Rapport R7:1975

Sol, solvärme, solenergi — en litteraturförteckning

Lars Engström, Jan Holmberg, Tor-Göran Malmström, Folke Peterson, Lennart Ringblom

Byggforskningen

SOL, SOLVÄRME, SOLENERGI – en litteraturförteckning

Lars Engström, Jan Holmberg, Tor Göran Malmström, Folke Peterson & Lennart Ringblom

Byggforskningen Sammanfattningar

R7:1975

Nyckelord:
solvärme, solenergi

Energiprognosutredningen som arbetat sedan våren 1972 dagtecknade sitt betänkande "Energi" i september 1974. Energiprogramkommittén som tillsattes vid årsskiftet 1973–74 lämnade sin utredning något senare under hösten. På sommaren 1973 höll UNESCO sin stora kongress "Sun in the service of Mankind". Vintern 1973–74 upplevde världen det man kallat "oljekrisen" som en följd av novemberkriget i Mellanöstern.

Mot denna bakgrund har intresset för användande av solenergi ökat starkt. BFR planerar redovisa ett förslag till FoU-program för området solvärme (solenergi utnyttjad för lokalkomfort, varmvattenberedning och husuppvärmning) i januari 1975. STU planerar redovisa ett förslag till FoU-program för området solenergi (solenergi för kraftproduktion, högtemperatursystem, fotokemiska och fotobiologiska processer m m) i april 1975.

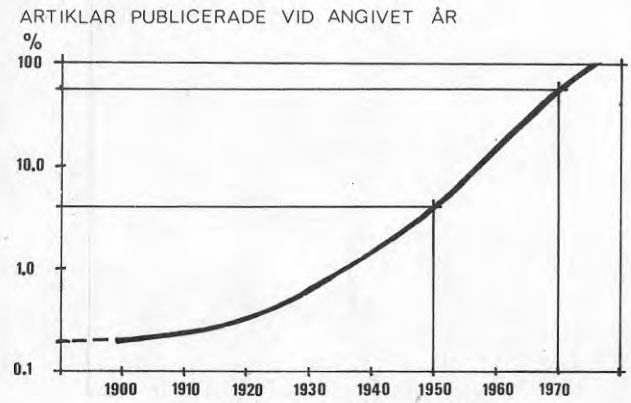
I samband med nämnda programarbeten har BFR beställt en sammanställning av litteraturuppgifter rörande solenergins användande. Förteckningen omfattar litteratur från c:a 1870 till 1974. Som framgår av nedanstående diagram har flertalet av rapporterna publicerats mellan 1950–1970. Huvudvikten har lagts vid litteratur rörande komponenter och system för uppvärmning av bostäder och undervisningslokaler. Även litteratur kring de meteorologiska, byggnadstekniska, arkitektoniska och sociala frågorna har behandlats. Liksom naturligtvis luftkonditioneringssystem baserade på drift med solenergi. En del litteratur behandlar områden utanför de nämnda, exempelvis fotosyntes, destillation m m.

Slutligen innehåller förteckningen en sammanställning av större och viktigare konferenser i ämnet samt äldre litteratursammanställningar varigenom antalet referat indirekt mångdubblats.

Huvuddelen av referenserna har insamlats genom KTH, IVA och AB Atomenergibibliotek samt Institutet för Byggdokumentation. Bland regelbundna publikationer av betydelse rekommenderas:

– Applied Solar Energy
(Geliotekhnika, The Academy of Sciences of the Uzbek Soviet Socialist Republik USSR) publicerad i engelsk översättning av Allerton Press Inc., 150 Fifth Avenue, New York, NY 19011, USA

– Solar Energy
publicerad på engelska av The Association for Applied Solar Energy, Arizona State University Campus, Tempe, Ari-



Rapport R7:1975 hänför sig till forskningsanslag 740445-8, block 09, program 1B, från Statens råd för byggnadsforskning till Jan Holmberg, Hugo Theorells Ingeniörsbyrå AB, Solna och Folke Peterson, Institutionen för uppvärmnings- och ventilationsteknik, KTH, Stockholm.

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697.7:551
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(59)

ISBN 91-540-2406-4

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Grupp: samhällsplanering

zona, USA
- politiska, sociala och ekonomiska aspekter
- konferenser, litteratursammanställningar

Litteratursammanställningar har gjorts på mycket kort tid för att snabbt ge alla intresserade information. Sammanställningen omfattar c:a 2500 artiklar och rapporter och täcker uppskattningsvis 20 % av all litteratur i ämnet. Alla väsentliga arbeten kring ämnet torde vara med, möjligen finns några enstaka förbiseenden. Den korta tiden har ej medgett någon noggrann språklig bearbetning av materialet.

UTGIVARE: STATENS INSTITUT FÖR BYGGNADSFORSKNING

AB Trycksaker Norrköping 1975

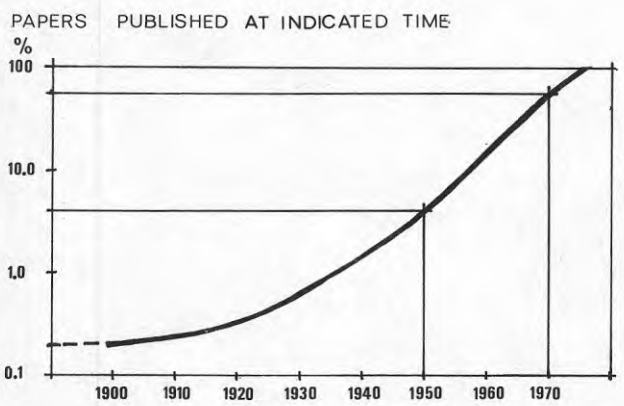
Sun, Solar Heat, Solar Energy – a bibliography

Lars Engström, Jan Holmberg, Tor Göran Malmström, Folke Peterson & Lennart Ringblom

The investigation of energy prognosis which has been taken place since Spring 1972 produces its report "Energy" in September 1974. The energy-programme committee, which was created at the end of 1973, beginning 1974 concluded its investigation somewhat later during Autumn. In the Summer of 1973 UNESCO held its large congress "Sun in the service of Mankind". As a result of the November war in the Middle East the world experienced in the Winter of 1973–74 that which was called the "oil crisis".

Against this background there has been a marked increase in interest in utilization of solar energy. BFR is planning to present a proposal to the FoU-programme within the field of solar energy (solar energy exploited for locale comfort, warm water preparation and heating of houses) in January 1975.

STU is planning to present a proposal to the FoU-programme within the field of solar energy (solar energy exploited for power production, high temperature systems, photo-chemical and photobiological processes, etc) in April 1975.



In connection with the programme work named above, BFR has requested a compilation of literary sources of information concerning the exploitation of solar energy. This list comprises literature from circa 1870 until 1974. As will be seen from the diagram below the most important reports have been published between 1950 and 1970. Emphasis has been laid on literature concerning components and systems for the heating of dwelling houses and teaching localities. Even literature involving meteorological, building technological, architectural and social questions has been covered, similarly of course air conditioning systems run on solar energy power. A certain amount of literature covers areas outside those named, e.g. photosynthesis, distillation etc.

Finally the list contains a compilation of larger and more important conferences on this subject as well as earlier lists of literature with the result that the total referred to has indirectly been multiplied manyfold.

The main part of the references have been collected through KTH, IVA and AB Atomenergibibliotek (The Atomic Energy Library Ltd.) together with the Institute for Building Documentation.

Amongst regular publications of importance can be recommended:

– Applied Solar Energy (Geliotekhnika, The Academy of Sciences of the Uzbek Soviet Social-

National Swedish Building Research Summaries

R7:1975

Key words:
solar heat, solar energy

Report R7:1975 refers to Research Grant 740445-8, block 09, programme IB, from the Swedish Council for Building Research to Jan Holmberg, Hugo Theorells Ingeniörsbyrå AB, Solna and Folke Peterson, Institutionen för uppvärmnings- och ventilationsteknik, KTH, Stockholm.

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Distribution:
Svensk Byggtjänst,
Box 1403, S-111 84 Stockholm
Sweden.

ist Republic USSR) published in English translation by Allerton Press Inc., 150 Fifth Avenue, New York, NY 10011, USA

– Solar Energy

published in English by The Association for Applied Solar Energy, Arizona State University Campus, Tempe, Arizona, USA

– political, social and economical aspects
– conferences

lists of literature

The list of literature has been completed in a very short time in order to quickly give all interested parties the information. The list comprises approx. 3000 articles and reports and covers at a guess 30 % of all literature on this subject. All important work on this subject is considered to be included, possibly with some few errors. The short time has not allowed a thorough linguistic revision of the material.

UTGIVARE: STATENS INSTITUT FÖR BYGGNADSFORSKNING

AB Trycksaker Norrköping 1975

Rapport R7:1975

SOL, SOLVÄRME, SOLENERGI - en litteraturförteckning

SUN, SOLAR HEAT, SOLAR ENERGY - a bibliography

Lars Engström
Jan Holmberg
Tor-Göran Malmström
Folke Peterson
Lennart Ringblom

Denna rapport hänför sig till anslag nr 740445-8 från Statens råd för byggnadsforskning till överingenjör Jan Holmberg, Hugo Theorells Ingenjörsbyrå AB, Solna, och Docent Folke Peterson, Institutionen för uppvärmnings- och ventilationsteknik, KTH Stockholm. Försäljningsintäkterna tillfaller fonden för byggnadsforskning.

Statens råd för byggnadsforskning
ISBN 91-540-2406-4

Tryck Faibo Grafiska - Stockholm 1975

REFERENSSYSTEM

Det i denna litteraturförteckning använda systemet för uppställning av referenser framgår av följande exempel:

Solar heat collector	Titel (kursiv)
Green W	Författare[1]
Engineer, 162 (1936) No 10, p 372	Tidskrift[2]
Describes apparateus and method of operation of a solar heat collector constructed by C G Abbot. It is producing steam to be used for driving an one-half hp steam engine.	Kort sammandrag[3]

1) I det fall det rör sig om ett arbete med två författare har båda dessas namn (med initialer) angivits. Är antalet författare fler än två anges t **ex** : Ringblom L et al

2) Vid tidskrift anges (se exemplet ovan):

Tidskriftens namn	Volym (Årgång)	(Årtal)	Nummer ev mån.	sida för art.början
Engineer	162	(1936)	No 10	p 372

I vissa fall refereras böcker. Bokförlag och tryckår (ev tryckort anges då i stället för tidskrift

Vid referat av forskningsrapporter anges vanligen dessas nr.

3) Sammandraget börjar i flertalet fall med följande statistiska uppgifter:

antal sidor antal tabeller antal bilder antal referenser

I vissa fall uppges endast sidantal (då kontroll av övr uppgifter ej medhunnits).

INNEHÅLLSFÖRTECKNING CONTENTS

FÖRORD

Under hösten 1974 har en arbetsgrupp på uppdrag av Statens råd för byggnadsforskning arbetat på ett förslag till FoU-program för *solvärmeprojekt* i Sverige (projekt 740445-8 block 09 program 1 B). Detta program kommer att presenteras i februari 1975. Styrelsen för teknisk utveckling är sponsor för en andra etapp omfattande förslag till FoU-program för *solenergiprojekt* i Sverige. Detta senare program kommer att presenteras i april 1975. BFR intresse är att klarlägga angelägna och nödvändiga forskningsinsatser inom området solvärme varmed här menas solenergi utnyttjad för byggnadsuppvärmning, lokalkomfort och varmvattenberedning. STU intresse är på motsvarande sätt att behandla området solenergi varmed här menas högtemperatursystem, elproduktion, fotokemiska- och fotobiologiska processer m.m.

För att snabbt göra en stor del av litteraturen kring de aktuella ämnesområdena känd för intresserade, gav Statens råd för byggnadsforskning mot slutet av år 1974 i uppdrag till Jan Holmberg, Hugo Theorells Ingenjörsbyrå AB, och Folke Peterson, Institutionen för uppvärmnings- och ventilationsteknik, att till det planerade symposiet "Soluppvärmda hus" i jan 1975 sammanställa en litteraturförteckning med referenser uppdelade på ämnesområden av intresse. För det omfattande arbetet med litteraturgenomgången engagerades personal vid Inst.för uppvärmnings- och ventilationsteknik.

I detta arbete har deltagit

Hiroshi Hon-ma, som översatt det japanska underlaget
Tor- Göran Malmström och Folke Peterson, vilka huvudsakligen granskat material från kongresser och engelska, franska samt tyska tidskrifter,
Lennart Ringblom, som arbetat med material från det socialistiska blocket, främst Sovjetunionen

I arbetets planläggning och samordningen med hänsyn till de ovannämnda forskningsprogrammen för BFR och STU har deltagit

Civ. ing., ark. SAR Lars Engström,
Uhlin & Malm Arkitektkontor AB
Ingenjör Jan Holmberg,
Hugo Theorells Ingenjörsbyrå AB

Den knappa tiden för arbetets genomförande medgav ej någon hög grad av fullständighet. Dock torde de ca 3 000 behandlade artiklarna och rapporterna täcka det i dessa sammanhang viktigaste som publicerats mellan 1930 och 1974.[1] Uppskattningsvis täcker sammanställningen 30 % av all litteratur i ämnet.

Naturligtvis har ej en kritisk värdering av här redovisade arbeten medhunnits. En sådan värdering av de viktigaste arbetena planeras utföras under 1975 vid Institutionen för byggnadsteknik, KTH, Stockholm. Vidare har ej tiden medgett att ge språket önskvärd uppmärksamhet.

Litteraturförteckningen har koncentrerats till att ge hänvisningar till viktigare källor. För mer än hälften av de ovannämnda källorna har ett kortfattat referat utarbetats, ibland med hjälp av författarens egen sammanfattning, ibland från redan utförda referat. Då referat ej utarbetats kan detta bero på att:

- litteraturen ej funnits tillgänglig i Sverige eller ej kunnat anskaffas.
- litteraturhänvisningen varit mycket kortfattad, vilket i sådana fall framgår av antalet sidor
- artikeln ej innehållit något väsentligt nytt utöver vad samme författare skrivit i andra referade artiklar eller böcker. Detta framgår i sådana fall av att samme författare svarar för en rad artiklar inom ett visst ämnesområde eller två närliggande områden
- litteraturen ej varit av direkt intresse för byggforskningsområdet, men ändock medtagits. Som exempel härpå kan nämnas uppsatser om vissa mätmetoder.

Materialet har insamlats - förutom via institutionsbiblioteket - genom biblioteken vid KTH, IVA och Atomenergi, Studsvik. Dessutom har Institutet för Byggdokumentation bidragit med en sökning.

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1) Ett mindre antal arbeten utförda under tiden 1800-1930 har även medtagits.

Och Gud sade: Warde Ljus, och
det wardt ljus
Och Gud såg ljuset, att det
war godt
1 Mos 1:3,4

1

SOLENERGI

Nära nog hela jordens energibehov täckes med solenergi - jordens egna energikällor, jordvärme och spontan kärnenergi svarar för endast 0,21 % och 0,03 % är energi från tidvattenrörelser.

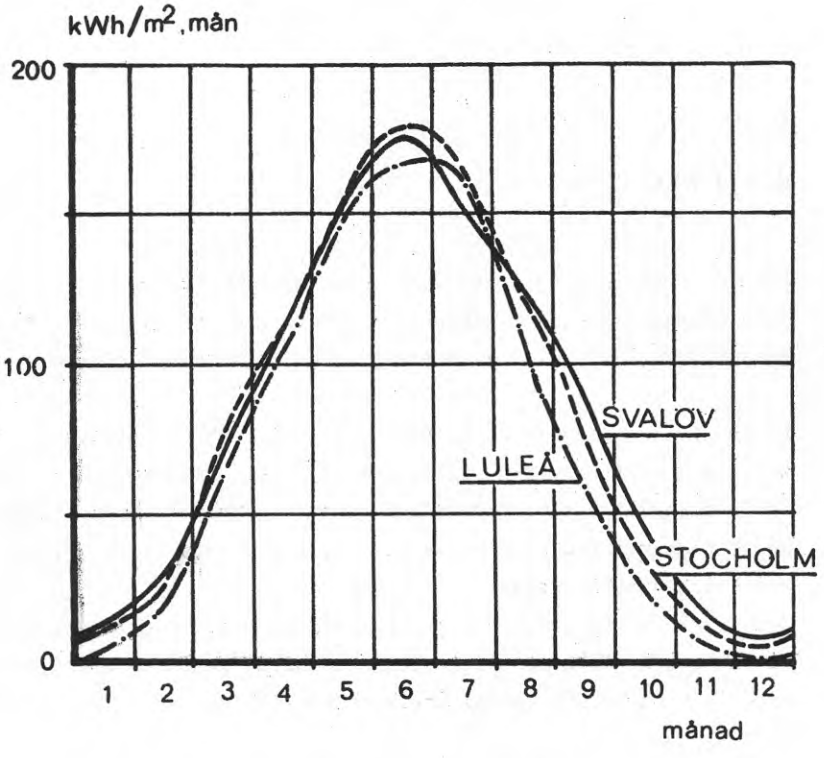
Av den till jorden förda effekten, $17 \cdot 10^{16}$ W - i huvudsak kortvågig strålning med våglängder upp till 8 mikrometer - upptas omkring 60 % som värme eller genom fotosyntes. Värmen lagras genom temperaturhöjning av mark, vatten och luft eller i form av luft- och vattenrörelser.
Solenergin är ren, d.v.s. den lämnar inga restprodukter på jorden om vi bortser från den lilla del som lagras genom fotosyntes. Praktiskt taget all energi återstrålar således från jorden till världsrymden.

Om en del av den infallande energin används kommer den efter nyttiggörandet att åter stråla ut i rymden och jordens energibalans kommer ej att rubbas. Även lagring av - i detta sammanhang - smärre energimängder saknar betydelse för jordens energibalans.

1.2

Av betydelse vid ett nyttiggörande av den infallande solenergin är

- **dess geografiska fördelning**
- **dess spektrala fördelning**
- **dess tidsmässiga fördelning**



Globalstrålning (kWh/m^2,mån) för tre orter
Efter Isfält (1975)

1.0
SOLENERGI, allmänt

The Sun

Abbot, C.G.

Appleton, New York (1911)

Solar Tables and Diagrams for building Designers

Ballantyne, E.

CIE Conference (1965) p 251 Newcastle-upon-Tyne

Solar erythemal radiation resources

Belinskii, V. et. al.

Geliotekhnika, 2 (1966), No 2, p 38

7 pages 4 tables 3 pictures

Solar-energy availability and instruments for measurements

Blanco, P

Solar Energy, 6 (1962) p 106

4 pages 32 ref.

Presentation of papers given at a session on solar energy availability and instruments for measurements. UN Conf on New Sources of Energy, Rome (1961).

Solar Radiation Data

Cohen, R.

Proc. solar heating and cooling for buildings workshop, Washington D.C. (1973) March

Solar energy on clear and cloudy days

Fritz, S.

Scientific Monthly, 84 (1957), No 2, p 55

11 pages

Quantity of heat energy received from the sun

Gardner, G.

Solar Energy, 4 (1960) No 1 p 26

3 pages 4 pictures 1 ref.

Certain Opticogeometrical and Energy Characteristics of the Sun as a Volumetric Radiator

Grigor'ev, V.

Geliotekhnika, 6 (1970), No 6, p 40

8 pages 3 tables 3 pictures 3 ref.

Tables of computed altitude and azimuth

Hydrographic Office

Bulletin No. 214, Vols. 2 and 3, (1958) U.S. Gov't. Printing Office, Washington

The solar constant

Johnson, F.

Journal of Meteorology, 11 (1954), p 431

The ratio of direct and diffuse solar radiation

Khadzhiev, Kh.

Geliotekhnika, 9 (1973), No 6, p 38

5 pages 1 picture 15 ref.

Calculation of solar radiation and the solar heat load on man

Klein, W.

Journal of Meteorology, 5 (1948), Aug, p 119

Radiant energy of the sun

Kondrat´ev, K

Gidrometizdat, Leningrad (1954) In Russian

599 pages

The first part of this comprehensive book on solar radiation follows the lines of Kalitin´s classic text of 1938, though incorporating findings through 1953. The last part of the book is completely original and based almost entirely on recent data and literature from Russia and abroad

World Solar Chart

Kuba, G

National Building Research Station Digest No 3 (1968)
University of Khartoum, Sudan

The effective radiative distance of the sun

Loewe, F. and van Meurs, B.

Solar Energy, 15 (1973), No 2, p 191

World distribution of solar radiation

Löf, G. et al

Report No 21, Solar Energy Lab., Univ. of Wisconsin, (1966), July

Etude de la radiation global du soleil

Nicolet, M and Dogniaux, R

Mem Inst R Met Belg, 48 (1951)

Soldiagram, stjärndiagram och himmelsljusdiagram för Sverige

Pleijel, G

Tekniska Skrifter, 118 (1945)

The Annual Radiation Balance of the Earth-Atmosphere System during 1969-70 from Nimbus 3 Measurements

Raschke. E., et.al.

Journal of the Atmospheric Sciences, Vol. 30 (1973) Apr. p. 341

24 pages - - -

Solar radiation

Robinson, N

Elsevier (1966)

Measurement of Apparent Solar Constant and Apparent Extinction Coefficient at Edmonton (Alberta) Canada

Sadler, G W

Solar Energy, 13 (1970) No 1, p 35

7 pages 8 tables 4 pictures 3 ref

The annual variation at Edmonton, Alberta, Canada (latitude 53° 34´N, longitude 113° 31´W) of the apparent solar insolation at air mass zero

The quilty sun

Sharafi, A.

Geliotekhnika, 9 (1973), No 5, p 69

1 page

The article is a report of a book which discusses the connection between terrestrial phenomena and solar activity.

Solar power - the clean energy

Swartman R

Eng Journ. (Canada) 56 (1973) No 1 p 14

4 pages

Possible use in Canada

A Global Classification of Solar Radiation

Terjung, W

Solar Energy, 13 (1970) No 1, p 67

15 pages 8 pictures 11 ref

Potential solar radiation climates of man

Terjung, W.

Annals of the Association of American Geographers, (1971), Sept

20 pages

Solar energy outside the earth's atmosphere

Thekaekara, M.

Solar Energy, 14 (1973), No 2, p 109

19 pages 4 tables 7 pictures 44 ref.

The distribution of radiation over the sun's disk

Ångström, A. and Ångström, K.

Solar Energy, 13 (1971), No 2, p 243

8 pages 3 tables 2 pictures 6 ref.

From available measurements and evaluations, formulae are derived for the distribution of radiation over the Sun's disk.

1.1 INSTRÅLNING

Atmosphere to solar radiation

Applied Optics (1963) No 9

12 pages

Measurements of atmospheric absorption coefficients obtained from solar observations

Sunradiation

Annals of the Astriphysical Observatory of the Smithsonian Inst, Vol 6 (1942)

Laws governing geographical distribution of direct solar radiation and total radiation

Aizenshtat, B.

Geliotekhnika 5 (1969), No 4, p. 33

10 pages 3 tables 3 pictures 15 ref.

Examples of statistical representation of radiation data

de Barry, E.

Solar Energy, 4 (1960) No 1 p 2

6 pages 14 tables 4 pictures 2 ref.

The paper is intended to illustrate how records of the total radiation from sun and sky, received on a horizontal surface, may be presented in order to make available data which are essential for users of solar energy.

The distribution of solar radiation over the earth's surface

Black, J

Arch Met Geophys Biokl B 7 (1956) p 165

25 pages

Atmospheric radiation near the surface of the ground: A summary for engineers

Bliss, R.

Solar Energy, 5 (1961) p 103

18 pages 2 tables 20 pictures 21 ref.

A procedure for estimating the instensity of atmospheric radiation upon horizontal surfaces gives in detail. Results of the calculations for typical atmospheric condition.

Solar radiation during cloudless days

Fritz, S.

Heating and Ventilating, 46 (1949), p 69

6 pages

Transmissions of solar energy through the earth's clear and cloudy atmosphere

Fritz, S

Transactions of the Conf on the Use of Solar Energy. The Scientific Basis, 1 (1955) p 17

20 pages

The number of days with solar radiation above or below specific values

Fritz, S. and MacDonald, T.

Solar Energy, 4 (1960) No 1 p 20

3 pages 3 pictures

The paper analyses solar radiation data in a way which make them useful in design of solar house heating systems, in applications of solar energy to house cooling, and for other application where energy storage is necessary.

Direct ultraviolet radiation under various atmospheric transmission conditions

Garadzha, M.

Geliotekhnika, 2 (1966), No 4, p 50

7 pages 3 tables 2 pictures 9 ref.

Weekly mean values of daily total solar and sky radiation

Hand, I.

U. S. Weather Bureau, Tech. Paper, (1946), No 11, p 17

Solar Energy for House Heating

Hand, I

Heating and Ventilating, 42 (1947) Dec p 80

Solar energy data are tabulated and their uses discussed for cases of solar heating through windows facing south

Insolation on cloudless days at the time of solstices and eqiunoxes

Hand, I.

Heating and Ventilating, 11 (1954), Febr, p 98

4 pages

Simple instruments for the assessments of daily solar radiation intensity

Heywood, H

UN Conf on New Sources of Energy, Rome (1961)

15 pages

The design of simple instruments which would assess the radiation received daily on a flat surface

A general equation for calculating total radiation on inclined surfaces

Heywood, H.

ISES Conf., Melbourne (1970).

8 pages 5 ref.

Solar radiation on cloudy days

Kimura K and Stephenson D

ASHRAE Trans 75 (1969) Part 1

8 pages

The Measurement of Solar Spectral Irradiance at Different Terrestrial Elevations

Laue, E

Solar Energy, 13 (1970) No 1, p 43

15 pages 13 pictures 9 ref

This paper indicates the methods necessary to obtain such spectral data and presents some ground-based summaries and, in particular, new results of concurrent measurements made at 1·3 and 2·3 km; the meteorological interpretation is indicated

The interrelationship and characteristic distribution of direct, diffuse and total solar radiation

Liu, B and Jordan, R.

Solar Energy, 4 (1960) No 2 p p 1

19 pages 1 table 16 pictures 17 ref.

Based upon the data now available the paper presents relationships permitting the determination on a horizontal surface of the instantaneous intensity of diffuse radiation on clear days, the long term average hourly and daily sums of diffuse radiation, and the daily sums of diffuse radiation for various categories of days of differing degrees of cloudiness.

Daily insolation on surfaces tilted toward the equator

Liu, B and Jordan, R

ASHRAE Journal, 3 (1961) No 10, p 53

7 pages

Proposed standard solar radiation curves for engineering use

Moon, P

Journal of Franklin Inst. 230 (1940) p 583

35 pages

Diffuse sky radiation

Norris, D.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 3/37

6 pages

Development and use of solar insolation data for south facing surfaces in northern latitudes

Morrison, C

ASHRAE Transactions, 80 (1974), part II

Irradiation of vertical and horizontal surfaces by diffuse solar radiation from cloudless skies

Parmelee, G.

ASHVE Transaction, 60 (1954), p 341

18 pages

Radiant energy transmission of the atmosphere

Parmalee, G. and Aubele, W.

ASHVE Transactions, 58 (1952), p 85

Solar load analysis by use of Ortographic projections and spherical trigonometry

Penrod, E.

Solar-Energy, 8 (1964) p 127

7 pages 11 pictures 7 ref.

A procedure for determing solar loads on roofs and southfacing walls is presented.

Studies of parameterization of solar irradiance at the earth's surface

Quinn, W.

Proc. of the Miami Workshop on Remote Sensing (1971) March, p. 21.

18 pages

Tables of Solar Altitude and Azimuth: Intensity and Solar Heat Gain Tables

Stephenson, D

Tech. Paper No 243, Division of Building Research, National Research Council of Canada, Ottawa (1967)

A quantitative evaluation of power density and storage capacity for solar and wind energy

Summers, C

OSU (1963)

Extraterrestrical Solar Energy and its Possible Variations

Thekaekara, M.

ISES Conference in Paris, July, 1973,

13 pages 2 tables 3 pictures 37 ref.

Review of applications of the design standard values of the solar constant and solar spectrum. Indications of possible variations in solar energy.

Solar irradiation on clear days

Threlkeld, J.

ASHRAE Journal, r (1962), No 11

Solar irradiation of surfaces on clear days

Threlkeld, J.

Transactions ASHRAE, 69 (1963)

Direct solar radiation available on clear days

Threlkeld, J. and Jordan, R.

Heating, Piping and Air Conditioning, 29 (1957), p 135

11 pages

Direct radiation available on clear days

Threlkeld,J and Jordan,R. rdan

ASHRAE Transactions, Vol. 64 (1958), p 45

Die Berechnung der Sonnen wärmeinstrahlung auf senkrechte und geneigte Flächen under Berücksichtigung meteorologischer Messungen

Tonne, F. and Wilhelm, N.

Zeitschrift für Meteorologie, 14 (1960), Heft 7-9

Strahlungsmeteorologische Unterlagen zur Berechnung des Kühlbedarfs von Bauten

Valko, P.

Schweizerische Blätter für Heizung und Lüftung, (1967), No 1

Solar Radiation Graphs

Whittier, A

Solar Energy, 9 (1965) No 3, p 165

2 pages 4 pictures

Four figures given are useful in solar energy research, in that they permit synthesis of hourly radiation data when only daily values are known

Solar and terrestrial radiation

Ångström, A.

Ouart. J. Roy. Metr. Soc. 50 (1924) p 121

1.2
SOLINSTRALNING, vissa orter

The Australian radiation network

Albrecht, F

Climatology and microclimatology; proceedings of the Canberra Symp, UNESCO, Paris (1958) p 99

7 pages

Instrumentation used in the Australian network of radiation measurement stations is described

Monthly Maps of Mean Daily Insolation for the United States

Bennett, I.

Solar Energy Society Conference, Phoenix, Arizona (1965) March

Monthly Maps of Mean Daily Insolation for the United States

Bennett, I

Solar Energy, 9 (1965) No 3, p 145

14 pages 12 maps 13 ref

Traditional problems in the preparation of climatic maps of insolation involve the quality and scarcity of data. Between 1950 and 1962, 59 stations in the contiguous United States maintained records of insolation suitable for climatic analysis. Simple and multiple regression analysis are tested and used to filling in missing data in the records of the insolation stations. The final product consists of 12 monthly maps of the United States showing mean daily insolation

Five years continouous recording of total and diffuse radiation at Kew Observatory

Blackwell, M.

Paper of the Meteorological Research Committee (London), No 895 (1954)

Study of solar radiation at Lwiro in 1953

Bonnet, G.

Acad. Roy. Sci. Colon. Cl. Sci. Nat. & Méd., 6 (1958) In Frensh

A survey of the activity of the Solar Radiation Laboratory at Lwiro since its foundation in 1953 and a summary of the solar radiation data obtained in 1952 and 1953.

Instrålning från sol och himmel i Sverige under klara dagar.

Brown, G. and Isfält, E.

Byggforskningsrapport No 19, (1969)

120 pages 2 tables 19 pictures

Irradiation from sun and sky in Sweden during clear days. Tables and diagrams.

Solar position at various hours datas and latitudes - tables

Brown, G. and Tuominen, T.

Byggforskningsrapport No 75, (1962)

44 pages 2 pictures 74 ref.

Covering latitudes from 32 ^{o}N to 68 ^{o}N every 4:th latitude. Solar time.

The study of heat gains and the natural lighting of buildings. Part 1 - Solar radiation.

Centre Scientifique et Technique de la Construction, Brussels (1969).

112 pages

Solar radiation and insolation data for Belgium, for computing heat transfer and illumination of buildings.

Solar radiation at New Delhi

Choudhury, N

Solar Energy, 7 (1963) No 2, p 44

9 pages 13 pictures 4 ref

Analysis of measured data has revealed the salient characteristics of solar radiation reaching New Delhi

The distribution of solar radiation throughout Southern Africa

Drummond, A and Vowinkel, E

J Meteorol, 14 (1957) p 343

11 pages

The minimum average daily solar radiation in the United States during December for a tilted flat-plate collector

Elliott, J.

Solar Energy, 3 (1959) No 2 p 35

2 pages 1 picture 5 ref.

The minimum average daily solar radiation in the United States during the month of December for a tilted flat-plate collector is presented by means of a map.

Vier Jahre Strahlungsbilanz-Registrierungen am Meteorologischen Observatorium, Hamburg

Fleischer, R

Ber d Deut Wetterdienstes, 7 (1959) No 51, p 9

5 pages

Average solar radiation in the United States

Fritz, S. and MacDonald, T.

Heating and Ventilating, 46 (1949), p 61

4 pages

Solar Radiation Measurements in the Arctic Ocean

Fritz, S.

Geophysical Research Papaer No 63, Scientific Studies at Fletcher's Ice Island, T-3, 1952-1955, 11, (1959)

5 pages

For several years the U.S. Air Force Cambridge Research Center has made various measurements of solar energy received on a horizontal surface from sun and sky.

Comparison of normal incident solar energy measurements at Washington, D.C.

Goldberg, B. and Klein, W.

Solar Energy, 13 (1971), No 3, p 311

11 pages 3 tables 8 pictures 6 ref.

Normal incidence measurements of solar radiation made in 1966 and 1969, indicate 14-16 per cent loss of energy when compared to normal incidence measurements in 1907 and 1919.

Summary of total solar and sky radiation measurements in the United States

Hand, I.

Monthly Weather Rev., 69 (1941), p 95

31 pages

Measurements of diffuse solar radiation at Blue Hill Observatory

Hand, I. and Wollaston, F.

Technical Paper, No 18, U.S. Dept. of Commerce, Weather Bureau (1952)

Methods of calculating solar radiation values at Blue Hill Observatory, Milton, Massachusetts

Hand, I

Monthly Weather Review, 82 (1954), p 43

7 pages

Studium zum Strahlungsklima von Potsdam

Hinzpeter, H

Veröff Met Dienst d Deut Dem Republ (1953) No 10

Records on solar radiation in Chile

Hirschmann, J.

Solar Energy, 14 (1973), No 2, p 129

10 pages 3 tables 6 pictures 9 ref.

The institutions that at present carry out measurements of solar radiation in Chile are named. Also included are the first results of the coordinated measurements.

Frequency distribution of hourly sums of direct solar radiation at Potsdam

Hinzpeter, H.

Solar Energy, 4 (1960) No 1 p 8

6 pages 4 pictures

The frquency distribution of direct solar radiation related to the building of apartment houses and in city planning.

Sun penetration and exclusion in tropical regions

Holshausen, C

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 361

12 pages 5 tables 1 picture 16 ref

Solar energy availability for heating in the United States

Jordan, R. and Threlkeld, J.

Heating, Piping and Air Conditioning, (1953), Dec, p 111

12 pages

The Climate of Turkmenistan (Ashkhabad Data) in Relation to the Utilization of Solar Energy for Heating and Cooling

Kakabaev, A. and Petrova, A.

Geliotekhnika, 2 (1966), No 6, p 47

6 pages 1 table 3 pictures 4 ref.

Interdiurnal Variability of total solar and sky radiation on a horizontal surface at Athens, Greece

Karapiperis, P

COMPLES Bulletin (1963) No 5

4 pages

The difference between the total solar and sky radiation measured for the same hours in consecutive days and the integrated daily total solar and sky radiation in consecutive days

Analysis of certain characteristics of the radiation climate in the Turkmen SSR that determine whether solar plants can be used

Khandovletov, S. and Agabaev, Ch.

Geliotekhnika, 10 (1974), No 2, p 59

5 pages 2 tables 1 picture 8 ref.

Die Globalstrahlung in Stockholm

Lindholm, F

Arch Met Geophys Biokl, 9 (1958) p 292

10 pages

Means of daily solar radiation for United States Stations

Lippmann, H

Weekly Weather and Crop Bull, 46 (1959) No 7, p 7

2 pages

Relationship between insolation and other surface weather observations at Blue Hill, Massachusetts

Lund, I

Solar Energy, 12 (1968) No 1, p 95

12 pages 1 table 9 pictures 22 ref

Nine years of daily insolation observations taken at Blue Hill, are correlated, by month, with observations of temperature, snow cover, winds, sunshine, sky cover, pressure and precipitation

Records of solar radiation in Helsingfors

Lunelund, H.

Finska Vetenskaps-Societeten, Helsingfors, Commentationes Physico-Mathematicae, 7 (1933), p 1

29 pages

Contribution to the knowledge of solar radiation in Finland

Lunelund, H.

Finska Vetenskaps-Societeten, Helsingfors, Commentationes Physico-Mathematicae, 7 (1934), p 1

59 pages

Värmestrålning och ljusstrålning i Finland

Lunelund, H.

Acta 12, (1936) Svenska Tekniska Vetenskapsakademin, Finland-Helsingfors

Summer weather data and sol-air temperature - study of data for New York City.

Mackey, C. and Watson, E.

Heating, Piping & Air Conditioning (1944), No 11, p 651

7 pages

Solar energy and sunshine hours at Athens, Greece

Macris, G

Monthly Weather Rev, 87 (1959) No 1, p 29

4 pages

Measurements of the amount of solar energy in langleys and the number of sunshine hours, at the National Observatory, Athens, 1953-1956

Solar radiation climate of India

Mani, A. and Chacko, O.

Solar Energy, 14 (1973), No 2, p 139

16 pages 4 tables 9 pictures 20 ref.

Presents the essential results of solar radiation measurements made at a network of thirteen stations in India during the last ten years.

1.22

Atmospheric turbidity over India from solar radiation measurements

Mani, A. et al

Solar Energy, 14 (1973), No 2, p 185

11 pages 1 table 7 pictures 17 ref.

L'utilisation de l'énergie solaire dans les regions tropicales

Masson, H

Bull & Mém Ecole Med Dakar, 3 (1955) p 244

7 pages

A preliminary estimate of the average insolation in Canada

Mateer, C

Canad Journ Ag Sci, 35 (1955) p 579

16 pages

Solar energy: a summary of records at Columbia, Missouri

McQuigg, J et al

Missouri Univ Agr Exp Sta Res Bull, 671 (1958)

27 pages

Gives hourly and daily totals of solar radiation received for the period 1944 to 1956

General Characteristics of the Process of Reception of Direct Solar Radiation in the Azerbaidzhan SSR

Movsumov, E. and Es'man, V.

Geliotekhnika, 4 (1968), No 5, p 53

4 pages 1 table 2 pictures 3 ref.

The paper deals with the study of chronologic changing processes of the intensity of solar radiation in Azerbaijan (seven stations).

Reliability curves for direct radiation in zones of Azerbaidzhan

Movsumov, E., Es'man, V.

Geliotekhnika 5 (1969), No 4, p. 43

4 pages 1 table 2 pictures 3 ref.

Solar radiation, net radiation and temperature in Argonne, Chicago

Ojo, O.

Solar Energy, 15 (1973), No 2, p 155

Solar energy measurements (1951-1960) at University of Kentucky

Penrod, E. and Knight, H.

University of Kentucky Engineering Experiment Station Bulletin, 16(1961), Sept, p 61

Sunpath diagrams and overlays for solar heat gain calculations

Petherbridge, P

HMSO (1969) BRS, England

For latitudes of the British Isles

Nocturnal Radiation Measurements, Atlanta, Georgia

Picha, K and Villanueva, J

Solar Energy, 6 (1962) No 4, p 151

4 pages 5 pictures 5 ref

Experiments were carried out during the summer of 1958 to measure nocturnal radiation. Reasonable correlation of the data for clear nights with an equation of the type proposed by Brunt was obtained. The effect of variable cloud cover was evaluated and an equation is proposed whereby this effect can be calculated

Svenska astrofysiska stationen på Capri

Pleijel, G

Byggmästaren (1962) No 1

The Swedish astrophysical station on Capri

Die Globalstrahlung in Davos

Prohaska, F

Gerl Beitr Geophys, 59 (1943) p 247

29 pages

Solar radiation and its measurement at a net work of stations, with special reference to India

Ramdas, L

UN Conf on New Sources of Energy, Rome (1961)

18 pages

The various types of instruments that have been devised for recording solar radiation are discussed

A note on the solar radiation pattern for the United Arab Republic

El Sabban, A. and Elnesr, M.

Solar Energy, 4 (1960) No 1 p 48

1 page 1 table 1 picture 1 ref.

The solar intensity at normal incidence has been measured on every day with clear skies, for three different altitudes of the sun.

An estimation of solar energy radiation for Australia

Sapsford, C

Austral J Sci, 20 (1957) No 4, p 99

6 pages

Le rayonnement solaire a Stanleyville

Schüepp, W

Serv Met du Congo Belge, Publ No 6 (1955)

Meteorologische Gesichtspunkte zur technischen Auswertung der Sonnenenergie

Schuepp, W

Arch Meteor Geophys Bioklimatol, 9 (1958) p 272

20 pages

The incoming radiation falling on a horizontal surface is studied for the climate of Belgian Congo with regard to the possibilities of its application for different purposes

On the distribution and variation of solar radiation in Japan

Sekihara, K. and Kano, M.

Papers Meteor. & Geophys., 8 (1957), p 144

6 pages

Using records of daily total of solar radiation measured on a horizontal surface for three to seven consecutive years for about forty stations in Japan, yearly and seasonal mean isopleths of solar radiation are drawn.

Ultraviolet radiation in Central Asia

Sitnikova, M.

Geliotekhnika, 1 (1965), No 2, p 35

3 pages 2 tables 3 ref.

This article examine the distribution of ultraviolet radiation in Central Asia.

Solar radiation in Israel

Stanhill, G

The Bulletin of the Research Council of Israel, Vol 11G (1962) May, No 1

8 pages

The relationship between the amount of solar radiation measured at the earth's surface and the observed amount of cloud cover was investigated using data from three stations

Correlation of solar radiation with common parameters in Toronto, Canada

Swartman, R. and Ogunlade, O.

Solar Energy, 13 (1971), No 3, p 345

3 pages 1 table

Direct solar radiation available on clear days

Threlkeld, J and Jordan, R

Heat Pip Air Cond, 29 (1957) No 12, p 135

11 pages

The paper presents the results of research on the incidence of direct solar radiation during clear days in the US. A fundamental procedure for determining atmospheric transmission factors for various atmospheric conditions and for various elevations is presented

Etude sur le chauffage des habitations par utilisation du rayonnement solaire

Trombe, F et al

Revue generale de thermique, 6 (1965), No 48

Report and description of a solar heated house in Pyrenees. Graphic presentation of the theoretical analysis of insulation.

Aerosol and solar radiation in Britain

M. Unsworth and J. Monteith

Quart. J. Roy. Met. Soc., 98 (1972), p 778

Turbidity at Uppsala from 1909 to 1922 from Sjöström's solar radiation measurements

Volz, E.

SMHI meddelanden serie B, Nr 28, Stockholm, (1968)

1.3 SPEKTRALFÖRDELNING

Distribution of Energy in the Spectrum of the Sun

Abbot, C. et.al.

Smithsonian Misc.Coll. 74 (1923) No. 7

Sources of solar ultraviolet radiation

Athay, G

Journal of Geophysical Research, 66 (1961) No 2, p 385

6 pages

Work related to the interpretation of the observed solar ultraviolet radiation is summarized

Measurements of absorbed shortwave energy in a tropical atmosphere

Cox, S. et al

Solar Energy, 14 (1973), No 2, p 169

5 pages 3 pictures 10 ref.

Measurements of the upward and downward solar irradiance between sea level and 20.000 feet over the tropical Atlantic shows values of atmospheric absorption exceeding computational estimates for a cloudless sky. Possible explanations for the high values of absorbed solar energy include increased path length due to the scattering by aerosols or absorption by the aerosols themselves,

The extraterrestrial solar spectrum

Drummond, A. and Thekaekara, M. (ed.)

Inst. of Environmental Sciences, Illinois, (1973)

169 pages

A collection of articles describing the methods, instruments, estimated accuracies, and results of recent measurements of the extraterrestrial solar spectrum. The reliability of the results is considered, and the possibilities of true variations in the emitted solar electromagnetic radiation are debated.

Solar heating: Total direct irradiance within the earth's atmosphere

Engineering Sciences Data Unit, London (1972).

16 pages

Spectrum of solar irradiance and atmospheric attenuation.

Spectral Distribution of Solar Radiation at the Earth's Surface

Gates, D.

Science, 151 (1966) No. 3710, p. 523

Studies of Spectral Energy Distribution of Different Light Sources in Connection with Solar Simulation

Gibson D and Weinand J.

Proc. Inst. Env. Science 1961 p 453

11 pages

Ultraviolet Spectral Energy Distributions of Natural Sunlight and Accelerated Test Light Sources

Hirt, R et al

Journal of the Optical Society of America, 50 (1960) No 7, p 706

8 pages

Spectral composition of direct solar radiation

Lopukhin, E.

Geliotekhnika, 1 (1965), No 1, p 44

5 pages 2 tables 1 ref.

Some peculiarities of representation of the spectral distribution of solar radiation

Sheklein, A

Geliotekhnika, 2 (1966), No 1, p 37

7 pages

A presentation of solar radiation data obtained by a spectro-heliometer

Sihvonen, Y. et. al.

Solar Energy, 2 (1958) p 21

5 pages 10 pictures 3 ref.

Use of a spectroheliometer

Effects of changes in the atmosphere on solar insolation

Swartman R. et al

Solar Energy, 14 (1973), No 2, p 197

6 pages 1 picture 14 ref.

A review of the nature of solar radiation and the spectral distribution of its energy is presented.

The Solar Constant and Spectral Distribution of Solar Radiant Flux

Thekaekara, M

Solar Energy, 9 (1965) No 1, p 7

13 pages 1 table 7 pictures 38 ref

The data currently available on the solar constant and the spectral distribution of the solar radiant flux is surveyed

1.4
MÄTTEKNIK

The silver-disk pyrheliometer

Abbot, C.

Smithsonian Misc. Col., 56 (1911), No 19

Measurements of the total absorptivity for solar radiation of several engineering materials

Birkebak, R and Hartnett, J.

Trans. ASME, 80 (1958), Feb., p 373

6 pages

Values are presented of the total solar absorptivity of several porous materials presently being considered for transpiration cooling of high-speed vehicles. To specify these surfaces, photomicrographs and a chemical analysis are presented. Two schemes used in the measurement of the absorptivity values are described in the text, a comparison technique and an integrating radiometer method (authors' abstract).

Solar-energy availability and instruments for measurements

Blanco, P

Solar Energy, 6 (1962) p 106

4 pages 32 ref

Presentation of papers given at a session on solar energy availability and instruments for measurements. UN Conf on New Sources of Energy, Rome (1961)

The Wig-Wag - An Inexpensive Instrument for Measuring Solar Radiation

Brodie, H

Solar Energy, 9 (1965) No 1, p 27

4 pages 7 pictures 3 ref

The "wig-wag", a simple mechanical device for the measurement of solar radiation is described. The principle of operation, which is based on the expansion of the gascous phase of a volatile liquid as a result of the conversion of radiant energy to sensible heat, is given in detail

Device for Measuring Fluctuations of Radition Intensity in the Visible Wavelength Range

Crivelli, E.

ISES Conference in Paris, July, (1973)

3 pages - - -

Response lag in thermal radiation calorimeters

Davies, J. et al

Solar Energy, 13 (1971), No 2, p 277

5 pages 4 pictures 11 ref.

Same characteristics of the Eppley pyrheliometer

MacDonald, T.

Monthly Weather Rev., 79 (1951), No 8

Instrumentation for the measurement of solar radiation - a survey of modern techniques and recent developments

Drummond, A

UN Conf on New Sources of Energy, Rome (1961)

13 pages

A review is presented of the principal objectives of the measurement of the different components of solar radiation, particulary with regard to the applicability of the derived radiation data in the several aspects of the utilization of solar energy

The Measurement of the Components of Solar Short-Wave and Terrestrial Long-Wave Radiation

Drummond, A et al

Solar Energy, 9 (1965) No 3, p 127

9 pages 12 pictures 19 ref

The principal characteristies of commonly used coated-receiver (thermopile-type) pyranometers are discussed and their performance compared with those employing such photoelectric detectors as selenium and silicon photovoltaic cells

Fundamental pyrheliometry

Drummond, A. and Greer, H.

Sun at Work, 3 (1958), No 2, p 3

The Eppley-jpl solar constant measurement program

Drummond, A and Hickey, J

Solar Energy, 12 (1968) No 2, p 217

16 pages 12 pictures 12 ref

A review of the experimental program

Appreciation du Rayonnement Solaire dans et Sous le Convert Forestér

Ducrey, M.

ISES Conference in Paris, July, 1973,

13 pages 3 tables 3 pictures 9 ref.

Discussion of two-methods to inforestry measure solar radiation: Pyranometers and hemispherical photography.

Instrumentation for solar studies

van den Eijk, J

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 265

8 pages 15 pictures

A device for actinometric measurements

Filippov, V. and Popov, A.

Geliotekhnika, 10 (1974), No 1, p 52

3 pages 3 picutres 7 ref.

This paper reports the results of tests on a heliostat which is both simple and ensures high accuracy of stabilization of the solar image.

The third international comparisons of pyrheliometers and a comparison of radiometric scales

Fröhlich, C. et al

Solar Energy, 14 (1973), No 2, p 157

10 pages 4 tables 5 pictures 4 ref.

Radiation instruments and measurements

International Association of Meteorology, Radiation Commission for Radiation Instructions, Radiation instruments and measurements.

Int Geophys Year 5 (1958), p 367. (IGY Instruction Manual Part 6)

Explains the construction and manipulation of every instrument in the field of meteorological radiation and advises on methods for obtaining worldwide comparability of radiation measurements.

Verfügbare Sonnenenergie und Strahlungsmessinstrumente

Gräfe, K.

BWK 14 (1962) No. 7

4 pages 21 ref.

Measurements of solar energy reflected by the earth and atmosphere from meteorological satellites

von der Haar, T. et al

Solar Energy, 14 (1973), No 2, p 175

10 pages 1 table 8 pictures 6 ref.

Solar probes - A feasibility study

Hall, C. et al.

Aerospace Engineering, (1962), May, p 22

9 pages

The paper gives a brief description of the solar environment and discusses scientific objectives of a solar probe and the type of measurements that would be made thereon.

Simple instruments for the assessments of daily solar radiation intensity

Heywood, H

UN Conf on New Sources of Energy, Rome (1961)

7 pages

Designs for simple instruments are proposed which assess the radiation received daily on a flat surface, primarily with the object of predicting performance of flat plate types of solar water heaters

A study of the spectral response of several Eppley pyranometers

Hill, A.

Solar Energy, 14 (1973), No 3, p 223

17 pages 6 tables 12 pictures 19 ref.

An easily constructed shadow-band for separating direct and diffuse solar radiation

Horowitz, J.

Solar Energy, 12 (1969), No 4, p 543

4 pages 1 picture 1 ref.

The shadow-band device described is capable of operation in temperate latitudes, It can be constructed in a few hours with a cost of materials less than $ 25 U.S. For the sake of simplicity, all references to solar-terrestrial relationsships will be in terms of the Northern Hemisphere.

A radiation fluxmeter for high intensity applications

Hughes, G.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 145

15 pages

The high energy concentration and the problem of correct flux measurement for a large solar furnace.

An instrument for the measurement of spectral irradiance under field conditions

Khazanov, V. and Shishov, D.

Geliotekhnika, 2 (1966), No 3, p 51

3 pages 1 picture 4 ref.

A new form of thermoelectric recording pyrheliometer

Kimball, H.

Jnl. Opt. Soc. Am., 7 (1923), No 9

The measurement of solar radiation

Lacy, R

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 103

8 pages 1 picture 12 ref

Solar energy recorder

Lollar R. and Mandt R.

Solar Energy, 16 (1974), No 2, p 73

8 pages 6 pictures 1 ref.

The interpretation of solar radiation measurements for building problems

Loundon A

Building Res Station, current paper (1967) No 73

Computing intensities on building faces

Simple Instruments for measurement of direct solar radiation

Majumdar, N and Kanshik, S.

Solar Energy, 8 (1964) p 91

4 pages 2 pictures 6 ref.

Operation principle worked out in details.

An Infra-red Solar-Furnace Pyrometer

Mann, K

Solar Energy, 9 (1965) No 3, p 136

5 pages 9 pictures 32 ref

Conventional radiation pyrometers, when used for solar furnace measurements, are subject to large errors due to reflected solar radiation. A spectral separation technique is discussed. The paper discusses the relative advantages of using the ultraviolet and infrared atmospheric absorption bands and describes a working pyrometer

The use of pyrheliometers for continuous measurements of an effective air pollution mixing depth

Moses, H. and Eggenberger, D.

Solar Energy, 15 (1973), No 2, p 143

A note on dew deposition on pyrradiometers

Mukammal, E.

Solar Energy, 13 (1972), No 4, p 421

3 pages 1 table 1 ref.

Use of Silicon Photocells for Measuring the Solar Radiation

Nexval, E. and Shklover, D.

Geliotekhnika, 3 (1967), No 3, p 38

4 pages - 5 pictures 4 ref.

Calibration of pyranometers

Norris, D.

Solar Energy, 14 (1973), No 2, p 99

10 pages 2 tables 1 picture 3 ref.

Methods currently used for calibrating pyranometers and some probable errors which may arise are discussed. Precautions that must be taken which could improve these methods are indicated.

A simple low cost pyranometer

Norris, D and Trickett, S

Solar Energy, 12 (1968) No 2, p 251

3 pages 8 pictures 4 ref

A thermopile is used as a basis for a new pyranometer

Le rayonnement solaire au sol et ses mésures

Chr Perrin de Brichambaut and Lamboley, G

Cahiers de l'AFEDES (1968) No 1

109 pages

This survey of solar radiation at the surface of the earth and its measurements makes a fitting start for the series of publications planned by the French Association for the Study, Development and Applications of Solar Energy. A comprehensive survey of radiation at the earth's surface is achieved

Notes on the measurement and estimation of atmospheric radiation

Robinson, G.

Quart. J. R. Met. Soc., 76 (1950) p 37

5 pages

Sky radiation measurement and corrections

Robinson, N and Stoch, L

COMPLES Bulletin (1963) No 5

12 pages

L'utilisation de l'énergie solaire, aspects météorologiques

Scuepp, W

Actes Soc Helv Sci Nat (1957) p 70

2 pages

Measurement of Direct, Diffuse, and Total Solar Radiation with Silicon Photovoltaic Cells

Selçuk, K and Yellott, J

Solar Energy, 6 (1962) No 4, p 155

9 pages 13 pictures 18 ref

The paper presents the results of tests carried out during the spring of 1962 to determine the suitability of commercially available silicon photovoltaic cells for use in solar radiometers

1.38

Pyrometers for high-temperature optical furnaces

Teplyakov, D. et al

Geliotekhnika 8 (1972), No. 4, p. 43

4 pages - 2 pictures 6 ref.

The paper describes a pyrometer which has been designed for measuring the temperature of samples heated within the focal point of high-temperature optical furnaces (solar funraces in this case) of the laboratory type.

Evidence for the need of a cheap simple solar radiation recorder

Ward, G.

Solar Energy, 2 (1958) p 34

3 pages 1 ref.

Survey of solar radiation data in eight countries.

New radiometric techniques and solar constant measurements

Wilson, R.

Solar Energy, 14 (1973), No 2, p 203

9 pages 4 tables 1 picture 18 ref.

A series of absolute cavity radiometers, designed to measure solar irradiance is presented.

The measurement of solar radiation

Yellott, J.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 19

9 pages - - 20 ref.

The paper present a brief review of the historical background and present status of solar radiometry.

1.5
MATEMATISKA MODELLER

A general equation for calculating total radiation on inclined surfaces

Heywood, H.

ISES Conf., (1970), Melbourne, Australia

La Function Cosinus Comme Une Expression Matematique de Proceus d'Energie Solaire
A/Radiator Solaire Incident
B/Utilization du Chaleur Solaire

Hirschmann, J.

ISES Conference in Paris, July, (1973)

11+11 pages - 1 picture 6 ref.

The convenience of introducing cosine - funtions to express solar energy processes in dependence of time. Several examples.

The Cosine Function as a Mathematical Expression for the Processes of Solar Energy

Hirschmann, J.

Solar Energy, 16 (1974), No 2, p 117

8 pages 9 pictures 4 ref.

Mathematical model for predicting solar radiation

Lawrence, J. and Morris, C.

ASHRAE Trans 75 (1969), Paper 2110, p 34, Part 2

10 pages

Prediction of direct solar radiation for low atmospheric turbidity

Majumdar, N. et al

Solar Energy, 13 (1972), No. 4, p 383

12 pages 1 table 5 pictures 9 ref.

An equation is derived for the prediction of direct solar radiation in relation to surface humidity and absolute air mass for clear sky and minimal smoke and dust contant of the atmosphere.

Intensity-time equations presented empirical solar intensity values

Moore, G

ASME Winter Annual Meeting (1969)

This paper points out the advantages of expressing hourly solar intensity variations in equation form. A matrix method of reducing tabular solar intensity values into intensity-time equations is described and demonstrated. This method of data reduction can be readily performed by hand or by desk-type calculators. The computation technique will be especially useful to those solar energy workers without access to computers, or to computer programs for curve fitting. The method described provides equations of solar intensity as a function of time and in a compact, useful form

An empirical method for the estimation of net radiation intensity

Reddy, S.

Solar Energy, 13 (1971), No 2, p 289

2 pages 1 table 4 ref.

Computer Estimation of Direct Solar Radiation on Clear Days

Spencer, J.

Solar Energy, 13 (1972), No 4, p 437

2 pages 5 ref.

1.6
ÖVRIGT

The Simulation of Solar Radiation

Bickler, D

Solar Energy, 6 (1962) No 2, p 64

5 pages 9 pictures 1 ref

Presently used artificial light sources are inadequate for testing solar cells for space applications. Design parameters and calibration procedures for a light source that closely stimulates solar radiation in space have been determined. The accuracy of presently used solar simulator and its recent applications are discussed

Light Equivalent of Solar Radiation Under Clear-Sky and Cloudy Conditions

Evnevich, T.

Geliotekhnika, 3 (1967), No 1, p 28

7 pages 3 tables 4 pictures 6 ref.

Statistics of Sunflecks and Its Applications for Light Flickering Problems in Plant Communities

Isobe, S.

ISES Conference in Paris, (1973)

9 pages - 5 pictures 4 ref.

Available data of the effect of fluctuating wind indicate an enhancement of the photosynthetic efficiency in a natural plant community.

An Extra-Atmospheric Sunlight Simulator

Koval´skii, V and Shklover, D.

Geliotekhnika, 3 (1967), No 1, p 35

8 pages 1 table 5 pictures 10 ref.

1.42

Filter-wheel solar simulator

Mandelkorn, J.

NASA TN D-2562 (1965)

8 pages

The filter-wheel simulator consists of eight narrow-band filters mounted on a wheel with provision for illuminating solar cells with the light transmitted through each filter.

Solar Simulators

Mann, A. and Dubey, M.

Space Aeronautics, (1962), March, p 67

4 pages

The works of a solar simulator depends on the characteristics of its optical system, the ability of the source lamps to reproduce the solar spectrum and the approximation of the sun's collimation by the intrinsic brightness of these lamps.

Etude Statistique du Rayonnement Solaire

Millet, J. et. al.

ISES Conference in Paris, July, 1973,

6 pages - - 5 ref.

Relevant definitions of the coherence of radiation, particularly solar radiation.

Etude des Relations Entre le Rayonnement Solaire Global, le Rayonnement net et l'Ensoleillement

Ometto, J.

ISES Conference in Paris, July, 1973,

9 pages 6 tables 3 pictures -

Distribution of solar flux density at the boundary between light and shade

Sharafi, A.

Geliotekhnika, 2 (1966), No 5, p 55

4 pages - 2 pictures 1 ref.

Correlations between soil-moisture depletion, solar radiation and other environmental factors

Stearns, F. and Carlson, C.

Journal of Geophysical Research, 65 (1960), p 3727

6 pages

To extend the usefulness of a soil-moisture prediction method, solar radiation, temperature, and other environmental factors is studied. Data were obtained in an upland meadow on loessial soil. Comparisons were made only for drying periods, and only when soil moisture was in the wetter half of its range.

Solar energy outside the earth's atmosphere

Thekaekara M

Solar Energy, 14 (1973), No 2, p 109

On Monday, when the sun is hot
I wonder to myself a lot:
"Now is it true, or is it not,
"That what is which and which is what?"

On Tuesday, when it hails and snows
.....

A.A. Milne: Lines written by a
bear of very little brain.

2

METEOROLOGI

Det ingenjörsmässiga underlag som krävs för en exploatering av solenergin i Sverige är bl.a. uppgifter om soltimmar, infallande effekt timme för timme, och fördelningen över olika delar av landet. Sådana uppgifter har delvis publicerats i flera byggforskningsrapporter och i "Klimatdata för Sverige"[1] men en ytterligare specialisering av data krävs för projektering av solvärmesystem.

Sambanden mellan solenergi och vissa meteorologiska uppgifter, t.ex. molnighet och utetemperatur är viktiga. Även förekomsten av snö har betydelse alldenstund snötäcket kan reflektera en stor del av infallande strålning till byggnader och solfångare.

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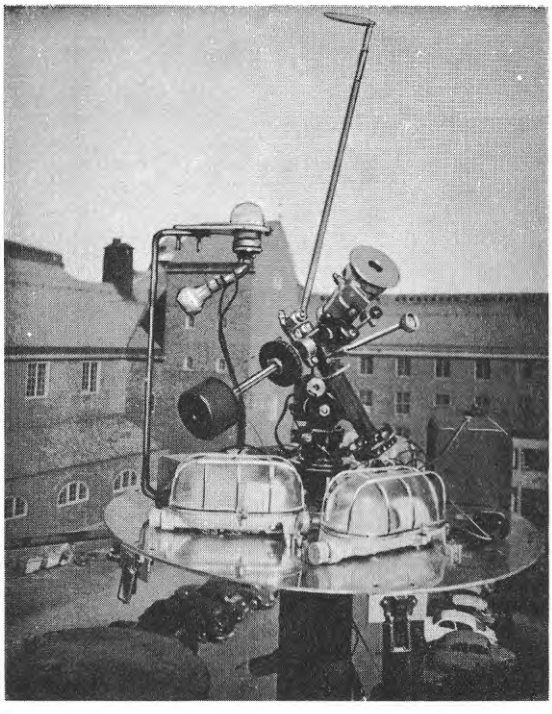
1) Brown, G. och Tuominen, T.: Solar position at various hours dates and latitudes - Tables, Byggforskningens Rapport 75, Stockholm 1962.
Höglund, I. och Stephenson, D.: Tabeller för beräkning av solinstrålning mot byggnader, Statens inst. f. byggnadsforskning, Rapport 49, Stockholm 1968.
Brown, G. och Isfält, E.: Instrålning från sol och himmel i Sverige under klara dagar, Statens inst. f. byggnadsforskning, Rapport 19, Stockholm 1969
Toesler, R.: Klimatdata för Sverige, Stockholm 1972.

Tillämpningar t.ex. betr. solfångare och lagring medför behov av optimeringar - orientering, elevation, kapacitet m.m. - i relation till meteorologiska data.



Anordning för mätning av direkt och diffus himmelstrålning (efter Brown (1965))

2.0
METEOROLOGI, allmänt

Weather and solar variation

Abbot C

Solar Energy 1 (1957) No 1 p 3

Solar variation and weather

Abbott, C.

Roebling Fund, Smithsonian Msicellaneous Collections, 146 (1963) No 3

Completely illustrated and documented summary of a half century of work devoted to the "solar constant" and solar variations. 13 aspects of the dependence of weather on solar variation.

Depletion of short-wave irradiance at the ground by particles suspended in the atmosphere

Barrett, E.

Solar Energy, 13 (1971), No 3, p 323

15 pages 5 pictures 10 ref.

Changes in concentration of those atmospheric constituents which contribute to the planetary albedo can give rise to climatic alterations. Suspended particles in the atmosphere contribute to the albedo by virtue of their light-scattering power.

Heat transfer by infrared radiation in the atmosphere.

Elsasser, W.

Harvard Meteorological Studies (1942) No 6

Radiational inversions and surface temperature changes

Fritz, S.

Monthly Weather Review, U.S. Weather Bureau, Washington, D.C. (1958), p 129

3 pages

When air stagnates in dark polar regions, and inversion forms. The change of the inversion magnitude is studied under the assumption that the snow surface radiates about as much energy as it receives from the atmosphere.

2.1
SOLINSTRÅLNING, påverkan från molnighet

Cumulus climatology and refractive index

Cunningham, R.

Geophysical Research Papers, (1962), No 51

Earlier investigations show that the most abrupt changes in refractive index to be encountered in the atmosphere are found in and about cumuliform clouds. Values of the difference in refractive index between that in a cloud and in the environment.

Absorption and scattering of solar energy in clouds of large water drops

Fritz, S.

U.S. Weather Bureau, Journal of Meteorology, 15 (1958), Feb., p 51

8 pages

A brief description of the basic method used to compute the absorption of solar energy in clouds and the numerical results of computations are presented.

Standardisation of outdoor conditions for the calculation of daylight factor with clear skies

Kittler, R

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 273

13 pages 10 pictures 13 ref

The calculation of daylight factor for clear sky conditions

Krochmann, J

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 287

15 pages 10 pictures 9 ref

Correlation of solar radiation with clouds

Norris, D

Solar Energy, 12 (1968) No 1, p 107

6 pages 4 tables 5 ref

The possibility of installing solar energy devices such as novel air conditioning plants, solar desalination stills, etc in remote parts of a country leads to the necessity of predicting solar radiation in places where no measurements have been made. In the past good correlations of solar radiation with sunshine hours have been obtained. However, when looking into the proposed regions for application of solar energy devices, it was found that very little information was available on sunshine hours recordings. It was decided, therefore, to investigate the possibility of correlations of solar radiation with reported cloud cover.

Climatical Consequences of Establishment. The Water Reservoirs in the Mountains

Lewinska, J.

ISES Conference in Paris, (1973).

10 pages - 6 pictures 2 ref.

Data on weather from 1924-1957 at the Irrigation Experiment Station near Prosser, Washington

Nelson, C and Domingo, C

Wash Ag Exp Sta Bull (1958 p 593

Surface dew point and water vapor aloft

Reitan, C

Journal of Applied Meteorology 2 (1963) No 6 p 776

Direct solar radiation available on clear days

Threlkeld, J. and Jordan, R.

Heating, Piping and Air Conditioning, 29 (1957), No 12, p 135

The possibility of intervening in the water cycle in tropical or arid regions

Vaillant, J.

Centre Belge d'Etude et de Documentation des Eaux, (1964), No 247 (In French)

An experiment in climatology, the result of fifty years of research, having for its purpose, the formation of clouds and rain at certain times and certain sectors of tropical or arid regions It is urged that the United Nations interest itself in these problems to put climatology at the service of mankind.

A study of the radiation of the atmosphere

Ångström, A

Smithsonian Misc. Coll., 65 (1915), No 3

Absorption of solar radiation by atmospheric water vapor

Ångström, A.

Arkiv for Geofysik, (1961), June,

10 pages

On the basis of the values for the absorption of solar radiation by the atmospheric water vapor from laboratory and field measurements a simple formula has been derived by the author for this absorption.

The parameters of atmospheric turbidity

Ångström, A.

Tellus, 16 (1964), No 2 (In Swedish)

12 pages

The methods for evaluating the atmospheric turbidity parameters introduced by the author in 1929-30, are subjected to a critical examination. A method first suggested by M, Herovanu (1959) is here simplified and expanded, and used for deriving the named parameters in adherence to a procedure described by the author, in a previous paper in this journal.

2.2
MATEMATISKA MODELLER

Classification des Differents Types de Climats Radiatifs et Lumineux en Function des Conditions Moyennes de Trouble Atmospherique

Dogniaux, R.

ISES Conference in Paris, July, (1973)

8 pages - - 2 ref.

Analytical functions for calculating, with computer, basic meteorological data for thermal conditions. Analyze of the turbidity factor.

On the calculation of solar radiation fluxes in the troposphere

Josepn, J.

Solar Energy, 13 (1972), No 2, p 251

11 pages 6 tables 2 pictures 21 ref.

The flux of solar radiation through a clear troposphere is presented in a simplified manner.

Calculation of solar radiation and the solar heat load on man

Klein, W.

Journal of Meteorology, 5 (1948), p 119

11 pages

Numerical simulation of the earths atmosphere

Leith, C.

Methods in Computational Physics, Vol. 4 - applications in Hydrodynamics. Edited by Berni Alder, et al, New York, Academic Press, (1965), p 14

28 pages

A study of energy sources for the thermosphere

Mahoney, J.

Time-Dependent Model of Solar Heating, Radiational Cooling, and Conductive Redistribution of Energy, MIT, Cambridge, Mass., (1966),

232 pages

A thermodynamic model of sea ice

Maykut, G

Washington Univ., Seattle (1969).

214 pages

Including effects of snow cover, ice salinity and internal solar heating.

An empirical method for estimating sunshine from total cloud amount

Reddy, J.

Solar Energy, 15 (1974)., No 4, p 281

5 pages 2 tables 11 ref.

A new empirical method has been developed for computing sunshine from total cloud amount.

The response of the atmosphere to the solar actual direct radiation in a linear model of the long-range numerical prediction

Yung-sen, C.

Scientia Sinica, 9 (1962), No 2, p 275

17 pages

A two-level linear model for the long-range numerical prediction is analyzed with a theoretical method commonly used in automatic control systems. The effects of friction, turbulence, and non-adiabatic heating of solar radiation are included in the equations.

2.3
ÖVRIGT

Natural light and the inside-outside heliodon

Beal. G.

Kansas Univ. Publ. Bull. Eng. & Archit. (1956) No 38

40 pages

The development of model sun machines for architectural analysis.

Simulation of average sea level sunlight (air mass two)

Benning, F

Solar Energy, 12 (1968) No 2, p 233

10 pages 11 pictures 3 ref

Starting with a standard Model X-25 Xenon Arc Solar Simulator equipped with spectral filters for matching air mass zero (outer space) sunlight, a special filtering system was developed to change the operation to air mass two (average sea level) sunlight

A general description of the solar energy laboratory and its initial research program

Bliss, R

Arizona University, Institute of Atmospheric Physics (1959) May,

45 pages

The Solar Energy Laboratory at the Institute is designed and built for work in two fields (1) applied research on the development of moderate-temperature thermal processes for the direct utilization of sunshine; (2) meteorological research on problems involving the measurement of solar, atmospheric, and ground radiation

Atmospheric radiation and its reflection from the ground

Brooks, F.

J. Meteorology, 9 (1952), Febr. p 41

11 pages

2.10

Remarks on the distribution of solar radiation over the surface of the earth

Burdecki, F

Arch Met Geophys Biokl B 8 (1958) p 326

10 pages

Diurnal Radiant Exchange with the Sky Dome

Cramer,R and Neubauer, L

Solar Energy, 9 (1965) No 2, p 95

9 pages **18 pictures**

The paper notes that: 1. It is valid and useful to record surface temperatures as differences between measured surface temperatures and simultaneous surrounding air temperatures. 2. Certain irregularities appear at northerly steep orientations at mid-day, at northerly orientations at right angles to the sun at mid-day, and at westerly and easterly steep orientations at sunrise and sunset respectively. 3.Night-time roof and wall temperatures are consistently below the temperatures of the surrounding air. 4. White surfaces sloped toward the north are heat sinks as indicated by comparison of their average temperatures and that of the surrounding air

Basfakta om solenergin (I)

Lundqvist, D.

IVA rapport 67 (1974), Sverige

11 pages **5 tables** **1 picture**

Basic data for solar irradiation. Means of converting solar energy. Technological aspects.

Forecasting of minimum temperature by measurement of the balance of thermal terrestrial radiation

Macris, G

Coopération Méditerranéenne pour l'Energie Solaire, Bull (1969) No 16

29 pages

A study was undertaken to forecast minimum air temperature of one particular day, measuring the thermal radiation balance or long wave radiation balance, of terrestrial origin, after sunset of the previous day, and using Suomi and Kuhn radiometer data (USA). The observations were made at sunset, under clear sky, at the National Observatory of Athens (altitude, 107 m). The results are very satisfactory. By this study, we can, in particular, predict minimum temperatures utilizing the outgoing radiation from the ground to the sky, and the incoming atmospheric radiation, taking into account the data recorded from previous days

Measurements of diffuse solar radiation and its distribution over the sky hemisphere

Robertson, R

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 119

51 pages 12 tables 17 pictures 22 ref

IQSY, the international years of the quiet sun, 1964-65

Ruttenberg, S

Solar Energy, 7 (1963) No 4, p 157

4 pages 1 picture

The program of IQSY

Per unò studio del clima delle citta: la necessita di una rete di rilevamenti meteorologici all'interno delle citta

Vinaccia, G

Geofis & Meteor, 6 (1958) No 5, p 5

2 pages

Solen glimmar blank och trind -
vattnet likt en spegel!
...
C.M. Bellman: Fredmans epistel
n:r 48

3

SOLFÅNGARE, TERMISKA

Bland solfångare intar den *plana konstruktionen* en central ställning - den lämpar sig för varmvattenberedningar och husuppvärmning, den är billig, enkel i konstruktionen, förhållandevis okänslig för smutsning och kan låta sig infogas som ett element i själva byggnadskonstruktionen. Den *koncentrerande* solfångaren däremot används då högre temperaturer eftersträvas, t.ex. för framställning av elektrisk eller mekanisk energi.

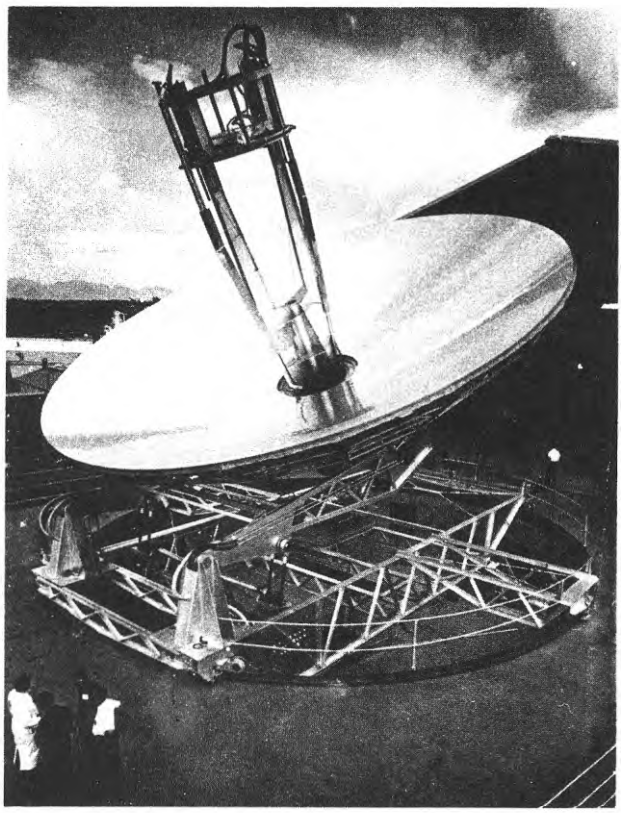
Forskningsproblemen vad gäller plana solfångare rör framför allt

- o glasningens optiska egenskaper[1)]
- o absorbatorns optiska egenskaper, hög emission för kortvågig - låg emmison för långvågig strålning, vilket åstadkommes t.ex. genom kemisk behandling av (plåt) ytan så att en s.k. selektiv yta erhålls.
- o värmeledning i absorbatorn, värmemotstånd i eventuella kopplingar.
- o lämplig utformning med hänsyn till strömning och tryckfall

1) Brown, G. och Isfält, E.: Solinstrålning och solavskärmning, Byggforskningsrapport (1975)(under tryckning)

- o korrosionsproblem, t.ex. vid solfångare för varmvattenberedning
- o konstruktioner för olika medier; vatten, vatten med frysskyddsmedel, luft m.m.

Koncentrerande solfångare är mer komplicerade än de plana genom att de måste följa solens rörelse över himmelen. Även här är materialfrågor och - liksom för den plana solfångaren - tillfredsställande provningsmetoder av betydelse för utvecklingen.



Koncentrerande solfångare vid Sundstrand Aviation-Denver, USA.

3.0
SOLFÅNGARE, termiska

Man with the energy answers?

Anon.

New scientist, (1973), 13 Dec

Interview with Nicolaus Laing. Super-black materials for solar collectors. Super-white.

Harnessing the sun

Abbot, C.

In: The sun and the welfare of man, Smiths. Sci. Series 2 (1929)

Utilizing Heat from the Sun

Abbot, C

Smithsonian Institution. Smithsonian Miscellaneous Collections, 98 (1939) No 5

Discusses principles of utilization of solar energy, and reviews briefly various solar energy devices, including solar collectors devised by author for cooking, heating of water, and water distillation; discusses principles and operation of author's solar boiler

Toitures Solaires

Alexandroff, G. and Alexandroff, J

ISES Conference in Paris, July, (1973)

9 pages - 13 pictures 3 ref.

Vegetable oil as a thermic fluid in a solar roof. Diversified orientation of solar roofs.

Captação directa do calor solar em beneficio da industria

De Arruda Pereira, A

Institute de Engenharia. Boletim, 31 (1940) p 65

Direct capture of solar heat for utilization in industry, historical review of use of solar heat in production of ceramic ware; gives design features of solar boiler suggested for use in drying of ceramic clay; describes briefly such installations used in California and other desert regions

3.4

A solar energy collector for heating air

Bevill, V and Brandt, H

Solar Energy, 12 (1968) No 1, p 19

18 pages 8 pictures 9 ref

Solar energy is collected in an absorber consisting parallel fins of aluminium. The absorber is installed in a glass covered box so that air can be pumped past the aluminium fins for heating. One objective of the study is to determine the efficiency that can be obtained with this collector when the absorber fins reflect specularly. A second objective is to evaluate changes in efficiency when different parts of the fins are made diffuse

Solar-to-Thermal Energy Conversion (STEC)

Bos, P. and Farran, R.

National Science Foundation Solar Thermal Workshop (1973) Jan.

Performance characteristics of rectangular honeycomb solar-thermal converters

Buchberg, H. et al

Solar Energy, 13 (1971), No 2, p 193

29 pages 11 tables 14 pictures 18 ref.

An array of rectangular cells, properly shaped with highly reflecting specular walls absorbing to infrared radiation, is shown to be an effective device to limit heat losses when placed over a solar absorber.

Heating air by solar energy

Buelow, F. and Boyd, J.

Agricultural Eng., 38 (1957), No 1, p 28

3 pages

Describes the construction and operating characteristics of an air-heating solar collector.

Solar Collectors for the University of Delaware Solar House Project

Böer, K.

Proc. Solar heating and cooling in buildings workshop. Washington D.C. (1973) March

- - - -

Some aspects of flow duct design for solar-air heater applications

Charters, W.

Solar Energy, 13 (1971), No 2, p 283

6 pages 1 picture 4 ref.

Solar air heaters
For low and moderate temperature applications

Close, D

Solar Energy, 7 (1963) No 3, p 117

8 pages 9 pictures 16 ref

Solar air heaters can be used for many purposes, including crop drying, space heating, and for regenerating dehumidifying agents. Possible designs for solar air heaters, from the point of view of both materials and configurations. These in turn lead to a variety of costs and collection efficiencies. Three basic construction types: various heat-transfer coeficients between the absorber plate and the air steam, selective and nonselective surfaces on the absorber plate, and natural convection barriers between the plate and ambient air

Making the most of the sunshine

Booth, J.

Copper, 1 (1967), No 4, p 7

3 pages 4 pictures

Reviews some recent developments in solar heat-collectors. A flat plate collector which uses a reflector which re-directs the sun's rays passing through gaps in the heater's coils onto the undersides of the coil. Reflectors of copper and heat resistant polyethene were tested. Copper proved more efficient. A.C.D.A. flat radiator shell collector is compared with a conventional design.

Solar-energy collection in the Pacific Northwest

Crain R

Solar Energy 1 (1957) No 4 p 3

Properties required for collector surfaces of solar-powered thermal systems

Cross, R

RTD Technology Briefs (1963) Headquarters Research and Technology Division U S Air Force, Bolling AFB, Washington D C. See also Solar Energy, 7 (1963) No 3, p 152

4 pages 1 table 5 pictures 2 ref

Flow distribution in solar absorber banks

Davey, T. and Dunkle, V.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 4/35

6 pages

Research Applied to Solar-Thermal Power System

Dienert, W. et al.

Minnesota Univ., Minneapolis (1973) Jan

286 pages

Solar collector system and energy storage

Developments in solar energy heat exchangers

Duffie, J

Paper presented at the Salt Lake City meeting of the American Institute of Chemical Engineers (1958)

30 pages

Results of recent studies on methods for improving solar heat exchangers performance and reducing costs are presented. Reduction and transparent covers for solar heat exchange surfaces are also discussed

Solar Energy Thermal Processes

Duffie, J. and Beckmann, W.

J. Wiley (1974)

Basic heat transfer studies related to the use and control of solar energy

Edwards, D et al

Final Report, NSF G20246, Report No 64-14 (1964)

161 pages

Summarizes methods for the calculation of radiant heat transfer between isothermal solids; the radiation characteristics of various materials for use in the collection and control of solar energy; aspects of the problem of collecting solar energy in a porous bed; the suppression of free convection heat transfer, a matter of concern in terrestrial solar collector design

The trapping of solar energy

Elder, T. and Strong, J.

Ohio J. Sci., 53 (1953)

Collection of solar energy

Erway, D. and Hottel, H.

Introduction to the utilization of solar energy, Edited by Zarem and Erway, McGraw-Hill, (1963), p 87

20 pages 12 ref.

Solar panel design considerations

Evans, W. et al.

Conf. paper 1296-60, Am. Rocket Soc. Space Power Systems Conf., (1960)

A new collector of solar radiant energy theory and experimental verification

Francia, G

UN Conf on New Sources of Energy, Rome (1961)

24 pages

A new type of collector

The spectrum of materials available for the utilization and control of solar energy

Gaumer, R

UN Conf on New Sources of Energy, Rome (1961)

A method for calculating the solar flux distribution in solar recievers

Grilikhes, V.

Geliotekhnika, 2 (1966), No 1, p 3

9 pages 4 pictures 10 ref.

The method proposed in this article permits the calculation of the incident flux density in real systems over the entire surface of receivers of any given geometrical form and investigation of the effect of various factors on the nature of this distribution.

Simulation of forced circulation water heaters; effects of auxiliary energy supply, load type and storage capacity

Gutierrez, G.

ISES Conf. Paris, (1973)

10 pages 1 table 1 picture 8 ref.

Indications of best methods for adding auxiliary energy to maximize solar energy gain.

Transpiration cooling of a radiatively heated porous bed

Hamid, Y and Beckman, W

ASME Winter Annual Meeting (1969)

Finite difference solutions have been obtained for the temperature distributions in a one-dimensional porous slab of finite optical thickness, heated by collimated and diffuse radiant energy and cooled by the normal flow of a transparent fluid. Radiatively, the porous slab was treated as a homogeneous nonscattering gray medium, with either a constant or a directionally dependent absorption coefficient. Conduction in the porous bed was considered, and the limitations of neglecting fluid conduction were investigated. The influence of the boundary conditions on the performance of the porous bed was also investigated. The performance of a porous bed operating as a solar energy collector was investigated in detail. The results are presented in the form of efficiency curves which cover a wide range of operating parameters

A compressed-film floating-deck solar collector

Harris, W.

Proc. Solar heating and cooling of buildings workshop, Washington, D.C., (1973), March

Status of solar energy collector technology

Heath, A.

American Rocket Society, Space Power Systems Conference, Santa Monica, Calif.,(1962), Paper 2531-62

10 pages 13 ref.

Solar collector development

Heath, H. and Maxwell, P.

Astronautics and Aerospace Engineering, 1 (1963), May, p 58

4 pages 13 ref.

State-of-the-art of solar collectors

Energy from the Sun

Hitt, N
Scientific American, 154 (1936) April p 197

Describes briefly solar collector developed by C G Abbot

New Perpetual Flame Fed Only by Water

Hitt, N

Refrigerating Engineering, 34 (1937) Dec p 367

2 pages

Describes method of securing flame from sun energy and water, discovered by O H Mohr, accomplished by concentrating sun's rays on absorbent materials under glass; describes device for extracting hydrogen gas from water by sun power

Heating of Solar Pond

Jain, G.

ISES Conference in Paris, (1973).

10 pages 7 tables 1 picture 6 ref.

Heat energy data for a solar pond using bitterns. Heat energy was extracted continously by extracting the bottom layer of the pond and also from heat exchangers at the bottom of the pond.

Solar collector research at the University of Minnesota

Jordan, R.

Solar Energy, 3 (1959) No 3 p 19

2 pages

Both fixed and moving collectors have disadvantages. For most low temperature applications, plane collectors appear advantageous, while for high temperature collection concentrating devices are necessary. The use of translucent solar trapping materials.

Heat and mass transfer during evaporation under natural convection

Khamadov, A.

Geliotekhnika, 10 (1974), No 1, p 55

4 pages 1 picture 6 ref.

The author obtains a simple solution for evaporation and condensation in hot-box type solar systems.

The utilization of solar energy

Khan, E.

Solar Energy, 8 (1964) p 17

6 pages 10 picture 18 ref.

Practical devices - mostly flat plate collectors for cooker, water heater driers, stills and so on.

Design and application of honeycomb porous-bed solar-air heaters

Lalude, O. and Buchberg, H.

Solar Energy, 13 (1971), No 2, p 223

10 pages 11 tables 6 pictures 5 ref.

The honeycomb-porous bed concept is shown to be an effective means for solar air heating.

Study of the Hot Box Type of Solar Radiation Absorber

Leggett, J

University of Florida, Master's Thesis (1940)

The solar collector thermal power system - its potential and development status

Mahekefkey F

Proc. Am Chem Soc (1972) p 512

10 pages

Heat transfer characteristics of a solar drier

Malik, K. and Buelow,F.

ISES Conference in Paris, (1973), July

10 pages 3 tables 7 pictures 15 ref.

Heat transfer investigation of a solar energy collector made of air ducts direct under the roof.

New Efforts May Harness Sunlight

Martin, R

Popular Science Monthly, 125 (1934) Oct p 32-33, 112

4 pages

Brief historical review of experiments carried out on utilization of solar energy; contains illustrations of various solar collectors

Domestic solar water heater

Mathur K and Khanna M

Indian.Journ. Sci. Ind.Res. 18 (1959) A2

Research Applied to Solar-Thermal Power Systems

Minnesota Univ. Minneapolis (1973-74)

486 pages - - -

Studies Jan-Jun 1973. Solar concentrator, absorber coating, the heat pipe, the transfer loop and heat storage containment vessels

Solar water heaters

Morse, R.

Proc. of world symp. on appl. solar energy, Stanf. Res. Inst. 1956 p 191

10 pages

Operational characteristics of a solar supplemented air-type heat pump

Mowry, G. and Chester, P.

Meeting of Kansas Committee on the Relation of Electricity to Agriculture (1961), Jan.

17 pages

During the 1959-1960 heating season occasional mechanical difficulties were experienced with the solar supplemented heat pump system. The corrective action taken is discussed in appropriate sections of the report and in addition a revision in the collector design was made for the south bank of collectors.

Considérations economiques sur l'énergie solaire

Nebbia, G

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 13 In French

A quantitative cost analysis, using developed equations, is made on the collection of solar energy.

Honeycomb thermal trap

Pellette, P et al

Solar Energy, 12 (1968) No 2, p 263

3 pages 5 pictures 4 ref

A collector, called a honeycomb thermal trap, for trapping solar energy without optical concentration has been developed

High efficiency collectors for high energy radiant sources

Polak, I.

Inst. of Environmental Sciences, Annual Technical Meeting, San Diego, Calif., (1966), Proceedings

3 pages

Applications of corrugated glass i solar installations

Rabbimov, R. et. al.

Geliotekhnika, 9 (1973), p 38

4 pages 3 tables 6 ref.

For each square meter of transparent surface using corrugated sheet 0,188 m^2 is gained as compared with window glass.

Research applied to solar-thermal power systems.

Ramsey J et al.

Minnesota Univ. Minneapolis (1974) Jan.

Semi-annual progress rept. 1 Jul-31 Dec (1973)

211 pages

Simulation and optimization of a solar collector and storage system

Roulet, J

M S Thesis Department of Engineering, Univ of Calif (1967)

3.14

An Integral Solar Water Heater

Satcunanathan, S.

ISES Conference in Paris, (1973)

12 pages 2 tables 6 pictures 12 ref.

A novel design of a solar water heater in which the collector and storage tank are constructed as one unit. Tests indicate good effeciency.

Further studies on the overlapped glass plate air heater

Selçuk, K

Coopération Méditerranéenne pour l´énergie solaire, Bull (1968) No 15

Formulation and computer solutions are presented. The theory is verified experimentally. An economic analysis based on the local cost of materials and workmanship is also presented

Further studies on solar still greenhouse assembly

Selçuk, K and van Vitran

COMPLES Revue Int. d´Heliotechnique, (1973) April

5 pages 7 pictures 5 ref.

Solution of the unsteady heat transfer problem.Conparisions with test data. Studies on the optimization of the assembly from design, plant production and cost pionts of view

Solar tracking systems

Sharafi, A.

Geliotekhnika, 1 (1965), No 1, p 67

4 pages 1 picture

Two automatic solar tracking systems are described, which are simple to build and operate and can be successfully substituted for systems using photelectric tracking.

Flash lamp as a high-intensity source for optical research in solar engineering

Sheklein, A.

Geliotekhnika, 1 (1965), No 5, p 51

Autonomous housing study. Economics of solar collectors, heat pumps and wind generators

Smith, G.

Univ, of Cambridge, Dept. of Arch., WP3 (1973)

31 pages 20 tables 8 pictures 26 ref.

Preliminary report with a brief review of relevant British work. Solar energy for space and hot water heating is found comparable cost of main electricity.

Cheap but practical solar kitchens

Stam, H

UN Conf on New Sources of Energy, Rome (1961)

Solar energy collector design

Tabor, H.

Bull. Res. Counc., Israel, 5 C (1955)

Radiation, convection and conduction coefficients in solar collectors

Tabor, H

Bull Res Council Israel 6C (1958) No 3, p 155

22 pages

Terrestrial solar energy power system 1. Development of high-efficiency solar energy collector

Takashi, H. et. al.

Bul Electrotech. Lab., 37 (1973), No 7, p 42

6 pages 6 pictures 5 ref.

Sunflower solar collector topical report

Thompson Ramo Wooldridge, Inc., Cleveland, Ohio, (1963)

196 pages

Performance of a flat plate solar heat collector

Ward, G.

Proc. I. Mech. E., 169 (1955), p 1091

Optics in installations for the utilization of solar energy

Veynberg, V

Department of the Army, Office of the Assistant Chief of Staff For Intelligence, (1959)

It can be assumed that solar-energy technology will be developed when solar units will be able to function together with conventional-fuel units and hydroelectric power stations, with all sources operating within a single power system. For this purpose, it will be necessary to provide for powerfull solar boiler plants that can supply the steam of industrial parameters required for the majority of manufacturing industries and for economical production of electrical energy. The major portion of the book is devoted to the optical problems which arise in the design of such steam generators

Solar energy collection and its utilization for house heating

Whillier,A

Sc. D. Thesis, MIT **(1953)**.

Theory and design of a mechanical blackbody for solar radiation

Winskell P. and Hsu, S.

Solar Energy, 3 (1959) No 2 p 1

8 pages 2 tables 16 ref.

A method of increasing the absorptivity of a metallic surface by a mechanical arrangement of the surface is discussed. An experimental heat exchanger and a mechanical blackbody surface are evaluated relative to a comparative heat exchanger and a coated black surface.

3.1 PLANA SOLFÅNGARE

Design and Feasibility of Flat Plate Solar Collectors to Operate at 100-150°C

Blum, H. et al.

ISES Conference in Paris, (1973)

10 pages 1 table 6 pictures 10 ref.

Hybrid Solar Energy and Electric Heat Pump

Calvert, F. and Harden, D.

ASME Meeting (1973) Nov, Paper 73-WA/SOL-5

Results of a study to determine the feasibility of combining solar flat plate collectors with conventional residential heat pump systems

Heat Transfer Effects in Solar Air Heaters

Charters, W. and Macdonald, R.

ISES Conference in Paris, (1973).

10 pages 7 pictures 6 ref.

A review of solar flat plate air heaters. Comparison of flat plates and corrugated plates on the basis of heat transfer and material utilisation. The use of a second cover of cheap "alkathene" film is suggested.

Potential utilization of flat plate collectors in tropical regions

Choudhury, N.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 53

7 pages 5 tables 6 pictures 7 ref.

In the tropics where solar radiation is plentiful, flat plate collectors can be used for heating, cooling and distillation of water. Costs and data for different systems are given.

Pressurised solar water heater of the combined collector and storage type

Chinnappa, J. and Gnanalingam, K.

Instn Engrs, Ceylon-Trans V 1 (1969), p 83

8 pages

Flat-plate solar absorbers: The production and testing of a selective surface for copper absorber plates

Close, D

C.S.I.R.O. Engineering Section, Report ED 7 (1962)

A low-cost solar heater

Dewhurst, J. and McVeigh, J.

Heat. Vent. Engr. , 41 (1968), p 445

2 pages 4 pictures

Tests carried out on a cheap, flat plate collector type solar heater at two flow rates 200 and 500 1/h. The heat collection efficiency never fell below 50 % and the temperature rise obtained for two days in August 1966 was about 5°C and 2°C for the two flow rates respectively. It is concluded the unit is suitable as a low cost solar pool heater. The unit has worked since 1966 without deterioration due to the weather.

Etude et réalisation d'un insolateur spirale

Diamant, W

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12
In French

A spiral solar collector is presented, which is hoped to reduce edge losses and areas of poor circulation normally encountered in conventional units

The minimum average daily solar radiation in the United States during December for a tilted flat-plate collector

Elliott, J.

Solar Energy, 3 (1959), No 2, p 35

2 pages 1 picture 5 ref.

The minimum average daily solar radiation in the United States during the month of December for a tilted flat-plate collector is presented by means of a map.

Un noveau collecteur de l'énergie rayonnante solaire - theorie et verifications experimentales

Francia, G

UN Conf on New Sources of Energy, Rome (1961)

Calculations on a solar energy system - for electric power and heat generation in buildings

Graven R

Intern. Meeting on the Solar Energy Soc, Cleveland (1973)

33 pages

Performance predictions with computer. Flat plate collectors.

Honeycomb Devices in Flat-Plate Solar Collectors

Hollands, K

Solar Energy, 9 (1965) No 3, p 159

5 pages 1 table 7 pictures 6 ref

Results are presented of a theoretical study on the performance of a flat-plate type solar collector in which a selectively transmitting honeycomb panel is mounted between the absorbing flat plate and the outer glass cover

The performance of flat-plate solar-energy collectors

Hottel, H.

Proceedings "Space Heating with Solar Energy" M.I.T. (1951) p 58

22 pages

Evaluation of flat-plate solar collector performance

Hottel, H. and Whillier, A.

Transactions of the Conference on the Use of Solar Energy, Vol. III, Thermal Processes, Part 2, (1955), p 74

Performance of Flat-Plate Solar-Heat Collectors

Hottel, H and Woertz, B.

ASME Transactions, 64 (1942) p 91

14 pages

Reviews development of solar energy collectors during last 60 years, and describes experiments made at Massachusetts Institute of Technology, Cambridge, Mass; contains a bibliography

Performance of a Novel Solar Water Heater

Jain, A. and Rao, T.

ISES Conference in Paris, July, (1973,)

12 pages 1 table 6 pictures 9 ref.

A flat plate solar collector for water heating with a water circuit operating under vacuum. No reverse flow cools the heated water over night.

Availability of solar energy for flat-plate solar heat collectors

Lin, B., Jordan, R.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 1

19 pages 3 tables 3 pictures 8 ref.

This paper summarize the various methods which have been developed for treating the availability of solar energy during all days, and to present the available data on solar radiation useful in predicting the performance of flat-plate collectors of any design and operated at any specified temperature levels.

The long-term average performance of flat-plate solar-energy collectors

Liu, B and Jordan, R

Solar Energy, 7 (1963) No 2, p 53

22 pages 8 tables 14 pictures 10 ref

Performance of flat plate solar collectors

Lorsch, H.

Proc. solar heating and cooling for buildings workshop, Washington, D.C., (1973)

Domestic solar water heater

Mathur, K et al

Jour Sci & Ind Research, 18A (1959) p 51

Solar water heaters for domestic and farm use

Morse, R.

Commonwealth Scientific & Industrial Research Organisation, Engineering Section Report E.D. 5. (1957) Melbourne, Australia.

Description of CISIRO'S solar water heaters.

The flat-plate absorber as a solar energy collector

Morse, R and Czarnecki, J

ANZAAS Congress Solar Energy Symposium, Australia (1958)

10 pages

The elements of a flat-plate absorber and the factors influencing its design and operation are reviewed. The thermal characteristics of energy received, losses, efficiency, and the heat transfer to the circulating fluid are dealt with in the light of design conciderations.

Flat plate solar absorbers: the effect on incident radiation of inclination and orientation

Morse, R and Czarnecki, J

Commonwealth of Australia, Report E D 6

26 pages

The influence of inclination and orientation of the receiving surface on the amount of incident solar radiation is examined

Etude de la distribution des émittances sur les parois d'une cellule antirayonnante

Perrot, M et al

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 13
In French

Discussion of the effects of honeycomb cells on the performance of flat-plate collectors

Selective surfaces for solar absorbers

Riordan, R.

C.S.I.R.O., Engineering Section. Internal Report (1958), No 18

A proposed standard test code for the determination of the efficiency of solar water heaters of the flat collector type

Robinson, N. and Stotter, A.

Solar Energy, 3 (1959) No 2 p 30

4 pages 2 ref.

The properties which must be considered in obtaining an objective estimate of the quality of a flat-plate-type solar water heater are listed. Methods are given for calculating the acrial, orientation, and thermal efficiency of the heater and the heat storage coefficient. A test procedure is outlined for making an objective standard determination of the efficiency of the heater, and a standardized sheet form is given on which the results can be tabulated.

Design of a new solar-heated house using double-exposure flat-plate collectors

Safwat, H. and Souka, A.

Solar Energy, 13 (1970), No 1, p 105

15 pages 6 tables 8 pictures 7 ref.

The heating system of a ranch-type five-room house has been designed utilizing the energy of the sun. The walls are made of stone existing at the site, while the roof is built of reinforced concrete. The solar heating system is based upon the use of double-exposure, flat-plate collectors. For the sake of simplicity a floor panel arrangement is used for space heating, and an auxiliary electric immersion heater is proveded to compliment the sun's energy under adverse wather conditions. An insulated hot water tank is employed as the means of low-temperature heat storage.

Honeywell flat plate collector code

Schmidt, R

Proc. solar heating and cooling for buildings workshop, Washington, D.C. (1973) March

Flat-plate solar collector perf. at high temperatures

Selcuk, K

Solar Energy, 8 (1964) p 57

6 pages 1 table 7 pictures 7 ref.

Advantages of flat-type collector over concentrating ones. Previous work and experimental results.

Solar water-coil water-heater for showers

Sharafi, A.

Joint Publications Research Service, Washington, D.C., Heliotechnology, (1965), Dec, p 50

2 pages

Flat-plate collector performance evaluation. The case for a solar simulation approach.

Simon F, Marlamert P

Intern solar energy soc, Cleveland (1973) Oct

Double Exposure Flat-Plate Collector

Souka, A

Solar Energy, 9 (1965) No 3, p 117

2 pages 5 pictures

A flat-plate collector has been designed to absorb heat from the back, as well as the front, the usual insulation being omitted from the back. The peak energy collection has been increased by 48 percent, as compared with a conventional flat-plate collector

Some design considerations for flat plate collectors

Streed, E

Proc. Solar heating and cooling of buildings workshop, Washington (1973)

Heating of water in a flat solar energy collector

Suresh, D.

Nagpur University (1956),

81 pages

The flat-plate collector constructed by the writer is a "sandwich" of eight component parts. The experimental thermal efficiencies of this unit, 33 to 53 per cent, compare favorably with efficiencies of 32 to 57 per cent for similar type of units designed and tested by other investigators.

Solar collector developments in Israel

Tabor, H.

Solar Energy, 3 (1959), No 3, p 8

2 pages 1 picture 1 ref.

Large area collectors - solar ponds
Mirror collectors - Plastic windows for collectors

The construction of solar water heaters to be employed where the possibilities of the use of solar energy is limited

Ultanir, M

Coopération Méditerranéene pour l´énergie solaire, Bull (1967) No 13

Describes the construction and operation of a closed system flat-plate collector indirectly heating water for home use

Application of expanded epoxystyrene as thermal insulation in solar water heating units

Umarov, G. et al

Geliotekhnika 8 (1972), No. 3, p. 76

2 pages 5 ref.

Emploi de certaine alliages d'aluminium pour utilisation de l'énergie solaire

Vachet, P and Mercier, J

UN Conf on New Sources of Energy, Rome (1961)

Performance of a flat-plate solar heat collector

Ward, G.

Proc, Inst. Mech. Engrs. 169 (1955), p 1091

22 pages

Black painted solar air heaters of conventionell design

Whillier, A.

Solar Energy, 8 (1964) p 31

8 pages 4 tabels 8 pictures 6 ref

Thermal resistance of the tube-plate bond in solar heat collectors

Whillier, A.

Solar Energy, 8 (1964) p 95

4 pages 1 table 4 pictures

Collector efficiency as a function of thermal resistance in the bonds between collector and tubes.

Design factors influencing solar collector performance

Whillier, A.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 27

13 pages 3 tables 10 pictures 12 ref.

Flat plate solar heat collectors of simple construction, the choice of materials and methods of fabrication are discussed.

3.1.1 MATERIAL

Uni-heater solar water heater

Uni-ehter Kogyo KK (AB) Catalogue (mostly illustrations)

2 pages

The cylinder of heat reciever element is made of special material coated glass

Optical Properties of Metallic Films

Abeles, F.

Physics of Thin Films, 6, (1971)

Radiation in transparent solids and the thermal trap effect

Cobble

Eng. Exp. Station, New Mexico State Univ., TR 16 (1963)

New Materials in Solar Energy Utilization

Duffie, J

Solar Energy, 6 (1962) No 3, p 114

5 pages 1 table 10 ref

Ten papers given at UN Conference, Rome (1962). The following subjects are treated: a/ radiation properties of surfaces with desirable combinations of radiation properties and processes for making these surfaces. b/ optical properties of glass and plastic transparent media for solar exchanger covers. c/ new materials and methods for construction and use of reflectors in focussing exchanger systems. d/ a method of constructing flat--plate exchangers

New materials for the utilization of solar energy

Edlin, F

Paper presented at the Colloque International sur les Applications Thermiques de l´énergie Solaire dans le Domaine de la Reeherche et de l´Industrie, Montlouis (1958)

21 pages

Plastic films for solar energy applications

Edlin F and Willauer D

UN Conf on New Sources of Energy, Rome (1961)

Temperature dependence of the solar absorptance and thermal emittance of copper, gold, nickel, and silver

Finn, J. et al

Applied Optics, (1964)., p 1411

5 pages **6 ref.**

The spectrum of materials available for the utilization and control of solar energy

Gaumer, R

UN Conf on New Sources of Energy, Rome (1961)

14 pages

The task of designing a satellite surface so that it will maintain an average equilibrium temperature of 20 degrees C in orbit is remarkably similar to that of designing a solar-collecting surface to be used in conjunction with a solar still

Reflectance, Solar Absorptivity and Thermal Emissivity of 2-coated Aluminium

Hass, G. et al.

Applied Optics, Vol. 8 (1969) Feb., p. 275

7 pages - - 19 ref.

Salt flats as solar-heat collectors for industrial purposes

Hirschmann, J.

Geliotekhnika, 7 (1971), No 4, p 64

5 pages 2 tables 24 ref.

Solarization studies on polyester resins using a heliostat-spectrometer

Hirt, R. et. al.

Solar Energy, 3 (1959) No 2 p 19

4 pages 1 table 5 pictures 4 ref.

A heliostat constructed to send a beam of sunlight into a fast optical system is examened. The ultraviolet portion of the solar spectrum was spread across the resin sample which was in the focal plane of the spectrometer. Polyester resins which were cross-linked with polystyrene were studied. In cases where the samples were solarized at very high rates, a dark reaction was observed which caused a fading of the yellowing.

Weathering properties of polymer materials exposed to intense solar radiation

Kazanchyan, G.

Geliotekhnika, 1 (1965), No 5, p 40

5 pages 1 tables 3 pictures 6 ref.

Neue Werkstoffe für die Sonnenenergietechnik

Krauch, H. and Jecht, K.

BWK, 14 (1962), No 7

5 pages 2 tables 2 pictures 11 ref.

New materials for solar collectors.

Radiative surface property degradation as a result of salt atmosphere exposure

Lemke, I.

American Inst. of Aeronautics and Astronautics, Aerospace Sciences Meeting, 3RD., New York, (1966), Paper 66-41

12 pages 5 ref.

A Modified Nonstationary Method for Determining the Absorptivity of Materials

Muchnik, G. et al.

Geliotekhnika, 4 (1968), No 5, p 16

6 pages

A unit and improved technique (N_1) for determination of material absorptivity (ε) according to incident solar radiation is established. Application of large incident heat flow on a sample and a test installation different from (N_o) allows measurement of ε in the range of 25 to 1500°C without a liquid nitrogen chamber. At the same time, the accuracy of the experiments was increased and the temperature range was considerably expanded. Results for a number of materials were obtained.

Modifications Qualitive et Quantitative du Rayonnement Solaire dans les Serres en Function des Formes et des Materiaux de Couverture

Nisen, H.

ISES Conference in Paris, (1973)

11 pages 5 picturs 4 ref.

Photostabilization of polyethylene terephthalate film

Novikova, I. et.al.

Geliotekhnika, 4 (1968), No 4, p 53

3 pages 1 picture 10 ref.

For light stabilization in polyethylene-theraphtalate film, a method is proposed of surface coating of the film with a stabilizer in varnish AC-528 diluted in acetone. Good results are obtained. The optimal 3 per cent stabilizer concentration is found.

Light-resistant coating for polyethylene terephthalete film

Novikova, I. et al.

Geliotekhnika, 7 (1971), No 3, p 36

5 pages 2 tables 2 pictures 3 ref.

3.30 *Investigation of the filtering action of photostabilized coatings*

Novikova, I. et al.

Geliotekhnika, 7 (1971), No 4, p 56

4 pages 2 tables 2 pictures 3 ref.

Récents travaux en matière de captation indirecte: éléments de catoptrique solaire

Peri, G et al

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15
In French

A presentation of new research on various kinds of solar collector materials

Spectral Reflectance of Glass and Quartz in the Near Infrared

Rekant, N.

Geliotekhnika, 3 (1967), No 4, p 38

4 pages 1 table 1 picture 6 ref.

Aging of Reflective Plastic Film

Rekant, N. and Gavrichenkov, A.

Geliotekhnika, 3 (1967), No 4, p 35

3 pages 1 table 1 picture 11 ref.

Measurements of the total absorptivity for solar radiation of several engineering materials
Richard, C. et al.

Trans. ASME, 80 (1958) p 373

Influence de l effet anormal de peau sur les indicatrices d'émission des métaux

Ropke, A and dHont, S

Coopération Méditerranéenne pour l'Energie Solaire, Bull (1969) No 16
In French

39 pages

The authors undertook experimental verification of the theory of Drude concerning the variation of the emission characteristics of several metals. Satisfactory agreement with the theory was found up to an angle of incidence of 45°. Above this, a small connection factor appears necessary

Contribution à l'étude des indicatrices d'émission des métaux

Ropke, A et al

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15
In French

Studies and calculations of the thermal emissive power of metals using a computer

Solar Energy Thermal Converters Fabricated by Chemical Vapor Deposition

Seraphin, B and Wells, V

NSF/ Univ of Pennsylvania Meeting (1973) March

A convenient Graphical Representation of the Results of Spectral Investigations of the Optical Characteristics of Solar Engineering Materials

Sheklein, A.

Geliotekhnika, 3 (1967), No 3, p 24

6 pages 1 table 3 pictures 6 ref.

Application of Phenol-Formaldehyde Expanded Plastics in Solar Technology

Vil'kova, S. and Guner, E.

Geliotekhnika, 6 (1970), No 1, p 43

2 pages 1 table 1 ref.

3.1.1.1
SELEKTIVA YTOR

Solar absorptance and thermal emittance of aluminum coated with surface films of evaporated aluminum oxide

Albright, H. et al

AIAA Thermophysics Specialist Conf., Monterey, Calif. (1965), Paper 65-656.

8 pages 8 ref.

Selective coatings for solar energy receivers

Alikhodzhaeva, M. et al.

Geliotekhnika, 1 (1965), No 6, p 19

6 pages 2 tables 3 pictures 4 ref.

Selectivity can be attained by coating polished metal with a thin layer of material which is black in the region of solar radiation and transparent at longer wavelengths. This can be done by spraying on a thin paint film. An attempt to select a more suitable paint than the usual ones is done.

A selectively reflecting metal mirror

Baranov, V. et al.

Geliotekhnika, 2 (1966), No 2, p 9

An investigation of a metal mirror which reflect energy in a selected spectral range and absorb the remainder passing through the interference coating is discussed.

Choice of materials for selective transparent insulation

Baum, V. and Sheklein, A.

Geliotekhnika, 4 (1968), No 2, p 50

8 pages 3 tables 16 ref.

Effet de la Sélectivité dans les Installations Solaires E´nergetiques

Baum, V. et. al.

ISES Conference in Paris, (1973)

The effect of selective coverings on the thermal balance of a sun radiation receiver

Baum, V. and Bektenov, L.

Fiziko-Tekhnicheskikh, Khimicheskikh I Geologiecheskikh Nauk (1970) No. 1, p. 21-26.

6 pages 7 ref.

Solar radiation availability on surfaces in the U S as affected by different factors

Becker C and Boyd J

Solar Energy 1 (1957) No 1 p 13

Research on spectrally selective materials and surfaces

Bradbury, R. and Moore, H.

Wright-Patterson AFB. Ohio, Aeronautical Research Labs., (1962)

70 pages 13 ref.

Solar Absorptivity and Thermal Emissivity of Aluminum Coated with Silicon Oxide Films Prepared by Evaporation of Silicon Monoxide

Bradford, A. et al.

Applied Optics (1970) Feb.

Spectrally Selective Blacks for Solar Energy Collectors

Christie, E.

Paper No. 7/81 I.S.E.S. Conf., Melbourne (1970)

Flat plate solar absorbers: The production and testing of a selective surface for copper absorber plates

Close, D

Commonwealth Scientific and Industrial Research Organization, Engineering Section, Report E D 7 (1962)

19 pages

A selective absorbing-emitting surface for flat-plate solar collectors

Measurement of hemispherical total emittance and normal solar absorptance of selected materials in the temperature range 280 deg to 600 deg K

Curtis, H.

The 1st Ann. Meeting, (1964), June

21 pages

Selective radiation properties of particulate coatings

Duffie, J. et al

ASME Transaction, Series A, Journal of Engineering for Power, 85 (1963), p 219

9 pages **23 ref.**

Spectral and Directional Thermal Radiation Characteristics of Selective Surfaces for Solar Collectors

Edwards, D et al

Solar Energy, 6 (1962) No 1, p 1

8 pages 1 table 17 ref

Surface systems suitable for collectors of solar heat energy are examined. Spectral radiation characteristics of metallic substrates coated with semiconductor and antireflection layers are considered. Directional spectral reflectances of several surface coatings are presented and evaluated. Commercial chemical dip treatments of copper and steel are shown to give selective characteristics desirable for low temperature collectors such as solar water heaters

Selective radiation coatings for solar heating

Ehab, S and Farrington, D

University of Wisconsin (1958)

11 pages

The preparation and tests of black selective radiation surfaces are described

Selective surfaces and solar absorbers

Farber, E.

Solar Energy, 3 (1959) No 2 p 9

5 pages 1 table 7 pictures 5 ref.

Deals with the emission characteristics of the sun and artificial radiation sources, the absorbing and transmitting properties of materials, and how these properties of materials can be analyzed and used to advantage in solar energy collectors.

Les Structures Cellulaires Antirayonnantes Associees a des Surfaces de Base Selectives

Gallet, P. and Peri, G.

ISES Conference in Paris, (1973)

12 pages 6 pictures 10 ref.

The effects of combining an antiradiative cellular structure with a selective surface base.

Thermal Stability of Mirror Reflective Coatings with Various Protective Backings

Gaziev, U. et al.

Geliotekhnika, 9 (1973) p 32

3 pages 2 pictures 5 ref.

The impairment of reflectance of aluminum mirror layers applied to glass substrates by vacuum thermal deposition under the action of high temperatures in addition to pore formation in the films and surface oxidation apparently caused by agglomeration of the aluminum with alkali components of the glass. This is prevented by application of transition layers between the glass and the aluminum reflective coating.

Selectively emissive materials for solar heat absorbers

Gillette, R.

Solar Energy, 4 (1960), No 4 p 24

9 pages 6 pictures 4 ref.

For a high conversion efficiency in thermal systems an absorbing surface must have high absorptivity and low infrared emissivity. A theoretical analysis of absorber-surface efficiencies was made and selective absorber materials were prepared and tested. Two selective coatings were developed-a cobolt-oxide deposit and a chrome-nickel-vanadium deposit.

3.36

Effect of Ultraviolet Radiation on Selective Polymer Coatings

Groshkova, G. et al.

Geliotekhnika, 4 (1968), No 5, p 42

3 pages 1 table 4 ref.

To forecast the behavior of thermoregulating selective covers for heliosets in operating conditions, methods of acclerated laboratory tests were developed. An evalution method of artificial source of ultraviolet radiation intensity in shortwave spectrum intensity of the extraterrestrial Sun was presented. Ultraviolet radiation influence on different type covers, based on integral solar radiation absorption coefficient variation, was evaluated. Some reflective paints (white for solar radiation and black for intrinsic thermal radiation) were investigated. The most resistive to ultraviolet radiation are covers based on silicon organic polymers with a non organic feeder TiO_2.

Surfaces of controlled spectral absorptance

Harris, J. et al

National Physical Lab. of Israel, Jerusalem, Res. on Optics of Selective Surfaces, (1964), Sep

7 pages

Nickel-Nickel black thin absorbing film.

Surfaces of Controlled Spectral Absorptance (Film Thickness in Two and Three Layer Systems)

Harris, J. et al.

NASA, Washington Symp. on Thermal Radiation of Solids (1965) p 525

6 pages

Equilibrium temperatures of ideal spectrally selective surfaces

Hibbard, H.

Solar Energy, 5 (1961) p 129

4 pages 4 pictures 6 ref.

Equilibrium temperature is calculated for spectrally selective surfaces when exposed to both focused and unfocused solar radiation at the earth's orbit distance.

New solar selective surface

Horwitz, C.

Opt. Commun., 11 (1974), No 2

3 pages

Directional selectivity, emittance, and absorptance properties of vee corrugated specular surfaces

Hollands, K

Solar Energy, 7 (1963) No 3, p 108

9 pages 15 pictures 9 ref

It is pointed out that a directionally selective surface takes advantage of the fact that the solar radiation striking a solar collector over a year is directional in character, while the radiation losses from the absorbing surface are hemispheric. Properties of an ideal directionally selective surface are discussed. It is then shown that a vee-corrugated specular surface is directionally selective and that the selective properties of a spectrally-selective surface can be improved by vee corrugating to make it directionally selective as well. The absorptance and emittance properties of a wide range of vee-corrugated, spectrally-selective surfaces are given, as well as a method of choosing the best "angle of opening" for a particular solar-energy design

The properties of a copper oxide-aluminum selective black surface absorber of solar energy

Hottel, H. and Unger, T.

Solar Energy, 3 (1959) No 3 p 10

4 pages 7 pictures 5 ref.

The flat-plate solar energy collector is the simplest type of collecting device and, in the opinion of its proponents, the only one which is economically feasible at the present time. Essentially it consists of a blackened absorber plate to which are attached tubes or fins for energy removal. The blackened side exposed to the sun is covered by one or more parallel air-spaced glass plates to reduce energy losses to the surroundings.

3.38

Solar collector surfaces with wavelength selective radiation characteristics
Irvine, T. et al.

Solar Energy, 2 (1958) p 12.

5 pages 3 tables 7 pictures 8 ref.

The characteristics of porous materials, preparation of surfaces and effectiveness as solar collectors.

Addendum to: "Solar collector surfaces with wave length selective radiation characteristics".

Irvine, T. et al.

Solar Energy, 3 (1959) No 2 p 38

1 page 1 picture 3 ref.

The purpose of the note is to present the collector efficiency. The inclusion favors a gray surface in comparison with a selective one.

Selective Surfaces of Copper Foils

Keller, A.

ISES Conference in Paris, (1973)

4 pages 1 picture -

Procedure for oxidizing one surface of thin copper foils which gives absorption for solar rays as good as black paint.

Radiation Characteristics and Stability of Selective Optical Coatings

Koltun, M.

Geliotekhnika, 6 (1970), No 6, p 33

5 pages 2 pictures 8 ref.

Selective surfaces and coatings for solar technology

Koltun, M.

Geliotekhnika, 7 (1971), No 5, p 70

11 pages 4 ref.

Selective coatings with variable ratio α_s/ε of the integral optical coefficients

Koltun, M.

Geliotekhnika 8 (1972), No 5, p. 38

5 pages 2 tables - 8 ref.

The paper describes selective coatings which make it possible to change the absorption coefficient α_s of solar radiation by metal surfaces from 0.12 to 0.88 simultaneously the emissivity ε within the range 0.06-0.84. The coatings consist of four thin interference films covered by a silicon varnish layer of controlled thickness and ban be used in passive thermal control systems of spacecrafts and solar installations.

Selective radiation coatings. Preparation and high temperature stability

Kokoropoulos, P. et al.

Solar Energy, 3 (1959), No 4 p 19

5 pages 2 tables 2 pictures 7 ref.

Selective radiation coatings suitable for operation at high temperatures with focused sunlight are described. Coatings of CuO and Co_3O_4 on polished nickel, silver, and platinum.

New selective coatings for collector surfaces of solar plants

Kudryashova, M.

Geliotekhnika 5 (1969), No 4, p. 47

10 pages 2 tables 3 pictures 14 ref.

Inorganic films for solar energy absorption

Langley, R

Engelhard Industries Technical Bulletin, 3 (1962) No 3

Integrated coefficient of absorption of solar radiation by some materials and coatings

L'vova, E. and Moroz, G.

Zh. Tekh. Fiz., 26 (1956), p 850, (In Russian)

3 pages

Describes a comparative method and gives results for several substances including silver (5 per cent), zinc oxide (9.4 per cent), aluminum foil (12.0 per cent), and copper foil (15.0 per cent).

Graphical construction making possible the study of the optical properties of stacks of thin leaves, and consideration of the minima of factors of reflection, in view of the development of selective surfaces

Papint, F. and Perrot, M.

Cooperation Mediterraneenne four l'energie solaire, Bulletin No. 7 (1964), p 100

4 pages 6 ref.

High-temperature space-stable selective solar absorber coatings

Park, K. and Schmidt, R.

Applied Optics, 4 (1965), p 917

8 pages 10 ref.

Influence des paramètres optiques des parois dans l'étude des structures antirayonnantes

Perrot, M et al

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15
In French

Describes a method of determining the influence of the optical parameters from the collector sides of anti-radiation cells which are both parallel in plan and parallelepiped in plan with a square base

Brightening of Selective Transparent Insulation

Rekant, N. and Sheklein, A.

Geliotekhnika, 4 (1968), No 5, p 49

4 pages - - 10 ref.

Enlightening coatings (SiO_2) on thermoreflective films of SnO_2, In_2O_3 are investigated, both theoretically and experimentally. It is shown that such coatings on selective-transparent insulation increase the admission of solar flux at least by 5-6 per cent. The low value of emissivity is kept at the same value in the longwave region. This composition, being used in solar installations as a transparent insulation, makes it possible to raise the efficiency of solar installations.

Selective surfaces for solar absorbers

Riordan, R

ANZAAS Congress Solar Energy Symposium, Australia (1958)

6 pages

The suggested methods for the production of a selective surface and the chosen process covering the plating operation, the preparation of the plate, and the properties of the product are outlined. The design and performance of an absorber employing selective surfaces and the practical value of selective surfaces are indicated

Etude et réalisation d'un étalon de rayonnement

Ropke, A and Garau, A

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12
In French

A standard source of blackbody radiation has been constructed and is described

Effectiveness of solar absorber surfaces

Schmidt, R.

American Rocket Society, Space Power Systems, Conference, Santa Monica, Calif., (1962), Paper 2533-62

10 pages

A new parameter which completely describes the efficiency of solar absorber surfaces

Wavelength-Dependent (Selective) processes for the utilization of solar energy

Shaffer, L.

Solar Energy, 2 (1958), No 3-4, p 21

The Microoptical Structure of Selective Semiconducting Films on Glass

Sheklein, A.

Geliotekhnika, 3 (1967), No 1, p 21

7 pages - 5 pictures 6 ref.

Theoretical and computational procedure dynamic solar collector analysis

Smith, G

Univ of Cambridge, Dep. of Arch., WP22 (1974)

The properties and performance characteristics of selective tin oxide films deposited on glass for use in solar energy collection

Solomon, R.

The University of Arizona Solar Energy Laboratory of the Inst. of Atmospheric Physics, (1963)

64 pages

The ability of tin-oxide films deposited on glass to retain or exclude heat suggests their possible usage in solar energy applications.

Selective radiation

Tabor, H

Transaction of the Conf on the Use of Solar Energy: The Scientific Basis, 3 (1955) Part 1, p 24

10 pages

Selective radiation; I. Wavelength discrimination

H. Tabor

Transactions of the Conference of Scientific Uses of Solar Energy, 1955, Vol. 2, Part 1-A, pp, 1-23, Univ. of Ariz. Press, (1958)

Selective radiation

Tabor, H

Bull Res Counc, Israel, 5A(2) (1956) p 124

6 pages

Selective Radiation. I.Wavelength discrimination

Tabor, H.

Bull. Res. Coun. Israel, 54 (1956), p 28

Selective Surfaces

Tabor, H

Solar Energy, 6 (1962) No 3, p 112

2 pages 16 ref

Research on Optics of Selective Surfaces Final Report, 1 Sep. 1959 - 31 May 1963

Tabor, H.

Hebrew Univ., Jerusalem (1963)

47 pages

Selective surfaces for solar collectors

Tabor, H.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 41

12 pages 4 pictures 25 ref.

Basic principles, types of selective surfaces, selective paints and applications are presented.

Research on Optics of Selective Surfaces Final Report 1 Jun. 1963 - 31 Oct. 1964

Tabor, H.

National Physical Lab. of Israel, Jerusalem (1964)

74 pages

Further studies on selective black coatings

Tabor, H et al

UN Conf on New Sources of Energy, Rome (1961)

Studies on selective surfaces for air conditioned dwellings

Trombe, F et al

UN Conf on New Sources of Energy, Rome (1961)

3.44

Temperature dependence of the Optical Characteristics of a Selective Transparent Insulator

Sheklein, A.

Geliotekhnika, 6 (1970), No 2, p 48

4 pages **14 ref.**

Dependence of integral optical parameters of transparent insulating materials on the spectral composition of incident radiation

Veinberg, V. and Sheklein, A.

Geliotekhnika, 9 (1973), No 5, p 48

5 pages 3 tables 9 ref.

The authors, consider the transmission of transparent insulating materials used in solar installations integrated over the spectrum for sources with different spectral composition and for these sources they have calculated the integrated energy transmission coefficient.

Selective radiation properties of particulate coatings

Williams, D and Lappin, T

Journal of Engineering for Power (1963) July

8 pages

The variation with wavelength of thermal radiation properties of coated surfaces is important for solar-energy absorbers, and depends on the optical properties of the coating material and the substrate and on the structure of the coating. Theoretical considerations indicate that, for homogeneous coatings, the good optical properties of semiconductors can be improved if the coating contains a high fraction of voids

Variation in the Technical Characteristics of Hot-Box Solar-Energy Devices when Selective Surfaces are used

Vladimirova, L. and Garf, B.

Geliotekhnika, 6 (1960) No 5 p 35

7 pages **3 pictures** **6 ref.**

3.2
"GLASNING"

Effect of the angle of attack on the efficiency and heat transfer of the glass cover of a solar installation under laminar-flow conditions

Avezov, A. et al.

Geliotekhnika, 9 (1973), No 5, p 61

4 pages 2 pictures 10 ref.

Analysis of the effect of the disposition of a hot-box solar system on its thermal characteristics and efficiency shows that the efficiency of the system whose long axis lies along the east-west direction is higher compared with the south-north direction. The research is a attempt to develop an engineering method of calculating the heat transfer coefficients of the glass cover for an arbitrary direction of the wind relative to the glass plane under laminar-flow conditions.

Design of honeycomb- porous bed solar air heaters

Buchberg, H. and Lalude, O.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 7/63

6 pages

Performance characteristics of rectangular honeycomb solar-thermal converters

Buchberg H et al.

Solar Energy, 13 (1971), No 2, p 193

29 pages 11 tables 14 pictures 18 ref.

An array of rectangular cells, properly shaped with highly reflecting specular walls absorbing to infrared radiation, is shown to be an effective device to limit heat losses when placed over a solar collector.

Heat Flux, Measurements for Free Convection within Inclined Cellular Structures

Charters, W.

ISES Conference in Paris, July,(1973)

8 pages 2 tables 1 picture 7 ref.

Results of measurements for various angles of inclination.

3.46

Heat transfer effects in solar air heaters

Charters W and Mc Donald R

ISES Conf , Paris (1973)

Comparision of flat plates and corrugated plates on the basis of heat transfer and materal utilization.

Free convection suppression using honeycomb cellular materials

Charters, W. and Peterson L.

Solar Energy, 13 (1972), No 4, p 353

9 pages 8 pictures 8 ref.

Plastic glasing for solar energy absorption collectors

Edlin, F.

Solar Energy, 2 (1958) p 3

3 pages 2 tables 4 pictures 8 ref.

Comparing three transparent plastic films with glas as glazings for solar energy absorption collectors. Data for transmittance coefficients etc.

Effect of dirt on transparent covers in flat-plate solar energy collectors

Garg, H.

Solar Energy, 15 (1974), No 4, p 299

4 pages 3 pictures 4 ref.

The effect of dirt on the transmittance of solar radiation through various inclined glass plates and plastic films, which are used as a transparent cover for flat-plate collectors is studied.

Foamed Phenol Formaldehyde Plastic as a Thermal Insulator for Solar Water Heaters

Guner, E. et al.

Geliotekhnika, 6 (1970), No 4, p 34

3 pages 1 table 4 ref.

Study of thermal radiative properties of antireflection glass for flat-plate solar collector covers

Hsieh C. and Coldenwey R.

Solar Energy, 16 (1974), No 2, p 63

10 pages 14 pictures 17 ref.

An analytical study to evaluate thermal radiative properties of soda-lime sheet glasses covered with 0.087 μm thick MgF_2 coatings,

Change in Illuminance Due to Dust Deposits on Hothouse Windows

Khavaldzhi, G. and Glikman, M.

Geliotekhnika, 6 (1970), No 4, p 24

5 pages 1 picture 7 ref.

Transmission of Solar Radiation through Flat Glass under Summer Conditions

Parmelee, G

Transactions, 51 (1945) p 317, 344

34 pages

Presents results of tests made at Research Laboratory of American Society of Heating and Ventilating Engineers on heat flow through glass windows exposed to solar radiation; description of testing method is given

Overall Coefficients for Flat Glass Determined under Natural Weather Conditions

Parmelee, C and Aubele, W

Heating, Piping and Air Conditioning, 20 (1948) Dec p 111

8 pages

Contains data from tests made at Research Laboratory of American Society of Heating and Ventilating Engineers under natural weather conditions on single sheets of glass and on two sheets spaced 1/4 inch apart; gives results of analysis of surface conductances; comparisons are made with guarded hot box test data

Méthode expérimentale d'étude de l'application des structures antirayonnantes au chauffage à moyenne température

Perrot, M et al

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12

A methode of determining the effect of honeycomb cells, under static conditions, on flat-plate collector performance is described

Applications of Corrugated Glass in Solar installations

Rabbimov, R. et al.

Geliotekhnika, 9 (1973) p 38

4 pages 3 tables 6 ref.

For each square meter of transparent surface using corrugated sheet 0,188 m^2 is gained as compared with window glass.

Optical characteristics of transparent insulation as a function of surface state

Rekant, N.

Geliotekhnika, 3 (1967), No 6, p 63

3 pages 2 tables - 5 ref.

Optical and energy parameters of cobolt oxide-coated glass

Rekant, N. and Borisova, J.

Geliotekhnika, 2 (1966), No 3, p 42

6 pages 2 tables 4 pictures 9 ref.

A two-pass solar air heater

Satcunanathan, S. and Deonarine, S.

Solar Energy, 15 (1973), p 41

9 pages

Describes methods to reduce heat losses from a simple 2-glass cover air heater. Air is passing between glass panes before going through a black metal collector (2-pass). Outer glass cover temperatures were found to be considerably lower (2-5°C over the day), and nearer atmospheric temperatures than when operated in a convertional single-pass giving efficiencies 10 - 15 % higher than with a range. Smaller separations between the two glass panes also gave better results with 2-pass operation.

Selective Transparent Insulation for Solar Devices

Sheklein, A.

Geliotekhnika, 3 (1967), No 4, p 42

9 pages - - 32 ref.

The present article is devoted to an examination of the parameters of specimens of modern commercial glasses.

Some optical properties of conducting tin oxide films on glass

Sheklein, A. et.al.

Geliotekhnika, 2 (1966), No 4, p 57

7 pages 2 tables 5 pictures 6 ref.

Net radiation method for transmission through partially transparent plates

Siegel, R.

Solar Energy, 15 (1974), No 3, p 273

Plastic covers for solar collectors

Whillier, A.

Solar Energy, 7 (1963) p 148

4 pages 2 tables 3 pictures 6 ref

The possible use of thin transparent plastic films as covers for solar collectors to replace glass are examined

Radiation Parameters of Polymer Films Used for Transparent Covers in Solar Water Heaters

Zhamalov, A. et al.

Geliotekhnika, 6 (1970), No 4, p 29

5 pages 1 table 3 pictures 5 ref.

3.50

Transmission of "cutoff" glass filters employed in solar radiation research, II

Ångström, A and Drummond, A

Journal of the Optical Society of America, 50 (1960) Oct, p 974

6 pages

The work reported constitutes part of an investigation into the transmission characteristics of coloured glass filters. Special attention is paid here to the determination of the absorption coefficient in the main transmission regions, through the employment of substantial thicknesses of glass. The study embraces also an investigation of the temperature dependence of the absorption coefficients

3.1.3 PROVNING

Effect of heat loss and shading factors on the output of a solar heater

Baibutaev, K. and Achilov, B.

Geliotekhnika, 4 (1968), No 1, p 49

4 pages 2 pictures 3 ref.

Study of heat transpfer in flat solar heaters

Baum, V. et al.

Geliotekhnika, 7 (1971), No 2, p 37

4 pages 3 pictures

The derivations of several "plate-efficiency factors" useful in the design of flat-plate solar collectors

Bliss, R.

Solar Energy, 3 (1959) No 1 p 55

4 pages 1 table 4 pictures 2 ref.

All variables influencing the efficiency of a flat-plate solar heat collector as a heat exchanger can be combined into a single "efficiency factor". These efficiency factors are more or less design constants of the particular collector design, and are only slightly influenced by operating conditions.

Two experiments with solar energy

Bouw, 29 (1974), No 14

Solar collectors in houses with sloping roofs incorporating large double-glazed windows.

A Low Cost Solar Heater

Dewhurst, J. and McVeigh, J.

Heating and Ventilating Engineer 41 (1968), p. 445

2 pages

Description of flat plate solar collector

Solar Heating of Houses by Vertical South Wall Storage Panels

Dietz, A and Czapek, E

Heating, Piping and Air Conditioning, 22 (1950) March p 118

8 pages

Report results of one full heating season's experiments (1947--1948) with solar heat collectors and heating units at test house of Massachusetts Institute of Technology, Cambridge, Mass., includes description of solar energy collecting units; contains a bibliography

Testing of solar collectors

Dovon, B

Solar Energy, 9 (1965) No 2, p 103

2 pages 2 pictures

In connection with work on solar power units, it has been found necessary to find a quick and simple way of measuring the efficiency of a given type of collector or, what is equivalent, of determining the amount of useful sunshine at a given site, as it would be received by a collector. Two simple schemes for these measurements are developed

A new collector of solar radiant energy- theory and experimental verification - calculation of the efficiencies

Francia, G.

National Aerospace Engineering & Manufacturing Meeting, Los Angeles, Calif., (1962), Preprint 594F

18 pages

Measurement of ratio of absorptivity of sunlight to thermal emissivity

Gordon, G.

The Review of Scientific Instruments, 31 (1960), Nov

Direct measurements of the ratio of the surface absorptivity of sunlight to the thermal emissivity have been made, and the apparatus is described. A thin plate to be measured is suspended in a vacuum, surrounded by walls cooled by liquid nitrogen, and illuminated by an arc light, which simulates solar radiation. The desired ratio is determined from the equilibrium temperature, which ranged from 0 to 250 C for the samples measured, Possible errors in the procedure have been analyzed theoretically, and corrections introduced where necessary, Intensity fluctuations in the present light source have limited the accuracy to 10%, but this is not a fundamental limitation in the method. Values of the thermal emissivity are also obtained from the rate of change of sample temperature.

Determination of the Infrared Absorption Coefficient of Semitransparent Materials

Gurevich, A. et al.

Geliotekhnika, 6 (1970), No 3, p 49

6 pages 1 table 1 picture 3 ref.

A design procedure suitable for calculating the size of a flat plate solar heat collector needed to warm on outdoor swimming pool in Great Britain

Hassan, G.

JIHVE, 39 (1971), June

7 pages 2 tables 2 pictures 12 ref.

Ultraviolet Spectral Energy Distributions of Natural Sunlight and Accelerated Test Light Sources

Hirt, R et al

Journal of the Optical Society of America, 50 (1960) No 7, p 706

7 pages

Performance of flat-plate solar energy collectors

Hottel, H

Space Heating with Solar Energy, Proceeding of a Course-Symp, MIT (1950) p 58

14 pages

Evaluation of flat-plate solar collector performance

Hottel, H. and Whillier, A.

Trans, Conf. on New Sources of Energy, 11 (1955), p 74

31 pages

Experimental study of the thermal output of some simple solar heater designs

Kakabaev, A. and Golaev, M.

Geliotekhnika, 7 (1971), No 2, p 41

6 pages 3 pictures 5 ref.

Transient considerations of flat-plate solar collectors

Klein, S. et al

ASME meeting (1973), Nov paper 73-WA/Sol-1

Investigation of the effect of thermal capacitance in modeling of the performance of a flat-plate solar collector.

A review of recent air force research on selective solar absorbers

Long, R.

ASME Meeting, New York (1964), Nov, Paper 64 - WA/Sol-4

4 pages 13 ref.

Solar heating of a fluid through a semi-transparent plate: Theory and experiment

Lumsdaine, E.

Solar Energy, 12 (1969), No 4, p 457

11 pages 6 pictures 7 ref.

A theoretical and experimental study of solar radiation passing through a thin semi-transparent slab to heat a fluid is presented.

Hydrodynamic and heat transfer characteristics of a solar heated air duct

Malik, M.

Michigan State Univ. (1967)

154 pages

Flat plate solar absorbers - the effect on incident radiation of inclination and orientation

Morse, R. and Czarnecki, J.

C.S.I.R.O. Engineering Section Report ED 6, (1958)

Energy and modern technology

Nikolskii V

Moscow (1925)

Description of experiments with a small wooden hot box solar collector.

Prédétermination des performances d'un insolateur plan

Pailharey, D

Coopération Méditerranéenne pour l'Energie Solaire, Bull (1969) No 16
In French

21 pages

This study proposes a method of predetermining the performance of flat-plate solar collectors. These performances are measured by means of simple formulae and laboratory data

Combined convective and radiative heat losses from flat-plate solar-air heaters

Rankine, A. and Charters, W.

Solar Energy, 12 (1969), No 4, p 517

7 pages 1 table 4 pictures 6 ref.

The magnitude of the losses from the heater plate as a criterion of unit efficiency, there is a stagnant air gap above the heated plate through which the mechanisms of free convection and radiation operate to transfer heat to the glass cover plate. Providing the aspect ratio of the gap is sufficiently large, it is reasonable to assume that the side walls have a minor effect on the free convection term.

Large automatic solar device (BGUS) for testing materials by the accelerated light-aging method

Shermazanyan, Ya. and Nersisyan, T.

Geliotekhnika, 1 (1965), No 5, p 45

6 pages 2 pictures 6 ref.

Accelerated Light and Weather Aging Tests on Materials and Manufactured Components Using Solar Installations (a review)

Shermazanyan, T.

Geliotekhnika, 6 (1970), No 4, 6 pictures 22 ref.

Methods of Determining the Solar-Radiation Sum on a Material Aging Testing Rig

Shermazanyan, T. and Nersisyan, T.

Geliotekhnika, 6 (1970), No 3, p 55

6 pages **2 pictures** **10 ref.**

Notes on a solar collector with unique air permeable media

Shoemaker, M

Solar Energy, 5 (1961) p 138

4 pages 1 table 3 pictures

Tests on plate heat collectors reveal that they are highly efficient in transferring heat and thus in increasing the temperature of a stream of air provided that the space between the cover and the bottom of the collector is filled with slit- and-expanded aluminum foil blackened on the one side, which is turned toward the sun. The high radiant-energy exchange should reduce the cost of heat collectors and hasten wider utilization of solar heat.

Determining the Longevity of FRP-1 Foam Plastic

Tarakanov, O. et al.

Geliotekhnika, 6 (1970) No 5 p 47

5 pages **3 pictures** **7 ref.**

An Experimental Investigation of Forced-Convective Heat Transfer for fully-developed Turbulent Flow in a Rectangular Duct with Asymmetric Heating

Tan, H and Charters, W

Solar Energy, 13 (1970) No 1, p 121

6 pages 2 pictures 17 ref

This experimental investigation was undertaken because of the limited published data available on rectangular duct heat transfer with asymmetric heating. In the design of a flat-plate solar-air heater with rectangular flow passages, the collector plate is the only heated surface and this is subjected to a uniform heat flux by solar radiation

Direct simulation of the receivers of the SV-1 solar water-raising unit

Teplyakov, D. et.al.

Geliotekhnika, 3 (1967), No 6, p 46

5 pages 5 pictures 5 ref.

Méthode de calcul pratique des insolateurs à basse température

Touchais, M

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12
In French

A practical method of estimating the performance of low-temperature solar collectors is presented

Investigation of the thermal regime of a solar water heater with a flat-channel receiver

Umarov, G. and Zhamalov, A.

Geliotekhnika, 4 (1968), No 2, p 43

7 pages 4 pictures 10 ref.

Performance of a flat-plate solar heat collector

Ward, G

Proc Inst Mech Engrs, 169 (1955) p 1091

Report on field tests of solar energy absorbers for drying vine fruit carried out in co-operation with the Commonwealth Research Station, Merbein, Vic, Feb-March 1957

Wilson, B

Commonwealth Scientific and Industrial Research Organization, Division of Industrial Chemistry (1957)

22 pages

3.58

Determination of the optimum angle of inclination of solar devices of the "hot box" type

Vladimirova, L. and Garf, B.

Geliotekhnika, 4 (1968), No 4, p 37

6 pages 2 tables 4 pictures 3 ref.

The paper deals with the criteria making possible the choice of the optimum tilt of a hot box solar device. The effects of latitude, season and hour of the day on the quantity of solar energy, coming to the receiver, have been studied. The curve shows the optimum tilt angle in relation with the season. It is shown that the proposed method may be used when choosing the tilt angle of a hot box with constant tilt, meant to operate during some particular time interval. The values of the tilt angle, recommended in the existing literature on the subject, are proved to be unfounded.

An investigation of solar water heater performance

Yellot, J and Sobotka, R

ASHRAE Transactions, 70 (1964), p 425

3.14
BERÄKNINGAR

Analysis of Solar Panel Effect on Louver Performance (Mathematical analysis of temperature control of spacecraft in solar heat environment)

Becker, R.

Jet Peopulsion Lab. Calif. Inst. of Tech., Pasadena (1965)

16 pages

Heat exchange with uniform blowing in the case of combined convection on a vertical surface

Brdlik, P., Dubovik, V.

Geliotekhnika 8 (1972), No. 2, p. 68

4 pages **2 pictures** **4 ref.**

The paper outlines results of studies of heat exchange within the binary laminar boundary layer with combined convection on a vertical surface. The analytical expressions given are obtained by processing the results of digital calculations for both coinciding and opposing convection.

Heat and mass transfer in a binary mixture during mixed convection

Brdlik, P. et al.

Geliotekhnika, 7 (1971), No 5, p 90

7 pages 3 pictures 7 ref.

Design evaluation of flat plate solar air heater absorbers by digital computer

Charters W et al.

Inst Eng, Aust, Mech Chem Eng Trans v MC8 (1972) No 1 p 55

4 pages

Numerical computational techniques to compare basic steady state mathematical models of three types of flat plate heater with the ultimate aim of providing the designer with a more reliable method of selection

Effect of tube inclination on laminar convection in uniformly heated tubes for flat-plate solar collectors

Cheng, K. and Hong, S.

Solar Energy, 13 (1972), No 4, p 363

9 pages 7 pictures 3 ref.

A numerical study is carried out to determine the free convection effects on fully developed upward laminar forced flow in uniformly heated inclined tubes.

A computer model for solar collector and storage systems

Close, D.

Presented at the Solar Energy Society Annual Meeting, Boston, (1966)

Heating a fluid by solar radiation

Cobble, H.

Solar Energy, 8 (1964) p 45

4 pages 1 table 2 pictures 5 ref.

The differential eq. describing the temperature of a plate heated by solar radiation and cooled by a fluid is solved. Examples

Optimum angle of inclination

Deris, N

Air Conditioning, Heating, Ventilating (1961) Aug

5 pages

Guide for Calculating Collection Efficiency for the Shallow Solar Pond (applicable for any horizontal flat plate solar collector)

Dickinson, V. and Neifert, R.

Cal. Univ., Livermore, Laurence Livermore Lab. (1974) Feb.

44 pages

Calculation of concentrator-receiver systems with a flat receiver

Dudko, A.

Geliotekhnika, 4 (1968), No 1, p 29

8 pages 2 tables 5 pictures 2 ref.

Calculation of concentrator-receiver systems with a flat receiver

Dudko, A.

Geliotekhnika, 4 (1968), No 2, p 32

4 pages 2 pictures 5 ref.

Radiation heat exchange between surfaces with specular reflection

Eckert, E and Sparrow, E

Int J Heat Mass Transfer, 3 (1961) p 42

13 pages

Theoretical effective reflectivities, absorptivities, and transmissivities of draperies as a function of geometric configuration

Farber, E

Solar Energy, 7 (1963) No 4, p 176

4 pages 8 puctures 2 ref

A method is presented by which the apparent reflectivities, absorptivities, and transmissivities of draperies can be determined theoretically from the corresponding properties of the flat material

Pilot plants of solar system generating stations

Francia, G

Solar Energy, 12 (1968) No 1, p 51

14 pages 17 pictures 37 ref

Describes a way to use honeycomb panels (anti-radiating cellular structure)

3.62

Optimization of tilt of flat-plate collectors

Gupta C and Garg H

Journ. Inst Eng India 48(1967)

Rapid Method of Calculating Gray-Body Radiation Parameters

Gurevich, A. et al.

Geliotekhnika, 6 (1970), No 1, p 45

7 pages 2 tables 3 pictures 5 ref.

Comparison of heat-rejection and weight characteristics of several radiator fin-tube configurations

Haller. H.

NASA TN D-2385 (1964)

34 pages

An analytical investigation was performed to provide comparisons of heat-rejection and weight capabilities of several radiator fin-tube configurations: Results indicate that a substantial weight saving can be realized with the closed-sandwich fin-tube arrangement with reduced tube side-wall thickness when compared with results of other configurations investigated.

The performance of flat-plate solar heat collectors

Hottel, H. and Woertz, B.

Trans. Am. Soc. Mech. Engr., 64 (1942)

Investigation of a mathematical model for the microclimate of transparent unheated film structures

Kobylyanskii, G.

Geliotekhnika, 9 (1973), No 4, p 59

7 pages 2 pictures 8 ref.

Experimental determination of the local heat transfer coefficient for thin cylindrical radiators

Kuliev, A. et. al.

Geliotekhnika, 10 (1974), No 1, p 19

4 pages 1 picture 4 ref.

The authors derive an equation which can be used in a relativly simple procedure to determine the local heat transfer coefficient of a radiator unit with constant transverse cross section.

Performance of a flat-plate solar-energy collector using a low-emissivity glass cover

Kutchinski, J.

Thesis, Dept. of Mechanical Engineering, University of Arizona (1961)

65 pages

The theoretical performance of flat-plate, solar-energy collectors using low-emissivity glass covers is calculated and evaluated. Basic heat gain equations for both single- and double-pane covers are derived and techniques for solution of the equations are presented.

Unsteady state heat transfer between air and loose solids

Löf, G.

Industrial & Engineering Chemistry, 40 (1948), p 1061

Solar absorber coating study.

Peterson R, Ramsey J.

Honeywell Inc. Minneapolis Minn. Systems and Research div (1973)

71 pages

Optimization of flat-plate solar collector area

Rao, S. and Suri, R.

Solar Energy, 12 (1969), No 4, p 531

5 pages 4 pictures 6 ref.

Water desalination deals with a simplified approach for design calculations involving estimation of collector area for solar-water heaters.

The heat transfer characteristics of the overlapped glass plate air heater

Selcuk, K

Coopération Méditerranéene pour L´énergie solaire, Bull (1967) No 12

The heat transfer problem of the overlapped glass collector is formulated for constant radiation intensity, neglecting the long-wave radiation, experimental verification of the theory

Thermal and economic analysis of the overlapped-glass plate solar-air heater

Selcuk, K.

Solar Energy, 13 (1971), No 2, p 165

27 pages 5 tables 11 pictures 11 ref.

Heat transfer analysis of the overlapped-glass plate air heater based on the quasi-steady state performance and was carried out in two steps. In the first step, the glass plates assumed to absorb the short-wave solar radiation, but the long-wave emission from the plates ignored. In the second step, the approximate glass temperatures obtained from the first-step solution used in the exact determination of the long-wave radiation exchange between the glass plates; therefore, improved results were obtained.

Accelerated Method of Spectral Calculation of Optical Parameters Relative to Solar Radiation

Sheklein, A.

Geliotekhnika, 3 (1967), No 2, p 28

9 pages 4 tables 2 pictures 9 ref.

Study of solar processes with an analog computer

Sheridan, N.

Solar Energy Soc.Ann.Meeting,Phoenix (1958)

Performance prediction of single-and double-exposure solar-air heaters

Suri, R and Saini, J

Solar Energy, 12 (1969) No 4, p 525

6 pages 3 pictures 3 ref

Variables for studying the performance prediction of single- and double-exposure types of solar-air heaters; the parameters have been conveniently reduced to essentially three non-dimensional groups

Radiation, convection and conduction coefficients in solar collectors

Tabor, H

Bull Res Council Israel 6C (1958) p 955

22 pages

Heat losses from solar collectors are usually computed on the basis of figures given by Hottel and Woertz. The present paper suggests, after a study of the literature on convection, new coefficients for convection heat transfer, as well as drawing attention to the value of the total hemispherical emissivity of glass, and to the edge losses that can occur in collectors of finite size

Le chauffage solaire de l'air humide

Touchais. M

Coopération Méditerranéenne pour l'Energie Solaire, Bull (1969) No 16
In French

17 pages

The actual subject of this thesis is to study optimum performances for a flat-plate solar collector. Formulae are given to insure for users a simple calculation way to determine suitable parameters for those collectors. Various forms of anticonvective structures are studied

The analytic features of the flat-plate solar collectors

Ultanir, M

Coopération Méditerranéenne pour l'Energie Solaire, Bull (1969) No 16

9 pages

The authors gathers a certain ammount of elementary data concerning the operation of flat-plate solar collectors. The article includes different parameters influencing the performance of these convertors, at low temperatures

Analysis of the Thermal Regimes of the Cavity Receivers of High-Temperature Solar Devices

Zakhidov, R. and Teplyakov, D.

Geliotekhnika, 3 (1967), No 4, p 17

4 pages **1 table** **3 pictures** **6 ref.**

3.1.5
TILLÄMPNINGAR (se även avsnitt 5-8)

The Abbot silver-disk pyrheliometer

Aldrich, L.

Smithsonian Misc. Col., Vol. III, No. 14

A New Glass-Roof Dryer for Cocoa Beans and Other Crops

Ghosh, B.

ISES Conference in Paris, (1973)

17 pages 11 pictures 12 ref.

Plane-glass mirror solar energy concentrators for concentrating sugarcane and palm juices

Khanna, M et al

J Sci Ind Res 18A (1959) No 5, p 201

48 pages

The design construction and working details of a plane-glass mirror solar energy concentrator are described

Heating of air from solar energy

Löf, G and Nevins, T

The Ohio Journ of Science, 8 (1953) No 5, p 272

8 pages

A Solar Timber Kiln

Read, W. et. al.

ISES Conference in Paris, (1973)

10 pages - 6 pictures 6 ref.

A prefabricated kiln, a solar energy collector and a rockpile thermal storage unit to be used for timber drying is discussed.

Application of optical instruments in the investigation of reflecting surfaces and transparent insulation in solar devices.

Rekant, N. et. al.

Geliotekhnika, 2 (1966), No 2, p 31

7 pages 5 pictures 11 ref.

The set of instruments described enables the study of all parameters of interest in solar engineering with an accuracy sufficient for practical needs.

Solar energy and its applications.

Sakas J.

Tech. Chron. (Greece) Journal Paper (1973) No 6 p 555

14 pages

Apparatus and methods of collecting solar energy in form of heat of low, medium and high temperatures are described,

A Crop Drier Utilising a Two Pass Solar Air Heater

Satcunanathan, S.

ISES Conference in Paris, (1973)

11 pages 2 tables 2 pictures 14 ref.

Air is heated in a solar energy collector, passed through the drier and exhausted by a blower.

Solar House Heater

Simon, M

Architectural Forum, 86 (1947) Feb p 121, 124

4 pages

Describes way in which a sun trap, covering on third of the roof area, provides 20 % of heat needed during winter season by an experimental house in Boulder, Colo.; gives details of solar heater and presents results of tests

3.68

A solar powered combined heating/cooling system with the air conditioning unit driven by an organic Rankine-cycle engine

Teayan, W. and Sargent, S.

ISES Conf. Paris, July 1973. Paper E H 94.

10 pages **5 pictures**

The system works with a flat plate solar collector.

A convenient graphical method of evaluating field of view obstructions for cosine response detectors

Wills, J.

Solar Energy, 13 (1971), No 3, p 349

3 pages 1 table 1 picture 2 ref.

3.1.6
ÖVRIGT

Temperature-decay curves in the box type solar cooker

Abou-Hussein, M

UN Conf on New Sources of Energy, Rome (1961)

8 pages

The temperature-decay curve of a solar oven of the box-type

Solar Reflectance of Unprotected and Protected Aluminium Front--Surface Mirrors

Bradford, A and Hass G

Solar Energy, 9 (1965) No 1, p 32

7 pages 4 tables 7 pictures 24 ref

Mirror coatings. High-vacuum evaporation technique. By the use of suitable shutters and rotating sector wheels, and by well--controlled movements of the mirror substrates during the vaccum deposition, films of uniform thickness over large areas can easily be obtained

Effect of surface thermal-radiation characteristics on the temperature-control problem in satellites

Camack, W. and Edwards, D.

Surface effects on spacecraft materials, John Wiley & Sons, New York, (1960).

Solar absorptance and thermal emittance of evaporated coatings

Drummeter, L and Hass, G.

Physics of Thin Films Advances in Research and Development, Vol. 2. Edited by Georg Hass and R. Thun. New York, Academic Press, Inc., (1964), p 305

56 pages **80 ref.**

The Solar Pond: Analytical and Laboratory Studies

Duke, J.

ISES Conference in Paris, (1973)

11 pages 4 pictures 9 ref.

Development of a time dependent vertical temperature distribution in a shallow pond due to solar heating is analytically predicted.

Flow Distribution in Solar Absorber Banks

Dunkle, R. and Davey, E.

Paper No. 4/35, I.S.E.S. Conf., Melbourne (1970)

Theoretical investigation of the thermal regime of a solar pond

Eliseev, V. et. al.

Geliotekhnika, 7 (1971), No 4, p 17

7 pages 5 pictures 6 ref.

Determining the Efficiency of a Solar Salt Pond

Eliseev, V. et. al.

Geliotekhnika, 9 (1973) p 44

3 pages 5 ref.

In Soviet and foreign publications concerned with utilization of the solar-energy converter of the type considered, there is almost no information on the efficiency, or on the way it depends on the fundamental factors determining operation of the pond

Salt Flats as Solar-Heat Collectors for Industrial Purposes

Hirschmann, J

Solar Energy, 13 (1970) No 1, p 83

7 pages 4 tables 14 pictures 24 ref

The large tracts of country taken up by salt flats are completely sterile and their minerals are usually of little commercial value due to the high transportation costs. Another fact is that the regions where all of them are located receive a very high quota of solar radiation, this being one of the main reasons for their formation. As in most cases, there is also the problem of the scarcity of other energy sources, so we arrive at investigating the possibility of using salt flats as solar heat collectors for industrial purposes

Some Aspects of Heat Transport, Determination of the Emissivity, and Temperature Measurement in a Semitransparent Body

Lopatina, G. et. al.

Geliotekhnika, 4 (1968), No 5, p 45

4 pages 2 pictures 5 ref.

Some problems of high-temperature radiation heating in semi-transparent bodies are investigated. The possibility of applying levelling marks for estimation of temperature in semi-transparent bodies is given. The mathematical relationships are given for determining the role of each kind of heat transmission, the temperature of heated bodies, and the integral absorption coefficient for semi-transparent materials temperature, measured in an optical way. Precision of 6 to 7 per cent is achieved.

Transient Solution and Criteria for Achieving Maximum Fluid Temperature in Solar Energy Applications

Lumsdaine, E

Solar Energy, 13 (1970) No 1, p 3

17 pages 1 table 9 pictures 7 ref

The one-dimensional transient heating by solar radiation of a semi-transparent medium and the adjoining fluid is analyzed. Criteria are established for achieving maximum fluid temperature through opaque, semi-transparent and transparent solids at steady state

Remarks on the present status of spacecraft thermal control surface development (status of solar reflector, solar absorber, and flat reflector spacecraft thermal control surfaces).

Mc Keliar, L.

Lockheed Missiles and Space Co., Sunnyvale, Calif., (1965), May

36 pages

A two-pass solar air heater

Sactunanathan, S. and Deonarine, S.

Solar Energy, 15 (1973), No 1, p 41

3.72 *Optimum conditions for operating a heat exchanger-cum-reservoir system to heat air with solar energy*

Singh, N. and Khanna, M.

Solar Energy, 13 (1972), No 4, p 431

6 pages 3 tables 1 picture 8 ref.

Autonomous housing study. Economics of solar collectors, heat pumps and wind generators

Smith, G

Univ. of Cambridge, Dep. of Arch., WP3 (1973)

31 pages 20 tables 8 pictures 26 ref

Preliminary report with a brief review of relevant British work. Solar energy for space and hot water heating is found comparable to cost of main electricity

Solar energy.

Stevovich V.

Informatics Inc Rockville Md (1974) March

478 pages

Collection/ energy conversion/ energy storage/ solar heating/ utilization

Effect of evaporation on the thermal state of a solar pond

Usamanov, Yu. and Eliseev, V.

Geliotekhnika, 9 (1973), No 5, p 45

Most of the heat losses from a heat-storing salt-water solar pond during conversion of solar energy into thermal energy are due to losses by evaporation. The authors investigate the effect of density gradient on evaporation and discuss methods for reducing the heat losses by evaporation.

Experimental investigation of the thermal regime of a model of a solar pond

Usmanov, Yu. et. al.

Geliotekhnika, 7 (1971), No 4, p 24

5 pages 6 pictures 7 ref.

The Physics of the solar pond

Weinberger, H

Solar Energy, 8 (1964) p 45

12 pages 4 tables 12 pictures 30 ref.

Solar radiation is shown to effect the temperature rise in ponds of about a meter depth

3.2
VATTENSAMLINGAR SOM SOLFÅNGARE

Pénétration de l´énergie solaire dans la mer

Boutler, J

Coopération Méditerranéene pour l´énergie solaire, Bull (1967) No 13
In French

A brief physical and mathematical analysis of experimental results of sunlight penetration through sea water is given

Solar energy and energy storage devices

Daniels, F

Battery Res. and Dev. Conf. (1957) Proc p 92

5 pages

Discuss conversion of solar energy into electricity. Storage of energy in water, pebble beds and in chemicals.

The Solar Pond: Analytical and Laboratory Studies

Duke, J.

ISES Conference in Paris, (1973)

11 pages 4 pictures 9 ref.

Development of a time dependent vertical temperature distribution in a shallow pond due to solar heating is analytically predicted.

Suppression of natural convection in open ponds by concentration gradient

Hirschmann, J.

Proc. First int. Symp. Water Desalination, Washington (1955), p 483

Prediction of solar and atmospheric radiation for energy budget studies of lakes and streams.

Huber W, Perez A.

Florida Univ. Gainesville (1970) Oct

133 pages

Design of a sea thermal energy power plant

Snyder, A.

Solar Energy, 3 (1959), No 4 p 49

6 pages 3 tables 6 pictures 5 ref.

A unique gross power and sea water conversion plant is described which uses the temperature difference of the ocean to produce usable energy and fresh water. Estimated cost for the sea thermal energy plant is 2.5 to 3 million dollars, including building and erection cost. This is equal to $ 310 to $ 375 per kw, amounts which are competitive with fossil-fuel burning plants in remote areas.

Large area solar collectors (solar ponds) for power production

Tabor, H

UN Conf on New Sources of Energy, Rome (1961)

15 pages

The "solar pond" is an artificial black-bottomed pond or lake about 1-2 m deep in which convection is prevented by having a strong density gradient from the bottom to the top. The gradient is obtained by having a high concentration of suitable salts-such as magnesium chloride-at the bottom of the pond and a negligible concentration at the top. The water-and particularly the ground under the pond -provide considerable built-in storage

Les centrales héliomarines et l'exploitation industrielle des mers et des fonds sous marins

Touchais, M

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 13
In French

Exploitation of the sea and sea bottom, using solar energy, is discussed

On the optical characteristics of a solar pond

Usmanov, Yu. et. al.

Geliotekhnika, 7 (1971), No 3, p 78

4 pages 1 table 1 picture 6 ref.

Experimental study of the removal of heat from a solar salt-water pond

Usmanov , Yu et al.

Geliotekhnika, 9 (1973), No 6, p 23

4 pages 3 pictures 3 ref.

A method of extracting heat stored in a salt-water pond.

Some Results of a Theoretical and Experimental Investigation of Thermal Conditions in a Solar Salt Pond

Usmanov, Yu. et. al.

Geliotekhnika, 9 (1973) p 60

6 pages 7 pictures 6 ref.

An experimental check on the results of calculations for the thermal regime of salt ponds used as solar-energy converters is made as a necessary stage in the design of reliable theoretical research methods.

Effect of evaporation on the thermal state of a solar pond

Usmanov Yu and Eliseev V

Geliotekhnika, 9 (1973), No 5, p 45

Most of the heat losses from a heat-storing salt-water solar pond during conversion of solar energy into thermal energy are due to losses by evaporation.
The authors investigate the effect of density gradient on evaporation and discuss methods for reducing the losses.

3.3 KONCENTRERANDE SOLFÅNGARE

Singer's cast epoxy resin mirrors require not costly hand work

Anon

Missiles & Rockets, 5 (1959)No 9, p 16

Design of Heliostats for High-Temperature Solar Furnaces

Annaev, A. and Rozyev, Kh.

Geliotekhnika, 6 (1970), No 6, p 21

7 pages **1 table** **3 pictures** **5 ref.**

Guidance system for a solar furnace

Armand St

Solar Energy 1 (1957) No 4 p 27

Method of calculating the radiant flux distribution over the walls of a cavity solar receiver

Baranov, V. and Muchnik, G.

Geliotekhnika, 2 (1966), No 5, p 3

7 pages - 4 pictures 8 ref.

A high temperature solar furnace

Baum, V et al

Applied Solar Energy, 5 (1969) No 1

4 pages 2 pictures 2 ref

Description of the furnace and the absolute calorimeter for the investigation of power characteristics of solar furnaces are given; also power characteristics and the region of temperature in which thermophysical and radiation properties of refractories can be investigated are presented

Modulation of the Light Flux at the Focal Point of a Solar Furnace

Borukhov, M. et al.

Geliotekhnika, 4 (1968), No 5, p 57

4 pages - 2 pictures 3 ref.

The method of calculation of some light flux modulations in the light flux of a solar oven is considered. Formulae are deduced for calculation of cone shape corresponding to sinusoidal changing of the light flux in the focal point of a solar oven.

Increasing the far-ultraviolet reflectance of siliconoxide-protected aluminum mirrors by ultraviolet irradiation

Bradford, A. and Hass, G.

Optical Society of America, Journal, 53 (1963), p 1096

5 pages 13 ref.

Invention de miroirs ardens, pour brusler, a une grande aistance

Buffon M

Gustorie del´l´Acad.R d Sciences,Memoire (1752) p 82

3 pages

Memoire sur le pouvar refringent des liguers seit simples, seit composées

Brisson C

Hist.Acad R d Sciences, Memoires (1788) p 541

13 pages

Chauffeur par Refraction

Chauvet, M.

ISES Conference in Paris, July, (1973).

8 pages - 2 pictures -

Description of a solar collector using refraction for concentrating the sun radiation.

Theoretical concentrations for solar furnaces

Cobble, M.

Solar Energy, 5 (1961) p 61

12 pages 11 pictures

The concentration for a parabolid of revolution mirror and for a parabolic cylinder mirror are derived as a function of relative aperture for several target geometrics.

Circular Flat Plate Heat Exchanger for Solar Concentrator

Cobble, H

Solar Energy, 6 (1962) p 164

4 pages 4 pictures

An analysis is given of a heat exchanger of the flat-plate type having circular boundaries that could be used just out of the focus of a concentrator of the paraboloid of revolution type to heat liquids

Solar Furnace Installations in the U S

Cohen R and Hiester N

Solar Energy 1 (1957) No 2-3 p 115

Accurate temperature measurements in work with solar furnaces

Conn, W

Am J Physics, 24 (1956) No 8, p 589

4 pages

Measurement of temperatures above 1500°C in a solar furnace is discussed

Image quality and use of the U S Army Quartermaster solar furnace

Cotton, E et al

UN Conf on New Sources of Energy, Rome (1961) In French

Design of a Concentrator-Receiver System with Equalized Receiver Heat Load

Dudko, A.

Geliotekhnika, 3 (1967), No 4, p 10

5 pages 2 tables 5 pictures 6 ref.

Designing Concentrating Systems

Dudko, A. and Dudko, O.

Geliotekhnika, 4 (1968), No 6, p 11

5 pages 2 tables 3 pictures 6 ref.

An attempt is made to build a calculation diagram of the reflecting concentrator surface, on the base of aberration experiments, for further quantitative estimation of the reflective surface quality and for receiving the value of radiation flux density on the surface of a receiver of any configuration.

Optimization of focusing solar-collector design

Duffie, J. and Lof, G.

ASME Transaction, Series A, Journal of Engineering for Power 85 (1963), July, p 221

8 pages 18 ref.

Performance of reflector-type direct solar cooker

Ghai, M.

J. Sci. Ind. Res., 12 A (1953), p 540

12 pages

Manufacture of reflector-type direct solar cooker

Ghai, M.

J. Sci. Ind. Res., 13 A (1954), p 212

5 pages

Lightweight solar concentrator development

Gillette, R., et al.

Solar Energy, 5 (1961) p 24

5 pages 8 pictures 7 ref.

The objective of the presented research program is to develop a lightweight solar concentrator that will provide sufficient solar energy for space vehicle power conversion equipment.

The status of solar furnace research

Glaser, P.

Solar Energy, 3 (1959) No 3 p 47

1 page

The Flux Redistributor

Glaser, P et al

Solar Energy, 7 (1963) No 1, p 12

6 pages 14 pictures 11 ref

High temperatures by concentrating the source radiation into the sample with an optical system. Although the highest temperatures occur at the center of the image, sharp temperature gradients are encountered a fractional distance from this point. Even if the material heated in the imaging furnace has a high thermal conductivity, these sharp temperature gradients persist within the material up to some distance below the surface. To reduce the magnitude of these temperature gradients, the flux over the sample must be made more uniform

New methods of manufacturing solar concentrators

Grilikhes, V.

Geliotekhnika, 4 (1968), No 3, p 44

10 pages - 8 pictures 10 ref.

Analysis of radiative heat exchange processes in cylindrical cavity type of solar power plants

Grilickes, V et al

Applied Solar Energy, 5 (1969) No 2, p 40

9 pages 2 tables 3 pictures 18 ref

The influence of overreflection and overradiation on the resultant radiation density distribution in cylindrical cavity receivers of high-temperature solar installations and their efficiency is discussed. It is shown that in the temperature limits of 800-1000°K, the main role is the reflection from cavity. Exact resolving results obtanied with computer are compared with data from approximated calculations. Some practical conclusions are given

Principles and methods for calculating solar high-temperature heat sources

Grilikhev, V.

Geliotekhnika, 9 (1973), No 3, p 36

9 pages 3 pictures 26 ref.

The basic principles for the calculation and selection of the working parameters of solar thermal power plants are discussed.

Investigation of the optical characteristics of the cone-and-column double reflector concentrator. Final report

Haylett, J.

Goodyear Aerospace Corp., Akron, Ohio, (1963)

124 pages

Theoretical considerations on performance characteristics of solar furnaces

Hiester, N et al

Jet Propulsion (1957) May, p 507

6 pages

The theoretical factors affecting the performance of the parabolic-type solar furnace are discussed

A tower top focus solar energy collector

Hildebrandt, A. and Vant-Hull, L.

ASME Meeting, (1973), Nov, Paper 73-WA/Sol-7

A receiver atop a 450-meter tower for collecting radiation reflected from a 2,6 km square field of mirrors. The col. is proposed to replace part of the fossil fuel burned in a conventional electric plant. An alternative approach is to use the energy to produce hydrogen through decomposition of water.

Reflexions sur la transformation heliothermique sous rayonnement concentre

Hima, A. and Pailharey, D.

COMPLES Bulletin No. 22, March (1972)

8 pages 8 pictures 5 ref.

Results of experiments.

Concentration of the radiation in a solar furnace

Hisada T et al

Solar Energy 1 (1957) No 4 p 14

Design problem of a solar furnace

Hukuo N and Mii H

Solar Ebergy 1 (1957) No 2-3 p 108

Calculation of the Radiant Flux Distribution in the Working Spot of a Radiation Furnace with a Three-Dimensional Emitter

Ishchenko, E. and Lopatina, G.

Geliotekhnika, 6 (1970), No 1, p 58

7 pages 4 pictures 3 ref.

Flux through the focal spot of a solar furnace

Jose P

Solar Energy 1 (1957) No 4 p 19

Theoretical Concentration and Attainable Temperature in Solar Furnaces

Kamada, O

Solar Energy, 9 (1965) No 1, p 39

9 pages 11 pictures 6 ref

By taking the brightness distribution of the solar disc into consideration, the characteristies of solar furnaces provided with a paraboloidal concentrator is theoretically treated

Shifting focus of film concentrators under wind load

Kamildjanova, A

Applied Solar Energy, 5 (1969) No 2, p 16

6 pages 4 pictures 8 ref

The effect of wind load on the optical characteristic of a solar concentrator was calculated. The reflector surface shape was determined and also the focal point shape described by points of intersection of infinite near parallel rays. If it is necessary to limit the focal point, the given formulae make it possible to calculate the required characteristics of a film concentrator

Fuel for solar furnaces

Kassander R

Solar Energy 1 (1957) No 2-3 p 44

General method for predicting efficiency of paraboloidal solar collector

Kaykaty, G.

Washington, Nasa, (1966), Dec

38 pages

Plane-glass mirror solar energy concentrators for concentrating sugarcane and palm juices

Khanna, M et al

J Sci Ind Res, 18A (1959) No 5, p 212

5 pages

The design, construction and working details of a plane-glass mirror solar energy concentrator are described

Investigating the spectral characteristics of radiation in focal arc furnaces
Kutateladse, S et al

Applied Solar Energy, 5 (1969) No 3

5 pages 4 pictures 5 ref

A modification of high-temperature emission spectra measurement technique in a focal arc furnace is suggested. The signals are being registered when a previously heated sample and carbon arc electrodes are cooling. Induced electronic system noises and those due to arc combustion instability are excluded by such a procedure. In spectral emission measurements the error does not exceed 3 %

A guide system for solar furnaces

Laszlo, T. et al.

Solar Energy, 2 (1958) p 18

3 pages 3 pictures 3 ref.

Image furnace techniques survey

Laszlo, T

Solar Energy, 7 (1963) No 4, p 195

7 pages 1 table

Image furnaces have found wide application recently in high temperature research and testing. A survey work was therefore initiated. All organizations known to be active in this field were requested to supply information about recent investigations, including new techniques and instrumentation and special problems countered. The first results of the survey is presented in tabulated form listing the location of the facility together with a few pertinent data

Etude sur les concentrations énergétiques données par les miroirs paraboliques de très grande surface

Le-Phat-Vinh, A

UN Conf on New Sources of Energy, Rome (1961)

Absorption von Sonnenstrahlung durch Plattenabsorber und konzentrierende Spiegel

Liebherr, T.

VDI-Zeitschrift, 106 (1964), No 12, p 14

3 pages

Design of a Powerful Solar Concentrator with Stationary Plane Mirrors

Linitskii, N.

Geliotekhnika, 3 (1967), No 4, p 21

8 pages 2 tables 7 pictures 2 ref.

Optimization of focusing solar-collector design.

Löf, G. and Duffie, J.

Journal of Engineering for Power, Transactions of the ASME, (1963) July,

8 pages

A set of general graphical relationships has been developed for establishing the receiver-reflector area ratio which will provide the maximum useful heat delivery from a focusing collector.

Determination of Focusing Properties of Solar Collectors by an Integral Formula

Mazur, P

Solar Energy, 6 (1962) No 1, p 23

4 pages 6 pictures

An analytical procedure is derived for determining the distribution of energy at the focal plane of a mirror such as is used in a solar collector system

Solar concentrators for high temperature space power systems

McClelland, D

ARS Space Power Systems Conf (1960)

Basic problems in the development of lightweight, high efficiency, solar concentrating mirrors for space power systems are discussed. Various concentrator and absorber configurations are compared both on the basis of idealized performance and in regard to performance degradation due to geometric errors

Solar concentrator design and construction

McCusker, T

Biennial Aerospace Power Systems Conference, 3RD, Philiadelphia, PA., (1964), Paper 64-733

8 pages

Solar furnaces: development at the N S W University of Technology

Milner, G

ANZAAS Congress Solar Energy Symposuim, Australia (1958)

Solar power, concentrated with a large high-grade concave paraboloidal mirror, has special advantages for heating materials to temperatures of 3000-4000° C, providing a "clean" method because a part only of a mass of homogeneous material need be heated to melting point

Solar Boilers or a new method of heating water without fuel

Mochenigo I

Chichentsa (1867) July 21

Research on heating water with solar energy (In Russia)

A high-flux low-temperature solar collector

Nevins, R and McNall, P

Heat Pip Air Cond, 29 (1957) No 11, p 171

6 pages

Solar collection efficiencies of 65 and 75 per cent were obtained on clear days with a focusing low-temperature solar collector

Solar furnace research in Japan

Noguchi, T.

Solar Energy, 3 (1959) No 3 p 44

17 ref.

3 pages

A brief description of solar furnace research in the Solar Research Laboratory of the Government Industrial Research Institute, Nagoya, is presented.

ɜegrain system modified for solar concentrators

Novikov, V. et al.

Geliotekhnika, 2 (1966), No 5, p 15

4 pages 2 tables 3 pictures 3 ref.

In order to establish the basic laws governing the correct choice of the parameters of a Cassegrain system, the authors have subjected them to analytical and graphic analysis and the results are given in this paper.

Approximate thermal calculations for cylindrical cavity-type collectors with liquid-metal heat transport medium

Obtemperanskii, F., Grilikhes, V.

Geliatekhnika 5 (1969), No 4, p. 18

6 pages 1 table 5 ref.

The authors have investigated the possibility of simplifying the thermal calculations for a cylindrical cavity-type collector, in which the liquid-metal coolant flows through annular channel formed by the ray-collecting wall and the outer housing.

A Plastic Fresnel Lens as a Solar Collector

Oshida, I.

ISES Conference in Paris, (1973).

6 pages 4 ref.

Merits and demerits of plastic Fresnel lenses. Results of experiments.

Analytic Method of Calculating the Radiation Flux Distribution in the Collectors of High Temperature Solar Installations

Poleuktov, V. and Grilikhes, V.

Geliotekhnika, 6 (1970), No 4, p 13

8 pages 4 pictures 4 ref.

Theoretical Investigation of the Effect of the Accuracy of the Concentrator Guidance System on the Operation of Solar Energy Devices

Rubanovich, I.

Geliotekhnika, 2 (1966), No 6, p 18

13 pages 1 table 7 pictures 9 ref.

Effect of tracking accuracy on the efficiency of solar de with paraboloidal concentrators

Rubanowich, M.

Geliotekhnika, 2 (1966), No 4, p 44

6 pages 4 pictures 7 ref.

Economic factors in furnace design

de la Rue R et al

Solar Energy 1 (1957) No 2-3 p 28

Calcul de l'énergie utile d'un système de concentration du rayonnement solaire et prevision de son fonctionnement repete pendant plusieurs années.

Sakas, J.

COMPLES Bulletin No. 22, March (1972)

10 pages 10 pictures

Mathematical analysis.

Kinematic Properties of Certain Suntracking Systems

Shermazanyan, T. et. al.

Geliotekhnika, 6 (1970), No 3, p 28

6 pages 3 pictures 4 ref.

Stationary mirror systems for solar collectors

Tabor, H.

Solar Energy, 2 (1958) p

7 pages 2 tables 6 pictures 2 ref.

Solar geometry

Solar concentration power and optimization of the cavity type heater for a solar source

Taeakoff, W.

Raumfahrtforschung 13 (1969), No 3, p 107

5 pages

Effect of Longitudinal Target Defocusing on the Power Characteristics of Solar Reflector Systems

Teplyakov, D.

Geliotekhnika, 3 (1967), No 1, p 10.

7 pages **3 pictures** **8 ref.**

Application of the theory of similarity to the investigation of solar engineering systems with concentrators

Teplyakov, D.

Geliotekhnika, 3 (1967), No 6, p 34

11 pages 1 table 4 pictures 19 ref.

Generalization of initial energy characteristics of paraboloid solar power plants under conditions of angular defocusing

Teplyakov, D

Applied Solar Energy, 5 (1969) No 1, p 25

6 pages 1 table 2 pictures 8 ref

The paper states the results of employing criterion system of reference, radiant fluxes and their densities, as well as inaccurate following, for generalising the detailed power characteristics of paraboloid solar devices under statical conditions of inaccurate sun-following. The author proposes the simplest approximation of the specific relationship under these conditions. It is also proposed to base more detailed study on mean numerical values of the distributions used in the theory of probability

Aberration theory of the optical characteristics of paraboloidal concentrators

Teplyakov, D.

Geliotekhnika 7 (1971), No 5, p 34

9 pages 1 table 2 pictures 7 ref.

Concerning a system of tolerances for high-temperature solar devices.

Teplyakov, D.

Geliotekhnika, 7 (1971), No 3, p 17

11 pages 2 tables 4 pictures 11 ref.

Concentrating Power of Solar-Energy Paraboloids in Various Spectral Ranges
Teplyakov, D.

Geliotekhnika, 9 (1973) p 20

7 pages 2 tables 3 pictures 13 ref.

Most research on concentration of solar radiation has been concerned with the concentrating power of mirrors for the integral solar emission. This is quite natural, since high-temperature solar units as a rule have collectors that are integral over the spectrum solar furnaces, semiconductor and thermoemissive converters. In many cases, however, we must know the distribution of monochromatic radiation fluxes at the focal spot. Special note should be taken of a new area associated with utilization of solar concetrators for "solar pumping" of lasers. The possible qualitative influence of mirrorsurface finish on such processes. The distribution of spectral-emission parameters over the sun's disc, the spectral characteristics of solar radiaion, an the spectral reflecting power of a mirror concentrator are discussed.

Determination of the Effect of Inaccurate Angular Solar Tracking in a Solar-Energy Device

Teplyakov, D. and Zakhidov, R.

Geliotekhnika, 4 (1968), No 5, p 29

10 pages 4 pictures 6 ref.

The method is considered of an experimental investigation of the influence of nonexact orientation of solar installation on the receiving characteristics and on energy performance in it. Calculation relations were received that are characteristic for the considered method and corrections are given which one has to consider when treating the experimental data. General practical recommendations are given.

Solar furnaces for high-temperature processing

Trombe, F

Solar Energy, 7 (1963) No 3, p 100

8 pages 13 ref

The uses of solar energy described in the report involve optical apparatus giving high concentrations of the energy received from direct solar radiation, concentrated on a relatively small surface or in a relatively small volume and so resulting in high local temperatures. Summary of papers given at UN Conf on New Sources of Energy, Rome (1961)

Concentration d'énergie solaire pour la réalization de très hautes températures

Trombe, F et al

Annales de Chemie, 12th ser, 2 (1947) p 385

35 pages

Concentration of solar energy for the realization of very high temperatures; complete history is given of the various attempts to utilize solar radiation; modern solar accumulators are described; contains a bibliography

Problems of solar energy concentration

Umarov, G.

Geliotekhnika, 3 (1967), No 5, p 32

20 pages 6 pictures 115 ref.

Low-Weight Film Concentrators

Umarov, G. et al.

Geliotekhnika, 6 (1970), No 1, p 40

3 pages 3 pictures 4 ref.

Design of a tubular heat collector for a solar power installation with a prabolocylindric concentrator

Umarov, G.

Geliotekhnika, 10 (1974), No 1, p 44

4 pages 2 pictures 2 ref.

A method for determination of the basic thermal parameters of a smooth-wall tubular heat exchanger for use as the heat collector in a solar power installation with a parabolocylindric concentrator is developed.

Film tension in film concentrators

Umarov, G. and Gafurov, A.

Geliotekhnika, 4 (1968), No 3, p 54

3 pages 2 pictures 4 ref.

Test results for suction type of film concentrators

Umarov, G and Gafurov, A

Applied Solar Energy, 5 (1969) No 1

3 pages 2 pictures 3 ref

Experimental investigation of film pump-put concentrators of 2·7 and 5 m diam. are described. The mean value of integral coefficient of reflection is determined, at 0·76. As the diameter of film-pump-out concentrators increases, their stability against wind load decreases. This fact make it impossible to manufacture film concentrators of great diameter

A proposed long- focus vacuum film concentrator

Umarov, G. et al.

Geliotekhnika, 1 (1965), No 4, p 22

5 pages 3 tables 3 pictures 2 ref.

An investigation of a long-focus vacuum film concentrator is presented. Following factors must be taken into account in fabricating the individual elements of a large concentrator. The metallized film should be secured to an optically precise rim and the degree of prestretching must be taken into account.

Rotation Method of Manufacturing Paraboloidal Collectors

Umarov, G. et al.

Geliotekhnika, 2 (1966), No 6, p 53

3 pages 3 pictures 3 ref.

Relationship between the air pressures in the anchor ring and the chamber of a film concentrator

Umarov, G. et al.

Geliotekhnika, 3 (1967) , No 6, p 51

5 pages 3 pictures 6 ref.

Changes in the reflective properties of aluminum mirrors exposed to the action of heat in a vacuum

Umarov, G. et al.

Geliotekhnika, 7 (1971), No 3, p 75

3 pages 2 pictures 2 ref.

Comparative Characteristics of Solar Furnace Power Regulators

Vartanyan, A.

Geliotekhnika, 2 (1966), No 6, p 12

6 pages **5 pictures** **5 ref.**

Protection of mirror surfaces obtained by the transfer method

Vil'kova, S. et al.

Geliotekhnika, 2 (1966), No 5, p 29

3 pages 3 pictures 10 ref.

Principles of solar concentrators of a novel design

Winston, R.

Solar Energy, 16 (1974), No 2, p 89

7 pages 2 tables 10 pictures 6 ref.

A new principle for collecting and concentrating solar energy, the ideal cylindrical light collector, has been invented.

A high-speed cylindrical solar-water heater

Vinze, S.

Solar Energy, 13(1971), No 3, p 339

6 pages 2 tables 3 pictures

3.3.1 GEOMETRISK FORM

Design and development directions

Electrical Design News (1961) May

5 pages

Parabolic reflectors

Supplement to article by Umarov, G. et al., "Calculating the optimal dimensions of reflecting elements of a Mosaic concentrator"

Geliotekhnika, 10 (1974), No 2, p 79

3 pages 1 table 1 picture 6 ref.

Energy concentrator assembled from circular glass facets

Alimov, A. et al.

Geliotekhnika, 9 (1973), No 5, p 58

3 pages 2 pictures 3 ref.

An investigation of a solar energy concentrator consisting of circular glass facets are discussed and the result are compared with the theroretical curve for the major axis of the ellipse forming the solar image.

Design of Conical Solar Concentrators and Targets

Annaev, A.

Geliotekhnika, 3 (1967), No 1, p 55

4 pages 1 table 2 pictures 2 ref.

Energy trapping characteristics of noncircular receivers in paraboloidal solar devices

Aparisi, R. et al.

Geliotekhnika, 4 (1968), No 2, p 18

7 pages - 4 pictures 7 ref.

Simplified Analytic Treatment of Reflected-Energy Field in Paraboloidal Solar Collectors

Aparisi, R. and Kolos, G.

Geliotekhnika, 4 (1968), No 6, p 3

8 pages - - 9 ref.

The proposed solution permits finding, with the aid of simple calculation, the quantitative value of energy density in focal and other planes that are normally orintated to the optical paraboloid axis. The results coordinate with experimental measurements; this makes possible the use of the formulae for calculations.

Concentration Capacity of a Paraboloidal Mirror with Angular Defoucusing

Aparisi, R. and Kolos, G.

Geliotekhnika, 6 (1970) No 5 p 15

7 pages - 4 pictures 4 ref.

Method for manufacturing parabolic mirrors

Archibald P

Solar Energy 1 (1957) No 2-3 p 102

A stationary solar energy concentrator

Archibald, P.

Solar Energy, 3 (1959) No 3 p 65

2 pages

It is shown that a parabolic reflector having a short focal length will keep the sun's rays focused within a small area for several hours without the employment of a heliostat mechanism.

Parabolocyndrical concentrator for light pulse irradiation

Baibutaev, K and Kakharov, M

Applied Solar Energy, 5 (1969) No 3

3 pages 1 picture

Concentrated photoimpulse irradiation on agriculture seeds is characterized. The design of a parabolocylindrical concentrator is described and calculated and experimental data are given upon the concentration degree

Paraboloidal mirrors as elements of solar energy concentrators

Baranov, V.

Geliotekhnika, 2 (1966), No 3, p 11

4 pages 5 pictures 9 ref.

Radiation energy distribution on reflection from mirrors

Baum, I

Geliotekhnika, 10 (1974), No 1, p 37

7 pages 5 pictures 5 ref.

The author report general integral relationship representing a number of solutions of theoretical problems which are accurate and are valid for a broad range of variation of the variables.

Designing solar furnaces for specific performance

Bliss R

Solar Energy 1 (1957) No 2-3 p 55

Performance design of parabolic solar furnaces

Bliss R

Solar Energy 1 (1957) No 1 p 22

Plastic-replica mirror segments for a solar furnace

Bolin, J. et al.

Solar Energy, 5 (1961) p 99

4 pages 2 tables 3 ref.

A paraboloidal mirror, built up from 162 segments. In order to avoid distortion of the final surface, due to shrinkage and other causes, threee successive coatings of resin are applied to a stout cast-aluminum backing plate.

Graphic method of calculating conical "focons"

Braslavskaya, M. and Baranov, V.

Geliotekhnika, 4 (1968), No 4, p 26

5 pages 5 pictures 7 ref.

The work deals with parameters calculation of phocons used for concentrating the density of light fluxes from different light sources including the Sun.

Flux distribution near the focal plane

Brenner J et al

Solar Energy 1 (1957) No 2-3 p 94

Cylindrical concentrators with an auxiliary reflector

Buzin, E.

Geliotekhnika, 4 (1968), No 3, p 35

9 pages 2 pictures 1 ref.

Conical concentrator with point-focusing secondary reflector

Buzin, E.

Geliotekhnika, 4 (1968), No 2, p 25

7 pages 2 pictures 3 ref.

Relationship between the surface shape of a heater-receiver and the concentration ratio for a parallelray flux

Buzin, E.

Geliotekhnika, 2 (1966), No 4, p 13

12 pages 2 tables 2 pictures 3 ref.

Design of a quartermaster solar furnace

Colton E

Solar Energy 1 (1957) No 2-3 p 16

Image quality and use of the US Army quartermaster solar furnace

Colton, E et al

UN Conf on New Sources of Energy, Rome (1961)

26 pages

The solar consists of a movable array of flat mirror segments, called the heliostat, which reflects solar radiation horizontally, and a fixed array of concave mirror segments, called the concentrator, which receives the reflected radiation and forms the convergent beam. By properly aligning the individual segments, a composite solar image can be formed at a point on the system axis inside the test chamber, a working enclosure and control center for the entire system

Solar focusing reflectors without glass

Daniels, F.

In: Proceedings of the Mont Louis Solar Energy Symposioum, (1958)

Some remarks on the design of a solar furnace and the calculation of concentration using spherical-mirror elements

Foote, J. and Adney, J.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 1

97 pages

The problem of replacing a single paraboloidal condensor by an approximate mirror system for a large solar furnace.

A new collector of solar radiant energy - theory and experimental verification

Francia, G

UN Conf on New Sources of Energy, Rome (1961)

24 pages

A frustum of a cone with its axis pointing in the direction of the sun and a vertex angle equal to the apparent diameter of the sun is placed in front of a classic blackbody; it does not limit the incoming energy. On the other hand, provided its walls are black and insulated, the frustum does limit the reradiated energy. The analytic development demonstrates that, under extreme conditions, at the limit, the reradiated energy is reduced to that contained in the solid angle occupied by the incoming energy

The design of solar concentrators using toroidal spherical, or flat components

Giutronich, J

Solar Energy, 7 (1963) No 4, p 162

5 pages 2 tables 5 pictures 2 ref

Some of the design data associated with the use of toroidal, spherical, and flat mirror components. The results indicate that most design requirements can be efficiently fulfilled by the use of these approximations

Algorithm for the statistical solution of the problem of radiant flux distribution in the receivers of solar devices equipped with paraboloidal concentrators

Grilikhes, V.

Geliotekhnika, 2 (1966), No 4, p 25

10 pages 4 pictures 7 ref.

Derivation of the equation of irradiance distribution in the focal plane of paraboloida solar concentrators

Grilikhes, V. and Zakhidov, R.

Geliotekhnika, 7 (1971), No 4, p 9

5 pages 2 pictures 5 ref.

Simple Sheet-Metal Concentrating Reflectors

Harrison, P.

ISES Conference in Paris, (1973)

9 pages 2 tables 3 pictures 3 ref.

A good approximation to cylindrical parabolic reflector is obtained by elastically flexing a metal sheet.

Method for fabricating paraboloidal mirrors

Hass, G and Jenness, J

J Opt Soc Am, 48 (1958) No 2, p 86

2 pages

Paraboloidal mirrors have been made, using a convex plastic paraboloid formed by centrifugal casting on a mercury surface as the master for fabricating plastic replica mirrors. Mirrors with disk of confusion diameters less than 1 mm have been obtained by the process

Theoretical performance of cylindrical prabolic solar concentrators

Hassan, K. and El-Rafaie

Solar Energy, 15 (1973)

Application of a CPSC in intermediate temperature range, Studies effects of different parameters, and determines energy available at focal plane and its intensity distribution. Performances obtained are best possible and can be used as standard of reference for concentrators.

Theoretical performance of cylindrical parabolic solar concentrators

Hassan, K. and El-Refaie, M.

Solar Energy, 15 (1974), No 3, p 219

Design of a heliostat mirror for a solar furnace

Jose P

Solar Energy 1 (1957) No 2-3 p 23

The design of a heliostat mirror for a solar furnace

Jose, P.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 199

20 pages

A general equation is derivedfrom which the shape of the mirror surface for a heliostat may be determined. It is shown that the separation of the heliostat mirror from the collecting area is a critical factor.

The design of the condenser of a solar furnace using non-parabolic elements

Jose, P.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 219

42 pages

The flux through the focal spot of a solar furnace

Jose, P.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 261

43 pages

The flux distribution through the focal spot of a solar furnace.

Film Concentrator with Concentric Circular Joints

Kamil'dzhanov, A.

Geliotekhnika, 6 (1970), No 1, p 32

8 pages 3 tabels 2 pictures 7 ref.

Solar concentrator surface contour.

Keller, B.

IEEE Transactions on Aerospace, Vol. AS-3 (1965), June, p 60

7 pages

Analyzer for defining 3- D solar concentrator surface contour

Estimated precision of the reflecting surface of a paraboloidal concentrator for different angular sizes of the radiation source

Krasina, E. et al.

Geliotekhnika, 10 (1974), No 1, p 31

6 pages 4 pictures 9 ref.

Temperature and flux vs. geometrical perfection

Laszlo T

Solar Energy 1 (1957) No 2-3 p 78

Sunshine on tap - the focon

Litynski, Z.

Foreign Sci. Bull., 2 (1966), No 9, p 1

20 pages

Review of russian accomplishments in fiber optics

Effect of transverse receiver defocusing on the energy characteristics of paraboloidal solar devices

Matveev, V. and Teplyakov, D.

Geliotekhnika, 2 (1966), No 1, p 12

6 pages 5 pictures 7 ref.

Manufacture of parabolic concentrators by the electroformed replica method

Nabiullin, F. et al.

Geliotekhnika, 2 (1966), No 3, p 28

6 pages 4 pictures 8 ref.

Adjustment of a concentrator with parabolic facets

Novicov, V and Skripkar, L

Applied Solar Energy, 5 (1969) No 1, p 20

5 pages 3 pictures 5 ref

An adjusting method is described for a concentrator mirror made of parabolic facets. The possibility of adjusting a facet mirror, made for a Cassigren concentrator, is discussed. The optimal facet zones are determined giving tne maximal light flux

Determining the Characteristics of the Radiation Filed in the Focal Plane of Parabolic Solar Concentrators

Poluektov, V. and Grilikhes, V.

Geliotekhnika, 4 (1968), No 6, p 20

8 pages 3 pictures 8 ref.

A simplified computation method for radiant flux density distribution in the perifocal area of parabolic mirrors is proposed. The deduction of the basic computation relations for the perifocal area is given. Calculation results are also given. Comparative analysis are performed with results deduced by other known methods.

Une cuisiniere solaire cylindro-parabolique

Prata, A

UN Conf on New Sources of Energy, Rome (1961) In French

Determination of the optimal dimensions of high-temperature cylindrical-cavity solar energy receivers

Rubanovich, J.

Geliotekhnika, 1 (1965), No 4, p 11

12 pages 1 table 6 pictures 17 ref.

Objective estimation of the accuracy of the reflecting surfaces of the paraboloidal concentratrators of high-temperature solar devices

Rubanovich, I.

Geliotekhnika, 3 (1967), No 6, p 26

8 pages 3 pictures 9 ref.

3.104 *Elliptical paraboloid solar cooker*

Sakr, I.

ISES Conf. Paris, (1973)

7 pages 2 tables 3 pictures

Fabrication of paraboloidal mirror segments for a large solar furnace

Sakurat, T and Shishido, K.

Appl. Optics, 3 (1964) p 813

4 pages

The investigation of high temperature solar collector surfaces

Schmidt, R et al

Quarterly Progress Report III, Honeywell Research Center (1962) Nov 1 (1963) Feb 1

22 pages

Effect of frontal reflection on radiant flux formation by back-reflection paraboloidal mirror concentrators

Shakhparonyan, V. and Shermazanyan, T.

Geliotekhnika, 7 (1971), No 3, p 28

7 pages 1 table 4 pictures 4 ref.

Calculation of the Concentration of Energy at Points Outside the Focal Spot of a Parabolic Condensor

Simon, A.

Solar-Energy, 2 (1958) p 22

3 pages 2 tables 2 pictures 1 ref.

Calculation of the Concentration of the Solar Radiation Through the Focal Spot of a Parabolic Mirror

Simon, A.

Solar Energy, 2 (1958) p 25

5 pages 6 tables 4 ref.

Analysis of the energy per unit area falling on the focal spot from a parabolic mirror. Comparison with older works.

The proof of certain laws of optics used in solar furnace calculations

Simon, A.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 187

11 pages

Several laws of optics assumed without proofs in a previous report dealing with calculations on the solar furnace are proved in detail.

Calculation of the concentration of energy at points outside the focal spot of a parabolic condensor

Simon, A.

Solar Energy, 3 (1959) No 3, p 67

3 pages 3 tables 8 pictures 1 ref.

An analysis of the distribution of intensity and of energy falling outside of the circular projection of the cone of reflected radiation coming from all infinitesimal areas of the surface of a paraboloidal mirror. The results given in a previous paper under the same title are corrected.

Some Experience with a New System of Solar Energy Concentration

Spyridonos, A.

ISES Conference in Paris, July, (1973)

9 pages - 2 pictures 9 ref.

Successive reflective surfaces covered by an envelope paraboloid surface.

A solar strip concentrator

Szulmayer, W.

Solar Energy, 14 (1973), No 3, p 327

9 pages 5 pictures 4 ref.

A solar concentrator, capable of focusing solar heat on a linear target viz. a rod or a water pipe, consists of a transparent extruded plastic strip.

3.106

Effect of central shading on the energy characteristics of paraboloidal mirrors

Teplyakov, D.

Geliotekhnika, 2 (1966), No 1, p 18

7 pages 5 pictures 9 ref.

Concentration ratio of paraboloidal solar concentrators deduced from geometric optics

Teplyakov, D.

Geliotekhnika, 7 (1971), No 6, p 10

16 pages 2 tables 6 pictures 13 ref.

Analytic determination of the optical characteristics of paraboloidal solar energy concentrators

Teplyakov, D.

Geliotekhnika, 7 (1971), No 5, p 21

3 pages 5 pictures 9 ref.

Optical and Energetic Aspects of Radiation Concentration in High-temperature Solar Units

Teplyakov, D.

Gelioteknika, 9 (1973) p 21

8 pages 1 picture 10 ref.

Geometric-optics calculations can be carried out for solar-power concentratiors of any geometry. In this sense, although quite cumbersome, they are extremely universal. They do not involve the various sorts of hypotheses and assumptions inherent in the usual photometric computational models. Thus the results of geometric-optics calculations of various concentrator energy characteristics can be treated as a sort of "standard", necessary for testing and validating other models.

Similar generalization in studies of the angular defocusing regimes of paraboloidal solar devices

Teplyakov, D. and Poluektov, V.

Geliotekhnika, 4 (1968), No 2, p 36

7 pages - 5 pictures 10 ref.

Heliotechnical Collectors on the Base of Paraboloid of Revolution: Optical Calculation and Energetic Possibilities

Teplyakov, D. and Aparisi, R.

ISES Conference in Paris, July, (1973)

14 pages - 4 pages 1 ref.

Comparative optic-geometrical and energetic calculation of classical continuous paraboloid, Fresnel and Slysarev collectors.

Defocusing Characteristics of a Solar Device with a Crucial Cavity Receiver

Teplyakov, D. et al.

Geliotekhnika, 4 (1968), No 5, p 23

6 pages - 3 pictures 9 ref.

The regularities of energy input to the walls of a cubical cavity receiver, depending on the magnitude and direction of the angular disorientation of the concentrator, were found experimentally. For some walls that were not in the aiming position, these relationsships were established to have an extremum (maximum). The experimental data obtained were processed in a criterial system.

Effect of Central Shading and Longitudinal Defocusing of the Receiver on the Power Characteristics of a Paraboloid

Teplyakov, D. et. al.

Geliotekhnika, 6 (1970) No 5 p 8

7 pages - 3 pictures 5 ref.

Energy density in the focal spot deduced from an "aberrogram"

Tver'yanovich, E.

Geliotekhnika, 9 (1973), No 6, p 12

6 pages 3 pictures 6 ref.

The energy distribution from particular aberrograms without necessarily demanding that the distribution is axially symmetric is determined.

3.108

Four solaire pour la rélisation de très hautes températures

Trombe, F et al

Académie des Sciences. Comptes Rendus, 223 (1946) Aug p 317

3 pages

Solar furnace for very high temperatures; describes method of concentrating solar radiation by means of parabolic mirror; application to fusion of oxides and metals discussed

Sequence of calculations for the determination of the energy density distribution in the focal plane from "aberrograms".

Tver'yanovich, E.

Geliotekhnika, 9 (1973), No 6, p 18

5 pages 1 table 3 pictures 1 ref.

A six-sided honeycomb film-type concentrator

Umarov, G.

Geliotekhnika, 1 (1965), p 66

3 pages 1 picture 5 ref.

The construction of a six-sided honeycomb concentrator is described.

Investigation of the surface shape of paraboloidal mirrors made by the rotation method.

Umarov, G.

Geliotekhnika, 1 (1965), No 6, p 12

7 pages 2 pictures 6 ref.

This paper deals with paraboloidal reflectors made from synthetic resins by the rotation method, which does not require expensive equipment and polishing.

Geometry of film concentrators with radial seams

Umarov, G.

Geliotekhnika, 4 (1968), No 1, p 37

5 pages 1 table 3 pictures 1 ref.

Investigation of two-mirror systems consisting of a paraboloidal mirror and an inflated-film reflector

Umarov, G. and Alavutdinov, N.

Geliotekhnika, 4 (1968), No 3, p 62

5 pages 2 tables 2 pictures 3 ref.

*Paraboloc*ylindric *Concentrator with an Auxiliary Reflector*

Umarov, G. and Alavutdinov, D.

Geliotekhnika, 6 (1970), No 3, p 23

5 pages - 3 pictures 2 ref.

Concentrators with focal image in form of ring

Umarov, G., Sharafi, A.

Geliotekhnika 5 (1969), No 4, p. 24

4 pages 1 table 2 pictures 1 ref.

Calculation of the Area Space Factor for an Umbrella-Type Concentrator

Umarov, G. and Sharafi A.

Geliotekhnika 6 (1970) No 5 p 64

3 pages 1 picture 2 ref.

Calculation of faceted solar concentrators based on a paraboloid of revolution

Umarov, G. and Sharafi, A.

Geliotekhnika, 3 (1967), No 6, p 57

6 pages 1 table 2 pictures 3 ref.

3.110

Geometry and optical charcateristics of a hexagonal reflecting-film membrane.

Umarov, G. et al.

Geliotekhnika, 1 (1965), No 3, p 19

11 pages 2 tables 15 pictures 3 ref.

Large concentrators should be sectionalized and the most efficient construction for a sectional concetrator is the honeycomb type with hexagonal facets. The authors discuss the need of knowing the geometry of the concave surface of the film to be able to determine the optical characteristics of the facets.

Manufacture of precision paraboloidal surface by the rotation method.

Umarov, G. et al.

Geliotekhnika, 2 (1966), No 3, p 66

3 pages 1 picture 4 ref.

Noncontact Method of Measuring the Shape of Inflated Concentrator Surfaces

Umarov, G. et al.

Geliotekhnika, 3 (1967), No 2, p 42

3 pages 3 pictures 3 ref.

Study of Circular and Hexagonal Vacuum Film Facets for Solar Concentrators

Umarov, G. et al.

Geliotekhnika, 3 (1967), No 1, p 17

4 pages 1 table 3 pictures 3 ref.

Deformation of wedge plate in paraboloid frame

Umarov, G et al

Applied Solar Energy, 5 (1969) No 3

5 pages 3 pictures 2 ref

Deduction is made of formulae for the determination of glass wedge plate shape difference from parabolic, in the case when they are fastened in several points upon the meridian on a parabolic rigid substrate. Calculation is given based on these formulae. The results are used for the manufacturing of a 5-m diameter concentrator

Two-Mirror Solar Energy Concentrators Using Nickel Paraboloidal Reflectors

Umaraov, G. et al.

Geliotekhnika, 6 (1970), No 6, p 18

3 pages **2 pictures** **7 ref.**

Concentrators composed of paraboloidal glass facets

Umarov, G. et al.

Geliotekhnika, 7 (1971), No 4, p 14

3 pages 1 table 1 picture 3 ref.

Determining the Geometric Parameters of two-mirror Solar Energy Systems

Umarov, G. et al.

Geliotekhnika, 9 (1973) p 13

7 pages 3 pictures 1 ref.

The first stage in the development of high-temperature solar-energy techniques consisted chiefly in determination of the possibilities of solar furnaces. These have now become established in research practice as working tools with which to attack problems in high-temperature thermophysics.
The operation of solar furnaces involves the need for constant tracking of the sun, and this imposes definite restrictions on the radiation collector. There is therefore a rising interest in two-mirror systems. The authors have attempted to obtain a general differential equation connecting the shapes of the primary and secondary mirrors. The equation obtained can serve as a basis for selecting the optimal parameters of such a system.

Determing the geometric parameters of a solar-power element consisting of a hyperboloid and paraboloid of revolution

Umarov, G. et al.

Geliotekhnika, 9 (1973), No 4, p 39

5 pages 5 pictures

The design of systems consisting of two reflecting surfaces is complicated by the necessity to choose the types of surfaces and by the determination of their parameters. The authors have derived several formulas that make it possible to determine the geometric parameters of the hyperboloidal counterreflector of a two-mirror system and to construct a nomogram that makes it simple to choose the counterreflector parameters for any principal-mirror dimensions without cumbersome mathematical operations.

3.112

Calculation of optimum dimensions of reflecting elements of a mosaic concentrator

Umarov, G. et al.

Geliotekhnika, 9 (1973), No 5, p 20

4 pages 1 table 1 picture

The fabrication of single-piece paraboloidal mirrors presents major technologie difficulties and, therefore large concentrators are more economically assembled from individual reflecting elements. One solution of this kind is the mosaic concentrator whose individual elements take the form of flat mirrors. How this flat mirrors should be placed on a approximately paraboloidal surface to get a good-qaulity focal spot are discussed.

Illuminance distribution in a reflected beam

Umarov, G. et al.

Geliotekhnika, 9m (1973), No 5, p 31

8 pages 4 pictures 9 ref.

Interest in the distribution of energy density in the focal spot and in the nonfocal regions of paraboloidal concentrators has been stimulated by the requirements of solar technology. These distributions are affected by the macro- and microimperfections on the concentrator surface, and the authors have investigated the effect of macroimperfectious.

Experimental determination of optimal size of a heat exchanger for solar furnaces with large aberrations

Vannucci, S.

Solar Energy, 15 (1973), No 1, p 51

Geometrical interpretation of a mathematical model of the energy distribution in the focal plane of a paraboloid

Vartanyan, A.

Geliotekhnika, 2 (1966), No 5, p 10

5 pages 3 pictures 9 ref.

Optics in devices utilizing solar energy

Veinberg, V

Gosudarstvennoe Iedatelystvo Oboronny Promyshlennosti, Moscow (1959)

235 pages

A high- speed cylindrical solar water heater

Vincze, S.

NZ Eng, 26 (1971), No 3, p 78

4 pages

Calculation of solar radiation on a cylindrical surface

Yakubov, Ya. et al

Geliotekhnika 8 (1972), No. 3, p. 52

Calculation of the energy distribution in the radiation field of reflector-type solar energy devices.

Zakhidov, R.

Geliotekhnika, 1 (1965), No 5, p 11

8 pages 5 pictures 16 ref.

The purpose of the work, presented in this paper, was to devise a method of calculation which would permit the solution of important practical problems by determining the characteristics of the radiation field at each point.

Design of a solar system consisting of two paraboloids of revolution

Zakhidov, R. and Kirgizbaev, D.

Geliotekhnika, 9 (1973), No 5, p 24

7 pages 5 pictures 3 ref.

There are obvious advantges in using solar installations consisting of a paraboloidal concentrator and a counter reflector which takes the heated region outside the limit of the concentrator and the authors have developed an analytic method for two-mirror systems which simplifies the mathematical operations and enables them to vary the sizes and focal parameters of both mirrors in a broad range.

3.114

A Method for Determining Local Radiant Fluxes in Cavity-Type Radiation Collectors

Zakhidov, R. and Teplyakov, D.

Geliotekhnika, 4 (1968), No 6, p 16

6 pages - pictures 8 ref.

Departing from the physical concept of a radiation field in a diathermal environment, the relationships which enable the proposal of new means for determining local radiation fluxes have been obtained. The principal distincitive feature of the proposed method is the possibility to establish local densities of the incident radiant fluxes in cavity receivers, by measuring the total radiant flows through normal cross-sections of the cavity. The method may be applicable to cavities of various shapes (cylinder, cone, sphere, etc.).

3.3.2 MATERIAL

Flexible reinforcement of polyethylene terephthalate film for use in solar energy concentrators

Aizenshtat, E. et al.

Geliotekhnika, 2 (1966), No 4, p 69

3 pages 2 tables - 4 ref.

Determining the temperature of specimens subjected to pulsed sunlight.

Akopyan S, Avakyan V.

Izv. Akad, Nauk Arm SSR. Ser. Tekh. Nauk (USSR) Journal paper (1972) No 5 p 43.

Accelerated aging tests on polymers for use in solar energy conversion.

4 pages

Radiation properties of Mo and Nb over the range 400-1500°C

Baranov V et al

Applied Solar Energy, 5 (1969) No 3

3 pages 2 pictures 6 ref

Radiation characteristics (L and E) of No and Nb over the temperature range 400-1500°C are considered. Results are given of experimental works on Mo and Nb absorbing characteristics determination for different degrees of sample surface cleaning, with reference to incident solar radiation as well as emissivity of the materials. Measurements were made by unsteady-state methods on an electron are device with paraboloid mirrors

Flat flexible-film concentrator surfaces

Buzin, E.

Geliotekhnika, 2 (1966), No 3, p 20

6 pages 1 table 1 picture 5 ref.

3.116

Temperature fields of solids heated by solar concentrators

Cobble, M

Solar Energy, 7 (1963) No 3, p 134

4 pages 7 pictures 1 ref

The steady-state temperature distribution is solved for four target solids under the assumptions that the energy rate per unit area at the target surface is coordinate dependent, and that there are losses to the surroundings at the exposed target surface. A dimensionless external temperature modulus is plotted vs. a dimensionless coordinate for various Nusselt numbers, using the assumed target energy rate per unit area

Solar focusing collectors of plastics

Daniels, F and Breihan, R

UN Conf on New Sources of Energy, Rome (1961)

Plastics for focusing collectors

Duffie J et al

Solar Energy 1 (1957) No 4 p 9

Plastics in solar stoves.

Duffie, J. et al.

Modern Plastics, 35 (1967) Nov., p 124, 260

5 pages

Initial-Tension Determination for Shell of Solar Concentrator

Faizullaev, A.

Geliotekhnika, 9 (1973) p 27

5 pages 1 table 2 ref.

Development of defects in reflecting coatings exposed to high temperatures

Gaziev, U. et al

Geliotekhnika 8 (1972), No. 4, p. 53

3 pages 2 pictures 2 ref.

The paper describes the effect of high temperature on an aluminum mirror coating with a metal oxide surface protective film.

Research and development of Magnesium/Aluminium electroforming process for solar concentrators. Final report

Guidotti, R. et al

Electro-Optical Systems, Inc., Pasadena, Calif., (1967), May

89 pages

Optical constants of gold films and luminous transmittance into the semiconductor for Au-GaAs and Au-GaP photocells in the 254-654 nm wavelength range

Gutkin, A. et al

Geliotekhnika 8 (1972), No 1, p. 19

6 pages 4 tables 2 pictures 15 ref.

The value of the effective refraction and absorption for gold films t 10-100 nm is calculated on the basis of data for the refraction and transparency of the "gold coating-quartz" system in the 254-654 nm wavelength range. These parameters characterize films obtained during vacuum evaporation (10^{-5} mm Hg column) with deposition rate 0.05-0.5 nm per second.

Surfaces of Controlled Spectral Absorptance (Nickel-Nickel Black Thin Absorbing Film)

Harris, J. et al.

National Physical Lab. of Israel, Jerusalem (1964) Sep.

7 pages

Thermal Emissivity and Solar Absorptivity of Aluminium Coated with Double Layers of Aluminium Oxide and Silicon Oxide (Fabrication Techniques and Performance Measurements)

Hass, G.

Applied Optics, Vol. 10 (1971) Jun. p.1296

3 pages – 7 ref.

Effect of infrared radiation on the properties of plastic films

Klein, G. et al.

Geliotekhnika, 1 (1965), No 1, p 39

5 pages 6 pictures 5 ref.

3.118

Effect of heat treatment on some characteristics of Bi_2Te_3+Bi_2Se_3 and Bi_2Te_3 + Sb_2Te_3 ternary alloy

Kulagin, A. and Erzin, N.

Gelioteknhika, 2 (1966), No 4, p 8

5 pages 2 tables 3 ref.

Mechanical tests of laminated plastics in solar furnaces

Kuzokov, E. et al

Geliotekhnika 8 (1972), No. 4, p. 47

6 pages 3 pictures 11 ref.

The paper describes the experimental technique which has been developed to test the mechanical properties of thermal insulating plastics under highly-intensive surface heating produced by solar energy concentrators.

High temperature research in a solar furnace. I. On the fusion of metal oxides

Noguchi, T et al

Rept Govt Ind Res Inst Nagoya 6 (1957) Nov, p 663

High temperature research in a solar furnace. II. On the fusion of metal oxides

Noguchi, T et al

Rept Govt Ind Res Inst Nagoya, 8 (1959) No 1, p 61 (In Japanese)

7 pages

A study on the fusion of metal oxides

The dawn of solar metallurgy

Presnyakov, A.

National Lending Library for Science and Technology, Boston Spa, England. Transl. into English from Pravda (Moscow) 1972.

3 pages

Developments in vacuum diffusion welding methods and metallurgical applications of solar energy.

Solar Energy Thermal Converters Fabricated by Chemical Vapor Deposition

Seraphin, B. and Wells, V.

ISES Conference in Paris, (1973)

9 pages 7 pictures 5 ref.

A new method of fabricating solar collector surfaces in which the high infrared reflectance of a metallized substrate reduces the black body emittance.

Measurements of the emissivity of materials at high temperatures

Shcherbina, D. et al.

Geliotekhnika, 9 (1973), No 5, p 53

5 pages 4 pictures 9 ref.

The spectral emissivity of nonmetallic materials in the visible and near infrared has been measured with an apparatus in which on of the main elements was a solar furnace. The use of the apparatus leads to an error in the measurements of the specular component of reflected radiation and to a reduction in the maximum possible specimen temperature. Therefore the authors have used an apparatus based on a different principle which they describe in this article.

Light-weight glass and pyroceram mirrors

Slavyanskiĭ, V. et al.

Geliotekhnika, 2 (1966), No 2, p 5

The manufacturing of light mirrors using some special construction principals are examined in this article.

Melting of Magnesium oxide in a solar unit

Smokovdina, G. et al.

Geliotekhnika, 9 (1973), No 3, p 54

4 pages 1 table 1 picture 3 ref.

Concentrator on an asbestos cement base

Starodubtsev, S. et al.

Geliotekhnika, 1 (1965), No 1, p 28

3 pages 1 table 1 picture 6 ref.

An experiment with the reflecting surface of the concentrator formed by a metallized polyethylene terephthalate film on an asbestos cement base, mounted on a light metal frame.

Use of polyurethane foam in the construction of solar concentrators

Vil'kova, S. et al.

Geliotekhnika, 1 (1965), No 4, p 27

4 pages 2 tables 2 pictures 2 ref.

Polystyrene foam reflectors

Vil' kova, S. et al.

Geliotekhnika, 2 (1966), No 5, p 26

3 pages 2 tables 5 ref.

Two-stage method of obtaining aluminium mirrors on a self-hardening base

Vil'kova S. et al.

Geliotekhnika, 4 (1968), No 3, p 57

3 pages 1 table 5 ref.

Asbestos-cement film concentrator fabrication technology

Umarov, G. and Abduazizov, A.

Geliotekhnika, 4 (1968), No 4, p 56

2 pages 1 picture

The work deals with the manufacturing technology of parabolic and parabolocylindrical concentrators and with the energetical and optic characteristics.

Solar furnace made of polyethylene terephthalate film

Umarov, G. and Kordub, N.

Geliotekhnika, 1 (1965), No 4, p 49

2 pages 1 picture 2 ref.

Transfer method of producing aluminium mirrors on asbestos cement

Umarov, G. et al.

Geliotekhnika, 1 (1965), No 3, p 41

8 pages 1 table 6 pictures 2 ref.

The possibility of producing an optically accurate mirror surface by transferring a reflective coating onto epoxy resin applied to the surface of asbestos cement has been demonstrated. An investigation of the adhesion of the reflective coating obtained by the transfer method showed that it exceeds compared with the vacuum-spraying method.

Materials and surfaces for solar furnaces

Wright, R.

Solar Energy 1 (1957) No 2-3 p 84

High-Output Aluminum Evaporator for Mirror Coatings

Umarov, G. et al.

Geliotekhnika, 6 (1970), No 3, p 20

3.3.3
PROVNING

Report on tests conducted using the Telkes solar oven and the Wisconsin solar stove over the period July to September 1959

Food and Agriculture Org of the United Nations. UN Conf on New Sources of Energy, Rome (1961)

Two-mirror solar test rig at the Krzhizhanovskii Power Engineering institute.

Akchurin, R. et al.

Geliotekhnika, 1 (1965), No 5, p 5

6 pages 7 pictures 3 ref.

A combined two mirror solar test rig designed for general methodological and specific practical high-temperature studies of the processes characteristic of high-temperature solar energy converters and the thermophysical and technical properties of materials at high temperatures in various atmopheres and in a vacuum is investigated.

A study of the reflection efficiencies of a water-white, silver-backed glass mirror at different angles of incidence

Allison, F and Steele, K

Air Force Missile Development Center, AFMDC-TN-59-27 (1959)

67 pages

The reflection efficiencies of the silver-backed, water-white glass mirror contemplated for the solar furnace have been determined, at various angles of incidence, by both computational and experimental methods. The results indicate practically negligible differences in the mirror efficiencies at all angles at which the solar radiation will impinge on the heliostat and the condenser mirrors of the presently designed furnace

Investigation of Solar Concentrators Composed of Doubly-Curved Facets

Amarov, G. et al.

Geliotekhnika 3 (1967), No 3, p 20

4 pages 5 pictures 1 ref.

Certain methods of investigating the physical characteristics of materials by means of solar furnaces

Annaev, A. et al.

Geliotekhnika, 1 (1965), No 3, p 34

7 pages 1 picture 7 ref.

An investigation of several possible methods of determining certain thermophysical properties of disk-shaped specimens has been carried out.

Calorimetric investigation of high-temperature solar devices

Aparisi, R. et al.

Geliotekhnika, 1 (1965), No 6, p 25

7 pages 5 pictures 6 ref.

This article discuss radiative heat transfer measurements in solar engineering devices with mirror concentrators. The calorimetric method was used.

Choice of controlling dimension in the oblique flow past the glass surface

Avezov, R. and Vakhidov, A.

Geliotekhnika, 9 (1973), No 6, p 49

2 pages 8 ref.

The convective heat transfer losses of simpler solar systems depend of the velocity distribution and the controlling linear dimension of the surface. In order to compare the data one must choose the controlling dimension in the correct fashion and how it should bee done is discussed.

Calibration of solar concentrator for use in power system research

Blake, F.

American Rocket Society, Space Power Systems Conference, Santa Monica, Calif., (1962), Paper 2528-62

28 pages

3.124

Use of Solar Heat to Measure Thermal Diffusivity

Borukhov, M. et al.

Geliotekhnika, 2 (1966), No 6, p 37

4 pages - 2 pictures 12 ref.

Aerodynamic stability of a heliostat structure

Brosens, P.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 99

17 pages

A rigid, flat mirror structure without damping is studied for stability in the presence of wind.

Oscillations of a rigid heliostat mirror caused by fluctuating wind

Brosens, P

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 117

16 pages

The response characteristics of an elastically supported rigid heliostat in random vibration.

Aerodynamic stability of a heliostat structure

Brosens, P

Solar furnace support studies, vol 2, p 99

17 pages

A rigid flat mirror structure supported elastically and without damping is studied for stability in the presence of wind. The wind is assumed to have a constant velocity normal to the elevation axis of the mirror

Measurement of the spectral intensity distribution of a convergent high-intensity light beam with a magnesium-oxide-smoked plate

Brown F

Solar Energy 1 (1957) No 2-3 p 104

An account of the invention of grinding and burning glasses of a figure not spherical

Buffon M

Phil Trans 3 vol 668 p 493

3 pages

Experiments with mirrors

A Study of temperative measurements in a solar furnace

Byron, B. et al.

Solar Energy, 2 (1958) p 13

5 pages 1 picture 24 ref.

A survey of temperature measurements with thermocouples and two color pyrometers.

Experimental study of the concentration of solar radiation by a parabolic mirror

Charron, F. et al

La Recherche Aerospatiale, (1963), July- Aug, p 37

9 pages

Heat transfer and flow friction characteristics of metallic foil matrices using radiation as the heat source and their application to the design of solar collectors

Chiou, J

Ph D Thesis Univ of Wisconsin (1964)

A Slit-and-Expanded Aluminium-Foil Matrix Solar Collector

Chiou, J et al

Solar Energy, 9 (1965) No 2, p 79

8 pages 7 pictures 12 ref

The paper proposes the use of porous matrices as the heat-absorbing media in air-cooled solar collectors. Heat-transfer and fluid-friction data have been obtained on slit-and-expanded aluminium-foil matrices

3.126

Analysis of a conical solar concentrator

Cobbel, M

Solar Energy, 7 (1963) No 2, p 75

4 pages 7 pictures 2 ref

The concentration that a conical mirror can theoretically attain is developed for two types of targets; a circular cylindrical target and a conical target

Experimental investigation of the semispherical reflectance of engineering materials in the solar radiation range as a function of the angle of incidence

Demidov, S. et al.

Geliotekhnika, 7 (1971), No 4, p 50

6 pages 1 table 3 pictures 3 ref.

Laboratory and Field Studies of Plastic Reflector Solar Cookers

Duffie, J et al

Solar Energy, 6 (1962) No 3, p 94

5 pages 1 table 4 ref

One of solar cookers having potential application in underdeveloped areas employs a thin plastic reflector in the shape of a paraboloid. The focussing-type solar cooker has been found most suitable for cooking in hot water, i e for boiling, stewing, and steaming

Méthode de mesure des températures des produits traités au four solaire

Foex, M and Coutures, J

Coopération Méditerranéenne pour l'Energie Solaire, Bull (1969) No 16 In French

5 pages

This article proposes a method of measuring temperatures of products treated by a solar furnace. The information given by the pyrometer is corrected from interfering solar emission by filters. The author sets forth other factors of errors in the measures

Measure des températures au four solaire

Foex, M

UN Conf on New Sources of Energy, Rome (1961) In French

Some remarks on the design of a solar furnace and the calculation of concentration using spherical-mirror elements

Foote, R

Solar furnace support studies, vol 2, p 1

97 pages

The problem of replacing a single paraboloidal condenser by an approximate mirror system for a large solar furnace is studied.

Studying the effect of increased moisture on mirror coatings of solar-energy concentrators

Gaziev, U.

Geliotekhnika, 10 (1974), No 2, p 35

3 pages 1 table 4 ref.

Experimental investigation of the distribution of irradiance in the near-focal region of a paraboloidal concentrator

Grilikhes, V.

Geliotekhnika, 4 (1968), No 4, p 31

6 pages - 4 pictures 4 ref.

The light stimulation method is used for investigation of the performance of the reflected radiation field in the nearfocal area of paraboloid concentrators. Experimental installation and measuring instruments are described. Test procedure and measurement data are presented.

Methods of quality control for solar energy concentrators

Grilikhes, V.

Geliotekhnika 8 (1972), No. 4, p. 3

13 pages 1 table 5 pictures 30 ref.

The paper examines the basic tests for solar energy concentrations which are conducted during manufacture and operation.

3.128

Some features of convective heat transfer in high-temperature solar receivers.

Grilikhes, V.

Geliotekhnika, 9 (1973), No 6, p 3

6 pages 1 picture 15 ref.

The receivers in solar high-temperature installations have to cope with a nonuniform thermal density distribution on their radiation-receiving surfaces and it is therfore important for solar engineering calculations to be able to estimate the effect of specific heat supply conditions on the heat transfer parameters in receivers as functions of the various factors affecting the heat transfer process.

An account of some experiments tried with M Villettes burning concave mirror in June 1718

Harris J and Desaquliers Y

Reg Soc SS Phil Trans 30(1717-1719) No 360 p 976

2 pages

Heat flux measurements at the sun image of the California Institute of Technology lens-type solar furnace

Hiester N et al

Solar Energy 1 (1957) No 4 p 23

A radiation fluxmeter for high intensity applications

Hughes, G

Solar furnace support studies, vol 2, p 145

15 pages

The high energy concentration and the problem of correct flux measurement for a large solar furnace are discussed

Performance and evaluation of concentrating solar collectors for power generation

Jordan, R. and Liu, B.

ASME Transaction, Series A - Journal of Engineering for Power, 87 (1965), Jan, p 1

7 pages 10 ref.

Geometric accuracy, focal plane, flux distribution, optimum absorber size and efficiency.

Increasing the photostability of polyamide films

Klein, G. et al.

Geliotekhnika, 1 (1965), No 2, p 31

3 pages 1 table 4 pictures 5 ref.

The authors have investigated the effectiveness of stabilizing polyamide films against sunlight by treating them with solutions of chronium and manganese salts.

Refractive index of polyethylene terephthalate film

Kordub, N

Geliotekhnika, 1 (1965), No 2, p 52

2 pages 1 picture 3 ref.

Measurements and application of high heat fluxes in a solar furnace

Laszlo, T

17th International Congress Pure and Applied Chem (1961)

Sample holder for electrical measurements

Laszlo T and Shores, A

Solar Energy, 7 (1963) No 3, p 147

1 page 1 picture 1 ref

A sample holder has been built that permits the rotation of a sample perpendicular to the optical axis of the furnace

Etude Experimentale d'Un Cylindro-Parabolique

Muomoni, A. and Wright, A.

ISES Conference in Paris, (1973)

10 pages 2 tables 7 pictures 1 ref.

Experiments with a parabolic cylinder mirror of 11,4 m^2 with a cylindrical boiler.

3.130

Pure Synthetic Minerals Produced in the Solar Furnace

Muster, J

Solar Energy, 6 (1962) No 4, p 129

7 pages 10 pictures

The experimental solar furnace and some data about the working conditions are given. The production of synthetic minerals from mixtures of pure oxides is described and the characteristics for the minerals produced are briefly listed

Applied research in a solar furnace

Noguchi, T et al

UN Conf on New Sources of Energy, Rome (1961) In French

High-temperature solar unit for investigating the mechanical properties of materials

Pasichni, V et al

Applied Solar Energy, 5 (1969) No 3

5 pages 4 pictures 8 ref

In the paper a new solar installation for the mechanical characteristics measurement of high-temperature materials is described. It permits the carrying out of rupture and compression tests in an oxidizing (air) atmosphere at temperatures up to 3000°K. The installation is provided with an automatic system of load stabilization during the experiment

Using an asymptotic calorimeter to investigate the radiant-flux distribution in the focal space of a concentrator

Polyakov, A. and Rubanovich, I.

Geliotekhnika, 9 (1973), No 4, p 24

9 pages 1 table 4 pictures 3 ref.

Nonstationary calorimetry can be used to determine the local values of heat flow for an area of less than 1 mm^2. The authors give the theoretical prerequisites to utilization of the given method and describe the first experiment involving its utilization.

A New Solar Furnace

Rudolph, M. and Wohlers, C

Industrial and Engineering Chemistry, 52 (1960) p 825

Cerium (LV) perchlorate is photochemically reduced in aqueous solution at the focus of a rear-silvered solar furnace

High-temperature radiation pyrometer measurements in a solar furnace

Shakpharonyan, V., Shekoyan, M

Geliotekhnika 8 (1972), No 2, p. 37

4 pages **3 pictures** **3 ref.**

The paper outlines radiation pyrometer measurement results for the complete emission of refractory materials with the heating of samples in a high-temperature solar furnace.

Study of solar furnace melting processes

Shakpharonyan, V. et al

Geliotekhnika 8 (1972), No 1, p. 43

8 pages **1 table** **5 pictures** **5 ref.**

The paper describes a digital method for electronic computer solution of melting problems. The results of calculation and experimental tests of the theory are based on a ZrO_2 melting model.

Calorimetric Measurements of the Radiant Flux Density Distribution in the Focal Spot of a Solar Concentrator

Sharafi, A.

Geliotekhnika, 3 (1967), No 4, p 56

6 pages **1 table** **1 picture** **4 ref.**

Solar furnace determination of high -temperature absorption coefficients

Strauss, R.

Solar Energy, 4 (1960) No 2 p 21

13 pages 3 tables 7 pictures 15 ref.

Experiments have demonstrated that a solar furnace serves as an excellent tool for establishing heat absorption coefficients of materials at extremely high temperatures.

3.132

Investigation of the optical and energy characteristics of solar concentrators fabricated by the inflation method

Tarnizhevskii, B. et al.

Geliotekhnika, 1 (1965), No 3, p 30

4 pages 3 pictures 5 ref.

Concentrators of approximately paraboloid and parabolo- cylindrical shape can be produced by using the method of inflating sheet material by means of a uniformly applied load. To determin the regious of application of such concentrators the authors have evaluated their optical and energy characteristics.

Energy Transport and Distribution Characterstics of High-Temperature Solar Devices

Teplyakov, D.

Geliotekhnika 3 (1967), No 3, p 13

7 pages 3 pictures 11 ref.

Energy Characteristics of the Concentrator of the SV -1 Water Lifter

Teplyakov, D. et al.

Geliotekhnika, 2 (1966), No 6, p 31

6 pages 1 table 3 pictures 4 ref.

Thousand kW solar furnace, built by the National Center of Scientific research in Odeillo (France)

Trombe, F. and Le Phat Vinh, A.

Solar Energy, 15 (1973), No 1, p 57

Conditions de traitement et mésures physiques dans les fours solaires

Trombe, F et al

UN Conf on New Sources of Energy, Rome (1961) In French

First results obtained with the 1000 kW solar furnace

Trombe, F. et al

Solar Energy, 15 (1973), No 1, p 63

Solar Furnaces for Research in Nonferrous Metallurgy

Tuddenham W

Solar Energy 1 (1957) No 2-3 p 48

Experimental determination of the shape of the reflecting surface of an inflated film concentrator.

Umarov, G. et al.

Geliotekhnika, 1 (1965), No 1, p 24

4 pages 2 tables 2 pictures 1 ref.

The authors have made an experimental investigation of the shape of the surface of an inflated film concentrator as a function of the pressure difference between the two sides of the film.

Experimental Investigation of Certain Properties of Parabolic Cylindrical Inflatable Film Concentrators

Umarov, G. et al.

Geliotekhnika, 4 (1968), No 5, p 39

3 pages

Experimental investigation results are given for the determination of surface shape and optics and heat engineering characteristics of parabolocylindrical film concentrators under the influence of gas pressure.

Investigation of constant-power heat flux regulating systems in solar furnaces

Vartanyan, A. and Shermazanyan, T.

Geliotekhnika, 1 (1965), No 4, p 5

6 pages 8 pictures 2 ref.

Using suitable notations the authors derive the basic control laws, which can be used to solve the regulating problem.

Measurements of the distribution of light at the focal point of solar energy collectors.

Veinberg, V. et al.

Geliotekhnika, 1 (1965), No 2, p 9

6 pages 6 pictures 10 ref.

A filament microphotometer has been tested at the focal point of a **paraboloidal** projector mirror when the irradiance reached 1,5 - 2 **kW/cm^2** at the focal point.

3.134

Obtention de carbure de bore et traitement thermique de minéraux au four solaire

Vuillard, G

UN Conf on New Sources of Energy, Rome (1961) In French

Determination of the spectral reflectance, spectral emissivity and true temperature of nontransparent solids at high temperatures in solar furnaces

Yanulis, V. and Mayauskas I.

Geliotekhnika, 2 (1966), No 5, p 32

5 pages 3 pictures 6 ref.

Experimental investigation of the effect of inaccurate orientation of a mirror-type solar power unit on its energy characteristics

Zakhidov, R. and Teplyakov, D.

Geliotekhnika, 1 (1965), No 2, p 15

8 pages 3 tables 5 pictures 7 ref.

This article gives the results of an experimental study of the effect of inaccurate orientation of the paraboloid of a mirror-type solar power unit on its collecting efficiency under static conditions.

3.3.4 ANVÄNDNING

Cooking by sun

Anon.

Discovery, 15 (1954) p 348

2 pages

He grills hot dogs on a solar cooker

Anon.

Pop. Sci. (1957), May, p 178

2 pages

Solar furnaces: the 12-ft diameter furnace project - a progress report

ANZAAS Congress Solar Energy Symposium, Australia (1957)

Giutronich, J.

Oscillations of a rigid heliostat mirror caused by fluctuating wind

Solar furnace support studies, vol 2, p 117

16 pages

The response characteristics of an elastically supported regid heliostat in random vibration are studied

Report on tests conducted using the Telkes solar oven and the Wisconsin solar stove over the period July to Sept, 1959

UN Conf on New Sources of Energy, Rome (1961)

12 pages

Two solar stoves, one an oven type (Telkes) and the other a parabolic reflector type (Wisconsin) were tested. In these tests it has been shown that water can be boiled considerably faster on the Wisconsin solar stove than in the Telkes oven. However, performance of the Telkes oven is less affected by infrequent positioning of the stove, by clouding of the sun, and by wind

3.136

Temperature-decay curves in the box-type solar cooker

Abou-Hussein, M

UN Conf on New Sources of Energy, Rome (1961)

Cooking by solar heat

Adams, W.

Sci. Am., 38 (1878), p 376

Measurement of electrical conductivity of magnesium oxide single crystal at high temperature using a solar furnace

Afzal, F. and Giutronich, J.

Solar Energy, 15, (1973), No 2, p 125

Manufacturing of paraboloid area collectors by rotation

Alavutdinov D.

Res in solar eng (1967) May p 38
Joint publications research service, Washington, D.C.

4 pages

Two-Mirror Multifacet solar concentrator for Agricultural Use

Alavutdinov, N. et al

Geliotekhnika, 4 (1968), No 6, p 64

2 pages 1 picture -

An original design of a two-mirror facet concentrator is considered. It is supposed that the new concentrator may be used for irradiation of different seeds before sowing, with the help of impulse concentrated solar light. Use of this new concentrator model make it possible to place the object to be irradiated at any required height over the ground.

Description of a Large Scale Solar Steam Cooker in Haiti

Alward, R. et al

ISES Conference in Paris, (1973).

9 pages 2 pictures 12 ref.

One cooker module can supply cooked food for 8 persons. Total cost per module installed was 65 dollars.

Solar furnaces with an inclined concentrator axis

Annaev, A.

Geliotekhnika, 1 (1965), No 3, p 14

5 pages 4 pictures 1 ref.

The main advantage of a furnace with an inclined, as compared with a vertical concentrator axis is the reduced height of the concentrator. But for a furnace with an inclined axis the heliostat should be larger than for a furnace with a vertical concentrator axis. The authors have examined how the height of the concentrator and the size of the heliostat depend on the angle of inclination.

A New Flux-Regulating Device

Baranov, V.

Geliotekhnika, 3 (1967), No 2, p 20

3 pages - 2 pictures 2 ref.

Mass Transfer in Solar Furnace Chambers

Baum, V. and Byashimov, M.

Geliotekhnika, 3 (1967), No 1, p 43

6 pages 2 tables 2 pictures 2 ref.

Gerichtspunkte für den Entwurf von Sonnen-Spiegelofen für Hochtemperatur forschung und - Entwicklung

Conn, W.

Zeitschr. für Ang. Phys. 6 (1954) p 284

7 pages

Reflective solar cooker designs

Duffie, J.

Trans Conference on the use of solar energy, Arizona, 3 (1955) p 79

8 pages

3.138

The collection and concentration of solar energy for thermal applications

Duwez, P

Seminar on Advanced Energy Sources and Conversion Techniques (1958) Proceedings, p 123

4 pages

Thermal applications of solar energy

Industrial considerations in solar furnaces

Edlin F

Solar Energy 1 (1957) No 2-3 p 52

High-temperature solar unit for plasma-chemical processes

Es'man V. and Akhundov, S.

Geliotekhnika, 9 (1973), No 3, p 50

4 pages 2 pictures 6 ref.

Interim Report on Solar Cookers

Fehr, E

Volunteers for International Technical Assistance Inc, Schenectady New York (1960) Dec

6 pages

An evaluation of known solar cookers from the stand-points of efficiency in cooking, durability, cost, shipping weight, portability, ease of operational use and ease of manufacture

Solar heat for cooking

Ghai, M.

J. Sci. Ind. Res., 12 A (1953), p 117

8 pages

Design of reflector-type direct solar cookers

Ghai, M.

J. Sci. Ind. Res., 12 A (1953), p 165

11 pages

Commercial development of solar cookers

Ghai, M.

Paper presented at the conference on the use of solar energy, Arizone, (1955)

The Design of a Sun Cooker

Ghosh, M.

ISES Conference in Paris, (1973),

10 pages 3 tables 5 pictures -

A sun - cooker designed on the hot box principle. Cooking temperature 130-150°C.

Solar furnace for use in applied research

Glaser P

Solar Energy 1 (1957) No 2-3 p 63

Engineering Research with a solar furnace

Glaser, P.

Solar Energy, 2 (1958) p 7

4 pages 7 pictures 10 ref.

Use of a solar furnace for testing of materials.

Industrial applications - the challenge to solar furnace research

Glaser, P

UN Conf on New Sources of Energy, Rome (1961)

26 pages

This paper discusses recent developments in the construction of reflecting surfaces

The heliodyne at the Algeria Observatory

Guillemin, J.

Rev. Aluminium, 34 (1957), Feb., p 171, (In french)

15 pages

A discription of the solar furnace at the Observatory in Algeria, built to study processes, minerals, and chemicals on a semi-industrial basis.

The image furnace as a research tool

Hiester, N. and De La Rue, R.

ARS Journal (1960), Oct., p 928

11 pages

The purpose of the paper is to provide a guide to the literature covering some of the important theoretical and practical aspects of image furnaces and their operation.

A Solar Furnace Using a Horisontal Heliostat Array

Hughes, G.

Solar Energy, 2 (1958) p 49

3 pages 2 tables 4 pictures

Recommendations and suggested techniques for the manufacture of inexpensive solar cookers

Jenness, J.

Solar Energy, 4 (1960) No 2 p 22

3 pages 2 pictures 3 ref.

Solar cookers of the focusing-reflector type have been considered too expensive for use in the arid non-industrial regions which need them most. It should be possible to fabricate them from cheap materials by hand-craft techniques. Solar cooking efficiency could be improved by the use of a cooking pot.

Construction and operation of the Arizona State College solar furnace

Kevane C

Solar Energy 1 (1957) No 2-3 p 99

Solar Heating of Vegetable Oil

Khanna, M

Solar Energy, 6 (1962) No 2, p 60

4 pages 1 table 4 pictures 8 ref

A solar cooker (of a type manufactured commercially in India) is used to heat a common vegetable oil as employed in cooking. At mid-day an oil temperature of 200°C was obtained in about 50 minutes. The over-all efficiency, five minutes after start, was about 34 percent. Intended to supplement, not replace cooking with conventional fuels

Economic Viability of Solar Cooking

Kim, K. et al

Geliotekhnika, 6 (1970), No 6, p 28

5 pages 3 tables 5 ref.

Metallurgical thermo - chemistry

Kubaschewski, O. and Evans, E.

3rd ed. Pergamon Press, (1958)

Emittance Measurements of Solids Above 2000 deg C

Laszlo, R. et al

Solar Energy, 8 (1964) p 105

7 pages 5 pictures 11 ref.

A method of measuring the emittance above 2000°C using a solar furnace is described.

Solar furnaces for high temperature research

Laszlo, T.

Solar Energy, 3 (1959) No 3 p 43

1 page

The number of solar furnaces built for high temperature research has increased considerably in recent years. In 1955 there were only two such furnaces. By 1957 this number increased to over 32. No reliable information is available on the exact number at present (1959) but it is estimated that close to 100 solar furnaces have been built.

3.142

New techniques and possibilities in solar furnaces

Laszlo, T

UN Conf on New Sources of Energy, Rome (1961)

30 pages

The limitations on experimentation in a solar furnace are discussed

Measurement and Application of High Heat Fluxes in a Solar Furnace

Laszlo, T

Solar Energy, 6 (1962) No 2, p 69

4 pages 4 tables 4 pictures 4 ref

The suitability of the solar furnace for the generation of high heat fluxes of known, stable intensity is investigated

Design and performance of folding umbrella-type solar cooker

Löf, G and Fester, D

UN Conf on New Sources of Energy, Rome (1961)

Chemical syntheses in the solar furnace

Marcus, R and Wohlers, H

UN Conf on New Sources of Energy, Rome (1961)

Determinating the termal diffusivity of materials at high temperatures

Mavoschew, S et al

Applied Solar Energy, 5 (1969) No 3

6 pages 4 pictures 12 ref

The article contains the results of the determination of the coefficient of temperature conduction, through plane waves

Characteristics and applications of the solar furnaces of the central laboratory of Armament.

Meunier R.

Revue internationale des hautes temperatures et des refractaires, 10 (1973) Oct-Dec p 297.

6 pages 5 ref.

High temperature research in a solar furnace. II On the fusion of metal oxides

Noguchi, T et al

Rept Govt Ind Res Inst Nagoya, 8 (1959) No 1, p 61

7 pages

The paper describes a further study on the fusion of metal oxides. The solar furnace was used for fusing Al_2O_3, Al_2TiO_5 and $MgO \cdot TiO_2$

Absorption cooling unit with fixed conoidal reflectors

Oniga, T.

UN Conference on new sources of energy, Rome, (1961), S/70

Step lenses and step prisms for utilization of solar energy

Oshida, I

UN Conf on New Sources of Energy, Rome (1961)

Application of Solar Radiation to High-Temperature Studies in the Ukraine

Pasichnyi, V.

Geliotekhnika, 6 (1970), No 2, p 45

3 pages

Solar device for investigating refractory oxides

Pasichyi, V. et al

Geliotekhnika, 4 (1968), No 2, p 58

4 pages 4 pictures 8 ref.

A cylindro-parabolic solar cooker

Prata, A

UN Conf on New Sources of Energy, Rome (1961)

29 pages

A solar cooker is presented where the solar beams are collected by a parabolo-cylindrical reflector and routed to a narrow glass window in the lower portion of an insulated cylindrical box with a horizontal axis, placed at the focus of the paraboloid. The food to be cooked is placed inside this box

Solar energy, the solar furnace and the civil engineer

Ringo, B

Civil Eng, 29 (1959) p 229

3 pages

Experience in fabricating glass-reinforced paraboloidal collectors

Rubinov, E. et al

Geliotekhnika, 1 (1965), No 2, p 23

5 pages 2 tables 1 picture 5 ref.

The authors have demonstrated the theoretical possibility of fabricating collectors using PN-1 polyester resin reinforced with fiber glass.

Construction of a large solar furnace

Sakurai, K et al

UN Conf on New Sources of Energy, Rome (1961)

Sun Heat

Sarbach, L

Heating and Ventilating, 43 (1946) June p 92

Describes briefly Russian mirror installation for capturing sun's energy; mirror develops boiler steam pressure of 29.4 lb/sq.in. in 30 minutes

A solar therapy device with parabolocylindrical and spherical concentrators

Shapovalova, T.

Geliotekhnika, 2 (1966), No 3, p 48

3 pages 3 pictures

A 2.7 - meter diameter vacuum film solar concentrator

Starodubtsev, S. et al

Geliotekhnika, 1 (1965), No 1, p 22

2 pages 1 picture

A vacuum film solar concentrator has been developed and how it is constructed is discussed.

A sun-tracking radiation instrument stand

Sumner, C. and Patterson, G.

Solar Energy, 12, (1969), No 4, p 537

6 pages 4 pictures 2 ref.

To "seek" the sun automatically by controlling drive motors with photocell detectors sensitive to solar radiation to the instrument described works on the principle, and has the advantage that it is not affected by several days of overcast weather.

Therapeutic solar energy device utilizing the combined action of total and scattered radiation

Svarichevskii, V.

Geliotekhnika, 1 (1965), No 1, p 49

Low-Cost Focussing Collector for Solar Power Units

Tabor, H and Zeimer, H

Solar Energy, 6 (1962) No 2, p 55

5 pages 1 table 5 pictures 3 ref

A focussing collector for producing heat from solar radiation for power use. The collector weighs 1,2 kg per square meter of solar aperture. Cost is estimated as $20 per square meter of solar reception. Collection efficiency is about 40 percent

Solar cooking ovens

Telkes, M.

Solar Energy, 3 (1959), No 1, p 1

11 pages 6 tables 12 pictures 40 ref.

The report summarizes a experimental work to develop a lowcost solar cooking oven.

3.146

Practical solar cooking ovens

Telkes, M and Andrassy, S

UN Conf on New Sources of Energy, Rome (1961)

16 pages

New models of solar cooking ovens have been developed with the aim of simplifying construction and to use materials available in arid, tropical countries. Heat can be stored as the heat of transition of a mixture of alkaline sulfates, which store heat by solid-solid phase change. This heat storage slab eliminates the danger of leakage (when heat-of-fusion type materials are used) and is otherwise harmless

Practical solar-cooking ovens

Telkes, M and Andrassy, S

UN Conf on New Sources of Energy, Rome (1961)

Solar furnaces and their application

Trombe F

Solar Energy 1 (1957) No 2-3 p 9

Purifications des substances par chauffage au four solaire

Trombe, F et al

UN Conf on New Sources of Energy, Rome (1961) In French

A two-mirror solar oven

Umarov, G et al

Applied Solar Energy, 5 (1969) No 1, p 44

2 pages 1 picture 4 ref

A two-mirror system is described consisting of two parabolic mirrors; viz a projecting and a paraboloid one that are manufactured by rotating. Optic and energetic characteristics of the system are given

Multipurpose portable cooker

Umarov, E. et al.

Geliotekhnika 8 (1972), No 6, p. 41

3 pages 1 table 2 pictures 3 ref.

The paper describes the design and technology for manufacturing a portable solar cooker which can be used as a solar installation for cooking food and also as a sun shade or tent for protection against solar radiation and bad weather.

Automatic regulator of radiant flux for high-temperature solar installations

Vartanyan, A et al

Applied Solar Energy, 5 (1969) No 1, p 31

6 pages 1 table 4 pictures 2 ref

A system of automatic regulation of power parameters of solar installations ray flow is proposed. Precision of regulation of 3-5% is provided with the automatic power regulator of paraboloid installation with a diameter of 1·5 m accomplished according to the given scheme

A high-temperature two-meter-diameter solar furnace

Yagudaev, M. et al.

Geliotekhnika, 1 (1965), No 1, p 31

8 pages 5 pictures 7 ref.

For the purpose of investigating the thermophysical properties of materials at high temperatures two solar furnaces were built. The design of reflector, tracking system, determination of heat flux at focus and optical characteristies are discussed.

Use of solar and arc furnaces to determine the vaporization rate of refractories

Yanulis, V. and Mayauskas, I.

Geliotekhnika, 3 (1967), No 6, p 72

5 pages 2 pictures 15 ref.

Solar energy steam generator: Parabolic-cylinder mirror type

Yappel, A.

Contributed by the Solar Energy Applications Committee for presentation at the Winter Annual Meeting, New York, (1960), American Society of Mechanical Engineers.

10 pages

The paper presents performance data for a solar steam generator along with a rough estimate of power cost.

3.3.5
ÖVRIGT

Research applied to solar thermal power systems

Honeywell systems and research center, Minneapolis, Minnesota

Semi-annual progress report 1 Jan-30 June, (1973)

220 pages

Research applied to solar thermal power systems

Honeywell systems and research center, Minneapolis, Minnesota

Semi-annual progress report 1 July-31 Dec., (1972)

341 pages

Solar collector. Transfer loop. Heat storage. Planned research.

Research applied to solar thermal power systems

Honeywell systems and research center, Minneapolis, Minnesota

Semi-annual progress report 1 July-31 Dec., (1973)

211 pages

Solar Radiation as a Power Source

Abbot, C

Military Engineer, 35 (1943) Feb p 70

4 pages

Reviews early experiments and describes modern solar flash boiler developed bythe author

Solar power from collecting mirrors

Abbot, C litt

Solar Energy Research, Univ of Wisconsin Press (1955) p 91

5 pages

Power characteristics of an arc solar furnace simulator with pyrometric chopper

Akchurin, R.

Gelioteknika, 2 (1966), No 3, p 15

7 pages 1 table 6 pictures 8 ref.

Utilisation rationelle de la chaleur solaire

Bayot, H

Académie des Sciences. Comptes Rendus, 194 (1932) April p 1484

3 pages

Rational utilization of sun heat; dismisses as impracticable all schemes using mirrors or lenses; suggests that use be made of differences in temperature between surface water and lower water and that vapor be passed from the warmer water through a turbine to a condenser cooled by colder water; proposes to augment this temperature difference artificially by selecting a controllable area of water and covering it with a layer of oil; this would increase the temperature rise of the upper layer due to exposure to the sun

A solar engine using the thermal expansion of metals

Beam, R. and Jedlicka, J.

Solar Energy, 15, (1973), No 2, p 133

Experience of the Tashkent Group in the Development of High-Temperature Studies Using Solar Furnaces

Borukhov, M. et al.

Geliotekhnika, 6 (1970), No 2, p 41

4 pages - 2 pictures 7 ref.

Control of thermal energy from a high-temperature source

Bussel B et al

Solar Energy 1 (1957) No 2-3 p 75

3.150

Soviets Capture Solar Power

Carter, D

Science Digest, 18 (1945) Dec p 22

5 pages

Reviews briefly research carried out in the Krzhizhanovsky Power Institute, U.S.S.R., utilizing solar heat for steam boiler; contains description of solar collector devised by F Molero

Heat Exchangers for Solar Concentrators

Cobble, M

Solar Energy, 7 (1963) No 1, p 18

4 pages 5 pictures 8 ref

The theoretical analysis of three types of heat exchangers for use with solar concentrators is developed. Under the assumptions of an incompressible inviscid fluid, constant energy rate input per unit area, and losses to the surroundings, an expression for the temperature field, and average exit temperature is given. An expression for a dimensionless temperature modulus, to aid in the determination of a fluid exit temperature, is derived and plotted for the three types of heat exchangers

Passive solar array orientation devices for terrestrial application

Fairbanks, J. and Morse F.

Solar Energy, 14 (1972) p 67

13 pages 1 table 10 pictures 9 ref.

Development and analysis of antideposition system for the glass cover of a vacuum chamber and experimental evaluation of losses during solar welding

Frantsevich, I.

Geliotekhnika, 9 (1973), No 6, p 30

5 pages 2 pictures 3 ref.

An installation for investigating the technology of welding, cutting and heat treatment of different materials using concentrated solar radiation is discussed.

Universal power characteristic for a high-temperature solar heating source

Grilikhes, V., Matveev, V.

Geliotekhnika 8 (1972), No. 3, p. 68

4 pages 3 pictures 5 ref.

A device for finding true north

Harrison, P.

Solar Energy, 15 (1974), No 4, p 303

6 pages 4 pictures 3 ref.

An instrument for finding geographic north from the sun is described.

Theoretical Considerations on performance characteristics of solar furnaces

Hiester, N. et al.

Jet Propulsion 27 (1957) p 507

7 pages

Experimental measurements of concentrated solar energy pattern in focus of a plane segments concentrator

Helwa, N. and Sakr, I.

Cooperation Méditerranéenne pour l'Energie Solaire, Bulletin No. 14, July (1968) p. 27-35.

9 pages 6 ref.

Solar Cookers

Hillig, W

Volunteers for International Technical Assistance, Inc, Schenectady New York (1960)

8 pages

The report is intended to provide som perspective to the attempts to develop solar cookers to date, their performance, some of the difficulties encountered, present availability, and future possible developments

3.152

Report on the measurement of thermal diffusivity using a solar furnace

Kevane, C.

Office of Naval Research Contract No. NR-032-419, (1958)

In order to develop a method for measurement of thermal diffusivity of materials, the propagation of temperature waves set up by periodic modulation of the heat flux in a solar furnace studied at moderate temperatures.

Wide-Angle Calorimeters for High-Irradiance Measurements in Small Regions of Space

Lopatina, G. and Spitsyn, B.

Geliotekhnika, 6 (1970), No 3, p 11

5 pages **3 pictures** **5 ref.**

Recent investigations in the use of solar energy for cooking

Löf, G

Solar Energy, 7 (1963) No 3, p 125

9 pages 1 table 7 ref

A solar cooker is a solar-energy exchanger designed specifically to deliver heat to foods, for the purpose of raising their temperature and causing the chemical changes associated with the process of cooking. In supplying the reqiured energy, the solar cooker supplements or replaces conventional fuels. In underdeveloped areas of the world, these fuels are wood, kerosene, charcoal, dried animal dung, agricultural refuse, and other combustible materials. Solar cookers can thus serve two important purposes: reduction in family cooking costs by decreasing the need for purchase or collection of fuel; and conservation of fuels for other uses, such as fertilizer in the case of dung, forest protection and erosion reduction in the saving of wood and charcoal

The Solar Collector Thermal Power System, it's Potential and Development Status

Mahefkey, E.

7th Intersociety Energy Conversion Engineering Conference, (1972)

A device for generating thermal sine waves in solar furnaces

Mavashev, Yu

Geliotekhnika, 1 (1965), No 3, p 49

4 pages 4 pictures 9 ref.

For the investigation of the thermophysical properties of materials at high temperatures a device, based on the utilization of solar energy, which can produce thermal sine waves, has been developed.

L'energy solaire: Mythe ? ou salut de demain ?

Peychès, I

ISES Conf. Paris, (1973) July

7 pages 11 pictures

Solar energy collection, concentration and accumulation

Some experiments with solar collectors

Pringle, P and Skopek, J

Rational technology unit 73-74, Architectural Association, London (1974)

2 pages

Economical aspects

Method of Irradiating Chlorella by Pulsed Concentrated Sunlight

Sadykov, M. et al.

Geliotekhnika 6 (1970) No 5 p 60

4 pages 1 ref.

Construction of a large solar furnace

Sakurai, T. et al.

Solar Energy, 8 (1964) p 117

10 pages 21 pictures 3 ref.

Describes the construction of a solar furnace with mirror 10 m in diameter some results are presented.

Solar furnaces: the pilot-model furnace at Broken Hill

Segal, A

Paper presented at the ANZAAS Congress Solar Energy Symposium, Australia (1958)

A furnace has been set up. Operating experience is reviewed and mention made of the studies in progress on a novel pyrometer device

Solar energy thermal converters fabricated by chemical vapor deposition

Seraphin, B and Wells, V

NSF/U Pennsylvania University Meeting (1973)

Natural circulation of intermediate coolant in a parabolocylindric concentrator

Shadyev, O. et. al.

Geliotekhnika, 9 (1973), No 6, p 27

3 pages 1 picture 3 ref.

Experimental studies of the natural circulation of glycerin in a model of a domestic solar refrigerator have shown that the glycerine is a suitable medium as a coolant and how it can be used as a intermediate coolant in the boiler of a parabolocylindric reflector and its free connection in a closed circuit are investigated.

Irradiation of volumetric receivers in the near focal region of high-temperature 1.5-m-diam solar furnaces

Shakhparonyan, V., Shermazanyan, T.

Geliotekhnika 8 (1972), No 1, p. 51

6 pages 3 tables 2 pictures 3 ref.

Calculation on an electronic computer made it possible to estimate the influx of radiant energy to cylinders, discs and plates placed in the near focal region of a solar furnace.

Application of optical pyrometer on a solar furnace

Shakpharonyan, V., Stamboltsyan, S.

Geliotekhnika 8 (1972), No. 3, p. 72

4 pages 1 table 2 pictures 6 ref.

Instrumentation for the 108-foot diameter cloudcroft solar furnace

Shank, M.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 161

26 pages

Problems of instrumentation for solar furnace are considered for the areas of temperature measurement, atmosphere and focal spot aperture control, flux measurement and temperature measurement.

Modulation system for sun tracking

Shcherbina, D.

Geliotekhnika, 9 (1973), No 3, p 62

5 pages 2 pictures 2 ref.

A modulation tracking system for controlling the motion of the heliostat of a solar unit used for measuring the spectral emissivity of high-temperature materials is described.

Ablation Tests in a Solar Furnace

Sheehan, P et al

Solar Energy, 9 (1965) No 3, p 141

4 pages 9 pictures 6 ref

A concentrating solar energy system employing a stationary spherical mirror and movable collector

Steward, W

Proc. Solar heating and cooling for buildings workshop, Washington (1973)

Combined solar-arc optical furnace for high-temperature research

Teplyakov, D. et al

Geliotekhnika 8 (1972), No. 3, p. 57

4 pages - 2 pictures 5 ref.

Studies on thermal effects on solar furnace mirrors

Toong, T.

U.S. Air Force Missile Development Center, Holloman Air Force Base, (1959), p 133

12 pages

Sur la fusion continue des substances au four solaire

Trombe, F et al

Académie des Sciences. Comptes Rendus, 226 (1948) Jan p 83

3 pages

Describes process of continuous fusion of metals and oxides at high temperatures in a solar furnace (Furnace itself is described in Académie des Sciences. Comptes Rendus, 223 (1946) Aug p 317).

Deformations of epoxy matrix-originals produced by centrifugal casting

Tver'yanovich, E.

Geliotekhnika 8 (1972), No 1, p. 25

5 pages 1 table 3 pictures 5 ref.

A study has been undertaken of deformations of the matrix-originales produced by centrifugal casting during the technological process of manufacturing and obtaining galvanocopies from them.

Critical and optimal air pressure in vacuum and inflated-film concentrators

Umarov, G. and Zhadraev, U.

Geliotekhnika, 2 (1966), No 3, p 34

8 pages 1 table 2 pictures 7 ref.

Deformation of a conical film reflector

Umarov, G. et al.

Geliotekhnika, 1 (1965), No 5, p 19

7 pages 4 pictures

The deformation of a conical film reflector as a zero- moment shell of revolution under normal pressure and corresponding axial force is examined and a linearized equation which gives the deformed shape of the shell under various boundary conditions derived.

Investigation of aberration in film concentrator

Umarov, G. et al.

Geliotekhnika, 2 (1966), No 1, p 47

2 pages 2 pictures 2 ref.

Investigation of the Deformation Field of Film Concentrators under Air Pressure.

Umarov, G. et al.

Geliotekhnika 3 (1967), No 4, p 29

6 pages 1 table 4 pictures 3 ref.

Designing a Solar-Energy Concentrator on the Basis of a Paraboloid of Revolution

Umarov, G. et. al.

Geliotekhnika, 4 (1968), No 6, p 72

4 pages 2 tables 2 pictures 2 ref.

The authors have determined the dependence of focal point diameter of a concentrator made of wedge mirror strips, strengthened on a reinforced concrete substrate of rotating paraboloid shape: (a) from the strips width; and (b) from temperature changes of the reflector at rigid strengthened strips.

Chemical Vapor Deposition and Solar Energy Converter

Wells, V.

NSF/Univ. of Pa. Solar Energy Meeting, (1973)

Solar concentrators of a novel design --- reflecting wall light channel structure

Winston, B.

Chicago Univ., Ill. (1974).

25 pages

Calculations of incident solar radiation on an inclined ribbed surface

Yakubov, N. et al

Geliotekhnika 8 (1972), No. 4, p. 60

4 pages - 4 pictures 3 ref.

The paper produces a formula for calculating direct solar radiation on a ribbed surface inclined at a certain angle to the horizon and facing south.

3.158

Measurement of the emittance of component surfaces on a radiation furnace.

Zakhidov, R. and Kirgizbaev, D.

Geliotekhnika, 10 (1974), No 1, p 48

4 pages 1 picture 8 ref.

A system for the determination of the integrated emittance of materials in vacuum at high temperatures for different types of surface treatment is discussed.

Computation and optimization of the thermal regime in concentrator-type solar devices

Zakhidov, R. and Teplyakov, D.

Geliotekhnika, 2 (1966), No 2, p 12

8 pages 1 table 4 pictures 9 ref.

Power characteristics of concentrator type solar devices under field tracking conditions

Zakhidoc, R. and Teplyakov, D.

Geliotekhnika, 2 (1966), No 4, p 35

9 pages - 6 pictures 7 ref.

...
Silver var varannan ruta,
och varannan var av guld.
...
E. Tegnér: Fritiofs saga

4

SOLFÅNGARE, ICKE-TERMISKA

För framställning av elektrisk energi med hjälp av solstrålning kan man bl.a. använda

- o termoelektriska solceller[1] vilka består av ett antal termoelement kopplade i serie. Lämpliga materialkombinationer är sådana som ger hög elektromotorisk kraft och har låg resistans och låg värmeledningsförmåga. Verkningsgraden är några få %
- o termoelektroniska celler studerades först 1915. De består ofta av halvledare vilka har lägre resistans/värmeledningsförmåga än de ämnen som används i termoelektriska celler. Verkningsgraden är omkring 15 %
- o fotoceller. har förhållandevis hög verkningsgrad (10 - 13 %)

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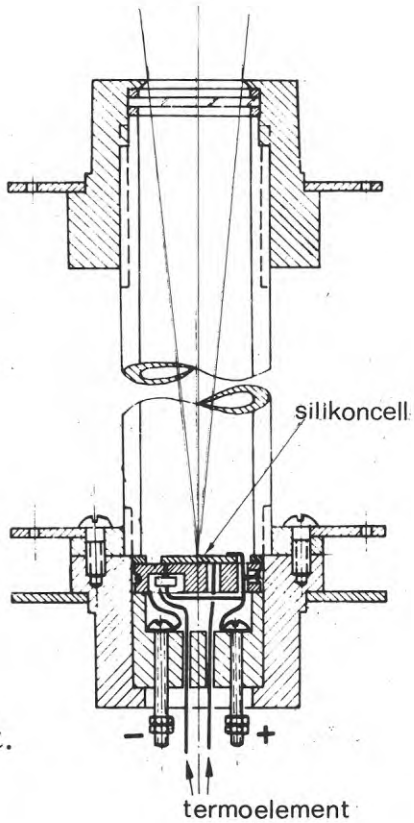
1) Första patenterade systemet för solenergi uttogs 1888

Också fotokemiska processer kan användas för energiframställning. vilket även berörts i avsnitt 5.3.1. Fotokemiska reaktioner har också utomordentlig betydelse vid material - t.ex. plasts åldringsbenägenhet - för apparatdelar i solfångare, se avsnitt 3 och 6.

Fotobiologiska processer är helt naturligt av intresse, bl.a. med hänsyn till livsmedelsförsörjning. Emellertid kan även framställning av bränslen med solenergins hjälp komma att bli av betydelse. Enklaste exemplet på det senare är självfallet ökad framställning av vad som utgör ett viktigt bränsle i icke industrialiserade länder, medan t.ex. metallframställning med hjälp av alger är intressanta projekt även för industristater.



Tvärsektion av en silikoncell.
(efter Selçuk et al (1962))

4.0 ICKE-TERMISKA FÅNGARE, allmänt.

Soviet solar switch

Anon

Electron Illus (1959) p 66

Data for use in the assessment of energy technologies.AET-8

Associated Universities, Inc., Upton, New York, (1972).

Solar thermal electric power systems

Westinghouse **electric corp. Georesearch lab.**

288 pages

Concentrators. Heat exchangers. Heat storage. Solar power generation. Systems analysis. Cost estimates.

Power from the sun and world energy resources

The Unesco Courier, (1974), June

Terrestrial solar power

J.S.E.S., (1974), Nov

Solar Radiation as a Power Source

Abbot, C.

Smithsonian Institute Report (1943)

9,000 Billion Horsepower of Solar Energy

Altenkirch, E

Fortune, 18 (1938) p 84, 142, 144, 146, 149

8 pages

Reviews various possibilities of utilization of solar energy, and describes briefly some of the devices developed

High-power solar installations

Aparasi R and Baum V

Solar Energy 1 (1957) No 1 p 6

Solar power plants

Aparisi, R. et al.

Geliotekhnika, 4 (1968), No 1, p 21

8 pages - 1 picture 22 ref.

The principal object of this research is to make possible the construction of large industrial enterprises in areas where this is prohibited by the unavailability of ordinary power sources.

High power solar installations

Baum, V. et al.

Solar Energy, 1 (1957), No 1, p 6

7 pages

How to make solar cells

Chapin, D

Radio-Electronics (1960) March, Bell Telephone Laboratories

3 pages

Handbook of space-radiation effects on solar-cell power systems

Cooley, W

NASA SP-3003 (1963)

This handbook is intended to provide a review of research data and analytical methods which can be used to design radiation resistant silicon solar-cell power systems for earth satellites which have orbits passing through the magnetosphere

Solar investigations

Ericsson J

New York (1875)

Details of some apparatuses for utilization of solar energy.

Contributions to the centennial exhibition

Ericsson J

New York (1877)

Ericsson's investigations and inventions in many fields, thereby in the utilisation of solar energy.

Conversion and utilization of solar energy

Farber, E.

Geliotekhnika, 9 (1973), No 4, p 55

4 pages

The author reports on activities at the Solar Engineering Laboratory of the University of Florida (U S A).

Power from the Sun

Glaser, P.

Science (1968) Nov. 22

Power for the small user

Golding, E

New Commonwealth, 37 (1959) No 2, p 103

5 pages

Demands from developing countries for power in varying capacities are now being met by a widening range of plants. Choice must depend largely on economic considerations, and the author here examines the suitability and running costs of different types of equipment. Various small-scale power plants are considered, including nuclear plants, oil engines, water power plants, wind power plants, equipment using solar radiation, and power plants using organic wastes

Low temperature engineering application of solar energy

Jordan, R. . et al

ASHRAE, New York, (1967)

78 pages

Six papers.

A study of advanced solar APU systems

McDonald, J et al

WADD Technical Report 60-626 (1960)

Solar energy for the terrestrial generation of electricity

Meinel A et al

Hearing before the subcomm. on Energy of the Comm. on Science and Astronautics, Washington, (1973)

48 pages

Rotary, deployable space solar power supply

Schuerch, H. and Robbins, W.

Contracto No NASA-652, Astro-Research Corporation, Santa Barbara, Calif., NASA CR-122, October, (1964)

81 pages

An automatic solar power system

Shul´meister, L. et al.

Geliotekhnika, 2 (1966), No 4, p 72

4 pages - 1 picture 1 ref.

The energy plantation

Szego, G. et al

7th Intersociety Engineering Conversion Engineering Conference, (1972)

Terrestrial solar energy power system

Tani, T., Horigome, T.

The Concept of Solar Energy Power System, The Journal of the IEE of Japan, 92 (1972), No. 12, p. 31

4 pages - - -

Solar energy utilization by physical methods --- including hydropower, windpower, direct solar heating and electrical power

Wolf, M.

Science 184 (1974) April p. 382

5 pages 16 ref.

Power from solar energy

Yellot, J.

ASME Transactions, 78 (1956), No 12

4.1 ELGENERERING, allmänt.

Solar generator offers low-cost power to inaccessible areas

Anon

Instruments and Lab (1961)

2 pages

Energy conversion & storage

School of electrical engineering, OSU

Quarterly report through December 31 (1965)

Conservation and better utilization of electric power by means of thermal energy storage and solar heating

Altman, M.

Towne School of Civil and Mechanical Engineering 1971

265 pages

Direct Energy Conversion

Angrist, S.

Allyn and Bacon, 2nd ed. (1971)

Solar energy power system

Scientific American (Jap.Printing) 3 (1973)No 5 p 42

3 pages

Solar thermal electric power systems.

Annual progress rept. 1 May-31 Dec (1973)

Colorado State Univ, Fort Collins. Solar energy applications lab (1974) Jan.

288 pages

Energy conversion

Defense Documentation Center, Alexandria, Va. (1974) Jan. Report bibliography Jan. 54 - Aug. 73.

407 pages

New Watts under the Sun

ASHRAE Journal (1974) Feb. p. 46

4 pages

Solar power generation and distribution

Auburn Univ., Alabama. Terrastar: Terrest. Appl. of Solar Techn. and Res. (1974).

11 pages

Research on Non-Magnetic Power Supplies

Artley, J. and Hall, J.

NASA CR-130 (1962)

62 pages

This report describes the work accomplished in the study of components for use in a non-magnetic converter.

Solar-Electric Residential Power System

Backus, C

7th Intersociety Energy Conversion Engineering Conference (1972)

A Proposed New Concept for a Solar Energy Converter

Bailey, R.

Trans ASME 'A' 94 (1972) No 2 April p. 73

5 pages - 7 pictures 7 ref.

Concept of pyramidical solar radiation absorber - converter (to electric energy)

4.10

The conversion of solar energy into electricity

Baum, V

Solar Energy, 7 (1963) No 4, p 180

6 pages 3 tables 15 ref

The conversion of solar energy into electricity can be done by using new methods based on the latest achievements of the physics of solid bodies and the production of new materials with special physical properties, as for instance, semi-conductors. Convertors of solar energy into electricity, which are now of practical interest only in some particular cases, but which seem to have a very promising future, are: thermoelectric, photovoltaic, and thermionic devices

New sources and methods of producing electricity

Baum, V. and Millionsechekov, M.

7th World Energy Conf., Moscov, (1968)

Research applied to solar-thermal power systems.

Bienert W et al.

Minnesota Univ, Minneapolis (1973) Jan.

Semi-annual progress rept 1 Jul-31 Dec (1972)

286 pages

Direct Solar Energy Conversion for Large-Scale Terrestrial Use

Böer, K. et al.

Annual Report of the Institute of Energy Conversion to the National Science Foundation RANN-Program (1972)

Direct Solar Energy Conversion for Large-Scale Terrestrial Use

Böer, K.

NSF/Univ. of Pa. Solar Energy Meeting (1973) March

Direct solar energy conversion for terestrial use.

Böer K

J Environ Sci 17 (1974) No 1 p 8

7 pages 8 ref.

Several possible systems are suggested for conversion of the solar energy into electric energy.

Solar-to-electric energy

Calmpitt, B et al

SAE Journal (1960) May, p 52

4 pages

A new two-stage device for converting solar energy into electrical energy

Energy Conversion

Chang, S.

Prentice Hall (1963)

The Generation of Pollution-free Electrical Power from Solar Energy

Cherry, W.

Journal of Engineering for Power (1972) April, p. 78
Also Trans ASME 'A' 94 (1972) No. 2, p 78

5 pages 4 tables 8 figures 9 ref.

Electricity from the Sun

Coblentz, W

Popular Mechanics, 57 (1932) March p 418

4 pages

Reviews briefly German and United States experiments for transformation of sunlight into electric current

Introduction to Direct Energy Conversion

Coombe, R.

Pitman (1968)

Direct use of the sun's energy

Daniels, F.

Yale University Press, New Haven, (1964)

383 pages

Experimental determination of near-anode region width in the Knudsen regime of a TEC with Ba + Cs interelectrode medium

Dunaev, A. and Tashbaev, N.

Geliotekhnika, 7 (1971), No 2, p 26

7 pages 4 pictures 6 ref.

Research applied to solar-thermal power systems

Eckert, E.

Minnesota Univ., Minneapolis (1973), July
Semi-annual progress rept. Jan 1 - Jun 30, (1973)

220 pages

Conversion of sun radiation to electricity

Gardner, G.

Solar Energy, 4 (1960) No p 23

2 pages 1 picture

An apparatus, without moving parts, which, if placed in a region containing a large number of charged particles will separate and capture them by a method analogous to the separation of ions in a storage battery.

Solar Power Systems

Hamilton, R.

XVth International Astronautical Congress, Warsaw, Poland (1964)

57 pages

The overall performance characteristics and the development status of static and dynamic solar-power-conversion systems are presented.

Large terrestrial solar arrays

Hewitt, J. and Rink, J.

Intersociety Energy Conversion Eng Conf., Ecston, (1971), Paper 719005, p 15

8 pages

Large scale efficient conversion of solar energy

Hildebrandt, H. et al

Univ. of Houston, (1971), November 23

A proposal for solar energy power system

Horigome et al

Bul.Electrotechn.Lab. 36 (1972) No 10 p 64

Utilization of Solar Energy Power System

Horigome T et al

General Meeting of IEE of Japan (1973) No 827

Artificial Converters of Solar Energy

Hottel, H

Sigma Xi Quarterly, 29 (1941) April p 49

12 pages

General discussion of problem of converting solar energy to power, and review of various experiments; contains a bibliography

Application of solar energy

Hunrath, G

Battery Research and Development Conference (1957) Proceedings p 99

4 pages

Solar energy conversion experiments

Solar energy conversion

Hunrath, G

Battery Research and Development Conference (1958) Proceedings, p 111

3 pages

Arctic regions can benefit from solar energy utilization for power requirements of small magnitude because in summer the high latitudes receive 24 hours of sunlight per day, even though it is at low intensity

A rational method for evaluating solar power generation concepts

Karaki S et al.

Colorado State Univ, Fort Collins. Dept of civil engineering (1973) May

12 pages

Direct conversion of heat to electricity

Kaye, J and Welsh, J

John Wiley and Sons (1960)

The book is divided into five general areas: Thermionic Engines High Vacuum; Thermionic Engines-Low Pressure; Magnetohydro Dynamic Converters; Semi-conductor Devices; Fuel Cells

Direct energy conversion

Kettani, M.

Addison Wesley Publishing Co., (1970)

Solar radiation simulators and measuring the characteristics of batteries and their elements (survey)

Koval'skii, V.

Geliotekhnika 8 (1972), No. 3, p. 45

7 pages - - 44 ref.

Sonnenkraftanlagen

Krauch, H.

BWK, 14 (1962), No 7

3 pages 4 pictures 6 ref.

Optimizing the power output of solar cells with concentrators

Latour, A. and Costello, F.

Aerospace Engineering, (1960), April, p 31

7 pages

The method presented permits determination of the steadystate operating temperature of the solar cell array, as well as the cut-on and cut-off points of the spectrally selective filter necessary to achieve maximum output.

Development of a heliotropic orientation device for high cencentration ratio solar power generation systems

Leovic, W.

Thompson Ramo Wooldridge, Inc., Cleveland, Ohio, (1964), Oct

143 pages

Solar battery power plant design

Lidorenko, N. et al.

Geliotekhnika, 2 (1966), No 2, p 20

5 pages 6 pictures 2 ref.

This paper deals with a new design for a solar power generator and describes the construction and tests carried out.

Research on the direct conversion of solar energy into electricity

Lidorenko, N.

Geliotekhnika, 3 (1967), No 5, p 20

12 pages 6 pictures 20 ref.

Possibilities of Solar Energy Conversion to Electrical One

Lidorenko, N. and Tarnizhevski, B.

ISES Conf. Paris, (1973)

11 pages

Ways of developing self-contained solar electrical devices for separate consumers.

4.16

The promise of large-scale solar power

Linitskii, N.

Geliotekhnika, 7 (1971), No 1, p 42

4 pages 1 table 1 picture 6 ref.

Survey and Analysis of Designs of Liquid-Liquid Type Semiconductor Batteries

Lukomskii, S. and Mikheev, V.

Geliotekhnika, 6 (1970), No 6, p 75

5 pages 4 pages 23 ref.

Engineering and economic problems in the production of electric power from solar energy
Löf, G.

Proc. of Wold Power Conference, Rio de Janerio, (1954)

A rational method for evaluating solar power generation concepts

Löf, G. and Karoki, S.

ISES Conf. Paris, (1973)

10 pages 3 pictures 6 ref.

Discussion of element of a technical and economical analysis of equipment for generating electricity from solar heat.

Installations for the Direct Conversion of Solar Energy into Electricity

Malevskii, N.

Geliotekhnika, 6 (1970), p 15

10 pages

Solkraftverk löser världens energiproblem

Meinel, A. and Meinel M

Forskning och Framsteg, (1972), No 2, p 19

7 pages

Thermal Performance of a Linear Solar Collector

Meinel, A. and Meinel M

Winter Annual Meeting of the American Society of Mechanical Engineers, New York, N.Y., (1972).

Etude d'Un Dispositif Compartant un Groupement Mixete d'Elements Refrigerateurs, Thermelectriques

Moumoni, A. and Mahamane, I.

ISES Conference in Paris, (1973)

13 pages - 2 pictures 5 ref.

Optimization of cascaded power generators and refrigerators.

Technical research trends at IESUA for energy production from solar radiation

Perrot, M and Touchais, M

UN Conf on New Sources of Energy, Rome (1961)

39 pages

Contrary to the general belief, solar energy is a very costly form of energy, which is abundant for industrial conversion primarily in arid regions, and more particularly in the Sahara. There are really no storage problems, except for low-power applications, or when relatively low temperatures are employed; but there is a problem of auxiliary power, which can be satisfactorily solved with fossil fuels, in the Sahara

Efficiency calculations of heterojunction solar energy converters

Purohit R et al

Trans on Electron Devices 16 (1969) No 3 p 309

Electricity from the sun

Person, G.

Proc. 1955 World Symposium on App. Solar Energy, Stanford Res. Inst., (1956)

4.18

Devices for direct conversion of solar energy into electrical energy

Petukhov, B.

Utilization of Solar Energy, Series IV, No 14 (1958)

4 pages

A general discussion on the various means for directly converting solar into electrical energy. e.g., photoelectric and thermoelectric types of conversion; and the materials used and their efficiency.

Commercial Solar Cell Array Design

Ralph, E

Heliotek,Division of Textron, Inc (1971)

Large scale solar electric power generation

Ralph, E.

Solar Energy, 14 (1972), No 1, p 11

10 pages 2 tables 6 pictures 9 ref.

Bordenergieanlagen mit solaren Energie

Rath, J

Schweizerische elektrotechnischer Vereins, Bulletin 61 (1970) No 10, p 437

5 pages

Electrical outputs of shadowed arrays

Rauschenbach S

IEEE Conf.Rec of 7th Photov..Spec.Conf.California (1968) p 54

8 pages

Etude de l'utilisation de l'énergie pour la production d'énergie électrique

Réméniéras, G

Rev Gén Elec, 66 (1957) p 593

34 pages

Various methods of transforming solar radiation into electrical energy are outlined

Estimation of optimum solar radiation concentration level for solar batteries with various cooling methods

Savchenko, I, Tarnizhevskii, B.

Geliotekhnika 8 (1972), No. 4, p. 20

4 pages **3 pictures** **5 ref.**

Solar batteries

Schekin, V

Library Bulletin, TG 230T65 (1959)

7 pages

Direct Energy Conversion

Soo, S

Prentice Hall (1968)

Direct Generation of Electricity

Spring, K

Academic Press (1965)

A solar to electric energy system with intermediate energy storage

Summers, C.

IEEE Conference and Electronics Show (1963)

20 pages

Direct Energy Conversion

Sutton, G.

McGraw, (1967)

Use of Solar Energy for Production of Mechanical Power and Electricity

Tabor, H

Solar Energy,6 (1962) No 3 p 89

5 pages 8 ref

Summary of papers given at UN Conference on new sources of energy, Rome (1962)

Large-area solar collectors for power production

Tabor, H

Solar Energy, 7 (1963) No 4, p 189

6 pages 2 pictures 6 ref

The paper provides a detailed picture of the problems involved with large central power station using solar collectors, and the economic prospects

Some Results of the Experimental Operation of Solar Power Plants

Tarnizhevskii, B. and Rodichev, B.

Geliotekhnika, 3 (1967), No 4, p 5

5 pages 2 tables 2 pictures 4 ref.

Fotoelektrische, thermoelektrische und thermionische Umwandlung in elektrische Energie

Tingwaldt, C. and Seemann, F.

Bremstoff, Wärme, Kraft, 14 (1962), No 7

5 pages 11 pictures 15 ref.

Permissible values of air pressure in inflated (vacuum) film solar concentrators

Umarov, G. and Zhadraev, U.

Geliotekhnika, 1 (1965), No 5, p 26

3 pages 2 pictures 4 ref.

The conversion of radiation into electricity

Veinberg, V. and Mal'tsev, Yu,

Zh. Tekh. Fiz, 26 (1956), p 2373, (in Russian)

5 pages

While there have been many discussions of the thermodynamics of converting solar radiation to heat and hence into electrical energy, the thermodynamics of the processes occurring in the heater where the incident radiation is trapped is not normally considered in detail. This paper, which is theoretical, considers the optimal conversion conditions, taking into account the parameters relative to the heater, The characteristics of various types of solar heaters in optimal working conditions are given in tabular form. For Central Asia summer conditons the daily power per sq m is 100-150 whr; with reflectors, 2 kWhr can be achieved. Thermoelectric installations may give only a third to a quarter of this energy.

Solar Energy Utilization by Physical Methods --- Including Hydropower, Windpower, Direct Solar Heating and Electrical Power

Wolf, M.

Science, Vol. 184 (1974) Apr., p 382

5 pages

Status of JPL solar powered experiments for terrestrial applications

Yasui, R. and Goldsmith, J.

9th Intersor Energy Conv. Eny. Conf., (1974), p 377

12 pages

4.1.1

TERMOELEKTRISKA SOLCELLER.

Thermal energy storage for thermionic conversion. I-materials for thermal energy storage. II-thermal energy storage systems considerations.

American Rocket society, space power systems conference, Santa Monica, Calif (1962) paper 2505-62.

77 pages 15 ref

Design and fabrication of advanced thermionic converters. Final report.

Jet propulsion lab, Calif. Inst of tech Pasadena (1968) Nov.

408 pages

Engineering models and flux analysis.

Solar Thermal Electric Power Systems

Colorado State Univ., Fort Collins, Solar Energy Applications Lab. (1974) Jan

288 pages

Parametric performance and cost models for subsystems, such as concentrators, collectors, cost optimization methods

US thermoelectric systems

Summary of talk by Rosi, F.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 10-1

2 pages

Semiconductor thermoelectric heat transformer

Abdullaev, G. et al.

Geliotekhnika, 3 (1967), No 6, p 3

[illegible]: 6 pages 4 pictures 9 ref.

A Semiconductor Solar Thermoelectric Generator with Thermoelements of Unequal Heights

Abdullaev, G. et al

Geliotekhnika, 4 (1968), No 5, p 3

5 pages 3 pictures 15 ref.

A solar thermogenerator is manufactured with the purpose of regulation of the irregular temperature field on hot solders (of thermoelements) on the focal surface of parabolic glass utilizing different altitude of elements. The elements' altitude decreases along the radius of the thermogenerator according to the increasing of the radiant flux density. The possibility of regulating the temperature field conditions in natural conditions on hot solders is shown.

Method for Measuring Thermoelectric Parameters

Agaev, Ya. and Mikhailov, A.

Geliotekhnika, 2 (1966), No 6, p 41

6 pages 3 pictures 11 ref.

Optimization of the weight and energy characteristics of an air-cooled solar thermoelectric generator.

Akramov, T. and Malevskii, Yu.

Geliotekhnika, 2 (1966), No 3, p 6

5 pages 1 table 4 pictures 5 ref.

This paper reports the results of the development of engineering computation methods for determing the operating regime and optimization of the weight and energy characteristics of air-cooled solar thermoelectric generators under the condition that metal radiation concentrators simultaneosly serve as excess heat radiators.

Efficiency of a Thermoelectric Generator with a Cavity Solar Energy Collector.

Akramov, T. and Makov, N.

Geliotekhnika, 6(1970), No 2, p 32

9 pages 2 tables 1 picture 11 ref.

Laboratory tests of a thermoelectric generator for a solar water pumping plant

Alatyrtsev, G. et al

Geliotekhnika 8 (1972), No 1, p. 3

5 pages 2 tables 3 pictures 3 ref.

The paper outlines the results of laboratory studies of a number of thermal and electric characteristics of a thermoelectric generator for a solar water-pumping plant.

Encapsulation of thermoelectric elements and investigation of p-n-type modules based on certain chalcogenides

Ambartsumyan, R. et al.

Geliotekhnika, 4 (1968), No 2, p 3

6 pages 3 tables 3 pictures 9 ref.

Thermoelectric solar energy converters

Anitov, V. and Kulagin, A.

Geliotekhnika, 1 (1965), No 1, p 6

10 pages 3 tables 2 pictures 17 ref.

In this article achievements in the area of thermoelectric energy conversion, materials and design of generators are discussed.

Calculation of the optimum efficiency of a solar thermoelectric generator

Arazmedov, B.

Geliotekhnika, 1 (1965), No 2, p 54

3 pages 1 table 3 ref.

The article outlines a method of calculating the optimum temperature of the hot junction in relation to the efficiency of the solar thermoelectric generator as a function of the concentration of the radiation for the condition of maximum efficiency of the thermopile itself.

Determination of the Optimum Energy Parameters of a Multistage Solar Thermoelectric Generator

Arazmedov, B. and Berdyev, B.

Geliotekhnika, 6 (1970), No 4, p 3

4 pages **2 pictures** **5 ref.**

Electric circuit calculations for multistage solar thermoelectric generators

Arazmedov, B. et al

Geliotekhnika 8 (1972), No 2, p. 13

4 pages **4 pictures** **3 ref.**

The paper outlines a method for calculating the electric circuit of a multistage thermoelectric generator whose stages are connected in series with the load. The rated formula takes into consideration mismatching in operational regimes.

The thermionic method of converting solar enrergy to electricity (Review)

Arifov, U and Kulagin, A.

Geliotekhnika, 1 (1965), No 6, p 5

7 pages 1 tables 3 pictures 31 ref.

Solar Thermoelectric Generator with Cylindrical Receiver

Arifov, U. et al.

Geliotekhnika, 3 (1967), No 3, p 3

4 pages - 6 Pictures 3 ref.

Commutation of Bi_2Te_3-Bi_2Se_3 and Bi_2Te_3-Sb_2Te_3 thermocouples

Arifov, U. et al.

Geliotekhnika, 4 (1968), No 3, p 15

4 pages 2 tables 1 picture 7 ref.

Experimental investigation of the temperature field in the cylindrical-cavity receiver of a solar thermoelectric converter

Arifov, U. et al.

Geliotekhnika, 4 (1968), No 4, p 3

4 pages 1 table 3 pictures 4 ref.

Results are given of an experimental investigation of a temperature field of solar receiver with cylindrical cavity. Analysis is given of nonuniformity of temperature field and optimal geometry is recommended for low-temperature solar thermogenerators.

Matching a thermoemissive converter with a solar receiver in a solar power installation

Arifov, U et al

Applied Solar Energy, 5 (1969) No 1, p 41

4 pages 1 picture 3 ref

Estimation is made of the efficiency of a solar receiver system for a solar power installation, with given parameters of concentrators for the case of partial filling of the external surface of the solar receiver by cathode converter. It is shown that in conditions of low radiation from the external surface of the solar receiver at temperatures ca 2000 K, the efficiency may be higher than at complete filling of the solar receiver surface

Large, low-cost thermionic solar concentrator analysis and development

Bagby, J. et al

American Rocket Society, Space Power Systems Conference, Santa Monica, Calif., (1962), Paper 2534-62

51 pages

Temperature Field of the Cylindrical Cavity-Receiver Cathode of a Solar Thermionic Converter

Baranov, V. et al.

Geliotekhnika, 6 (1970), No 6, p 3

10 pages 6 pictures 10 ref.

Thermoélectrogénérateurs Solaires (Teys) a Semi-Conducteurs: Materiaux et Transformateurs

Baranova, R. et al

ISES Conference in Paris (1973)

13 pages 1 table 2 pictures 7 ref.

Use of solar energy for electricity production by direct conversion by means of thermo-electric converters and photo-electric cells

Baum, V

UN Conf on New Sources of Energy, Rome (1961)

31 pages

Three types of converters of solar energy inte electricity are discussed (1) thermoelectric, (2) photoelectric and (3) thermionic

Semiconductor Convertors of Solar Energy

Baum, V et al

UN Conf on New Sources of Energy, Rome (1961)

34 pages

The present paper is a summary of some investigations concerning Thermoelectric convertors and photoelectric convertors of solar energy

Thermoelectric pile for household air conditioning

Beilin, A. et al

Geliotekhnika 5 (1969), No 4, p. 57

3 pages 2 tables 1 picture 2 ref.

Construction of a thermionic energy converter

Block, F

Proceedings from the IRE (1960) p 1847

6 pages

Some of the general design considerations for a cesium vapor-type thermionic energy converter are discussed

Preliminary tests of a solar heated thermoelectric converter

Breihan, R et al

UN Conf on New Sources of Energy, Rome (1961)

Preliminary data are reported on the production of electric currents by focussed sunlight on a thermoelectric converter

Thermoelement Contacts

Drabkin, L.

Geliotekhnika, 3 (1967), No 4, p 3

2 pages - 1 picture 4 ref

Method of determining the transfer functions of solar thermoelectric generators

Drabkin, L.

Geliotekhnika, (1971), No 3, p 9

8 pages 2 tables 5 pictures 2 ref.

Thermodynamic analysis and parameter optimization of a solar thermoelectric power unit with radiative heat dissipation

Drabkin, L.

Geliotekhnika 8 (1972), No. 3, p. 15

9 pages 1 table 8 ref.

Stand for Vibration Testing of Theromelements

Drabkin, L.

Geliotekhnika, 9 (1973) p 66

2 pages 2 pictures

Irradiation effectos on thermoelectric materials

Danko, J. et al.

ARS Source Power Systems Conference, Santa Monica, Calif., (1960) p 1276

5 pages

The research and development program on a thermoelectric nuclear fuel element with $Li_xNi_{1-x}O$.

Development of solar thermionic converters - Tests in simulated radiation

David, J. and Fiorft, F.

Cooperation Méditerranéenne pour l'Energie Solaire, Bulletin No. 15, Dec. (1968) p. 51-60.

10 pages 12 ref.

Bonding of thermoelements in thermoelectric devices

Erzin, N. and Makov, N.

Geliotekhnika, 1 (1965), No 5, p 32

Réalisation de convertisseur thermoionique - essais en rayonnement simulé

Floret, F and David, J

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15

The paper deals with ionization in a thermoconverter operated by solar radiation. The process results in the variation of the current discharged by a converter

Prospects for thermoelectricity

Gettings, H

Missiles & Rockets, 5 (1959) No 26, p 29

3 pages

4.30

A possible regenerative molten-salt, thermoelectric fuel cell

Greenberg, J. et al.

NASA TM D-2440 (1964)

7 pages

When a molten salt is subjected to a temperature gradient, a thermopotential is developed. It is then possible to make the salt decompose by supplying inert electrodes that are connected by an external circuit. The removal of decomposition products from the electrodes prevents the formation of a back electromotive force that will cancel the thermopotential. These decomposition products can then be made to recombine electrochemically in fuel cell. Preliminary investigations indicate that such a regenerative molten-salt thermoelectric fuel cell is possible.

Analysis of the characteristics of a thermoelectric cooling module under different operating conditions

Gukhman, G.

Geliotekhnika, 7 (1971), No 6, p 3

7 pages 1 table 5 pictures 4 ref.

Solar Heated Thermionic Converter

Hatsopoulos, G and Brosens, P

UN Conf on New Sources of Energy, Rome (1961)

13 pages

A discussion of the potential advantages of thermionic engines to be used in converting solar energy into electric power is given

Solar heated thermionic converter

Hatsopoulos, G. and Pierre, B.

United Nations conference on New Sources of Energy, Rome (1961)

13 pages

Thermionic energy converter

Hernqvist, K et al

RCA Rev, 19 (1958) June, p 244

15 pages

The paper describes operational characteristics and experimental studies of a converter having a tungsten cathode

Thermionic converters

Hernquist, K

RCA Laboratories, 14th Annual Proceedings Power Sources Conference (1960)

4 pages

There are three main problem areas for the thermionic energy converter, namely: (a) space charge problems. That is, to devise methods to assure an unhindered flow of electrons from cathode to anode (b) materials problem. This is the search for cathode and anode materials having the right electrical, mechanical, and thermal properties (c) technological problems. These are problems connected with the fabrication of devices and depend to a large extent on the properties of the heat source to be used

Thermoelectric properties of Gallium-Nickel system alloys under standard conditions

Iordanishvili, E. et al

Geliotekhnika 8 (1972), No. 4, p. 36

Thermoelectric properties of copper-gallium alloys

Iordanishvili, E. et al.

Geliotekhnika, 9 (1973), No 3, p 22

4 pages 1 pictures 19 ref.

On the maintenance of saturated standard cells at 3 deg. C. through the use of thermoelectric cooling

Karoli, A. and Robert, E.

Instrument Society of America, (1964)

7 pages

Examination of emf-temperature data for saturated standard cells in the vicinity of 0 deg. C shows that the cell voltage reaches a maximum at approximately 3 deg. C. A cell maintenance temperature of 3 deg. C, therefore, appears the most appropriate operating environment for a saturated cell in order to obtain maximum voltage stability.

4.32

Thermoelectric generators for the conversion of solar energy to produce electrical and mechanical power

Katz, K

UN Conf on New Sources of Energy, Rome (1961)

32 pages

The design and performance capability of thermoelectric generators for the conversion of solar energy and relative system economics

Solid state physics and solar energy.

Keyes F.

Comments solid state phys. Journal paper 4 (1972) No 6 p 183

7 pages

The physics involved in thermal conversion of solar energy to useful work and the crucially important property of solids.

A new form of thermoelectric recording pyrheliometer

Kimball, H.

J. Opt. Soc. Am. 7 (1923) No. 9

Utilization of Thermosiphon in Thermoelectric Devices

Kolenko, E. and Verdiev, M.

Geliotekhnika, 9 (1973) p 10

3 pages 4 pictures 4 ref.

The operational advantages and disadvantages of thermoelectric devices (coolers and generators) are determined by the structure of the heat-exchange system at the cold and hot junctions of the thermopile. The condition for improved device efficiency, minimization of heat losses in the thermoelectric system, compels designers toward a single reasonable solution: location of the heat-exchange system directly on the thermopile. In the most common cases, this solution entails several drawbacks such as: heat losses due to heat exchange between the cold and hot radiator systems, the need for uniform distribution of the heat flow from a location with high density over the entire surface of the cooling radiator, which leads to a significant increase in the cross section of radiator components and to an increase in the size and weight of the cooling system. The most acceptable way of eliminating these drawbacks inherent in air cooling system is to combine the radiator with a thermosiphon.

Electrical and mechanical characteristics of thermoelement branches reinforced by metal frame

Kolomoets, N. and Tipikin, V.

Geliotekhnika, 9 (1973), No 4, p 17

7 pages 2 pictures 4 ref.

Investigation of Calculated and Experimental Parameters of Medium-temperature Thermal Batteries Using Tellurides of Lead, Germanium, and Tin

Kolomoets, N. et al.

Geliotekhnika, 9 (1973) p 9

6 pages 2 tables 1 picture 9 ref.

Analysis of results obtained from tests and operation of modern thermal batteries show that most existing designs deliver only 60 - 70 % of the efficiency η and electric power W calculated on the basis of the materials. Only in laboratory specimens and certain developments using low specific heat flows is it possible to improve these figures to 85 - 90 %. The reasons for the impaired parameters of actual thermal batteries as compared with the design values are analysed.

Preliminary Results of an Experimental Study of Solar Thermionic Converters

Korobov, V. et al.

Geliotekhnika, 2 (1966), No 6, p 8

4 pages - 5 pictures -

Solar thermoelectric generator with a cylindrical collector

Kulagin, A. et al.

Geliotekhnika, 2 (1966), No 3, p 3

3 pages 3 pictures 8 ref.

A cylindrical collector has been designed and the possibilities of equalizing the temperature at the hot junctions of the collector has been demonstrated experimentally.

Determination of the reduced thermal resistance of a flat plate thermopile

Kuliev, A. et al.

Geliotekhnika, 7 (1971), No 5, p 18

3 pages 1 picture 5 ref.

4.34

A basic solar thermoelectric power unit

Lang, R. and Lubin, B.

Aerospace Engineering, (1962)

10 pages

A logical precedure for the design of a solar thermoelectric power unit is described. Theoretical performance is shown to agree with the results of prototype tests.

Some features of the operation of thermionic converters in solar power systems

Lidorenko, N. et al.

Geliotekhnika, 4 (1968), No 3, p 19

7 pages 1 table 4 pictures 4 ref.

Loss of Temperature Head in the Internal Connections of a Thermoelectric Generator with Electrically Insulating Layers

Lukomskii, S. et al.

Geliotekhnika, **6 (1970), No 3, p 61**

8 pages 2 tables 3 pictures 15 ref.

Thermoelectric thermal insulation for exterior walls

Lukomskii, S. and Korotaev, A.

Geliotekhnika, 7 (1971), No 4, p 69

7 pages 1 table 3 pictures 2 ref.

Heat dissipation intensity indexes in liquid-liquid thermoelectric module

Lukomskii, S. et al

Geliotekhnika 8 (1972), No. 3, p. 88

4 pages - 3 pictures 1 ref.

Commutation losses in Bi-Te-Se-Sb thermoelectric modules

Lukomskii, S. and Khazanov

Geliotekhnika, 9 (1973), No 3, p 72

6 pages 3 tables 11 ref.

Convergence and speed of calculations for thermoelectric heat pump

Makhlin, A.

Geliotekhnika, 10 (1974), No 2, p 71

5 pages 1 picture 6 ref.

Calculations for a thermoelectric device operating under steady-state heat-pump conditions and designed for a thermoelement functioning under average conditions are discussed.

Calculating the perational reliability of a modular solar thermoelectric generator

Malevskii, N. and Tsvetkov, A.

Geliotekhnika, 7 (1971), No 1, p 16

5 pages 1 table 3 pictures 6 ref.

On the possibility of interconnecting thermoelectric batteries using mercury amalgam

Malevskii, N. and Tsvetkov, A.

Geliotekhnika, 7 (1971), No 2, p 22

4 pages 1 table 1 picture 7 ref.

Improvement of the Quality of Semiconductor Thermocells Employing Solid Solutions

Malygin, E. and Khazanov, M.

Geliotekhnika, 6 (1970) No 5 p 3

5 pages **5 ref.**

4.36

Ivestigations of thermoelectric batteries commutated on basis of vacuum condensates of cobalt

Malygin, E. et al.

Geliotekhnika, 9 (1973), No 3, p 27

5 pages 3 pictures 3 ref.

Apparatus for Recording the Current-Voltage Characteristics of Thermoelectric Devices

Markman, M. and Simanovskii, L.

Geliotekhnika, 6 (1970), No 1, p 25

3 pages 2 pictures -

Use of the Harman Method to Measure the Quality of Thermocells and Batteries

Markman, M. et al.

Geliotekhnika, 6 (1970), No 6, p 3

10 pages 6 pictures 10 ref.

Determination of thermoelement quality with account for commutation thermal losses

Markman, M. et al.

Geliotekhnika 8 (1972), No 5, p. 21

4 pages 1 picture 6 ref.

The paper outlines an expression which makes it possible to calculate the quality of thermoelements on the basis on their heat conductivity and short-circuit conditions, taking into consideration thermal losses in commutation. The temperature is measured on the external commutation boundaries which makes it possible to estimate the reliability of thermal elements on conventional units used for measuring heat conductivity of material samples.

Tubular module for thermoelectric generators

Markman, M. et al.

Geliotekhnika, 9 (1973), No 3, p 32

4 pages 3 pictures 1 ref.

Utilization of tubular thermoelectric modules in solar generators

Markman, M. et al.

Geliotekhnika, 10 (1974), No 1, p 23

5 pages 4 pictures 4 ref.

Determination of the temperature field in a tubular thermoelectric module

Markman, M.

Geliotekhnika, 10 (1974), No 1, p 28

3 pages 2 pictures 1 ref.

The use of high temperature thermoelectric materials (silicides) for power generation in space

Mayer, S. and Ritchie, I.

ARS Space Power Systems conference, Santa Monica, Calif. (1960)

4 pages

This paper discusses the possible use of some developmental high temperature thermoelectric materials - the silicides - for space applications. Calculations of efficiency and powerweight ratio are carried out.

Thermal Conversion Offers Potential in Solar Energy Production

Meinel, A. and Meinel, M.

Aware Magazine, (1973)

Solar energy thermionic conversion system

Menetrey W.

American Rocket Society, Space Power Systems Conference, Santa Monica, Calif., Sept. 25-28, (1962), Paper 2499-62

105 pages

Solar energy thermionic electrical power supplies

Menetrey, W. and Smith, A.

American Rocket Society, Space Power Systems Conference, Santa Monica, Calif., (1962), Preprint
Journal of Spacecraft and Rockets, 1 (1964), p 659

7 pages

Experimental investigation of the temperature field of the cathode of a solar thermionic converter

Nevezhin, O. and Rubanovich, I.

Geliotekhnika, 4 (1968), No 4, p 16

3 pages 1 table 1 picture 5 ref.

Experimental determining of thermal fields of solar thermoemissional converter of two configurations is described. Data obtained on a thermal model are presented.

Thermoelectric Element Using the Silicides of Transition Metals

Nikitin, E. and Tarasov, V.

Geliotekhnika, 6 (1970), No 1, p 28

4 pages - 3 pictures 3 ref.

Japanese thermoelectric and thermionic systems

Noguchi, T.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 9-1

7 pages 3 pictures 4 ref.

Experimental solar thermionic converter for space use

Oman, H. and Street, G.

AIEE Pacific general meeting, Calif., August (1960)

Sur un effet thermoélectrique presenté par de l'oxydé cuivrique en poudre

Perrot, M et al

Compt, Rend, 242 (1956) p 2519

3 pages

Etude expérimentale d'effets thermoélectriques de certains oxydes pulvérulents

Perrot, M et al

Publ Sci Univ Alger, B3 (1957) No 2, p 107

18 pages

Solar thermionic electric power systems

Purdy, D

ARS Space Power Systems Conf (1960)

The theoretical application of vacuum type thermionic converters for a space power supply utilizing solar power

Lateral heat transfer in thermoelements

Rezgol, I.

Geliotekhnika 8 (1972), No. 3, p. 39

6 pages 8 ref.

Thermoelectric and mechanical conversion of solar power

Schlichtig, R and Morris, J.

Solar Energy, 3 (1959) No 2 p 14

4 pages 4 pictures 9 ref.

It has previously been overlooked, that sunshine stores vast amounts of free energy in the atmosphere by lowering its relative humidity. The described equipment is a composite of a solar collector, a thermoelectric generator, and a mechnical converter which will generate power from waste heat and stored free energy of dry atmospheric air. Although the use of salt or fresh water for evaporation improves the power output, the mechanical converter will operate without evaporating water if water cannot be obtained.

Experimental thermoelectric batteries with high-performance semiconductor material

Shapiro, E.

Geliotekhnika, 4 (1968), No 3, p 67

4 pages 2 tables 4 ref.

Application of selective coatings in solar thermogenerators

Sheklein, A.

Geliotekhnika, 4 (1968), No 1, p 42

7 pages 3 pictures 13 ref.

Technology of plane and cylindrical thermionic converters

Shroff, A.

International Conference of Thermionic Electrical Power Generation, 2nd, Stresa, Italy, May (1968) Proc. p. 103-111.

9 pages 8 ref.

Solar-powered thermoelectric generator design considerations

Shuh, N. and Tallent, R.

AIEE Technical Paper, (1959), June

Measuring the figure of merit of thermoelectric materials at high heat-loss levels

Simanovskii, L. and Markman, M.

Geliotekhnika, 10 (1974), No 2, p 7

3 pages 4 ref.

Reduced Intensity Indices for Heat Removal and Initial Temperatures in Thermoelectric Units

Skuratovskii, N.

Geliotekhnika, 4 (1968), No 6, p 66

4 pages 1 table 2 pictures 2 ref.

Methods of estimation and comparison of working regimes of different thermoelectric devices are given, for reduced heat derivation indices and initial temperature of working factors. The index of intensity of heat derivation is determinded as the tangent of the angle of slope of the straight line that reflects this dependence.

Determination of the Thermoelectric Power of Thermoelectric Devices from their Thermal Characteristics

Skuratovskii, N.

Geliotekhnika, 6 (1970), No 1, p 82

4 pages 1 table 1 picture 3 ref.

Comparison of Methods of Measuring the Resistance of Thermoelectric Heating and Cooling Devices

Skuratovskii, N. and Mikheev, V.

Geliotekhnika, 6 (1970), No 5, p 67

3 pages 1 picture 3 ref.

Some facts to consider when applying thermoelectric generators

Sorensen, A

Product Engineering (1961) p 463

4 pages

Consideration is given to the engineering design, space applications, terrestrial applications

Thermoelectric properties of some rare earth systems

Vickery, R. et al.

ARS Space Power Systems Conference, Santa Monica, Calif., (1960)

4 pages

Compositions of gadolinium with other metals and metalloids is examined for value as high temperature thermoelectric materials in systems containing bismuth, antimony, silicon, boron, phosphorus, iron, nickel, cobolt and manganese. Seebeck emf's and resitivities are generally low. The gadolimium-selenium system presents however, intermetallic compounds with Seebeck outputs up to 600 uv/C. Specific considerations are made of the potential of this system.

Application d'un noveau type de récepteur à thermopile à l'actinométrie

Volkovisky, V

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12

A description is given of a recently developed thermopile type actinometer

4.42

The conversion of solar energy to electricity by means of the thermionic converter

Wilson, V

UN Conf on New Sources of Energy, Rome (1961)

19 pages

Thermionic converters are being engineered for use in converting solar energy to electricity for space vehicles. To adapt this development for inexpensive electric power on the Earth, the converters must be redesigned to make them resistant to oxidation by the atmosphere and to make them less expensive to build

Solar collectors for use in thermionic power supply systems in space

Wing, L and Cameron, K

ARS Journal (1961) March, p 327

8 pages

Optical aspects of a solar-thermionic power system

Calculations for thermal behavior of converter panel with inaccurate tracking of the sun

Zakhidov, R.

Geliotekhnika 5 (1969), No 4, p. 3

5 pages 2 ref.

4.1.1.1 TERMOELEKTRICITET - VÄRMEPUMP

Sun Energy Assistance for Airtype Heat Pumps

Davis, C. and Lipper, R.

ASHRAE Transactions 64 (1958), p. 97

Optimization of the operating conditions of semiconductor heat pumps in the design of climate-control systems.

Dzhagatspanyan, A.

Geliotekhnika, 7 (1971), No 3, p 70

5 pages 2 pictures 2 ref.

Effectiveness of using semiconductor heat pumps under the conditions of the Turkmen SSR

Ibragimov, D. and Filatov, A.

Geliotekhnika, 10 (1974), No 2, p 64

7 pages 1 picture 3 ref.

The place of the heat pump and solar energy in space conditioning

Jordan, R

Proc Am Power Conf, 39, p 369

11 pages

The current status of heat pump applications is outlined. Design conditions and operating costs for heat pump, solar heat source system

Technical aspects of the use of compression and thermoelectric heat pumps for heating and cooling purposes

Lukomskii, S.

Geliotekhnika, 4 (1968), No 2, p 62

7 pages 1 table 4 pictures

Semiconductor Thermoelectric Devices for Heat Pumps

Lukomskii, S. and Preizer, A.

Geliotekhnika, 6 (1970), No 4, p 78

5 pages **2 pictures** **5 ref.**

Design and study of semiconductor air-to-air heat pumps with indermediate heat carriers

Lukomskii, S, Mikheev, V.

Geliotekhnika 8 (1972), No 5, p. 56

5 pages 4 pictures 1 ref.

The paper describes the circuit and general outline of a semiconductor air-to-air type heat pump with an intermediate heat carrier with heat output of 1.000 watts. There is also a description of a liquid-to-liquid type battery which constitutes the basic element of the heat pump.

Some results of operating tests of a semiconductor heat pump

Lukomskhi, S et al

Applied Solar Energy, 5 (1969) No 1, p 37

5 pages 2 pictures

It has been shown that the heating coefficient of the heating system was 3·3 for a thermoelectric heat pump. The coefficient of performance of the thermoelectric unit was 2·3.In 11 cases break of thermoelements connection occurred because of bad soldering. The coefficient of performance of the heating system may reach 4 for operation conditions of heating system

Heat-Transfer Coefficients of the Interchannel Wall of the Thermopile in a Semiconductor Air-To-Water Heat Pump

Shkabelñikova, L.

Geliotekhnika, 6 (1970), No 3, p 78

3 pages **1 picture** **2 ref.**

4.1.2

ELGENERERING med hjälp av fotocell

RCA demonstrated solar cell using gallium arsenide

Anon

Missiles & Rockets, 5 (1959) No 19, p 16

Vapor-deposited polycrystalline silicon solar cells

IRE Transactions on electric devices, (1961), Nov

Photovoltaic conversion of solar energy: Present and future

Int. Rectifier Corporation IRC. El Segundo, Calif., (1964)

Solar Cell Cover Glass Development Quarterly Technical Progress Report, Dec. 1, 1966-Apr. 30, 1967 (Integral Coverslips Fabricated for Solicon Solar Cells)

Ion Physics Corp., Burlington, Mass. (1967) Apr.

47 pages

Novelties in the field of solar cells

Anon
Int Elektronische Rundschau V 23 (1969), Dec, No 12, p 319

2 pages

Soldriven batteriladdare för båt och husvagnsfolk

Ny Teknik, (1974), No 9

Reported in new scientist

New scientist, 62 (1974), No 898, May 16

Report on a market survey by Ferranti, sale British manufacturers of solar cells.

4.46

US photovoltaire systems

Summaries of talks by Lindmayer, J., Mlavsky, A.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 8-1

6 pages **1 picture**

Research on Cadmium Stannate Selective Optical Films for Solar Energy Applications

Chemical Research Division
A. Cyanamid Co.

27 pages

Development of transparent electrically conductive cadmium stannate coatings

Obtaining photodiodes by bombardment of a silicon surface with positive ions

Ablyaev, Sh. and Chirva, V.

Geliotekhnika, 3 (1967), No 6, p 9

2 pages 2 pictures 6 ref.

Some properties of Si photocells obtained by ion bombardment

Ablyaev, A. and Chirva, V.

Geliotekhnika, 4 (1968), No 2, p 69

2 pages 1 table 1 ref.

Mesuring depth of p-n junction in epitaxial-layer photocells

Abdurakhmanov, B. et. al.

Geliotekhnika, 9 (1973), No 4, p 79

4 pages 1 table 2 pictures 6 ref.

Recent Travaux en Matière de Conversion Helio-electrochinique

Aiache, L. et al.

ISES Conference in Paris, (1973)

6 pages 6 ref.

An introduction to a new device operating on forced photochemical ustulations, capable of directly giving alternating current.

Temperature dependence of the electric conductivity and photo-sensitivity of CdS film

Akramov, T. et al

Geliotekhnika 8 (1972), No 2, p. 9

4 pages 3 pictures 8 ref.

The paper examines the temperature dependence of electric conductivity and photo-sensitivity of CdS film deposited on a non-oriented substrate from a vapor transport reaction at a source temperature 750-1,000°C, depositing temperature 350-500°C and hydrogen consumption 4-6 liters/hour.

Electrical Properties and Photoconductivity of Thin CdS Layers Produced in a Hydrogen Atmosphere

Akramov, Kh. et. al.

Geliotekhnika, 9 (1973) p 3

3 pages 1 table 3 pictures 8 ref.

Published results indicate that by heat treatment of CdS single crystals in a hydrogen atmosphere it is possible to improve the photosensitivity significantly and vary the photoelectric parameters. Heat treatment makes it possible to control (within specific limits) the spectral photoconductivity characteristics in the fundamental absorption region. Water-vapor absorption significantly diminishes both the spectral and integral photosensitivity of CdS crystals, increasing the rate of surface recombination.

Deterioration of the I-V Characteristics of a Photoelectric Power Converter

Akramov, T. and Kulagin, A.

Geliotekhnika, 3 (1967), No 3, p 51

2 pages 1 picture 3 ref.

Contribution to the technology of thin film CdS solar cells

Albrand, K et al

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 13

An Improved Schottky Barrier Photovaltaic Diode for Solar Energy Conversation

Anderson, W. and Delahoy, A.

NSF/Univ. of Pa. Solar Energy Meeting (1973) March

Temperature and humidity effects on silicon solar cells

Arcian C et al

IEEE Conf.Rec of 7th Photov. Spec.Conf. California (1968) p 214

12 pages

Investigation of the current-voltage characteristics of silicon photocells

Arifov, A. and Saidov, M.

Geliotekhnika, 1 (1965), No 5, p 29

3 pages 1 picture 4 ref.

Effect of multiple trapping centers on the photoconductivity of semiconductors in the presence of radiative interband recombination

Aronov, D. and Shamasov, R.

Geliotekhnika, 3 (1967), No 6, p 11

10 pages 5 pictures 9 ref.

On semiconductor photocell surface leakage current measurements

Ashmarin, V.,Lisin, A.

Geliotekhnika 8 (1972), No. 4, p. 16

4 pages 1 table 4 pictures 5 ref.

Environmental study of european silicon solar cells with improved antireflection coatings

Atzel, A. and Crabb, I.

IEEE, 8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 78

6 pages

Some photoelectric characteristics of photoconverters with P-I-N structure

Azimov, K. et al.

Geliotekhnika, 9 (1973), No 3, p 3

4 pages 2 pictures 4 ref.

The authors have tested photoconverters fabricated in the form of a P-I-N structure and these have showed good photoelectric characteristics and high conversion efficiency.

Testing photoelectric generators under the conditions of the Apsheron Peninsula, Azerbaidzhan SSR

Bakirov, M. et al.

4 pages 4 pictures 8 ref.

The authors have done an experimental investigation of a photogenerator assembly under the natural conditions of the Apsheron Peninsula of the Azerbaidzhan SSR, with the aim of deciding whether the photogenerators could be used as an independent power source for cathodic protection of trunk gas pipelines and metallic supports of electric-power transmission lines.

Some remarks on the photochemical conversion of solar energy

Balzani, V. and Bolleter, F.

COMPLES Revue Int. d'Heliotechnique, April (1973)

3 pages 19 ref.

Testing silicon photoelectric batteries at large light fluxes

Bashnyak, A. and Nechaeva, L.

Geliotekhnika, 1 (1965), No 3, p 10

4 pages 3 pictures 8 ref.

Development status of solar generators used on silicon photovoltaic cells.

Basnett D et al.

29th Meec of AGARD propul and energy panel (1967) June p 829

Enviromental assesment of thin silicon solar cells from pilot production

Basnett D and Crabb L

IEEE Conf.Rec. of 7th Photov.Spec.Conf. California (1968) p 161

15 pages

Use of solar energy for electricity production by direct conversion by means of thermo-electric converters and photo-electric cells

Baum, V.

UN Conf. on New Sources of Energy, Rome (1961)

31 pages

Three types of converters of solar energy into electricity are discussed (1) thermoelectric, (2) photoelectric, and (3) thermionic.

Status of Lithium Solar Cell Development

Berman P

IEEE Conf.Rec. of 7th Photov.Spec.Conf. California (1968) p 101

7 pages

Analysis of the performance and stability of CdS solar cells

Besson, J. et al

IEEE, 8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 16

8 pages

New Technology for CdS - Cu_2S Solar Cells of High Reliability

Besson, J. et al

ISES Conf. Paris, (1973)

15 pages 9 pictures 7 ref.

The problem of degradation of cells when exposed to light has been solved.

Methods for fabricating CdS thin-film solar cell modules

Blake, F. et al

Intersocity Energy Conversion Eng Conference Rec. Boulder, Colo (1968), p 600

7 pages

Solar cell radiation studies

Brancato L

Ann Aviation & Space Conf. California (1968) p 156

12 pages

Solar-cell performance at high temperatures

Broder, J. et. al.

NASA TN D-2529 (1964)

7 pages

Open-circuit voltage, curve power factor, and maximum power output as functions of temperature is measured for 1-, 10-, 20-, and 80 ohm-cm silicon cells. The results is compared with those for gallium arsenide that, for temperatures to 200 deg. C.

Regulation of the spectral sensitivity of silicon photoconverters

Buzanova, L.

Geliotekhnika, 10 (1974), No 1, p 50

3 pages 1 picture 3 ref.

A combined solar thermal and electrical house system

Böer, K.

ISES Conf. Paris, July (1973), Paper E H 108.

11 pages 4 pictures 5 ref.

Flat-plate collectors containing CdS/Cu_2S solar cells.

Photovoltaic CdS converter on the Delaware solar house

Böer K, Olson J

IEEE Photovoltaic Spec Conf 10th, Conf Rec, Palo Alto, Calif (1973) p 254

4 pages

4.52

Flat Plate Collectors with CdS Solar Cells and First Indicators of Feasibility for their Large Scale Use

Böer, K. et al

ISES Conf. Paris, (1973)

20 pages 4 tables 6 pictures 11 ref.

Results indicate that CdS/Cu_2S solar cells indicate that life expectancies more than 20 years under terrestrial conditions may be possible if temperatures are below 50°C. Such solar cells are used in the Delaware Solar House.

Photovoltaic Effect in Cu · Cd S System

Capart J et al

IEEE Conf Rec of 7th Photov. Spec.Conf. California (1968) p 22

11 pages

Research on methods of treating cadmium sulfide elements

Carlson, A. et. al.

Wright Air Develop. Centre, Tech. Rept. 57-749, ASTIA Document No AD 151024, Nov (1957)

52 pages

The study forms part of a program for the development of a cadmium sulfide single crystal solar battery, Emphasis is placed on a fundamental study of photvoltaic electrodes formed on cadmium sulfide crystals by copper compounds

A new silicon p-n junction photocell for converting solar radiation into electrical power

Chapin, D. et. al.

Jnl. App. Phys., 25 (1954), p 676

The Bell solar battery

Chapin, D. et al

Bell Lab. Rec. 33 (1955), No 7

How to make solar cells

Chapin, D.

Radio-Electronics, Bell Telephone Laboratories, (1960), March, p 3

Irradiation studies on state- of- the art cadmium sulfide cells

Cubtin D

IEEE Conf.Rec of 7th Photov. Conf. California (1968) p 206

8 pages

Study of Silicon Photovoltaic Converters at High Light Flux Concentrations

Daletskii, G. et al.

Geliotekhnika, 3 (1967), No 2, p 3

7 pages 1 table 4 pictures 13 ref.

p-GaAs$_{1-x}$ P$_x$-n-GaAs heterojunction solar cells

Cheban, A. et al

Geliotekhnika 8 (1972), No 1, p. 30

4 pages 3 pictures 10 ref.

The paper outlines the results of investigations of p-GaAs$_{1-x}$ P$_x$-n-GaAs heterojunction photocells, obtained by the liquid epitaxy method. Solar cells have been developed with an efficiency ratio of 7 per cent. Recommendations are made for raising the efficiency of the photoconvertors under investigation.

Large Area Solar Cells

Cherry, W.

Proceedings 13th Annual Power Sources Conference (1959)

Solar cells and the applications engineer

Cherry, W

Astronautics and Aerospace Engineering, 1 (1963) No 4

5 pages

Photoelectric converters based on epitaxial p-n junction in Si

Chetverikova, G.

Geliotekhnika, 2 (1966), No 1, p 34

3 pages 5 pictures 3 ref.

An experimental investigation of radiation effects in semiconductors

Compton, D.

NASA TN D-2364 (1964)

9 pages

The present experiments are concerned with the radiation induced changes in the minority carrier liftetime of silicon, of the influence of radiation upon the recombination luminescence of germanium and silicon, and the influence of radiation upon the impurity conduction of germanium.

Power from the sun

Cook, E

Army (1961) April, p 39

4 pages

The usefullness of solar cells for military purposes

Room temperature stability and performance of lithium-containing solar cells evaluation

Corra, J. et al

8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 247

13 pages

Photovoltaic conversion-high efficiency silicon solar cells.

Dale, B. and Rudenberg, H.

Transitron Electronic Corporation, Reprinted from 14 th Annual Proceedings, Power Sources Conference, (1960)

4 pages

The improvements made in high efficiency silicon solar cells under a research study have raised the over-all conversion efficiency of the units from 10% to 15%.

High-Voltage Photoconverters Using Gallium Arsenide

Dorokhina, T. et al.

Geliotekhnika, 9 (1973) p 6

3 pages 3 pictures 1 ref.

An increase in the temperature of high-voltage silicon photoconverters reduces their operating power, as in silicon photocells of ordinary structure with a gradient of about 0,5°C; in gallium arsenide converters, owing to the broader forbidden gap, this gradient is about 0,25°C. The difference in the width of the forbidden gap is also responsible for the fact that GaAs devices have higher no-load voltages and optimal load voltages than silicon devices. Thus, it is desirable to use gallium arsenide for high-voltage photoconverters intended for high-temperature operation. The possiblility of making such high-voltage photoconverters with complex p-n junction configurations on the basis of GaAs is investigated.

Electron bombardment of silicon solar cells

Downing, R.

Conf. paper 1294-60, Am. Rocket Soc. Space power systems conf., Calif. (1960)

Photovoltaic power systems on flight spacecraft lunar orbiter.

Drazdauskas C, Read M.

General electric co, Philadelphia Pa (1969) May

303 pages

Photoelectric current in solar elements with heterogeneous intrinsic fields

Edvokimov, V.

Geliotekhnika 8 (1972), No 5, p. 3

18 pages 1 table 9 pictures 5 ref.

UDC 621.472:621.383
The paper outlines the solution of the diffusion equation in semiconductors with heterogeneous intrinsic electric fields for current carriers whose mobility and lifetime depend on the coordinates in the approximation that these dependences are weak. An expression has been obtained for the photoelectric current in a p-n junction and the optimization of the photoelement has been carried out according to the profile of the intrinsic fields.

4.56

Photoelectric film converters

Egorov, J.

Geliotekhnika 2, (1966), No 4, p 4

4 pages 4 pictures 3 ref.

A low-cost photoelectric film converter which would be superior to existing Si single-crystal photoconverters in reliability, weight characteristics, surface area, and radiation, is designed.

Sensors in the automatic control system of a solar power installation

Egorov, A. et.al.

Geliotekhnika, 4 (1968), No 4, p 7

4 pages 2 pictures 1 ref.

Photoelectric sensible elements are described in automatic control system of a solar energy installation. Connecting diagrams of these elements on load are given. Construction and recommendation of use are also described.

Large area solar cells

Elliott, J

Space Power Systems Conf of the American Rocket Society (1960)

Light approach to patterning; cobble single and scroll type pattern attachment; silicon cells convert beam of light into electrical energy

Erwin, J. and Hammel, W.

Textile Ind. 123 (1959), May, p 109

Photovoltaic conversion of solar energy

Escoffery, C.

Proceedings of the American Power Conference, 22, March 1960 (Illinois Institute of Technology, Chicago)

Optical characteristics of silicon solar cells and of coatings for temperature control

Escoffery, C. and Luft, W.

Solar Energy, 4 (1960) No 4 p 1

8 pages 10 pictures 22 ref.

Silicon photovoltaic cells, are widely used for the direct conversion of solar radiation into electric power. The article discusses the control of cell temperature in terms of the absorptance and the emittance of solar radiation by the cell surface.

Silicon photovoltaic cells and the utilization of solar energy

Escoffery, C. and Luft, W.

International Rectifier Corp, (1960)

16 pages

Silicon photovoltaic elles are being widely used in numerous applications, both celestial and terrestrial, for the direct conversion of solar radiation into electric power. The possibility of relieving the world energy problem by the photovoltaic process is discussed. Present day silicon solar cells have conversion efficiencies of 12 per cent or more.

Solar panel design considerations

Evans, W et al

ARS Space Power Systems Conf (1960)

The requirements and parameters of photovoltaic solar array design for space applications are presented. Orbit conditions of insolance, electrical power requirements and panel geometry

Estimation of minority carrier parameters in semiconductor photoelements from the spectral sensitivity curve

Evdokimov, V.

Geliotekhnika 8 (1972), No. 3, p. 32

7 pages 1 picture 2 ref.

Built-in field heterogeneity influence on semiconductor photocell collection efficiency

Evdokimo, V., Milovanov, A.

Geliotekhnika 8 (1972), No. 4, p. 24

12 pages 3 pictures 7 ref.

The paper examines the expression for photocell current under arbitrary dependencies of mobility and lifetime on the coordinates and under arbitrary regeneration functions.

4.58

Calculations of series and shunt resistances on the basis of the volt-ampere characteristic of a solar cell.

Evdokimov, V.

Geliotekhnika 8 (1972), No 6, p 16.

7 pages 3 pictures 8 ref.

The paper outlines a method for determining the series and shunt resistances, the A parameter and reverse current in a photo-transformer with the utilization of a volt-ampere characteristic of an illuminated cell.

Thermal annealing of radiation damage in solar cells

Fang, H.

Astronautica Acta, 13 (1967), March-Apr, p 147

11 pages 33 ref.

Silicon solar cells with direct solar heating. Electric storage methods to avoid radiation damage.

Low-cost Silicon Solar Cells for Terrestrial Applications

Fany, P.

ISES Conf. (1973).

5 pages

A thin layer of silicon is grown on a stainless steel substrate with a titanium layer of about 1 μm in between.

Forestiere, A. and Spakcwski, A.

IEEE-Conference Rec of 7th Photovaltaic Specialists Conference, Pasadena, Calif. Nov 19-21, (1968), p 155

6 pages

Status of cadmium sulfide thin- film solar cell

Forestieri, A. et al

IEEE- Intersociety Energy Conversion Eng Conference Rec. Bouider, Colo-Papers for Meeting, (1968), p 112

4 pages

Electron irradiation of silicon solar cells

Franser, J. et. al.

Conf. paper 60-1094, AIEE Pacific general meeting, Calif. (1960)

Efficiency comparison of photocells with step and exponential distribution of impurities in the alloyed layer

Gavrilova, N.

Geliotekhnika 8 (1972), No 6, p. 23

6 pages 1 table 3 pictures 5 ref.

The paper examines the problem of raising the efficiency of photocells by introducing electric fields into the alloyed layer to correspond to the complex impurity distribution configuration.

Phosphorus Atom Distribution in the Surface Layer of Silicon Photovoltaic Converters for Various Thermal Diffusion Regimes

Gliberman, A. and Landsman, A.

Geliotekhnika, 3 (1967), No 1, p 3

7 pages 2 pictures 9 ref.

Use of silicon photocells in solar orientation sensors

Gliberman, A.

Geliotekhnika, 9 (1973), No 3, p 7

9 pages 4 pictures 10 ref.

Sensors of silicon photocells and how they can be used without the use of amplifying and collecting optics and still have good performance are discussed.

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High-voltage photovoltaic effect

Goldstein, B and Pensak L

J App Phys, 30 (1959) Feb, p 155

7 pages

Vacuum evaporated films of cadmium telluride have been preparated that show photovoltages as high as 100 v/cm of film length

Short-circuit current density of silicon photocells as a function of the angle of incidense

Golovner, T.

Geliotekhnika, 4 (1968), No 1, p 4

5 pages 3 pictures 6 ref.

Germanium p-n Junctions Obtained by Phosphorus ION Bombardment

Golubev, O. et al.

Geliotekhnika, 6 (1970), No 3, p 7

4 pages 4 pictures 4 ref.

Difference in the radiation resistance of n-silicon and p-silicon

Gorodetskii, S. et. al.

Geliotekhnika, 7 (1971), No 1, p 3

7 pages 2 pictures 19 ref.

Effect of cosmic radiation on solar cells

Grigor'eva, G. et. al.

Geliotekhnika, 7 (1971), No 5, p 3

15 pages 2 tables 9 pictures 49 ref.

Determination Photodensitometrique des Parametres Focaux

Guerrero, J. et al.

ISES Conference in Paris, (1973)

11 pages 7 pages

A method for determination of focal plane parameters with solar concentrators of low and medium concentration.

Temperature consideration in solar battery development

Halsted, R

J App Phys 28 (1957) p 1131

Semiconductor materials of band gap appreciably greater than that of silicon may prove useful for photovoltaic solar energy converters operating at elevated temperatures. Such operation is of interest for applications where solar energy concentration can be employed to reduce the photovoltaic surface area required to produce a desired amount of electrical power

Ceramic CdS solar cell "Sunceram"

Hamazaki, N. et al

CC-NAT Tech Reeort V 15 (1969), No 2, p 154

1 page

Photovoltaic cells: Direct conversion of solar energy

Hammond, A.

Science, (1972), November 17

A cadmium sulfide solar generator

Hammond, D et al

Wright Air Development Center, Tech Rept 57-770 (1957)

128 pages

Theoretical analysis of the series resistance of a solar cell

Handy, R.

Solid state electronics, 10 (1967)

Evaluation of the silicon cell pyranometer

Hanson, K.

Manuscript Progress Report, No. 1, Aviation Forecast Res. Project. Washington, D.C.: U.S. Weather Bureau, (1963)

Reflectance, solar absorptivity, and thermal emissivity of SiC cells - coated aluminium

Hass, G. et al.

Applied optics, Vol. 8, (1969)

6 pages

Thermal emmissivity and solar absorptivity of aluminium coater with duoble layers of aluminium oxide and silicon oxide

Hass, G. et al.

Applied optics, 10 (1971)June

4.62

The solar cell-conditionings for optimum perfomance

Heeger, A and Nisbet, T.

Solar Energy, 3 (1959) No 1 p 12

7 pages 14 pictures 1 ref.

The role of the dark diode curve in solar cell evacuation, and the optimum load resistance are discussed.

A concentrator for thin-film solar cells

Hollands, K.

Solar Energy, 13 (1971), No 2, p 149

15 pages 11 pictures 5 ref.

Presents a theoretical study of a novel concentrating reflector especially suited to thinfilm solar cells. The concentrator consists simply of a V-trough with side-walls which are specularly reflecting and a base to which the solar cells are attached

Increased output from silicon solar cells

Iles, A.

IEEE, 8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 345

8 pages

Semiconductor Solar Energy Converters and the Quenching of Photoconductivity

Isamukhamedova, M. and Karageorgii-Alkalaev, P.

Geliotekhnika, 6 (1970), No 3, p 16

4 pages 6 ref.

Photoelectric Conversion

Jensen, A and Limansky, I

Proceedings 14th Annual Power Sources Conference (1960)

4 pages

The photoelectric phenomenon appears to hold excellent promise as a method of utilizing solar energy

Terrestrial Solar- Thermal Power Systems

Jordan, R. et al.

ISES Conference in Paris, (1973)

Photo-thermal conversion for efficient utilization of solar energy in large scale production of electricity.

Improved efficiency of polycristalline thin film solar cells by use of Pd or Re coated current collecting grids.

Justi, E.

COMPLES Revue Int. d'Heliotechnique, April (1973)

3 pages 3 pictures 8 ref.

Investigations on CdTe thin film solar cells

Justi, E. et al

Energy Conversion, 13 (1973), p 53

4 pages 24 ref.

High-Efficiency Gallium Arsenide Solar Cells and Possible Improvements

Kagan, M.

Geliotekhnika, 3 (1967), No 2, p 10

10 pages 4 tables 5 pictures 13 ref.

The potentialities of sandwich-type solar cells

Kagan, M. et al.

Geliotekhnika, 4 (1968), No 1, p 9

12 pages 2 tables 7 pictures 19 ref.

Solar Cells Based on GaAs Epitaxial Films

Kagan, M. et al.

Geliotekhnika, 6 (1970), No 2, p 28

4 pages 2 pictures 13 ref.

4.64

Determination of the recombination parameters and the depth of the p-n junction in semiconductor photocells

Kagan, M. and Lyubashevskaya, T.

Geliotekhnika, 4 (1968), No 4, p 11

5 pages 2 pictures 6 ref.

A method of determination of recombination parameters is proposed that was experimentally controlled on GaAs. The depth of p-n-junctions was found after the position of the maximal spectral sensitivity. Expressions are given for determination of maximum conditions, with the help of which it is possible to calculate the influence of the recombination parameters position on the depth of the p-n-junctions, and different relationships of them.

Investigation of photoelectric characteristics of gallium arsenide solar cells over a wide range of light flux variation

Kagan, M. and Lyubachevskaya, T.

Geliotekhnika, 7 (1971), No 2, p 12

10 pages 1 table 6 pictures 8 ref.

Silicon solar cells

Kalman, J.

Electronics 32 (1959), Jan 30, p 59

Heat waves and thermally stimulated plasma oscillations in semiconductor photocollectors of solar power plants

Karageorgii-Alkalaev, P., Leiderman. A.

Geliatekhnika 5 (1969), No 4, p. 8

6 pages 9 ref.

Solarzellen und Solargeneratoren

Karius, S.

Elektrotechnik und Maschinenbau, 88 (1971), No 1, p 7

4 pages

Photovoltaic effect and photoconductivity in laminated organic systems

Kearns, D and Calvin, M

J Chem Phys, 29 (1958) No 4, p 50

2 pages

Nondestructive measurement of concentrating solar cell panel profile

Keller, B

IEEE Transactions on Aerospace, 2 (1964) No 2

5 pages

Discusses the development and evaluation of a nondestructive inspection tool for measuring surface geometry of light concentrator solar cell panels

Investigation of Photovoltaic Applications

Kelly, B. et al

ISES Conf. Paris, (1973)

7 pages **4 pictures**

Photovoltaic energy systems which compete economically with other power sources for terrestrial applications.

Analysis of performance degradation in CdS solar cells

Kennerud, K.

IEEE-Trans on Aerospace & Electronic Systems V AES-5, (1969), No 6, p 912-17

6 pages

Determination of the Integrated Short-Circuit Current of Solar Photovoltaic Converters from their Spectral Characteristics

Koltun, M. et al.

Geliotekhnika, 2 (1966), No 6, p 3

5 pages **1 table** **3 pictures** **6 ref.**

Multilayer illumination of receiving surface of semiconductor photocells

Koltun, M.

Geliotekhnika 5 (1969), No 4, p. 14

4 pages **1 table** **1 picture** **4 ref.**

Protective Coatings for Solar Batteries

Koltun, M. et al.

Geliotekhnika, 6 (1970) No 5 p 52

4 pages **1 picture** **6 ref.**

Optical Coolings for Semiconductor Photovoltaic Converters and Solar Energy Concentrators

Koltun, M.

ISES Conf. Paris, (1973)

9 pages **11 ref.**

Review of Russian work.

Semiconductor photocells transparant in the long-vave region beyond the edge of the fundamental absorption band

Koltun, M. et al.

Geliotekhnika, 9 (1973), No 5, p 10

8 pages 3 pictures 13 ref.

The development of cascade solar cells and the reduction in the equilibrium working temperature of solar batteries working under the conditions of radiative heat transfer require the availability of semiconductor photocells which are transparent in the long wave part of the spectrum beyond the fundamental absorption band. Measurements have shown that conventional photocells are opaque throughout the solar range between 0.2 - 3.0 μm because of the absorption of radiation by free current carriers in the relatively highly doped surface layer of p-n junction photocells in the solid-metal back electrode, and at the semiconductor-metal separation boundary. This article is an attempt to determine possible ways of reducing infrared absorption in photocells due to the above processes without deterioration in the optical and electrical properties of the devices.

Advent

Kracher, R.

ARS Space Power Systems Conference, Santa Monica, Calif., (1960)

3 pages

The vehicle will be positioned so that its antenna will be continually oriented toward the earth by means of the attitude control system. The electrical power for the vehicle will be drawn from the sun and converted to electricity by silicon photovoltaic cells.

Design and development of a solar cell test console

Lally, F

IEEE Transactions on Aerospace, 2 (1964) No 2

6 pages

A discussion of the design, development and fabrication of solar cell measuring equipment

High-Voltage Photoelectric Generators for Ultrahigh Light Flux Densities

Landsman, A. and Strebkov, D.

Geliotekhnika, 6 (1970), No 2, p 15

6 pages 1 table 2 pictures 3 ref.

Electric Parameters of "Foto volt" Generators at High Irradiance Levels

Landsman, A. and Strebkov, D.

Geliotekhnika, 6 (1970), No 3, p 3

4 pages 3 pictures 4 ref.

Solar Energy Efficiency of the High-Voltage Photoelectric Generator

Landsman, A. and Strebkov, L.

Geliotekhnika, 6 (1970), No 2, p 21

7 pages 4 pictures 3 ref.

Low-powered Photoelectric Generators for the Terrestrial Application

Landsman, A. & Pulmanov, N.

ISES Conf. Paris, (1973)

6 pages

A solar energy power converter

Landsman, A. et al.

Geliotekhnika, 1 (1965), No 1, p 16

6 pages 8 pictures 15 ref.

The problems connected with photocell technology have been worked out for ordinary light intensities. This article presents an investigation about photocells working with high intensities.

An introduction to the theory of photovoltaic cells

Landsberg, P.

J.S.E.S. (UK), (1974), Nov

Investigation of High-Voltage Photoconverters at low Radiation Intensities

Landsman, A. et. al.

Geliotekhnika, 9 (1973) p 3

4 pages 2 tables 3 pictures 3 ref.

Photochemical aspects of solar energy utilization

Levine, S. et al.

Solar Energy, 2 (1958) p 11

11 pages 3 tables 4 pictures 54 ref.

The pssibilities of using organic dyestuffs with a solid state catalyst is examined.

Analysis of the probe method of measuring the back contact resistance of a semiconductor photoconverter

Lisin, A.

Geliotekhnika, 10 (1974), No 1, p 10.

9 pages 5 pictures 4 ref.

Theoretical considerations governing the choice of the optimum semiconductor for photovoltaic solar energy conversion

Loferski, J

Jour Appl Phys, 27 (1956) p 77

8 pages

The effect of radiation on silicon solar-energy converters

Loferski, J and Rappaport, P

RCA Rev 19 (1958) No 4, p 536

The performance of silicon solar cells under simultaneous illumination and irradiation by various ionizing radiations has been observed for the purpose of estimating the useful life of such power sources

The photovoltaic effect and solar energy conversion

Loferski, J

ARS Space Power Systems Conf (1960)

The photovoltaic effect as a means of energy conversion is presented. There exist semiconductors whose maximum solar energy conversion efficiency could be even higher than that of silicon

Recent research on photovoltaic solar energy converters

Loferski, J

Proceedings of the IEEE (1963) May

8 pages

This paper contains a review of recent work on photovoltaic cells fabricated from semiconductors other than silicon; the effects of radiation on silicon *n/p* and *p/n* cells, and galliumarsenide *p/n* cells; and thin-film photovoltaic cells

Some problems associated with large-scale production of electrical power from solar energy via the photovoltaic effect

Loferski, J.

ASME Conference, (1972), Nov

Large-scale solar power via the photovoltaic effect

Loferski, J.

Mechanical engineering, (1973), No 12, p 28

5 pages 5 ref.

Methods of improving the efficiency of photovoltaic cells

Loferski, J. et al

Sixth Semiannual Report, Brown University, September 1, 1972 - February 28, (1974)

Theoretical and practical fill factors in solar cells

Lindmayer, J.

COMSAT, 2 (1972), No 1

Choosing the Optimum Thickness of Photoelements

Lisovskii, L.

Geliotekhnika, 4 (1968), No 5, p 8

8 pages **4 ref.**

The optimal relation between the power of the photocell and its weight are found for the case of nonmonochromatic light source. The limit value of the basic thickness at which such a relation exists is estimated. In this relation, the dependence of short-circuit current from the basic thickness is considered. It is shown that consideration of optimum is reasonable only if the battery weight is of decisive importance.

Accelerated UV degradation to solar cell coatings

Lott D and Vesei J

IEEE Conf. Rec of 7th Photov.Spec.Conf. California (1968) p 189

6 pages

Stationary Silicon Solar Cell Converter Calculations

Luft, W

Solar Energy, 6 (1962) No 1, p 27

6 pages 2 tables 11 pictures 9 ref

Silicon solar cells at low temperature

Luft, W.

IEEE, 8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 161

8 pages

Temperature Control of Silicon Solar Cells in Space Environment

Luft, W and Nash, H

Semiconductor Products (1960) June, p 39

6 pages

The performance of silicon cells in converting radiant energy into electrical energy is dependent on the cell temperature

Photoionization of Cesium Atoms by Solar Radiation

Luke, K

Solar Energy, 9 (1965) No 3, p 110

3 pages 1 table 5 pictures 10 ref

Sealed cells with solar converters

Lunz, R

Battery Research and Development Conference (1957) Proceedings p 89

4 pages

An investigation to determine the voltage and cycle life characteristics of sealed and vented rechargeable cells

Investigation of a solar photothermoelectric converter

Malevskii, N. et al.

Geliotekhnika, 4 (1968), No 4, p 26

5 pages 4 pictures 6 ref.

A new radiation-resistant high-efficiency solar cell

Mandelkorn, G et al

US Army Signal Research and Dev Lab (1960)

20 pages

Details of a phosphours-diffusion process for fabrication of high-efficiency silicon solar cells

Comparison of p-n and n-p silicon solar cells

Mandelkorn, J et al

Proc 14th Annual Power Sources Conf (1960) p 42

3 pages

Sur la dégradation de photopiles solaires en couches de CdS - Cu_xS

Martinuzzi, S. et al

COMPLES Revue Int. d'Heliotechnique, April (1973)

4 pages 5 pictures 3 ref.

Studies of the degradation of CdS - Cu_xS thin film photocells under spatial conditions.

Photoelectric converters of solar energy made from p-type silicon

Maslakovets, Yu. et. al.

Zh. Tekh., 26, (1956), p 2396 (In Russian)

2 pages

Vapour phase diffusion of Sb in p-type Si gave n-p junctions showing a photovoltaic peak response at 700 μm.

Influence of series resistance on effectiveness of antireflection coatings and optimal thickness of doped layer in silicon solar cells

Matveev, V. et al.

Geliotekhnika, 10 (1974), No 2, p 43

8 pages 1 table 4 pictures 7 ref.

Solar energy conversion study

Meinel, A.

University of Arizona, Tucson: Technical Proposal Submitted to N.S.F., (1975)

1-14 pages

Report on progress in Solar Photothermal Power Conversion

Meinel, A. et al.

House of Representation, Washington, DC, (1973), 13 January

Presented to the subcommittee on envirement, Committee for interior and Insular Affairs.

Photothermal Conversion of Solar Energy for Large-Scale Electrical Power Production

Meinel, A. et al.

ISES Conference in Paris, (1973)

10 pages 1 table 12 pictures 3 ref.

Systems with solar collectors with optical thin films of very high selictivity.

Optical and technological problems of solar cell generators

Menke H, Fath J.

29th Meet of AGARD propul and energy panel (1967) p 1011

9 pages

Evaporated CdS film photovoltaic cells for solar energy conversion

Middleton, A

ARS Space Power Systems Conf (1960)

Replacement of the semiconducting single crystal slab in solar cells by a deposited macrocrystalline film or layer can lead to major advances in solar battery utilization, design and cost, and weight reduction

Controll applications for silicon solar cells

Molay, R

Military Systems Design (1961)

2 pages

Suggest new techniques of control design

Silicon solar cells

Mlavsky, A. et al

Materials research bulletin, 6, (1971), p 571, 581, 681

30 pages

The NSF (USA) Photovoltaic Energy Conversion Program

Morse, F.

ISES Conf. Paris, (1973)

5 pages

Special projects: Development of fabricating thin films of polycristalline silicon photovoltaic cells. Development of CdS/Cu_2S solar cells.

The Present Potential of CdS Solar Cells as a Future Contender for Photovoltaic Space and Terrestrial Power Applications

Mylton, K.

ISES Conf. Paris, (1973)

17 pages 6 tables 7 pictures 12 ref.

Comparison between CdS and silicon cells. Costs and power-to-weight ratio.

Progress in the development of cadmium sulphide terrestrial solar batteries

Mytton, R.

JSES (UK), (1974), November

Efficiency of solar converters based on CdS-$Cu_{2-X}S$ heterojunctions

Pavelets, S. and Fedorus, G.

Geliotekhnika, (1971), No 3, p 3

6 pages 3 pictures 13 ref.

Low temperature and low solar intensity characteristics of silicon solar cells

Payne, P. and Ralph, L.

IEEE, 8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 135

7 pages

Conversion of solar to electrical energy

Pearson, G.

Am. J. Phys. 25, (1957), p 591

8 pages

A photovoltaic device has been developed which converts solar radiation directly into electrical energy with an over-all efficiency of 11 per cent.

High-voltage photovoltaic effect

Pensak, L

Phys Rev,109 (1958) p 601

Recent progress in thin film solar cells

Perkins, D

Advanced Energy Conversion, 7 (1967), p 265

10 pages

Determination of solar cell eq. parameters

Picciano W

Energy Conversion 9 (1969) No 1 p 1

6 pages

Silicon solar energy converters

Prince, M

Jour Appl Phys, 26 (1955) p 534

7 pages

New developments in silicon photovoltaic devices

Prince, M and Wolf, M

J Brit Inst Radio Engr, 18 (1958) p 583, 594

13 pages

Discussion and analysis of the performance of three types of *p–n* junction devices prepared by solid-state diffusion methods: (a) a solar cell, (b) a low level cell, and (c) a photodiode for low to high levels

The photovoltaic solar energy converter

Prince, M.

Solar Energy, 3 (1959) No 3 p 35

1 page 1 ref.

Review of the present state of photovoltaic solar energy converters.

Some theoretical aspects of the physics of solar cells

Queisser, H. and Shockley, W.

Conf. Paper 1293-60, Am Rocket Soc. Space Power Systems Conf., Calif. (1960)

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A commercial solar cell array design

Ralph, E.

Solar Energy, 14 (1973), No 3, p 279

8 pages 8 pictures 3 ref.

Solar cell development survey

Ralph, I.

IEEE- Intersociety Energy Conversion Eng Conference Rec. Bouider, Colo-Papers for Meeting, (1968), p 116

6 pages

An Investigation of Silicon Photovoltaic Cells Aimed at Increasing Their Solar Energy Conversion Efficiency

Ranganathan, N

Brown University (1972) February

A method for estimating the optimum load resistance of a silicon solar cell used in terrestrial power applications

Rao, B. and Padmanabhan, G.

Solar Energy, 15 (1973), No 2, p 171

New solar converter materials

Rappaport, P

Proceedings of 11th Annual Battery Research and Development Conference (1957)

4 pages
Work on an investigation into materials for photovoltaic solar energy converters

The photovoltaic effect and its utilization

Rappaport, P

Seminar on Advanced Energy Sources and Conversion Techniques, Pasadena, Calif, Proceedings (1958) p 139

11 pages

History and description of the photovoltaic effect in solar cells. Presently available silicon solar energy converters have yielded efficiencies as high as 14 %; in production quantities, efficiencies run between 7 % and 10 %

The Photovoltaic Effect and Its Utilization

Rappaport, P

RCA Review (1959) September

The History and state-of-the-art of the Solar Cell

Rappaport, P

Proceedings of 29th Meeting of AGARD Propulsion and Energetics Panel, at Liège, Belgium (1967)

Photovoltaic Power

Rappaport, P

Photovoltaic Power 4 (1967) No 7

New solar converter materials

Rappaport, P and Loferski, J

Battery Research and Development Conference (1957) Proceedings p 96

4 pages

Summarizes work on an investigation into materials for photovoltaic solar energy converters

Low-cost photovoltaic conversion of solar energy

Rappaport, P and Moss, H

UN Conf on New Sources of Energy, Rome (1961)

10 pages

The purpose of the paper is to indicate how the photovoltaic effect (solar cells) can be used as an energy source in terrestrial applications especially for under-developed countries

Thin film photovoltaic devices for solar energy conversion

Ravich, L.

U.N. Conf. on New Sources of Energy (1961)

4.78

The use of solar cells in the maritime field

Richards, E

I, S, E S (UK) (1974) November

Large Area Solar Cells Prepared on Silicon Sheet

Riel, R and Tarneja, K

17th Annual Power Sources Conference Proceedings, Atlantic City, N.J. (1963) May

The ESTEC Technology Programme in Solar Energy Conversion

Reinhartz, K.

ISES Conf. Paris, (1973)

8 pages **14 ref.**

Review of results obtained since 1970 and work planned until 1975. Main activities: Radiation damage in solar cells, improvement of module technology, development of light-weight flexible and rigid solar panels.

An evaluation of Photovoltaic devices for future Spacecraft Power Demands

Ritchie, D and Sandstrom, J

Energy Conversion 9 (1969) p 83

8 pages

Use of p-n Junctions for Solar Energy Conversion

Ritter, E

Physical Review (1955) August 15

Characteristics of a concentrator in a solar power plant using photoconverters

Rodichev, B et al

Applied Solar Energy, 5 (1969) No 2, p 9

7 pages **1 table** **5 pictures** **2 ref**

This work deals with an analysis of energetic efficiency of a concentrating system of solar installation with a photoconverter. The possibility of their optimization is considered

Photovoltaic Conversion

Rudenberg, H and Dale, B

Proceedings 14th Annual Power Sources Conference (1960)

4 pages

Effect of impurities on the properties of silicon photocells

Saidov, M. et al.

Geliotekhnika, 1 (1965), No 2, p 5

4 pages 1 table 3 pictures 13 ref.

The authors have investigated the electrical and photoelectrical properties of silicon photocells with different impurities.

Solar cell and photocell handbook. Including solar cell and selenium photocell applications

Sasuga, J

International Rectifier Corporation, IRC. El Segundo, Calif. (1960)

111 pages

Temperature regime of solar photoelectric generators with air cooling

Savchenko, I. et al.

Geliotekhnika, 4 (1968), No 4, p 19

7 pages 2 tables 2 pictures 10 ref.

Results of calculated and experimental temperature measurements of photovoltaic battery, depending on concentration of solar radiation and the ribbed metal substrate of the battery, are given. Rational limits of concentration for air cooling of photovoltaic batteries are given.

The History, Design, Fabrication and Performance of Cadmium Sulphide thin film solar cells

Shirland, F

Advanced Energy Conversion 6 (1966)

Detailed Balance Limit of Efficiency of p-n Junction Solar Cells

Shockley, W and Queisser, H

Journal of Applied Physics (1961) March

A system for the evaluation of solar cell samples

Skolnik, H.

Solar Energy, 14 (1972), No 1, p 43

12 pages 13 pictures

The system described is a solar cell test vehicle intended primarly for education and research applications. Because of the many advantages to be derived from testing cells under real sky conditions, the sun is utilized as the system's energy source.

Energetics 5: Photovoltaic power

Smith, A

Mechanical Engineering (1966) October, p 38

3 pages 7 ref

A one-watt solar power plant

Smith, D

Paper presented at the winter general meeting of the AIEE, New York (1958) Feb

7 pages

Describes some of the preliminary work with a silicon solar battery, including exploratory device development and engineering studies. Preliminary tests are discussed and field tests data are summarized

Solar cell measurement standardization

Spitzer, C.

Lockheed Aircraft Corp., Missiles & Space Div., Sunnyvale, Calif, (1960)

84 pages

This report on solar cell standards and measurements covers the preparation of standard solar cells, methods for measuring the direct solar radiation intensity, the latitude of the observing location, and atmospheric conditions necessary to accurate measurement.

Solar cell measurements standardization

Spitzer, C. et. al.

Lockheed Aircraft Corporation, Missiles and Space Division, Report No LMSD-288184 (1960)

Integrally composed variable energy gap photovoltaic cells

Stone, L et al

ARS Space Power Systems Conf (1960)

Progress in the fabrication and preparation of integrally composed variable gap gallium arsenide-gallium phosphide photovoltaic cells

Analysis and experimental investigation of high-voltage photo-converters with n^+-p-p^+ structures

Strebkov, D. et. al.

Geliotekhnika, 7 (1971), No 4, p 3

6 pages 4 pictures 2 ref.

Developments in solar cell generators

Suppa, E. and Heinicke, J.

Solar Energy, 14 (1972), No 1, p 55

11 pages 4 tables 5 pictures 8 ref.

Results of an investigation of a solar battery power plant

Tarnizhevskii, B. et. al.

Geliotekhnika, 2 (1966), No 2, p 25

6 pages 4 pictures 2 ref.

The results of this investigation have confirmed the possibility and technical feasibility of using a solar photoconverter power plant for water raising.

Reflectivity of mirrors used in photoelectric generators

Tarnizhevskii, B. et al

Geliotekhnika 8 (1972), No. 3, p. 24

4 pages 1 picture 7 ref.

Methods for results of solar energy plant output determination on the basis of meteorological observation data

Tarnizhevskii, B. et al

Geliotekhnika 8 (1972), No 2, p 41

7 pages 3 tables 5 pictures 12 ref.

The methods recommended in the paper make it possible to combine meteorological data and performance characteristics of the solar energy plant (incorporating a photo-converter) for determining its electric power output and water raising capacity from various depths. Calculation results are given for three typical geographical locations in the Turkmen Republic.

Japanese photovoltaire systems

Tarui, Y.

Japanese/United States symposium on solar energy systems 2 (1974) p. 7-1

12 pages 3 tables 10 pictures 2 ref.

This paper deals with solar cell industry in Japan, new types of solar cells and the plan for the photovoltaire conversion of light into electricity.

Spectral response of solar cell structures

Terman, L

Stanford University, Technical Report No 1605-1 (1959)

21 pages

Present large scale applications of solar energy

Touchais, M.

Bulletin D'Information, Universite D'Alger, Institut de L'Energie Solaire (1968), No 8, (In French).

19 pages

The various forms of energy to which solar radiation can be converted are discussed, with an emphasis on heat obtained by photothermic conversion and transformation into electricity.

Recent developments in silicon solar cells

Treble F.

29th Meet of AGARD propul and energy panel (1967) p 902

14 pages

Investigation of some properties of cadmium telluride film photoconverters

Tykvenko, R.

Geliotekhnika, 2 (1966), No 1 p 30

4 pages 4 pictures 6 ref.

Investigation of irradiance distribution in the focal plane of a concentrator by the photoelectric pulse method

Umarov, G. et.al.

Geliotekhnika, 2 (1966), No 4, p 76

3 pages 4 pictures 3 ref.

Effect of an Electric Field on the Collection Efficiency of a Silicon Photocell

Vasil'ev, A.

Geliotekhnika, 3 (1967), No 3, p 7

6 pages 1 table 11 ref.

Series resistance of transparent photocell

Vasil'ev, A. et al.

Geliotekhnika, 9 (1973), No 4, p 5

12 pages 7 pictures 5 ref.

Optimization of photocells at high levels of illumination.

Vasil'ev, A. et. al.

Geliotekhnika, 10 (1974), No 1, p 3

7 pages 6 pictures 3 ref.

Becquerel photovoltaic effect in binary compounds

Williams, R

Journal of Chemical Physics, 32 (1960) p 1505

10 pages

An experimental study of photovoltaic effects

Power from the Sun

Wilson, E

Power, 79 (1935) Oct p 517

Discusses briefly practicability of using photovoltaic cell as power converter, and points out that it will not prove interesting to practical engineers until efficiency has been increased at least 50 times

New look at silicon solar cell performance

Woip, M.

IEEE, 8th Photovoltaic Specialists Conf. Rec. Seattle, Washington, (1970), p 360

12 pages

Limitations and possibilities for improvements of photovoltaic solar energy converters

Wolf, M

The proceedings of the IRE (1960) July p 20

Factors limiting the performance of photovoltaic solar energy converters are listed and explained

The Present state-of-the-art of photovoltaic solar energy conversion

Wolf, M.

Solar Energy, 5 (1961) p 83

12 pages 15 pictures 31 ref.

The present state-of-the-art in photovoltaic solar energy conversion is summarized. Past and future development goals are: lower weight-to-power and cost-to-power ratios, higher reliability, and increased useful lifetimes. Improvements introduced on a standard device, namely, the silicon solar cell are discussed.

A new look at silicon solar cell performance

Wolf, M.

Enorgy conversion, 11 (1971), p 63

11 pages

Recent developments in radiation hardening silicon solar cells

Wolf, M. and Brucker,G

Energy Conversion, 11 (1971), p 75

16 pages **29 ref.**

Limitations and possibilities for improvement of photovoltaic solar energy converters

Wolf, M

Proc IRE, 48 (1960) p 1246

18 pages

Effect of temperature on photovoltaic solar energy conversion

Wysocki, J. and Rappaport, P.

Journal of Applied Physics, 31 (1960), p 571

8 pages

Photovoltaic solar energy conversion is investigated theoretically over a temperature range of 0-400 C using semiconductor materials with band gaps varying from 0.7 to 2.4 ev. are considered.

Rational choice of parameters for solar thermal power units with radiative cooling

Grilikhes, V.

Geliotekhnika, 9 (1973), No 5, p 3

7 pages 4 pictures 6 ref.

One of the characteristic criteria for optimization of thermal power units with radiative cooling is the minimum (per unit power output) area of the radiative heat sink and the choice of the cycle parameters is invalid in most cases if one considers an installation with a solar heat source in which the largest element is the solar radiation concentrator, whose area and weight depend directly on the energy conversion efficiency and the maximum cycle temperature.

Research on Photovoltaic Converters

Wysocki, J et al

Proceedings 14th Annual Power Sources Conference (1960)

5 pages

This paper is a summary of the research performed on solar energy converters

4.86

An analysis of the dependence of "Photovolt" high-voltage matrix photoelectric generator electrical characteristics on radiation intensity and temperature

Zaitseva, A., Polisan, A.

Geliotekhnika 8 (1972), No. 3, p. 28

4 pages **5 pictures** **3 ref.**

Estimation of photoelectric converter parameters A and j_0 from the load segment of the volt-ampere characteristic

Zaitseva, A.

Geliotekhnika, 9 (1973), No 3, p 16

6 pages 3 pictures 5 ref.

Methods used for estimation of the photoelectric converter parameters are discussed.

The optico-mechanical part of the SV-1 solar water-raising unit

Vladimirova, L. and Garf, B.

Geliotekhnika, 2 (1966), No 2, p 45

5 pages 5 pictures 2 ref.

A description of the construction and operation of the optico-mechanical part of a solar water-raising unit is given.

4.1.3

LASER.

Solar photoresonant pumping of semiconductor lasers and photoluminescent devices

Karageorgii-Alkalaev, P. and Leiderman, A.

Geliotekhnika, 4 (1968), No 2, p 9

9 pages 2 pictures 21 ref.

Solar pumping of semiconductor lasers and luminescent devices

Karageorgy-Alkalaev, P et al

Applied Solar Energy, 5 (1969) No 1, p 9

11 pages 2 pictures 17 ref

The feasibility of solar pumping of semiconductor luminescent devices and lasers is considered based on the resonant interaction of modulated solar light with plasma and field intensity waves

4.14

ELGENERERING över mekanisk energi

Thermal machines for the conversion of solar energy into mechanical power

D'Amelio, L.

United Nations conference on New Sources of Energy, Rome (1961)

The Solar Ear, Part 2 - Power Production with Small Solar Engines

Daniels, F.

Mechanical Engineering (1972) Sep.

Optimal operation of closed-cycle solar gas-turbine unit with radiative heat removal

Drabkin, L.

Geliotekhnika, 9 (1973), No 4, p 33

6 pages 3 pictures 3 ref.

A gas-turbine unit operating on a closed Brayton cycle with radiative heat removal can be used for converting thermal energy into electrical energy. The author discusses the optimization of the basic cycle parameters with respect to the opwer-unit weight, rather than with respect to efficiency.

The sun motor

Ericsson, J.

Harpers Weekly, 31 (1887), Jan, p 10

Supercharged and water-injected Stirling engine

Farber, E

ASME Winter Annual Meeting (1969)

This paper, one in a series on the development of fractional horse-power solar hot-air engines, describes changes in a previously discussed engine. A very simple adjustable checkvalve design allows the engine to supercharge itself, by drawing in fresh air during the below atmospheric pressure part of the cycle. The same device can be used to draw in water instead of air. Thereby, the performance of the engine is improved, giving higher power output, increasing it for air injection by about 8 per cent and for water injection by as much as 19 per cent

Les Moteurs Solaires et l'Habitat pour les Zones Arides

Gicardier, J-P. et al.

ISES Conference in Paris, (1973)

10 pages 10 pictures

Description of a solar motor with a flat collector integrated with a building.

An Open Gas-Turbine Cycle for Solar Energy Conversion

Green, L.

ISES Conference in Paris, July, (1973)

7 pages - 3 pictures 8 ref.

A steady-flow concession cycle suitable for undeveloped or remotely located communities. Focusing collector arrangements.

Solar Heat Collector

Green, W

Engineer, 162 (1936) Oct p 372

Describes apparatus and method of operation of a solar heat collector constructed by C G Abbot which can produce steam to be used to drive a one-half h.p. steam engine

Sun Engine at the Smithsonian Institution

Green, W

Science, 84, Supplement (1936) p 10

Describes briefly apparatus developed by C G Abbot at the Smithsonian Institution; solar heat is used to run a one-half h.p. engine

Motors

Greeves-Carpenter, C

Domestic Engineering, 145 (1935) Febr p 75, 104

Brief description of electric motor driven by light energy; new photoelectric cell has been developed, and sufficient electric energy to operate this motor can be obtained directly from sunlight

Interessente tipo di "Motore Solere"

Greeves-Carpenter, C

Energia Termica, 3 (1935) p 198

Brief, illustrated description of new solar engine developed by Giovanni Andri and Daniele Gasperini of Milano, Italy

Power direct from Sunlight

Greeves-Carpenter, C

Scientific American, 152 (1935) Jan p 38

Very brief description of small electric motor, powered solely by sunlight, developed by J T Ramstine, Detroit, Mich

Thermal regime studies of a coil-type solar-receiver vapor-generator plant

Grilikhes, A. et al

Geliotekhnika 8 (1972), No. 2, p. 52

8 pages 5 pictures 7 ref.

The distribution of thermal currents and temperatures within a coil-type solar steam-generator plant is determined experimentally and on the basis of calculations. The paper also describes various solar plants and methods of conducting experiments. A comparison of calculation and experimental results corroborates the application of a uniform method in engineering estimates.

Thermo-hydraulic calculation of a coil-type solar receiver and steam generator

Grilikhes, V. et al

Geliotekhnika 8 (1972), No 1, p. 8

11 pages 3 pictures 19 ref.

The paper describes a method for thermo-hydraulic design and calculation of a receiver and steam generator for a solar steam-turbine unit using an organic heat carrier.

Solar concentration associated with the stirling engine

Henderson, R

ARS Space Power Systems Conf (1960)

Review of the development of a lightweight solar concentrator for the Stirling engine power system. The preliminary study activity which led to the selection of an all-metal Fresnel reflector component is given

Planta piloto para utilizar la energia solar en producir agua potable de agua salada generando simultaneamente energia electrica

Hirschmann, J.

Scientia, No 109, (1958)

A simple reaction turbine as a solar engine

Hsu, S. and Leo, S.

Solar Energy, 2 (1958) p 7.

5 pages 1 tables 9 pictures 8 ref.

Describes a turbine operating (and some other engines) on low pressure steam generated by a solar bioler. Test results.

Conversion of solar to mechanical energy

Jordan, R.

Proceedings of the World Symposium of solar energy, Stanford Research Inst., (1956)

Data of comparative heat-engineering tests on domestic and other small solar energy units

Kalos, Ya.

Geliotekhnika, 1 (1965), No 1, p 57

9 pages 3 tables 4 pictures 7 ref.

Comparative test to determine the technical characteristics of domestic solar energy installations with focusing collectors have been carried out.

Climatological Effects on Heliohydroelectric (HHE) Power Generation

Keffani, M.

ISES Conference in Paris, (1973)

10 pages 8 pictures 5 ref.

Effects of air temperature, relative humidity, station pressure and wind speed on the generation power.

Heliohydroelectric (HHE) power generation

Kettani, A. and Gonsalves, L.

Solar Energy, 14 (1972), No 1, p 29

11 pages 5 pictures 9 ref.

Describes how solar energy can be efficiently converted into electricity by transforming it into hydraulic energy as in nature.

A simple reaction turbine as a solar engine

Leo, S. and Hsu, S.

Solar Energy, 4 (1960) No 2 p 16

5 pages 7 pictures 8 ref.

Theory and experimental data of a simple reaction turbine are presented. The article describes the design improvement and performance of the reaction turbine when operating under vacuum conditions. A method of distilling water and obtaining power simultaneously by using a closed cycle is presented. Also thermoelectric and thermionic power sources are discussed.

Solar Turbo Power-Plant Design

Mackay, D and Leventhal, E

J Eng for Power (1960) Jan

9 pages

The paper discusses the design of a lunar-based power plant powered entirely by solar radiation

Solar energy converters: The relationship between efficiencies and other parameters

Ments, M.

Solar Energy, 3 (1959) No 1 p 44

6 pages 1 table 5 pictures

A closed and convenient mathematical framework is presented containing the main descriptive parameters for solar energy converters. Principles for turbines driven by sun-generated steam are also formulated.

Materials technology for flat plate steam generator

Merriam, M.

Pror, solar heating and cooling of buildings workshop, Washington, D.C., (1973)

The development of jet engines

Nechayev, Yu.

Soviet Aviation, (1958), No 293, p 1

Feasibility of Solar Power for Seattle, Washington

Oman, H. and Bishop C.

ISES Conference in Paris, (1973)

10 pages 1 table 7 pictures 3 ref.

Converting sunshine to electric power with paraboloidal concentrators and heat engines.

Solar machines

Robinson, D

Proc World Symp on Appl Solar Engineering, Stanf Res Inst, California (1955) p 43

19 pages

Thermoelectric and mechanical conversion of solar power

Schlichtig, R. and Morris, J.

Solar Energy 3 (1959) No. 2, p. 14.

4 pages 4 pictures 9 ref.

It has previously been overlooked that sunshine stores vast amounts of free energy in the atmosphere by lowering its relative humidity. The described equipment is a composite of a solar collector, a thermoelectric generator, and a mechanical converter which will generate power from waste heat and stored free energy of dry atmospheric air. Although the use of salt or fresh water for evaporation improves the power output, the mechanical converter will operate without evaporating water if water cannot be obtained.

Optimization of solar terrestrial power production using heat engines

Selcuk, M and Ward, G

ASME Winter Annual Meeting (1969)

The output cost of a Rankine solar power plant, incorporating flat-plate collectors, is minimized under both steady-and unsteady-state conditions using an IBM 360-75 computer

4.94

Survival Scrapbook 5: Energy

Szezelkun, S.

Unicorn Bookshop, Brighton

12 pages **100 ref.**

Do-it-yourself handbook of solar energy and wind-energy devices.

Small turbine for solar energy power package

Tabor, H and Bronicki, L

UN Conf on New Sources of Energy, Rome (1961)

24 pages

It is shown that while with steam at moderate temperature- say 150-200 degrees C - it is not possible to make a small turbine efficient, the use of heavy fluids makes high efficiency possible

Use of solar energy for mechanical power and electricity production by means of piston engines and turbines

Tabor, H

UN Conf on New Sources of Energy, Rome (1961)

16 pages

For sizes in the range of a few kilowatts, there are good prospects of getting solar power in the near future at around 5 US cents per Kwh in a sunny climate using realistic interest and amortisation charges but omitting maintenance and operating costs. Many consumers would consider 5 cents per Kwh a reasonable price to pay for power in isolated communities, so the prospects for kilowatt power packages is quite good

Use of solar energy for production of mechanical power and electricity

Tabor, H.

Solar Energy 6 (1962) No. 3, p. 89.

5 pages 8 ref.

Summary of papers given at UN Conference on New Sources of Energy, Rome (1962).

Solmaskinen kan bli källa för billig energi

Trombe, F.

Byggnadsindustrin, 44 (1974), No 16, p 28

Influence of heat exchanger inefficiency on the efficiency and power characteristics of a solar powerplant dynamic converter

Umarov, G. et al

Geliotekhnika 8 (1972), No. 2, p. 48

4 pages - 1 picture 4 ref.

The paper outlines radiation pyrometer measurement results for the operating economy and power characteristics of a Stirling cycle solar energy dynamic transformer. Methods are recommended to take into account the effect of heat exchanger inefficiency on thermal efficiency and power. Calculation results for a concrete dynamic converter are used as the basis for constructing a diagram of efficiency and power relative values depending on the hot and cold source temperature ratio.

Influence of regenerator efficiency on the thermal efficiency of a Stirling engine dynamic energy converter

Umarov, G. et al.

Geliotekhnika, 9 (1973), No 3, p 58

4 pages 1 picture 6 ref.

The investigation is a study and an attempt to develop a technique for determining the influence of regenerator efficiency on the efficency of a converter of the Stirling engine type.

Prospects for using dynamic thermocompression converter in solar power plants

Umarov, G. et al.

Geliotekhnika, 10 (1974), No 2, p 10

5 pages 2 pictures 4 ref.

Many energy-consuming devices require moderate-power independent solar power plant. To increase the efficiency of the solar power plants a thermocompressor, operating on a modified Stirling cycle and directly converting heat energy into pneumatic energy, can be used.

Fluidyne heat engine

West, C.

Solar energy utilization, ISES conf., (1974)

4.96

Ingenious Invention Converts Energy in Sun's Rays into Dynamic Power

Wilder, E

Architect and Engineer, 163 (1945) Oct p 15

3 pages

Describes briefly photosynthesis generator developed by O H Mohr, consisting of small compact units actuated by light rays of sun

4.1.5
RYMDTEKNISKA TILLÄMPNINGAR.

Solar power in space

Westinghouse Engr. 19 (1959), Jan, p 33

Space handbook: astronautics and its applications

U.S. Congress, 86th, Select Committee on Astronauties and Space Exploration. Wash., Govt. Print. Office, (1959), p 252

Instruments on explorer VII powered by solar cells

Machine Design, (1959), Oct 29, p 6

Solar power in space

Westinghouse Engr, 19 (1959) Jan, p 33

Experimental solar thermionic converterfor space use.

AIEE Pacific General Meeting, San Diego, Calif., (1960), Aug.

8 pages

A high-pressure cesium-vapor type thermionic converter heater by sunshine concetrated by a lightweight mirror appears to be a promising power source for space vehicles. A procedure for designing solar-thermionic space-vehicle power sources has been developed.

The Photovoltaic Power and its Applications in Space and on Earth

ISES Conf. Paris, (1973)

680 pages

Proceedings from a section of the Paris Conference. Sessions:
- **New trends and programs**
- **Silicon solar cells**
- **CdS - Cu_2S solar cells**
- **Light-weight solar cell**
- **Performances and generators in space**
- **Solar generator design for space crafts**
- **Present status of terrestrial photovoltaic power**
- **Future of terrestrial use of photovoltaic power**

A total of about 60 papers.

Solar-cell power supplies for satellites

Acker, R et al

Electronics (1960) March 11, p 167

7 pages

13-watt isotope-powered thermoelectric generators for space and lunar impact missions

Bloom, J. and Weddell, J.

ARS Space Power Systems Conference, Santa Monica, Calif., (1960), p 1332

11 pages

Reports on two small thermoelectric generators which derive their power from the radioactive decay of curium-242.

Vapor turbine for space power

Bullock, R.

ARS Space Power Systems Conference, Santa Monic, Calif. (1960)

20 pages

Vapor turbines for space power will require the use of unfamiliar fluids in unfamiliar conditions. In order to achieve long life, reliability, and efficiency, attention must be given to problems that previously were either nonexistent or could be economically ignored. Several prominent problems are raised; the background information about them is reviewed, and the research and development required to solve them is outlined.

Surfaces for Solar Spacecraft Power

Butler C. et al.

Solar-Energy 8 (1964) p 2

7 pages 16 pictures 4 ref.

Solar sailing - a practical method of propulsion within the solar system

Garwin, R

Jet Propulsion, 28 (1958) No 3, p 188

3 pages

Commercially available metallized plastic film can be used as a solar radiation pressure sail for propulsion of space vehicles within the solar system

Space Solar Power

Glaser, E.

ISES Conference in Paris, (1973)

19 pages 2 tables 6 pictures 21 ref.

A project of a satellite solar power station is reviewed: Electrical power is to be supplied to the earth. The energy is to be transported as microwave energy.

The Feasibility of a Satelite Solar Power Station

Glaser, P.

ASME Conference (1972) Nov. 26-30

Satelite Solar Power Station: An Option for Power Generation

Glaser, P.

7th Intersociety Energy Conversion Engineering Conference (1972)

Optimized SNAP III power generator design for spacecraft

Greefield, H.

ARS Space Power Systems Conference, Santa Monica, Calif., (1960)

18 pages

Design performance studies on the original SNAP III type of thermoelectric generator were made to optimize its use as a power system for special spacecraft missions.

Spectrally Selective Collector Surfaces in a Solar-Driven Carnot Space-Power System

Liebert C and Hibbard R

Solar Energy,6 (1962) p 84

5 pages 6 pictures 7 ref

A study of the theoretical performance of specially selective surfaces when used as the collectors of solar energy for driving heat-engine cycles in space. Selective surfaces were considered for which the monochromantic emissivity changed abruptly at specific wavelengths between 0,5 and 10 microns

The Fuel Cell in Space

Liebhafsky, H and Grubb, W

ARS Journal, 31 (1961) p 1183

8 pages

Comparison of solar-thermal and solar-electrical-thermal propulsion methods

Linhardt, H

AIAA Journal, 1 (1963) No 7

8 pages

Solar propulsion concepts based on the simplicity of proposed designs and the availability of free solar energy are discussed

Sun to cool spaceship electronic components

Nolan, R

Missiles & Rockets, 4 (1958) No 15, p 39

3 pages

A method to optimize the solar cell power supply for interplanetary spacecraft

Nichols, G

NASA TN D-1846 (1963)

This paper presents a generalized approach to the development of an optimized solar-cell power supply

Stirling engine development for space power

Parker, M. and Smith, C.

ARS Space Power Systems Conference, Santa Monica, Calif., (1960)

34 pages

The basic Stirling cycle is reviewed with respect to its advantages and limitations for space power applications. An engine design for space power is discussed.

Electric powered and solar powered food warming units for space vehicles

Rochman, M

Wright Air Development Div, REF Mfg, Corp, Mincola, N Y, WADD Tech Rep 60-620 (1961)

54 pages

Two general classes of food warming methods for use aboard a space vehicle were studied; one class using electrical energy, the other using direct thermal energy. Electrical heating methods investigated are electromagnetic, ultrasonic energy, electrically-produced, and electrical resistance; direct thermal energy sources evaluated are nuclear, solar, chemical, and a heat pump system

Sunflower power conversion system

Rudy, J

ARS Space Power Systems Conf (1960)

The paper describes the proposed solar power conversion system, defines the bases on which it has been concieved and establishes the relationship of the system requirements with the state of the art of today's power conversion system development

Electrical power systems for solar probes: some general considerations

De Sautels, A

ASME Winter Annual Meeting (1969)

This paper presents general mission and system considerations for an electrical power system design adaptable to an intermediate probe, to approximately one third the distance from the Sun to the Earth. The primary mission of a solar probe is to gather scientific data and not to test subsystem designs: therefore, the electrical power system design for an initial solar probe must be based on state-of the-art technology, as evidenced to exist at the time of a proposed flight. The electrical power system must provide power at the levels and times dictated by the requirements of the various loads during the launch, acquisition, and orbit phases of a solar-probe flight

Space power systems. A selection of technical papers based mainly on a symposium of the American Rocket Society

Snyder, N

Progress in Astronautics and Rocketry, New York, 4 (1961)

17 + 632 pages

4.102

The use of vacuum deposited coatings to inprove the conversion efficiency of silicon solar cells in space

Thelen, A.

Conf. Paper 1298-60, Am, Rocket Soc., Space Power Systems Conf., Calif. (1960)

Work in UK on the applications of solar cells in space

Treble F

J.S.E.S., (1974), Nov

The conversion efficiency of silicon solar cells decreases rapidly with increasing cell temperature

Silicon solar batteries as sources of electrical power for artificial earth satellites

Vavilov, V. et. al.

Uspekhi Fizicheskikh Nauk, 63 (1957), No 1

13 pages

The authors discuss the design, construction, operation and theoretical and experimental characteristics of photoelements to transform solar radiation into electrical energy.

Solar-power sources for satellite applications

Ziegler, H

Ann Int Geophys, 6 (1958) p 300

5 pages

Progress in the field of solar-power sources for satellites since 1956; investigations on silicon solar cells, improving their efficiency and determining their durability to high intensity radiation; energy storage devices; silicon-type solar power supplies designed and produced by satellite program

4.2
FOTOKEMISKA PROCESSER, icke organiska (se även 5.3)

Photosensitized electrolysis of water

Fueki, K.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 13-1

10 pages 8 pictures 11 ref.

Possible Utilization of Semiconductor Photocells as Ultraviolet Detectors

Groshkova, G.

Geliotekhnika, 9 (1973) p 7

3 pages 2 tables 1 picture 3 ref.

Possiblités d'Utilisation de l'Energie Solaire pour la Photochime Industrielle

Guillemonat, A.

ISES Conference in Paris, (1973)

6 pages 1 picture

Kinetic Studies of the Thionine-Irone System II

Hardwick, R.

Dept. of Chemistry, Univ. of California, Los Angeles.

5 pages

The observed inhibitory effect of ferric ions on the bleaching of aqueous thionine-ferrous ion solutions has been formerly attributed to direct quenching of excited thionine, The results of the present experiments, reinforced by recent data of other authors, are used in an interpretation of the reaction mechanism which assigns a chemical, not quenching, role to ferric ions.

Non-biological photosynthesis

Heidt, J.

Proceedings of the American Academy of Arts and Sciences, 79 (1951), No 4

4.104

Introduction to the Symposium of Photochemistry of Liquids and Solids

Heidt, L et al

J Phys Chem, 63 (1959) No 1, p 1

Summary of the symposium on photochemical research into the practical utilization of solar energy

Photochemistry in the liquid and solid states

Heidt, L et al

John Wiley and Sons (1960)

174 pages

The availability of sunlight, the various ways in which it might be used photochemically, the limitations, and the ground rules for scientists and inventors

Potassium ferrioxalate as a new inexpensive photochemical pyranometer for extensive field work

Lam, E. et al

Solar Energy, 15 (1974), No 3, p 259

Photochemistry in the solar furnace

Marcus, R and Wohlers, H

Industrial and Engineering Chemistry, 51 (1959) p 1335

5 pages

Liquids as well as gases can be handled at the focus of the solar furnace as they absorb only selected wave lengths.

Photochemical systems for solar energy conversion - Nitrosyl Chloride

Marcus, R and Wohlers, H.

Solar Energy, 5 (1961) p 44

14 pages 6 tables 6 pictures 60 ref.

The desirable properties of a photochemical conversion reaction are discussed and a number of possible reactions are listed and rated. This list should be added to by additional work in this field. Studies of one of these reactions, the photolysis of nitrosyl chloride, are reported.

Flow system in the solar furnace and the photolysis of nitrosyl chloride

Marcus, R. and Wohlers, H.

Solar Energy, 5 (1961) p 121

8 pages 1 table 8 pictures 24 ref.

The paper reports the design, construction, installation, testing and use of various flow systems in a solar furnace. The flow system used is more complex than usual, since it was designed to handle a corrosive solution of chloride in carbon tetrachloride.

Photoreduction of methylene blue. Some preliminary experiments by flash photolysis

Parker, C

J Phys Chem, 63 (1)(1959) No 1, p 26

5 pages

Photochemical energy conversion

Pirter, G

Sun at work in Britain, (1974) No 1

2 pages

Energy forms, Electricity Production, Energy Storage, Fuel Preparation

Photochemical processes and their utilization for energy conversion

Rosenberg, N

Seminar on Advanced Energy Sources and Conversion Techniques (1958) Proceedings, p 139

11 pages

Correlation between absorption changes and electron transport in photosynthesis.

Rumberg, B.

Photosynthetic Mechanisms of Green Plants, Pub. 1145, National Academy of Sciences, National Research Council, (1964)

34 pages

Using the method of senisitive flash photometry the authors have separated and analyzed seven types of absorption changes to derived a rather detailed reaction scheme on the electron transport system in photosynthesis.

Efficiency of photosynthesis as a solar energy converter

Schneider, T

Energy Conversion 13 (1973) p 77

9 pages

A solar to electric energy system with intermediate energy storage

Summers, C

IEEE Conference and Electronics Show (1963)

20 pages

Conversion of solar to electric energy. Conversion of the eletrical energy into storable energy. The final production of direct current electrical energy and conversion to alternating current

Thermodynamics of Photochemical Processes

Suppan, P.

ISES Conference in Paris, (1973)

11 pages 2 pictures 6 ref.

The "light as heat" model compared with the quantum model. It is suggested that the "light as heat" model can not be extended to directional beams.

The energy plantation.

Szego C et al.

Proceedings of the 7th intersociety energy conversion engineering conference, (1972)

Solar radiation/direct energy conversion/ photochemistry.

4.3
FOTOKEMISKA PROCESSER (organiska) OCH BIOLOGISKA

Solar for small plants

Chem Week (1959) June 6

Biological transformaiton of solar energy

Advances in applied microbiology, Vol. 2, Umbreit, W., (ed.)

Academic Press, New York and London, (1960)

Interaction of solar radiation with plant systems

Alderfer, R.

Solar Energy, 15, (1973), No 1, p 77

The mass culture of algae

Babcock H and Thacker D

Solar Energy 1 (1957) No 1 p 37

Utnyttjande av solenergien vid fotosynteser

Baltscheffsky, M.

IVA Rapport 67 (1974)

1 page

Discussion of efficiency of photosynthesis

Intervention du Soleil sur le Bilau Thermique des Abris

Bartoli, R. and Gac, A.

ISES Conference in Paris, (1973)

10 pages 4 pictures 1 ref.

The role of sun radiation in the heat balance for plants.

Possible Skin Damage Due to Intense Solar Radiation

Berent, N.

Geliotekhnika, 3 (1967), No 2, p 45

tel:

4 pages 2 tables 9 ref.

Lighting for Plant Growth

Bickford, E. and Dunn, S.

Kent State Univ. Press. Ohio (1972)

High Efficiency Photosynthesis

Bjorkman, O. and Berry, J.

Scientific American 229 (1973) No 4, p. 80

14 pages

Enceintes solaires pour la culture et l'aquaculture combinées en economie d'eau

Bouttere, H. and Coutombon, P.

ISES Conference, Paris, (1973) July

9 pages **3 pictures** **3 ref.**

Devices for both vegetable cultivations and breeding of aquatic invertebrates. Solar energy is employed for salt water still and photosynthesis.

Solar Radiation and its use by plants

Budyko, H.

Agroclimatological Methods. UNESCO, Proc. Reading, U.K., Symposium (1968) p. 39

15 pages

Algae Culture from Laboratory to Pilot Plant

Burlew, J.

Carnegie Institute of Washington Publication (1968)

Energie solaire et production végétale

Damagnez, J

Coopération Méditerranéenne pour l´énergie solaire, Bull (1968) No 15
In French

Summarizes solar energy technology and its influence on the production of vegetables

Evidence of increased carbon dioxide production accompaning photosynthesis

Decker J

Solar Energy 1 (1957) No 1 p 20

A solar-illuminated photosynthetic exchanger.

Dyer D et al.

Martin co, Denver, Colo (1968)

26 pages

Interception et Utilisation de l'Energie Solaire par Differents Types de Végétation dans la Region Mediterranéenne

Edkardt, F. et al

ISES Conference in Paris, (1973)

10 pages 2 pictures 4 ref.

The interception and use of solar energy in plants.

Biological Utilization of Solar Energy

Evstigneev, V.

Geliotekhnika, 6 (1970), No 1, p 70

6 pages

Approche Thermodynamique pour Evaluer l'Utilisation de l'Energie Solaire par les Plantes

Florov, R.

ISES Conference in Paris, (1973)

10 pages 12 ref.

A thermodynamic approach to the calculation of maximum accumulation of free energy in plants.

Measuring light to determine irrigation needs of plants

Furuta, T

Southern Florist and Nurseryman (1962) p 8

4 pages

To determine the correlation of solar energy accumulation to actual water use (evapotranspiration), chrysanthemums were grown in a greenhouse following acceptable commercial practices

4.110

Influence of pulsed concentrated sunlight on rice and cotton seeds

Galkina, N., Sadykov, M.

Geliotekhnika 8 (1972), No 6, p. 44

3 pages 2 tables 2 ref.

Laboratory experiments have produced results showing that irradiation by concentrated solar ray impulses raises the germination capacity of cotton seed by 13% and rice by 29% as compared with untreated seed.

Solar radiation and horticulture in Britain

Canham, A and Golding, E

Solar Energy, 7 (1963) No 2, p 34

7 pages 3 pictures 10 ref

Plants, which offer a convinient, if inefficient, means of energy conversion, have the distinct merit of being solar integrators: their overall performance in conversion depends less on day-to-day, or minute-to-minute, variations than on long-term averages

Captation de l'Energie Solaire pur une Culture de Mais

Charier, P. et. al.

ISES Conference in Paris, (1973)

11 pages - 10 pictures 5 ref.

About the utilization fo solar energy by crop photo-synthesis: Interception of solar radiation by the crop. Repartition of absorbed photons between the different leaves. Physiological responses of leaves at the given stage of growth.

Biological conversion of light energy to the chemical energy of methane

Golueke, C and Oswald, W

Applied Microb, 7 (1959) p 219

9 pages

Over-all light energy conversion efficiency of a high temperature strain of Chlorella pyrenoidosa

Golueke, C

Physiol Plantarum, 15 (1962) p 1

9 pages

Power from solar energy - via algae-produced methane

Golueke, C and Oswald, W

Solar Energy, 7 (1963) No 3, p 86

7 pages 1 table 2 pictures 9 ref

The solar energy that impinges on the earth´s surface is intermittent and comes in low concentration. Its storage is normally extremely difficult and of brief duration. A solution based on the duplication and miniaturization of nature´s method of utilizing solar energy; for nature solved the problem long ago, as is attested by the vast array of life that has developed whose hole energy source is the sun, is by fixing solar energy into the cellular energy of green plants

A Calculation Model and Descriptive Formulas for the Extinction and Reflection of Radiation in Leaf Canopies

Goudmaan, J.

ISES Conference in Paris, (1973)

10 pages 2 tables 5 pictures 13 ref.

The angular distribution of the incoming and reflected radiation is taken into account. Repeated scattering is executed in wavebands where the leaves have a high scattering coeffient. Formulas for the rapid calculation of extraction coeffiecients and reflection coefficients.

Photosynthesis

Hall, D. and Rao, K.

Edward Arnold, London (1972)

Photosynthetic oxygenation sewage treatment utilized in Woodland plant operation

Hiatt, A

Sun at Work (1962) 3rd Q

2 pages

The city of Woodland Calif, recently placed in operation four units of a 12-unit photosynthetic oxygenation sewage treatment plant;the type of raw-sewage lagoon process in which solar energy is used to achieve complete treatment of raw sewage

An inquiry into biological energy conversion

Hollaender, A. et al

NSF-RANN, Univ. of Tennessee, Knoxville, (1973)

Photosynthesis and Growths of Plant Canopy in Relation to Solar Radiation Climate

Horie, T.

ISES Conference in Paris, July, (1973)

10 pages 1 table 5 pictures 17 ref.

Growth curves of sunflower plants grown under varying radiation climates were simulated using experimentally determined plant parameters. Important factors were; photosynthesis, specific leaf area and allocation ratio of photosynthesis.

Photobiological Energy Conversion

Hull, D.

Sun at work in Britain (1974) No. 1 Jul.

4 pages

Available energy. Photosyntesis efficiency. Areas required. Photosynthesis conversion. Improvement of utilization.

Interaction Entre la Photosynthese et l'Action du Phytocorme: Consequences pour la Morphogenese des Plantes.

Jacques, R.

ISES Conference in Paris, (1973)

10 pages 14 ref.

The radiation climate of an irrigated orange plantation

Kalma, J. and Stanhill, G.

Solar Energy 12 (1969) p. 491

18 pages 3 tables 7 pictures 26 ref.

Abstract - Regular measurements of incoming and reflected global radiation and net radiation were taken both above and below the canopy of an irrigated orange plantation during one year. The results have been analyzed to show the diurnal and seasonal changes in the main components of the radiation balance.

Photovoltaic effect in organic crystals

Kallman, H and Pope, M

J Chem Phys, 30 (1959) No 2, p 585

Studies on the photoconductivity of anthracene, photovoltaic measurements on thin single crystals

Photosynthesis in physiology of plant growth and development

Kok, B.

M.B. Wilkings, Ed., McGraw-Hill, London, (1969)

Solar energy research information meeting - biophotolysis of water

Krampitz, L.

NSF/University of Pennsylvania Solar Energy Meeting, (1973), March

The Effects of Air Jons on Plants

Krueger, A. et al

ISES Conference in Paris, (1973)

7 pages 18 ref.

About a hypothetical mechanism of air ion actions on plants.

Effect of Concentrated Pulsed Sunlight on Productivity of Certain Blue-Green Algae

Kuchkarova, M. et. al.

Gelioteknika, 9 (1973) p 47

3 pages 2 tables 2 ref.

The literature gives no data on the influece of CPSL on the development of blue-green algae. The effect of CPSL on the growth, development, and fixation of molecular nitrogen for certain types of nitrogen-fixing blue-green algae ai investigated.

Plant-Community Photosynthesis as Related to Insolation Climate

Kuroiwa, S.

ISES Conference in Paris, (1973)

10 pages 8 pictures 14 ref.

Effective foliage architecture for photosynthesis theoretically analysed.

Measurement of Ultraviolet Radiation in Biologically Weighted Units

Lazarev, D. and Frolova, T.

Geliotekhnika, 3 (1967), No 3, p 30

8 pages 10 pictures 4 ref.

Agricultural productivity

Loomis, R. et al

Ann. Rev. Pl. Physiol., 22 (1971), p 431

38 pages

Pour Une Architecture Positive

Mark, G.

ISES Conference in Paris, (1973)

6 pages 5 ref.

Warning for disturbing the photosynthesis by massive mineralization of the earths surface.

The measurement of photosynthetically active radiation

McCree, K.

Solar Energy, 15, (1973), No 1, p 83

Solar energy part II

Moorcraft, C.

Architectural design, (1974), No 1

Photosynthesis.

On the mechanism of photosynthesis

Muller, A et al

Proceedings of the Royal Society, 157 (1963) p 313

19 pages

The Sun and the Stomatal Apparatus

Munsfield, T. et. al.

ISES Conference in Paris, July, (1973)

10 pages 38 ref.

The importance of endoyenous rhythms in stomatal movements. The role of achieve ion transport. The use of antitranspirants.

A phytotron with controlled solar lighting

Neubauer, L

1960 Annual Meeting American Society of Agricultural Engineers, Paper No 60-425 (1960)

7 pages

Roof-lighting tests on a plant-growth chamber have shown that a flat translucent roof has poor lighting characteristics early and late in the days

The role of plants in the bioregenerative systems

Nickiporovich, A

Ann. Rev. Pl. Physiol., 20 (1969), p 185

24 pages

Light conversion efficiency of algae grown in sewage

Oswald, W

J Saint Engr Div Proc Am Soc Civil Engrs, 86 (SA4) (1960) p 71

25 pages

Productivity of algae in sewage disposal

Oswald, W.

Solar Energy, 15, (1973), No 1, p 107

Photosynthesis in sewage treatment

Oswald, W and Gotaas, H

Trans Am Soc Civil Engrs, 122 (1957) p 73

33 pages

Waste water reclamation through the production of algae

Oswald, W et al

Tech Bull Contribution, No 22 (1959) Water Resources Center, U of Calif, Berkeley

89 pages

Influence de la regulation sur la transformation de l'energie d'origine solaire par les feuilles

de Parcevaux, S.

ISES Conference, Paris, (1973)

8 pages 4 pictures 3 ref.

An equation of leaf energy budget for the most general case. Approximate values are given for each element of the budget.

Photosyntesis: An Unfolding Discovery

Rulinowitch, E.

ISES Conference in Paris, (1973)

5 pages

A short history of photosyntesis research.

New results about the mechanism of photosynthesis

Rumberg, B

Nature, 194 (1962) No 4831

5 pages

Flash photometry measurements of absorption change. The relative changes of absorption in chloroplasts causes by a flash of light and the causes of light induced changes

Solar Technology as a Means of Increasing Crop Yields

Shakhov, A.

Geliotekhnika, 6 (1970), No 2, p 56

11 pages 11 tables 1 pictures 16 ref.

Use of Concentrated Sunlight to obtain New Formes of Plants

Shakhov, A.

Geliotekhnika, 6 (1970), No 6, p 64

11 pages 6 tables 12 ref.

Photoenergy of Plants and the Use of Concentrated Sunlight for Raising Crop Yeilds

Shakhov, A.

ISES Conference in Paris, (1973)

10 pages 2 tables 6 ref.

A mutogenic effect is achieved by irradiation of non-photosynthesizing organs by concentrated sunlight pulses.

Photoinduced parental control of seed germination and the spectral quality of solar radiation

Shropshire Jr.

Solar Energy, 15, (1973), No 1, p 99

The distribution of 660 and 730 nm radiation in corn canopies

Sinclair, T. and Lemon, E.

Solar Energy, 15, (1973), No 1, p 89

4.118

Effect of white and monochromatic (red, green and blue) concentrated sunlight on the growth, development and yield of plants

Stanko, S.

Geliotekhnika, 1 (1965), No 2, p 41

7 pages 5 tables 2 pictures 5 ref.

Recherches sur la Dimunition de l'Energie de Dissipation et l'augmentation de l'Utilisation de la Redation

Stofanow, Z. and Florov, R.

ISES Conference in Paris, (1973)

9 pages 2 tables 15 ref.

The efficiency coefficient of gross photosynthesis can be risen by means of mineral nourishment, e.g. nitrogeneours salts.

Shape of the red absorption band of chlorophyll A in algae lacking chlorophyll B

Thomas, J.

Editions du Centre National de la Recherche Scientifique (1963) No 119

13 pages

The structure of the red absorption band of the blue-green alga Anacystis nidulans is studied. Apart from the main maximum, at least six wak shoulders. which occurred independently of each other were observed. It is therfore suggested that, at least, seven chlorophyll forms occur in this alga.

Investigation of the Behavior of Organisilicon Polymers Used in Solar Energy Devices

Toroptseva, T. et al.

Geliotekhnika, 6 (1970), No 6, p 38

2 pages 1 table

Potential for raising the radiation regime of a cotton field.

Umarov, G.

Geliotekhnika, 9 (1973), No 3, p 83

3 pages 1 table

Method of irradiating chlorella by concentrated pulsed solar radiation

Umarov, G. et al

Geliotekhnika 5 (1969), No 4, p. 62

4 pages 2 tables 1 picture 2 ref.

Comparisons of plant productivity

Westlake, D

Biological Reviews, 38 (1963), p 385

45 pages

Kinetische Untersuchungen über die Primarvorgange der Photosynthese

Witt, H et al

Zeitschrift für Elektrochemie-Berichte der Bunsengesellaschaft für physikalische Chemie, 64 (1960) Heft 1, p 181

7 pages

By use of a suitable flash method four types of absorption changes were found during photosynthesis in plant cells

Electron-transport system in photosynthesis of green plants analysed by sensitive flash photometry

Witt, H et al

Nature, 197 (1963) No 4871

14 pages

Report of measurements of absorption changes done with the method of very sensitive flash photometry

Photosynthesis under field conditions. VI. Solar radiation balance and photosynthetic efficiency

Yocum, C. et al

Bureau of Mines IC 8549, (1972)

4.4
PUMPAR, arbetande med hjälp av solenergi.

Some considerations relative to a solar-powered savery water pump

Jenness, Jr.

Solar Energy, 5 (1961) p 58

3 pages 2 pictures 4 ref.

An experimental solar power plant

Lidorenko, N. et. al.

Geliotekhnika, 1 (1965), No 3, p 5

5 pages 4 pictures 5 ref.

The results obtained with a experimental solar power plant for raising water show that the use of such devices is technically promising.

Solar Water-Raising Installation Incorporating Photoconverters at the Ovezshikh Watering Point in the Turkmen SSR

Lidorenko, N. et. al.

Geliotekhnika, 6 (1970), No 2, 52

4 pages 5 ref.

Technical-Economic Characteristics of Photoelectric Water-Pumping Plats

Rodichev, B.

Geliotekhnika, 9 (1973) p 42

6 pages 5 tables 16 ref.

During the last decade, solar-power engineering has taken a new direction associated with the development and application of solar-power plants and devices based on silicon photoconverters. The creation of functionally adequate and sufficiently efficient photoclectric solar water-pumping units required a series of investigations, including determination of the electrical parameters of solar batteries at high illuminations and temperatures the design of photoelectric units, their comprehensive testing and pilot operation the study of the interaction of a photoelectric generator and electric drive, etc. The solution of the above problems made it possible to design a photoelectric pumping plant, which since 1969 has been used at the Ovez-Shikh stock watering station on the Bakharden State Farm in Central Kara Kum.

Solkraftverk i Norrland

Ryde, N.

IVA Rapport 67 (1974)

Solar power stations in north Sweden. Proposal to use solar energy to pump water up to a reservoir.

Some generalizations of sample water-supply calculations for solar-powered pumping plants

Salieva, R.

Geliotekhnika, 10 (1974), No 2, p 28

7 pages 2 tables 4 pictures 7 ref.

The reliability of solar-powered pumping plants are discussed and some technical-economic considerations are presented.

Characteristics of solar-powered water-pumping systems

Tarnizhevskii, B. and Rodichec, B.

Geliotekhnika, 4 (1968), No 3, p 31

4 pages 2 pictures 3 ref.

4.5

SOLENERGI-OMVANDLING TILL BRÄNSLEN.

Technology for the conversion of solar energy to fuel gas

University of Pennsylvania

NSF/Univ. of Pa. Solar energy meeting, (1973), March

Design data handbook for regenerative fuel cell study

SSD Electrical Power Systems, Lockheed Missiles & Space Company, Inc., (1972), Nov

Technology for the conversion of solar energy to fuel gas

Centre for energy management and power

Penn University, (1973)

NSF/RANN/SE/G 134991/PR/73/2

Photochemical Conversion of Solar Energy: Criteria for the Design of Suitable Systems

Balzani, V. et. al.

ISES Conference in Paris, July, (1973)

Water photodissociation into hydrogen and oxygen. Advantages of catalyzed photodissociations.

Oxidation and Evolution of Molecular Hydrogen by Microorganisms

Gest, H.

Bact. Rev. 18 (1954) 43.

Conversion of solar energy to electricity via algae growth

Oswald, W. and Gotass, H.

Transactions of amer. soc. of civil engineers, (1957)

Biochemical fuel cells

Lewis, K.

Bact. Rev., 30 (1966), p 101

Energy forests and fuel plantations

Szego and Clinton

Chemtech, (1973), May

4.6
ÖVRIGT.

Chemical vapour deposition of molybdenum and tungsten borides by thermal decomposition of gaseous mixtures of halides on a solar "front chaud"

Armas, B. and Trombe, F.

Solar Energy, 15 (1973), No 1, p 67

Investigation of thin sheets of high-quality, single-crystal silicon

Grace, W.

U.S. Army Signal Research & Development Laboratory, Report No 3, ARPA Order No 80-59, (1960)

31 pages

The purpose of this contract is to investigate and determine the feasibility of a concept advanced by Dr. W. Shockley of floating a thin layer or film of molten silicon upon a liquid metal surface, preferably lead. and pulling the silicon horizontally through a temperature gradient to obtain a single crystal in form of thin sheet.

Crystal growth mechanism in cadmium sulfide crystals

Reynolds, D. and Greene, L.

J. App. Phys., 29 (1958), p 559

Cadmium sulfide crystals growing from vapor phase have been studied by observing growth patterns, chemical etch patterns, and vaporization patterns.

4 pages

Le problème des servitudes sur les bases océanographiques et l´utilisation de l´énergie solaire

Touchais, M

Coopération Méditerranéenne pour l´énergie solaire, Bull (1968) No 15

Presents various possibilities in the utilization of solar energy for oceanographic bases

"Now *here*, we mostly have days
and nights two or three at a
time, and sometimes we take
as many as five nights together
- for warmth, you know."
"Are five nights warmer than one
night, then?" Alice ventured to
ask,
"Five times as warm, of course."
"But they should be five times
as *cold*, by the same rule -"
"Just so!" cried the Red Queen...

L. Carroll: Trough the Looking-Glass

5

ENERGILAGRING

Ett av de stora - och mest intressanta - problemen vad gäller solenergins utnyttjande för uppvärmningsändamål gäller solvärmens lagring dygnsvis eller från höst till vinter.
En ändamålsenlig och ekonomisk lagring är av största betydelse alldenstund åtminstone ca 80 % av energin för uppvärmning (och luftkonditionering sommartid) torde kunna erhållas genom solenergi.
Lagring måste kunna ske för korttidsutnyttjande (12 - 24 h) och för långtidsutnyttjande (4 - 8 mån.). Det skall dessutom vara möjligt att lagra energimängder av storleksordningen $5 \cdot 10^4 - 10^5$ MWs motsvarande behovet i en villa. Man kan lagra värme med eller utan fasomvandling av lagringsmediet.

Vid metoder utan fasomvandling, t.ex. lagring i vatten, sten[1] eller jord blir lagringsvolymen av samma storleksordning som husets volym[2].

---

1) T.ex. vid lagring i byggnadsdelar såsom väggar eller bjälklag

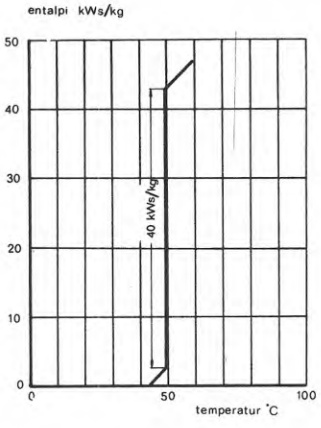
2) Kapitalkostnader av storleksordningen $10^4 - 5 \cdot 10^4$ kr

Används lagring genom fasomvandling, såsom smältning av salter (exempelvis Na_2 HPO · 12 H_2O, urea) är smältpunkt, smältvärme, kristalltillväxt liksom helt naturligt priset och tillgången på ämnet av vikt. Hydrater kommer troligen att få stor betydelse - de är billiga, har stora latenta värmevärden och få "dåliga egenskaper".
Användning av entektika av olika slag - baserade på exempelvis natriumsulfat och ett billigt annat salt, t.ex. koksalt - med lämpliga smältpunkter är ett annat intressant forskningsfält som också är väldokumenterat i litteraturen. Kostnaden för salter och saltblandningar kan förmodas bli låg och med hänsyn till de höga omvanligsvärmena blir volymen för lagring förhållandevis låg.

Lagringsproblemen innefattar även en rad optimeringsfrågor såsom:

Ekonomisk lagringskapacitet vid samverkan med andra uppvärmningssätt (olja, värmepump)
Ekonomisk lagringstemperatur vid användning av värmepump
Ekonomisk storlek och temperaturfall i värmare
Lämplig säsong för upptagning av solenergi

Slutligen kan nämnas att lagringen av värme i kemikalier ger materialproblem både vad gäller korrosion, diffusion av kemikalier, instabilitet m.m.



Entalpi för natriumtiosulfat (5 kristallvatten) ökar radikalt vid ca 50° C.
Härigenom kan saltet med fördel användas för värmelagring.
(efter Telkes (1974))

Solenergi kan emellertid lagras i andra former än värme;

- genom solenergi erhålla mekaniskt arbete (t.ex. via ångmaskin) som lagras exempelvis genom uppfordring av vatten i högt belägna reservoirer[1)]
- genom lagring av elektrisk energi[2)] i akumulatorer (t.ex. av typen bilbatteri[3)] som f.n. framställes billigt[4)], Fe-Ni och Ni-Cd akumulatorer)
- lagring av bränsle exempelvis väte (syre) för bränsleceller
- tillverkning av Zn och Al för användning till elkemiska celler (återanvändning)
- lagring genom tillverkning av H_3N enl. Haber-metoden. Senare omvandling till nitrater eller nitriter
- fotolys (av t.ex. NOCl som ger NO och Cl_2)

---

1) Medger eluttag

2) Se avsnitt 4

3) Och kan göras billigare om de ej skall transporteras

4) Anskaffningskostnad 50 - 100 kr/kWh

5.0
ENERGILAGRING, allmänt

Energy conversion & storage

School of electrical engineering, Oklahoma State University

Quarterly report through December, (1964)

Energy conversion & storage

School of electrical engineering, Oklahoma State University

Annual report for the year ending June 30, (1965)

Energy conversion & storage

School of electrical engineering, Oklahoma State University

Quarterly report through December 31, (1965)

Energy conversion & storage

School of electrical engineering, Oklahoma State University

Quarterly report through December 31, (1966)

Energy conversion & storage

School of electrical engineering, Oklahoma State University

Quarterly report through March 31, (1967)

Status report as of Jan, 1964 (biochemical fuel cells, plasma physics - mhd and thermionics, thermal energy storage, thermal transport, and solar reflector research)

Pennsylvania Univ, Philadelphia (1964) Feb

106 pages

System Sacher technik storage power heating

VEB Kombinat Technische Gebäudeausrüstung, Karl-Marx-Stadt, (1971)

9 pages **4 pictures**

Storage power heating system with controllable dynamic heat discharge and complex regulation unit. Costs and economy.

Titel:

Handbook of thermodynamic data

Menlo Park, Calif. Water resources division, geological survey, (1974)

Compilation by Russian scientists of data such as enthalpies, free energies, heat capacities and mole volums for inorganic solids, liquids, gases and solutes. Many data previously unavailable in English.

Research applied to solar-thermal power systems

Minnesota Univ., Minneapolis (1973-74)

486 pages

Studies Jan. - June 1973. Solar concentrator, absorber coating, the heat pipe, the transfer loop and heat storage containment vessels.

Equilibrium in Saturated Salt Solutions

Blasdale, W.

Reinhold Pbl. New York (1927)

- -

Research in the conversion of various forms of energy by unconventional techniques. Status report, Jun 1964.

Bockris J.

Pennsylvania Univ, Philadelphia (1964) Aug.

Biochemical fuel cells, plasma physics, and thermal energy storage.

24 pages

Economic Optimazation of Energy Conversion with Storage

Bruckner, A.

IEEE Paper (1968) No 68-CP-134-PWR

tabellen ... titel

A computer model for solar collector and storage systems

Close, D.

Presented at the Solar Energy Soc. Annual Meeting, Boston (1966)

Solar energy and energy storage devices

Daniels, F

Battery Research and Development Conference (1957) Proceedings p 92

5 pages

Discusses conversion of solar energy into electricity. Storage of energy, in water tanks, pebble beds, and in chemicals

Energy Storage Problems

Daniels, F

Solar Energy, 6 (1962) No 3 p 78

6 pages 7 ref

Research on practical ways of storing energy is new because there has not been sufficient incentive. Countries best able to undertake research and development in these fields have had an ample supply of combustion fuels and have had little need for new sources of energy

Research applied to solar-thermal power systems

Dienert, W. et al

Minnesota Univ., Minneapolis (1973) Jan.

286 pages

Solar collector system and energy storage.

Certain Aspects of Simulating the Thermal Conditions of a Solar Reservoir

Eliseev, V. and Usmanov, U.

Geliotekhnika, 6 (1970) No 5 p 42

5 pages 2 pictures 6 ref.

Forced convection, multiple effect solar still for desalting sea and brackish waters

Förf.:
Grune, W.

Tidskr.:
UN Conf. on New Sources of Energy, Rome (1961)

sidtal	tabeller	bilder	itt.hänv.
26 pages			

One approach of minimizing unit conversion cost is to develop high unit productivity, form a given process first and then to optimize the components by improved engineering design. This approach led to the development of a forced convection still with an external condenser. The internal efficiency of this still was increased by dispersion of the basin water to increase the rate of mass transfer to the condensing surfaces, relative to the thermal heat losses. Storage of heat exchanger coolant during the period of highest temperature operation was investigated.

Utilization of energy stored in the upper atmosphere

Harteck, P and Reeves, R

AFOSR TR-57-50, AD-136-421 (1957) July 15, p 61

Über die ungarischen warmen und heissen Kochsalzseen als natürliche Wärmaccumalatoren, sowie über die Herstellung von Warmen Salzseen Accumulatoren

Kalecsinski, V.

Ann. d. Physik, 47, p 408

9 pages

Energy storage

Levy, M.

Rational Technology Unit 73-74. Architectural Association, London, (1974)

4 pages

Solar ponds. Heats of melting solid-solid transition. Heats of solution. Evaporation. Storage by chemical reaction in solution storage batteries. Fuel cells.

Approximate calculation of heat transfer in the heat storage system of a solar power installation

Förf.:
Matveev, V.

Tidskr.:
Geliotekhnika, 7 (1971), No 5, p 43

sidtal	tabeller	bilder	itt.hänv.
6 pages		4 pictures	3 ref.

Analyzing the Parameters of Solar Thermal Power Plants with Energy Accumulators

Matveev, V. and Grilikhes, V.

Gelioteknika, 9 (1973) p 15

6 pages 2 pictures s 5 ref.

If the solar radiation is delivered periodically (day-night, light-dark, etc.), while the plant must operate so as to furnish electric power, continuously, there must be an accumulation system. In this case, it is occasionally desirable to take as a criterion in selecting STPP parameters the minimum total weight of its basic elements: the concentrator-receiver system (cR), the cooler (refrigerator)-radiator system (rr), and the energy accumulator. The weight criterion is used in analysis of the thermal cycles if the weight of the heat source is commensurate with or greater than the weight of the rr . The influence of the accumulation system on STPP parameters when the electrical output power of the plant must be maintained constant is considered.

Ekologiskt byggande - I

Nordenström, H.

LTH - A - HUFO, Lund (1974)

Buildings in balance with the environment. Utilization of solar energy. Heat storage. Many illustrations and references.

L'energie solaire: Mythe? ou salut de demain?

Peychès, I.

ISES Conf. Paris, (1973)

7 pages 11 pictures

Solar energy collection, concentration and accumulating.

Energy Storage Research at Oklahoma State University

Ramakumar, R

OSU (1970)

Selected values of chemical thermodynamic properties

Rossini, F. et al

National Bureau of Standards Circular 500 (1952), reprinted (1961)

Simulation and optimization of a solar collector and storage system

Roulet, J.

M.S. Thesis, Dept. of Engineering, Univ. of Calif. (1967)

Solkraftverk i Norrland

Ryde, N

IVA Rapport 67 (1974)

Solar power stations in north Sweden. Proposal to use solar energy to pump water up to a reservoir

Design Principles for Accumulating Elements of Solar Plants

Salieva, R.

Geliotekhnika, 9 (1973) p 53

7 pages 1 table 6 ref.

Design principles for wide stochastic variations in solar radiation

A quantitative evaluation of power density and storage capacity for solar and wind energy

Summers, C.

Oklahoma State University (1963)

A solar to electric energy system with intermediate energy storage

Summers, C.

IEEE Conference and Electronics Show (1963)

20 pages

Nucleation of supersaturated inorganic salt solutions

Telkes, M.

Ind. and Eng. Chem. 44 (1952), p 1308

3 pages

5.10

Experimental determination of the amount of stored energy as a function of the type and disposition of the storing medium in solar hothouses

Umarov, G. et al.

Geliotekhnika, 7 (1971), No 6, p 26

5 pages 1 table 3 pictures 5 ref.

5.1
LAGRING AV EL-ENERGI

Magnetic storage,

Chernyshev V et al.

Akademiia Nauk SSSR, Doklady 165 (1965) p 65

Mechanical and thermal energy conversion into magnetic field energy and electromagnetic energy transfer.

4 pages in russian

Electrical storage of solar energy

Foote, H and Shair, R

Mech Eng, 8 (1959) No 7, p 41

3 pages

Electrochemical phenomena of storage of solar energy for small stationary solar power plants

5.2
KEMISK LAGRING

US chemical dissociation systems

Summaries of talks by Lichtin, N., Heidt, L.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 15-1

7 pages 7 pictures -

Energy storage in chloroplasts

Arnold, W and Sherwood, H

J Phys Chem, 63 (1959) No 1, p 2

3 pages

Dried chloroplast films that have been illuminated exhibit thermoluminescence. The glow curves have been analyzed to give the activation energies associated with this energy storage

Equilibrium in saturated salt solutions

Blasdale, W.

Reinhold Pbl. New York (1927)

Solar-energy receiver with lithium-hydride heat storage

Caldwell, R. et al

Solar Energy 3 (1965) No. 1, p. 48

13 pages 4 tables 13 pictures 5 ref.

The results of an applied research program to experimentally evaluate a small cavity-type solar energy receiver and integral lithium-hydride thermal-energy storage unit are described.

Application of free energy diagrams to thermochemical processes

Fueki, K.

Japanese/United States symposium on solar energy systems. 2 (1974), p. 14-1

17 pages 2 tables 15 pictures 7 ref.

Some Physical and Chemical Aspects of Heat Storage

Goldstein

Proc. Conf. New Sources of Energy, Rome (1961)

The hill reaction as a model for chemical conversion of solar energy

Marcus, R

US Dept of Commerce, Rep No 15 (1959) Dec

7 pages

The possibility of storing solar energy for use during dark periods by decomposition of water into its elements

The photolysis of nitrosyl chloride and the storage of solar energy

Neuwirth, O

J Phys Chem, 13 (1959) No 1, p 17

3 pages

Nitrosyl chloride, dissolved in carbon tetrachloride, is photochemically decomposed by light below 6400 Å into nitric oxide and chlorine. Experiments using sunlight with a flowing system are described. The nitric oxide is insoluble and can be stored and later recombined with chlorine in carbon tetrachloride to give the original nitrosyl chloride and release some of the solar energy consumed in the photolysis

Kinetic complications associated with photochemical storage of energy

Noyes, R

J Phys Chem, 63 (1959) No 1, p 19

4 pages

If energy is to be stored in a photochemical process, the initial act of absorption of a photon must be followed rapidly by additional reactions. These can be classified according to whether or not a non-absorbing species must react either with the excited absorber or with a fragment formed from its dissociation

Selected values of chemical thermodynamic properties

Rossini, F et al

National Bureau of Standards Circular 500 (1952)
reprinted (1961)

Storing solar heat in chemicals

Telkes, M.

Heating and Ventilating, (1949), Nov, p 80

Nucleation of supersaturated inorganic salt solutions

Telkes, M.

Ind. & Eng. Chem. 44 (1952) p. 1308.

3 pages

Storing solar heat in chemicals.

Telkes, M and Raymond, E

The Industrial Heating Engineer, 12 (1950) p 119

5 pages

Experiment with energy storage in chemicals.

5.3
LAGRING AV TERMISK ENERGI

Der Sonnenwärmespeicher

Schweizerische Bauzeitung, 65 (1947) p 426

Short comment about the possibilities to use sun radiation for heating purpose.

First step of heat storage research program completed: progress report

AEIC-EEI Heat Pump Committee, Bull Edison Elec Inst, 27 (1959) No 6, p 250

2 pages

First phase of a project to determine the status of heat storage development and to analyse the potential applicability of various heat storage materials for use in conjunction with the heat pump and resistance heating

Determination and analysis of the potentialities of thermal energy storage materials

ASD Technical Report 61-187 (1961)

Electrical storage heater for hot water central heating

Sanit. Heiz. Techn., 36 (1971), No 2

5 pages 1 table 11 pictures 6 ref.

Heat storage in solids, in insulated tanks with water, oil or special fluids. Means of control.

Practical applications of computeraided design

Electr. Rev., 190 (1972), April, No 17

Developing of a mathematical model for design of storage heaters.

Prospects for Thermal Energy Storage

Altman, M.

AGARD conf., Cannes (1964), March

Utilization of heat of fusion

The prediction of transient heat transfer performance of thermal energy storage devices.

Altman M et al.

Chemical engineering progress, symposium series 61 (1965) No 57 p 289.

9 pages 5 ref.

Conservation and better utilization of electric power by means of thermal energy storage and solar heating

Altman, M.

Towne School of Civil and Mechanical Engineering (1971)

265 pages

The determination of thermal diffusivities of thermal energy storage materials.

Altman M et al.

ASME Transactions, Series A - journal of engineering for power 89 (1967) Jul p 407

Surface temperature measurements, discussing advantages of transient methods.

8 pages 21 ref.

A Suspension Medium for Heat Storage Materials

Baer, S.

Proc. Solar heating and cooling for buildings, workshops Washington D.C. (1973) March

Dependence of Stored Energy on the Type and Size of a Solar Hothouse

Baibutaev, K. and Yakubov, Yu.

Geliotekhnika, 6 (1970), No 4, p 7

6 pages 2 tables 2 pictures 6 ref.

Thermal energy storage research and development program. Final technical report, 6 Dec 1960-1 Dec 1961

Batutis B

General electric co, Philadelphia, PA (1962)

178 pages

The binary eutectic as a thermal energy storage system - equilibrium properties.

Belton G, et al

6th Natl. ASME - AIChE heat transfer conf. Boston (1963)

Contribution à l'étude du stock dans le cas de stockage de l'énergie à haute température et en grande quantité

Botta, H

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15
In French

Aspects of heat storage at higher temperatures in large quantity are discussed. The nature, form and size of the storage area

Simulation and optimization of solar collection and storage for house heating

Buchberg, H and Roulet, R

Solar Energy, 12 (1968) p 31

20 pages 4 tables 16 ref

Optimization of a combined solar collection and storage system regarding economy. The hourly performance over a season is considered

Architectural planning and design analysis of energy conversion in housing through thermal energy storage and solar heating

Cox, J.

NSF/RANN/SE/G 127976/TR 72/2, Univ. of Pennsylvania (1972)

Sun energy assistance for air-type heat pumps

Davis, C and Lipper, R

Heat Pip Air Cond, 29 (1957) Dec, p 123

6 pages

Acceptance of the air-type heat pump as a means of year-round air conditioning is delayed and limited by its decreased capacity when maximum capacity is required. A means of supplementing the capacity is the use of solar energy. This study does not cover the direct use of solar energy for the purpose but rather is concerned with using a heat storage with a simple low-cost flat plate collector to capture the sun´s energy

Solar energy storage practical application

Jordan, R.

American Artisan, (1960), Oct., p 53

4 pages

Since solar energy source is highly variable, it is manditory that any solar space heating be designed with either an energy storage system, auxiliary heat, or both.

Elektroblockspeicher

Jüttemann, H.

HLH, 22 (1971), No 2

4 pages 4 pictures 13 ref.

Elektro - Blockspeicher für Warmwasser - Zentralheizungsanlagen

Kalischer, P.

Wärme - Lüftungs- und Gesundheitstechnik, (1968), No 4

4 pages 8 pictures

Heat storage devices with cheramics, iron, water, salt and oil.

Experimental results from solar heated thermoelectric generator utilizing thermal energy storage

Kueser, P. et al

IEEE Trans. on Aerospace VCI As-2 (1964) p. 675

7 pages 5 ref.

Influence of azimuthal orientation on collectible energy in vertical solar collector building walls

Lorsch, H.

NSF/RANN/SE/G 127976/TR 72/18. Univ. of Pennsylvania (1972)

Latent heat and sensible heat storage for solar heating systems

Lorsch, H.

NSF/RANN/SE/G 127976/TR 72/20. Univ. of Pennsylvania (1972)

Thermal energy storage devices suitable

Lorsch, H.

9th Intersoc. Energy Conversion Eng. Conf. San Francisco, (1974), p 572

6 pages

Heat Storage of Solar Energy Space Heating

Mathur, K

Solar Energy, 6 (1962) No 3, p 110

3 pages 3 ref

Presentation of papers given at UN Rome Conf (1962) on New Sources of Energy

Thermal energy storage/converter prototype design, fabrication and testing third monthly progress report, 3 May-2 Jun. 1965.

Merra S, van Someren I.

Thermo electron engineering corp. Walteam, Mass. (1965)

22 pages

Controlling the charging of storage heaters

Metzger, M.

Sanitär- und Heiz, Tech 35, (1970), November

4 pages 7 pictures

Four different modes of operating storage heaters.

Thermal energy storage. Final Technical Report. Apr 1 1965 - Sep 30, 1966

Moak, D.

Battelle Memorial Inst., Columbus, Ohio (1966), Sep.

300 pages

Temperature distribution in accumulation of solar energy in an acquifer

Rabbimov, R. et al.

Geliotekhnika, 10 (1974), No 2, p 15

5 pages 1 picture 4 ref.

A model acquifer has been used in an experimental study of solar-energy accumulation in an acquifer.

Optimum storage of heat with a solar house

Speyer, E

Am Machine & Foundry Co Central Res Lab CRL-T-20 (1959)

34 pages

Explains a method for calculating the economic feasibility of solar house heating for different localities in the United States and presents results in terms of maximum cost per square foot of solar collector which can be afforded if the solar system is to be competitive. Sunny mountainous regions with cold winters are the most favorable areas

Optimum storage of heat with a solar house

Speyer, E.

Solar Energy, 3 (1959) No 4 p 24

25 pages 24 tables 15 pictures 18 ref.

The paper reports calculations of the economic feasibility of solar house heating (and cooling) for different localities in the United States, and presents results in terms of maximum cost per square foot of solar collector which can be afforded if the solar system is to be competitive.

Solar House Heating - A Problem of Heat Storage

Telkes, M

Heating and Ventilating, 44 (1947) May p 68

9 pages

Reviews usual methods of utilizing heat from the sun for heating houses; details of new method of storage, using the latent heat of fusion of certain chemical compounds, e g, Glauber's salt, melting at about 90° F

Development of high capacity heat storage materials

Telkes, M.

R-380 Report to Instrumentation Laboratory of MIT, (1962)

Solar heat storage

Telkes M.

Paper No. 64-WA/SOL-9, ASME, New York, (1964)

Solar energy storage

Telkes, M

ASHRAE Journ, 16 (1974) No 9, p 38

7 pages 4 tables 5 pictures 25 ref

Heating and "cooling" storage as sensible heat of solids and liquids. Also heat of fusion for heat storage is discussed. Economics for large-scale installations

Energy storage media in solar heating and cooling workshop

Telkes, M.

Proceedings NSF/RANN, (1973), March, p 57

3 pages

Energibesparing med ny värmelagringsmetod

Wagermark, R.

Industriell Teknik, (1974), No 2

Saltwater ponds as solar energy accumulators

Usmanov, U

Applied Solar Energy, 5 (1969) No 1

7 pages 1 table 20 ref

This article is devoted to the analysis of work on solar ponds. Theoretical, technological and economic aspects are treated. The first section "Physics of a solar pond" deals with theoretical analysis of the temperature regime of the pond. The second section "Some peculiarities of work of a solar pond" is devoted to the specificity of the pond, problems of heat action, heat stability, the influence of dirt and dust, evaporation and waves. In the section "Conclusions and prospects" economical prospects of utilization of solar ponds are discussed

5.3.1
LAGRING UTAN FASOMVANDLING

Neuer Industriebetrieb zur Herstellung von Sonnen - Warmwasserspeichern

RAS, 19 (1964), No 3, p 150

Poolen ger huset rätt temperatur och fuktighet

Ny Teknik, (1971), No 40, p 19

1 pages

Air humidification and heat storage by means of indoor swimming pool.

Heat stored under building cuts operating costs

Engineering news-record, 192 (1974), No 11, p 20

3 pictures

System "Deepheat".

Testing Storage Heating in Schools

Amonn, W.

WKT 24 (1972) No 12

7 pages 2 tables 9 pictures

Tests of classrooms, one with electric storage heating and the other one with hot water heating from a reservoir outside the heated room.
Low wall heat-storage capacity. High degree of insulation.
a comparison of energy consumption, control and temperatures.

Canned Heat

Baer, S.

Undercurrents (1972) No 5

Heat storage in a South facing wall by means of water

Le stockage thermique dans le sol, en vue de la régularisation de l'énergie solaire

Brun, G

Coopération Méditerranéenne pour l'énergie solaire, Bull (1967) No 13
In French

A proposal is given to store thermal energy, produced by concentrating solar energy, in a cylindrical volume of earth

Performance of a solar air heater and rockpile thermal storage system

Chada, A. and Read, W.

Int. Solar Energy Soc. Conf. (1970) Prepr. Paper N 4/48

7 pages

Heating a solid by solar radiation

Cobble, H.

Solar Energy, 8 (1964) p 63

3 pages 1 table 2 pictures

A solution for the differential of describing the time-temperature relation of a solid of infinite conductivity heated by solar radiation

One-dimensional heat-transfer analysis of thermal-energy storage for solar direct-energy-conversion systems

Cullom, R et al

NASA Lewis Research Center, Cleveland, Ohio (1964).

28 pages

Controls in Electric Hot Water Storage Heating

Degl, F.

HLH 24 (1973) No. 9, p.279

6 pages 1 table 13 pictures 1 ref

Floating Plastic Reservoir Covers in the Arctic

Eaton, E

Solar Energy, 8 (1964) p 116

1 page 2 tables 1 ref.

A water reservoir can be heated by solar energy using a plastic cover.

Funktion und Systeme sowie Einsatzmöglichkeiten der Elektro-Zentralspeicherheizung

Hadenfeldt, A.

HLH 25 (1974) No. 11, p. 393

4 pages 4 pictures 2 ref.

Systems for electrical heat storage heating systems. Different materials for heat storage. Central water heat storage.

Storage of radiant energy in solids

Kallman, H

Seminar on Advanced Energy Sources and Conversion Techniques Proceedings, p 209

6 pages

Storage of radiant energy in solid materials and the rate and form of release of this energy

Solution of equations of a thermal network on a digital computer

Ness, A.

Solar Energy, 3 (1959) No 2 p 37

1 page 1 ref.

A model of a solid body emitting heat by radiation as well as by conduction and convection is represented by a network of thermal resistances. These thermal circuits can then be analyzed, similar to electrical networks, for the temperatures at the various nodes.

5.26

Sonnenwärmespeicher Sutter-Adank

Ostertag, A

Schweizerische Bauzeitung, 65 (1947) Aug p 426

2 pages

Sutter-Adank solar heat accumulator; describes briefly experimental plant for storage of solar heat erected in Switzerland; water was heated and used to supplement heat requirements of a central heating system

Experimental study of acquifer heating in solar-energy accumulation

Rabbimov, R. et al.

Geliotekhnika, 10 (1974), No 2, p 20

8 pages 1 table 3 pictures 4 ref.

Combination instantaneous/storage type hot water supply

Schwidrogitz, K

Sanit. Heiz. Tech 37 (1972) No 5

3 pages 1 table 5 pictures

Storage of solar energy in a sandy-gravel ground

Umarov, G. et al.

Geliotekhnika, 7 (1971), No 5, p 57

8 pages 1 picture 24 ref.

Experimental study of the removal of heat from a solar salt-water pond

Usmanov, Yu. et al.

Geliotekhnika, 9 (1973), No 6, p 23

4 pages 3 pictures 3 ref.

A method of extracting heat stored in a solar salt-water pond by passing the solution through external heat exchangers is discussed.

The physics of the solar pond

Weinberger, H.

Solar Energy 8 (1964) p. 45

12 pages 4 tables 12 pictures 30 ref.

Solar radiation is shown to effect the temperature rise in ponds of about a meter depth.

5.3.2
LAGRING MED FASOMVANDLING

"Flytande metaller" kan 30-dubbla lagringen av elektrisk energi

Elbranschen, (1974), No 1-2, p 4

The determination of thermal diffusivities of thermal energy storage materials: II (Molten salts thermal diffusivity measurement method at temperatures above melting point)

Altman M, et al

ASME winter annual meeting, New York (1968) American society of mechanical engineers 1968.

11 pages 24 ref.

Solar-Energy Receiver with Lithium-Hydride Heat Storage

Caldwell, R et al

Solar Energy, 3 (1965) No 1, p 48

13 pages 4 tables 13 pictures 5 ref

The results of an applied research program to experimentally evaluate a small cavity-type solar energy receiver and integral lithium-hydride thermal-energy storage unit are described

Some physical chemical aspects of heat storage

Goldstein, M

UN Conf on New Sources of Energy, Rome (1961)

17 pages

No pure substance among those considered for storing heat by melting has a storage capacity in excess of 100 Kcal per liter. Some concentrated,highly nonideal aqueous solutions gave storage capacities as high as 200 Kcal per liter. The decomposition of solid hydrates gave capacities up to 500 Kcal per liter

Thermal Control of Space Craft by Use of Solid-Liquid-Phase-Change Materials

Grodzka, P.

AIAA 8th Aerospace Sci. Meeting, New York (1970) Jan.

Phase Change Materials Handbook

Hale, D. et.al.

NASA CT-61363 (1971) Sep.

Cavity receiver temperature analysis. (Temperature distribution in cavity receiver of brayton cycle solar power conversion system, using lithium fluoride as thermal energy storage material)

McKinnon R et al.

AIAA annual meeting, 2nd San Francisco, Calif (1965) Paper 65-470.

16 pages 8 ref.

Heizen, kühlen durch Sonne und Weltraum, umweltfreundliche verfahren mit Latentenergiespeicher

Moesta, H.

Umwelt (1972) No. 6

5 pages 7 pictures

Solar house heating, a problem of heat storage

Telkes, M.

Heating and Ventilating, 44 (1947), May, p 68

8 pages

Storing Solar Heat in Chemicals

Telkes, M and Raymond, E

Heating and Ventilating, 46 (1949) Nov p 79

8 pages

Describes solar house built in Dover, Mass., and occupied since Dec 1948; illustrated description of heat collector and results of tests

Melting and crystal structure

Ubbelohde, A.

Clarendon Press Oxford, (1965)

5.3.3
LAGRING, rymdtekniska tillämpningar

Thermal energy storage for thermionic conversion. I - materials for thermal energy storage. II - thermal energy storage systems considerations

Am. Rocket Soc., Space Power Systems Conf., Santa Monica, Calif. (1962), paper 2505-62.

77 pages 15 ref.

Optimization of energy storage for solar space power.Append.1

Paiewonsky B and Szego G

Agard space power systems (1969) p 603

16 pages

Optimal systems for storage.

Prospects for thermal energy storage (thermal energy storage utilizing heat of fusion of compounds noting advantages for space power systems)

Altman M.

Combustion and propulsion, AGARD coloquium on energy sources and energy conversion. 6th Cannes, France (1964)

15 pages 25 ref.

Experimental results from solar heated thermoelectric generator utilizing thermal energy storage.

Kueser P et al.

IEEE transactions on aerospace VCI As-2 (1964) p 675

7 pages 5 ref.

Simulation of Convective and Radiative Entry Heating

Lundell, J et al

Symp Hypervelocity Techniques (1962)

Heat transfer processes in solar energy storage systems for orbital applications

Matinek F

Intern.J of sSpacecraft and Rockets 7 (1970) p 1032

6 pages

Heat storage by fusion.

Study of heat storage cells for space solar power plants

Matveev, V.

International astronautical federation, international proceedings. Volume 2 - Spacecraft systems, p 147

5 pages

Lithium hydride storage unit development for the sunpower system.

McKinnon R.

Power systems for space flight, progress in astronautics and aeronautics vol 11. Edited by Ziekin and Edward. New York Academic Press, Inc (1963) p 447.

14 pages

Design study of solar absorbers with lithium fluoride heat storage.

McKinnon, R et al

Space power systems engineering. Edited by Szego and Taylor. New York, Academic Press (1966) p 795.

26 pages 21 ref.

Optimization of energy storage for solar space power

Paiewonsky, B and Szego, G.

Energy Conversion 8 (1968) p. 71.

10 pages

Energy storage for satellites

Walker, C et al.

Engineering Digest, 7 (1960) No 3, p 30

2 pages

5.32

Heat Storage System for Satellite Powerplants

Walker, C et al

ARS Journal (1960) Oct, p 979

2 pages

In satellites using a solar-energy source, the energy must be stored for use during the shaded portion of the orbit. A system has been designed for storing energy as heat, making use of the high heat of fusion of lithium hydride

5.4
ÖVRIGT

Energy storage using desiccant beds

Close, D. and Dunkle, R.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 7/24

7 pages

Låt oss hämta nu strax av Solens
oxar de bästa
.....
Skulle vi komma till Itaka hem,
till fäderne-jorden,
skola åt Solen, Himmelens son, vi
ett strålande tempel
skynda att bygga och smycka det
rikt med härliga skänker.
Odysséen 12: 343-347

6

SYSTEM

System för varmvattenberedning är förhållandevis vanliga - säkert finns över 10^6 i bruk! I enklast fall arbetar systemet genom att vatten värms i en "plastkudde" placerad på hustaket, i andra fall används en plan solfångare med självcirkulation eller pumpsystem.

Trots att varmvattenanläggningar således är väl utprovade kan viss forskning rörande materialfrågor (billiga korrosionsbeständiga material) och formgivning vara av betydelse.

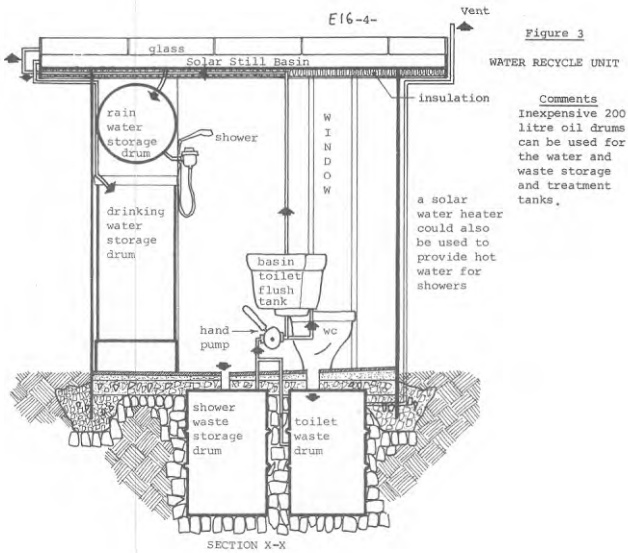
Solenergins användande för byggnadsuppvärmning är ett av dess mest intressanta tillämpningsområden, inte bara för att byggnadsuppvärmning under vinterhalvåret svarar för en stor del av kalla länders energikonsumtion utan också för att byggnader redan nu - höst, vår och sommar - till stor del uppvärms just genom solenergi.

Förutom speciella frågor rörande byggnadsteknik [1], byggnadsutformning[2] och konsekvenser[3] kan nämnas att slaget av solfångare, lagringsproblem[4] samt geografiska[5] och klimatiska[6] förhållanden spelar väsentlig roll vid projektering av ett solvärmt hus.

Ett flertal experiment har utförts - vid MIT redan 1939 - och litteraturen rörande erfarenheter av energisystem i provhus är rikhaltig.

Kylning och luftkonditionering med hjälp av solvärme har diskuterats sedan 1920-talet då Altenkirch föreslog ett enkelt system för ventilation med luftlagring. Föreslagna system har ofta arbetat med absorptionsmaskiner eller evaprativ kylning, vilket naturligtvis medför att den som önskar tränga in i området finner det nödvändigt att i detalj studera motsvarande termodynamiska processer[7]. Även system med rörliga isloleringar har testats och givit goda resultat.

Installation för vattenåtervinning (efter Alward et al (1973))



1) Se avsnitt 7.1
2) Se avsnitt 7.2
3) Se avsnitt 8
4) Se avsnitt 5.1
5) Se avsnitt 1
6) Se avsnitt 2
7) Litteraturen i detta avsnitt upptar ej sådana källor.

6.0
SYSTEM, (huvudsakligen uppvärmning och ventilation)

Heating and hot water supply central system

Nihou Netsugaku Kogyo Catalogue (mostly illustrations)

12 pages

The company has a speciality in small heat pump technique. A central system was designed for residences under a consideration of effective application of solar energy

Applied solar energy

Air conditioning, heating and ventilating, (1956), No 1, p 78

6 pages

Solar heating spreads in South

American Roofer & Building Improvement Contractor (1960) Dec

1 page

A Case for a Solar Ice Maker

Solar Energy, 7 (1963) No 1, p 1

2 pages

Low Temperature Engineering Application of Solar Energy

ASHRAE New York (1967)

78 pages 26 ref.

Solar energy for heating and cooling

Hearing before the subcomm. on Energy of the Comm. on Science and Astronautics, Washington (1973)

291 pages

Solar energy utilization for one-family houses and multi-storey buildings. Economics.

Solar energy for heating and cooling

Hearing before the subcomm. on Energy of the Comm. on Science and Astronautics, Washington, (1973)

291 pages

Solar energy utilization for one-family houses and multi-storey buildings. Economics.

Progress report on modeling of solar heating and air conditioning

University of Wisconsin

NSF/Univ. of Pa. Solar energy meeting, (1973), March

Solenergi - solen i människans tjänst

IVA. Utlandssekretariatet, Stockholm

Specialrapport, Frankrike, 7 (1973)

45 pages

Utilization of solar energy for space heating, cooking desalination, pumping. France.

System med värmelagring av solenergi i byggstomme

Byggnadstidningen (1974) No. 18, p. 13

3 pictures

System with thermal storage in the building structure.

Solar heating and cooling demonstration act

Hearings before the subcomm. on Energy of teh Comm. on Science and Astronautics Washington D.C., (1974)

502 pages

Solar heating and cooling buildings

Auburn Univ., Alabama. Terrastar: Terrest. Appl. of Solar Techn. and Res. (1974).

28 pages

Solar Energy's Role in Heating and Cooling of Buildings

ASHRAE Journal (1974) Sep

Special issue about solar energy

ASHRAE Handbook of Applications New York (1974)

Chapter 54: Solar Energy Utilization for heating and cooling

20 pages 4 tables 15 pictures 79 ref.

A detailed review of the field

Utilizing sun rays

Abbot, C.

Scientific Monthly 51 (1940) Sept., p. 195

6 pages

Reviews various methods of utilization of solar energy and describes solar flash boiler, solar cooker, and solar distiller developed by the author.

Solar heating

Adams, W.

Bombay, (1878)

Use of solar energy for heating and cooling of buildings in Central Asia

Avezov, R et al.

Geliotekhnika,6 (1970), No 2, p 76

7 pages 2 tables 3 pictures 15 ref.

Experimental Investigation of the Combined Operation of a Heat Pump and Solar Device with a Radiation Heating and Cooling System

Avezov, R. et al.

Geliotekhnika, 6 (1970) No 5 p 56

4 pages 2 pictures 6 ref.

Solar energy utilization for heating and air conditioning

Avezov, R. et al

Geliotekhnika 8 (1972), No. 4, p. 64

11 pages 5 pictures 35 ref.

The paper provides a detailed analysis of foreign and Soviet experimental data in the utilization of solar energy for heating and air conditioning and compares the climate in the southern regions of the USSR with that of the northern and central states of the USA.

Possibilities for Solar Ice Maker

Ba Hli, F et al.

1970 International Solar Society Conference, Melbourne. Austr. (1970) paper No 6/59

Some Foreign Developments in the Utilization of Solar Energy

Barlow, E.

The Heating and Ventilating Engineer (1949) June

4 pages 4 pictures 2 ref

Application of "Greenhouse" principle.
Utilization of latent heat

Modeling of solar heating and air conditioning

Beckman, W. and Duffie, J.

Wisconsin Univ., Madison. Engineering Experiment Station (1973) July.

20 pages

The path of solar heating

Bliss, R.

J. Homebuilding, (1958), Oct, p 64

3 pages

Performance of an Experimental System Using Solar Energy for Heating and Night Radiation for Cooling

Bliss, R. and Bliss, M

U.N. Conf. on New Sources of Energy, Rome (1961)

Performance of a solar heated office building

Bridgers, F et al

Heat Pip Air Cond, 29 (1957) No 11, p 165

6 pages

The heating and cooling system of an office building and the instrumentation for determining performance are described

Applying solar energy for cooling and heating institutional buildings

Bridgers, F

ASHRAE Journ, 16 (1974) p 29

9 pages 4 tables 10 pictures 3 ref

The state of the art of using solar energy for buildings and for hot water preparation

Paris Fair

Brooks, F

Engineering, 148 (1939) July 21 p 82

2 pages

Includes brief illustrated description of solar heating apparatus constructed by La Thermique Naturelle, Bordeaux, France

Rock pile thermal storage heating and cooling system

Chapman, H.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 6/54

7 pages

Domestic solar energy systems for Delaware

Costello, F. and Puni, V.

Delaware Univ., Newark. Inst. of Energy Conversion (1973) May.

184 pages

NSF/RANN Workshop on Solar Heating and Cooling of Buildings (June 1974)

Cuba, J.

ASHRAE Journal (1974) No 9

1 page 3 pictures

Sections: 1. Technical and economic considerations for solar heating and cooling of buildings.
2. Technology Assessment of solar heating experiments.
3. Public acceptability and implementation of solar heating and cooling of buildings
4. Advanced research in solar heating and cooling experiments

The proceedings will be published by ASHRAE

Solar heating, radiative cooling and thermal movement-their effect on built-up roofing.

Cullen W.

National bureau of standards, Washington D.C. Techn Note (1963) Dec

34 pages

The hot-water thermal cycle in the utilization of solar energy

d´Amelio, C

Solar Energy, 7 (1963) No 3, p 138

6 pages 8 pictures 6 ref

The solar thermal machine is claimed to be the only method to obtain, from the sun, sufficient energy to run electric generators with outputs of several kilowatts. The cost of the energy thus obtained is, however, considerable. The system cannot compete in cost with traditional sources such as hydraulic and steam turbine-electric generation, internal combustion engines, steam engines etc. The paper presents the study of an extremely simple solar plant that incorporates a turbine actuated directly by the hot water furnished, at atmospheric pressure, by flat-type collectors

Federal Energy Conservation Demonstration Building

Dubin, F.

Proc. Solar Heating and Cooling for Building Workshop Washington D.C. (1973) March

GSA's energy conservation test building: A report

Dubin F

Actual Spec. Eng. 30 (1973) No 2 p 84

6 pages

Utilization of solar energy for heating and cooling

A study of a solar air conditioner

Duffie, J et al

Mechanical Engineering, 85 (1963) No 8

4 pages

Discusses the experimental investigation which utilizes a heat supply from a flat-plate solar collector in combination with a source of conventionally generated steam

Solar energy thermal processes

Duffie, J. and Beckmann, W.

J. Wiley (1974)

Solar Energy will Cool and Heat Atlanta School

Duncan, R.

ASHRAE Journal (1974) No. 9

3 pages 1 picture

Case history

Eclairage par le soleil d'un atelier d'usine dont la toiture semi-transparente est doublée par un plafond translucide

Escher-Desrivières, J

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 325 (in French)

5 pages 2 pictures

Solar Heating

Ghaswala, S.

Civil Engineering (1951) No. 537, p. 178

Utilization of Natural Energies for Heating and Cooling of Houses

Givoni, B.

Build. Int. 7 (1974) No. 2, p. 174

10 pages

Power for the small user

Golding, E

New Commonwealth, 37 (1959) No 7, p 103

5 pages

Various small-scale power plants are considered, including equipment using solar radiation

Energy Utilization in a Residential Community

Grot, R.

Proc. Solar heating and cooling for buildings workshop, Washington D.C. (1973) Mar.

On generalizing the dynamic performance of solar energy systems

Gupta, C.

Solar Energy, 13 (1971), No 3, p 301

10 pages 2 tables 6 pictures 14 ref.

An outline is given of a response factor method for generalizing the dynamic performance of lowtemperature solar energy utilization devices.

International aspects of air conditioning with movable insulation

Hay, H. and Yellott, J.

Solar Energy, 12, (1969), No 4, p 427

12 pages 4 pictures 8 ref.

Natural air conditioning, involving heating with solar energy and summer cooling to the night sky, is accomplished with ceiling ponds and movable insulation. Pertinent international aspects of climate, economics mores and needs are related to industrialized and to developing countries. The efficiency of a solar water-heater (or a solar still) can be improved by covering it at night with insulation moved from over a container in which water is cooled (or frozen) by nocturnal radiation; this water is maintained cold throughout the day when the insulation is positioned over it.

Solar heat

Heywood, H.

Heating and Ventilating Engineer, (1954), p 120

Solar energy for water- and space heating

Heywood, H.

J. of Inst. of Fuel, 27 (1954)

A solar energy pilot plant for Northern Chile

Hirschmann, J.

Solar Energy, 5 (1961) p 37

7 pages 3 tables 5 pictures 10 ref.

Evaluation of flat-plate solar collector performance

Hottel, H and Whillier A

Transaction of the Conf on the Use of Solar Energy: The Scientific Basis, II (1955) Part 1, p 74

31 pages

Application of solar energy to small-scale industries

Khanna M and Mathur K

Solar Energy 1 (1957) No 1 p 34

More on the ice-making machine

Khanna, M

Solar Energy, 7 (1962) No 4, p 187

1 page 2 ref

This type of ice-making machine stated to be very simple to operate, is described

Solar energy as a heat source for heating and cooling buildings

Kimura, K

Journal of Fuel Association No 559, vol 52,(1973)

9 pages 2 tables 7 pictures 11 ref

If solar radiation is actually available for heating and cooling buildings is described. Irregular and intermittent characteristics of solar radiation as a energy source and the problems related to the actual usage are explained. Various collecting system, storing system, heat supplying system and their performance are described based on the current possible methods

Possibilities of using solar energy for domestic space heating and hot water supply in Holland

Koppen van, C

Klimaatbeheersing (1974) May, p 194 (in Dutch)

9 pages 13 pictures

Reasons for increasing interest in exploiting solar energy, outlines likely future energy situation, and traces evolution of energy sources of all types. Influence of climate on heat demand. Possibility of meeting heat demand as far as possible by use of solar collectors

Solar heating systems analysis

Lorsch, H.

Report No NSF/RANN/SE/G 127976/TR 72/19. Univ. of Pennsylvania Conf., (1972), Nov

32 pages 5 tables 8 pictures 5 ref.

Previous work in solar heating and thermal energy storage in buildings plannings and architecture. Heating systems and components. Technical and economic trade-offs.

Thermoelectric heating and cooling systems

Lukomskii, S. et al

Geliotekhnika 4 (1968) No. 1, p. 56

13 pages 10 pictures 38 ref.

Economics of the Application of Semiconductor Heat Pumps for Room Heating and Cooling

Lukomskii, S. et al.

Geliotekhnika, 6 (1970), No 3, p 69

4 pages 2 pictures 3 ref.

Heating and cooling of buildings with solar energy

Löf, G.

Chapter 11. Introduction to the utilization of solar energy (Zarem - Erway) McGraw-Hill, (1963)

Statement of solar energy for heating and cooling

Löf, G.

Hearings before the subcommittee on Energy of the Committee on Science and Astronautics U.S. House of Representatives, (1973), June

Australian solar water heaters

Löf, G. and Duffie, J.

Proc. Solar heating and cooling for buildings workshop, Washington, D.C., (1973), March

Heating by solar radiation

Michel, J.

Chaud. Froid. Plomb. 27 (1973) May/June, p. 101, 111, 324

14 pictures

Basic principles of collecting and storing solar energy using sheets of glass, heat-storing walls etc. Ventilation aspects. Economics.

Solar energy research programs alternatives

Mitre Corp

MTR-6516, (1973), December

Heating and cooling of buildings. Processes solar systems for electricity generating. Budgets.

Heizen, kühlen durch Sonne und Weltraum umweltfreundliche verfahren mit Latentenergiespeicher

Moesta, H.

Umwelt, (1972), No 6

5 pages 7 pictures

Description of works of groups in Aldingen b. Stuttgart and Tucson, Arizona.

Application of solar energy to residential dwellings

Morrison C, Farber A

Build Syst Des 71 (1974)No 3 p 49

4 pages

Approximately 50% of the floor space of a residence will be required to supply all of the energy require ments.

Flat plate solar absorbers: the effect on incident radiation of inclination and orientation

Morse, R. and Czarnecki, J.

C.S.I.R.O., Engineering Section, Report E.D., 6 (1958)

L'énergie solaire et ses applications industrielles

Mouchot, A.

Paris, Gauther- Villars; 1st ed, 1869; 2nd ed., 1879.

Japanese solar-thermal systems

Noguchi, T.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 3-1

9 pages 2 tables 2 pictures 2 ref.

Systems for heating and cooling of buildings, water-heaters, solar furnaces, agricultural application and a solar thermal power plant are described.

The development of a residential heating and cooling system using NASA derived technology

Oneill, M. , et al

Lockheed Missiles and Space Co., Huntsville, Alabama (1973)

99 pages

Technical and economic feasibility of solar powered space heating, air conditioning and hot water heating systems for residential applications.

The development of a solar powered residential heating and cooling system

Oneill, M. et al

Lockheed Missiles and Space Co NASA - CR - 120400, (1974)

95 pages

Solar energy in architecture

Page, J.

Sun at Work in Britain, (1974), No 1

3 pages **2 pictures**

General review of the subject. Heating and cooling, energy storage systems.

Use of RBR systems in South Australian schools

Read, W et al

Australian Refrigeration, Air Conditioning and Heating, 26 (1972) No 12 p 20

Possible Applications of the Properties of Water in Solar Installations

Romanenko, V. and Korlyakov, E.

Geliotekhnika, 6 (1970), No 4, p 83

2 pages **3 ref.**

The heat pipe experiment

Shelton, R.

NASA, Marshall Space Flight Center, Huntsville, Alabama (1969)

13 pages

Solar and radiant heating.

Criteria for justification of solar energy systems

Sheridan, N.

Int Solar Energy Soc Conf., (1970), Prepr Pap N 2/108

6 pages

Criteria for justification of solar energy systems

Sheridan, N.

Solar Energy, 13 (1972), p 425

5 pages

Solar + Radiant Panel + Warm Air = Comfort

Simon, M

Architectural Record, 101 (1947) June p 92

4 pages

Description of design and layout of house in Glenview, combining solar heating with a radiant panel system.

Cheap but practical solar kitchens

Stam, H.

UN Conf. on New Sources of Energy, Rome (1961)

Solar energy - it's role in heating and cooling

Tasker, C.

Heating and Ventilating Engineer, (1950), p 143

6 pages

A solar powered combined heating and cooling system

Teagan W and Sargent S

I.S.E.S. Congress, Paris, (1973)

Solar space heating and air conditioning in the Thomason Home

Thomason, H

Army Signal Corps, Pentagon (1961)

9 pages

The problems of successful solar space heating are many and varied. The scientist and engineer who starts out merely to heat his home by solar energy, with presently known apparatus and materials, faces a very difficult situation because the amount of heat energy received per square foot of surface per heating season is quite low, and the cost of previous efficient solar heat collectors has been high. Further problems are involved because the solar input occurs only about 6 hours out of 24, and because many cloudy days per season plague the solar scientist. The paper reports the author's attempts to solve these difficult problems of solar space heating and cooling

Solar space heating, water heating, cooling in the Thomason house

Thomason, H.

Proc. Conf. New sources of energy, Rome, (1961)

Solar space heating and air conditioning in the Thomason Home

Thomason, H.

Solar Energy, 4 (1960), No 4, p 11

9 pages 1 table 5 pictures

The problems of successful solar space heating are many and varied. The scientist and engineer who starts out merely to heat his home by solar energy, with presently known apparatus and materials, faces a very difficult situation because the amount of heat energy received per square foot of surface per heating season is quite low, and the cost of previous efficient solar heat collectors has been high. Further problems are involved because the solar input occurs only about 6 hrs out of 24, and because many cloudy days per season plague the solar scientist. This paper reports the author's attempts to solve these difficult problems of solar space heating and cooling.

Solar houses/heating and cooling: progress report

Thomasson, H. and Thomasson, J.

Solar Energy, 15 (1973), No 1, p 27

Presents data on performance of 7 solar houses. One house has been operating for 13 years, with 95 % of heating needs met by solar energy and mixed hot water and air heating. An improvement of this is cheaper with reduced heat losses from collector in summer. One was not constructed according to authors' recommendations, and the solar heating is insuffiecient. One has 3 innovations: under floor heat storage, reflector to intensify sun's power and a thin air layer under the roof.

Thermal environmental engineering

Threlkeld , J

Prentice-Hall, New York, (1962)

Economic balance sheet of ice manufacture with an absorption machine utilizing the sun as the heat source

Trombe, F and Foex, M

UN Conf on New Sources of Energy, Rome (1961)

11 pages

The machine described is of the ammonia absorption type and operates intermittently. During the day, ammonia gas is distilled by heating the aqueous ammonia solution circulating in iron piping heated by solar radiation focused by cylindroparabolic mirrors of aluminium-magnesium alloy. At night, the liquid ammonia accumulated under pressure is evaporated and reabsorbed by the cooled solution, which then has a minimum ammonia concentration

Possibilities of using solar energy for domestic space heating and hot water supply in Holland

Von Koppen, C.

Klimatbeheersing, 3 (1974), May, No 5, p 194

10 pages 13 pictures

Feasibility of solar heating & cooling of buildings

Weinstein A, Chen S.

Prof Eng (Wash, D.C) 44 (1972) No 2 p 28

5 pages

Utilization of sun and sky radiation for heating and cooling of buildings

Yellott, J.

ASHRAE Journal, (1973), Dec

12 pages 7 pictures 48 ref.

Solar heat collection, collector plates blazing materials. Applications concentrating collectors. Heat storage systems. Cooling.

6.1
VATTENVÄRMNING, förbrukningsvarmvatten (uppv. med vatten)

Installing solar water heaters

Australia, C.S.I.R.O., Engineering Section

Circular (1959), No 1

Solar water heaters, principles of design, construction and installation

Commonwealth Scientific and Industrial Research Organization, Div. Mech. Engng. Melbourne. Circulair, (1964), No2

Solar heating for hot water

Austral. Engr., (1964), April, p 79

Another example of hot water from the sun

Plumber, 86 (1964), Oct, p 857

Sekisui solar water heater

Sekisui Chemical Industry Co Catalogue (mostly illustrations)

2 pages

The cylinder of heat reciever is made of special plastic

10 Years experience with solar water heaters in the UAR

Abou-Hussein, M

UN Conf on New Sources of Energy, Rome (1961)

7 pages

The paper shows the present status of solar water heaters in the UAR and a review of their development from the early open-cycle basin type to the recent metal-in-strip closed-cycle type with storage tank. The economic value of the solar water heating in comparison with water heating by kerosine, butane gas, and electricity was expressed as "the average yearly consumer total expenses". The comparison shows that water heating by solar energy is the cheapest method

Sun Effects and the Design of Solar Water Heaters

Alt, H

ASHVE, Transactions, 41 (1935) p 131

18 pages

Analyzes factors entering into the use of sun heat for warming domestic hot water, and describes design of solar heaters

Solar water heaters

Andrassy, S

UN Conf on New Sources of Energy, Rome (1961)

11 pages

A new type of solar water heater which combines sheet metal with durable plastic tubing. The metal sheet is corrugated in a special way, forming tubular openings. Plastic pipe is inserted into these grooves forming a continuous coil. The new panels show the following advantages as compared to all-metal panels:
a/ Not damaged by freezing temperatures, nor by heat, when heat-resistant tubing is used
b/ Light weight and simplicity in installation
c/ Low cost
d/ Corrosion-proof and leak-proof

Investigation on Three Closed Chamber Solar Water Heaters

Bhardwaj, R.

ISES Conference in Paris, (1973)

8 pages 4 pictures 5 ref.

Studies of tanks with inclined buffles aluminium chips matric showed no improved performance compared with a tank without convection and conduction pro-motors.

Making the best use of Solar Energy

Brinkworth, B.

Electronics and Power 20 (1974) No9, p.356

4 pages

Recent studies of solar energy devices. Flat plate water heaters designed for UK climate

Solar Energy and Its Use for Heating Water in California

Brooks, F

University of California. Agricultural Experiment Station, Bulletin No 602 (1936)

64 pages

Discusses availability of solar energy and gives results of experiments with solar water heaters; various solar water heaters are described and data for design and construction are given

Use of solar energy for heating water

Brooks, F

Smithsonian Institute US, Printing Office, Washington (1939)

24 pages

Use of Solar Energy for Heating Water

Brooks, F

Smithsonian Institution, Annula Report for 1939 (1940) p 157

25 pages

Describes experimental investigations carried out at California Agricultural Experiment Station, and gives recommendations for installation and construction of solar water heaters

Heating Water by Solar Energy

Carnes, A

Agricultural Engineering, 13 (1932) June p 156

4 pages

Discusses various aspects of solar heater equipment for household hot water requirements

Pressurized Solar Water Heater

Chinnappa, J.

ISES Conf. Australia (1970)

Performance at Colombo, Ceylon, of a pressurised solar water heater of the combined collector and storage type

Chinnappa, J and Gnanalingam, K

Solar Energy, 15 (1974) p 195

10 pages

The heater consists of a 14 m long square coil of 7 cm diameter pipe, in wooden box with thermal insulation at bottom and 2 glass covers. Glass surface is 2 1/4 m^2. If 135-225 l water is drawn off a day at 49°C. Collection-efficiency is around 46 %

Solar Water Heating in So. Africa

Chinnery, D. .

Bulletin No. 44 National Building Research Institute of So. Africa, Council for Scientific and Industrial Research, Pretoria (1967)

The Performance of Solar Water Heaters with Natural Circulation

Close, D

Solar Energy, 6 (1962) No 1, p 33

8 pages 1 table 11 pictures 7 ref

A methode of estimating the performance of solar water heaters circulating to a storage tank by thermosyphon is presented. Ideal conditions of no drawoff during the day and clear sunshine are assumed. Two absorber and tank systems were tested and the results compared with those estimated from the theoretical method

ASHRAE Journal article leads to Georgia solar water heater experiments

Cloud, F

ASHRAE Journ, 16 (1974) No 9, p 45

2 pages

Report on a small thermosyphon water heater

Performance of experimental solar water heaters in Australia

Czarnecki, J.

Solar Energy, 2 (1958) p 2

5 pages 11 tables 4 pictures 6 ref.

Report on experiment with seven solar water heaters.

Solar Water Heating in Australia

Davey, E.

Paper No. 4/71, I.S.E.S. Conf., Melbourne (1970)

Solar assisted gas energy water heating feasibility for application in new apartments

Davis, F.

California Inst. of Tech., Pasadena, Environmental Quality Lab. (1974)

47 pages

Floating plastic reservoir covers in the Arctic

Eaton, E.

Solar Energy 8 (1964) p. 116

1 page 2 tables 1 ref.

Quelques éléments de comparaison pour la production domestique d'eau chaude

Escondeur, M

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15
In French

Presents results of studies and evaluations for the comparison of different methods of production of hot water for household use and for swimming pool heating

Solar energy used to supply service hot water

Farber, E and Bennert, J

Air Cond Heat Vent, 54 (1957) No 10, p 75

6 pages

Data are presented of interest to the designer of a system that uses solar energy for heating water

Solar water heating and space heating in Florida

Farber, E.

Solar Energy 3 (1959) No. 3, p. 21

5 pages **16 pictures**

The paper briefly describes methods used for solar water heating.

Solar water heating

Farber, E

Air Cond Heat Vent, 56 (1959) No 7, p 53

3 pages

Design and performance of a large-size solar water heater

Garg, H.

Solar Energy, 14 (1973), No 3, p 303

10 pages 2 tables 5 pictures 24 ref.

Reports the design details of a solar water heater suitable for the large intermittent demands for hot water by hospitals, and hostels.

Performance correlation of horizontal plastic solar water heaters

Gopffarth, W et al

Solar Energy, 12 (1968) No 2, p 183

14 pages 2 tables 8 pictures 4 ref

Statistical and experimental methods are used to determine the optical efficiency and the heat lost by radiation and convection in a horizontal plastic solar water heater. The heater consisted of a water filled polyethylene bag with a clear top and black bottom

The application of phenol-formaldehyde plastic foam as thermal insulation for solar water heaters

Guner, K. et al

Army Foreign Science and Technology Center, Charlottesville, Va (1973).

5 pages

System design in solar water heaters with natural circulation

Gupta, C and Garg, H

Solar Energy, 12 (1968) No 2, p 163

20 pages 12 pictures 15 ref

A computer model for predicting the thermal performance of domestic solar water heaters, employing thermosyphon circulation between the collector and the insulated storage tank, is described

Field design methods and data for solar energy applications

Gupta, C.

ISES Conf., Paris (1973) July

10 pages 1 picture 5 ref.

Hand calculation procedure to evaluate a device for the given job situation. A description of a solar water heater installation in a hot humid coastal climate.

Simulation of forced circulation water heaters; effects of auxiliary energy supply, load type and storage capacity

Gutierrez, G. et al

Solar Energy, 15 (1974), No 4, p 287

12 pages 2 tables 4 pictures 8 ref.

A hybrid computer was used to simulate forced circulation solar water heater systems using stratified storage. A single month of hourly meteorological data was used to examine the effects of three types of auxiliary heating systems and three different sized tanks. Various time distributions and magnitudes of the load were studied. Results are shown in terms of the ratio of auxiliary energy requirements to total load and indicate best methods for adding auxiliary energy to maximize solar energy gain.

Domestic Solar Water Heating in Florida

Hawkins, H

Florida University. Engineering and Industrial Experiment Station Bulletin No 18 (1947)

96 pages

Discusses principles involved in the design and construction of solar water heaters, and gives examples of proper applications of these principles; economics of solar and other water heating systems; contains a bibliography

Solar energy for water- and space-heating

Heywood, H.

J. Inst. Fuel 24 (1954) p. 334

Solar water heating in Great Britain

Heywood, H.

Solar Energy, 3 (1959) No 3 p 29

2 pages

For successful development, the solar heater must be regarded as a preheater and combined with an auxiliary heat source to raise the water to the final temperature required.

Operating experiences with solar water heating

Heywood, H.

IHVE J V 39 (1971), June, p 63

7 pages

Hitachi HI HEATER solar water heater

Hitachi Chemical Co Ltd, Catalogue

The heat collector element is made of special plastic solar heat-collecting cylinders

The development of solar water heater and its field trials under Indian tropical conditions

Khanna, M

Solar Energy, 12 (1968) No 2, p 255

6 pages 2 pictures 12 ref

The main characteristics of the Indian winter months are very favourable for the utilization of solar energy in heating water for domestic use. The development of a solar water heater, simple in design but efficient and cheap, and its field trials under Indian tropical conditions and sub-zero temperatures are discussed

A portable-type solar water heater

Khanna, M.

Solar Energy, 15 (1974), No 3, p 269

Domestic solar water heater

Khanna, M et al.

Journal of Scient. and Ind. Res. 18 A (1959) p 51

8 pages

Study on heating and hot water supply in residencial buildings by solar heat, part 1, on the hot water supply system

Kimura, K et al

Annual Meeting(1974) Architectural Institute of Japan

2 pages 7 pictures

Let Sol Do The Work

Koch, T

Domestic Engineering, 157 (1941) May p 48, 124

6 pages

Description of the solar water heaters used in two housing projects in Florida; discusses briefly design and construction

Fundamental Principles of Solar Water Heaters

Koch, T

University of Florida, Master's Thesis (1941)

Use of solar energy for residential space heating

Lorsch H

Energy Convers 13 (1973) No 1 p 1

5 pages

Solar heating system to supplement a gas furnace, fuel savings in excess of 40% were obtained by computer simulation for Washington, D.C. weather

Putting Sunbeams on the Roof to Work

Löf, G et al

Plumbing and Heating Journal, 117 (1946) May p 44

3 pages

Illustrated description of solar heaters installed in small houses in Florida and California; hot water may thus be obtained from sunshine during 7 months of the year

Solar water heaters

Löf, G., Close, D.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 61

18 pages 4 tables 12 pictures 26 ref.

This paper deals with different types of solar water heaters, their performance, cost and the design procedure. Systems and the future possibilities of solar water heating are also discussed.

Contribution à l'étude de l'échauffement de l'eau sous l'effet de la radiation solaire

Masson, H

Dakar, Inst Hautes Etudes Ecole Sup Sci Ann, 1 (1954)

Solar water heaters

Mathur, K and Khanna, M

UN Conf on New Sources of Energy, Rome (1961)

19 pages

An arrangement for heating water by solar energy using a flat plate collector is described

Domestic solar water heater

Mathur, K et al

J Sci Ind Res, 18A (1959) Feb, p 51

8 pages

Arrangements for heating water with solar energy for supplying the domestic needs for a small family at Delhi, using easily available and inexpensive construction materials (galvanized iron sheets). Details of construction are given and observations using heat collectors unit with a single layer of glass taken during Oct-Nov 1955. Trials indicate domestic unit will recover initial cost in less than one year

Some experiments with a flat plate solar water heater

McVeigh, J.

J.S.E.S (UK), (1974), April

8 pages 2 tables 2 pictures 6 ref.

Experiments with solar water heating in the UK.

Sun Rays Furnish Hot Water for Homes

Merle, A

American Builder, 62 (1940) April p 117

Brief illustrated description of solar water heating system

Solar Heaters for Service Water

Merle, A

Heating and Ventilating, 37 (1940) Aug p 22

5 pages

Discusses design and performance of modern solar heating installations used for warming hot water for domestic purposes

Solar energy applied to residential dwellings

Morrison, P. and Farber, E.

Univ. of Florida, USA (1974)

13 pages **6 pictures**

Solar water heater, residential space heating, air conditioning and electric power generation. Solar powered cooking.

High Temperature Solar Water Heating

Morse, R. et. al.

ISES Conference in Paris, (1973)

10 pages 3 tables 6 pictures 11 ref.

A mathematical model of a four-stage system to supply water at 15°C, each stage using absorbers designed to be optimal for its operating temperature.

Solar water heaters for domestic and farm use

Morse, R

Commonwealth Scientific and Industrial Research Organization, Eng Sect Rept ED 5 (1957)

15 pages

A solar water heater is described. Complete details in the form of drawings

Installing solar water heaters

Morse, R.

CISIRO Circular (1959), No 1, Melbourne, Australia.

Description on how to go about installing a solar water heater.

Solar water heaters

Morse, R.

CSIRO Division of mechanical engineering, circular No 2. Melbourne, Australia.

Practical descriptions of how to make solar water heaters.

Solar water heaters - Principles of design, construction and installation

Morse, R.

Journal Institute of Heating and Ventilating Engineers, (1967), January

Summary of CSIRO circular No 2 and describes methods of construction solar water collectors, using conventional materials: good on practical aspects.

Old Sol's Energy Trapped to Provide Free Hot Water for Modern Florida Homes

Murdoch, W

American Builder, 63 (1941) May p 129

1 page

Brief illustrated description of solar water heating system installed in Florida

Aero-sun panel solar water heater

Nihou Netsugaku Kogyo Catalogue (mostly illustrations)

8 pages

A solar radiation collection unit panel is designed according to Japanese traditional dimension. The panel can be settled on roof instead of roofing material

Solar Heating for Domestic Hot Water

Parmelee, G and Aubele, W

Domestic Engineering, 171 (1948) June p 124, 172 (1948) July p 120

8 pages

Discusses principles of operation and reviews briefly studies made at University of Florida; data for design and construction of solar water heaters are included

Heat Transfer in a Tubular-Type Solar Water Heater

Petukhov, B.

Geliotekhnika, 3 (1967), No 2, p 37

5 pages 1 table 2 pictures 2 ref.

Economic description of employing solar water heating plants

Petukov, B

Applied Solar Energy, 5 (1969) No 3

6 pages 5 tables 2 pictures

It should be noted that the use of solar water heaters allows saving in food. Hence, the necessity follows of wide introduction of such water heaters into the national economy

Modernization of tube-type solar water heaters

Petukhov, B.

Geliotekhnika 8 (1972), No 1, p. 40

3 pages 1 table - -

The paper outlines the production indices of tube-type solar water heaters and gives recommendations for their assembly and installation.

A solar water heater for low cost housing

Richards, S and Chinnery, D

South African CSIR Report No 237 (1967), Pretoria, South Africa

26 pages

A proposed standard test code for the determination of the efficiency of solar water heaters of the flat collector type

Robinson, N. and Stotter, A.

Solar Energy 3 (1959) No. 2, p. 30

4 pages **2 ref.**

The properties which must be considered in obtaining an objective estimate of the quality of a flat-plate-type solar water heater are listed. Methods are given for calculating the acrial, orientation and thermal efficiency of the heater and the heat storage coefficient. A test procedure is outlined for making an objective standard determination of the efficiency of the heater, and a standardized sheet form is given on which the results can be tabulated.

When the Sun Shines - How to Use It

Rogers, F

Domestic Engineering, 150 (1937) Aug p 74

3 pages

Describes solar water heaters and how they can be installed

Sunshine Water Heaters

Rogers, F

University of Florida, Agricultural Extension Service. Bulletin No 93 (1938)

An integral solar water heater

Satcunanathan, S.

ISES Conf., Paris (1973)

12 pages **2 tables** **6 pictures** **12 ref.**

A novel design of a solar water heater in which the collector and storage tank are constructed as one unit. Tests indicate good efficiency.

Study of Solar Water Heating in Algeria

Savornin, J

Proc. UNESCO Conf. New Sources of Energy 5, Rome (1961)

Combination instantaneous/storage type hot water supply

Schwidrogitz, K.

Sanit. Heiz. Techn. 37 (1972) No. 5

3 pages 1 table 5 pictures

Solar water-coil water-heater for showers

Sharafi, A.

Joint Publications Research Service, Washington, D.C., Heliotechnology (1965) Dec., p. 50

2 pages

A solar coil water-water heat exchanger for showers

Sharafi, A.

Geliotekhnika, 1 (1965), No 1, p 55

2 pages 2 pictures 1 ref.

The simple domestic solar water heater

Sheridan, N

Queensland University, Brisbane, Australia, Solar Research Note No 5 (1973)

6 pages

Working drawings and short explanatory text for the making and installing of a simple water heater

How to build a solar water heater

Simon, O and Hoad, T

Do-it-yourself Leaflet L.4 (1965) February, Brace Research Institute, Macdonald College of McGill Univ. Ste. Anne de Bellevue, 800, Quebec, Canada

Plans to build a solar water heater

Autonomous housing study. Economy of solar collectors, heat pumps and wind generators

Smith, G.

Univ. of Cambridge, Dept. of Arch., WP 3 (1973)

31 pages 20 tables 8 pictures 26 ref.

Dynamic modeling and simulation of a solar energy system by digital techniques

Tzufestas, S. et al

ISES Conf., Paris (1973) July

19 pages 5 pictures 13 ref.

Simulation of a solar water heating system with a heat exchanger in the hot water tank.

The construction of solar water heaters to be employed where the possibilities of the use of solar energy is limited

Ultanir, M.

Coopération Méditerranéene pour l'énergie solaire, Bull. (1967) No. 13

Describes the construction and operation of a closed system flat-plate collector indirectly heating water for home use.

Industrial solar water heater at the Charvak hydroelectric power station

Umarov, G. and Zhamalov, A.

Geliotekhnika, 7 (1971), No 3, p 82

Year-round continous testing of industrial solar water heaters

Umarov, G. et al.

Geliotekhnika 8 (1972), No 5, p. 69

3 pages - 3 pictures 3 ref.

The paper provides data on the testing of solar water heaters with a flat radiation receiver. Tests were conducted to determine the temperature of the water in the accumulating tank, the efficiency of the unit and its capacity. Experimental results are compared with calculation data. It has been found that the capacity of the unit is 500 liters per square meter per month in the winter with 40 per cent efficiency. The temperature of the water reaches 40-45°C.

Hot Water from the Sun

Van Straaten, J

National Building Research Institute of So. Africa, Council for Industrial and Scientific Research, Pretoria (1961)

The Place of Solar Water Heating in the Energy Supply

Vincze, S.

ISES Conference in Paris, (1973)

6 pages 1 table - 6 ref.

Calculations showing that at least half of the electricity used for water heating in New Zeeland could be economically replaced by solar water heating.

The performance of solar water heaters

Vincze, S.

ISES Conf. Paris, (1973)

13 pages 2 tables 2 pictures 5 ref.

A universal grapho-analytical method for the evaluation of the performance of selfcontained cylindrical solar water heaters and of solar water heaters powered by flat plate heat collectors is proposed, and a numerical example given.

Project SAGE

Weingart, J. and Schoen, R.

Proc. Solar heating and cooling for buildings workshop, Washington, (1973)

Water heating

Hot water from the sun

Whillier, A and Richards, S

Farmers Weekly (1958) Nov 19

2 pages

Effect of Materials and Construction Details on The Thermal Performance of Solar Water Heaters

Whillier, A and Saluja, G

Solar Energy, 9 (1965) No 1, p 21

6 pages 3 tables 2 pictures 9 ref

Investigation to measure the quantitative improvement in performance of a solar water heater with a single glass cover, resulting from a commercially applied selective surface on galvanized steel

6.38

Solar hot water systems in commonwealth department of works projects

Wickham, F. and Wilson, C.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 4/51

7 pages

Radiation parameters of polymer films used for transparent covers in solar water heaters

Zhamalov, A. et al

Geliotekhnika 6 (1970) No. 4, p. 29

5 pages 1 table 3 pictures 5 ref.

6.1.1
BYGGNADSUPPVÄRMNING (inkl. varmluftsuppvärmning).

Space heating with solar energy

Proceedigns of the 1950 symposium

M I T, Cambridge, (1954)

Solar-heated residence

Air conditioning, Heating and Ventilating, (1958), No 5, p 76

2 pages

Solar power for home heating

Undercurrents, 2 (1972), May

Solar energy residential system modeling

University of Pennsylvania

NSF/University of Pennsylvania Solar Energy Meeting, (1973), March

Bostadsuppvärmning

IVA. Utlandssekretariatet, Stockholm

Specialrapport, Frankrike, 4 (1974)

16 pages 76 ref.

General survey of residential heating in France. References to utilization of solar energy.

Bostadsuppvärmning

IVA. Utlandssekretariatet, Stockholm

Specialrapport, USA, 2 (1974)

13 pages 26 ref.

Residential space heating in the U.S. References to utilization of solar energy.

ASHRAE Handbook of Applications, New York (1974)

Chapter 54: Solar energy utilization for heating and cooling

20 pages 4 tables 15 pictures 79 ref.

A detailed review of the field.

Solstrålningens utnyttjande vid centralvärmeanläggningar.

Ander, S.

VVS 16 (1945), No 12, p 172

10 pages

Use of solar heat in Sweden.

Use of Plastic Panels and Solar Installations for the Radiation Heating of Buildings

Avezov, R. et al.

Geliotekhnika, 6 (1970), No 1, p 65

5 pages 1 table 2 pictures 9 ref.

Research and Development Study of Space Thermal Control by use of feasible materials

Bannister, T. and Bentilla, E.

Proc. Inst. Environmental Sci. (1966)

Industry moves into Solar Energy Hardware: A Report on an Elementary School Solar Heating System

Barr, J.

Prof. Eng. (Wash. D.C.) (1974) No 6

4 pages

Builder Sloan Erects First All-Sealed House in America

Billington, N

American Builder, 69 (1947) April p 96

10 pages

Illustrated description of solar house built in Glenview, Ill., which combines solar heat, mechanical heat and air conditioning, full piping details are given

Design and performance of the nation's only fully solar heated house

Bliss, R.

Air Cond. Heat. Vent. (1955) Oct.

Solar house heating - a panel discussion

Bliss, R

Proc World Symp on Applied Solar Energy (1955)

Solar house heating

Bliss, R

Proceedings of the world symp on applied solar energy, Stanford Research Institute (1956) p 151

8 pages

Circuit analysis applied to solar house heating

Buchberg, H

Transactions of Conf on the use of solar energy - the scientific basis, Univ of Arizona (1955) p 1

20 pages

Heating air by solar energy

Buelow, F and Boyd, J

Agric Eng, 38 (1957) No 1, p 28

3 pages

Describes the construction and operating characteristics of an air-heating solar collector

A combined solar thermal and electrical house system

Böer, K.

ISES Conf. Paris, (1973)

11 pages 4 pictures 5 ref.

Flat-plate collectors containing CdS/Cu_2S solar cells.

Solar heating

Chaseala, K.

Civil Engineering and Public Works Review, 46 (1951) p 260

Etude du rayonnement solaire, comme appoint au chauffage des bâtiments habités

Dumortier, J

Flamme et Thermique, 10 (1957) No 108, 109

A study of the intensity of solar radiation as a factor in the amount of energy needed to heat or to cool a house. In the first part an expression is given for the amount of solar heat absorbed by a wall. The second part deals with the determination of the various factors entering into the expression for the absorbed heat

Results of Measurements in St. Georges School, Wallasey

Davies, M. et al.

JIHVE (1971) July, p. 80

7 pages

A description of results of measurements of thermal environment within a solar heated school

Progress in space heating with solar energy

Engebretson, C and Ashar, N

ASME Publication 60-WA-88 (1961)

Solar water heating and space heating in Florida

Farber, E.

Solar Energy, 3 (1959) No 3 p 21

5 pages - 16 pictures

The paper briefly discribes methods used for solar water heating.

Installations for solar space heating in Girin

Fukuo, N. et al.

United Nations Conference on New Sources of Energy, Rome (1961)

19 pages

The design. the construction, and the performance of the heating and cooling device by solar energy, which has been studied at the Government Industrial Research Institute, Nagoya, In Nagoya, Japan since September 1958, are reported.

Solvärme. Framtida uppvärmningsformer

Ganneskov , S.

VVS Forum, (1973), No 4

Design and Performance Studies on a Solar Room Heater

Gary, H. et. al.

ISES Conference in Paris, (1973)

10 pages 2 tables 3 pictures 10 ref.

Solar Space Heating at High Altitude Conditions

Gupta, J. and Chopra, R.

ISES Conference in Paris,(1973)

10 pages 2 tables 3 pictures 12 ref.

Results of field trials on a solar space heating device at an altitude of 3,5 km and under sub-zero ambient conditions down to -20^{o}C. The equipment does not require auxiliary power (India).

Simulation of forced circulation water heaters; effects of auxiliary energy supply, load type and storage capacity

Gutierrez, G. et al

Solar Energy 15 (1974) No. 4, p. 287

12 pages 2 tables 4 pictures 8 ref.

A hybrid computer was used to simulate forced circulation solar water heater systems using stratified storage. A single month of hourly meteorological data was used to examine the effects of three types of auxiliary heating systems and three different sized tanks. Various time distributions and magnitudes of the load were studied. Results are shown in terms of the ratio of auxiliary energy requirements to total load and indicate best methods for adding auxiliary energy to maximize solar energy gain.

6.44

Space Heating with Solar Energy

Hamilton, R.

MIT Press (1954)

Information on specific behaviour of designs tested in experimental solar houses at MIT and others.

Space Heating with solar energy

Hamilton, R and Farwell, A.

Proc. of a Course-symp. MIT (1950)

160 pages

Solar energy for house heating

Hand, I.

Heating and Ventilating, (1947), No 12, p 80

15 pages

Space heating with solar energy symposium

Hesselschwerdt, A

Performance of the Mass Inst of Technology Solar House MIT Press (1954) p 99

8 pages

Solar energy for water-and space-heating

Heywood, H.

Journal Inst. Fuel, 24 (1954), p 334

Sun Furnace in Your Attic

Howe, H

Popular Science Monthly, 154 (1949) March p 106

7 pages

Illustrated review of experiments carried out at Massachusetts Institute of Technology, Cambridge, Mass., contains detailed description of solar heating installations

How to Combine Solar Heating, Radiant Heating and the Heat Pump

Johnson, L

Heating and Ventilating, 45 (1948) Dec p 86

5 pages

Discusses problem of reconciling the abrupt changes in heating demand characteristics of solar construction with the comfort characteristics of panel heating and the relatively low temperature output of the heat pump; presents design equations to account for heat losses through the attic side of an open warm air panel

Old Sol Gets Another Job

Johnson, L

American Builder, 70 (1948) Feb p 82

6 pages

Describes design and construction of solar housing development at Northbrook, Ill.; houses use sun's heat in combination with warm air, radiant, floor panel heat

Utilization of solar energy for house heating

Jordan, R. and Threlkeld, L.

Heating, Piping and Air Conditioning, (1954), Jan, p 193

8 pages

Design and economics of solar energy heat systems

Jordan, R. et al

Heating, Piping and Air Conditioning (1954), No 2, p 122

9 pages

Casa proyectada para utilisar los beneficios del sol

Keck, G.

Casas y Jardines (1950) No. 192, p. 36

5 pages

A house which take care of as much solar energy as possible and with special ventilation arrangement has been constructed.

Study of heating and hot water supply in residencial buildings by solar heat, part 2, on the heating system

Kimura, K et al

Annual Meeting 1974, Architectural Institute of Japan

2 pages 1 table 7 pictures

A heating load and solar radiation have periodical difference in their intensities. A radiation collector is errected at the parapet of a balcony, and hot water accumulator was settled at a ceiling. A surface of the accumulator was used as radiation surface for heating of room. Heat radiation was controlled by a cover in front of the surface. The efficiency of the collector reached to 20 to 50 % by natural circulation. The maximum water temperature did not reach over 24 and 35°C, respectively for 2 and 3 pane collectors, with collector area 2 m^2 and accumulator capacity 134 liters

Recent Developments in Residence Heating-Advances in Warm Air Heating

Konzo, S and Roose, R

Architectural Record, 102 (1947) Nov p 121

5 pages

Contains brief review of design of solar house

Projekt nollenergihus

Korsgaard, V. and Esbensen, T.

VVS, 45 (1974), No 4, p 43

5 pages 8 pictures

Description of a danish project for a residence by means of persons, lighting and solar energy.

Solar heating systems analysis

Lorsch, H.

Report No. NSF/RANN/SE/G 127976/TR 72/19. Univ. of Pennsylvania Conf. (1972) Nov.

32 pages 5 tables 8 pictures 5 ref.

The use of solar energy for residential space heating

Lorsch, H.

Energy conversion, 13 (1973), p 1

Use of solar energy for residential space heating appears to have economic importance for the medium term in the context of forseeable fuel shortage and increase in fuel prices. It appears possible that using solar energy will allow a 40 % saving in the consumption of fuels in the Washington District.

5 pages

Franskt system utnyttjar solenergin till uppvärmning av enfamiljsvillor

Lindholm, J.

Ny Teknik, (1973), No 31

2 pictures

Description of a french system for solar heating of residences.

Solar house heating - a panel discussion

Löf, G

Proc World Symp on Applied Solar Energy (1955)

Use of solar energy for heating purposes: space heating

Löf, G.

Proc. Conf. New sources of energy, Rome, (1961)

11 pages

Solar air heaters

Löf, G.

Proc. heating and cooling of buildings workshop, Washington, D.C., (1973), March

Cost of house heating with solar energy

Löf, G. and Tybouth, R.

Solar Energy, 14 (1973), No 3, p 253

26 pages 2 tables 12 pictures

A practical method of predicting the true cost of heating a house with solar energy and designing the heating system (solar and auxiliary) to achieve the minimum total annual heating cost possible under the particular climatic, geographic, and residential characteristics involved.

Brave Ideas for the Bright New World

Löf, G et al

Domestic Engineering, 166 (1945) p 96, 129

9 pages

Brief review of solar heating theory and description of a system combining solar and panel heating; used in solar house

Solar Energy Utilization for House Heating

Löf, G et al

U S Department of Commerce, Office of Technical Services, Washington, D C, PB Report No 25375 (1946)

173 pages

Describes the construction and operation of two successful solar--heat collectors developed by the Engineering Experiment Station of Colorado Univ for heating of houses; includes appendix containing data from preliminary investigation, patent applications showing design of apparatus, methods of calculation and literature citations

An evolution of a solar heated building

Manning, P.

St. Georges School, Wallasey: Architects Journal, (1969), 25th June

Description of the Wallasey School.

Utilization de l'energie solaire

Michel, J.

L'architecture d'aujourd'hui, (1973), No 167

Space heating of residences with solar energy. Description of solar heated houses in Odeillo, France. Heat capturing device in vertical walls. For a greenhouse a second layer of glass led to maximum retention.

Le chauffage par rayonnement solaire

Michel, J.

ISES Conf. Paris, (1973)

5 pages 5 pictures

Description of a solar house heating system.

Solar energy applied to residential dwellings

Morrison, P. and Farber, E.

Univ. of Florida, USA, (1974)

13 pages 6 pictures

Solar water heater, residential space heating, air conditioning and electric power generation. Solar powered cooking.

Operational characteristics of a solar supplemented air-type heat pump

Mowry, G. and Chester, P.

Meeting of Kansas Committee on the Relation of Electricity to Agriculture (1961) Jan.

17 pages

During the 1959-60 heating season occasional mechanical difficulties were experienced with the solar supplemented heat pump system. The corrective action taken is discussed in appropriate sections of the report and in addition a revision in the collector design was made for the south bank of collectors.

Das erste mit Sonnenwärme geheizte Wohnhaus.

Nemethy, A.

Schweizerische Bauzeitung, 69 (1951), No 22, p 309

2 pages

Solar heating for houses

Olgyay, A and Telkes, M

Prog Archit (1959) p 195

13 pages

A detailed outline of basic design considerations for house heating by solar energy, including an analysis of the amount of solar energy that can be obtained at a particular location, compared to the heating loss of the house; a discussion of solar collectors and heating storage systems; the winter-summer balance; and design features in a solar house differing from conventional residences

Solar heat utilization in residential heating systems.

Ostad-Hosseini, A.

Pennsylvania Univ., Philadelphia (1973). Ph D Theses

216 pages

Sun-Heated Home Ready for Tests through Boston Winter

Parmelee, G and Aubele, W

Heating and Ventilating, 45 (1948) Oct p 136, 138

2 pages

Brief description of solar heating system installed in test house at Dover, Mass.

Research in the field of sunradiation, and the possibilities of economic use of solar energy for heating purpose

Pleijel, G.

Byggforskning, IVA 22 (1951), No 6, p 234

Using solar energy in residential housing

Rittelman, P

Constr. Specifier 27 (1974) No 7 p 20

11 pages

A thermodynamic simulation of a building environmental control system

Sepsy, C

Proc. Solar heating and cooling buildings workshop, Washington, D.C. (1973) March

Harnessing the Sun

Sibley, J

Tech Engineering News, 22 (1941) Nov p 134, 146, 152

5 pages

Describes experiments carried out at Massachusetts Institute of Technology, Cambridge, Mass., in testing utilization of solar energy for heating of buildings

Solar house heater

Simon. M.

Architectural Forum 86 (1947) Feb., p. 121, 124

4 pages

Describes way in which a sun trap, covering one third of the roof area, provides 20 % of heat needed during winter season by an experimental house in Boulder, Colo.; gives details of solar heater and presents results of tests.

Your solar house

Simon, M.

New York, (1947)

125 pages

Advances in House Heating

Strock, C

Architectural Record, 101 (1947) May p 135

8 pages

Contains review of progress made in utilization of solar energy for heating purposes; brief descriptions of research projects carried out in USA

Solar heated house

Szokolay, S.

Architects Journal 159 (1974), No 21, p 1127

5 pictures

Description of an English solar heated house.

Solar energy - Its role in heating and cooling

Tasker, C.

The Heat. & Vent. Eng. and J. Air Cond., 24 (1950), No 280, p 143

6 pages

Reports from American investigations using solar energy to heat building

A solar powered combined heating/cooling system with the air conditioning unit driven by an organic Rankine-cycle engine

Teayan, W. and Sargent, S.

ISES Conf., Paris (1973) July, Paper E H 94

10 pages **5 pictures**

The system works with a flat plate solar collector.

Heating with Sunbeams

Telkes, M

Domestic Engineering, 168 (1941) Dec p 133, 136, 141

5 pages

Describes briefly design of solar house heating unit installed in test house in Boulder, Colo. and discusses principles of operation

Review of Solar House Heating

Telkes, M

Heating and Ventilating, 46 (1949) Sept p 68

7 pages

Various methods of solar house heating are reviewed and compared in their relation to the efficiency of collecting and storing available solar energy

Space Heating with Solar Energy

Telkes, M

Scientific Monthly, 69 (1949) Dec p 394

4 pages

Discusses briefly available amount of solar energy and reviews various experiments with solar heating; contains illustrated description of experimental solar house at Dover, Mass.

Chapter on solar house heating

Telkes, M.

Daniels and Duffie ed: Solar energy research, Univ. of Wisconsin Press, (1955)

House with sunshine in the basement

Thomason, H

Popular Mechanics, (1965), Feb, p 89

3 pages

Heating by solar radiation (Maisons solaires)

Trombe, F.

Centre nationale de la recherche scientifique, Paris, France. Techniques de l'Ingenieur, (1974)

9 pages

Research about solar heating of houses performed by the CNRS.

Solar house heating

Tybout R and Löf G

Natural Resources Journal, 10 (1970), No 2, p 283

Solar energy collection and its utilization for house heating

Whillier, A

Ph D thesis in Engineering MIT (1953)

Solar energy collection and its utilization for house heating

Whillier, A

D Sc Thesis in Mechanical Engineering, MIT, Cambridge, Mass (1953)

Solar house heating - a panel

Whillier, A

1959 World Symposium on Applied Solar Energy, (1959)

Solar energy: Technology and applications

Williams, J.

Ann Arbor science publ/dish. J. Wiley, (1974)

144 pages

Chapters on solar collectors and heat for buildings.

6.1.2
POOLER

The Bahama pool

Heating (1960) Nov, p 394

4 pages

Poolside Pleasure

Institutions Magazine (1961) June

4 pages

Sliding roof that will seal in swimming area during winter or inclement weather

Sonnenwärme zur Beheizung von Schwimmenbecken

Archiv Hyg., 148 (1964), No 6, p 425

Efficient and Inefficient Ways of Heating Pools by Solar Energy Collectors

Carter, A.

Bldg. Serv. Engr. 14 (1973) p. 101

5 pages 3 tables 5 pictures -

Under high flow conditions heat losses can be reduced and collection efficiencies increased.

A Method of Heating Swimming Pools by Solar Energy

Czarnecki, J

Solar Energy, 7 (1963) No 1, p 3

5 pages 2 tables 4 pictures 7 ref

Solar energy is the natural heating agent for open swimming pools by direct absorption in the water. Because of high losses from the surface of the water to the atmosphere the temperature of the pool water does not significantly differ from the mean air temperature. If a suitable transparent plastic cover is placed on the water, the temperature of the water can be raised because the heat losses are reduced while the incident solar radiation can pass through the cover and heat the water. Tests in Melbourne have shown that the swimming season can be considerably extended if an inflated cover made of clear plastic film is used. This method of collection and storage of heat energy from the sun may also find other applications where water of a relatively low temperature can be utilized

Solar Energy Heats Swimming pool

Dehrer, L.

Heating, Piping and Air Conditioning (1969) Oct., p. 94

3 pages

Solar swimming pool heating

Farber, E. and Triandafyllis, J.

ISES Conference in Paris, (1973)

8 pages - 6 pictures 3 ref.

Performance of a solarly heated pool (in Florida) in reference to an identical unheated pool.

Some experiments on heating swimming pools by solar energy

McVeigh, J.

IHVE J V 39 (1971), June, p 53

3 pages

Solar heating for a swimming pool

Robson, S

New Zealand Engr (1956) Sept 15

The author proposes heating a swimming pool by floating a film of black plastic on the pool surface during periods when the pool is not in use

Practical aspects of solar swimming pool heating

Root, D.

Solar Energy, 4 (1960) No 1 p 23

2 pages 2 ref.

Since 15, 000 home swimming pools are being built in the United States each year, pool heating has become important to the solar engineer. A sun trap, using a pool as its own heat collector, is discussed along with more conventional types of solar pool heaters. The possibilities of a floating liquid film to effect a sun trap is suggested as a most promissing area of experimentation

Survey of solar heating installations in the U.K.

Shain, M. et al

ISES (UK) (1974) April

27 pages **10 pictures**

Experimental works. Domestic usage. Swimming pools.

Optical charateristics of a solar reservoir

Usmanov, Yu. et al.

Geliotekhnika, 7 (1971), Nol, p 28

5 pages 2 tables 5 pictures 12 ref.

The information available in the literature on the optical properties of liquid media usually relate to the distilled and sea water, which are charaterized by different spectral ranges. In this connection the authors have made an attempt to collect data on the optical charateristics of water and water solutions of salts and to supplement these data with the results of their own experiments.

Home-Built Solar Water Heaters for Swimming Pools

de Winter, F. and Lyman, U.

ISES Conference in Paris, (1973)

10 pages 1 table 1 picture 18 ref.

Technical and economic basis for a manual for the design and construction of solar water heaters for swimming pools.

6.1.3
BERÄKNINGAR.

Equation for Calculating Flooded Roofs and Experimental Verification

Baum, V. et al.

Geliotekhnika, 3 (1967), No 4, p 51

5 pages **2 pictures** **4 ref.**

Reducing the heat loads on buildings in hot climates

Baum, V et al

Applied Solar Energy, 5 (1969) No 1

5 pages 1 table 2 pictures 5 ref

The results of heat engineering calculations for guard construction in the South regions, by the method of finite differences, are given. Radiation and temperature data of Ashkhabad are used

An *electronic-mechanical analogue for the design of solar heating plant*

Benseman, R

UN Conf on New Sources of Energy, Rome (1961)

12 pages

The analog described treats a solar design problem in two stages: relationship between the collector and the sun. The second stage is entirely interactions of all the other features that affect the completed plant´s performance

Heliotechnique et series de Fourier

Camia, F. and Gilbert, M.

COMPLES Revue Int. d'Heliotechnique, (1973)

7 pages 3 tables 4 ref.

A method for solving the periodic heat transfer problems in relation to walls. Numerical results.

Calculation and analysis of parameters of a high-temperature solar heater with convective heat removal

Grilikhes, V. et al.

Geliotekhnika 8 (1972), No 6, p. 29

8 pages 6 pictures 9 ref.

The task is outlined for design calculation of a high-temperature solar heater with convective heat removal and the paper also recommends methods for its solution. The authors examine some of the specific peculiarities of calculations for gas heaters and outline some basic correlations.

Field Design Methods and Data for Solar Energy Applications

Gupta, C.

ISES Conference in Paris, (1973) 973,

10 pages 1 picture 5 ref.

Hand calculation procedure to evaluate a device for the given job situation. A description of a solar water heater installation in a hot humid coastal climate.

A rational basis for solar heating analysis

Hutchinson, F. and Chapman, V.

Heating, Piping & Air Conditioning, (1946), p 109

9 pages

Rational Basis for Solar Heating Analysis

Hutchinson, F and Chapman, W

ASME, Transactions, 52 (1946) p 305, 323

21 pages

Develops rational general equation which can be used to obtain gain or loss of heat in solar construction

Zum Einfluss der Sonneninstrahlung auf den jährlichen Wärmebedarf beheitzter Räume

Koenig, P.

Luft Kältetechnik, 9 (1973), No 6, p 294

3 pages

Solar radiation influence on energy demand of heated rooms.

A model for optimizing solar heating design

Löf, G. and Tybout, R.

Winter Annual Meeting of ASME, New York, (1972), Nov

On the determination of day and night direct radiation sums for Azerbaijan zones

Mavsumov, E and Vesman, V

Applied Solar Energy, 5 (1969) No 3

4 pages 2 tables 2 pictures 3 ref

On the basis of principles worked out by G A Grinevich and N A Petelina for seven Azerbaijan points, the authors obtained statistical radiation characteristics needed for solar installation efficiency calculations

Electric analogue prediction of periodic heat flow in buildings

Rao, K

Ph.D., Thesis, Univ. of Roorkee (1964)

Calculation of the radiation load with direct and diffuse radiation.

Trogisch A

Luft u Kältetech 10 (1974) No 2 p 93

8 pages

Dynamic Modeling and Simulation of a Solar Energy System by Digital Techniques

Tzufestas, S. et al.

ISES Conference in Paris, (1973)

19 pages 5 pictures 13 ref.

Simulation of a solar water heating system with a heat exchanger in the hot water tank.

6.1.4

ENERGILAGRING i samband med byggnadsuppvärmning.

Warm air heating for multi-storey housing

Heat. Vent. Engr., 44 (1971), May

Description of multi storey houses heated by ducted warm air supplied on an off-peak electricity heat storage basis.

Conservation and Better Utilization of Electrical Power by Means of Thermal Energy Storage and Solar Heating

Altman, M.

Towne School of Civil and Mechanical Engineering (1971)

265 pages

Dependence of stored energy on the type and size of a solar hothouse

Baibutaev, K. and Yakubov, Yu.

Geliotekhnika 6 (1970) No. 4, p. 7

6 pages 2 tables 2 pictures 6 ref.

Värmd och renad luft hus från husets grund

Bjerke, D.

Ny Teknik (1973) No 30

2 pages - - -

Description of a system for heat storage in a rock bed under a house

Hybrid solar energy and electric heat pump

Calvert, F. and Harden, D.

ASME Meeting (1973) Nov., paper 73-WA/SOl-5

Results of a study to determine the feasibility of combining solar flat plate collectors with conventional residential heat pump systems.

Performance of a solar air heater and rockpile thermal storage system

Chada, A. and Read, W.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 4/48

7 pages

Solar Augmented Home Heating Heat Pump System

Corman, J. et.al.

Intersoc. Energy Conversion Eng. Conf. San Francisco (1974) p. 334

7 pages

How to combine solar heating, radiant heating and the heat pump

Johnson, L.

Heating and Ventilating 45 (1948) Dec., p. 86

5 pages

Discusses problem of reconciling the abrupt changes in heating demand characteristics of solar construction with the comfort characteristics of panel heating and the relatively low temperature output of the heat pump; presents design equations to account for heat losses through the attic side of an open warm air panel.

Component thermal control via heat of fusion radiator

Leatherman, R.

American Society of Mechanical Engineers, (1963), Paper 63-AHGT-12

8 pages

Solar-heated houses are nearing reality in the U.S.A.

Learmonth, R.

Heating and Ventilating, 47 (1973), Sept, p 123

3 pages 4 pictures

Describes the solaris system devised by H.E. Thomason. Heat storage system.

Latent heat and sensible heat storage for solar heating systems

Lorsch, H.

NSF/RANN/SE/G 127976/TR72/20. Univ. of Pennsylvania, (1972)

Low-temperature solar water heaters as a source of lowpotential heat for heat pumps

Lukomskii, S. and Sheklein, A.

Geliotekhnika, 3 (1967), No 6, p 77

4 pages 1 table 11 ref.

Experimental study at the parameters of semiconductor air- to-air heat pumps

Lukomskii, S. and Preizer, A.

Geliotekhnika, 7 (1971), No 6, p 62

7 pages 1 table 4 picutres 6 ref.

Heating by solar radiation

Michel, J.

Chaud. Froid. Plomb., 27 (1973), May/June, p 101, 111, 324

14 pictures

Basic principles of collecting and storing solar energy using sheets of glass, heat-storing walls etc. Ventilation aspects. Economics.

Solar energy supplemented rural-home heat pump

Moery, G

Solar Energy, 8 (1964) p 12

5 pages 2 tabels 4 pictures

Practical appl. of a heat pump installation in conn. with solar heating

Operational characteristics of a solar supplemented air-type heat pump

Mowry, G and Chester, P

Meeting of Kansas Committee on the Relation of Electricity to Agriculture (1961) Jan

17 pages

During the 1959-1960 heating season occasional mechanical difficulties were experienced with the solar supplemented heat pump system. The corrective action taken is discussed in appropriate sections of the report and in addition a revision in the collector design was made for the south bank of collectors

Solar energy heat source for tomorrow's heat pump

Penrod, E. and Prasanna, K.

Heating, Piping and Air Conditioning, 32 (1960), No 5, p 117

10 pages

Solar energy for future heat pumps

Penrod, E. and Prasanna, K.

Proceedingns of the American Power Conference, 22 (1960), March, p 497

14 pages

Examination of Some Heat Storage Systems for Solar Collectors in Building Heating Applications

Pisoni, C.

ISES Conference in Paris, (1973)

10 pages 1 table 2 pictures 5 ref.

Heat transfer from solar collector for the heat storage systems and the possibilities of controlling the temporal distribution of the available heat flux. With regard to the thermal characteristics of heat storage media such as solidandliquid materials, or molten salts.

Experimental determination of the amount of stored energy as a function of the type and disposition of the storing medium in solar hothouses

Umarov, G. et al

Geliotekhnika 7 (1971) No. 6, p. 26

5 pages 1 table 3 pictures 5 ref.

6.2
LUFTBEHANDLING

Solar air conditioning using solid adsorbents

Akopdjanian, E

Applied Solar Energy, 5 (1969) No 2, p 34

6 pages 1 table 1 picture 5 ref

Calculation of solar conditioning system with use of hard absorbent is made by use of solar airheaters

Nocturnal Water Cooling by Skyward Radiation in Israel

Bar-Cohen, A. and Ramback, C.

9th Intersoc. Energy Conversion Engineering Conf. San Francisco (1974) Paper 749011

8 pages

Effectiveness of flooded roofs in a hot dry climate

Baum, V. et al.

Geliotekhnika, 4 (1968), No 4, p 48

5 pages 3 pictures 3 ref.

Results are given of calculation investigations of the effectiveness of water-filled coatings usage in the hot climate of the Turkmen Soviet Socialist Republic. It is shown that the effectiveness depends on the quantities influencing the temperature regime of the coating.

Utilizing solar energy and evaporative cooling methods for air conditioning (survey)

Baum, V., Kakabayev, A.

Geliotekhnika 8 (1972), No 2, p. 3

6 pages 8 ref.

The paper examines the range of application of the cooling methods in different climates. It is recommended to use solar units with evaporative cooling for regions with a hot and dry climate. The utilization of refrigeration machinery based on electrical and thermal energy is justified in humid regions.

Utilisation de lEnergie Solaire dans les Conditions Particulieres des Regions a Climat Torride et Aride pour la Climatisation en Eté

Baum, V et. al.

ISES Conference in Paris, (1973)

13 pages 1 pictures 5 ref.

Temperature Regime of Cover Used as Solution Regenerator for Solar Cooling installation

Baum, V. et al.

Geliotekhnika, 9 (1973) p 34

4 pages 1 picture 4 ref.

The daily variation in heat flow through different cover for solar cooling installation where measured and a water filled cover was found to be the best.

Thermoelectric pile for household air conditioning

Beilin, A. et al

Geliotekhnika 5 (1969) No. 4, p. 57

3 pages 2 tables 1 picture 2 ref.

The Sunshine Problem in Air Conditioning

Billington, N.

Institution of Heating and Ventilating Engineers (1951) No 190 p. 112

24 pages

An Experimental System Using Solar Energy and Night Radiation

Bliss, R.

U.N. Conference, Rome (1961) Paper No E-35-S-30

An Investigation of the Use of Solar Energy for Absorption Refrigeration

Chari, R.

M.S. Thesis, College of Engineering, University of Florida (1958)

Performance of an Intermittent Refrigerator Operated by a Flat-Plate Collector

Chinnappa, J

Solar Energy, 6 (1962) No 4, p 143

8 pages 2 tables 11 pictures 10 ref

A simple form of intermittent refrigerator incorporating a flat--plate collector, five feet by three feet six inches, has been tested. Values for the actual coefficient of performance have been obtained, and compared to the theoretical values. The performance of the flat-plate collector has been analyzed, and figures obtained for the effective cooling produced per unit area of collecting surface

Solar space cooling

Chung, R et al

Chem Eng Prog, 55 (1959) No 4, p 74 (Also in Air Cond Heat Vent 56 (1959) No 7, p 50)

5 pages

Design problems of the combination of a flat-plate solar collector with an absorption air conditioner

Design and Performance of a Thermal Storage Air Conditioning System

Close, D. et al.

Institute of Engineers, Australia, Vol. MC-4 (1968) No. 1

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Solar air conditioning and solar refrigeration

Dannies, J.

Solar Energy, 3 (1959), No 1 p 34

6 pages 2 pictures 1 ref.

Describes a method of air conditioning giving a drop about 15°C in air temperature. Also som other methods are discussed.

A Study of a Solar Air Conditioner

Duffie, J. et al.

Mechanical Engineering (1953) Aug.

The Florida program in solar refrigeration and air conditioni

Farber, E.

Solar Energy, 3 (1959) No 3 p 33

1 page

The Univeristy of Florida has a long-range program in solar energy refrigeration and air conditioning because this state h considerable sunshine all year round and refrigeration and air conditioning are therfore almost necessities.

Refrigeration Solaire: Comparison un Isolateur Plan et un Concentrateur Cylindre - Parobolique

Flechen, J. and Torue, J.

ISES Conference in Paris, (1973)

11 pages 4 tables 4 pictures 3 ref.

Comparison for a tropical climate.

Production of cold by solar radiation

Foex M and Trombe F

Solar Energy 1 (1957) No 1 p 51

Thermoelectric materials for space cooling

Gardner, E. and Woisard, E.

ARS Space Power Systems Conference, Santa Monica, Calif., (1960) Sep., p 1280

7 pages

Thermoelectric devices suited to space applications. Since these are electronic devices there is no mechanical motion involved. This impleis long life and dependability with minimum upkeep. Of equal importance: there are no vibrations or gyroscopic moment to interfere with guidance or stabilizing systems.

Utilization of Solar Energy for Air Conditioning and Refrigeration in Florida

Green, W.

Master's thesis, College of Eng., Univ. of Florida, Gainesville (1936)

Air Conditioning by the Sun

Green, W

Mechanical Engineering, 58 (1936) June p 369

Reports of tests on possibilities of using solar energy for air conditioning in Florida; experimental collector, built and mounted upon the roof of the engineering shop at the University of Florida, is briefly described

Sun Rays Used to Make Cold

Green, W

Science, 83 (1936) Suppl p 9

Describes briefly new invention in which solar energy is used to operate a refrigerator

Natural air conditioning with roof ponds and movable insulation

Hay, H. and Yellott, J.

ASHRAE Transactions, 75 (1969), Part 1

Glazed flat surface as a solution regenerator for use in an absorption solar cooling system

Kakabaev, A. and Golaev, M.

Geliotekhnika, 7 (1971), No 4, p 44

6 pages 2 pictures 2 ref.

Properties of refrigerating installations with a spray chamber and solar heaters

Kakabaev, A. and Golaev, M.

Geliotekhnika, 7 (1971), No 5, p 49

8 pages 3 pictures 3 ref.

Explanation of the mechanism of thermoelectric refrigeration

Kelly, J

Air Cond Heat Vent, 56 (1959) No 3, p 89

3 pages

Assessment of economic efficiency of a solar refrigeration plant with open flat solution regenerator

Khandurdyev, A., Kakabaev, A.

Geliotekhnika 8 (1972), No 6, p. 37

4 pages 2 tables - 2 ref.

The paper makes an attempt to estimate the capital and operational expenditures for refrigeration plants utilizing electric power, thermal power, and solar energy in the specific conditions of Turkmenia. It has been found that in the case of air conditioning in the summer an absorption type solar refrigeration plant requires 3.5 times less expenditure than a lithium bromide machine, 4 times less than a turbocompressor and 12 times less than a steam ejection installation.

Sonnenenergie und Kältetechnik

Malecot, R.

Revue Pratique du Froid, (1973), No 8, p 35

3 pages

Investment and operational costs of air conditioning units and sun screening equipment

Matthaei A

HLH 25 (1974) No 1 p 9

5 pages

Cooling-load characteristics for residential and public buildings in the cities of Central Asia

Mingazov, R. and Rodimkin, E.

Geliotekhnika, 9 (1973), No 4, p 71

8 pages 3 tables 3 pictures 8 ref.

Light-weight exteriors are now widely used in the cities of Central Asia in large-scale construction. The considerable reduction in cost and construction time is at the expense of the thermal performance of the structures. The authors present formulas which can be used in determining the cooling demand for a particular hour in air-conditioning systems for public and residential buildings.

A theoretical investigation and experimental verification of the two-phase heat transfer characteristics of a combined solar collector-generator for a solar air conditioner.

Moore G.

Florida Univ, Gainesville (1967)

115 pages

A Simple Method for Desorption of Water by Solar Heating of the Absorbent Solution Used for Dehumidification of Room Air

Mullick, S. and Bupta, M.

ISES Conference in Paris, (1973)

12 pages 3 pictures 13 ref.

Water is transferred to the ambient air which flows through the solar collector-sun -desorber by thermosiphon action.

Testing of a solar adsorption refrigerator

Muradov, D. and Shadiev, O.

Geliotekhnika, 7 (1971), No 3, p 33

3 pages 1 table 1 picture 2 ref.

Solar heating equipment is also used for cooling

Riddick, J

Tuscon Citizen (1959) July 18

Solar air conditioning

Sheridan N

The Journal of the Institution of Engineers, 47 (1961) Jan, p 47

6 pages

6.72

Comparison of methods of measuring the resistance of thermo-electric heating and cooling devices

Skuratovskii, N. and Mikheev, V.

Geliotekhnika 6 (1970) No. 5, p. 67

3 pages **1 picture** **3 ref.**

Evaluation of an experimental intermittent absorption refrigerator incorporating the generator with the flat plate collector

Swartman, R. and Alward, R.

Solar energy society annual meeting, California, (1968)

Further studies on solar powered intermittent absorbtion refrigeration

Swartman, R. and Swaminathan, C.

International Solar Energy Society Conf. Paper no 6/114
Melbourne, (1970)

Solar powered refrigeration

Swartman, R. and Swaminathan, C.

Mech Eng 93 (1971), No 6, p 22

Use of solar energy for cooling purposes

Tabor, H

UN Conf on New Sources of Energy, Rome (1961)

16 pages

One of the types of heat-operated cooling devices considered the most promising are the closed cycle absorption machines which should follow conventional design but be modified to suit solar heat sources, in particular to have the lowest possible supply temperature. Open-cycle absorption systems require more input calories and are thus not attractive although their first cost - apart from the collectors - may be low. Jet pump cooling is a possible alternative to the absorption machine and may be cheaper and simpler to construct through the heat consumption is likely to be large -thereby calling for large collectors-unless the jet pump is very skillful designed and the supply temperature can be kept up. Careful studies and experiments are required to determine whether this relatively untired system is valid alternative to the absorption systems. Assuming that cooling machines adapted for operation by solar collectors will ultimately be about as efficient as similar machines operated by fuel, it is seen that the solar operated system cannot at present compete with fuel systems where fuel costs correspond to the normal world price for fuel, but may compete in remote areas where fuel costs are many times the world price. A promising development, particulary suitable for more primitive communities in hot areas, is the intermittent absorption cycle domestic refrigerator regenerated by a solar mirror. The improvements needed are a lower pressure system to permit a lighter construction (and reduce the danger of bursting by overheating); an improvement in the COP and a more efficient mirror for regeneration

Use of Solar Energy for Cooling Purposes

Tabor, H

Solar Energy, 6 (1962) No 4, p 136

Summary of papers given at UN Conf on New Energy Sources, Rome (1961)

7 pages 14 ref

The economics of solar refrigerators derived from thermodynamic considerations

Tabor, H

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15

Solar refrigeration, only with absorption cycles. Because of the discontinuity of sunshine either hot-side or cold-side storage is mandatory

Cooling systems based on solar regeneration

Williams, D. et al.

Refrig. Eng. (1958) Nov. p 33

6.2.1

MEDIA OCH PROCESSER för luftbehandling.

Experimental Study of a LiBr-H_2O Absorption Air Conditioner for Solar Operation

Chung, R. et al.

ASME Annual Meeting New York, (1962) Paper No.62-WA-347

Solar absorption cooling

Duffie, J. et al.

In: Proceedings of the Mont Louis Solar Energy Symposium (1958)

Solar air-conditioning with an ammonia water absoption refrigeration system

Eisenstadt, M. et. al.

A.S.M.E. Paper 59-A-276 (1959)

Tests prove feasibility of solar air conditioning

Eisenstadt, M et al

Heating, Piping and Air Conditioning (1960) Nov, p 126

7 pages

The engineering features of an ammonia-water absorption refrigeration system utilizing hot water from a flat-plate solar absorber for regeneration

A Study of Liquid Ammonia-Salts Systems and Their Potential Application to the Absorption Cooling Process

George, J. et al.

Project ZF-72 and ZF-72a, American Gas Association, Inc (1965)

An air film osmotic stack for low cost multiple evaporation

Hassler, G.

Symposium on Saline Water Conversion, Washington, D.C., (1957), Proceedings, p 150

7 pages

Work is reported on a polarised form of air-film osmotic stack for use in multiple evaporation which requires no pressure activation.

Absorption solar refrigeration unit with open regeneration of solution

Kakabaev, A., Khandurdyev, A.

Geliotekhnika 5 (1969), No 4, p. 28

5 pages 2 pictures 2 ref.

Intermittent solar refrigerator with solid absorbent

Muradov, D. and Shadiev, O.

Problems of natural science (in Russian), TachGUi, BGPI, Tashkent, (1969)

On the temperature distribution in a solar refrigerator generator and the thermal conductivity of the adsorbent

Shadyev, O, Umarov, G.

Geliotekhnika 8 (1972), No 5, P. 34

4 pages 3 pictures 4 ref.

The paper describes experimental studies of the thermal conductivity of octoammoniate - an adsorbent, and the temperature distribution within the cross section of the generator of a solar refrigeration unit.

Comparison of Ammonia-Water and Ammonia-Sodium Thiocyanate in a Solar Refrigeration System

Swartman, R. et. al.

ISES Conference in Paris,(1973)

10 pages 5 pictures 12 ref.

Solar energy used to produce refrigeration in an intermittent system with a combined solar collector and generator-absorber.

Performance of a solar refrigeration system using ammonia-sodium thiocyanate

Swartman, R. and Ha, V.

Paper No. 72-WA/Sol-3, ASME Annual Meeting, New York, (1972)

6.2.2
KYLNING

Solar air conditioning with solid absorbents

Akopdzhanyan, E.

Geliotekhnika, 3 (1967), No 6, p 81

5 pages 5 pictures 5 ref.

Engineering and economic study of the use of solar energy especially for space cooling in India and Pakistan

Ashar, N and Reti, A

UN Conf on New Sources of Energy, Rome (1961)

23 pages

The system under consideration consists essentially of a flat--plate solar heat collector coupled to a specially designed absorption refrigeration system. It was found that such a system would be technically feasible in a climate such as the one of New Delhi

Possible Use of Natural Heat Sinks in an Air-Conditioning System

Avezov, R. et. al.

Geliotekhnika, 6 (1970), No 4, p 62

7 pages 4 pictures 6 reg.

Absorption refrigeration with solid absorbents.

Buffington, R.

Refrig. Eng., 26 (1933) Sept. p 137

Cooling with solar energy

Chung, R and Duffie, J

UN Conf on New Sources of Energy, Rome (1961)

23 pages

Intermittent absorption coolers of the simplest type have the functions of generator and absorber combined in one vessel, and condenser and evaporator combined in another; they are of simple design, with no moving parts

Thermodynamic treatment of air by solar radiation

Dannies, J.

Solar Energy, 3 (1959), p 23

6 pages 3 pictures 7 ref.

Discussion of a new reversible cyclic process for treating mixtures at atm. pressure with a small temperature rise and its use for solar airconditioning

A study of a solar air conditioner

Duffie, J. et al

Mechanical Engineering (1963)Aug

5 pages

A lithium bromide-water absorption-air conditioner

Solar Air-Conditioning with an ammonia-water absorption refrigeration system

Eisentadt, M. et. al.

A.S.M.E. (1959) paper 59-A-276

Design and performance of a compact solar refrigeration system

Farber, A.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 6/58

7 pages

Sun's Rays Used for Refrigeration

Greeves-Carpenter, C

Refrigerating Engineering, 30 (1935) p 339

Describes briefly invention by O H Mohr which uses solar energy to create refrigeration; unit consists of a solar absorber, generator, condenser and receiver

A naturally air conditioned building

Hay, H. and Yellott, J.

Mech. Eng., 92 (1970), No 1

A switched-bed regenerative cooling system

Hogg, F.

Proceedings of 13th Int. Conf. on Refrig., Vol. 4, Washington, (1971)

The regeneration of lithium chloride brine in solar still

Hollands, K

Solar Energy, 7 (1963) No 2, p 39

5 pages 6 pictures 7 ref

In an absorption dehumidification air-conditioning system, the absorbent can be regenerated in a conventional solar still in the same manner in which saline water is desalinated using solar energy. A theoretical and experimental study of the regeneration process is carried out and the results are presented in the paper

A freon ejector solar cooler

Kakabaev, A. and Davletov, A.

Geliotekhnika, 2 (1966), No 5, p 42

7 pages 2 tables 3 pictures 2 ref.

The test data on a experimental freon ejector solar cooler intended for use as an air-conditioner have been examined and the over-all efficiency of the installation is 20-30% under the conditions described.

An absorption solar cooling system with spray chamber: Description and test results.

Kakabaev, A. and Rakhmanov, A.

Geliotekhnika, 7 (1971), No 4, p 38

6 pages 2 pictures 2 ref.

A report on the utilization of solar energy for refrigeration and air conditioning applications

Kapur, J.

Solar Energy, 4 (1960) No 1 p 39

8 pages 6 tables 5 pictures

The object of the study is to explore the possibilities of the utilization of solar energy in conjunction with different systems for the dehydration and cooling of air, and to endeavour to establish one which will be most suited under the Indian conditions.

Exploring in House Cooling with Solar Energy - Study on the Horizontal Parabolic Cylinder Type of Collector

Kimura, K. et al.

ISES Conference in Paris, (1973)

10 pages - 15 pictures 6 ref.

In combination with an absorption refrigeration machine with Lithium bromide absorber. Theoretical studies on processing problems allowing for slight densation of solar incident angle to the collector surface and on thermal sensibility of HPC collector in terms of amount of heat and temperature level suitable for the absorption machine.

Solar air conditioning with semiconductors

Kulagin, A. and Makov, N.

Geliotekhnika, 3 (1967), No 6, p 21

5 pages 1 table 1 picture 14 ref.

Thermoelectric heating and cooling systems

Lukomskii, S. et.al.

Geliotekhnika, 4 (1968), No 1, p 56

13 pages 10 pictures 38 ref.

Experimental investigation of the operation of an intermittent solar refrigerator

Muradov, D. and Shadiev, O.

Proc.All. Union Conference on the Utilization of solar energy (in Russian) VNIIT, Moscow, (1969)

Thermoelectric cascade-type microrefrigerators

Naer, V. et. al.

Geliotekhnika, 9 (1973), No 3, p 78

5 pages 2 tables 4 pictures 4 ref.

Accurate estimation airconditioning loads of buildings

Rau , K

Third Australian Building Res. Congress (1967)

A thermodynamic simulation of a building environmental control system

Sepsy, C.

Proc. Solar Heating and Cooling Buildings Workshop, Washington, D.C. (1973) March

Production of cold by means of solar radiation

Trombe, F. et al.

Solar Energy, 1 (1957) p 51

Evaluation of a solar powered cooling system for livestock shelters

White, G and Isaacs, G

Winter Meeting American Society of Agricultural Engineers, Paper No 60-821 (1960)

11 pages

Solar energy for cooling purposes

Cooling systems based on solar regeneration

Williams, D et al

Refrig Eng (1958) Nov, p 33

8 pages

Intermittent adsorption of absorption refrigeration cycles, with regeneration by heating with solar energy, have been proposed for small food coolers and space cooling in non-industrialized areas where refrigeration is not available for economic or technological reasons and where solar radiation is ample and reasonably dependable

Intermittent absorption cooling systems with solar regeneration

Williams, D. et al

ASME annual meeting, (1957), No 57-A-260

6.2.3
ENERGILAGRING i samband med kylning (även med värmepumpar).

Design and performance of a thermal storage air conditioning system

Close, D. et al

Inst. of Engineers, Australia, Mech. & Chem. Trans. MC-4 (1968), No. 1

Ausnutzungsmöglichkeiten der Sonnenenergie durch Wärmepumpen

v. Cube, H.

Kältetechnik (1957) No. 8, p. 246

3 pages

Solar Energy Assisted Heat Pump System for Commercial Office Buildings

Gilman, S.

ASHRE Transactions 80 (1974) part II

A switched-bed regenerative cooling system

Hogg, F.

Proc. of 13th Int. Conf. on Refrig., vol. 4, Washington (1971)

Conditioning with the heat pump

Penrod, E.

Kentucky Engineer, 18 (1956), March

6.84

Solar-heated house uses 3/4 hp for air conditioning

Thomason, H.

ASHRAE Journal, (1962), Nov.

In designing a solar space heating system it is important to obtain the greatest use of the equipment for providing benefits to the owner, The article describes a system for cooling the second Thomason solar home. The system utilizes the solar heat storage equipment in reverse during the summer to store "coolness".

6.2.4
BERÄKNINGAR

Efficiency of a solar cooler with an open flat solution regenerator

Baum, V. et al

Geliotekhnika 8 (1972), No 1, p. 34

6 pages 3 pictures 2 ref.

The paper outlines the simplified analytical dependence of the specific cooling capacity of an absorption solar cooler incorporating open-type solution evaporation on meteorological conditions. The paper analyzes the efficiency of the cooler in the climatic conditions of Turkmenia.

Atmospheric Effects on Solar Radiation for Computer Analysis of Cooling Loads at various Location Heights

Curtis, D.

Journal IHVE (1972) Feb.

Changes in transmission due to dry air, dust, water vapour and ozone,

Mathematical model of a house and solar-gas absorption cooling and heating system

Lauck, F. et al

ASHRAE Journal, 7 (1965), No 7, p 52

4 pages 2 tables 9 ref.

The design and cost of optimized systems for cooling dwellings by solar energy

Löf, G. and Tybout, R.

ISES Conf. Paris, (1973)

10 pages 3 tables 7 pictures 3 ref.

One hundred analyses of hourly cooling (and heating) performance for a full year. Combined systems. A description of the method of computation.

6.86

A method for engineering and economic estimates for the facades of buildings designed with air conditioning

Peker, D.

Geliotekhnika 8 (1972), No 1, p. 61

10 pages 4 tables - 4 ref.

This paper is devoted to the elaboration of methods for engineering and economic calculations of facades of buildings with air-conditioning. Expenditures entailed in the construction of enclosures and air-conditioning are taken into account. Data outlined in this article can be unsed by solar engineers and researchers for estimating engineering and economic efficiency of solar-plants for heating and cooling.

Economics of solar refrigeration derived from thermodynamic considerations

Tabor, H.

1968 Annual Meeting Solar Energy Society, California, (1968)

6.3
DRIVHUS

Heat balance of hothouses and optical properties of transparent surfaces

Anufriev, L. and Pozin, G.

Geliotekhnika, 2 (1966), No 5, P 19

7 pages 3 pictures 2 ref.

The method proposed in this article can be used to investigate the energy balance in hothouses and solve a variety of thermal engineering problems connected with such structures.

Calculation of the Natural Ventilation of Greenhouses in the Presence of Overheating with Allowance for Solar Irradiance

Anufriev, L. et. al.

Geliotekhnika, 3 (1967), No 1, p 49

6 pages 1 table 2 pictures 16 ref.

Determing the Heat Balance in a Film Hothouse of Semicylindrical Form

Avezov, A. et al.

Geliotekhnika, 9 (1973) p 29

5 pages 13 ref.

Proper thermal design of semicylindrical film hothouses requires a knowledge of the conditions under which they trap solar energy, the distribution of specific heat loads over the surface of the receiver, the transmission of infrared by the films, and the coefficient of heat transfer through the transparent insulation.

Experimental Study of Air Circulation in Solar Hothouses

Baibutaev, K. and Yakubov, Yu.

Geliotekhnika, 6 (1970), No 3, p 39

4 pages 1 table 3 pictures 3 ref.

Simplified technique for thermal calculation of solar hothouses with account for variability of their operation

Bairamov, R. et al.

Geliotekhnika, 9 (1973), No 3, p 45

5 pages 1 picture 6 ref.

A simplified technique for termotechnical calculation of hothouses with account for variability of meteorological factors have been developed.

Optimal Shape of Greenhouse Roofs Deduced from the Solar Shape of Tree Crowns and Other Plant Surfaces

Bitterman, M. and Dykyjová, D.

ISES Conference in Paris, (1973)

9 pages 1 table 5 pictures 4 ref.

A new type of solar greenhouse deduced from the heliotropic growth curvatine of tree crowns and plants sown in climps is described.

Enceintes Solaires pour la Culture et l'Aquaculture Combinees en Economie d'Eau

Bouttere, H. and Coutombon, P.

ISES Conference Paris, (1973)

9 pages 3 pictures 3 ref.

Devices for both vegetable cultivations and breeding of aquatic invertebrates. Solar energy is employed for salt water still and photosynthesis.

Automatic Glasshouse Shading

Canham, A.

Solar Energy, 8 (1964) p 9

3 pages 1 table 3 ref.

Description of an automatic shading system. Liquids films as solar filters.

A Method of Determining the Relative Illuminance for Various Types of Greenhouses

Glikman, M.

Geliotekhnika, 4 (1968), No 6, p 47

10 pages 4 pictures 18 ref.

An improved method is proposed for direct estimating of diffuse and itegrated illumination of glasshouses. The method is based upon more accurate patterns of light flux distribution in the construction. Formulae are given from the results of comparative estimation of the illumination in glasshouses of typical forms and orentations.

Determining the Maximum Temperature for Mastic used on the Surface of Greenhouses, with Allowance for Solar Radiation

Gurevich, A. and Pozin, G.

Geliotekhnika, 9 (1973) p 35

9 pages 2 tables 2 pictures 11 ref.

The most important problem in connection with operation of solar-powered structures, including hothouses, is the extreme summer-time fluidity of the mastic used to seal the structure' s surface, owing to overheating by solar radiation. When new grades of mastic are developed, the required heat stability is taken to be 80°C, on the basis of temperature measurements made for highway surfaces. There is no justification for using this figure for hothouses, since it does not allow for the specific features of heat exchange at the surface structure; it also neglects climatic conditions. Experience has shown that in southern regions, mastic designed for 80° often melts on the covering, resulting in unsealing of the hothouse. To avoid this, the temperature stability of the mastic must at least match the maximum possible temperature that the mastic on the hothouse covering can reach in the given locality.

The radiation climate of an irrigated orange plantation

Kalma, J. and Stanhill, G.

Solar Energy, 12 (1969), No, p 491

18 pages 3 tables 7 pictures 26 ref.

Abstract-Regular measurements of incoming and reflected global radiation and net radiation were taken both above and below the canopy of an irrigated orange plantation during one year. The results have been analyzed to show the diurnal and seasonal changes in the main components of the radiation balance.

Some Problems in the Improvement of Hothouses

Karpenko, B.

Geliotekhnika, 6 (1970), No 3, p 43

6 pages 1 table 2 pictures 13 ref.

Method for calculating over-all solar radiation entering an inclined solar hothouse

Kim, M., Ziyaev, T.

Geliotekhnika 8 (1972), No. 4, p. 56

4 pages 3 tables 2 pictures -

The paper examines the results of calculations of over-all solar radiation in a solar hothouse built on the Engels collective farm in Karshi district, Kashkadarya region of the Uzbek Republic.

An investigation of the contribution of solar energy in heating greenhouses in Quebec

Lawand, T. et al

Trans ASME 'A', 95 (1973), April, p 114

5 pages 4 tables 1 picture 6 ref.

Le Role de l'Energie Solaire dans le Chauffage des Serres au Quebec

Lawand, T. et. al.

ISES Conference in Paris, (1973)

A new design for greenhouses which reduces the exposed surface area without significantly affecting the input of direct solar radiation.

Influence de la Reyulation sur la Transformation de l'Energie d'Origine Solaire par les Feuilles

de Parcevaux, S.

ISES Conference in Paris, (1973)

8 pages - 4 pictures 3 ref.

An equation of leaf energy budget for the most general case. Approximate values are given for each element of the budget.

Special glasses and mountings for the utilization of solar energy

Peyches, I

UN Conf on New Sources of Energy, Rome (1961)

15 pages

For the radiation traps utilizing the hothouse effect, the author calls attention to the sharpe of the absorption edge, usually located near wavelength 2.5 microns

Rational selection of natural ventilation system parameters to prevent overheating in cultivation structures

Pozin, G.

Geliotekhnika, 7 (1971), No 1, p 46

5 pages 1 picture 2 ref.

Solution of the system of heat balance equations for hothouses in the unsteady regime

Pozin, G.

Geliotekhnika, 7 (1971), No 2, p 47

Effect of transparent screens of the plastic film on the thermal regime of hothouses.

Rzaev, P.

Geliotekhnika, 1 (1965), No 3, p 53

3 pages 1 table 1 picture 2 ref.

Influx of solar radiation into a greenhouse

Rzaev, P.

Geliotekhnika, 1 (1965), No 4, p 43

6 pages 3 tables 4 pictures 6 ref.

The quanti of solar energy entering a greenhouse averages 50 - 55 % of the total energy outside. A method for the theoretical calculation of the heat influx due to solar radiation which can be used to rationalize the design of greenhouse heating systems is presented.

Calculation of heat losses from a solar hothouse through a transparent barrier

Rzaev, P.

Geliotekhnika, 1 (1965), No 6, p 32

5 pages 3 tables 1 picture 2 ref.

The heat transfer coefficient on the basis of the actual temperature distribution over the walls and glazing, and in the air space between the spaces is calculated.

Solar radiation entering a hothouse

Rzaev, P.

Heliotechnology (1966) Feb. p. 38. Joint Publications Research Service, Washington, D.C.

6 pages

Determing Temperatures in a Solar Hothouse

Rzaev, P.

Geliotekhnika, 9 (1973) p 48

5 pages 2 pictures 7 ref.

The Apsheron Peninsula is used to study a method for determing the temperatures in a hothouse with allowance for stochastic meteorological factors.

Calculation of input radiation for a semicylindrical solar greenhouse

Saydkov, T. et al

Geliotekhnika 8 (1972), No. 3, p. 61

7 pages 2 tables 3 pictures 8 ref.

Further studies on solar still greenhouse assembly

Selcuk, M. and Van-Vitran

COMPLES Revue Int. d'Heliotechnique, (1973)

5 pages 7 pictures 5 ref.

Solution of the unsteady heat transfer problem. Comparisons with test data. Studies on the optimization of the assembly from design, plant production and cost points of view.

Solar stills for agricultural purposes

Selcuk, M. and Tran, V.

ISES Conf., Paris (1973) July

10 pages 2 tables 3 pictures 15 ref.

Solar still greenhouse - a proposal for using desalinated water for agricultural purposes

Tran, V. et al

COMPLES Bulletin (1972) March, No. 22

12 pages 2 tables 6 pictures 5 ref.

Fundamentals of the mathematical formulation for the prediction of the solar still and greenhouse temperatures, distillation and evaporation rates. Some solutions are outlined. Results of experiments.

Temperature Conditions and Heat Accumulation in Film Hothouses

Umarov, Y. et. al.

Geliotekhnika, 9 (1973) p 50

6 pages - 2 pictures 6 ref.

Between 1967 and 1972, the authors constructed solar-heated film hothouses with and without accumulators and investigated thermal processes under the conditions of Uzbekistan (Karshi). To create favorable temperature-humidity conditions, the amount of excess daytime solar heat and the required nighttime deficit are determed.

6.4
TORKNING

Testing of a pilot solar fruit-drying plant

Akhmadaliev, A.

Geliotekhnika, 10 (1974), No 2, p 76

3 pages 1 table 1 picture 4 ref.

A pilot solar air-heating plant designed for drying fruits and vegetables is investigated.

A solar drier supplemented with auxiliary heating systems for continuous operation

Akyurt, M. and Selcuk, M.

Solar Energy, 14 (1973). No 3, p 313

8 pages 1 table 7 pictures 21 ref.

A prototype solar fruit and vegetable drier is described.

Trocknungsanlage mit Ausnutzung der Sonnenenergie

Altenkirch, E

VDI Zeitschrift, 82 (1938) p 1347

Drying plant utilizing solar energy; describes drying process in which circulating air is used which has been freed of its moisture by solar radiation

Drying grain with solar heated air

Buelow, F

Quart Bull Mich Agric Exp Sta, 41 (1958) Nov, p 421

9 pages

Various types of air heaters for grain drying systems discussed in the paper were tested experimentally

Drying crops with solar heated air

Buelow, F

UN Conf on New Sources of Energy, Rome (1961)

11 pages

The paper presents a solar crop-drying system design which consists basically of an unheated forced-air drying system with the addition of a solar air heater to accelerate the drying process

Corrugated solar heat collectors for crop drying

Buelow, F.

Sun at Work (1962) No 4 p 8

A Natural Convection Solar Crop Drier

Hendley, C. and Springer, B.

ISES Conference in Paris, (1973)

10 pages 2 tables 4 pictures 5 ref.

A solar crop drier with no moving parts.

Solar Dryers for Indian Conditions

Kapoor, S.

ISES Conference in Paris, July, (1973)

11 pages 3 tables 2 pictures 7 ref.

A simplified and sophisticated analysis of solar dryers. Design of solar dryers. Experimental results.

Solar Energy for the Drying of Solids

Löf, G

Solar Energy, 6 (1962) No 4, p 12

7 pages 5 ref

Summary of papers given at UN Conf on New Energy Sources, Rome (1961)

Heat Transfer Characteristics of a Solar Drier

Malik, M. and Buelow, F.

ISES Conference in Paris, (1973)

10 pages 3 tables 7 pictures 15 ref.

Heat transfer investigation of a solar energy collector made of air ducts direct under the roof.

Drying 4/4 Red oak by solar heat

Peck, E.

Forest Products Journal, 12 (1962) March, p 103

5 pages

The principle of trapping heat that is absorbed is incorporated into a drying structure, called a predryer.

A solar timber kiln

Read, W. et al.

Solar Energy, 15, (1974), No 4, p 309

18 pages 2 tables 6 pictures 6 ref.

Solar engineering calculations for a year-round combined hothouse-drier.

Sadykov, T.

Geliotekhnika, 2 (1966), No 3, p 62

4 pages 3 pictures 5 ref.

Temperature regime in a combined solar hothouse-drier

Sadykov, T.

Geliotekhnika, 2 (1966), No 4, p 64

5 pages 1 table 4 pictures 4 ref.

The final report of the solar fruit drier

Selcuk, K

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12

A solar collector absorber of blackened wood shavings was used for heating air to dry fruit. The drying time and quality of the products are compared with other dehydration methods

Development, theoretical analysis and performance evaluation of shelf type solar driers

Selcuk, K. et al

Solar Energy, 16 (1974), No 2, p 81

8 pages 1 table 6 pictures 14 ref.

A brief summary of solar driers and tests.

Thermodynimics of Sun-Drying

Szulmayer, W.

ISES Conference in Paris, (1973)

10 pages 11 ref.

Representation of the drying process for plants in the Mollier diagram.

The role of solar radiation in the drying of peanuts

Wilson, B

Commonwealth Sci Ind Res Org Div Ind Chem (1958) June

9 pages

Solar energy was used in drying peanuts both directly by absorption by the peanuts or indirectly by the transfer of solar heat from the air

6.5
DESTILLATION OCH AVSALTNING.

Utilizing Sun Rays

Abbot, C

Scientific Monthly, 51 (1940) Sept p 195

6 pages

Reviews various methods of utilization of solar energy and describes solar flash boiler, solar cooker, and solar distiller developed by the author.

Economics of Solar Stills in the Water-Supply Systems for Livestock Farming in Uzbekistan

Achilov, B. et al.

Geliotekhnika, 6 (1970), No 4, p 57

5 pages 1 table 3 pictures 7 ref.

Investigation of an industrial-type solar still

Achilov, B. et al.

Geliotekhnika, 7 (1971), No 2, p 33

4 pages 3 tables 1 picture 4 ref.

Study of solar stills of the inclined-stepped type

Achilov, B. et al.

Geliotekhnika, 7 (1971), No 5, p 65

5 pages 2 tables 1 picture 5 ref.

Annual operational data on industrial solar stills

Achilov, B. et al

Geliotekhnika 8 (1972), No 1, p. 57

4 pages 2 tables 6 ref.

The paper investigates the influence of wind velocity, sealing degree, pollution, and system inertia on the water output from solar stills of the flume and inclined-step type. The reliability of materials and annual operational characteristics for glass, putty, and paint are also illustrated.

Results of yearlong tests of tilted-step solar stills

Achilov, B. et al

Geliotekhnika 8 (1972), No. 3, p. 78

6 pages 3 tables 4 pictures 3 ref.

Choice of materials and technology for solar stills

Achilov, B. et al.

Geliotekhnika, 9 (1973), No 5, p 39

6 pages 2 tables 1 picture 5 ref.

The development of efficient inexpensive, and serviceable solar stills involves the choice of materials and fabrication technology. The authors have tested a great number of materials and different building systems are described

Test on a portable solar still

Achilov, B. et al.

Geliotekhnika, 9 (1973), No 6, p 51

3 pages 2 pictures 3 ref.

The authors have discussed foamed plastic as a material for a portable solar still and have investigated its physical and mechanical properties when subjected to continuous insolation and to the action of the initial salt water.

The Integration of Solar Stills into Minimum Cost Dwellings for Arid Areas

Alward, R. et al.

ISES Conference in Paris, (1973)

11 pages 3 tables 5 pictures 5 ref.

A solar distillation unit, incorporated into the roof of a building, and making shower waste and saline water potable.

Effect of wind speed and direction on the output of a solar still

Annaev, A. et al.

Geliotekhnika, 7 (1971), No 4, p 33.

Förf.: 5 pages 2 tables 1 picture 3 ref.

Solar Energy to Provide Water Supply for Island

Ayres, E

Heating and Ventilating, 45 (1948) Aug p 99

Brief description of solar installation to be installed on one of the Virgin Islands, to distill salt water by use of solar energy

Operation of pilot plant LTV evaporator at Wrightsville Beach, North Carolina

Badger, W

US Dept of the Interior Research and Development Progress Rep No 26 (1959)

103 pages

To minimize the ultimate cost of producing water

Improvement of solar stills by the surface treatment of the glass

Bahadori, M. and Edlin, F.

Solar Energy, 14 (1973), No 3, p 339

14 pages 2 tables 14 pictures 4 ref.

Glass still glazings are treated with sodium silicate or hydrofluoric acid to make them more wettable. Consequently, the angle of inclination can be reduced to 1.5°. Stills of low glazing height are ammenable to diffusion mass transport which is expressed for the natural parameters of air temperature, wind, and solar energy intensity and for vapor length.

Comparative Testing of a Solar Distiller

Baibutaev, K. and Achilov, B.

Geliotekhnika, 4 (1968), No 5, p 69

4 pages 2 tables 2 pictures -

Comparative trails are performed with water distillers with a single inclination, differing from each other by the transparent protecting cover, the thickness of the water strata, different angles of inclination to the transparent surface horizon, and determination of day and season productivity of the distillers during similar meteorological conditions at Bukhara. The yield of the water distiller with glass cover is more than the yield of a distiller with transparent film cover. The greatest effectivity is attained at 30° inclination, at the water strata thickness of 10-12 mm. The yield of distilled water is 3·5-4·5 l. from each m^2 in 24 hr.

Using a solar plant to obtain fresh water from the soil

Baibutaev, K., Achilov, B.

Geliotekhnika 5 (1969), No 4, p. 60

2 pages **1 picture**

Effect of the Inclination of the Transparent Solar-Still Surface on the Condensation and Collection Processes

Baibutaev, K. and Achilov, B.

Geliotekhnika, 6 (1970), No 3, p 34

5 pages **2 tables** **1 picture** **10 ref.**

Obtaining fresh water from the soil by condensation on a transparent film using solar power

Baibutaev, K. and Yakubov, N.

Geliotekhnika, 4 (1968), No 3, p 60

2 pages 2 pictures

The authors have investigated the effect of the distance from the film to the soil, the angle of inclination of the film, and the shape of the film surface on still output.

Effect of Salt Concentration on the Evaporation Process in Solar Stills

Baibutaev, K. et al.

Geliotekhnika, 6 (1970), No 2, p 83

2 pages **2 tabels** **1 picture** **3 ref.**

Resultats de l'Exploitation d'Un Distillateur Solaire en Turkménie

Bairamov, R.

ISES Conference in Paris, (1973)

8 pages 1 picture

The economics of hot-box solar stills

Bairamov, R. and Ataev, Ya.

Geliotekhnika, 2 (1966), No 5, p 59

7 pages **5 tables** **4 pictures** **8 ref.**

Results of a year-long solar still test

Bairamov, R. and Ataev, Ya.

Geliotekhnika, 7 (1971), No 1, p 21

7 pages 1 table 3 pictures 14 ref.

Experimental study of a regenerative solar still under field conditions.

Bairamov, R. et al.

Geliotekhnika, 7 (1971), No 6, p 31

5 pages 3 pictures 2 ref.

Heat and mass transfer in models of solar stills of various configuration

Bairamov, R. et al.

Geliotekhnika, 4 (1968), No 4, p 43

5 pages 1 picture 7 ref.

Analysis is made of the possibility of using criterial equations, for the meaning of Grashof criterion from $10^6 \div 10^7$ in a greater interval of criterion changing $10^6 \div 10^9$, for distillers with one side inclination at angle of inclination of 30°C.

Solar distillers

Baum, V

UN Conf on New Sources of Energy, Rome (1961)

43 pages

This article expounds certain methods for the solar distillation of salt water: Hot box stills. Regenerative stills. Another type of still discussed is one for obtaining fresh water in large quantities

Heat and mass transfer processes in solar stills of hot box type:

Baum, V and Bairamov, R

Solar Energy, 8 (1964) p 78

5 pages 8 pictures 8 ref.

The motion of steam-water in the still and the mass and heat transfer was studied. Heat transfer coeffients.

Possible engineering and economic characteristics of various thermal regenerative solar stills

Baum, V. et al.

Geliotekhnika, 2 (1966), No 5, p 37

5 pages 1 table 2 pictures 7 ref.

Mass Transfer in Hot-Bed Solar Stills

Baum, V. et al.

Geliotekhnika, 3 (1967), No 3, p 46

5 pages 4 pictures 6 ref.

Method of calculating the engineering characteristics of a solar still with allowance for nonstationary operation

Baum, V. et al.

Geliotekhnika, 3 (1967), No 5, p 52

7 pages 4 pictures 9 ref.

Weathering tests of plastics and design of suspended envelope solar stills

Bjorksten

Research and Development Progress Report No. 30, (1959)

40 pages

Report designed to present accounts of progress on saline water conversion.

Culture en zone aride et serres - distillateurs solaires

Boutiere, H.

COMPLES Bulletin No. 22, (1972)

22 pages 4 pictures

Solar stills in Iraq

Brancker

Nature, 185 (1960) Febr.

Heat and Mass Transfer in a Binary Turbulent Boundary Layer

Brdlik, P.

Geliotekhnika, 4 (1968), No 6, p 28

8 pages - 2 pictures 5 ref.

An approximated solution is given for heat and mass exchange in a binar laminar turbulent natural convection on a vertical surface, according to diffuse heat conductibility. The results are compared with experimental heat and mass exchange at liquid boiling point, from mixtures with different non-condensing gases.

Refroidissement d'Un Corps Noir Irradiant en Direction de l'Espace dans le Desert d'Alacama (Chili)

Castellanos, G. and Fournier, J.

ISES Conference in Paris, (1973)

10 pages 3 tables 8 pictures 12 ref.

Temperature differences more than 40°C have been obtained between ambient air and an isolated black body due to radiation to outer space. Combined with evaporation this is used to desalinate brackish water by means of natural freezing.

Some factors affecting the absorption of solar radiation in solar stills

Cooper, P.

Solar Energy, 13 (1972), No 4, p 373

9 pages 8 tables 9 ref.

The performance of a solar still is affected by the build-up of reflecting layers of salt on the water surface and basin liner. This paper presents a method of quantitiatively assessing the effect of these salt layers.

Heat and Mass Transfer within a Solar Still Envelope

Cooper, P.

ISES Conference in Paris, (1973)

10 pages 1 table 4 pictures 11 ref.

Theoretical and experimental examination.

Digital simulation of experimental solar still data

Cooper, P.

Solar Energy, 14 (1973), No 4, p 451

18 pages 2 tables 13 pictures 8 ref.

The maximum efficiency of single-effect solar stills

Cooper, P.

Solar Energy, 15 (1974), No 3, p 205

13 pages

Presents factors affecting efficiency of a singleeffect, horizontal solar still in terms of component efficiencies. It is possible to postulate an ideal solar still with ultimate efficiency of about 60 %. Experimental work shows that only about 50 % efficiency is in practical installations.

Design Philosophy and Operating Experience for Australian Solar Stills

Cooper, P. and Read, W.

ISES Conference in Paris, (1973).

10 pages 2 tables 7 pictures 8 ref.

The development undertaken in Australia, both the theoretical and practical aspects of solar stills is described. Operating experience. Description of two types of units.

Solar water pumping

Dannies, J.

Solar Energy, 3 (1959), No, p 29

6 pages 14 pictures 1 ref.

Two working methods for obtaining water out of air are described.

Tests of small plastic water stills

Daniels, F.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 5/115

7 pages

This paper presents a study and the results of experiments on the production of portable water with solar energy on three pilot plants in Iran. The effects of geographical locations, the size and shape of plants, together with descriptions of various plants and methods of distillation, on the actual production of the pilot plants are explained in the report

An introduction to solar distillation

De Jong, T

Proc Am Soc Civil Engr, J Sanit Eng Div SA4, Paper 1704 (1958)

40 pages

A study and the results of experiments on the production of portable water still working with solar energy - 3 pilot plants.

The Patmos solar distillation plant

Delyannis, A and Piperoglou, E

Solar Energy, 12 (1948) No 1, p 113

3 pages 1 picture 1 ref

The inhabitants of the upper part of the town Patmos depend completely on rain for their water supply. No piping system exists. Patmos is a place in which desalting could effectively help. A suggestion to erect a solar distillation plant was made

Solar water distillation: the roof type still and the multiple effect diffusor

Dunkle, R

Int Dev in Heat Transfer, V (1961) p 895

8 pages

Determination of the aerodynamic coefficients of solar stills in relation to the leakage of steam-air mixture.

Dzhubalieva, P.

Geliotekhnika, 1 (1965), No 4, p 31

6 pages 5 pictures 5 ref.

The article deals with the results of an investigation of the effect of leaky joints between the glazing and structural members of the performance of a solar still exposed to an air stream. The results can be used to calculate the heat balance of solar stills and greenhouses.

Effect of leakage from a solar still on its performance under thermal head.

Dzhubalieva, P.

Geliotekhnika, 1 (1965), No 4, p 37

6 pages 3 pcitures 4 ref.

The effect of still leakage on performance in the presence of natural head only, when the wind speed was equal to zero, is investigated.

Design and construction of the Symi still

Eckstrom R

Sun at work 10 (1965) p 7

How to build a solar still

Edson et al

Univ of Calif, Series 75 (1959) Issue 13

7 pages

Emphasizes simplicity of construction with some slight sacrifice of performance. The still can be built from materials available in most lumber yards and metalsupply houses

Solar stills for community use - digest of technology

Eibling J. et al

Solar Energy, 13 (1971), No 2, p 263

14 pages 2 tables 4 pictures 1 ref.

The many factors that influence the productivity of solar stills are discussed in three categories.

6.108

Quelques experiences sur la distillation solaire de l'eau a petite echelle - Algunas experiencias de destilacion solar del agua en pequena escala

Fontan, P and Barasoain, J

UN Conf on New Sources of Energy, Rome (1961) In French

20 pages

This paper give Spanish sunshine and solar energy records. Several types of solar stills using Spanish materials, and designed to serve small household consumers, are under study. Ten still types have been tested. The performance of three of these types over a relatively long period is discussed, and conclusions on their industrial production are drawn. Three recent prototypes of new design are described. The annual production and costs of material and labor for several types are given

Estudios sobre aprovechamiento energia solar en destiladores y cocinas

Frick, G

Centro Universitario Zona Norte, Universidad de Chile (1958) p 94

9 pages

Solar stills of inclined evaporating cloth

Frick, G. and Sommerfeld, J.

Solar Energy, 14 (1973), No 4, p 427

5 pages 1 table 2 pictures 3 ref.

Various solar stills with inclined evaporating surfaces.

Solar Still with Evaporating Wick

Frick, G. and Theinländer, J.

ISES Conference in Paris, (1973).

10 pages 2 tables 2 pictures 8 ref.

Theoretical fundaments for the lay-out calculation of a solar still with evaporating wick.

Solar distillation developments in the eastern Mediterranean.

Gomella, C.

Symposium on Saline Water Conversion, (1957), Nov., Proceedings, Wash., National Academy of Sciences-National Research Council, (1958) Publication 568, p 131

6 pages

The possibilities of solar distillation in North Africa and developments in this field are described. A small distillation cell consisting of a molded asbestos-cement shell with a glass cover, set on rock wool insulation, has been improved and some aspects of its performance are described including the daily variation in yield.

Solar distillation studies of CSMRI Bhavnagur, India

Gomkate, S. and Datta, R.

COMPLES Revue Int. d'Heliotechnique (1973) April

4 pages 2 tables 4 pictures 4 ref.

Report of performed studies. Discussion of possible applications in India.

Some Aspects of Investigations on Solar Stills

Gomkale , S. and Datta, R.

ISES Conference in Paris, (1973)

12 pages 1 table 4 pictures 5 ref.

Results of experiments on effect of salt concentration, continuous feeding of the stills and double glass cover.

Some aspects of solar distillation for water purification

Gomkale, S.. and Datta, R.

Solar Energy, 14 (1973), No 4, p 387

6 pages 2 tables 2 pictures 5 ref.

Experimental work on a solar still which produces 5 to 7 liters of purified water per day.

6.110

Forced convection, multiple effect solar still for desalting sea and brackish waters

Grune, W

UN Conf on New Sources of Energy, Rome (1961)

26 pages

One approach to minimizing unit conversion cost is to develop high unit productivity for a given process first and then to optimize the components by improved engineering design. This approach led to the development of a forced convection still with an external condensor. The internal efficiency of this still was increased by dispersion of the basin water to increase the rate of mass transfer to the condensing surfaces, relative to the thermal heat losses. Storage of heat exchanger coolant during the period of highest temperature operation was investigated

Improved solar still process for desalting sea and brackish water

Grune, W. and Zandi, I.

J. American Water Works Assn., 52 (1960), p 993

8 pages

Several new design features have been investigated to improve the yield of existing solar stills. One of the improvements is the mechanical separation of the collector-evaporator unit from the condensor, another is the use of air as an intermediate substance that substitutes forced convection for natural convection to increase evaporation.

Demineralization of saline water by solar radiation in the United Arab Republic

Hafez, M and Elnesr, M

UN Conf on New Sources of Energy, Rome (1961)

10 pages

An aluminium foldable still of the roof type has been constructed. It is provided with a small reservoir which permits a constant level of water. A moderate size experimental distiller has also been constructed. It has a permanent concrete base of 40 sq meter area and a glass cover of the roof type

Prediction of liquid holdup on an absorption tower for the production of water from the atmosphere with subsequent recovery in a solar still

Hall, R et al

Solar Energy, 12 (1968) No 2, p 147

15 pages 1 table 6 pictures 20 ref

In the production of water from the atmosphere by absorption with subsequent recovery in a solar still, it has been suggested that the absorption tower could be a simple vertical plane, such as a sheet of plywood, over which the absorbent could spread as a thin layer for contact with the air. When an actual attempt was made to produce the thin liquid layer with the suggested equipment it was found that severe channelling occurred

Chemicals from the Dead Sea

Halperin, A

Chemical Engineering, 54 (1947) June p 94

3 pages

Describes operations carried out by Palestine Potash Ltd, in extracting chemicals from Dead Sea brine by utilizing solar energy for evaporation

Apparatus for solar distillation

Harding, J.

Paper No. 1933, Proc. Inst. Civil. Engr., (1883) No 73 p 284

Plastic solar stills: Past, present, and future

Hay, H.

Solar Energy, 14 (1973), No 4, p 393

12 pages 22 ref.

Over 400.000 plastic solar stills have been sold commercially. According to the literature highest yields for large-scale solar stills were obtained from those with plastic covers. The technology of plastic stills is changing; that of glass covers has remained basically the same for the past hundred years,

6.112

Cascade solar still for distilled water production

Headley, O.

Solar Energy, 15 (1974), No 3, p 245

The design of a solar water still

Heywood, H.

Cambridge University Engineering Society

10 pages

A simple roof type still which uses "the glasshouse effect" to trap radiation will be considered in this paper. The essential features of a still of this type are an evaporator and a condenser. The first usually consists of a shallow pan, or suspended pad, filled or saturated with saline water which serves as an absorber of solar radiation. The second is usually an inclined or curved transparent surface which hermetically seals the evaporator. This transmits the solar radiation, and allows wind cooling to dissipate the heat evolved by the condensing vapour

Distillation of saline water utilizing solar energy in a multiple effect system consisting of separate collector, evaporator, and condenser

Hodges, C and Kassander A

Institute of Atmospheric Physics, The Univ of Arizona (1962)

20 pages

Solar distillation experiments at the University of California

Howe, E.

Solar Energy, 3 (1959) No p 31

2 pages

Solar distillation experiments at the University of California were begun in January, 1952, with the design and construction of one mirror-backed unit and 5 units of the symmetrical glass-covered type.

Solar distillation research at the University of California

Howe, E

UN Conf on New Sources of Energy, Rome (1961)

22 pages

Experimental results are reported for seven units

Solar and atmospheric distillation

Howe, E et al

Berkeley Progress Report (1962)

11 pages

Three types of stills are discussed

Twenty Years of Work on Solar Distillation at the University of California

Howe, E. and Tleimat, B.

ISES Conference in Paris, (1973)

10 pages 8 pictures 11 ref.

Construction and performance of still units of small size for potable water. Design of solar collector for furnishing low pressure steam.

A Solar Distillation Design for the Economic Production of Fresh Water

Hummel, R and Dale, F

The University of Michigan, Ann Arbor, Michigan (1961)

42 pages

A design is presented to use solar energy to distill 10,000,000 gallons per day of fresh water from saline water at a cost of less than 40 cents per thousand gallons

Humidification-dehumidification process (solar distillation)

Ivekovic H et al.

Yugoslav Academy of sciences and arts, Dubrovnik, Inst for Marine corrosion and desalination (1973) March.

33 pages

Refrigeration capacity of an absorption solar refrigeration plant with flat glazed solution regnerator

Kakabaev, A. et al

Geliotekhnika 8 (1972), No. 2, p. 60

8 pages 1 picture 3 ref.

The paper describes an absorption solar refrigeration plant with solution regeneration by a glazed surface and blowing of air through a channel formed by the glass and the surface. A method of calculating the refrigeration capacity of such a plant is recommended in the case of direct and reverse air currents. The power indices of the plant have been estimated on the basis of analytical dependences for various climatic conditions.

6.114

Corrosion prevention in solar stills with adiabatic evaporation

Karpeev, N. et al.

Geliotekhnika 8 (1972), No 5, P. 29

5 pages 2 pictures 2 ref.

Experimental studies have been conducted on a test model of a vacuum deaerator with plane-parallel packing and an attempt has been made to correlate the experimental data with the help of a nondimensional equation which reflects the process of gas removal from the water in the vacuum deaerator.

Solar water distillation in North India

Khanna, M

Journal of Scientific & Industrial Research, 21A (1962) No 9

5 pages

A summary of the results obtained from several types of stills are cited

Tests of a plastic staircase-type solar still

Khatamov, S. and Umarov, G.

Geliotekhnika, 7 (1971), No 2, p 64

2 pages 1 table

A method of obtaining water in arid lands

Kobayashi, M

Solar Energy, 7 (1963) No 3, p 93

7 pages 3 tables 9 pictures

Underground water is, by capillary action, sucked up to the surface of the earth through tiny crevices in the soil. When the ground surface is heated by the sun, this water dissipates in aqueous vapor. To collect such moisture in the form of droplets is installed on the ground a quadrilateral frame with a sloping lid made of glass, or plastic material with its inner surface chemically treated. Pure water can be obtained by collecting these droplets. It is possible for the device to collect water in considerably arid areas, yielding about 1000 cm^3 per m^2 per day. Water obtained through the use of the device is suitable for chemical and medical use, for human consumption etc, and is not radioactive

International research center for distillation

Kokkaliaris, P.

Solar Energy, 14 (1973), No 4, p 423

3 pages

Equation for time-independent convective-evaporative heat transfer from a radiator unit.

Kuliev, A. et al.

Geliotekhnika, 9 (1973), No 6, p 9

3 pages 4 ref.

The authors derive the equation for the time-independent evaporative convective heat transfer and its solution.

Solar Energy Use in Ceylon (Sri Lanka)
Minerals from the Sea

Kutâratman, K.

ISES Conference in Paris,(1973).

3 pages 3 tables

Manufacture of salt through solar evaporation of seawater.

Sea-Water Desalination by Solar-Heated Heat-Pipes

Kögler, K. and Kübler, M.

ISES Conference in Paris, (1973)

9 pages 3 pictures 4 ref.

A solar evaporation system with heat pipes with high absorption and low emission. Water is heated to boiling without additional energies.

A description of the construction of solar demineralization still No 1

Lawand T

Brace Rec Inst Mc Gill Univ. Canada. Techn. Rep No T1 (1962)

11 pages

Engineering and economic evaluation of solar distillation for small communities

Lawand T

M Sc Theses. Agr.Eng Dept. Mc Gill Univ. Canada (1968)

Description of a large solar distillation plant in the West Indies

Lawand, T.

Solar Energy, 12 (1969), No 4, p 509

4 pages 1 table 2 pictures 7 ref.

Solar distillation of saline water conversion for the provision of fresh water. The development of a simple, locally fabricated. easily operable still for use by peasants or small communities in the emergent areas of the world.

Technical evaluation of a large scale solar distillation plant

Lawand, T.

ASME-Paper 69-WA/Sol-8 for Meeting , (1969), Nov 16-20

11 pages

A theoretical evaluation of the heat and mass transfer interchange in an air-inflated solar still has been studied. Experimental verification tests have been carried out and the results compared with theoretical predictions. The percentage of unaccounted heat losses on the overall balance was under three per cent for most tests. Continued modification of the theory is necessary in order to account for variations in some of the internal balances

Fundamental problems in solar distillation

Löf, G.

Symposium on Research Frontiers in Solar Energy Utilization, National Academy of Sciences, Washington, (1961)

A simplified mathematical model for predicting the nocturnal output of a solar still

Malik, M. and Tran van Vi

Solar Energy, 14 (1973), No 4, p 371

15 pages 2 tables 8 pictures 8 ref.

The production capacity of a solar still which converts saline water to fresh water can be increased by introducing hot feed water into the unit at night. A waste heat source, such as cooling water from a power plant, can be used to preheat the feed.

Solar stills

Masson, H

SPC Quart Bull (1957) Jan

5 pages

Solar Stills for Residential Use

Mc Cracken, H.

ISES Conference in Paris, (1973).

9 pages 6 pictures 2 ref.

Design parameters, performance and construction details for a commercial solar still.

A rational basis for the engineering development of a solar still

Morse, R and Read, R

Solar Energy, 12 (1968) No 1, p 5

13 pages 3 tables 7 pictures 6 ref

The heat and mass transfer relationships which govern the operation of a solar still in the unsteady state is solved graphically by means of a characteristic chart, which expresses the various heat fluxes as functions of the cover temperature

Operating Experiences with Solar Stills for Water-Supply in Australia

Morse, R et al

Solar Energy, 13 (1970) No 1, p 99

5 pages 1 table 2 pictures 3 ref

Solar stills are now producing water for motels and a small township on a commercial basis. In addition, full-size prototypes have been operating on an experimental basis at field stations since 1963. These are widely separated on the Australian continent and have produced more than a million gallons of fresh water

An experiment with a plastic tubular solar still

Nebbia, G.

Symposium on Saline Water Conversion, Washington. D.C., (1957), Proceedings., p. 175

2 pages

Tests to verify the practical efficiency of a rigid tubular solar still with blackened aluminum water pan in a Plexiglass case, designed to reduce heat losses throught the bottom of the pan.

An experiment with a vertical solar still

Nebbia, G

UNESCO-Iran Symposium on Salinity Problems in Arid Zones (1958)

Present status and future of the solar stills

Nebbia, G.

United Nations conferens on Nwe Sources of energy, Rome (1961)

12 pages

In the past ten years the problem of developing solar stills has received a great deal of attention. A list is given of the laboratories and groups more actively engaged in such studies and an outline is also given of the main goals of such research and of the scientific and technical lines followed at present.

Calcul des quantités d'energie calorifique solaire absorbées par les salines et led usines "a march solaire"

Panteleymonoff, B

Revue de Chimie Industrielle, 47 (1938) April p 98

6 pages

Calculation of amount of solar heat energy absorbed in salt works; present results of evaporation tests carried out on brine in Dead Sea; author envisages possibility of constructing plants utilizing solar heat

Solar still

Parker, R. et al

Agric. Eng. 55 (1974), No 9, p 38

7 pages

The use of waste heat in a solar still

Proctor, D.

Solar Energy, 14 (1970), No 4, p 433

17 pages 1 table 8 pictures 10 ref.

Application de la Distillation Solaire aux Cultures sous Abri

Roncharine, J.

ISES Conference in Paris, (1973).

10 pages 12 ref.

Protected cultivations for hot countries. Excess heat is used to desalt water.

Empirical formula for the expected fresh water production by solar energy

Sakr, I

Coopération Méditerranéene pour l´énergie solaire, Bull (1967) No 12

A small circular solar still has been operated and studied for two years. An empirical linear equation has been deduced relating fresh water production and solar radiation intensity

Finned air-cooled solar still

Sakr, I. et al

ISES Conf. Paris, (1973)

20 pages 6 tables 13 pictures 4 ref.

Performance curves with and without metallic fins.

An investigation of some of the parameters involved in solar distillation

Satcunanathan, S. and Hansen, H.

Solar Energy, 14 (1973), No 3, p 353

11 pages 8 pictures 18 ref.

The results of experiments carried out with a parallel-plate, cascade-type solar still to determine the effects of gap distance, slope of cover, and cooling of the cover on the performance of the still.

A multiple effect, tilted solar distillation unit

Selcuk, K.

Solar Energy, 8 (1964) p 23

8 pages 4 tables 8 pictures 6 ref.

The construction and performance of a tilted solar distillation unit is described. Tests shows that the unit is superior to the conventional roof-type, but more expensive in first cost.

Design and performance evaluation of a multiple effect tilted solar distillation unit

Selcuk M

Brace Res Inst Mc Gill Univ. Canada (1963)

Solar Stills for Agricultural Purposes

Selcuk, M. and Trau, V.

ISES Conference in Paris, (1973).

10 pages 2 tables 3 pictures 15 ref.

A mathematical model describing heat and mass transfer in a system combining a solar still with a greenhouse, its solution and test results of a small scale unit are discussed.

Continuous solar still

Sharafi, A.

Geliotekhnika, 1 (1965), No 2, p 38

3 pages 1 tables 1 picture 1 ref.

Results from an investigation of a continuous solar still used to distill the waters of the desert and semidesert regions of central Asia are presented.

Utah Desert Yields Potassium Chloride for Western Agriculture

Smith, H

Chemical and Metallurgical Engineering, 51 (1944) Dec p 94

2 pages

Gives details of process and equipment used for production of potassium chloride from brine by solar evaporation using high out-door temperatures

Solar distillation of salt water in plastic tubes using a flowing air stream

Solam, E and Daniels, F.

Solar Energy, 3 (1959) No 1 p 19

4 pages 2 tables 3 pictures 2 ref.

Experiment on solar distillation of salt water partially filling long horizontal plastic tubes. Air is swept along the solar heated water and the water vapor is removed.

Effect of wind on solar distillation

Soliman, S.

Solar Energy, 13 (1972), No 4, p 403

13 pages 2 tables 5 pictures 16 ref.

A study of roof type solar stills under forced convection conditions.

Summary of solar distillation processes

Strobel, J.

Symposium on Saline Water Conversion, Washington, D.C. (1957) Proceedings, p 117

6 pages

Recent research in solar distillation is briefly described. Several different types of nonfocusing solar stills are discussed, including a simple Telkes-type still, a roof-type still, the Lof deep-basin still, a Dupont plastic still, a Telkes flat tilted still, a frame-supported multiple-effect still, and the Bjorksten suspended-envelope still.

6.122

Review of desalinization processes

Stroebel, J. et al.

Panel discussion, Journal American Water Works Association, 52 (1960), No 5

32 pages

A panel discussion covers the articles "Recent Developments" by Joseph J. Stroebel, "Membrane Processes" by Ernest H. Sieveka, "Freezing Processes" by Dewey J. Sandell, Jr., "Distillation Processes" by David M. Bradt, and "Solar Distillation" by George O. G. Löf.

Solar stills with low thermal inertia

Szulmayer, W.

Solar Energy, 14 (1973), No 4, p 415

7 pages 6 pictures 5 ref.

A small plastic still of approx. 0,2 m^2 area incorporating several unconventional design features, viz. a floating solar absorber to heat a thin layer of surface water, and a single-sloped roof with a specularly reflecting back wall.

Manual on solar distillation of saline water

Talbert, S. et al

U. S. Dept. of the Interior, Office of Saline Water, (1970)

Research on methods for solar distillation

Telkes, M

Res & Dev Progr Rept, No 13, for Office of Saline Water (1956)

63 pages

The study forms part of an investigation to reduce the total cost of converting saline water to fresh water in large quantities by solar energy through developing new methods and improving existing ones. Tilted flat stills previously developed and compared with roof-type stills were found to give 26-50 per cent greater yield than estimated in the summer months

Solar still theory and new research

Telkes, M.

Symposium on Saline Water Conversion, Washington D.C. (1957), Proceedings. p 137

13 pages

Basic principles of solar still design theory are outlined.

Solar radiation, water demand and desalinization

Thompson L and Hodges, C

Solar Energy, 7 (1963) No 2, p 79

2 pages 3 pictures 3 ref

Among the many techniques for demineralization of saline water now under development are several methods that utilize solar energy as the primary power source

Effects of construction and maintenance on performance of solar distillers

Tleimat, B

ASME Winter Annual Meeting (1969)

Production data of single-effect distillers of various types of construction have been recorded for a period of several years. The data on clear days, plotted against the solar altitude at noon, indicated a decrease in the specific productivity with age of most of the distillers under investigation. Under minimal maintenance, the decrease of productivity dependens on the type of still construction. Greenhouse-type distillers, with wooded brine trays, showed the largest decrease whereas the tilted-tray construction, with metal-or plastic-lined brine trays, showed an extremely small decline in productivity

Effect of the Heat Transfer Coefficient on the Operation of a Solar Still

Toiliev, K. and Bairamov, R.

Geliotekhnika, 6 (1970), No 4, p 21

4 pages 3 ref.

Un nouveau distillateur solaire à exposition directe: le distillateur Jean Mary

Touchais, M

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12
In French

A flat solar still is tested and the results reported

6.124

Solar still greenhouse - a proposal for using desalinated water for agricultural purposes

Tran V. et al

COMPLES Bulletin (1972) March No 22

12 pages 2 tables 6 pictures 5 ref.

Fundamentals of the mathematical formulation for the prediction of the solar still and greenhouse temperatures, distillation and evaporation rates. Some solutions are outlined. Results of experiments.

Heat and Mass Transfer in Convective Solar Stills

Umarov, G. and Vardiyashvili, A.

Geliotekhnika, 6 (1970), No 1, p 52

6 pages

The authors have investigated existing models of convective stills from the standpoint of heat and mass transfer, the effect of various factors on still parameters, and the determination of the coefficients of heat and mass transfer during evaporation and convection.

Utilization of solar energy for demineralizing the subsurface waters of the desert pastures of Uzbekistan

Umarov, G. and Vardiyashvili, A.

Geliotekhnika 7 (1971) No. 4, p. 60

4 pages 1 table 2 pictures 6 ref.

Water distillation by solar energy and winter cold

Umarov, G. et al.

Geliotekhnika 8 (1972), No 6, p. 62

4 pages 1 table 1 picture 5 ref.

The paper describes methods for water distillation through the utilization of solar energy in summer and cold temperatures of winter. Certain changes have to be introduced into the design of the solar still which do not affect its operation in summer.

Experimental investigation of heat- and mass-exchange processes in an inclined-step solar still

Umarov, G. et al.

Geliotekhnika, 9 (1973), No 4, p 49

6 pages 2 pictures 11 ref.

Existing design methods pertain to the hothouse type of solar still and to flat stills with wetted surface. In inclined-step solar stills, the evaporation processes take place from the free surface of the liquid, located on the steps, in contrast to wetted-surface designs. Steps of a certain height perpendicular to the bottom plane, can effect the circulating flows of mixture and the heat- and mass-exchange coefficients. To understand the physical processes taking place within the still the optimal geometry of the still chamber, the number and height of the steps, and the distance between the evaporation and condensation surfaces were investigated.

Sea Water Distillation Using Solar Energy with Solar Preheater.

Vannueci, N.

ISES Conference in Paris, (1973).

7 pages 1 table 3 pictures 9 ref.

Complete data from one year experiments. Economic analysis.

Investigation of a solar still

Vardiyashvili, A.

Geliotekhnika, 2 (1966), No 2, p 50

4 pages 1 table 1 picture 2 ref.

Experimental investigation of the optical and technical characteristics of a through-flow solar still

Vardiyashvili, A.

Geliotekhnika, 4 (1968), No 1, p 53

3 pages 2 pictures 2 ref.

Integral heat and mass transfer characteristics of convective solar stills

Vardiyashvili, A.

Geliotekhnika, 7 (1971), No 4, p 29

4 pages 1 picture 4 ref.

Testing and thermal analysis of a continuous-flow solar still

Vardiyashvili, A. and Sharafi, A.

Geliotekhnika, 3 (1967), No 6, p 67

5 pages 2 tables - 1 ref.

The test results and the thermal analysis of a continuous still show that the output of the still can be determined if the amount of incident radiation, the air temperature, the volume flowrate of vapor-air mixture, and the wind speed are known.

Solar Stills

Veinberg, V

Leninggrad, (1973).

Potentialitiesfor saline water conversion and the provision of power in arid areas

Ward, G

Brace Research Inst, Montreal. Technical Report No T8 (1963)

12 pages

An appraisal of the progress made in providing a solution to fresh water shortages in arid countries. A brief review of the various conversion processes now in use and those that provide promise for future application. An interpretation of the results of engineering research in the light of economic factors

Fresh water from sea water: Distilling by Solar Energy

Weihe, H.

Solar Energy, 13 (1972), No 4, p 439

6 pages 2 tables 2 pictures

Research on the production of fresh water from sea water.

6.6
VÄRMEPUMPAR

Optimal work regime of solar thermogenerator in the presence of thermal contacts

Arasmedov, B

Applied Solar Energy, 5 (1969) No 2, p 3

6 pages 2 pictures 2 ref

Investigation of the optimal work regime of a solar thermogenerator with special evidence of thermal contacts influence. Thermal balance is given, and are also formulae for efficiency calculation for cold seams of the thermogenerator and optimisation of efficiency

Choice of optimal connection of solar generators to electric drivers

Belnova, A and Tarnizhevskij, B

Applied Solar Energy, 5 (1969) No 3

7 pages 1 table 4 pictures 6 ref

Different variants of electroschemes for the connection of solar photoelectric generators to electrodriver and accumulator of electrical energy are analysed. These schemes are estimated with relation to technical and economical indices of a unit as a whole, reliability and convenience of exploitation. Recommendations of optimal variants of mentioned schemes are given

Flat plate collectors with CdS solar cells and first indications of feasibility for their large scale use.

Boer K et al.

Delaware Univ, Newark, Inst of energy conversion (1973) June.

23 pages

Hybrid solar energy and electric heat pump

Calvert, F. and Harden, D.

ASME Meeting (1973) Nov., Paper 73-WA/SOL-5

Results of a study to determine the feasibility of combining solar flat plate collectors with conventional resedential heat pump systems.

A solar supplemented heat pump for rural home air-conditioning

Davis, C and Mowry, G

American Society of Agricultural Engineers, Paper No 60-822 (1960)

30 pages

Utilization of sun energy to an air-source heat pump system

Applications of selective coatings in solar thermoelectric generators.

Garf B et al.

Semiconductor solar energy converters. Edited by V A Baum p 209 New York (1969).

7 pages 12 ref.

Selective glass coatings.

Investigation of mechanical influence of the optical properties of protection coatings of Si photobatteries

Golovner, T et al

Applied Solar Energy, 5 (1969) No 1 p 3

6 pages 1 table 5 pictures 6 ref

This paper considers optical coatings stability. Investigation has been made of photobatteries under sandy particle action and selection of optimum coatings for providing photovoltaic converter operation reliability in uninhabited regions of the south part of the USSR and under micrometeorite fluxes. Si-photocell protected by 0·2 and 0·5 mm thickness. K* 208 glass is shown to be operative for a long time. Antireflection films and silicon organic coatings appeared not to be reliable. Photocells with such coatings do quickly fail as a result of bombardment accelerated flows of glass and chrome particles

Development of high-efficiency solar energy collector

Horigome, T. et al

Bul. Electrotech. lab 37 (1973), No. 7, p. 42

8 pages - 9 pictures 5 ref.

An outline of a terrestrial solar energy power system and a solar energy collector is described.

Efficiency and energy characteristics of thermoelectric piles and moist of air fluid type

Korotaev, A

Applied Solar Energy, 5 (1969) No 3

4 pages 1 picture 9 ref

All thermoelectric modules have to be selected with identical coefficients of thermo-emf and resistances to work with the same figures-of-merit. If the unit works in conditions of maximum cooling load, figures-of-merit of thermoelectric modules should be close. It has been determined experimentally that the average figure-of-merit of the thermoelectric module produced by the experimental plant N 2 has a limit from $1.8.10^{-3}/^{o}C$. It has been shown experimentally that nominal heat capacities are 1500 and 3000 kcal/hr at a current of 17 - 10 amp. At a current of approximately 30 amp, its heat capacity exceeds nominal capacity approximately twofold

Investigation of thin layers Cd solar batteries

Lacroix, M

Applied Solar Energy, 5 (1969) No 3

5 pages 6 pictures

Reliability of semiconductor devices

Makhlin, A and Khazanov, M

Applied Solar Energy, 5 (1969) No 1

5 pages 1 table 2 pictures 3 ref

It is shown that the reliability of thermoelectric semiconductor devices being used in solar energy devices, in air conditioners and in cooling installations, depends to a great extent on the scheme of junctions and reserving of separate blocks. It has been computed that the failure value of semiconductor thermoelements is from 2 to 14.10^{-6} 1/hr. The method of reliability characteristics determination has been pointed out as well

Thermal performance of a linear solar collector

Meinel, A. and Meinel, M.

ASME Winter Annual Meeting, New York (1972).

4 pages

Will solar energy be the heat source for tomorrow's heat pump?

Penrod, E and Prasanna,K

Heating, Piping & Air Conditioning (1960) May p 117

11 pages

The solar energy incident on a solar collector has been used as a heat pump source to supplement that stored in the earth's crust

Analysis of proposed solar-earth heat pump

Penrod, E. and Prasanna, K.

Lexington, (1964)

111 pages

X *Design of a Flat-Plate Collector for a Solar Earth Heat Pump*

Penrod, E and Prasanna, K

Solar Energy, 6 (1968) No 1, p 9

14 pages 1 table 14 pictures 18 ref

A procedure for designing flat-plate collectors for a solar earth heat pump. Equations are derived from fundamental principles for converting direct solar radiation incident on horizontal planes to south facing planes tilted from the vertical

Procedure for designing solar-earth heat pumps

Penrod E and Prasanna K

Heating, Piping and Air Cond. 41 (1969) p 97

4 pages

An analysis of linear focused collectors for solar power.

Pope R, Schimmel W.

Intersociety energy conversion engineering conference, 8th Philadelphia, Pa (1973) p 353.

7 pages

Single crystal CbS solar cell

Sato B, Shitaya T.

Japanese J applied physics7(1968) No 11 p 1348

6 pages

Influence of temperature on electric parameters of Si and GaAs photobatteries under increased illumination

Savchenko, I et al

Applied Solar Energy, 5 (1969) No 3

8 pages 3 tables 5 pictures 19 ref

This work deals with electrical parameter changes of Si and GaAs photoelements, that are assembled from elements yielded by our industry, when working temperatures and energetical illumination are increased. Empirical dependence of parameters of the photoelements on the temperature and illumination are given

Solar collection limitations for dynamic converters

Schrenk, G.

Agard Conf., Cannes, France, (1964), March

Transport and distribution of radiation in solar energy units with mirror concentrators.

Tepilakov D.

Semiconductor solar energy converters, Edited by V A Baum, New York (1969). p 143.

24 pages 35 ref

Mono-grain layer solar cells

Tevelde T.

29th Meet of AGARD propul and energy panel (1967) p 926

16 pages

... Nog ha vi fönster åt alla
väderstrecken
... Ty vi vilja ha sol in i
lifvet liksom in i
rummen ...
C. Larsson: Åt solsidan

7

BYGGNADSTEKNIK, BYGGNADSUTFORMNING, STADSPLANER

Vissa generella byggnadstekniska problem accentueras i samband med solvärmetillämpningar; fönster- och isoleringsfrågor och byggnadsstommens värmekapacitet kan nämnas som exempel. Här har svensk forskning avsatt viktiga bidrag till litteraturen[1]. De provhus utomlands, som redan redovisats, preciserar relationerna mellan byggnadsteknik och solvärmesystem, men de har som regel byggts i områden där byggnadsteknikern traditionellt ställts inför mindre krav än vi är vana vid.

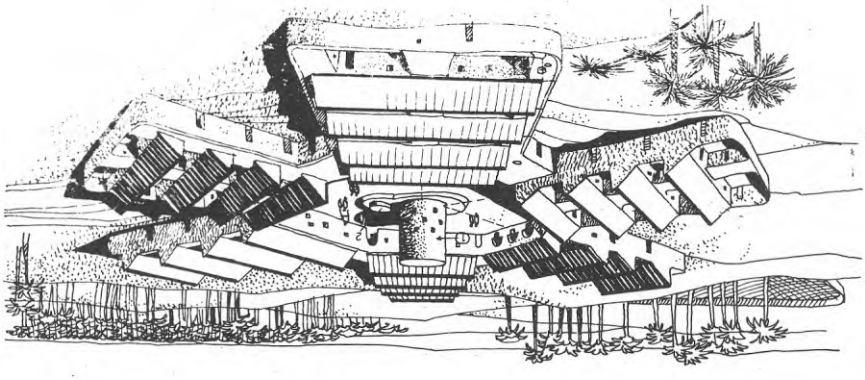
---

1) T.ex. Elmroth, A. och Höglund, I.: Värmebalans i småhus, Byggforskningens Rapport, R7:1973
Isfält, E.: Optiska och termiska egenskaper hos fönster och solskydd, Tekn. medd., 37 från Inst. för uppvärmning- och ventilationsteknik, KTH, Stockholm 1974.
Adamson, B.: Energitransport genom fönster, tidskriften VVS, 45 (1974), nr 1.

Konsekvenserna för byggnadsutformningen som följd av solvärmesystem har på senare år rönt ett tilltagande intresse. Möjligheterna att bemästra och inlemma stora traditionellt sett främmande element som solfångare för uppvärmning - i Sverige 30 m^2 eller mer för en enfamiljsbyggnad - är exempel på nya problem för arkitekten. Hela ytterväggar utformade för solfångning är ett annat.

Viktiga frågor för stadsplaneraren är t.ex;

- med vilken täthet kan ett samhälle byggas då krav på "fri horisont" är en viktig teknisk förutsättning för soluppvärmda byggnader?
- hur ökar friheten vid planläggningen, då beroendet av långsiktiga investeringar på fjärrvärmeområdet minskar?



Samhälle för solenergi.
(efter Alexandroff et al (1973))

7.0
BYGGNADSTEKNIK, BYGGNADSUTFORMNING, STADSPLANER

Wohnhäuser, von der Sonne beheizt

Neue Bauwelt, (1949), No 24, p 375

3 pages

Solen värmer bostäder om fem år

Ny Teknik, (1974), No 2, p 16

A Feasibility Study of Total Energy Systems for Breakthrough Housing Sites

Achenbach, P. et al.

National Bureau of Standards Report 10402 (1971)

Solar tables and diagrams for building designers

Ballantyne, E

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 251

14 pages **8 pictures** **20 ref**

Modeling of Solar Heating and Air Conditioning

Beckman, W. and Duffie, J.

Wisconsin University, Madison Engineering Experiment Station (1973)

20 pages

The sunshine problem in air conditioning

Billington, N.

Journal of the Inst. of Heat. & Vent. Engineers, 19 (1951) p 112

Performance of an Experimental System Using Solar Energy for Heating and Night Radiation for Cooling

Bliss, R. and Bliss, M.

U.N. Conf. on New Sources of Energy, Rome (1961)

Solar Heat for a Building

Bridgers, F. et al.

Mechanical Engineering (1957) No 6, p. 536

3 pages

Solinstrålning och solavskärmning

Brown,G and Isfält,E

Byggforskningsrapport, (1975) Stockholm

520 pages 26 tables 210 pictures 80 ref.

An exhaustive report presenting methods and data concerning physics of solar radiation, irradiation from sun and sky against building surfaces, transmission of solar radiation through windows, shape and influence of shidows, solar shading devices, daylight distribution in rooms, performance of shading devices, costs.

Getting Down to Fundamentals

Brooks, F

Heating and Ventilating, 33 (1936) May p 43, April p 37

8 pages

Discusses methods for estimating sun heat through walls, roofs, glass windows and skylights

Role of Climatological Factors in Predicting the Thermal Behaviour of Buildings

Buchberg, H.

WMO-No255, TP 142 (1973)

9 pages 1 table 6 pictures 9 ref.

Some results from computer computations including cases with different solar shading

The Performance of a Solar Air Heater and a Rockpile Thermal Storage System

Chada, A. and Read, W.

Paper No. 4/48, I.S.E.S. Conf. Melbourne (1970)

Solar Radiation Charts

Champkins G

Heat. vent. eng. 45 (1972), No 538, p 549

5 pages

Solar radiation gain of buildings.

Le soleil travaille a domicile

Creplet, J-G.

COMPLES Revue Int. d'Heliotechnique, April 1973

5 pages **3 pictures** **7 ref.**

Review of ways of using solar energy in dwellings.

The Autonomous Servicing of Dwellings

Crouch, G. et al.

University of Cambridge, Dept. of Arch. (1972)

200 pages

Paper 3: The role of plants in the collection storage and release of solar energy.
Paper 4: Solar Energy
Paper 5: Hothouses - their design and construction with reference to the collection of solar energy.
Paper 6: Direct conversion of solar energy to electricity.

Soleil et Architecture

Dabat, R. and Perriu, R.

ISES Conference in Paris, (1973)

7 pages **5 ref.**

Conceptions based on work from a research group trying to take into account all the natural elements of the environment influencing a building.

Solar energy.

Duffie J.

54th Annual meeting of the American geophysical union. Conference paper 54 (1973) No 4 p 224 Washington D.C. USA.

The easiest applications are in meeting thermal energy requirements of buildings.

Man, Climate and Architecture

Givoni, B.

Elsevier (1969)

Energy, technology and solararchitecture

Hay, H.

Paper 72 - WA/Sol-11, ASME, (1972)

Converting solar energy into comfort

Hesselschwerdt, A.

Refrigeration engineering, (1954), Aug, p 55

6 pages

Solkraft i Sverige kan klara halva värmebehovet i nya hus

Hillbom

Ny Teknik, (1974), No 10, p 1,7

Evaluation of Solar Radiation Climatic conditions and Building Temperatures Design by the Total Thermal Time Constant Method

Hoffman, M.

ISES Conference in Paris, (1973)

13 pages 2 tables 3 pictures 4 ref.

Residential uses of solar energy

Hottel, H

Proceedings of the world symposium on applied solar energy, Stanford Research Institute (1956) p 103

10 pages

A rationell basis for solar heating analysis

Hutchinson, F. and Chapman, W.

Heating, Piping and Aircond. (1946), July.

Tabeller för beräkning av solinstrålning mot byggnader

Höglund, I. and Stephenson, D.

SIB rapport 49 (1968) Stockholm

15 pages 7 tables 10 pictures 9 ref.

Tables for calculation of solar radiation.

Solenergi och byggnader

Höglund, I.

IVA rapport 67 (1974), Stockholm

17 pages 11 pictures 10 ref.

Solar radiation in Sweden. Systems for heating of houses and water with solar energy. Solar houses. Heat storage. Economy.

Sunlight in buildings

Hopkinson, R et al.

Proceedings of the CIE International Conference, Newcastle-Upon-Tyne (1965)

Availability and utilization of solar energy

Jordan, R and Threlkeld, J

ASHRAE Trans, 60 (1954) p 193

Solar heat utilization and energy saving in buildings

Kimura, K

Building and Society (1974) No 7 (in Japanese).

5 pages 4 pictures 6 ref

Principles of research process of solar heat application for buildings are explained, starting from the intensity of solar radiation at earth surface, mentioning to accumulation for cloudy days and reasonable ways of application. Several examples of practices are also explained

Climate and house design

Koeningsbergen, O. et al

U.N. Publication (Sales No F 69. IV. 11), (1969)

Analysis of solar energy data applicable to building design

Liu, B. and Jordan, R.

ASHRAE Journal, 4 (1962), No 12 p 31

The use of solar energy for residential space heating

Lorsch, H.

Energy Conversion, 13 (1973)

The interpretation of solar radiation measurements for building problems

Loudon, A

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 111

8 pages 12 pictures 6 ref

Solar house heating - a panel

Löf, G

Proceedings, World Symp on Applied Solar Energy (1955) p 131

15 pages

Heating and cooling of buildings with solar energy

Löf, G

Chapter 11. Introd. to the utilization of solar energy (Zarem-Erway) Mc Graw-Hill (1963.

Statement for heating and
Statement of solar energy for heating and cooling

Löf, G

Hearings before the Subcommittee on Energy of the Committee on Science and Astron. US House of Repr. (1973)

Solar energy utilization for house heating

Löf, G. et al

Final Report US Department of Commerce, Office of the Publication Board (1946), Washington, PB 25375, (1946), May

Proposed solar radiation curves for engineering use

Moon, P

Jnl Franklin Inst, 230 (1940) p 583

Solar energy in housing

Moorcraft, C.

Architectural design, 43 (1973), No 10, p 634

20 pages. 25 pictures

Comfort. Solar radiation. Solar houses. Solar heating of water and distillation.

Solar heating for house

Olgyay, A. and Telkes, M.

Prog. Archit, (1959), March, p 195

13 pages

The development of a solar powered residential heating and cooling system

Oneill, M. et al

Lockheed Missiles and Space Co NASA - CR - 120400, (1974)

95 pages

A continuation of solar energy and the total energy concept - The Solar Community.

Pope R et al.

8th Intersociety energy conversion engineering conference proceedings, conference paper, I, (1973) Philadelphia, Pa., USA.

Standards for sunshine and sun control

Ritchie, J and Page, J

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 39

9 pages 8 pictures

Solar energy - it's role in heating and cooling

Tasker, C.

Heating and Ventilating Engineer, (1950), p 143

6 pages

Review of solar house heating

Telkes, M

Heating and ventilating, 46 (1949), Sept, p 68

Sonne und Architecture

Twarowski, M.

Callweg Verlag, München, (1962)

Strahlungsmeteorologische Unterlagen zur Berechnung des Kühlbedarfs von Bauten

Valko, P.

Schweizerische Blätter für Heizung und Lüftung, (1967), No 1

Feasibility of solar heating and cooling of buildings

Weinstein, A. and Chen, C.

Prof. Eng (Wash.D.C.) 44 (1974), No 2, p 28

5 pages

Solar energy collection and it's utilization for house heating

Whillier, A.

Sc. D. Thesis MIT, (1953)

Solar Energy Residential System Modeling

Wolf, M.

ISES Conf. Paris,(1973) July (Section Photovoltaic Power)

13 pages - 6 pictures -

Description of a complete solar energy utilization system for a residence. Combination of photovoltaic converter and thermal energy collector.

Utilization of sun and sky radiation for heating and cooling of buildings

Yellott, J.

ASHRAE Journal, (1973), Dec

12 pages 7 pictures 48 ref.

Solar heat collection, collector plates blazing materials. Applications concentrating collectors. Heat storage systems. Cooling.

7 1
BYGGNADSTEKNIK

Vom Einfluss der Sonne auf die Erwärmung der Räume

Ges Ing (1935) p 779

Solar energy utilization for heating and air conditioning

Avezov, R et al.

Geliotekhnika 8 (1972), No 4, p 64

Provides a detailed analysis of foreign and Soviet data in the utilization of solar energy for heating and airconditioning.

Industry moves into Solar Energy Hardware: A Report on an Elementary School Solar Heating System

Barr, J.

Prof. Eng. (Wash. D.C.) (1974) No 6

4 pages

Energy Conservation Through Effective Utilization

Berg, C.

Science (1973) July 13

Calculations on a solar energy system - for electric power and heat generation in buildings

Graven R

Intern. Meeting on the Solar Energy Soc, Cleveland (1973)

33 pages

Performance predictions with computer. Flat plate collectors.

Residential use of solar energy

Hottel, H.

Proc. World Symp. on applied Solar Energy, Merlo Park, California, (1955)

Solenergi för byggnader

Höglund, I

VVS (1974), No 9

8 pages 11 pictures 10 ref.

Review of (mostly swedish) results in solar energy use.

Visual aids for the design of solar protection

Jackson, G et al

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 241

9 pages 11 pictures 4 ref

Casa proyectada para utilisar los beneficios del sol.

Keck, G.

Casas y Jardines (1950), No 192, p 36

5 pages

A house which take care of as much solar energy as possible and with special ventilation arrangement, has been constructed.

Low energy building - why and how?

Mackillop, A.

Building technology and Management, (1973), January

5 pages - 9 pictures -

Enviromental effects. Energy consumed by buildings. discussion.

Solar energy research programs alternatives

Mitre Corp

MRT-6516, (1973), Dec

Heating and cooling of buildings. Processes, solar systems for electricity generating. Budgets.

Proposed standard solar-radiation curves for engineering work

Moon, P.

J. Franklin Inst. , 230 (1940), 583

The development of a residential heating and cooling system using NASA derived technology

Oneill, M. . et al

Lockheed Missiles and Space Co., Huntsville, Alabama (1973)

99 pages

Technical and economic feasibility of solar powered space heating, air conditioning and hot water heating systems for residential applications.

7.1.1
FÖNSTER

Window design and solar heat gain

HMSO BRS, Digest 68

A general introduction

Heat absorbing glass, it's use in buildings for warm climates

Building research station

Colonial Building Note, (1954), No 20

Thermal transmission of windows

Environmental Advisory Service (1973) March

Pilkington Glass

12 pages 1 table 9 pictures

Thermal properties of a range of glasses and combinations of glasses and blinds. Values of solar reflectance, absorptance and transmittance for solar heat

Solar control performance of blinds

Environmental Advisory Service 8 (1973) July

Pilkington Glass

12 pages 12 pictures 9 ref

Solar optical properties of typical blind materials and glasses. Shading coefficients. Safety from thermal fracture

Solar heat gain through windows

Environmental Advisory Service (1974) April

Pilkington Glass

8 pages 2 tables 4 pictures

Graph for total heat gain through single glazing and transparent sun path diagram for a relevant latitude. Tables for shading coefficients for various window designs

Solar Heat Gain through Windows

Billington, N

Royal Institute of British Architects Journal, 54 (1947) Jan p 177

Presents theoretical analysis of the heating effect of sunshine, and describes research program carried out by Purdue University

Estimating Sun Heat Through Glass Windows and Skylights

Brooks, F

Heating and Ventilating, 33 (1936) Sept p 58 a

Presents data sheet cutlining estimating method and gives formula for its application

Solvärme genom fönster

Brown, G.

VVS, (1966), No 2

11 pages 3 tables 14 pictures 4 ref.

Diagrams for determining solar position direct and sky radiation striking vertical surfaces and transmitted through windows, all during clear weather conditions.

Solskydd

Brown, G. and Isfält, E.

VVS, (1965), No 6

11 pages 2 tables 8 pictures 15 ref.

Spectral distribution of solar radiation of transmission through different kinds of glass, shading coefficints for different combinations of glass and shading devices.

Influence of radiation loads on the choice of skylights in industrial buildings.

Bukhvostova, L.

Geliotekhnika 8 (1972), No 5, p. 46

3 pages 1 table 3 pictures 3 ref.

The paper recommends the construction of skylights on the basis of the thermal effects of insolation. The paper also outlines the results of calculations for thermal input in buildings with different types of skylights. On the basis of comparison of the calculated thermal influx to the buildings the paper illustrates the efficiency of building individual skylights.

Heat Transfer through Single and Double Glazing

Carr, M et al

American Society of Heating and Ventilating Engineers, Transactions, 44 (1938) p 471, 485

28 pages

Presents results of study on relationship of windows and their appurtenances to indoor atmospheric environment

Radiation in transparent solids and the thermal trap effect

Cobble

Eng Exp Station, New Mexico State Univ, TR 16 (1963)

Solar radiant gains through directional glass exposure

Cramer, R and Neubaur, L

Heat,Pip, Air Cond, 30 (1958) Nov p 155

8 pages

Results are reported from tests conducted with an 8-ft cubicle having one side constructed of glass. The cubicle was oriented in various directions with reference to the sun, and the solar radiant gains caused changes in the air temperature in the cubicle. Measurements of the temperature were made and were plotted in graphical form

Calculation of heat transfer by convection and long-wave thermal radiation from a window with screen-type sunshield

Ershov, A. et al.

Geliotekhnika, 7 (1971), No 2, p 56

8 pages 1 picture 2 ref.

Transmission of Solar Radiation through Heat-Absorbing Glass

Estey, R and Miller, R

Illuminating Engineering Society, Transactions, 30 (1935) p 403

14 pages

Describes test methods and results on typical heat-absorbing glass; laboratory methods are suggested which yield results approximating average solar values

Theoretical analysis of solar heat gain through insulating glass with inside shading

Farber, E. et al.

ASHRAE Journal (1963)

12 pages

This paper gives the correlation between two methods of determining the absorptance of the slat surface for the solar spectrum.

Die Erwärmung von Räumen infolge Sonneneinstrahlung durch Fenster

Gertis, K

Veröffentlichungen aus dem Institut für Technische Physik, Stuttgart, Heft 65 (1970)

35 pages 7 tables 42 pictures 67 ref.

Solar radiation through windows. Analysis of the effect on spaceheating, building orientation, size and type of windows, building structure, ventilation and air conditioning

Theoretical Calculation of the Total Heat Entering Through a Window with a Shading System

Gul´karov, E.

Geliotekhnika, 6 (1970), No 4, p 50

7 pages - 1 picture 6 ref.

Radiative heat transfer in a window fitted with an external honeycomb sunshade

Gul'karov, E.

Geliotekhnika, 9 (1973), No 6, p 43

6 pages 2 tables 1 ref.

The honeycomb sunshade and its effect on buildings is analysed.

Practical method of calculation of daylight illumination for premises with sun control devices

Gusev, N

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 205

6 pages 2 tables 4 pictures

Solar factors of windows and shades

Gyula, S.

Epületgepészet, 20 (1971), Feb., p 9 (In Hungarian)

5 pages 8 tables 4 pictures 6 ref.

The solar factor for determining the solar energy transmission characteristics of windows not only indicates the effectiveness of a shading structure but an inherent part of design calculations.

Studies of Solar Radiation through Bare and Shaded Windows

Houghten, F et al

Heating, Piping and Air Conditioning, 6 (1934) Febr p 67

8 pages

Reports results of studies made at Research Laboratory of American Society of Heating and Ventilating Engineers on the sources of heat gain through windows

Heat Gain Through Glass Blocks by Solar Radiation and Transmittance

Houghten, F et al

Heating, piping and Air Conditioning, 12 (1940) April p 264

7 pages

Report on study made at Research Laboratory of American Society of Heating and Ventilating Engineers; contains description of test methods and graphical presentation of test results

Calculation of incident low temperature radiation upon building surfaces

Holden, T

ASHRAE Journal (1961) April

Solar irradiation of walls and windows

Hutchinson, F.

Heating, Piping and Air Conditioning, (1951), No 5, p 106

3 pages

Avskärmning för solstrålningen genom lanterniner

Hägeryd, A.

Byggmästaren, 30 (1950), No 16, p 334

3 pages

Optiska och termiska egenskaper hos fönster och solskydd

Isfält, E

Tekniska meddelanden, Stockholm, 2 (1974), No 1

126 pages 10 tables 70 pictures 51 ref.

Optical and Thermal Properties of Windows and Solar Shading Devices.

On the Physical and Psycho-Physiological Meaning of Windows for the Environment in Interiors

Krochmann, J.

ISES Conference in Paris, July (1973)

6 pages 1 table 16 ref.

Method for determining daily total heat from direct solar radiation entering structure

Kuvshinov, Y . and Malyavina, E.

Geliotekhnika, 9 (1973), No 4, p 66

5 pages 3 pictures 3 ref.

The direct solar radiation through vertical transparent outside enclosures forms a considerable proportion of the total heat absorbed by a structure. The solution of many problems involves the need to determine the daily total heat transmitted by solar radiation to a structure through the endosing forms. The authors propose a method for determining the daily heat intake through the vertical transparent elements owing to direct solar radiation.

Solavskärmning

Lindberg, L. et al

KBS rapport, Stockholm, (1974), May, No 111

44 pages

A practical guide for choice of sun shading device.

BRS daylight protractors

Longmore, J.

HMSO, (1968) and (1969) BRS, England

10 protractors. Interior daylighting with glazed and unglazed windows of different inclinations, and uniform and overcast skies

Window design criteria to avoid overheating by excessive solar heat gains

Loudon, A

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 95

8 pages 9 pictures 7 ref

Window design criteria to avoid overheating by excessive solar heat gains

Loudon, A.

Proc. CIE Conf. on sunlight in buildings, Rotterdam, (1967) (BRS Current Paper CP 4/68)

General rewiew. Charts for peak temperatures as a function of window size for offices with unshaded windows in multistored blocks.

Cooling loads from sunlit glass and wall

Mackey, C. et al.

Heating, Piping and Air Conditioning, (1954), No 8, p 123

6 pages - - -

Glass and solar energy

Markus, T

Glass Age (1959) May p 23

7 pages

Effect of inner surface air velocity and temperature upon heat gain and loss through glass fenestrations

McDuffie, D. and Pennington, C.

ASHRAE Trans 76 (PT 2) (1970), p 190

25 pages

Absorption and transmission of thermal radiation by single and double glazed windows

Mitalas, G. and Stephenson, D.

Research Council of Canada, Ottawa, (1962)

Solar control and shading devices

Olgyay, A. and V.

Princeton, (1957)

Solar heat gains through slat-type between-glass shading devices

Ozisik, N. and Schutrum, L.

The American Society of Heating, Refrigerating & Air-Conditioning Engineers, Cleveland, Ohio, (1960)

8 pages

Instantaneous heat gain through slat-type between-glass shading devices is predicted with engineering accuracy from the incident solar radiation, the outdoor air temperature, and the K and U values reported in the paper.

The transmission of solar radiation through flat glass under summer conditions

Parmelee, G.

Heating, Piping and Air Conditioning, (1945), Oct-Nov

Solar and Total Heat Gain through Double Flat Glass

Parmelee, G and Aubele, W

Heating, Piping and Air Conditioning, 20 (1948) June p 116

11 pages

Presents report on tests, carried out at Research Laboratory of American Society of Heating and Ventilating Engineers, to determine solar transmittance of various combinations of flat glass unshaded and spaced 1/4 inch apart

Measurement of solar heat transmission through flat glass

Parmelee,G et al

Heating Piping & Air Conditioning, (1948), Jan., p 158

9 pages

Presents report on experimental measurement of solar heat transmission by window glass and glass block, made at Research Laboratory of American Society of Heating and Ventilating Engineers; influence of type of glass, angle of incidence, solar energy distribution and temperature

Solar Energy Transmittance of Eight-Inch Hollow Glass Block

Parmelee, G and Aubele,W

Heating, Piping and Air Conditioning, 21 (1949) Sept p 111, 119

10 pages

Contains data from tests made at Research Laboratory of American Society of Heating and Ventilating Engineers on solar energy transmitting characteristics of five patterns of eight-inch hollow glass blocks; data on heat conduction through the panel under steady-state natural weather conditions are given

Heat flow through unshaded glass. Design data for use in load calculations

Parmelee, G et al

Heating Piping and Air Conditioning, 22 (1958) No 6, p 123

10 pages

Control of solar heat gain through building fenestration

Pennington, C

ASME Winter Annual Meeting (1969)

This paper explores the various methods in common use for reducing solar heat gains through glass fenestrations, outlines their relative advantages and disadvantages, and makes some analysis of cost versus effectiveness between the different methods. The four principal methods are outdoor shading, use of heat absorbing or reflective glass, between glass shading, and indoor shading. These methods may be used singly, or in combination, each in a variety of ways

Solar heat gains through 3/8- in. and 1/2-in. grey plate glass with indoor shading

Pennington, C.

Univ. of Florida, Gainesville

ASHRAE Trans 75 (1969), Paper 2111, p 44

Experimental analysis of solar heat gain through insulating glass with indoor shading

Pennington, C. et al

ASHRAE-Journal, 6 (1964), No 2, p 27

13 pages 4 tables 25 pictures 6 ref.

A previous paper gives a mathematical analysis of the solar heat gain through a double-glass barrier with indoor shading.

Solinfald genem vinduer

Petersen, E

DTH Laboratoriet för värmeisolering, Meddelande 13, (Akademisk Förlag) Köbenhavn (1966)

Solar transmission through windows

Transmission characteristics of window glasses and sun controls

Petherbridge, P

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 183

16 pages 9 pictures 13 ref

Special glasses and mountings for the utilization of solar energy

Peyches, I

UN Conf on New Sources of Energy, Rome (1961)

15 pages

For the radiation traps utilizing the hothouse effect, the author calls attention to the sharpe of the absorption edge, usually located near wavelength 2.5 microns

Fönstrets värmebalans

Pleijel, G

Byggmästaren (1959) No 1

Heat balance of windows

Fönsterglasens transmission av strålning från sol och himmel

Pleijel, G

VVS (1961) No 3

Transmission of sun and sky radiation through windows

Solskydd - skyddsåtgärder mot solinstrålning

Pleijel, G

VVS (1961) No 10

Sun shading

Solinstrålning genom fönster i norra, mellersta och södra Sverige

Pleijel, G

SIB (1963) Rapport 94, Stockholm

Preventing the intrusion of unwelcome sunshine by means of using glass of variable transmission

Reusch, G

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 199

6 pages 15 pictures

Some performance characteristics of selective transparent insulation

Sheklein, A. and Rekant, N.

Geliotekhnika, 7 (1971), No 3, p 41

7 pages 2 tables 5 pictures 8 ref.

Net radiation method for enclosure systems involving partially transparent walls.

Siegel R.

NASA Lewis research center, Cleveland, Ohio (1973).

33 pages

Equations for Solar Heat Gain Through Windows

Stephenson, D

Solar Energy, 9 (1965) No 2, p 81

6 pages 1 table 6 pictures 6 ref

This analysis of solar-radiation records obtained at Scarborough, Ontario, indicates that the insolation in Canada can be significantly greater than the values given by Moon's standard solar-radiation curves. Simple expressions relate the time, date, latitude, buildings orientation, and the type of window glass and shading with the solar heat gain through windows

Sun-Exposed Glass Walls Provide Test For Solar Heating

Taylor, W

Glass Industry, 24 (1943) Sept p 384

2 pages

Report on study made by Illinois Institute of Technology on design of buildings using large areas of glass; results of tests in house

Determination of the thermal stability of an apartment with allowance for the solar radiation entering through windows

Turilov, V.

Geliotekhnika, 7 (1971), No 6, p 44

4 pages 1 table 2 ref.

Solar heat gain factors and shading coefficients

Vild, D.

ASHRAE Journal, (1964), Oct

Solar heat gain through unshaded glass

Waters, J and Richardson, D

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 167

14 pages 3 tables 8 pictures 3 ref

Measurement of the heat flux through an insulated glass plate

Yankelev, L. and Gulabyants, L.

Geliotekhnika, 7 (1971), No 6, p 53

5 pages 1 table 2 pictures

Calculation of solar heat gain through single glass

Yellott, J

Solar Energy, 7 (1963) No 4, p 167

9 pages 3 tables 7 pictures 4 ref

The spectral transmittances of three kinds of clear plate, two heat-absorbing glasses, and two glasses to which selective-reflectance surface coatings have been applied are shown

New Developments in Architectural Glass

Yellott, J.

ISES Conference in Paris, (1973)

10 pages 1 table - 13 ref.

Summary of new developments in architectural glass. A procedure for working quantitative estimates of solar heat gains through windows.

7.1.2

TAK OCH YTTERVÄGGAR som solfångare

Der Einfluss von Sonnenwärme auf Gebäude

Ges. Ing. (1940), p 529 (In German)

Results of measurements on walls and roofs.

System med värmelagring av solenergi i byggstomme

Byggnadstidningen, (1974), No 18, p 13

3 pictures

System with thermal storage in the building structure.

Predicting steady-periodic variations of building temperature

Albright D, Scott R

Univ of Ky, Lexington Pad 73-408 (1973)

28 pages

Predicts temperature of a ventilated structure subjected to daily variations of outside air temperature and solar heating

Spectral absorption of solar radiation by concrete with silicate and cement coatings

Babaev, Ch.

Geliotekhnika, 9 (1973), No 6, p 35

3 pages 3 tables 4 ref.

The spectral absorption coefficient for solar radiation of concrete coated with cement and silicate materials is investigated.

Heat and mass exchange studies under joint convection on vertical walls heated by solar radiation

Bairiev, A. et al.

Geliotekhnika 8 (1972), No 5, p. 49

7 pages 2 pictures 3 ref.

The paper examines the problem of heat and mass exchange under joint convection on vertical walls, which is of considerable theoretical and practical significance.

Investigation of the absorption of solar radiation by various building materials

Baum, V. and Babaev, Ch.

Geliotekhnika, 2 (1966), No 3, p 54

8 pages 1 table 3 pictures 9 ref.

Effect of optical characteristics of wall surfaces on the passage of solar heat

Baum, V. and Babaev, Ch.

Geliotekhnika, 2 (1966), No 5, p 49

6 pages 2 tables 2 pictures 10 ref.

Atmospheric radiation near the surface of the ground: A summary for engineers

Bliss, R.

Solar Energy, 5 (1961) p 103

18 pages 2 tables 20 pictures 21 ref.

A procedure for estimating the instensity of atmospheric radiation upon horizontal surfaces gives in detail. Results of the calculations for typical atmospheric condition.

Determination of the total radiation incident on a vertical surface facing south.

Brooks, E

Solar Energy proj. Interval Rep. H 6 MIT 1946

Heat storage in walls

Børresen, B

The Building Service Eng. (1973)

2 pages 4 tables 2 ref

The optimum thickness for a wall in the case of storing energy in floors, walls and ceilings.

Température d'un toit - et de façon générale d'un mur - sous l'effet du rayonnements solaire. Son calcul à l'ordinateur

Camia, F

Coopération Méditerranéenne pour l'énergie solaire, Bull (1968) No 15
In French

Different aspects of solar radiation incident on a solar still or of a wall, such as the temperature, the heat flux and more difficult and complex problems. The main difficulty is how to write programs which the computer can handle easily

Sur le Choix des Materiaux pour la Conduction et le Stockage de la Chaleur en Heliotechnique

Camia, F.

ISES Conference in Paris, (1973)

9 pages - - 6 ref.

Expressions modelling for composite walls the transient conduction problem resulting from an external periodic perturbation.

Heliotechnique et series de Fourier

Camia, F. and Gilbert, M.

COMPLES Revue Int. d'Heliotechnique, (1973)

7 pages 3 tables 4 ref.

A method for solving the periodic heat transfer problems in relation to walls. Numerical results.

The radiation balance of the vertical surfaces of a building

Cicenko, G.

National Lending Library for Science and Technology, Boston Spa, England. Transl. into English from Tr. Gl. Geofiz. Observ. (Leningrad) No: 207 (1967) p. 94.

11 pages

Solar radiation on walls facing east and west

Cunniff, C.

Air Cond. Heat. Vent. 55 (1958), Oct., p 82

7 pages

A report and analysis of four years of solar radiation measurements at Blue Hill Observatory from September 1952 to August 1956. Average hourly, daily, and monthly values are given for radiation received on a vertical surface facing east and west and on horizontal and east and west vertical surfaces with sky covers of 0 to 3/10,4 to 7/10, and 8 to 9/10, and with an overcast sky of low clouds and of middle clouds.

Solar radiation on walls facing north and south

Cunniff, C

Air Cond Heat Vent, 56 (1959) No 8, p 64

4 pages

Détermination des rayonnement solaires recus sur une facad

Dourgnon, J.

Techniques et Architecture, 7 (1947) p 207 (In French)

3 pages

The thermal effect of solar radiation on a wall.

The Evaluation of Surface Variations in Solar Radiation Income

Garnier, B and Ohmura, A

Solar Energy, 13 (1979) No 1, p 21

14 pages 1 table 6 pictures 9 ref

Formulae have been developed, using fundamental Earth/Sun relationships and the radiation observations normally made on well-exposed horizontal surfaces, whereby to evaluate the flux of global radiation on surfaces of any gradient or azimuth

Reduction of Solar Heat in Industrial Buildings

Gupta, B. and Chaud, S.

ISES Conference in Paris, July, (1973)

8 pages - 5 pictures 5 ref.

Continous roofsprings for cooling industrial buildings (India).

New roofs for hot dry regions

Hay, H.

Ekistice, (1971), No 183, p 158

Describes Hay's ideas for roof pond as method of heating and cooling.

Effective solar absorption of various colored paints

Hellman, H. and Ortmiller, R.

Heating, Piping & Air Conditioning, 22 (1950), No 6, p 119

4 pages

Solar Irradiation of Walls and Windows South-Facing; October-April

Hutchinson, F

Heating, Piping and Air Conditioning, 21 (1949) July p 102

3 pages

Presents in tabular form solar angles, incidence angles, and irradiation rates as functions of time of day, month of year, latitude of structure and orientation of the wall or window

Heat gain through walls and roofs as affected by solar radiation

Houghten, F. et al.

Heating, Piping & Air Conditioning, (1942), May, p 306

8 pages

Metod för beräkning av extrema yttemperaturer hos isolerade ytterkonstruktioner

Höglund, I.

Byggforskningen, rapport R 6, (1973) Stockholm

56 pages 24 pictures 1 ref.

Method for calulation of extreme surface temperatures on insulated walls or roofs. Results of measurements.

Optimales Speichervermögen von Wänden

Knabe, G.

Luft und Kältetechnik, 7 (1971) No 2

1 page 1 table 17 pictures 2 ref.

Optimization of thermal wall constructions with a periodic varying temperature.

The interpretation of solar radiation measurements for building problems

Loudon, A.

Building Research Station, current paper, (1967), No 73

A method for computing intensities on building faces from measurements on the horizontal.

Theoretical analysis of transient solar heating through a composite barrier

Lumsdaine, F.

ASHRAE Trans 76 (PT 2) (1970), p 164

13 pages

Estimating Heat Flow through Walls

Mackey, C and Wright, L

Heating and Ventilating, 37 (1940) March p 43, April p 29, May p 23, 38 (1941) May p 28, June p 32

21 pages

Presents rational method of determining cooling load as affected by solar radiation on building surfaces; method is applied to roofs and walls

Effectiveness of Different Methods of Protecting Roof Covers from Overheating in Central Asia

Marakaev, R. and Mezhevnikov, B.

Geliotekhnika, 6 (1970), No 2, p 67

9 pages 2 tables 1 picture 7 ref.

Effect of the Roof Cover of Industrial Buildings on Their Microclimate in Central Asia

Marakaev, R.

Geliotekhnika, 6 (1970), No 4, p 69

9 pages 3 tables 4 pictures 12 ref.

Practical method of calculating the heat flow through the roofs of industrial buildings in hot weather

Marakaev, R. et al.

Geliotekhnika, 7 (1971), No 3, p 55

9 pages 4 tables 9 ref.

Laboratory measurements of the thermal properties of walls and partitions during summertime overheating

Marakaev, R. et al.

Geliotekhnika, 7 (1971), No 6, p 58

4 pages

Economic efficiency of sun shielding devices for industrial construction roofing

Marakaev, R.

Geliotekhnika 8 (1972), No. 3, p. 84

4 pages 1 table - 3 ref.

Utilization de l'energie solaire

Michel, J.

L'architecture d'aujourd'hui, (1973), No 167

Space heating of residences with solar energy. Description of solar heated houses in Odeillo, France. Heat capturing device in vertical walls. For a greenhouse a second layer of glass led to maximum retention.

Development and use of solar insolation data for south facing surfaces in northern latitudes

Morrison, C. and Farber, E

ASHRAE Meeting, Montreal, (1974), June, No 825

A method for engineering and economic estimates for the facades of buildings designed with air conditioning

Peker, D.

Geliotekhnika 8 (1972), No 1, p. 61

10 pages 4 tables - 4 ref.

This paper is devoted to the elaboration of methods for engineering and economic calculations of facades of buildings with air-conditioning. Expenditures entailed in the construction of enclosures and air-conditioning are taken into account. Data outlined in this article can be unsed by solar engineers and researchers for estimating engineering and economic efficiency of solar-plants for heating and cooling.

Solar load analysis by use of Ortographic projections and spherical trigonometry

Penrod, E.

Solar-Energy, 8 (1964) p 127

7 pages 11 pictures 7 ref.

A procedure for determing solar loads on roofs and southfacing walls is presented.

Limiting the temperatures in naturally ventilated buildings in warm climates

Petherbridge, P

Building Research Establishment, Department of the Environment (1974) Feb

22 pages 10 tables 2 pictures

Formulae used in cooling loads calculation are used to demonstrate the influence of some building parameters, such as *U-value* solar absorptivity and thermal storage, on the indoor thermal environment

Electric analogue prediction of periodic heat flow in buildings

Rao, K.

Ph.D. Thesis, Univ. of Roorkee (1964)

Heat Flow Through Sunlit Walls of One Material

Sibley, J

Heating and Ventilating, 37 (1940) June p 58 a

2 pages

Presents table which can be applied for finding amount of heat flowing through certain simple walls of one material at variou hours of the day

Die Berechnung der Sonnen wärmeinstrahlung auf senkrechte und geneigte Flächen under Berücksichtigung meteorologischer Messungen

Tonne, F. and Wilhelm, N.

Zeitschrift für Meteorologie, 14 (1960), Heft 7-9

Study on the heating of houses by the utilization of solar energy

Trombe, F

Chauff Vent Condit, 43 (1967) p 47

12 pages 2 tables 14 pictures

Theoretical solar energy gains on the various surfaces of a building over the year. Comparising these results with actual gains measured. A new solar collecting medium. The principle of collecting energy on a south wall. Buildings with selective walls, and energy accumulation. Describes a prototype house, indicating its feasibility as a practical project

7.1.3
LAGRING i byggnadsstomme

System med värmelagring av solenergi i byggstomme

Byggnadstidningen, (1974), No 18, p 13

3 pictures

System with thermal storage in the building structure.

Simulation and optimization of solar collection and storage for house heating

Buchberg, H. and Roulet, R.

Solar Energy, 12 (1968) p 31

20 pages 4 tables 2 ref.

Optimization of a combined solar collection and storage system regarding economy. The hourly performance over a season is considered.

Heat storage in walls

Børresen, B.

The Building Services Engineer (1973)

2 pages 4 tables 2 ref.

Investigates "optimum thickness" for a wall in the case of storing heat in floors, walls and ceilings. Illustrates well-insulated wall with a heat accumulating slice on the inside and provides formula for determining optimum thickness of heat accumulating slice determined from frequency analytic point of view.

Solar heating of houses by vertical south wall storage panels

Dietz, A. and Czapek, E.

Heating, Piping & Air conditioning, 22 (1950), No 3, p 118

8 pages

Reports from experiments done in Cambridge, Mass.

Etude du rayonnement solaire, comme appoint au chauffage des bâtiments habités

Dumortier, J.

Flamme et Thermique, 10 (1957) No 108, 109

A study of the intensity of solar radiation as a factor in the amount of energy needed to heat or cool a house.

Calculation of building thermal response

Hill, J.

Proc. Solar heating and cooling for ubildigns workshop, Washingotn, D.C., (1973), March

Wärmespeicherung bei endlicher Wärmeleitung der Wände

Güttler, G.

Gesundh.-Ing. 94 (1973) No. 11, p. 329

7 pages 2 tables 8 pictures

Practical method for accurate calculation of heat storage in walls. Frequency curves of attenuation and phase displacement. Practical examples.

Sparhus för solenergi

Isfält, E and Södergren, D

VVS, 45 (1974), No 4

3 pages 5 pictures 3 ref.

A system for storing heat from day to night in the building construction (hollowed concrete slabs) is discribed. The solar heat is collected behind a glass covering the facade and transported by circulating air into the heavy slabs.

Optimales Speichervermögen von Wänden

Knabe, G.

Luft und Kältetechnik, 7 (1971), No 2

1 page 1 table 17 pictures 2 ref.

Optimization of thermal wall constructions with a periodic varying temperature.

Temperature curve and heat storage with under floor electrical storage heating

Kollman, A.

Gesundh-ing, 91 (1970), No 11

7 pages 6 pictures 16 ref.

Describes working and provides equations for under floor electrical storage heating. An actual example. Experimental heat transfer coefficients for ten different floors.

Influence of azimuthal orientation on collectible energy in vertical solar collector building walls

Lorsch, H.

NSF/RANN/SE/G 127976/TR 72/18. Univ. of Pennsylvania, (1972)

Die Berücksichtigung von Wärmespeichervorgängen in den VDI-Kühllastregeln

Masuch, J.

HLH 21, (1970), No 12

11 pages

Discussion of heat storage effects in combination with VDI rules for calculating cooling loads. Heat storage in rooms due to solar radiation.

Concerving energy with heat storage wells

Meyer, C. . and Todd, D.

Envir.Sci. Tch. 7 (1973), NO 6, p 512

5 pages

Preliminary analysis indicates that special water wells underground can store useful heat with more than 75% recoverable after 90 days. Economics.

Etude sur le chauffage des habitations par utilisation du rayonnement solaire

Trombe, F. et al

Revue generale de thermique, 6 (1965), No 48

Report on and description of construction and operation of the CNRS/Trombe solar wall heated houses in the Pyrenees. Good graphic presentation of theoretical analysis of insolation values at different latitudes on a range of orientations, etc.

7.1.4
ÖVRIGT

Wärmetechnische Untersuchungen des Buildings Research Station zu Garston

Schw. Blätter für Heizung und Lüftung 10 (1943), p 24

4 pages 1 table 1 picture

Building climatology

World Meteorological Organization

Technical note No 109, (1970), WMO-No 255 Tp 142

260 pages

30 papers on different subjects, e.g. solar irradiation

GSA unveils two model designs to conserve energy in buildings

Engineering news-record, 191 (1973), No 21, p 12

2 pages

Utilization of solar energy

Some investigations on the sol- air temperature concept

Ballantyne, E. and Rao, K.

Aust. Commonw Sci Ind Res Organ. Div Eldg Res. Tech Pap 27 (1970)

25 pages

The bactericidal significance of solar radiation penetrating a room

Belikova, V.

Office of Technical Services, U.S. Dept of Commerce (1958)
JPRS: L-547-N

9 pages

From the point of view of hygiene, great interest attaches to the problem of the bactericidal effectiveness of solar radiation penetrating into a room and to its role in the general bacterial decontamination of the air.

Comment on "a convenient graphical method of evaluating field of view obstructions for cosine response detectors"

Bibby, J.

Solar Energy, 15 (1973), No 2, p 189

Measurements of the absoptivity for solar radiation of several engineering materials

Birkebak, R. and Hartnett, J.

Trans. Am. Soc. Mech. Eng., 80 (1958), p 373

1 page

On the determination of optimal thermal enclosures

Buchberg, H et al

Int J Biomet, 8 (1964) No 2, p 103

Thermal comfort in a solar-heated school

Davies, M.

Steam. Heat. Engr., 42 (1973), Jan., p 44

4 pages

Internal temperatures achieved in relation to outdoor temperature and solar radiation at Wallasey. Internal temperature is maintained without conventional heating plant, but is provided by the occupants, solar radiation and lighting. Describes solar wall and examines statistical connections between meteorological and environmental variables in building.

A simple portable system for measuring the emissive power of solids at room temperature

Demidov, S. et. al.

Geliotekhnika, 7 (1971), No 6, p 36

8 pages 3 tables 2 pictures 4 ref.

Informe sobre mediciones solarimétricas

Dormont, H

Centro Universitario Zone Norte, Universidad de Chile (1958) p 90

5 pages

A study of the solar heat absorbed by various colours

Hanif, M.

Engineering News, Lahore, (1971)

Bostad och sol (dwelling and sun).

Holm, L. et al

Byggforskningen, rapport 100 (1964) Stockholm

76 pages 61 pictures 8 ref.

Investigations on the influence of the access to sunshine on the hygiene of the air, the climate indoors and the well-being at home.

The psycophysics of sunlighting

Hopkinson, R

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 13

7 pages 5 ref

Surface heating by solar radiation

Honskus, J.

Zpravodaj Vzlu (1969) No. 2, p. 15-21.

7 pages 7 ref.

Al alloy sheets with multicolor protective coatings, measuring surface temperature under solar radiation.

The Role of Scattering in Determining the Radiative Properties of Surfaces

Hottel, C, et al.

Geliotekhnika, 4 (1968), No 6, p 57

7 pages 1 table 2 pictures 15 ref.

Vom Einfluss der Sonne auf die Erwärmung der Räume

Hottinger, M

Gesundheits Ingenieur, 58 (1935) Dec p 779

6 pages

Presents results of experimental study made at Zürich Institute of Technology, Switzerland, to determine heating effect of solar radiation in clear and partly cloudy weather; brief description of test houses used

Mathematical model of a house and solar-gas absorption cooling and heating system

Lauck, F. et al

ASHRAE Journal, 7 (1965), No 7, p 52

4 pages 2 tables 9 ref.

Full-field camera techniques in sunlight studies

Longmore, J

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 231

10 pages 9 pictures 17 ref

Summertime temperatures in buildings

Loudon, A.

B.R.S. Current paper 47/68 (1968)

Sunlights and its effect on human behaviour and performance

Morgan, C

Sunlight in Buildings., Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 21

6 pages 2 pictures

On ensuring adequate microclimate in premises under hot climate conditions

Marakaev, R. et al.

Geliotekhnika 8 (1972), No 6, p.

13 pages 7 pictures 13 ref.

The paper examines climatic conditions and microclimate norms for premises from the point of view of ensuring and predicting thermal comfort under increased insulation in the southern regions of the country.

Biochlimatic orientation method buildings

Olgyay, V

Int. J. Biometeor., 11 (1967), p 163

12 pages

Verres et montages speciaux pour l'utilisation de l'energie solaire

Peyches, I

UN Conf on New Sources of Energy, Rome (1961)

Lumidue architecture

Rattier, G.

COMPLES, Bulletin No. 22, March (1972)

7 pages 11 pictures

Les Vitrages Reflechissants, Elements d'Esthetique et de Comfort dans l'Habitat

Rourier, A.

ISES Conference in Paris, (1973)

10 pages 4 pictures 2 ref.

Contribution of the reflective glass for the aesthetics of the facade and for the visual psychologic and thermal comfort of the inhabitants.

Study of the solar radiation recieved by school buildings

Shapovalova, T.

Geliotekhnika, 1 (1965), No 2, p 48

4 pages 2 pictures 5 ref.

Estimation of the natural ultraviolet irradiation of buildings

Sukhanov, I. and Safaev, A.

Geliotekhnika, 7 (1971), No 3, p 64

6 pages 2 pictures 12 ref.

Solstrålningens inverkan på rumsklimatet

Tenelius, F.

Byggmästaren, (1960), No 3

7.2
BYGGNADSUTFORMNING

Living with the sun, volume 1: Sixty plans selected from the entries in the 1957 International Architectural Competition to Design a Solar-Heated Residence

Association for Applied Solar Energy, Phoenix, Ariz (1958)

The architect´s original drawings for 60 of the solar house plans entered in the 1957. Perspective, floor plan, plot plan and elevations are shown for each entry, accompained by brief notes on unusual or interesting features, based on the architect´s own descriptive material and the comments of the judges

The study of heat gains and the natural lighting of buildings. Part 1 - Solar radiation.

Centre Scientifique et Technique de la Construction, Brussels (1969).

112 pages

Solar radiation and insolation data for Belgium, for computing heat transfer and illumination of buildings.

Urbanisme et architecture solaires

Alexandroff, G

Coopération Méditerranéennepour l´énergie solaire, Bull (1967) No 13
In French

Discusses the architecture best suited to capture, efficiently and economically, solar energy

Building Design and Solar Energy

Ballantyne, E.

Building Internat 6 (1973) p 471

24 pages 16 tables 17 ref.

Solar tables and clear-sky irradiance on surfaces for various orientations throughout the year, various latitudes. Analyses indoor temperatures for different houses using actual climatic data. Possible savings in energy by design changes of buildings

Solar Design

Baumer, H

Ohio State University. Engineering Experiment Station News, 19 (1947) June p 38

3 pages

Presents two graphical metohod for depicting and suggesting the sun to aid architect in design of houses; one method uses a north point indication as a representation of the projection of the sun and shows, for the latitude in question, the path of the sun at the summer solstice, winter solstice, and the equinoxes; the second method is a solar calendar showing the monthly movement of the earth around the sun

Analysis of conference proceedings in relation to architectural design criteria

Burberry, P

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 377

7 pages 4 pictures

Architectural Planning and Design Analysis of Energy Conversion in Housing through Thermal Energy Storage and Solar Heating

Cox, J.

NSF/RANN/SE/G127976/TR72/2, University of Pennsylvania (1972)

Solar Energy Applications in Architecture

Curtis, E.

I.S.E.S. (UK) London (1974) April

10 pages

Solar houses at Richmansworth. Solar heater, Mellom House, Blyth. Solar heated swimming pool, Westerham.

Soleil et Architecture

Dabat, R. and Perriu, R.

ISES Conference in Paris, July, (1973)

7 pages 5 ref.

Conceptions based on work from a research group trying to take in account all the natural elements of the environment influencing a building.

Architecture and the Sun

Danz, E.

London (1967)

Energy Conservation Through Building Design and a Wiser use of Electricity

Dubin, F.

Conf. of the American Public Power Association, San Francisco, Calif. (1972) June

18 pages

Energy can be saved by reducing the environmental requirements, refining design calculations and regulation and by utilizing building materials which require little energy for their production

Designing houses for energy conservation

Elmroth, A. and Höglund, I.

Building Res. and Practice (1974), March/April

8 pages 3 tables 8 pictures 4 ref.

Some effects and use of solar radiation is described.

Habitation Economique Utilisant le Flux de Chaleur Resultant de l'Absorption du Rayonnement Solaire

Ixard, J.. and Long, J.

ISES Conference in Paris, (1973)

8 pages 6 pictures 5 ref.

Adoptation of a conventional dwelling to the natural climatological conditions.

Solar heating systems analysis

Lorsch, H.

Report No. NSF/RANN/SE/G 127976/TR 72/19. Univ. of Pennsylvania Conf. (1972) Nov.

32 pages 5 tables 8 pictures 5 ref.

Design of a Cover for an Industrial Building in Hot Climate

Marakaev, R.

Geliotekhnika, 6 (1970), No 1, p 76

6 pages **2 pictures** **6 ref.**

The significance of sunshine and a view for office workers

Markus, T

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 59

36 pages 26 tables 17 pictures 9 ref

Ekologiskt byggande och alternativ teknologi

Nordenström, H.

Byggforum, (1974), No 7-8, p 9

3 pages **8 pictures**

Alternative technology for buildings. Utilization of solar energy.

Ekologiskt byggande I

Nordenström, H.

LTH - A - HUFO, LUND, (1974)

Buildings in balance with the environment. Utilization of solar energy. Heat storage. Many illustrations and references.

Solar energy and architecture

Page, J.

Discourse at the Royal Inst. London, (1974), 16th May

8 tables 12 ref.

Divert use of solar energy for low grade themal purpose in buildings: heating and cooling supply of hot water and the drying of clothes. Solar energy availability. The radiative properties of building materials. Dynamic waves of heat energy in building materials as a solar energy storage process, from selected examples of solar architecture.

Shape and surface factors affecting radiant energy steady state

Shaffer, L and Speyer, E.

Solar Energy, 3 (1959) No 1 p 40

4 pages 1 table 5 ref.

An analysis of the steady state temperaturer reached by different bodies exposed to sunshine.

Architecture and Energy

Stein, R

The Architectural Forum (1973) July-August

21 pages

Review of building system design

Study of the diffuse illumination of vertical surfaces in Tashkent in connection with building design problems

Sukhanov, I. et al.

Geliotekhnika, 2 (1966), No 5, p 66

3 pages 2 pictures 6 ref.

Solar house plans

Thomason H

Edmund Scientific Co., Barrington, N. J., (1972)

Architectural and town planning aspects of domestic solar water heaters

Tran, J.

Architectural Science Review, 16 (1973), No 1, p 89

16 pages

Results from project financed by the Israel Ministry of Housing. Suggests possible architectural integration of solar water heaters (diagrams).

7.2.1
ORIENTERING

The heliodon: Sunshine in the cellar

Progr. Archit., 48 (1967), Sep., p 152

2 pages 4 pictures

The heliodon is a unique testing room in the form of a hemisphere which is used to study the effects of sunlight. The room is small in diameter and dome lighting can simulate the solar effects. Its primary purpose is to test architectural models.

Site Analysis for the Application of Total Energy Systems for Housing Development

Achenbach, P. and Ceble, J.

7th Intersoc. Energy Conversion Engineering Conf. Proc.
San Diego (1972)

Determination de l'Ensoleillement d'Un Site

Chanson, D. and Claux, P.

ISES Conference in Paris, (1973)

10 pages 5 pictures

Period of insolation of a site. Multi-storeyed and flat-roofed buildings in a mountain resort conditionned by solar energy using the green-house effect.

The relation between building orientation, daylight illumination of rooms and their heat balance

Dogniaux, R

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 313

11 pages 5 tables 3 pictures 6 ref

Hillside House, Central Valley, N Y, Solves Difficult Problem of Solar Orientation

Hawkins, H M

Architectural Forum, 86 (1947) April p 126

3 pages

Describes method used in design of house in Central Valley, N Y; house is built on steep north slope of hill and large windows were designed to catch the downhill sun

Observations sur lénsoleillement de bâtiments

Leroux, R.

La Construction Moderne, 64 (1948), No 2, p 43

4 pages

House orientation according to best energy supply.

Daily insolation on surfaces tilted towards equator

Liu, B. and Jordan, R.

ASHRAE Journal, 10 (1961), Oct, p 53

Evaluation of Diffuse Solar Irradiation of Vertical Building surfaces

Puskas, J.

ISES Conference in Paris,(1973)

8 pages 4 pictures 2 ref.

Effect of orientation of vertical walls or glazing on intensity of diffuse solar radiation in function of atmospheric turbidity and of the position of the sun.

Shape and surface factors affecting radiant energy steady state

Shaffer, L. and Speyer, E.

Solar Energy, 3 (1959) No 1, p 40

4 pages 1 table 5 ref.

An analysis of the steady state temperature reached by different bodies exposed to sunshine.

Etude sur le chauffage des habitations par utilisation du rayonnement solaire

Trombe, F. et al

Revue générale de thermique, 6 (1965), No 48

Report on and description of construction and operation of the CNRS/Trombe solar wall heated houses in the Pyrenees.

Influence of solar installation orientation on its efficiency

Umarov, G.

Geliotekhnika, 9 (1973), No 3, p 67

5 pages 4 ref.

The efficiency of a solar installation depends on the orientation. This paper shows that the efficiency of a solar installation whose long axis is directed from east to west is higher by 20 % than for an installation whose long axis runs from south to north.

The effect of shape and orientation on the radiation impact on buildings

Valko, P.

CIB/WMO Colloq. on Building Climatology "Teaching the Teachers", Stockholm (1972).

14 pages

7.2.2
BELYSNING (i samband med solstrålning)

Appreciation of sunlight in the home

Bitter, C and van Ierland, J

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 27

10 pages 4 tables 11 pictures 1 ref

Method of Calculating Reflections of Sunlight in a Building

Ershov, A. and Gol'dshtein G.

Geliotekhnika, 6 (1970), No 6, p 48

12 pages 2 tables 4 pictures 7 ref.

Sunlight in relation to buildings for animals and plants

Friend, P

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 373

3 pages 4 pictures

Etude sur l'Ensoleillement d'Habitations

Grandjean , E. et al.

ISES Conference in Paris,(1973)

7 pages 5 tables 4 pictures 2 ref.

Results of sunshine measurements in 335 dwellings. The dwellers were interviewed about their opinion. Recommendations for minimum and desirable sunshine in dwellings.

Byggnadsteknisk ljusekonomi

Kreuger, H.

Statens Kommitté för byggnadsforskning, meddel. nr 18 Sthlm (1950)

113 pages

Sunshine through windows.

Byggnadsteknisk ljusekonomi

Kreuger, H.

Tidskrift för Ljuskultur, 23 (1951) No 1, p 19

7 pages

Quantities of Illuminating Engineering for Daylight

Krochmann, J.

ISES Conference in Paris,(1973)

8 pages 1 table 13 pictures 14 ref.

Data on the extra terrestrial radiation from the sun, and for overcast sky, clear sky and direct sunlight at the earth's surface.

A Technique for Predicting Interreflected Component of Illumination

Mirza, R.H.

ISES Conference in Paris,(1973)

9 pages 4 tables 6 ref.

Digital computer programme for predicting window performance and material illumination within rooms.

Visual Aspects of Sunlight in Buildings

Néeman, E.

ISES Conference in Paris,(1973)

11 pages 3 tables 1 picture 19 ref.

Studies of the effect of the presence of sunlight in dwellings and of the degree of exposure of occupants to the sun.

Calculation of Certain Components of the Light Climate

Nikol'skaya, N.

Geliotekhnika, 3 (1967), No 3, p 42

4 pages 3 pictures 7 ref.

A study of interior illumination due to skylight and reflected sunlight under tropical conditions

Plant, C et al

Sunlight in Buildings, Proc of the CIE Intersessional Conf Newcastle-upon-Tyne (1965) p 303

10 pages 3 tables 9 pictures 1 ref

Daylight investigation. Description of test set-up and results of selected test series

Pleijel, G

Statens Kommitté för Byggnadsforskning, Rapport 17 (1949) Stockholm

Daylight. Summary with references and abstracts

Pleijel, G and Lindqvist, N

Statens Kommitté för Byggnadsforskning, Rapport 10 (1947) Stockholm

67 pages

Approche Methodique des Problemes de l'Ensoleillement dans l'Habitat

Roux, J. and Zoller, J.

ISES Conference in Paris,(1973)

14 pages 1 table 8 pictures 4 ref.

Innovation and Continuity
Planning for Sunlight in Housing. British Experience

Woodford, G.

ISES Conference in Paris,(1973)

4 pages 3 ref.

Review of the History, Present Position and Prospects of Planning for Sunlight in the British Residential Environment.

Review of the history,present position and prospects of planning for sunlight in the British residential enviroment.

7.2 3
SOLHUS i drift

Expect Full Report Soon on MIT's Sun-Heated House

Engineering News-Record (1950) June p 60

Brief note announcing report on experiences with solar test house at Massachusetts Institute of Technology, Cambridge, Mass., to be presented in summer 1950; contains some preliminary data on the house

Solar research house shows promising future

Elec. Constr. & Maintenance 58 (1959), Feb, p 184

Sun's help measured

Center for building technology news NBS, Washington, D.C., (1974)

Description of tests being performed in Gaithersburg, Md.
A test house's consumption of conv. energy with and without a solar energy system is being measured.

George Fred Keck Designs a Solar House of Brick with Cavity Walls Radiant Heating

Billington, N

Brick and Clay Record, 110 (1947) Feb p 18

3 pages

Gives floor plan and selected masonry details of solar house erected in Kalamazoo, Mich.

Builder Sloan Erects First All-Sealed House in America

Billington, N

American Builder, 69 (1947) April p 96

10 pages

Illustrated description of solar house built in Glenview, Ill., which combines solar heat, mechanical heat and air conditioning, full piping details are given

Design and performance of the nation's only fully solar heated house

Bliss, R.

Air Cond. Heat. Vent. (1955) Oct.

Sun on the Roof

Brachi, P.

New Scientist 63 (1974) No 915

3 pages 1 table 2 pictures -

Description of Biotechnic Research and Development (BRAD). Solar house in England

Performance of a Solar Heated Office Building

Bridgers, F. et.al.

Heating, Piping and Air Conditioning 27 (1957) Nov

Performance of a solar heated office building

Bridgers, F et al

ASHRAE Transaction, 64 (1958) p 83

14 pages

Applying Solar Energy for Cooling and Heating Institutional Buildings

Bridgers, F.

ASHRAE Journal (1974) No 9

9 pages 14 pictures 3 ref.

Three case histories: Denver Community College, University of Colorado Basketball Arena and Conference Center and Dept. of Agriculture Building, New Mexico State University

Trapping the Sun's Rays to Heat Buildings

Brooks, F

Sheet Metal Worker, 30 (1939) Dec p 40

1 page

Brief illustrated description of solar test house built at Massachusetts Institute of Technology, Cambridge, Mass.

The Solar House and its Portent

Böer, K.

Ekistics 38 (1974) No 225
Chemtech (1973) July, p. 394

4 pages 5 pictures

Description of a Delaware Solar House

Contrasts in Heating

Dietz, A and Czapek, E

Domestic Engineering, 173 (1949) March p 110, 157

3 pages

Describes solar house built at Massachusetts Institute of Technology, Cambridge, Mass., and compares it with conventionally heated house

Solar energy will cool Atlanta school

Duncan, R

ASHRAE Journ, 16 (1974) No 9, p 50

3 pages

A project for heating as well as cooling a large building using solar energy

The University of Florida Solar House

Farber, E. et al

ISES Conf. Paris, (1973)

10 pages 7 pictures 13 ref.

Description of a test house.

Massachusetts Audobun Society Solar Building.

Glaser, P.

ISES Conf. Paris, (1973)

6 pages 2 pictures

Description of a proposed solar building.

Solar house tests to compare heating costs

Harper, E

The Sun at Work, III (3) (1958) p 3

8 pages

Le developpement de la climatisation naturelle

Hay, H.

Architecture Concept, 28 (1973), No 313

4 pages 6 pictures 3 ref.

Results from tests in Phoenix Projected solar house in California.

The California Solarchitecture House

Hay, H.

ISES Conference in Paris,(1973)

10 pages 4 pictures 7 ref.

Ecological considerations. Geographic Climatology. Materials and Construction. Architectural implications. Evaluation procedure.

Solar homes

Henry, O.

The Washington Post/Potomac, (1971), Sep

Performance of the MIT solar house

Hesselachwerdt, A

Space heating with solar energy, Proceeding of a Course-Symp held at MIT (1950) p 99

8 pages

Solar Heat Test Structure at M.I.T

Hollingsworth, F

Heating and Ventilating, 44 (1947) May p 76

2 pages

Description of test building and of solar heating system built at the Massachusetts Institute of Technology, Cambridge, Mass., to conduct research on the utilization of solar energy for domestic heating; compares efficiencies of various methods of storing heat

Solar House: A Full-Scale Experimental Study

Hutchinson, F

Heating and Ventilating, 42 (1945) Sept p 96

2 pages

Describes briefly solar research program carried out by Purdue University by means of two houses, one solar-heated, the other electrically heated; rational heat balance analyses are being developed

Solar House: a Research Progress Report

Hutchinson, F

Heating and Ventilating, 43 (1946) March p 53

5 pages

Presents progress report summarizing results of a nine-week experimental study of two test houses erected on campus of Purdue University, which are thermally and architecturally identical with one having 12 % of wall area in glass and the other 22 1/2 %; no heat was supplied to either house, and records were kept of inside and outside temperatures, hours of direct sunshine, wind direction and velocity

Solar House

Hutchinson, F

Heating and Ventilating, 44 (1947) March p 55

5 pages

Gives results of second year of tests carried out at Purdue University, with two houses, one solar-heated the other not; data are analysed and interpreted in order to aid heating engineer to estimate performance of solar houses

Solar House: Analysis and Research

Hutchinson, F

Progressive Architecture, 28 (1947) May p 90

5 pages

Presents analysis of solar house design based on research carried out at Purdue University

7.64

Sparhus för solenergi

Isfält, E., Södergren, U.

VVS, 45 (1974), No 4

3 pages **5 pictures** **3 ref.**

A system for storing heat from day to night in the building construction (hollowed concrete slabs) is described. The solar heat is collected behind a glass covering the facade and transported by circulating air into the heavy slabs.

Packed Full of Postwar Ideas

Keck, G

American Builder, 67 (1945) July p 84, 138

4 pages

Illustrated description of a prefabricated solar home

Novel Features in Heating Solar Home

Keck, G

Sheet Metal Worker, 36 (1945) Nov p 64, 66, 72

3 pages

Detailed description of a solar home

Solar House of Flexible Unit Construction

Keck, G

Architects' Journal, 102 (1945) Dec p 411

3 pages

Illustrated description of one-storey solar-oriented house, with no basement; floors are heated thermostatically by panels; all main rooms face south and have projecting eaves which permit solar rays to penetrate into the rooms in winter but not in summer

Kimura solar house

Kimura, K

Japan Architecture (1974)-2

4 pages 5 pictures

An explanation of the Kimura solar house for architects

On the operation of Kimura solar house

Kimura, K

Annual Meeting (1974) Architectural Institute of Japan

2 pages 1 table 4 pictures

Solar radiation was applied for a supplemental heat source of a detached house. Movable solar radiation collectors, 16 units, one unit is 90 x 180 cm, total area 26 m^2, is installed in southern windows. 44 % of radiation to the elements was absorbed by the forced circulation water. In winter five months of 73/74, 7000 kwh was spared comparing with the electricity consumption 15000 kwh of the same period of 72/73, even though the later winter was much colder

Heating houses with solar energy

Kimura, K

Lecture record at a session of 74 Building Installation Techniques by the Society of Heating, Air-conditioning and Sanitary Engineers of Japan (1974)

24 pages 7 tables 15 pictures 20 ref

Available amount of solar energy is estimated for several locations of Japan. Elements of solar energy application system and various combinations of them are explained. Seven examples of solar energy research houses, most of them from USA, are explained. Finally estimation method of the capacity of each element and economy is explained

Northeastern Solar House Is Compact, Economical, Relies on Architectural Restraint to Conform to Its Locale

Konzo, S and Roose, R

Architectural Forum, 87 (1947) Sept p 90

6 pages

Describes briefly design and construction of solar house built in Weston, Mass

Projekt nollenergihus

Korsgaard, V. and Esbensen, T.

VVS, 45 (1974), No 4, p 43

5 pages 8 pictures

Description of a danish project for heating a house by means of solar energy and interior lighting.

A competitive by priced residence for utilization of solar energy

La Plante, J.

ASME Meeting, (1973), Nov, Paper 73-WA/Sol-3

A low-cost residence for utilization of solar energy in the southwestern U.S.

Solar-heated houses are nearing reality in the U.S.A.

Learmonth, R.

Heating and Ventilating, 47 (1973), Sept, p 123

3 pages 4 pictures

Describes the solaris system devised by H.E. Thomason. Heat storage system.

M.I.T Investigates Domestic Use of Solar Heat

Leggett, J

Architectural Record, 87 (1940) Jan p 48

1 page

Brief illustrated description of solar test house built at Massachusetts Institute of Technology, Cambridge, Mass.

Solar Energy Utilization for House Heating

Löf, G et al

U S Department of Commerce, Office of Technical Services, Washington, D C, PB Report No 25375 (1946)

173 pages

Describes the construction and operation of two successful solar-heat collectors developed by the Engineering Experiment Station of Colorado Univ for heating of houses; includes appendix containing data from preliminary investigation, patent applications showing design of apparatus, methods of calculation and literature citations

Utilization de l'energie solaire

Michel, J

L'architecture d'aujourd'hui, (1973), No 167

Space heating with solar energy. Description of solar heated houses in Odeillo, France.

Solar House Claimed to Reduce Heating Cost 20 %

Murdoch, W

Heating and Ventilating, 38 (1941) May p 47

2 pages

Illustrated description of solar house built by G F Keck near Chicago; includes data on amount of solar heat received by the house on typical January and February days

Das erste mit Sonnenwärme geheizte Wohnhaus.

Nemethy, A.

Schweizerische Bauzeitung, 69 (1951), No 22, p 309

2 pages

Pike, A

Architectural Design (1974)

9 pages 26 pictures 17 ref

Description of the full size test house soon to be built in Cambridge

Sun House

Parmelee, G

Heating and Ventilating, 42 (1945) Sept p 104

2 pages

Describes briefly a test house where solar heat will supplement radiant heat from floor panels and fire places

Prefabrication Progresses to a New Design Level Incorporating Contemporary Planning Ideas with Factory Processed Parts

Parmelee, G

Architectural Forum, 83 (1945) July p 125

8 pages

Detailed illustrated description of "Green Solar Home", a prefabricated house

Solar House Erected in Cambridge to Use Sun's Heat

Parmelee, G and Aubele, W

Heating and Ventilating, 46 (1949) April p 118, 120

2 pages

Illustrated description of solar house built at Massachusetts Institute of Techonolgy, Cambridge, Mass.; very brief note on heating equipment used

Sunlight Heats This House

Parmelee, G and Aubele, W

Science Illustrated, 4 (1949) March p 98

7 pages

Illustrated description of solar-heated test house built at Dover, Mass.; contains very brief discussion of experiments carried out at Massachusetts Institute of Technology, Cambridge, Mass.

Using solar energy in residential housing

Rittelman, P

Constr. Specifier 27 (1974) No 7 p 20

11 pages

Performance of the Brisbane Solar House

Sheridan, N.

Solar Energy, 13 (1972), No. 4, p 395

7 pages 4 pictures 4 ref.

Report about a house with an absorption air conditioning system operated by flat-plate collectors built in Brisbane, Australia.

Performance of the Brisbane solar house

Sheridan N

Inzh-Fiz Zh v 13 (1972) No 4 p 395

7 pages

An absorption air conditioning system operated by flat-plate solar collectors.

Solar House for H M Sloan

Sibley, J

Architectural Record, 89 (1941) Jan p 91

3 pages

Descriptive illustrations of solar house

Solar House Achieves Privacy on a Plot Facing South

Simon, M

Architectural Forum, 86 (1947) Feb p 98

2 pages

Brief illustrated description of solar house built in Winnetka, Ill.

Your Solar House

Simon, M

Simon and Schuster, Inc N.Y. (1947)

128 pages

Presents illustrated descriptions of solar house written by 49 architects, representing the forty-eight states and the District of Columbia; principles of solar house design and construction are discussed in separate chapter

Autonomous housing study. Economy of solar collectors, heat pumps and wind generators

Smith, G.

Univ. of Cambridge, Dept. of Arch., WP 3 (1973)

31 pages 20 tables 8 pictures 26 ref.

Solar buildings in temperate and tropical climates

Speyer

Proc. Conf. New Sources of Energy, Rome (1961)

Using solar energy in housing

Szokolay, S and Hobbs R

RIBA Journal, (1973), April, p 177

Describes research project, for installing solar heating for housing in the UK. Includes computer study. The research led to installation of solar collectors on a house in Milton Keynes.

Solar heated house

Szokolay, S.

Architects Journal 159 (1974), No 21, p 1127

5 pictures

Description of an English solar heated house.

Design of an experimental solar heated house at Milton Keynes

Szokolay S

J.S.E.S (UK), (1974), April

11 pages 2 tables 10 pictures

Optimum tilt for max. annual radiation gain. Collector area. Storage tank. Domestic hot water supply Annual energy balance.

Wall Heaters Aid Sun in Arizona Solar Homes

Tasker, C

Domestic Engineering, 172 (1948) Dec p 114

Brief illustrated description of design of solar house in Tuscon, Arizona

Solar Heating

Taylor, W

Architectural Forum, 79 (1943) Aug p 6, 114

4 pages

Illustrated description of solar test house built by G F Keck in the Chicago area, combining radiant and solar heating; brief review of test procedure

It's Here - Solar Heating for Post-war Homes

Taylor, W

American Builder, 65 (1943) Sept p 34, 96

4 pages

Illustrated description of a solar house

Did You Know That The Heat of The Sun Can Help Heat Your House in Winter?

Taylor, W

House Beautiful, 85 (1943) Sept p 59

8 pages

Reviews briefly principles of solar heating and contains descriptive illustrations of various solar houses

Two Developments

Taylor, W

Architectural Forum, 80 (1944) March p 85

10 pages

Illustrated descriptions of various types of solar heated houses in Glenview, Ill.

Solar House

Taylor, W

Architectural Record, 95 (1944) March p 58

8 pages

Detailed illustrated description of solar house built by G F Keck, in a suburban location north of Chicago; house is erected on a sunny hilltop

Solar Heating for Postwar Dwellings Foreseen as Result of Findings in Year's Survey Just Completed

Taylor, W

Architect and Engineer, 159 (1944) Oct p 26, 38

3 pages

Review of experiences in several solar heated homes

Your solar home is all wrapped up

Taylor, W

Popular Mechanics, 84 (1945) Aug p 13, 160, 162

6 pages

Illustrated description of prefabricated solar houses produced by E W Green

House in Toronto

Telkes, M

Architectural Forum, 85 (1946) Dec p 91

3 pages

Descriptive illustrations of solar house planned for a typical suburban lot in Toronto, Canada

Wickes, Inc., Uses Its Wartime Experience to Build a House with Packaged Utilities, Solar Fenestration, Prefab Radiant Heat

Telkes, M

Architectural Forum, 86 (1947) Jan p 98

3 pages

Brief illustrated description of model of prefabricated solar house built by Wickes, Inc, Camden, N J

This Midwest House, with Solar Window, Water-Cooled Roof, Cavity Walls and Cellular Floors, Masters a Difficult Climate

Telkes, M

Architectual Forum, 87 (1947) Sept p 107

3 pages

Illustrated description of design and layout of solar house built by G F Keck

Low cost solar heated house

Telkes, M.

Heating and Ventilating (1950).Aug. , p 72

Performance of the solar-heated house at Dover, Mass

Telkes, M

Space Heating with Solar Energy, Proceedings of a Course-Symp held at MIT (1950) p 92

Test House Heated Only by Solar Heat

Telkes, M and Raymond, E

Architectural Record, 105 (1949) March p 136

2 pages

Illustrated description of solar test house in Boston area; contains brief notes on solar heat collector used

Storing Solar Heat in Chemicals

Telkes, M. and Raymond, E.

Heating and Ventilating, 46 (1949) Nov p 80

8 pages

Describes solar house built in Dover, Mass., and occupied since Dec 1948.

Solar space heating and air conditioning in the Thomason home

Thomason, H.

Solar Energy, 4 (1960) No 4 p 11

9 pages 1 tables 5 pictures

The problems of successful solar space heating are many and varied. The scientist and engineer who starts out merely to heat his home by solar energy, with presently known apparatus and materials, faces a very difficult situation because the amount of heat energy recieved per square foot of surface per heating season is quite low, and the cost of previous efficient solar heat collectors has been high. Further problems are involved because the solar input occurs only about 6 hrs out of 24, and because many cloudy days per season plaque the solar scientist. This paper reports the author's attempts to solve these difficult problems of solar space heating and cooling.

Three solar houses

Thomason, H.

ASME Paper-65-WA/SOL-3, (1965)

7.74

Solar houses/heating and cooling progress report

Thomason, H. and Thomason, H., Jr.

Solar Energy, 15 (1973), No 1, p 27

ADDENDUM

Sun Power

Villecco, M.

Architecture Plus, 2 (1974), No 5, p 84

16 pages

Profusely illustrated survey, from the architects point of view, of solar energy applications, especially space heating.

...
och då till himlen höjes
din forskarblick, du spanar där,
att solars banor stäckas,
och världar gå i kvav,
...
Vad mer, om spejarblicken ser,
hur bort från fästet tusen solar
fejas?
Vad mer, om stjärneskördar mejas
som gyllne säd av tidens lie ner?
Vad rätt du tänkt,
...
V. Rydberg: Kantat ... i Uppsala
... 1877

8

POLITISKA, SOCIALA OCH EKONOMISKA ASPEKTER

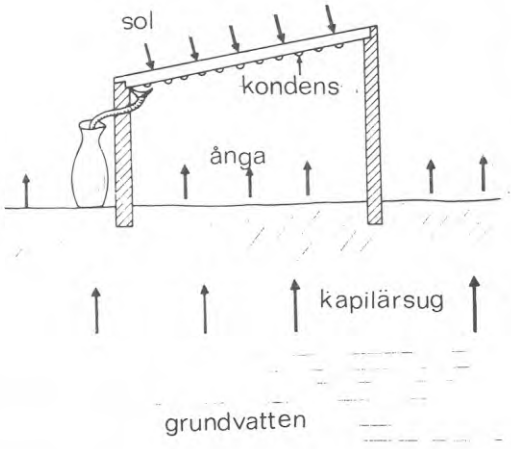
Solvärmeutnyttjande i stor skala liksom "alternativ teknologi" över huvudtaget kräver i förstone forskningspolitiska ställningstaganden. Ett aktuellt exempel: Den nyligen antagna "Solar Heating and Cooling Demonstration Act" innebär att U S A de närmaste fem åren satsar $60 \cdot 10^6$ dollar på demonstrationsprojekt utöver innevarande års $50 \cdot 10^6$ dollar för solenergiforskning. 1975/76 väntas den senare satsningen öka till $75 \cdot 10^6$.

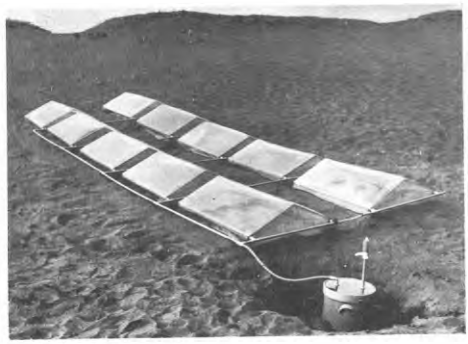
På längre sikt blir politiska beslut av vidare art nödvändiga för en meningsfull utveckling. För svenska förhållanden räcker det med att peka på bostadslånelagstiftningen, som givetvis måste anpassas bl.a. till den ny relation mellan investerings- och driftkostnader som solvärmesystem rimligtvis medför.

De sociala konsekvenserna av möjligheter till lokala energisystem utan övergripande samhällsengagemang är givetvis särskilt påtagliga i icke industrialiserade länder, där effekten kan för-

väntas bli positiv. Tillämpningar av ny teknologi på energiområdet får i industristater åtminstone under en övergångstid negativa konsekvenser för den enskilde - omställningar till en till synes omständligare teknologi inom det enskilda hushållet är knappast välkomna. När tillräckligt erfarenhetsunderlag finns blir attitydundersökningar viktiga parallella forskningsuppgifter till den rent tekniska utvecklingen. För närvarande saknas sådana undersökningar av naturliga skäl.

Det stod från början klart för solenergiforskarna att nästan varje tänkbart solenergisystem skulle komma att sakna initialekonomisk konkurrenskraft gentemot konventionella system. En mycket viktig deluppgift för forskningen har därför hela tiden varit ekonomiska bedömningar och överväganden; litteraturen på området är riklig.





Anläggning för vattenuppsamling.
(efter Kobayashi (1963))

8.0
POLITIK, SOCIOLOGI, EKONOMI OCH MILJÖ, översikter.

Course in Solar Heating

Heating and Ventilating, 47 (1950) June p 115

2 pages

Announces report on operation of solar-heated house to be presented to members of a course-symposium on "Space Heating with Solar Energy" at the Massachusetts Institute of Technology, Cambridge, Mass., from Aug 21-26, 1950; announcement contains a few preliminary data on experiences with solar heating

Utilization of solar energy

National Physical Laboratory of Great Britain

Research, 5 (1952), p 522

Solenergins praktiska utnyttjande

Industritidn. Norden, (1956), No 16, p 212

4 pages

Sonnenenergie

Schweizerische technische Zetschrift STZ,(1956), No 11, p 206

3 pages

De l'utilité des fours solaires

Ing Conseil France (1958) No 29, p 19

3 pages

New York University, College of Engineering, Research Division

Annual Report (1958)

The earth puts the sun to work

Constr & Eng World (1959) July p 24

4 pages

Solar research house shows promising future

Elec Constr & Maint, 58 (1959) Feb, p 184

Solar and atomic energy: a survey

Maryland University, Bureau of Business and Economic Research

Studies Bus. & Econom. 12 (1959), p 21

World solar progress

Anon

Chemical Week (1961) Sept

3 pages

Solar energy as a national energy resource

NSF/NASA Solar energy panel report, (1972), Dec

The National Technical Information Service, U.S. Dept of Commerce, Springfield, Virginia 22151, Document number PB 221659

Solar energy evaluation Group Report

Argonne National Lab., Ill. (1973) Aug.

50 pages

Solar energy proof of concept experiments.

Mitre corp. McLean Va (1973) Dec

106 pages

Solar energy could play big role in U.S.

Chemical and Engineering News, (1973), March

Terrastar: Terrestrial application of solar technology and research. Final Report.

Auburn Univ., Alabama, School of Engineering (1974).

344 pages

Solar energy potential

Auburn Univ., Alabama. Terrastar: Terrest. Appl. of Solar Techn. and Res. (1974).

9 pages 1 ref.

New frontier of energy

Paris, (1974), Sep

340 pages

Political and economical aspects of energy. Technical aspects.

Nature

249 (1974), No 5459, June 21st

Special energy review: topics covered include nergy problems and policies in UK, Europe, Japan, USSR and India, North Sea Oil; nuclear options; wave or tidal power; hydrogen economy; solar energy.

Solar thermal conversion mission analysis. Volume I: Summary report. Aerospace Corp. El Segundo, Calif. Civil programs div. (1974), Jan.

230 pages

Alternative Sources of Energy

Newsletter (ASE) No 9, Bibliography issue

ASE c/o Donald Marier, Rt. 2, Box 90A, Milance, MN 56353, USA

Utilizing sun's rays

Abbot, C.

Sci. Mo., 51 (1940), p 195

6 pages

Utilizing heat from the sun

Abbot, C

Smiths. Misc. Coll., 98 (1940), p 1

11 pages

Energy of the Sun

Abbot, C

Science, 96 (1942) Oct p 10

Very brief review of various methods of utilization of solar energy

L'avenir de l'energie solaire

Aigroin, P.

Analyse et Prévision (1972) June

Nye muligheder for udnyttelse af solstrålingsenergi

Andersen, C.

Ingeniør- och Bygningsvaesen (1959) No. 18, p. 392

5 pages

Meesten al energi stammer fra Solen

Andersen, C.

In the book: Solen - energiens kilde, Munksgård, København, (1973) p. 52

36 pages

General about solar energy

Science and the Sun

Archer, M.

New Scientist 60 (1973) No. 874, 29 Nov, p. 636

Major Sources of Energy

Ayres, E

American Petroleum Institute, Proceedings, 28 (1948) Section III p 109

34 pages

Includes discussion for utilization of solar energy; reviews various methods for direct conversion of solar energy to heat. storage of solar heat, high temperature uses of solar radiation, and solar heating of houses

Power from the Sun

Ayres, E

Scientific American, 183 (1950) Aug p 16

6 pages

Discusses availibility of solar energy and reviews present methods of utilization

Solar Energy

Babson's Repts, 50 (1959) May 4, p 105

2 pages

Development in the Utilization of Solar Energy

Barlow, E.

Heating and Ventilating Engineer (1949) No 264, p 586

4 pages

Utilization of solar energy

Baum, V

Teploenergetika, 2 (1960)

Availability of solar energy

Becker, C and Boyd, J

Agricultural Eng (1961) June p 302

4 pages

The sun at work round the world

Behrman, D

UNESCO Courier, 11 (1958) No 9, p 7

11 pages

Chaleur solaire et son utilisation

Boutaric, A

Chaleur et Industrie, 11 (1930) p 59, 147

16 pages

General discussion of possibilities of utilisation of solar energy, and historical review of various methods

Solar Energy for Man

Brinkworth, B.

Compton Press, Salisbury, Wilts. (1972)

Most of the results are presented graphically. Practical uses of solar energy. Collection of solar energy. Heating by solar heating; conversion of solar energy into work, and electricity; photo electricity; photochemistry and photobiology.

Grundlagen und Wege zur Nutzung der Sonnenenergie

Böhm, J.

Schweizerische Bauzeitung (1958) No 23, p. 337

9 pages

Some major terrestrial applications of solar energy

Cherry, W.

IEEE, International Convention and Exposition, New York (1973), Technical Papers.

Putting the sun to work

Copper & Brass Bull., (1959), Sept, p 4

2 pages

Solar Energy

Daniels, F

Science, 109 (1949) Jan p 51

7 pages

Discusses amount of solar energy available and reviews briefly various methods for its utilization; contains a bibliography

Solenergien

Daniels, F.

Ingeniøren (1949) No. 36, p. 715

5 pages

The utilization of Solar Energy

Daniels, F.

American Ceramic Society, Bulletin (1957) No. 11, p. 406

3 pages

Solar Energy Research

Daniels, F. and Duffie, J.

University of Wisconsin Press (1955) (1961)

Direct Use of the Sun's Energy

Daniels, F.

Yale University Press (1964)

Production de force motrice par transformation directe de la chaleur solaire

Delecourt, H

Revue Universelle des Mines, 8th series, 4 (1930) Aug p 97, Sept p 137

21 pages

Generation of power by direct transformation of solar heat; historical review describing work of G Claude and P Boucherot, France; gives details of solar engine

An Assessment of Solar Energy as a National Energy Resource

Donovan, P. et al

NSF/NASA Solar Energy Panel (1972)

Capturing another great resource

Douglas, E.

Ariz. Farmer Ranchman 38 (1959), Aug 20, p 1

3 pages

Phoenix puts sun to work

Duff, R

Phoenix Action, 14 (1959) No 4, p 1

3 pages

Solar Energy

Duffie, J

Encyclopedia of Chemical Technology, 1st supplementary volume, Interscience Encyclopedia (1957) p 789

33 pages

Detailed general review of the utilization of solar energy

Solar energy and wind power

Daniels, F.

Science, 121 (1955)

Sources of Energy

Eccles, J

Institute of Fuel. Journal, 19 (1946) Aug p 245

6 pages

Reviews various energy sources and discusses briefly possibility of utilization of solar radiation; problem of solar energy through photosynthesis method is briefly discussed

Focus on the sun

Edlin, F

DuPont Mag, 53 (1959) No 2, p 2

4 pages

Basic studies on the use and control of solar energy

Edwards, D. et al.

U.C.L.A. report no 60-93 (1960)

Tapping the sun; scientists have begun to put solar energy to work

Elliot, R

Barron's, 38 (1958) No 51, p 3, 16

4 pages

Solar energy, its conversion and utilization

Farber, E.

Solar Energy, 14 (1973), No 2, p 243

10 pages 16 pictures

Presents briefly a summary of solar energy research, comments on the need for continuing these studies, and describes the activities of the University of Florida Solar Energy Laboratory.

Physics and the Energy Problem - 1974

Fiske, M. . and Havers, W. . (ed.)

AIP Conference Proceedings 19, American Institute of Physics, Conference Chicago (1974) Feb.

The Solar Era, Part 1 - The Practical Promise

Gaucher, P.

Mechanical Engineering (1972) Aug.

New Sources of Power: Solar Energy

Glaser. P.

World Energy Supplies Conf., London, (1973) Sep.

13 pages

Ausnutzung der Sonnenenergie auch in unseren Breiten

Gräfe, K.

Umschau (1958) No 24, p. 746

4 pages

Large Scale Utilization of Solar Energy

Haas, M.

M72-168, The MITRE Corporation (1972) Sep.

R H Goddard and Solar Power 1924-1934

Hagemann, E

Solar Energy, 6 (1962) No 2, p 47

8 pages 14 pictures 5 ref

From 1924 through 1934, Professor Robert H Goddard, made research in solar power and conversion: five patents and several laboratory test models. Goddard's principal contributions were his correction of errors in the work of others and his conversion studies. He envisioned his work being applied to cheap terrestrial power

Power from the Sun. The Story of Solar Energy

Halacy, D.

London, Murray (1962)

152 pages

Solar energy: A feasible source of power?

Hammond, L.

Science, (1971), May 14

Solar energy: The largest resource

Hammond, L.

Science, (1972), Sept

The solar era, part 3 - solar radiation: Some implications and adaptations

Hay, H.

Mechanical Engineering, (1972), Oct

An appraisal of the use of solar energy

Heywood, H.

J. of the Soc. of Engineers, Vol. 51, p 13

Application of solar energy

Heywood, H.

Civil Engineering, (1953), p 835

Solar energy: past, present and future applications

Heywood, H.

Engineering, (1953), p 377

4 pages

Review paper twenty years of work on solar distillation at the university of California

Howe E. and Tleimat B.

Solar Energy, 16 (1974), No 2, p 97

9 pages 8 pictures 13 ref.

Development of still units of relatively small size.

Big Practical Problem for Science

Jaeger, F

Scientific American, 142 (1930) Feb p 141

5 pages

Reviews various methods of utilizing solar energy; experiments of G Claude and P Boucherot, France, are briefly described

Low temperature engineering application of solar energy

Jordan, R. (Ed.)

ASHRAE, (1967)

Availability and utilization of solar energy

Jordan, R. and Threlkeld, J.

ASHRAE Transactions, 60 (1954)

A chemist looks at solar energy

Kastens, M

The Chemist, 36 (1959) No 1, p 19

5 pages

Die Sonne

Kiepenheuer, K

Springer Verlag (1957)

Nontechnical account of what we know about the sun. Solar energy utilization is mentioned briefly

Is solar energy an alternative to nuclear energy?

Lindhout A.

Atcomenerg. Toepass (Netherlands) Journal paper 15 (1973) No 1 p 15

Solar energy, wind power and geothermal energy

Lindström, B. and Pleijel, G.

UN Conf., Rome, (1961)

Profits in solar energy

Löf, G

Energy Resources Conf, Denver 1958. Research Management winter (1958) p 235

6 pages

A philosophy for solar energy development

Löf, G et al

Solar Energy, 12 (1968) No 2, p 243

8 pages

Living of the sun

Mackillop, A.

The Ecologist, (1973), July

6 pages

Application of solar energy to small scale industry

Mathur, K. and Khanna, M.

J. Solar Energy Sci. Eng., 1 (1957), p 34

3 pages

Tillväxtens gränser

Meadows, D and D

Bonniers, Stockholm (1972)

Physics Looks at Solar Energy

Meinel, A. , and M.

Physics Today, (1972), February

Mankind on the turning point

Mesarovic, M. and Pestel, E.

The Second Report to the Club of Rome, New York (1974)

Sun-power comes down to earth

Monroe, M.

Readers' Digest 74 (1959), Apr, p 101

5 pages

Solar heat and its use in industry

Mouchot A.

Paris (1879) (In French)

Present status and future of the solar stills

Nebbia, G.

United Nations conferens on Nwe Sources of energy, Rome (1961)

12 pages

In the past ten years the problem of developing solar stills has received a great deal of attention. A list is given of the laboratories and groups more actively engaged in such studies and an outline is also given of the main goals of such research and of the scientific and technical lines followed at present.

Recent developments in solar energy research and application in Japan

Noguchi, T.

Solar Energy, 15 (1973), No 2, p 179

Solar energy

Noyuchi, T.

New frontier of energy. Paris, (1974)

Connaissance de l'energie solaire

Perrot, M and Touchais, M

Arts et Metiers (1974) No 4

Description of common solar energy techniques

Ausnutzung der Sonnenenergie

Piccard, A

Association Suisse des Electriciens. Bulletin, 36 (1945) May p 279

3 pages

Utilization of solar energy; gives exemples of energy conversion and discusses various possibilities of solar energy utilization

Solar radiation - our greatest source of energy

Pleijel, G.

Byggnadsvärden, 41 (1950), No 6, p 41

3 pages

Studies of the insolation have begun at KTH.

Solenergi

Pleijel, G.

Aldus (1966) Stockholm

100 pages

House heating, water heating, solar cooling and destillation etc

Solar energy

Rao, H.

Macmillan (1964)

The sun's energy

Reinfeld, F

Rays, visible and invisible, N. Y. Sterling Publishing Co (1958)

21 pages

L'energia solare e le sue applicazioni

Righini, G. and Nebbia, G.

Feltrinelli Editore, Milano (1966)

Illustrates the journey of solar energy from its generation in the solar core to its application on the surface of the earth.

Using nature to heat and cool.

Rogers B

Build Syst Des 70 (1973) No 7 p 11

5 pages

Psychrometrics of dew ponds; discussion of the energy conservation implications.

Methods of technical prediction in solar engineering

Sheklein, A, Shafeeva, K.

Geliotekhnika 8 (1972), No 5, p. 61.

8 pages 1 picture 6 ref.

The paper describes the basic principles of technical prediction: current world standard of engineering, level of industrially developed technology and engineering studies, future level of engineering. Practical engineering prerequisites have been created for the large-scale utilization of solar energy and there is considerable social demand for the type of energy.

The Solar Era, Part 4 - The University of Florida 'Electric'

Schaeper, H and Farber, E

Mechanical Engineering (1972) November

Solar energy

Stevovich, V

Informatics Inc., Rockville, Md. (1974)

478 pages

Theoretical and experimental data on the background and state-of-the-art of applied solar energy research, emphasis on work in the Soviet Union. Future planning

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Utilisation of Solar Energy

Trombe, F

Research, 1 (1948) Sept p 393

8 pages

Historical account of the harnessing of solar energy for industrial purposes, and description of recent developments in solar furnaces

Utilization of the Sun's heat

Tsesarskii T

Russian Ast.Calender for 1909, Nizhnii Novgorod (1908)

Temperatures of 3500°C recorded.

Main trends in Solar Energy Utilization

Umarov, G.

Geliotekhnika, 6 (1970), No 2, p 10

5 pages 13 ref.

The history of soviet solar engineering

Veinberg, V.

Geliotekhnika, 3 (1967), No 5, p 7

13 pages 2 tables 6 pictures 14 ref.

Report on committee on solar energy research in Australia

Watson-Munro

Australia Academy of Sciences, (1973)

Solar energy research

Whillier, A

Res Rev South African CSIR, 8 (1958) No 3, p 98

5 pages

Engineering uses for solar energy

Whillier, A

EASA J, 15 (1958) No 5

21 pages

Comparative evaluation of solar, fission, fusion and fossil energy resources. Part 1: Solar energy. Final report.

Williams, J.

Georgia Inst. of Tech., Atlanta. School of Mechanical Engineering (1974).

122 pages

The utilization of solar energy

Wilson, B

J Astron Soc Victoria, 10 (1957) No 4, p 55

2 pages

Solar energy utilization by physical methods - including hydropower, windpower, direct solar heating and electric power

Wolf, M.

Science, vol. 184, (1974) Apr 19

5 pages

Power from solar energy

Yellott, J.

Trans. ASME, 79 (1957) p 1349

Energy from the sun

Yellott, J.

Power Eng. (1957) p 94

Solar energy progress report 1969

Yellott, J

ASME Winter Annual Meeting (1969)

The paper deals briefly with the current status of solar energy technology throughout the world and calls attention to a number of significant papers which have appeared in the past several years

Solar energy: it's use and comfort. Part II. Applications on earth and in space

Yellott J.

Heat. Pip. and Air Cond., 38 (1966), No 10

10 pages 20 pictures 6 ref.

Solar energy progress - a world picture

Yellott, J.

Mechanical engineering, (1970), July, p 28

7 pages 37 ref.

Introduction to the utilization of solar energy

Zarem, A. and Erway, D.

Mc Graw-Hill, (1963)

8.1 POLITISKA ASPEKTER PÅ SOLENERGI.

Solen i människans tjänst. Pariskonferensen 1973

Kristofferson, L.

IVA rapport, 67 (1974)

3 pages

A rational energy policy

Raphael C.

Atlantic Research Corp. Alexandria, Va (1974) April

64 pages

Nuclear or solar energy: which is more practical for space heating

Rusler, G

Heat Pip Air Cond, 31 (1958) No 2, p 106

4 pages

Following an appraisal of the fossil fuel situation in an earlier issue, the author considers the potentialities of these two energy sources in meeting future space heating needs. Although the reserves of fissionable material are great, there are some major problems to be overcome before fissionable energy can be realized; disposal of atomic wasters and the disportionate amount of basic materials required by atomic plants as compared to steam plants. The advantages and disadvantages of solar energy utilization are outlined and its applications in various areas discussed

The world-wide energy outlook; part one of a study of solar energy utilization

Rusler, G

Minneapolis Honeywell Res Rept (1958) Apr

58 pages

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SOCIOLOGISKA ASPEKTER PÅ SOLENERGI

The sun and the welfare of man

Abbot, C.

Smithsonian Institution, (1929)

The bactericidal significance of solar radiation penetrating a room

Belikova, V.

Office of Technical Services, U.S. Department of Commerce (1958) JPRS: L-547-N.

9 pages

From the point of view of hygiene, great interest attaches to the problem of the bactericidal effectiveness of solar radiation penetrating into a room and to its role in the general bacterial decontamination of the air. There are indications in the literature of the fact that the action of ultraviolet rays may reduce the aggressive properties of bacteria and render their toxins innocuous without influencing their antigenic and immunologic properties.

The University of Florida solar energy laboratory

Farber, E.

ISES Conf. Paris, (1973)

10 pages **8 pictures** **12 ref.**

Solar properties of materials. Solar water heating, swimming-pool heating and house heating, air conditioning and refrigeration, solar cooking, solar distillation etc.

Predicting the physiological effect of solar radiation

Givoni, B.

ISES Conf. Paris, (1973).

11 pages **1 table** **1 picture** **6 ref.**

Formula for the computation of the heat load on the human body due to solar radiation and its effect on the sweat rate.

Etude sur l'Ensoleillement d'Habitations

Grundjean , E et al.

ISES Conf in Paris (1973)

7 pages 5 tables 4 pictures 2 ref

Results of sunshine measurements in 335 dwellings. Recommendations for minimum and desirable sunshine in dwellings.

Socio economic implications of decentralised power production in Greece

Nicolopoulus, N and Stambolis, C.N.D.

Solar energy utilization ISES (UK) conf. London, (1974), 9 July

Food production and the energy crisis

Pimentel, D et al

Science 182 (1973) 443

Le Soleil - Facteur de la Vie Urbaine

Tunev, L.

ISES Conference in Paris, (1973)

10 pages 5 ref.

The role of sunshine in urban planning, architecture and aesthetics. The heating effect of sunshine helps the natural ventilation of cities

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EKONOMISKA ASPEKTER PÅ SOLENERGI.

New Sources of energy and economic development

New York, United Nations, Dept, of Economic and Social Affairs (1957)

Recent developments relating to new sources of energy

Report of the Secretary General of the United Nations Economic and Social Council E 3218, (1959)

Systems analysis of solar energy programs

Mitre Corp

NTB US dept of Commerce PB-231-142-145, (1973), December

300 pages

Study of major applications of solar energy in terms of their costs and expected benefits in the NSF five-year solar energy research program.

Economics of solar stills in the water-supply systems for Livestock farming in Uzbekistan

Achilov, B. et al.

Geliotekhnika, 6 (1970), No 4, p 57

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Thoughts on economic- social implicaitons of solar energy use

Duffie, J. and Miller, J.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 2/42

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Economic and power forecasting in solar energy utilization

Gudkov, L. et al.

Geliotekhnika, 7 (1971), No 5, p 81

5 pages 5 ref.

International aspects of air conditioning with movable insulation

Hay H and Yellott J

Solar Energy 12 (1969) No 4 p 427

12 pages 4 pictures 8 ref.

Natural airconditioning, inv.heating with solar energy and summer cooling to the night sky.

The efficiency of solar water heater can be improved by covering it at night with a movable insulation.

Socio-Economic Considerations in the Utilization of Solar Energy in Underdeveloped Areas

Kapur, J

Solar Energy, 6 (1962) No 3, p 99

5 pages 2 tables 1 picture

The economics of solar energy

Kastins, M.

Introduction to the use of solar energy. Zarem and Erivay Ed., McGraw-Hill. (1963)

Solar water distillation in North India

Khanna, M

Journal of Scientific & Industrial Research, 21A (1962) No 9

5 pages

A summary of the results obtained from several types of stills are cited

The use of solar energy for residential space heating

Lorsch, H.

Energy conversion, 13, (1973), p 1

5 pages 2 tables 5 pictures

Technical-economic analysis of simulated use of solar energy for residential space heating in Federal District of Washington This appears to have economic importance for the medium term in the context of foreseeable fuel shortage and increase in fuel prices. It appears possible that using solar energy will allow a 40 % saving in the consumption of classical fuels in the Washington District.

Profits in solar energy

Löf, G.

Solar Energy, 4 (1960) No 2 p 9

7 pages

Solar energy applications are examined from the point of view of their profit-making potential. The study is based on a consideration of the availability and characterstics of solar energy, the sources of profit in conventional energy sources, and the type of industry which could participate in the commercialization of solar energy.

L'énergie solaire dans l'économie du monde actuel

Masson, H

Ind & Trav Outre-Mer (1956) No 36

6 pages

Solar thermal application study: Status, economies and priorities

Meinel, A. and Meinel M.

Recommendations for the white house energy task force, (1973),

Science and economic development

Meiers, R

John Wiley and Sons, Inc (1956)

266 pages

L'energie solaire et les nouvelles sources l'energie

Peycnes, I

Revue du palais de la Decouverte 2 (1974) No 16

23 pages 12 pictures

Different industrial applications of solar energy

Competitively priced residence for utilization of solar energy

La Plante J et al.

ASME Pap No 73-WA/Sol-3 (1973)

7 pages

Research in the field of sunradiation, and the possibilities of economic use of solar energy for heating purpose

Pleijel, G.

Byggforskning, IVA 22 (1951), No 6, p 234

Prospects for tapping solar energy on a large scale

Ramakumar R. et al

Solar Energy, 16 (1974), No 2, p 107

9 pages 1 table 7 pictures 21 ref.

A simplified economic analysis of solar energy systems is presented, and the calculated generation costs are compared with those of conventional fuel burning systems for different fuel costs, load factors and interest rates.

Les applications pratiques actuelles des fours solaires et leurs possibilities économiques de développement

Trombe, F and Foex, M

UN Conf on New Sources of Energy, Rome (1961) (In French)

Should solar electricity generation be centralised?

Vincze, S.

Solar Energy, 15 (1974), No 4, p 313

1 page

Economic analysis of solar energy utilization

Woodcork, G. and Gregory, D.

9th Intersoc. Energy Conversion Eng. Conf. San Francisco, (1974), p 306

11 pages

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MILJÖVÅRDSASPEKTER PÅ SOLENERGI.

Ecologie, environnement et heliotechnique

Boutiere, H.

COMPLES, Bulletin No. 22, (1972), March

5 pages

Environment, energy and the need for new technology.

Dalal V.

Energy Convers (GB) Journal Paper 13 (1973) No 3 p 85

10 pages

Energy Exchange in the Biosphere

Gates, D.

Harper and Rowe, N.Y. (1962)

Energy and the Environment. A Collision of Crisis

Goodwin, I. ed.

Publ. Sciences Group (1974)

272 pages

The California Solarchitecture House

Hay, H.

ISES Conference in Paris (1973)

10 pages 4 pictures 7 ref.

Ecological considerations. Geographic climatology. Materials and construction. Architectural implications. Evaluation procedure.

The significance of solar radiation for habitability of environment

Kittler, R.

Architektura à Urbanizmus, (1973), No 1

20 pages

Calculation of solar radiation and the solar heat load on man

Klein, W.

Journal of Meteorology, 5 (1948), p 119

11 pages

Raumheizung und klimatisierung mit umweltfreundlichen energiarten

Moesta, H.

HLH 23, (1972), No 11, p 363

7 pages 2 tables 11 pictures

Utilization of solar energy.

Energy conservation alternatives to nuclear power, a case study

Mueller, R.

NASA, Goddard Space Flight Center, Greenbelt, Md (1973).

36 pages

Solar heating and air conditioning as energy conservation alternatives to nuclear power.

L'Influence de l'Urbanisation et de l'Industrialisation sur le Bilan du Rayonnement Solaire

Pazzynski, J.

ISES Conference in Paris, (1973)

7 pictures 5 ref.

Effect of air pollution on solar radiation to the ground.

Ecological Energetics

Phillipson, J

Edward Arnold London (1966)

World resources of Spartina and economic use of Spartina marshland

Ranwell, D

J Apol Ecol 4 (1967) p 239

Ecology of salt marshes and mudflats

Ranwell, D

Chapman-Hall, London (1972)

The solar era, part 5 - the pollution of our solar energy

Swartman, R. et al

Mechanical Engineering, (1972), Dec

The restoration of the earth

Taylor and Humstone

Harper and Rowe, N.Y. (1973)

Environmental conservation

Winter, 1 (1974) No 4, p 241

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SOLENERGINS FRAMTIDA ANVÄNDNING.

UN surveys development of new sources of energy

Science, 129 (1959) p 1114

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Solar energy may achieve wide use by 1980's

Chemical and Engineering News (1973), Jan

Solar Energy Perspective

Spectrolab and Heliotek (1973)

Solar energy - Hope for the future

University of Florida Magazine, (1973)

An assessment of new options in energy research and development

Office of Science and Technology, Washington, D.C.
Energy Advisory Panel, (1973), Nov

297 pages

Energy, Europe and the 1980's

International Conference (1974) May, Conf. Publ. No 12
Institution of Electrical Engineers

106 pages

A long-range forecast of U.S. precipitation

Abbot, C.

Smithsonian Misc. Pub. 4390, (1960)

A long-range temperature forecast

Abbot, C.

Smithsonian Misc. Pub. 4471 (1961)

L'avenir de l'energie solaire

Aigroin, P.

Analyse et Prévision (1972) June

Solar energy today and tomorrow

Baum, V

UNESCO Courier, 11 (1958) No 9, p 4

3 pages

The coming energy crisis and solar sources

Bockris

9 pages 7 pictures 24 ref.

Dawn of Sun Power

Carter, D

Science Digest, 15 (1944) May p 37

3 pages

General discussion of availability of solar energy and brief review of modern experiments for utilization of solar heat

Future Sources of Power

Furnas,C

Science, 94 (1941) p 425

4 pages

Contains brief survey of various methods of direct utilization of solar radiation

Energy sources of the future

Furnac, C

Ind Eng Chem, 46 (1954) p 2446

12 pages

Prospects for solar power

Gardner J

Nuclear Energy (1968) p 163

4 pages

Energy Sources of the Future for the United States

Gaucher, L

Solar Energy, 9 (1965) No 3, p 119

8 pages 3 pictures 48 ref

The long-range planning of research for an oil-energy company requires a continuous appraisal of all factors: political, social, economic and technological, that might affect the energy-consumption pattern of the future, even beyond the next 20 or 30 years when other studies of this type usually stop. By 200 years from now, approximately 30 percent of all the energy consumed in US may be derived from central solar power stations

Energy requirements of the future

Gaucher, L.

Solar Energy, 14 (1972), No 1, p 5

6 pages 3 pictures 4 ref.

Is Solar Energy the Fuel of the Future

Getincelik, M.

Impact of Science on Society 24 (1974) No 3

6 pages 2 pictures

New sources of power: Solar energy

Glaser, P.

World Energy Supplies Conf., London, 18-20 Sept. (1973)

13 pages

The Coming Age of Solar Energy

Halacy, D.

Harper and Row, 2nd ed. (1973)

Energy and the future

Hammond, A. et al

Am Ass. Adv. Science, Washington, D.C., (1973)

Solar energy: a challenge to the future

Heywood, H.

Proc. Royal. Inst. G.B., 36 (1957), No 3, p 703

An energy system for the future

Hughes, W et al

IEEE Transactions of Industrial Electronics (1963) May

4 pages

The output of solar-energy converters is used to produce hydrogen by pressure electrolysis of water. The energy stored in the hydrogen can be efficiently transformed into electrical energy

Basfakta om solenergin (II)

Ingelstam, E.

IVA rapport 67 (1974)

13 pages **6 pictures** **7 ref.**

Solar energy utilization in the future. Solar radiation. Solar collectors.

What future for solar heating

Jordan, R

ASHRAE Journal (1960) Jan, p 74

5 pages

A condensed version of"the future of solar heating" as presented at the Fall Conferences of the Building Research Institute in Washington 1959. Solar flat-plate collectors are recommended as a relatively cheap and satisfactory solution for the utilization of solar radiation for space heating. Instead of attempting to store heat for use when solar energy is not available the author suggests the use of an auxiliary heating system

Is it time for a new look at solar energy?

Meinel, A. and Meinel, M.

Bulletin of the atomic scientists, (1971), October

6 pages

Solar energy

Oshida, I

Tokyo, Nikkan Kogyo Shinbun Sha (1958) (In Japanese)

327 pages

A discussion of the increasingly serious problem of our energy shortage and of the possibilities for utilizing solar energy to overcome it, drawing on literature references up to 1958

L'energie solaire: Mythe ? ou salut de demain ?

Peychès I

ISES Conf, Paris (1973)

7 pages **11 pictures**

Solar energy collection, concentration and accumulation

Solar Power--The Next Step

Rappaport, P

Space/Aeronautics 44 (1965) No 4

Mankind, civilization and prosperity

Reynhart, A.

Solar Energy, 3 (1959) No 2 p 23

7 pages 4 tables 3 pictures 7 ref.

Mankind is exhausting his sources of energy at an alarming rate. Within about 50 years oil supplies will not last longer than 90 years. Even atomic energy, of which so much is expected, can provide us with energy only for a couple of centuriesif the present increase in consumption continues. Therefore, it is of vital importance to stimulate the utilization of energy from natural sources such as solar radiation. wind power, and hydro power.

Solar energy to meet the nation's energy needs

Rom, F. and Thomas, R.

National Forum on Energy Facts for Concerned Citizens, Boise, Idaho (1973) April.

25 pages 14 ref.

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Coming Era of Sun Power

Sarbach, L

Nature Magazine, 39 (1946) Dec p 513

4 pages

Discusses availibility of solar energy and reviews briefly experiments carried out in United States and Russia

General survey of engineering interest in solar radiation and the radiation data

Tabor, H

Radiation Commission of the International Association of Meteorology and Atmospheric Physics. World Meteorological Org International Symposium, Vienna (1961) Aug

12 pages

In view of the possible expansion, in the coming years, in the use of solar radiation as an auxiliary energy source in the development of the emerging nations, and the consequent need to expand the network of radiation measuring stations, the question of what to measure becomes of primary importance. One general conclusion seems to be clear: that its intencity, variability, distribution between direct and diffuse radiation, etc is far more important than the absolute accuracy of the radiation measurements

The utilization of solar energy to help meet our nation's energy needs

Thomas, R.

Energy Crisis Symposium, Albuquerque, (1973)

37 pages

Solar Energy Potential and Solar Technology of Turkey up to 2000 Year

Ultanir, M.

ISES Conference in Paris, (1973).

8 pages 2 ref.

Some Problems in the Long-Range Forecasting of Power Generation and Solar-Energy Utilization

Vermishev, K.

Geliotekhnika, 6 (1970), No 1, p 9

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Uber die gegenwartige und zukünftige Ausnutzung der Sonnenenergie

Vogel, W. et al

Brennstoff-Wärme-Kraft, (1954), p 278

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Solenergi

Wettermark, G

Modern kemi, (1970), No 6

3 pages

Different ways in exploring solar energy

Solar energy progress - a world picture

Yellott, J.

Mech Eng 92 (1970), No 7, p 28

7 pages

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FORSKNINGSPROGRAM.

A bill to provide for research into and development of practical means for the utilization of solar energy and for other purposes

U S Congress, 86th, 1st sess Senate (1959) July

5 pages

Space station solar array technology program

Lockheed Missiles & Space Company, Inc., (1972)

Systems analysis of solar energy programs

Mitre Corp

NTB US dept of Commerce PB-231-142-145, (1973)

300 pages

Study of major applications of solar energy in terms of their costs and expected benefits in the NSF five-year solar energy research program.

Program ASTEC - Assessment of Solar-to- Thermal Energy Conversion

Aerospace Corporation

NSF/University of Pennsylvania Solar Energy Meeting (1973)

The LBL solar energy program

Lawrence Berkeley Laboratory, University of California, (1973), Aug

Conclusions and Recommendations of the United States Solar Energy Panel

Cherry W, Morse F.

11 pages 1 table 6 pictures 12 ref.

An Inventory of Energy Research

Comarov, M. et al.

Booz, Allen & Hamilton, Inc. (1971) Oct.

Solar energy research

Daniels and Duffie

Univ. of Wiscosin Press,(1955)

New value for the solar constant of radiation

Drummond, A. et al

Nature, 218 (1968), p 259

The University of Wisconsin research program.

Duffie, J. and Löf, G.

Solar Energy, 3 (1959) No 3 p 16

3 pages 4 pictures 5 ref.

The Engineering Experiment Station of the University of Wisconsin, is studying some of the problems of the engineering applications of solar energy, This program includes studies of flat-plate solar heat exchangers and focusing collectors, intermittent and semicontinuous absorption cooling systems, focusing collectors for small power units and food cookers, photochemical processes, and solar radiation measurements and correlation.

Solar energy; economics and engineering research at the Univ of Wisconsin

Duffie, J and Löf, G.

Canadian J Chem Engr (1959) April, p 77

8 pages

The probable economic feasibility of several solar applications is assessed by using the costs of energy from present sources as a basis for estimating upper limits on the first cost of solar heat exchangers and their associated equipment

Solar energy program. Subpanel report IX used in preparing the ABC chairmans energy report to the President.

Eggers A.

National Science Foundation Washington, D.C (USA) (1973) Nov

223 pages

Solar and wind energy

Golding, E W

Research, 14 (1961) March, p 82

4 pages

During the last few years research on the potential applications of solar and wind energy has been greatly intensified

Dissemination and utilization of solar energy research results. Report to the office of systems integration and analysis directorate of applied research, National science foundation.

Greenley B.

Mitre corp. McLean Va (1973) Dec

69 pages

Solar energy: Proposal for a major research program

Hammond, L.

Science, (1973), March 16

National science foundation's advanced research program on heating and cooling of buildings with solar energy

Horowitz, H.

ASHRAE Transactions, 80 (1974), part II

Twenty Years of Work on Solar Distillation at the University of California

Howe, E. and Tleimat, B.

ISES Conference in Paris, (1973)

10 pages 8 pictures 11 ref.

Construction and performance of still units of small size for potable water. Design of solar collector for furnishing low pressure steam.

Applied solar energy research

Jensen, J.

Association for Applied Solar Energy, Melbourne, Australia

Exploitation of sun's rays

Kirpichev, M. and Baun, V.

Perivoda, 43 (1954)

M.I.T To Study Use of Sun's Heat

Leggett, J

Power Plant Engineering, 44 (1940) Febr p 116

5 pages

Describes briefly research project carried out at Massachusetts Institute of Technology

Tables of Planck's radiation and photon functions

Lowan, A. and Blanch, G.

Journal Optical Soc. Am., 30 (1940), p 70

Solar energy, a summary of records at Columbia, Missouri Ag. Exp. Sta.

McQuigg, J. and Decker W.

Univ of Missouri Res Bull, 671 (1958)

27 pages

Solar Energy R&D Policy Assessment

Ralph, E

Heliotek, Division of Textron, Inc (1972) March

The sun is a free energy source.

Ramaer H.

Electra (Netherlands), Journal Paper 53 (1973) No 31 p 8

10 pages

Reports on a number of projects and proposals for utilizing solar energy.

Energy storage research at Oklahoma State Univ.

Ramakumar, R

OSU (1970)

Surface measurements of solar and terrestrial radiation during the IGY and IGC

Robinson, G.

Ann. Int. Geophys. Year 32 (1964), p 17

Soviet research on solar energy utilization

Teplykakov, D.

Joint Publications Research Service, Washington, D.C., (1962), May

14 pages **7 ref.**

The utilization of solar energy to help to meet our nation's energy needs

Thomas, R.

Energy Crises Symp. New Mexico (1973)

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8.7
FORSKNING AVSEDD FÖR U-LÄNDERS UTNYTTJANDE AV SOLENERGI.

Solar energy in developing countries: Perspectives and Prospects

National Academy of Sciences, Washington, D.C. (1972) March.

60 pages

Solar energy in developing countries: Perspectives and prospects

A report of an ad hoc advisory panel to the National Academy of Science, Washington DC, (1972)

49 pages

10 Years experience with solar water heaters in the UAR

Abou-Hussein, M

UN Conf on New Sources of Energy, Rome (1961)

7 pages

The paper shows the present status of solar water heaters in the UAR and a review of their development from the early open-cycle basin type to the recent metal-in-strip closed-cycle type with storage tank. The economic value of the solar water heating in comparison with water heating by kerosine, butane gas, and electricity was expressed as "the average yearly consumer total expenses". The comparison shows that water heating by solar energy is the cheapest method

Economics of Solar Stills in the Water-Supply Systems for Livestock Farming in Uzbekistan

Achilov, B. et al.

Geliotekhnika, 6 (1970), No 4, p 57

5 pages **1 table** **3 pictures** **7 ref.**

Comparative tests on large solar stills in the fields of Kzyl-Kum in the Uzbek. SSR

Achilov, B. et al.

Geliotekhnika, 7 (1971), No 5, p 86

4 pages 2 tables 2 pictures

Test on a portable solar still

Achilov, B. et al.

Geliotekhnika, 9 (1973), No 6, p 51

3 pages 2 pictures 3 ref.

The authors have discussed foamed plastic as a material for a portable solar still and have investigated its physical and mechanical properties when subjected to continuous insolation and to the action of the initial salt water.

Solar Energy Activity in India

Agrawal, H

Conf. Solar Energy Utilization, ISES (UK) (1974)

The Integration of Solar Stills into Minimum Cost Dwellings for Arid Areas

Alward, R. et al.

ISES Conference in Paris, (1973)

11 pages 3 tables 5 pictures 5 ref.

A solar distillation unit, incorporated into the roof of a building, and making shower waste and saline water potable.

Country report on solar energy work in Pakistan

Anwar, M.

Int Solar Energy Soc Conf., (1970), Prepr Pap N 1/82

8 pages

Engineering and economic study of the use of solar energy especially for space cooling in India and Pakistan

Ashar N and Reti A

UN Conf on New sources of energy, Rome(1961)

23 pages

A flat-plate solar heat collector and a refrigeration system can be used in New Delhi

Use of Solar Energy for Heating and Cooling of Buildings in Central Asia

Avezov, R. et al.

Geliotekhnika, 6(1970), No 2, p 76

7 pages 2 tables 3 pictures 15 ref.

Solar energy to provide water supply for islands

Ayres, E

Heating and Ventilating 45 (1948) Aug p 99

Brief discription of solar installation to be installed on one of the Virgin Islands, to distill salt water by use of solar energy.

Feasibility study of solar heating

Bahadori, M.

Solar Energy, 15 (1973), No 1, p 3

Resultats de l'Exploitation d'Un Distillateur Solaire en Turkménie

Bairamov, R.

ISES Conference in Paris, (1973)

8 pages 1 picture

Technical and Economic Comparison of Methods of Pasture Irrigation in the Turkmen SSR

Bairamov, R. and Ataev, Ya.

Geliotekhnika, 4 (1968), No 5, p 61

9 pages 2 tables 3 pictures 3 ref.

The paper deals with a very up-to-date agriculture problem of the Turkmen SSR. It is capital work dealing with the expediency of financing the one or other method of watering new territory. The results are given in form of graphical dependence of the essential values characterising the economical expediency of the watering method.

8.46

Solar depression power plant of Qattara in Egypt

Bassler, F.

Solar Energy, 14 (1972), No 1, p 21

8 pages 4 pictures 8 ref.

In the Libyan Desert of North Africa, only 80 km away from the Mediterranean, a vast depression 300 km long and 150 km wide can be found, the floor of which at its lowest point lies 135 m below sea level. If seawater is conducted to the northern edge of this depression by an open channel or an underground supply line, the difference of elevation between the Mediterranean and the bottom of the depression can be used for generating power in water turbines.

Utilisation de lÉnergie Solaire dans les Conditions Particulieres des Regions a Climat Torride et Aride pour la Climatisation en Eté

Baum, V et. al.

ISES Conference in Paris, (1973)

13 pages 1 pictures 5 ref.

Solar powered free cylinder water pump

Beale, W. et al

Proc. of 4th Intersociety Energy Conversion Eng Conf., Washington, D.C., (1969), p XIV

Solar still in the desert

Baum, V. et al

Int. Solar Energy Soc Conf., (1970), Prepr. Pap. N 5/36

7 pages

Projet de distillateur solaire pour l'ile de Nueva Tabarca

Blanco, P et al

Coopération Méditerranéene pour l'énergie solaire, Bull (1967) No 12
In French

A solar distillation pilot plant is described

Solar energy utilization in Chile

Bliss, R.

A Report to The National Academy of Sciences, (1961), June

27 pages

A general non-technical description of the present status of solar energy technology is given, Economically practical use of solar energy today is restricted to processes requiring merely thermal energy at a moderate temperature level, and subject to the further restriction that there be associated with the intended application a favorable combination of sunny climate, high annual use factor of the equipment, and moderately high cost of available conventional fuels. Research and development over the next decade or two is not expected to greatly alter the above practical restrictions.

L'utilisation de la chaleur solaire et les possibilités de l'exploitation du Sahara comme source de puissance motrice

Boisse de Black, J

Revue Industrielle, 62 (1932) Sept p 449

Discusses utilization of solar heat in Sahara Desert, and possibility of practical application; presents average caloric value per square meter; describes briefly first application in hospital at Colomb-Béchar for heating of baths

Culture en zone aride et serres - distillateurs solaires

Boutiere, H.

COMPLES Bulletin No. 22, (1972)

22 pages 4 pictures

Solar stills in Iraq

Brancker

Nature, 185 (1960) Febr.

Emploi de l'énergie solaire en Afrique

Bremaecker, J

Fol Sci Africae Cent, 4 (1958) No 1, p 8

3 pages

Describes four possible ways in which solar energy can be utilized: water heaters, cookers, air conditioners, and refrigerators

Refroidissement d'Un Corps Noir Irradiant en Direction de l'Espace dans le Desert d'Alacama (Chili)

Castellanos, G. and Fournier, J.

ISES Conference in Paris, (1973)

10 pages 3 tables 8 pictures 12 ref.

Temperature differences more than 40°C have been obtained between ambient air and an isolated black body due to radiation to outer space. Combined with evaporation this is used to desalinate brackish water by means of natural freezing.

Performance at Colombo, Ceylon, of a pressurised solar water heater of the combined collector and storage type

Chinnappa, J. and Gnanalingam, K.

Potential utilization of flat plate collectors in tropical regions

Choudhury, N.

Low temperature engineering application of solar energy. ASHRAE (1967), p. 53

7 pages 5 tables 6 pictures 7 ref.

In the tropics where solar radiation is plentiful, flat plate collectors can be used for heating, cooling and distillation of water. Costs and data for different systems are given.

The Varied and Early Solar Energy Applications of Northern New Mexico

Cook, J.

AIA Journal (1974) Aug., p. 37

6 pages

Solar Radiation and Solar Energy in Argentina

Cvirelli, S. et al.

ISES Conference in Paris, (1973)

10 pages 15 pictures 5 ref.

Solar Energy Utilization in Developing Countries

Datta, R.

Ekistics 38 (1974) No.225

3 pages 2 tables - -

Deals with the energy problems in India

Survey of the status of solar energy application and research in India

Datta, R. and Gomkale, S.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 1/38

7 pages

The Patmos solar distillation plant

Delyannis, A and Piperoglou, E

Solar Energy, I2 (1948) No 1, p 113

3 pages 1 picture 1 ref

The inhabitants of the upper part of the town Patmos depend completely on rain for their water supply. No piping system exists. Patmos is a place in which desalting could effectively help. A suggestion to erect a solar distillation plant was made

Energia Solare

Dorning, M

Ingegnere, 13 (1939) p 11 & 14 (1940) p 341

11 pages

Solar energy; reviews methods of utilization of solar energy, and describes various solar energy installations; discusses utilization of solar energy for electric power generation, and examines possibilities of solar power developments in Abyssinia and on east coast of Africa; effect of solar power developments on world economy

How to build a solar still

Edson et al

Univ of Calif, Series 75 (1959) Issue 13

7 pages

Emphasizes simplicity of construction with some slight sacrifice of performance. The still can be built from materials available in most lumber yards and metalsupply houses

8.50

Solar energy in developing countries

National Academy of Sciences, USA

Ekistics, 38 (1974), No 225

5 pages

The role of solar radiation calculations in the design of housing in central Asia

Ershov, A. et al.

Geliotekhnika, 7 (1971), No 3, p 48

7 pages 2 pictures 18 ref.

Experience in setting up solar-energy survey for Azerbaidzhan

Es'man, V. et al.

Geliotekhnika, 10 (1974), No 2, p 51

8 pages 2 tables 4 pictures 5 ref.

Theory and experience with solar stills in Chile

Frick, G. and Hirschmann, J.

Solar Energy, 14 (1973), No 4, p 405

9 pages 7 pictures 5 ref.

Theoretical studies of solar stills are described. These deal with efficiency, thermal balance, thermal inertia, thermal capacity, thermal conductance, thermal lag and distillation lag with regard to solar irradiation maximum, and time constant,

Installations for solar space heating in Girin

Fukuo, N. et al.

United Nations Conference on New Sources of Energy, Rome (1961)

19 pages

The design. the construction, and the performance of the heating and cooling device by solar energy, which has been studied at the Government Industrial Research Institute, Nagoya, In Nagoya, Japan since September 1958, are reported.

L'utilisation de l'energie solaire au Vénézuéla

Gandillon, P

Société des Ingénieurs Civils de France. Bulletin, 84 (1931) p 1761

18 pages

Utilization of solar energy in Venezuela; reviews advantages of solar utilization, and discusses possibilities of producing energy through solar evaporation of Maracaibo Lake, Venezuela

Solar Energy Utilization Potential in India

Garg, H. and Krishman, A.

ISES Conference in Paris,(1973)

14 pages 3 tables 6 pictures 12 ref.

Design curves for water heating by flat-plate collectors giving the ratio of useful energy to the heat removal efficiency factor in terms of inlet temperature rise over ambient temperature.

A New Glass-Roof Dryer for Cocoa Beans and Other Crops

Ghosh, B.

ISES Conference in Paris, (1973)

17 pages 11 pictures 12 ref.

Power for the small user

Golding, E

New Commonwealth, 37 (1959) No 2, p 103

5 pages

Different types of small plants including oil engines, water power plants, wind power plants and equipment using solar energy are considered.

Solar distillation studies of CSMRI Bhavnagur, India

Gomkale, S. and Datta, R.

COMPLES Revue Int. d'Heliotechnique, April 1973

4 pages 2 tables 4 pictures 4 ref.

Report of performed studies. Discussion of possible applications in India.

Solar energy applications in India

Gomkale, S. and Datta, R.

Solar Energy, 14 (1973), No 3, p 321

6 pages 3 pictures 14 ref.

Solar radiation distribution map of India is prepared.

Solar distillation developments in the eastern Mediterranean.

Gomella, C.

Symposium on Saline Water Conversion,(1957), Nov., Proceedings, Wash., National Academy of Sciences-National Research Council, (1958) Publication 568, p 131

6 pages

The possibilities of solar distillation in North Africa and developments in this field are described. A small distillation cell consisting of a molded asbestos-cement shell with a glass cover, set on rock wool insulation, has been improved and some aspects of its performance are described including the daily variation in yield.

Solar Space Heating at High Altitude Conditions

Gupta, J. and Chopra, R.

ISES Conference in Paris,(1973)

10 pages 2 tables 3 pictures 12 ref.

Results of field trials on a solar space heating device at an altitude of 3,5 km and under sub-zero ambient conditions down to -20°C. The equipment does not require auxiliary power (India).

Reduction of Solar Heat in Industrial Buildings

Gupta, B. and Chaud, S.

ISES Conference in Paris (1973)

8 pages 5 pictures 5 ref.

Continous roofsprings for cooling industrial buildings (India)

Demineralization of saline water by solar radiation in the United Arab Republic

Hafez, M and Elnesr, M

UN Conf on New Sources of Energy, Rome (1961)

10 pages

An aluminium foldable still of the roof type has been constructed. It is provided with a small reservoir which permits a constant level of water. A moderate size experimental distiller has also been constructed. It has a permanent concrete base of 40 sq meter area and a glass cover of the roof type

Energy as a factor in the progress of underdeveloped countries

Hartley, H.

United Nations Conference on New Sources of Energy, Rome, (1961), p 11

Most of the underdeveloped countries are in the tropics where seasonal variations are smaller and the incidence of sunshine more reliable than in higher latitudes, so conditions are relatively favorable for its utilization to add to their present meagre supplies of energy.

Project of a solar desalination plant for the North of Chile.

Hirschmann, J.

Proc. First int. Symp. Water Desalination, Washington (1955), p 499

A solar energy pilot plant for Northern Chile

Hirschmann, J.

Solar Energy, 5 (1961) p 37

7 pages 3 tables 5 pictures 10 ref.

8.54

The Prospects of Utilization of Solar Energy and Wind Power for Generation of Power, Air Conditioning and Refrigeration in the Climatic Condition Similar to India

Jayadish, S.

ISES Conference in Paris,(1973)

16 pages 1 table 7 pictures

Solar energy in developing countries

Jefferies, E.

Solar Energy Utilization in ISES (UK) Conf. London, (1974), July

An introduction to solar distillation

De Jong, T

Proc Am Soc Civil Engr J Sanit Eng Div SA4, Paper 1704 (1958)

40 pages

This paper presents a study and the results of experiments on the production of potable water with solar energy on three pilot plants in Iran. The effects of geographical location, the size and shape of plants, together with descriptions of various plants and methods of distillation, on the actual production of the pilot plants are explained in the report

Le four solaire de Bouzaréah

Juston-Coumat, F et al

Bull Engrais (1957) No 402, p 8

2 pages

Socio-Economic Considerations in the Utilization of Solar Energy in Underdeveloped Areas

Kapur, J.

Solar Energy, 6 (1962) No 3, p 99

5 pages 2 tables 1 picture

Solar Dryers for Indian Conditions

Kapoor, S.

ISES Conference in Paris, July, (1973)

11 pages 3 tables 2 pictures 7 ref.

A simplified and sophisticated analysis of solar dryers. Design of solar dryers. Experimental results.

Concentration of palm juice with solar energy

Khanna, M

J Sci Ind Res 16A (1957) No 6, p 260

2 pages

Reflectors arranged in a semicircle has been used by the National Physical Laboratory of India to concentrate solar heat for evaporating palm juice

Solar water distillation in North India

Khanna, M

Journal of Scientific and Industrial Research, A-General (1962)

5 pages

A summary from studies conducted over the past several years on various aspects of solar distillation. The economics of installation and operation are discussed

A method of obtaining water in arid lands

Kobayashi, M

Solar Energy, 7 (1963) No 3, p 93

7 pages 3 tables 9 pictures

Underground water is, by capillary action, sucked up to the surface of the earth through tiny crevices in the soil. When the ground surface is heated by the sun, this water dissipates in aqueous vapor. To collect such moisture in the form of droplets is installed on the ground a quadrilateral frame with a sloping lid made of glass, or plastic material with its inner surface chemically treated. Pure water can be obtained by collecting these droplets. It is possible for the device to collect water in considerably arid areas, yielding about 1000 cm^3 per m^2 per day. Water obtained through the use of the device is suitable for chemical and medical use, for human consumption etc, and is not radioactive

The development of solar water heater and its field trials under Indian tropical conditions

Khanna, M

Solar Energy, 12 (1968) No 2, p 255

6 pages 2 pictures 12 ref

The main characteristics of the Indian winter months are very favourable for the utilization of solar energy in heating water for domestic use. The development of a solar water heater, simple in design but efficient and cheap, and its field trials under Indian tropical conditions and sub-zero temperatures are discussed

Potential utilization of solar energy in Guinea

Lamin Kaba, M.

Geliotekhnika, 9 (1973), No 4, p 44

5 pages 6 pictures

The high intensity of solar radiation at the earth's surface the 7 to 8 hr duration of sunshine, and the high air temperature are all favorable for utilization of solar energy in Guinea. Thus, in Guinea all conditions exist for utilization of solar energy, it is necessary to carry out research in order to obtain basic data on solar radiation and also to find the technical and economic characteristics of solar plants for high-output operation.

Description of a large solar distillation plant in the West Indies

Lawand, T.

Solar Energy, 12 (1969), No 4, p 509

4 pages 1 table 2 pictures 7 ref.

Solar distillation of saline water conversion for the provision of fresh water. The development of a simple, locally fabricated. easily operable still for use by peasants or small communities in the emergent areas of the world.

Availability of solar energy in Brazil

Luiz A and Santos J

Acad. Bras. Cienc (Brazil) 44 (1972) No 1 p 1

7 pages

Extensive tables showing the seasonal and geographic patterns of mean solar energy recieved in Brazil.

Effectiveness of Different Methods of Protecting Roof Covers from Overheating in Central Asia

Marakaev, R. and Mezhevnikov, B.

9 pages 2 tables 1 picture 7 ref.

Effect of the Roof Cover of Industrial Buildings on Their Microclimate in Central Asia

Marakaev, R.

Geliotekhnika, 6 (1970), No 4, p 69

9 pages 3 tables 4 pictures 12 ref.

Le moteur solaire dans les regions arides

Masson, H

Bull & Mém Ecole Nat Med Dakar, 5 (1957) p 298

8 pages

Domestic solar water heater

Mathur, K. et al.

Journal of Scientific Industrial Research 18 A (1959), p 51

7 pages

An arrangement for heating water with solar energy for supplying the domestic needs of a small family using easily available and inexpensive construction materials (galvanized iron sheets), is described.

A new option for Solar energy utilization by Sahel Communities

Meinel, A. and Meinel, M.

ISES conf Paris,(1973)

Cooling-load characteristics for residential and public buildings in the cities of Central Asia

Mingazov, R and Rodimkin, E

Geliotekhnika 9 (1973) No 4, p 71

Formulas wich can be used for estimating the cooling demand for some types of buildings.

Solar water heaters for domestic and farm use

Morse, R

Commonwealth Scientific and Industrial Research Organization, Eng Sect Rept ED 5 (1957)

15 pages

A solar water heater is described. Complete details in the form of drawings

Solar energy as an aid to the development of the tropics

Morse, R. and Dunkle, R.

Report 119, Sixth World Power Conf., Melbourne, (1962)

Solar water heaters

Morse, R.

CSIRO Division of mechanical engineering, circular No 2. Melbourne, Australia.

Practical descriptions of how to make solar water heaters.

Problems of energy supply in undeveloped countries with special regard to new sources of energy

Mueller, N

UN Conf on New Sources of Energy, Rome (1961)

12 pages

An experiment with a vertical solar still

Nebbia, G

UNESCO-Iran Symposium on Salinity Problems in Arid Zones (1958)

L'Utilisation de l'Energie Solaire dans les Localitées sous zero (Alpes) et dans le cercle Domestique et Similaire

Paolo, G.

ISES Conference, Paris (1973)

9 pages 5 pictures 3 ref.

Solar water heating in the tropics

Pillay, K.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 4/77

6 pages

Solar energy in India

Ramdas, L

Wind and Solar Energy, UNESCO Arid Zone Research VII (1956) p 188

8 pages

A solar timber kiln

Read, W. et al.

Solar Energy, 15, (1974), No 4, p 309

18 pages 2 tables 6 pictures 6 ref.

A solar water heater for low cost housing

Richards S and Chinnery O

South African CSIR Report No 237 (1967) Pretoria

26 pages

Application de la Distillation Solaire aux Cultures sous Abri

Roncharine, J.

ISES Conference in Paris, (1973).

10 pages 12 ref.

Protected cultivations for hot countries. Excess heat is used to desalt water.

Solar-energy utilization at Dacca

De Sa, V.

Solar Energy, 8 (1964) p 83

8 pages 2 tables 12 pictures 9 ref.

Results for water heating and for refrigeration.
As a water heater was a corrigated-sheet flat-plate collector used.
An ammonia-water absorption unit is used for refrigeration.

Research into Solar Energy Utilization in Saudi Arabia

Sabbagh, J. et al

ISES Conference in Paris,(1973),

10 pages 1 table 13 pictures 20 ref.

Solar data for Saudi Arabia. Design and performance of water heaters and water distillers for domestic use.

Study of solar water heating in Algeria

Savornin, J

Proc. UNESCO Conf. New Sources of energy, Rome (1961)

A solar coil water-water heat exchanger for showers

Sharafi, A.

Geliotekhnika, 1 (1965), No 1, p 55

2 pages 2 pictures 1 ref.

Solar irrigation for the ***Underdeveloped***

Stratton, D.

The Rutgers Engineer (1962), March

2 pages

Underdeveloped areas have new hopes from a small, selfcontained electric power plant and pumping unit which is capable of sustaining individual families or villages by irrigating the land they live on and supplying their household water needs.

A universal solar kitchen

Swet, C.

John Hopkins Univ., Silver Spring, Md. Applied Physics Lab. (1972) July.

27 pages

Solar energy for developing regions

Tabor, M.

UNESCO, (1973)

A concise overview of possible current applications by one of the best heliotechnologists.

Solar energy research carried out at the Union of Burma Applied Research Institute

Thaung, U. et al

Int Solar Energy Soc Conf., (1970), Prepr Pap N 1/70

6 pages

A brief report about the available solar energy and its importance for the villages and farms in Turkey

Ultanir, M

Coopération Méditerranéenne pour l´énergie solaire, Bull (1968) No 15

Gives an isohel chart and outlines the potential of solar energy utilization for Turkey

Solar energy potential and solar technology of Turkey up to 2000 Year

Ultanir, M

ISES Conf., Paris (1973)

8 pages **2 ref.**

Utilization of solar energy for demineralizing the subsurface waters of the desert pastures of Uzbekistan

Umarov, G. and Vardiyashvili, A.

Geliotekhnika, 7 (1971), No 4, p 60

4 pages 1 table 2 pictures 6 ref.

Development of solar engineering in Uzbekistan

Umarov, G, Zakhidov, R.

Geliotekhnika 8 (1972), No 6, p. 9.

7 pages 2 pictures 20 ref.

The paper provides a review of research conducted by scientists of Uzbekistan in the field of solar engineering. The authors outline the basic trends of research and results achieved.

Performance de Four Solaires Eqonomiques pour l'Usage Domestique

Vannucci, S. and Rebello, F.

ISES Conference in Paris, (1973)

7 pages 3 pictures 8 ref.

Design, construction and experiments of a small low-cost furnace for domestic use.

Potentialitiesfor saline water conversion and the provision of power in arid areas

Ward, G

Brace Research Inst, Montreal. Technical Report No T8 (1963)

12 pages

An appraisal of the progress made in providing a solution to fresh water shortages in arid countries. A brief review of the various conversion processes now in use and those that provide promise for future application. An interpretation of the results of engineering research in the light of economic factors

Helio-Technical Institute of Samarkand

Wilson, E

Science, 80 (1934) Suppl, Oct p 8

Very brief description of Russian experiments in which solar energy is used for heating of water and drying of vegetables

8.8
FORSKNING AVSEDD FÖR I-LÄNDERS UTNYTTJANDE AV SOLENERGI.

Solar distillation research and its application in Australia

Symp. on Saline water conversion, Washington (1957)

8 pages

Progress made during two years towards the development of solar stills.
Telkes, tent-shaped as well as Gomella solar still where tested.

Photovoltaic conversion of solar energy: Present and future

Int. Rectifier Corp. IRC. El Segundo, California (1964)

A review and comparison of selected United States energy forecasts

Pacific Northwest Laboratories of Battelle Memorial Institute, (1969), December

Solar Energy Research in Australia

Australian Academy of Science. Report No 19 (1973)

Comparative Evaluation of Solar Fission, Fusion and Fossil Energy Resources
Part 1: Solar Energy

GIT, School of Mech. Eng. (1973)

122 pages

Utilization of Solar Energy to meet the energy needs of the US

Solar heating and cooling demonstration act of 1974
Background and legislatic history

Subcomm. on Energy of the Comm. on Science and Astronautics Washington D.C., (1974)

306 pages

8.64

I Spanien satsar man på solenergi

Byggnadsindustrin, (1974), NO 27

Intervju med fabrikanter av solpaneler och solelement i Spanien.

Largest solar project set for Denver

Engineering News-Record, 192 (1974), No 23, p 11

1 picture

US overview of solar energy

Summary of talk by Herwig, L.

Japanese/United States symposium on solar energy systems, 2 (1974), p. 2-1

10 pages 10 pictures

Bostadsuppvärmning

IVA. Utlandssekretariatet, Stockholm

Specialrapport, Frankrike, 4 (1974)

16 pages 76 ref.

General survey of residential heating in France. References to utilization of solar energy.

Bostadsuppvärmning

IVA. Utlandssekretariatet, Stockholm

Specialrapport, USA, 2 (1974)

13 pages 26 ref.

Residential space heating in the U.S. References to utilization of solar energy.

Stations Énergétiques Solaires: Problèmes et Perspectives

Alediev, I. et al

ISES Conference in Paris,(1973),

9 pages 4 ref.

Russian research review.

Solar Energy in Canada

Allcut, E. and Hooper, F.

Conf. New Sources of Energy, Rome (1961), Vol. 4, p. 120

The Energy Resources and Electric Power Situation in the United States

Altman, M. et al.

Energy Conversion 12 (1972)

Current Work in Britain

Archer, M.

Sun at work in Britain, 1 (1974) No. 1

4 pages 28 ref

Commercial activity. Solar houses. Swimming pools. Developing countries. Solar cells. Photochemical conversion.

Proposals for Solar Energy Utilization

Archer, M.

The Royal Insitution, London (1974) Feb.

10 pages 9 tables 1 picture 25 ref

Research in different countries. Describes present state of the art

Solar engineering and technical progress

Arifov, U.

Geliotekhnika, 3 (1967), No 5, p 3

4 pages

Some aspects of solar power engineering in the USSR

Arifov, U. and Kulagin, A.

Geliotekhnika, 4 (1968), No 3, p 5

10 pages 64 ref.

Implementation of the Lenin Plan for the Electrification of the USSR

Arifov, U.

Geliotekhnika, 6 (1970), No 2, p 3

7 pages **20 ref.**

Effectiveness of Solar Energy in the Fuel Energy Balance

Avezov, R. et al

Geliotekhnika, 6 (1970), No 6, p 60

4 pages **2 tables** **3 ref.**

Silicon solar cell power source equipments in Japan

Baea, Y. and Kimura, R.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 7/24

7 pages

Reaching for the sun

Behme, R

Better Homes & Gardens, 37 (1959) No 2, p 56

4 pages

Review of solar energy utilisation in New Zealand

Benseman, R.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 1/111

7 pages

Algae culture from laboratory to pilot plant

Burlew, J

Carnegie Inst of Washington Publication (1968)

Large Aera Solar Cells

Cherry W

Proc. 13th Annual Power Sources Conf. (1959)

Conclusion and Recommendations of the United States Solar Energy Panel

Cherry, W. and Morse, F.

NSF-RANN and NASA, Washington D.C. (1973)

Conclusions and Recommendations of the United States Solar Energy Panel

Cherry, W. and Morse, F.

International Solar Energy Congress Paris (1973) Paper No E-39

Design Philosophy and Operating Experience for Australian Solar Stills

Cooper, P. and Read, W.

ISES Conference in Paris, (1973).

10 pages 2 tables 7 pictures 8 ref.

The development undertaken in Australia, both the theoretical and practical aspects of solar stills is described. Operating experience. Description of two types of units.

Testimony before Subcommittee on Energy, House ,Science and Astronautics Comm.

Dubin, F.

Published by Dubin-Mindell-Bloom Association, New York (1973) June

Average solar radiation in the United States

Fritz, S. and MacDonald, T.

Heating and Ventilating, 46 (1949), No 7, p 61

4 pages

8.68

Quelques experiences sur la distillation solaire de l'eau a petite echelle - Algunas experiencias de destilacion solar del agua en pequena escala

Fontan, P and Barasoain, J

UN Conf on New Sources of Energy, Rome (1961) In French

20 pages

This paper give Spanish sunshine and solar energy records. Several types of solar stills using Spanish materials, and designed to serve small household consumers, are under study. Ten still types have been tested. The performance of three of these types over a relatively long period is discussed, and conclusions on their industrial production are drawn. Three recent prototypes of new design are described. The annual production and costs of material and labor for several types are given

Solar Energy, Solar Power and Pollution

Hay, H.

ISES Conference in Paris, (1973)

9 pages 1 table 1 picture 8 ref.

California is considering the subsidy of solar devices.

Solar energy applications in the United Kindom

Heywood, H.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 1/86

2 pages

Solar Radiation and its Utilization

Kalitin, N

Nauka i Zhizn, 7 (1946) p 1 (In Russian)

6 pages

Reviews studies on utilization of solar energy carried out in the U.S.S.R.; gives data on variations of amount of solar radiation received in different latitudes under different atmospheric conditions and describes solar heat accumulator designed by Trofimow; brief discussion of uses for domestic hot water supply, laundries and public baths

A review of Japanese ocean-based solar energy conversion systems

Kamogawa, H.

Japanese/United States symposium on solar energy system, 2 (1974), p. 5-1

12 pages 4 tables 6 pictures 7 ref.

The place of solar energy in the heat supply of the USSR's southern regions

Katsovich, F.

Geliotekhnika 8 (1972), No. 3, p. 3

12 pages 6 tables 2 pictures 10 ref.

Solar radiation simulators and measuring the characteristics of batteries and their elements (survey)

Kovalskii, V

Geliotekhnika 8 (1972) No 3 p 45

7 pages **44 ref.**

Precision spectral measurements of direct solar radiation: an analysis of extended daily values for Arizona and Florida

Kunkel, R. et al.

Fourth Annual Meeting of the Solar Energy Society, Palo Alto, (1968)

Solar Batteries

Linder, E

Proceedings, Tenth Annual Battery Research and Development Conference (1956), p 59

4 pages

The origin and early development of photovoltaic cells from 1839 to the present day is reviewed

Franskt system utnyttjar solenergin till uppvärmning av enfamiljs-villor

Lindholm, [illegible]

Ny Teknik, (1973) No 31

2 pictures

Description of a french system for solar heating of dwellings

Solar energy as an option for Arizona

Meinel, A.

An Executive Review, (1973), May

Solar water heaters for domestic and farm use

Morse, R

CSIRO Engineering Section, Report ED 5 (1957)

Solar energy research: Some Australian investigations

Morse, R.

Solar Energy, 3 (1959) No 3 p 26

3 pages 6 pictures 8 ref.

The potential for solar distillation in Australia

Morse, R.

Proc, Int. Conf. Water for Peace, Washington (1967)

Solar energy research and development and industrial applications in Australia

Morse, R.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 1/84

10 pages

Operating Experiences with Solar Stills for Water-Supply in Australia

Morse, R et al

Solar Energy, 13 (1970) No 1, p 99

5 pages 1 table 2 pictures 3 ref

Solar stills are now producing water for motels and a small township on a commercial basis. In addition, full-size prototypes have been operating on an experimental basis at field stations since 1963. These are widely separated on the Australian continent and have produced more than a million gallons of fresh water

Solar power in the Australian energy scene

Morse, R.

Nature, (1973), November

The development of a solar still for Australian conditions

Morse, R. and Read, W.

Mechanical and Chemical Engineering Transactions of the Institu-- tion of Engineers, Australia, 3 (1967), p 71

Recent developments in solar energy application in Japan

Noguchi, T.

Int Solar Energy Soc Conf., (1970), Prepr Pap N 1)112

6 pages

Japanese overview of solar energy

Noguchi, T.

Japanese/United States symposium on solar energy systems 2 (1974), p. 1-1

11 pages 3 tables 3 pictures 2 ref.

A look at solar power for Seattle

Oman H and Bishop C

8th Intersoc. Energy Conv. Eng. Conf. (1973)

6 pages

Solar collectors, heat engines and systems are discussed

Solar energy in Britain

Page, J.

Sun at work in Britain, (1974), No 1

4 pages 3 pictures

General review of the possibilities to use solar energy in Britain.

Energy policy in the U.S.

Rose, D

Scientific American 230 (1974) No 1 p 20

Survey of solar heating installations in the U.K.

Shain, M et al

ISES (Uk) (1974) April

27 pages 10 pictures

Experimental works. Domestic usage. Swimming pools

8.72

Evaporation in Israel

Stanhill, G.

Bulletin of Research Council of Israel, 11 G, (1963)

13 pages

Penman's combined heat balance and aerodynamic equation has been adapted so that the evaporation from open-water surfaces can be calculated using the standard climatological data. The errors in the method are discussed and the estimates tested against measurements from a 12-ft evaporation tank.

The U. S. Energy Problem. Volume II. Appendices volume. Part A.

Szego, G.

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744 pages

Solar collector developments in Israel

Tabor, H.

Solar Energy, 3 (1959), No 3, p 8

2 pages 1 picture 1 ref.

Large area collectors - Solar ponds
Mirror collectors - Plastic windows for collectors

Solar utilization and development in Israel

Tabor, H.

The National Physical Laboratory of Israel, Hebrew University Campus, Jerusalem, Israel (1962) Feb

29 pages

Apart from solar evaporation of Dead Sea brines, water heating is the major present practical use of solar energy in Israel and economics show it to be competitive with electric water heating

Present situation of commercial solar water heaters in Japan

Tanishita, I.

Int Solar Energy Soc Conf., (1970), Prepr. Pap. N 2/73

6 pages

Large scale array development in UK

Trebble C

IEEE Conf Rec on 7th Photovoltaic Spec Conf, California (1968)

8 pages

Review of solar energy utilization in France, Italy, Australia and the USA

Trombe, F. et al

Solar energy utilization; ISES Conf. London (1974)

Solar energy in Spain

Villena, L.

Solar Energy 1 (1957) No 4 p 32

Historical development of solar cells

Wolf, M.

Proc. 25th Annual Power Sources Conf., Session on Solar Energy Conversion, Univ. of Pa., (1972)

Japan applies solar energy

Yellott, J.

Mechanical engineering, (1960), March, p 46

...
fantastiskt, utländskt, flärdfullt
om du vill,
men det var sol däri, ...
E. Tegnér: Sång ... den 5 april
1836

9

KONFERENSER, LITTERATURSAMMANSTÄLLNINGAR

En rad viktiga konferenser - helt ägnade åt solenergiproblemen - upptas i följande förteckning[1]. Desslikes har en förteckning även äldre litteratursammanställningar gjorts.

Såväl konferensförteckningen som förteckningen över litteratursammanställningar får ses som (icke fullständiga) komplement till de tidigare givna referaten. I många fall ger de - liksom naturligtvis litteraturhänvisningarna till olika artiklar - värdefulla hänvisningar också till litteratur som ej direkt anknyter till solenergi; icke förty är den av betydelse för den som vill sätta sig in i ämnesområdet.

---

1) I tidigare avsnitt har artiklar från några av konferenserna medtagits. Följande (icke kompletta) förteckning omfattar i viss mån sådana källor där solenergi endast behandlats i ett av flera teman.

90
LITTERATURSAMMANSTÄLLNINGAR

Solar Technology in the XV-XVII Centuries

Shafeeva, K.

Geliotekhnika, 6 (1970), No 3, p 73

4 pages - - 15 ref.

Major Lines of Development of Solar Engineering in the Eighteenth and Nineteenth Centuries

Shafeeva, K.

Geliotekhnika, 6 (1970), No 6, p 80

John Ericsson, pioneer in solar energy

Yellott, J.

Sun at work, 4 (1957), No 2

Solar continuity and spectral distribution of solar rays

Thekaekara, M.

Applied Solar Energy, 5 (1969) No 1

12 pages 1 table 3 pictures 37 ref

Summary of older works

Daylight Bibliography. Supplement to Report No 10

Pleijel, G and Lindqvist, N

Statens Kommitté för Byggnadsforskning (1947), Stockholm

85 pages

Research for Heating, Ventilating and Air Conditioning Engineer

Tasker, C

Journal, 16 (1948) Nov p 324, 345

36 pages

Review of literature including discussions of solar heating experiments carried out by American Society of Heating and Ventilating Engineers

Literature survey for an investigation of solar energy storage materials

New Mexico Highlands University

40 pages

Lists some 500 papers on heat storage chemicals, published during the period 1919-1956

Industrial applications of solar heating

Engineering Societies Library

ESL Bibliography No 7 (1950)

Annotated bibliography of about 150 selected references listing most of the important papers published on the various aspects of solar heating between 1930 and the middle of 1950.

Applied Solar Energy Research - A Directory of World Activities and Bibliography of Significant Literature

Burda, E.

Association for Applied Solar Energy, Phoenix, Arizona; Stanford, Calif. USA, Stanford Research Institute (1955)

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List of work up to 1954

Solar energy utilization

Baum, V et al

USSR Academy of Sciences (1957)

248 pages

A collection of papers by Baum and his colleagues on their investigations in solar energy applications

Solar energy applications

Washington, (1960)

OTS selective bibliography. SB-418

5 pages

Solar Energy Technology: 1954-1959

Brimelow, T.

London, the Library Association (1961)

32 pages

Solar energy applications

Washington, (1962), July (1960) - January (1962)

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Värmetransport genom fönster. Litteraturstudie med bibliografi

Byggforskningsrapport (1965) 15. Stockholm

Literature survey on heat transport through windows.
Many references

Utilization of solar energy

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Building research station, Garston, England, Library bibliography No. 220, (1969)

Patent descriptions as a source of information in solar engineering, patent search

Sheklein, A., Lazareva, M.

Geliotekhnika 8 (1972), No 6, p. 66

8 pages 3 tables 9 ref.

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L'architecture d'aujourd'hui (1973) No 167 May/June

82 ref.

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Yellott J.

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407 pages

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NASA SP 7042 , Washington (1974)

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National Technical Information Service , Springfield, Va. (1974)

162 pages

Energy Supply and demand and the availability of energy sources - A bibliography with abstracts

National Technical Information Service, Springfield, Va (1974)

167 pages

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Rio de Janerio (1954).

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Menlo Park, Calif., Stanford Research Institute,(1956)

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Univ. of Arizona Pr,. (1958)

Symposium on Solar Energy & Windpower in Arid Zones

New Delhi Symposium, UNESCO, Paris (1956)

238 pages

Battery Research and Development Conference

(1957)

Symposium on Saline Water Conversion

Washington, D.C. (1957) Nov.

Climatology and microclimatology; Proceedings of the Canberra Symp. UNESCO
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Report of the meeting of solar radiation experts held at WMO secretariat from Feb 25 to 27, 1959

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AIEE Pacific General Meeting

California (1960).

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Univ of Colorado (1961)

Meeting of Kansas Committee on the Relation of Electricity to Agriculture
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Los Angeles. Calif. (1962)

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UN Publications New York (1964) (AA)

Vol. 1 General Sessions.
Wide coverage of energy needs, locally available sources of energy and energy storage.
Vol. 4 Solar Energy I for Mechanical Power and Electrical Production. Pistons, Turbines and conversion to electricity
Vol. 5 Solar Energy II for Heating, Covers most aspects of solar heating.
Vol. 6 Solar Energy III for Cooling. Distillation and furnaces

ASME Meeting

New York (1964) Nov.

Proceedings of 1961 Athens Conference on Solar & Aerolian Energy

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231 pages

Session 1: Solar collectors
2: Energy storage
3: Hot water heating
4: Energy conversion, instrumentation, isolation, heating and cooling loads
5: Solar air conditioning
6: Foreign activities
7: Solar heating/cooling systems

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I.S.E.S. (UK) (1973) April

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Cleveland (1973)

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Soluppvärmda hus (BFR)
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R7:1975

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