

Solar Air Systems A Design Handbook Solar Air Systems Series

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Roof Cooling Techniques - Evyatar Erell

2013-04-03

Natural heating and cooling of buildings helps to improve energy efficiency in the built environment. This book considers the principles

of roof design and specific systems and cooling techniques. The authors explain the fundamental principles of roof cooling and describe in detail the relevant components, applications, built precedents, recent experimental work and key

design considerations. Specific systems and techniques are examined, including the main advantages and disadvantages of each strategy. Environmental functions are considered in terms of protective strategies and selective strategies. Protective strategies include solar control, thermal insulation, heat storage and thermal inertia. Selective strategies include radiative, evaporative and convective cooling and planting of roofs. Traditional and current roof construction practices are described, exemplified by case studies from across Europe. Including a free CD-ROM with software that enables readers to evaluate their own designs, this book will be invaluable for architects and engineers who wish to create buildings that are more energy-efficient.

A Handbook on Low-Energy Buildings and District-Energy Systems - L.D. Danny Harvey

2012-08-21

Winner of Choice Magazine - Outstanding Academic Titles for 2007. 'I predict that it will

become the "bible" of the field ... In my career, it's been difficult to spot a future classic even before it was published, but this is such a classic'. Mark D. Levine, Director, Energy Division, Lawrence Berkeley National Lab, USA. 'Explains in an easily understandable but not trivial way the factors that affect energy consumption, from building design to HVAC systems and systems serving communities'. Michael Holmes, Consultant to Ove Arup, UK. 'Technology compendia such as this book will become.

Solar Energy - Andy Walker 2013-08-07

Solar Energy is an authoritative reference on the design of solar energy systems in building projects, with applications, operating principles, and simple tools for the construction, engineering, and design professional. The book simplifies the solar design and engineering process, providing sample documentation and special tools that provide all the information needed for the complete design of a solar energy

system for buildings to enable mainstream MEP and design firms, and not just solar energy specialists, to meet the growing demand for solar energy systems in building projects. *Handbook of Heating, Ventilation, and Air Conditioning* - Jan F. Kreider 2000-12-26 Over the past 20 years, energy conservation imperatives, the use of computer based design aids, and major advances in intelligent management systems for buildings have transformed the design and operation of comfort systems for buildings. The "rules of thumb" used by designers in the 1970s are no longer viable. Today, building systems engineers must have a strong analytical basis for design synthesis processes. But how can you develop this basis? Do you have on your shelf a reference that describes all the latest methods? Does it cover everything from the fundamentals to state-of-the-art, intelligent systems? Does it do so in practical way that you can easily access and use when you need to? The Handbook of Heating,

Ventilation, and Air Conditioning does. It combines practice and theory, systems and control, and the latest methods and technologies to provide, in one volume, all of the modern design and operation information needed by HVAC engineers. The Handbook of Heating, Ventilation, and Air Conditioning will stay up-to-date while other resources become outmoded and go through lengthy revision and reprint processes. Through a link on the CRC Web site, owners of the Handbook can access new material periodically posted by the author. *The Solar House* - Daniel D. Chiras 2002-10-01 Passive solar heating and passive cooling—approaches known as natural conditioning—provide comfort throughout the year by reducing, or eliminating, the need for fossil fuel. Yet while heat from sunlight and ventilation from breezes is free for the taking, few modern architects or builders really understand the principles involved. Now Dan Chiras, author of the popular book *The Natural*

House, brings those principles up to date for a new generation of solar enthusiasts. The techniques required to heat and cool a building passively have been used for thousands of years. Early societies such as the Native American Anasazis and the ancient Greeks perfected designs that effectively exploited these natural processes. The Greeks considered anyone who didn't use passive solar to heat a home to be a barbarian! In the United States, passive solar architecture experienced a major resurgence of interest in the 1970s in response to crippling oil embargoes. With grand enthusiasm but with scant knowledge (and sometimes little common sense), architects and builders created a wide variety of solar homes. Some worked pretty well, but looked more like laboratories than houses. Others performed poorly, overheating in the summer because of excessive or misplaced windows and skylights, and growing chilly in the colder months because of insufficient thermal mass and insulation and poor siting. In *The Solar*

House, Dan Chiras sets the record straight on the vast potential for passive heating and cooling. Acknowledging the good intentions of misguided solar designers in the past, he highlights certain egregious—and entirely avoidable—errors. More importantly, Chiras explains in methodical detail how today's home builders can succeed with solar designs. Now that energy efficiency measures including higher levels of insulation and multi-layered glazing have become standard, it is easier than ever before to create a comfortable and affordable passive solar house that will provide year-round comfort in any climate. Moreover, since modern building materials and airtight construction methods sometimes result in air-quality and even toxicity problems, Chiras explains state-of-the-art ventilation and filtering techniques that complement the ancient solar strategies of thermal mass and daylighting. Chiras also explains the new diagnostic aids available in printed worksheet or software formats, allowing

readers to generate their own design schemes.

Thermal Analysis and Design of Passive Solar Buildings - A. K. ATHIENITIS 2020-06-30

Passive solar design techniques are becoming increasingly important in building design. This design reference book takes the building engineer or physicist step-by-step through the thermal analysis and design of passive solar buildings. In particular it emphasises two important topics: the maximum utilization of available solar energy and thermal storage, and the sizing of an appropriate auxiliary heating/cooling system in conjunction with good thermal control. Topics include: Transient heat transfer and thermal storage, Fenestration components, systems and daylighting, Dynamic models of heat transfer in solar buildings, The passive response of solar buildings and its use in design, Ventilation and indoor air quality, Analysis and sizing of small auxiliary heating/cooling systems, Control of passive solar buildings, Solar energy utilization techniques

and systems, Thermal Analysis and Design of Passive Solar Buildings is an important contribution towards the optimization of buildings as systems that act as natural filters between the indoor and outdoor environments, while maximizing the utilization of solar energy. As such it will be an essential source of information to engineers, architects, HVAC engineers and building physicists. Book jacket.

Convert Your Home to Solar Energy - Everett M. Barber 2010-01-01

With the cost of heating oil and electricity fluctuating wildly, consumers are clamoring for information on alternative energy. This source book covers all the relevant technologies, including solar space and water heating as well as photovoltaic electricity.

Solar Energy Index - George Machovec 2013-10-22

Solar Energy Index is an index of resources dealing with solar energy, including archival materials from the International Solar Energy

Society collection; references to articles in major solar journals; patents and pamphlets; National Technical Information Service reports; unbound conference proceedings; and other assorted reports. Both theoretical and "how-to-do-it" publications are well represented. This book places particular emphasis on terrestrial solar thermal and photovoltaic applications of solar energy. Subjects are classified according to physics, terrestrial wind, collectors, space heating and cooling, economics, materials, distillation, thermal-electric power systems, photoelectricity, solar furnaces, cooking, biological applications, water heaters, photochemistry, energy storage, mechanical devices, evaporation, sea power, space flight applications, and industrial applications. Topics covered range from wind energy and bioconversion to ocean thermal energy conversion, heliohydroelectric power plants, solar cells, turbine generation systems, thermionic converters, batteries and fuel cells,

and pumps and engines. This monograph will be of interest to government officials and policymakers concerned with solar energy.

The Solar Cooling Design Guide - Daniel Mugnier 2017-09-01

Solar cooling systems can be a cost-effective and environmentally attractive air-conditioning solution. The design of such systems, however, is complex. Research carried out under the aegis of the International Energy Agency's Solar Heating and Cooling Program has shown that there is a range of seemingly subtle design decisions that can impact significantly on the performance of solar cooling systems. In order to reduce the risk of errors in the design process, this guide provides detailed and very specific engineering design information. It focuses on case study examples of installed plants that have been monitored and evaluated over the last decade. For three successful plants the design process is described in detail and the rationale for each key design decision is

explained. Numerical constraints are suggested for the sizing / selection parameters of key equipment items. Moreover, the application conditions under which the system selection is appropriate are discussed. By following The Guide for any of the three specific solar cooling systems, the designer can expect to reliably achieve a robust, energy-saving solution. This book is intended as a companion to the IEA Solar Cooling Handbook which provides a general overview of the various technologies as well as comprehensive advice to enable engineers to design their own solar cooling system from first principles.

Solar Home Heating Basics - Dan Chiras
2012-05-08

Helps home and business owners retrofit their buildings with solar heating, in a book that discusses solar hot air heating; energy efficiency, weatherization and insulation; solar thermal systems, passive solar heating and backup heating systems. Original.

The Passive Solar Energy Book - Edward Mazria 1979

Presents technical information on passive energy design and application, using illustrations and text, and includes 27 design patterns for use in designing a passive energy system.

ERDA Energy Research Abstracts - United States. Energy Research and Development Administration 1976

Solar Air Systems - Robert Hastings 2013-10-18

Active solar systems for air heating are a straightforward yet effective way of using solar energy for space heating and tempering ventilation air. They offer some unique advantages over solar water systems, can offer improved comfort and fuller use of solar gains than passive solar systems and are a natural fit with mechanically ventilated buildings. They can be economical, with short pay-back periods and can act not only as space heating or ventilation air heating but also for water pre-heating,

sunshading, electricity generation (with hybrid photovoltaic systems) and can help induce cooling. This design handbook takes architects and building engineers through the process of designing and selecting an active solar system from the six types presented, optimizing the system using nomograms and curves, and finally dimensioning the components of the system. Tips are offered regarding the construction and how to avoid problems. The book will provide essential design information for all architects, building engineers and other building design professionals and all those concerned to reduce the environmental impact of buildings.

Concepts for Energy Savings in the Housing Sector of Bodrum, Turkey - Arda Karasu 2010

Advances in Passive Cooling - Mat Santamouris
2012-05-16

Following a rapid increase in the use of air conditioning in buildings of all types, the energy demand for powering such devices has become a

significant cause for concern. Passive cooling is increasingly being thought of as the best alternative to air conditioning. This book offers the latest knowledge and techniques on passive cooling, enabling building professionals to understand the state of the art and employ relevant new strategies. With separate chapters on comfort, urban microclimate, solar control, ventilation, ground cooling and evaporative and radiative cooling, this authoritative text will also be invaluable for architects, engineers and students working on building physics and low-energy design. *Advances in Passive Cooling* is part of the BEST series, edited by Mat Santamouris. The aim of the series is to present the most current, high quality theoretical and application oriented material in the field of solar energy and energy efficient buildings. Leading international experts cover the strategies and technologies that form the basis of high-performance, sustainable buildings, crucial to enhancing our built and urban environment.

The Complete Handbook of Solar Air Heating Systems - Steven Kornher 2006-01-01

Harnessing Solar Heat - Brian Norton
2013-10-11

Systems engineered by man to harness solar heat in a controlled manner now include a diverse range of technologies each serving distinctive needs in particular climate contexts. This text covers the breadth of solar energy technologies for the conversion of solar energy to provide heat, either as the directly-used output or as an intermediary to other uses such as power generation or cooling. It is a wholly updated, extended and revised version of "Solar Energy Thermal Technology" first published in 1992. The text draws on the own author's research and that of numerous colleagues and collaborators at Cranfield University, University of Ulster, Dublin Institute of Technology, Indian Institute of Technology, Delhi and University of Nigeria. The initial chapters deal with relevant

fundamental aspects of solar energy meteorology, radiative heat transfer, material properties and energy storage. Solar energy collectors are discussed in detail before a set of chapters deal with each of the full range of applications. The early chapters consider: the solar energy resource, its distribution in geographical, spectral, skyward geometrical and temporal domains; the physics of solar energy absorption, transmission and loss at surfaces; and techniques for storing collected solar energy. Specific collector sub-systems are then discussed in chapters seven to nine. For each system, practical issues are discussed and a proven analytical procedure for predicting performance described. Similarly analyses are presented in the concluding chapters on solar energy systems. These range from dryers to greenhouses to systems that render buildings solar energy systems in themselves and the associated design issues. The context for any use of solar energy is the prevailing climate. This

text, being global in scope, defines the most appropriate regions for particular technologies and applications. It is a research-orientated academic work citing publications on the peer-reviewed literature covering engineering and applied science topics intended both for student use, as a reference tool for teaching solar energy and for those researching solar thermal applications in universities, industry or national/commercial laboratories. Insight into the challenges of implementation including practical constraints and operational considerations are provided to aid those undertaking feasibility studies, technical assistance, training assignments or operating testing facilities.

Solar Air Systems - Ove Mørck 2000
Genetic sciences have produced a 'blue revolution' in the way we use aquatic biodiversity. By 2020 the world will be eating more farmed than wild fish, marine bacteria may yield the cure for cancer and deep-sea bacteria

may be exploited to gobble up oil s

Planning and Installing Solar Thermal Systems - Deutsche Gesellschaft Fur

Sonnenenergie Dgs 2013-09-13

Solar thermal systems available today offer efficiency and reliability. They can be applied in different conditions to meet space- and water-heating requirements in the residential, commercial and industrial building sectors. The potential for this technology and the associated environmental benefits are significant. This book offers clear guidance on planning and installing a solar thermal system, crucial to the successful uptake of this technology. All major topics for successful project implementation are included. Beginning with resource assessment and an outline of core components, this guide details solar thermal system design, installation, operation and maintenance for single households, large systems, swimming pool heaters, solar air and solar cooling applications. Details on how to market solar thermal

technologies, a review of relevant simulation tools and data on selected regional, national and international renewable energy programmes are also provided. In short, the book offers comprehensive guidance for professionals who wish to install solar thermal technology and will be a cherished resource for architects and engineers alike who are working on new projects, electricians, roofers and other installers, craftsmen undertaking vocational training and anyone with a specialized and practical interest in this field. Published with DGS

Solar Installations - Lars Andren 2013-11-05
Solar energy will play an important role in our future energy supply, to the advantage of both the environment and the economy. This book focuses on water-based solar heating technology, presenting basic principles on solar radiation and the solar heating system, including details on orientation and output, sizing, the solar collector, the solar circuit, heat

exchangers, heat stores and overall system technology. A range of practical applications are described, such as multi- and single-family dwellings, pools, camp sites, sports facilities, schools and industry. The potential and diversity of solar energy is made clear with additional sections on solar electricity, passive solar and solar air heating.

Solar Panel Handbook: 2017 Edition: a Simple, Practical Guide to Solar Energy: Designing and Installing Solar Photovoltaic Systems - Ervin Myers 2017-11-11

Active solar energy is used by several homes, offices and other structures today because of its many benefits. Generally, active solar energy is described as the use of mechanical devices to gather, store and distribute solar energy inside the home. Active solar energy water heating systems use pumps so that water is circulated well within the system. There are several applications that you can try depending on your setup. Here are some tips. The AdvantagesActive

solar energy can provide people with many benefits. It can be used on your present home regardless of the current design or orientation. Active solar energy can produce a lot more solar thermal energy compared to passive solar energy. The heat energy created can be used easily all throughout the house. Electricity requirements are also reduced thereby boosting your savings. The Components There are three main components in active solar energy. First is solar energy collection which involves the use of solar collectors. The most basic collector is the flat-plate collector. This is an insulated box covered with glass. Inside the box, you will see black absorber plates that absorb solar energy and transform it into heat. The heat energy is moved to a fluid, air or water that will flow through the collector. This will ensure if the system is air-based or liquid-based. Solar energy storage can be done using thermal mass or water tanks for liquid based systems. Air-based systems will have to rely on rock bins to contain

the heated air. Solar energy distribution is the third component which is based on the kind of system. The Types There are 3 types of active solar applications that you can readily use in the home namely active solar pool heating, active solar space heating and active solar water heating. Active solar space heating can heat air inside the house by using pumps, blowers and fans that will distribute and gather heat. The systems can be either air-based or liquid-based. Air-based systems use rock bins or thermal mass, while liquid-based systems use thermal mass or water tanks. Active solar water heating can heat water in the home with the use of pumps. There are two kinds of solar water heating systems namely direct and indirect systems. Direct systems heat the current household water in solar collectors. Water is pumped to a tank after heating. Indirect systems use heat transfer fluid. The fluid is heated in solar collectors, then pumped to a storage tank. This is also known as a closed-loop system. The

Third TypeActive solar pool heating involves the use of pumps to properly circulate the water in the pool via solar collectors to heat and then return to the pool. The pool becomes a storage medium for heated water so you do not need any more water storage tanks. If you use active solar pool heating, you can extend the swim periods of the family and reduce the heating costs of maintaining the pool. Active solar energy is a smart option for individuals who want to save more in heating costs. Now in this edition, this book assumes no previous knowledge. It explains the advantages of solar energy and the drawbacks you need to take into account. As well as explaining the underlying principles, it provides a step-by-step guide so that you can successfully design and install a solar energy system from scratch

Passive Solar Architecture - David Bainbridge
2011-08-18

New buildings can be designed to be solar oriented, naturally heated and cooled, naturally

lit and ventilated, and made with renewable, sustainable materials—no matter the location or climate. In this comprehensive overview of passive solar design, two of America’s solar pioneers give homeowners, architects, designers, and builders the keys to successfully harnessing the sun and maximizing climate resources for heating, cooling, ventilation, and daylighting. Bainbridge and Haggard draw upon examples from their own experiences, as well as those of others, of more than three decades to offer both overarching principles as well as the details and formulas needed to successfully design a more comfortable, healthy, and secure place in which to live, laugh, dance, and be comfortable. Even if the power goes off. Passive Solar Architecture also discusses “greener” and more-sustainable building materials and how to use them, and explores the historical roots of green design that have made possible buildings that produce more energy and other resources than they use.

Solar Energy Engineering - Soteris A. Kalogirou
2009-07-22

As perhaps the most promising of all the renewable energy sources available today, solar energy is becoming increasingly important in the drive to achieve energy independence and climate balance. This new book is the masterwork from world-renowned expert Dr. Soteris Kalogirou, who has championed solar energy for decades. The book includes all areas of solar energy engineering, from the fundamentals to the highest level of current research. The author includes pivotal subjects such as solar collectors, solar water heating, solar space heating and cooling, industrial process heat, solar desalination, photovoltaics, solar thermal power systems, and modeling of solar systems, including the use of artificial intelligence systems in solar energy systems, modeling and performance prediction. *Written by one of the world's most renowned experts in solar energy *Covers the hottest new

developments in solar technology, such as solar cooling and desalination *Packed with quick look up tables and schematic diagrams for the most commonly used systems today'

Solar Heating and Cooling Systems - Ioan Sarbu
2016-10-18

Solar Heating and Cooling Systems: Fundamentals, Experiments and Applications provides comprehensive coverage of this modern energy issue from both a scientific and technical level that is based on original research and the synthesis of consistent bibliographic material that meets the increasing need for modernization and greater energy efficiency to significantly reduce CO2 emissions. Ioan Sarbu and Calin Sebarchievici present a comprehensive overview of all major solar energy technologies, along with the fundamentals, experiments, and applications of solar heating and cooling systems. Technical, economic, and energy saving aspects related to design, modeling, and operation of these

systems are also explored. This reference includes physical and mathematical concepts developed to make this publication a self-contained and up-to-date source of information for engineers, researchers, and professionals who are interested in the use of solar energy as an alternative energy source. Includes learning aims, chapter summaries, problems and solutions to support the theories presented Puts a specific emphasis on the practical application of the technologies in heating and cooling systems Contains calculating equations for the energy and economic index of solar systems

Solar Cell Array Design Handbook - Hans S. Rauschenbach 2012-12-06

Energy Research Abstracts - 1985

Solar Heating and Cooling - Frank Kreith 1982
Discusses solar-energy concepts and requirements and the principles of heat transfer and details the designs and operation of

economically feasible systems for heating and air-conditioning buildings

Solar Energy Update - 1978

Passive Solar Simplified - Thomas Doerr
2012-05

"Learn just what you need to know about passive solar house design for western states"--P. [4] of cover.

Solar Technologies for Buildings - Ursula Eicker 2006-08-14

A complete overview of solar technologies relevant to the built environment, including solar thermal energy for heating and cooling, passive solar energy for daylighting and heating supply, and photovoltaics for electricity production Provides practical examples and calculations to enable component and system simulation e.g. Calculation of U-values, I-V curve parameters and radiance distribution modelling Discusses the new trends in thermal energy use, including the architectural integration of collector

systems, integrated ventilation photovoltaics facades and solar powered absorption cooling systems Coverage of cutting-edge applications such as active and passive cooling techniques and results from ongoing research projects
Solar Cooling Handbook - Hans-Martin Henning
2013-09-17

Our energy system faces a fundamental transformation and renewable energies will play a dominant role in the future energy supply. One of the promising solutions is the use of solar thermal energy in buildings, for cooling, heating and domestic hot water preparation. Solar thermal systems for providing heat and cold to industrial processes show a high potential, too. In the last decade, the application of solar driven cooling systems achieved a significant progress. Steps forward have been taken in the design of system concepts to specific needs and in more reliable and efficient operation of the installed plants. New systems are available on the market and cover a broad range of cooling capacities

and driving temperatures. This handbook provides an overview on the various solutions to convert solar heat into useful cooling, reports about experiences made with realized installations and gives support in the design process. Its use will strongly contribute to achieve high quality solar cooling systems which provide significant energy savings and fulfil the user's requirements in a safe and reliable way.
Pacific Regional Solar Heating Handbook - Los Alamos Scientific Laboratory. Solar Energy Group 1976

Solar-Assisted Air-Conditioning in Buildings
- H.-M. Henning 2007-08
This second edition of a hugely important work on this subject still plugs a gap in the literature. It is a source of crucial support to the planner in the design of solar assisted air-conditioning systems, which use solar collectors as a heat source. Air conditioning contributes significantly to the energy consumption of buildings in many

countries and a promising possibility for energy reduction is the use of solar thermal energy in solar-assisted air conditioning systems.

However, until today only a few systems have been installed world-wide and design and operation experiences are fairly poor.

Sun, Wind, and Light: Architectural Design Strategies - Mark DeKay 2013-12-16

An updated guide to designing buildings that heat with the sun, cool with the wind, and light with the sky. This fully updated Third Edition covers principles of designing buildings that use the sun for heating, wind for cooling, and daylight for natural lighting. Using hundreds of illustrations, this book offers practical strategies that give the designer the tools they need to make energy efficient buildings. Hundreds of illustrations and practical strategies give the designer the tools they need to make energy efficient buildings. Organized to quickly guide the designer in making buildings respond to the sun, wind and light.

McEvoy's Handbook of Photovoltaics -

Soteris Kalogirou 2017-08-24

Practical Handbook of Photovoltaics, Third Edition, is a 'benchmark' publication for those involved in the design, manufacture and use of these devices. This fully revised handbook includes brand new sections on smart grids, net metering and the modeling of photovoltaic systems, as well as fully revised content on developments in photovoltaic applications, the economics of PV manufacturing and updated chapters on solar cell function, raw materials, photovoltaic standards, calibration and testing, all with new examples and case studies. The editor has assembled internationally-respected contributors from industry and academia around the world to make this a truly global reference. It is essential reading for electrical engineers, designers of systems, installers, architects, policymakers and physicists working with photovoltaics. Presents a cast of international experts from industry and academia to ensure

the highest quality information from multiple stakeholder perspectives Covers all things photovoltaics, from the principles of solar cell function and their raw materials, to the installation and design of full photovoltaic systems Includes case studies, practical examples, and reports on the latest advances and worldwide applications

The Passive Solar Design and Construction Handbook - Steven Winter Associates, Inc. 1998
Passive solar design refers to design strategies that minimize or eliminate the need to heat or cool a building mechanically. This sourcebook of details, drawings and case studies of passive solar buildings throughout the U.S. provides is a complete guide to passive solar design and construction.

Solar Cooling - Paul Kohlenbach 2014-06-20
Cooling buildings is a major global energy consumer and the energy requirement is growing year by year. This guide to solar cooling technology explains all you need to know about

how solar energy can be converted into cooling energy. It outlines the difference between heat-driven and photovoltaic-driven systems and gives examples of both, making clear in what situations solar cooling technology makes sense. It includes chapters on: • solar thermal collectors • solar cooling technologies • cold distribution • storage components • designing and sizing • installation, operation and maintenance • economic feasibility • potential markets • case studies. Solar Cooling is for engineers, architects, consultancies, solar thermal technology companies, students and anyone who is interested in getting involved with this technology.

Solar and Heat Pump Systems for Residential Buildings - Jean-Christophe Hadorn 2015-09-08
The combination of heat pumps and solar components is a recent development and has great potential for improving the energy efficiency of house and hot water heating systems. As a consequence, it can enhance the

energy footprint of a building substantially. This work compares different systems, analyses their performance and illustrates monitoring techniques. It helps the reader to design, simulate and assess solar and heat pump systems. Good examples of built systems are discussed in detail and advice is given on how to design the most efficient system. This book is the first one about this combination of components and presents the state of the art of this technology. It is based on a joint research project of two programmes of the International Energy Agency: the Solar Heating and Cooling Programme (SHC) and the Heat Pump Programme. More than 50 experts from 13 countries have participated in this research.

Solar Air Systems - Robert Hastings
2013-10-18

Active solar systems for air heating are a straightforward yet effective way of using solar energy for space heating and tempering ventilation air. They offer some unique

advantages over solar water systems, can offer improved comfort and fuller use of solar gains than passive solar systems and are a natural fit with mechanically ventilated buildings. They can be economical, with short pay-back periods and can act not only as space heating or ventilation air heating but also for water pre-heating, sunshading, electricity generation (with hybrid photovoltaic systems) and can help induce cooling. This design handbook takes architects and building engineers through the process of designing and selecting an active solar system from the six types presented, optimizing the system using nomograms and curves, and finally dimensioning the components of the system. Tips are offered regarding the construction and how to avoid problems. The book will provide essential design information for all architects, building engineers and other building design professionals and all those concerned to reduce the environmental impact of buildings.

The Passive Solar House - James Kachadorian

2006-07-31

Revised and Expanded Edition - Includes CD-ROM with Custom Design Software For the past ten years The Passive Solar House has offered proven techniques for building homes that heat and cool themselves, using readily available materials and methods familiar to all building contractors and many do-it-yourself homeowners. True to this innovative, straightforward approach, the new edition of this best-selling guide includes CSOL passive solar design software, making it easier than ever to heat your home with the power of the sun. Since The Passive Solar House was first published, passive solar construction expert

James Kachadorian has perfected user-friendly, Windows-compatible software to supplement the design process explained in the book by allowing homeowners/designers to enter the specifications of their design and see how changing a variable will affect its energy efficiency. This is the building book for a world of climbing energy costs. Applicable to diverse regions, climates, budgets, and styles of architecture, Kachadorian's techniques translate the essentials of timeless solar design into practical wisdom for today's solar builders. Profiles of successful passive solar design, construction, and retrofit projects from readers of the first edition provide inspiration to first-time homebuilders and renovators alike.