

Passive Solar Building Design Guidelines And Recognition

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.

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.

"TRB's National Cooperative Highway Research Program (NCHRP) Report 751: Renewable Energy Guide for Highway Maintenance Facilities offers guidance for the application of renewable energy technologies to the heating and cooling, lighting, and electrical power requirements of highway maintenance facilities."--Publisher's description.

Reaching Up, Reaching Out

Passive Solar Simplified

A Complete Guide to Passive Solar Home, Greenhouse, and Building Design

Guidelines for Home Building, North Platte, Nebraska

The Green Library Planner

A Guide to Organizing Local Solar Events

A detailed design guide to energy-efficient, passive solar architecture, drawing together essential information from leading European practitioners and world experts. The book includes arguments for energy conservation in Europe and a review of CEC solar programmes. The first section of the book concentrates on the environment, providing an analysis of European climates, with examples of typical architectural responses, both traditional and modern. A topographical analysis of a range of locations including coastal, plain and woodland locations, illustrating different architectural choices in a representative range. The second section looks at buildings examining such issues as passive solar heating strategies, daylighting control systems and evaluation methods. 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.

The need for solar design review--What solar energy systems look like--Design strategies for solar buildings--Making design review more responsive to solar energy use.

A Design Guide

Using Solar Design to Cool and Heat Your Home, 2nd Edition

Design Guidelines

Passive Solar Schools

Residential Solar Design Review

Passive Solar Architecture Pocket Reference

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.

The Passive Solar Energy Book A Complete Guide to Passive Solar Home, Greenhouse, and Building Design

The Green Library Planner is designed for library building design teams who are not actively engaged in architecture or engineering, but need an introduction to green building. With this book, the librarian and related staff will be able to design and operate the library in the best and most efficient way possible.

Passive Solar Design Procedures for Naval Installations

Residential Solar Site Design

Passive Solar Schools: A Design Guide

An International Summary : Passive and Hybrid Solar Low Energy Buildings

A Manual on Community Architectural Controls and Solar Energy Use

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.

This book presents the main principles for designing buildings and neighborhoods with increased potential to capture and utilize solar energy. It discusses practical issues in the design of the built environment and their impact on energy performance; and a range of design considerations, from building components (e.g. the building envelope) to urban planning issues (e.g. density and street layouts). In addition to design guidelines on how to increase buildings' potential to capture solar energy, the book provides creative tips to increase the aesthetic value of solar technology integration in buildings. Helping readers plan energy-efficient buildings with innovative building envelope technologies, and to understand the impact of early-stage design considerations on the energy performance of buildings and communities, the book offers a valuable source of information for building professionals, including architects, engineers, and urban planners. It can also serve as a reference guide for academics and students of energy efficiency in buildings and urban planning.

Introductory technical guidance for professional engineers, architects and construction managers interested in design and construction of buildings to passively utilize solar energy for space heating. Here is what is discussed: 1. INTRODUCTION 2. SYSTEMS 2.1 DIRECT GAIN HEATING 2.2 DAYLIGHTING 2.3 RADIANT PANELS 2.4 THERMOSIPHONING AIR PANELS 2.5 THERMAL STORAGE WALLS 2.6 SUNSPACES 2.7 INCREMENTAL COOLING LOAD 3. CLIMATIC CONSIDERATIONS 3.1 CHARACTERISTIC WEATHER PARAMETERS 3.2 CLIMATE AND CONSERVATION MEASURES 3.3 SOLAR AVAILABILITY 3.4 GUIDELINES FOR SCHEMATIC DESIGN 4. CONCLUSION.

Phase 1, Annotated Bibliography

A Manual for Wisconsin

Guideline for sustainable, energy efficient architecture and construction

Energy Analysis Software for Homebuilders

Passive Solar Design Strategies

The Solar House

Describes developments in passive solar technology that will save time, energy, and resources in planning for the buildings of the future. This companion to Passive Cooling and Solar Building Architecture (volumes 8 and 9) describes developments in passive solar technology that will save time, energy, and resources in planning for the buildings of the future. It is filled with tips and useful research for architects and designers and includes three substantial chapters on general modeling. Passive solar heating works. Properly designed and constructed, it is cost-effective, practical, comfortable, and aesthetic. Balcomb's introductory remarks set the tone for the rest of the contributions, which describe the considerable record of achievements in passive solar heating. Balcomb summarizes and evaluates the era between 1976 and 1983 when most of the major developments took place and highlights the design features that have contributed to effective buildings. Three chapters cover modeling passive systems (applicable to both heating and cooling), and six chapters focus on the application of passive solar heating, with emphasis on components, analytical results for specific systems, test modules, subsystem integration into buildings, performance monitoring and results, and design tools. J. Douglas Balcomb is a Principal Engineer with the Solar Energy Research Institute.

Nowadays there is an ever growing awareness regarding inevitable importance of sustainable development and its sub topics such as environment protection, ecology, resource saving, energy efficiency, etc. Due to massive and rapid development in recent years, this topic is getting more crucial in developing countries for instance Iran. It is getting more obvious that most of the development activities in absence of precise analysis of current conditions, as well as consequences of such activities, will lead to devastation of natural resources. The resources that is essential for further development of the country. Therefore, It is necessary to deal with sustainable development and environmental issues from the broader perspective, where includes items underlying immediate causes of environmental impact and at the same time tries to improve them. Sustainability or sustainable development is an umbrella covering many issues and

aspects, among them energy, which is the key item, because energy consumption of buildings could have an impact on environment more than other aspects. Considering the huge portion of energy consumption in construction industry and housing sector, paying special attention to improvements in this sector is essential. Following this goal, the aim of this publication is to highlight procedures and practices which promote sustainable construction that is about creating a better quality of building and more healthy places to live in. Procedure of sustainable design includes various approaches and methods to develop energy efficient and environmentally sensitive buildings. Such approaches and methods demonstrate how to design, develop and construct all buildings in general and residential buildings in particular. Among various approaches towards sustainability, "Passive solar strategies" are well-known thanks to their cost efficiency and context friendliness of its principals and measures. The approach of passive design (architectural) strategies could be considered as the most applicable approach for resource saving and sustainability, thinking about special situation of Iran in particular and the Mena region in general. Such an approach requires paying special attention to climate, social characteristics of current or prospective inhabitants, topographical-physical characteristics as well as architectural characteristics of the understudied area. The relationships and interactions among society, building and its architecture and climate is "Site-specific" and dynamic. Therefore, they should be studied and properly analyzed throughout a specific project process for each certain place. The most expecting outcomes are precise definitions of passive design strategies, generally for buildings in MENA Region and especially for Iran. This publication is prepared in the young cities project framework, as the reasonable outcome of the developed pilot projects. The book starts with introducing the target group, related definitions and a brief overview on a conventional approach and its impact on environment. This chapter ends up with a brief review on benefits of applying sustainable guidelines. As the next step, after analyzing the climate and its relationship with thermal comfort and building, the main principals of passive solar design are introduced. The selected principles are: orientation, day-lighting, shading, thermal mass, insulation and ventilation. After a brief introduction of the principals, each one is explained in detail through its general principles and design strategies. Sustainable construction is examined based on its main pillars: construction systems, building elements, ecological building materials, and applicable measures for building physic. Construction systems are sorted out in six main groups as: block work- brick infill, block work- lightweight block infill, conventional panels, light weight steel frame, tunnel form structural system and precast modular. All selected systems are introduced based on following factors: brief description of the building concept, factory production, insulation, wastage, finishes, labor, installation, transport- lifting, services, hydronic cooling/ heating and safety. Then main building elements are examined. Here the elements are limited to: foundations, walls, floors, roofs, doors and windows. After a short description, different types of each element are introduced. Ecological building materials are investigated in chapter four. To find a base to compare, several common criteria are selected such as: embodied energy, pollution and waste, local production, reusability and recyclability, durability and interdependency. Applicable measures for building physic are examined in chapter five. The selected main measures are as follows: insulation, glazing, thermal mass, day-lighting, shading, ventilation and air-tightness. After describing the general principles of each measure, several recommendations in frame of design considerations are provided. Die enorme Bedeutung nachhaltiger Projekte wie Umweltschutz, Ökologie, sparsamer Umgang mit Rohstoffen, Energieeffizienz usw. dringt immer stärker in unser Bewusstsein. Aufgrund der massiven und rasanten Entwicklung in den Schwellenländern, z. B. Iran, gewinnen Umweltschutz und Nachhaltigkeit immer mehr an Relevanz. Ein einseitiges Wirtschaftswachstum, ohne Berücksichtigung ökologischer und klimatischer Bedingungen, verursacht die Zerstörung der Umwelt und Rohstoffe, Ressourcen, die für die weitere Entwicklung der Länder unverzichtbar sind. Es ist unumgänglich, sich umfassend mit nachhaltiger Entwicklung und ökologischen Aspekten auseinanderzusetzen, die unmittelbaren Auswirkungen auf die Umwelt zu erfassen und gleichzeitig Möglichkeiten einer Optimierung aufzuzeigen. Nachhaltigkeit und Umweltschutz erfassen eine Vielzahl von Themen und Aspekten, u. a. den Energieverbrauch; ein wesentlicher Faktor, da der Energieverbrauch in Gebäuden den größten Einfluss auf die Umweltbilanz hat. In Anbetracht des enormen Energieverbrauchs in Bauwirtschaft und Wohnungsbau ist es unerlässlich, gerade in diesem Bereich eine Optimierung in der weiteren Entwicklung zu verfolgen. Diesem Ziel folgend, werden in dieser Publikation Verfahren und Methoden, für nachhaltige Bauweisen, unter Berücksichtigung einer besseren Bauqualität und gesundheitlicher Aspekte, erläutert. Die

Maßnahmen nachhaltigen Designs beinhalten verschiedene Ansätze und Methoden, energieeffiziente und umweltfreundliche Gebäude zu entwickeln. Sie zeigen Entwurf, Konstruktion und bauliche Ausführung von Gebäuden im Allgemeinen und Wohngebäuden im speziellen. Neben den verschiedenen Ansätzen sind die „passive solar strategies“ die wohl namhaftesten Methoden, da diese sehr rentabel und daher für Bauherren attraktiv sind. Angesichts der speziellen Situation im Iran im Besonderen und der MENA-Region im Allgemeinen, könnten die passiven Design- (Architektur-) Strategien als eine der am besten anzuwendenden Methoden für Rohstoffeffizienz und Nachhaltigkeit betrachtet werden. Dies setzt eine besondere Berücksichtigung des dortigen Klimas, der sozialen Charakteristiken derzeitiger oder zukünftiger Einwohner als auch der topographisch-physischen und architektonischen Charakteristiken der betroffenen Region voraus. Beeinflussung und Beziehungen zwischen Gesellschaft, Gebäuden, Architektur und Klima sind „lokal spezifisch“ und dynamisch. Deshalb sollten diese Faktoren für jeden Standort neu geprüft und analysiert werden. Die Resultate dieser Analysen, allgemein für Gebäude in der MENA-Region und im Besonderen im Iran, zeigen deutlich die Überlegenheit von passiven Designstrategien. Diese Publikation ist das Resultat der entwickelten Pilotprojekte im Rahmen des Young Cities-Projektes. Sie beginnt mit der Vorstellung der Zielgruppe, relevanten Definitionen und einem kurzem Überblick des konventionellen Ansatzes und dessen Einfluss auf die Umwelt. Das Kapitel endet mit einem kurzen Rückblick über den Nutzen nachhaltiger Bauweise. Nach Analyse des Klimas und seine Beziehung zu thermischem Komfort und Gebäuden werden die wichtigsten Prinzipien passiver Solarenergie vorgestellt: Orientierung, Tageslicht, Schatten, thermale Masse, Isolierung und Ventilierung; ihre Grundlagen und Designstrategien detailliert erläutert. Nachhaltige Konstruktion und deren Hauptpfeiler, Bausysteme, Bauelemente, ökologische Bauelemente und anwendbare Maßnahmen für die Bauphysik, werden anschließend beleuchtet. Dabei wurden die Konstruktionssysteme in sechs Hauptgruppen gegliedert: Ziegeleinfüllung, leichtgewichtige Ziegeleinfüllung, klassische Füllwände, leichtgewichtige Stahlrahmen, tunnelförmige Struktursysteme und vorgefertigte Modelle. Anhand folgender Faktoren werden diese eingehend dargestellt: Baukonzepts, Fabrikproduktion, Isolierung, Abnutzung, Verarbeitung, Arbeitsaufwand, Installierung, Transport-Beförderung, Services, hydronische Kühlung/Heizung und Sicherheit. Die Hauptbauelemente wie Unterbau, Wände, Boden, Dächer, Türen und Fenster werden beschrieben und verschiedene Baureihen dieser vorgestellt. Das vierte Kapitel befasst sich mit ökologischen Baumaterialien. Um hierbei eine vergleichbare Basis zu finden, wurden gemeinsame Kriterien ausgewählt: graue Energie, Verschmutzung und Abfall, lokale Produktion, Wiederverwendung und Recycling, Nachhaltigkeit und Interdependenzen. Im fünften Kapitel werden anwendbare Maßnahmen für die Bauphysik, wie Isolierung, Lasur, Wärmemasse, Tageslicht, Schatten, Ventilation und Luftdichte, untersucht, deren Grundlagen beschrieben und Empfehlungen bezüglich der Gestaltung präsentiert

Climate Considerations in Building and Urban Design Baruch Givoni *Climate Considerations in Building and Urban Design is the most comprehensive, up-to-date reference available on building and urban climatology. Written in clear, common-sense language by Baruch Givoni, the leading authority in the field, this book is a far-reaching look at a variety of climatic influences and their effects on individuals, buildings, and communities. Aimed at architecture and urban planning professionals and students alike, Climate Considerations in Building and Urban Design offers real-life solutions to climatological site planning and design issues, helping to settle disputes about site orientation, site organization, and the assembly of building materials. Climate Considerations in Building and Urban Design is organized into three parts. The first, Building Climatology, analyzes human thermal comfort and the effect of architectural and structural design features including layout, window orientation, and shading, and ventilation conditions on the indoor climate. Then, Urban Climatology explores the ways in which the climate in densely built areas can differ from surrounding regional climactic conditions, for example, in temperature, wind speed, and humidity. This part further explores the effects of urban design elements, such as urban density and building height, on a city's outdoor climate. Finally, Building and Urban Design Guidelines applies the body of available research on building climatology and the effects of physical planning on the urban and indoor climates to suggest design guidelines for different regions--for example, hot-dry and hot-humid climates. Filled with lists, tables, and graphs for easy cross-referencing, as well as hundreds of visuals, Climate Considerations in Building and Urban Design offers readers the ability to perform a quick check of a proposed scheme against authoritative criteria. Mr. Givoni's latest volume is a unique, indispensable guide to the relationship between building design, urban planning, and climate.*

Design Considerations for High Energy Performance

Building Bulletin 79

Energy and Environment in Architecture

Passive Solar Architecture

Energy in Architecture

Guidelines for Home Building, San Francisco Bay Area

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

Summarizes the major findings and patterns of performance observed using national passive solar energy conservation guidelines.

This handy pocket reference contains a wealth of information on a range of topics including the principles of passive solar building and passive house, a ten-step design and build strategy, calculating solar irradiance, factors affecting the choice of building materials, passive heating and cooling principles and techniques in different climates, the Passivhaus Standard and natural and augmented lighting and notes on technology and building occupation. The book also includes conversion factors, standards, resources and is peppered throughout with helpful illustrations, equations, explanations, and links to further online resources. Ideal for practitioners, architects, designers, consultants, planners, home builders, students and academics, and those working in development contexts, the book is intended to act as an aide memoir, a reference supplement, a resource and an overview of the field. Rich in background detail, the book also includes at-a-glance tables and diagrams, equations and key definitions.

An Introduction to Passive Solar Buildings

A Technical Design Guide

Passive Heating and Cooling

What Every Librarian Needs to Know Before Starting to Build or Renovate

The Hawkweed Passive Solar House Book

Passive Solar Heating Analysis

Ecohouse is an exciting and timely text that tells you how to design low energy, environmentally friendly buildings today. It also provides the foundations for building design in a warming world, and stepping stones towards the zero-carbon emission buildings of tomorrow. Sue Roaf is famed for her approach to design and her awareness of energy efficiency. Here she reveals the concepts, structures and techniques that lie behind the realization of her ideals. By using her own house as a case-study Roaf guides the reader through the ideas for energy efficient design or 'eco design'. This guide to the ecohouse also explores 21 case-studies from around the world, from Norway and Sweden to India and Japan, Argentina and Mexico. Chapters by Christopher Day, Katerine Bohn and Andre Viljoen on ecological building materials and methods and a contribution by Robert and Brenda Vale - all experts in this field Ecohouse has a regularly updated companion web site providing further information on all issues relating to Ecohouse and eco design. Log on to www.bh.com/companions/ecohouse for a direct link.

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.

The energy efficiency of buildings at Naval installations can be greatly improved through the use of passive solar heating strategies. These strategies may be applied to many existing buildings that are suitable for retrofit and are universally applicable to new construction. The purpose of this design procedure is to provide the tools required by professionals involved in building design and/or evaluation who wish to improve the energy efficiency of buildings by use of passive solar heating. Three types of tools are provided. First, a general discussion of the basic concepts and principles of passive solar heating is presented to familiarize the reader with this relatively new technology. Second, a set of guidelines are presented for use during schematic design that will enable the user to quickly define a building that will perform in a cost-effective manner at the intended building site. Finally, a quantitative design-analysis procedure is presented that provides the user with an accurate estimate of the auxiliary heating requirements of a given passive solar design. This procedure is presented that provides the user with an accurate estimate of the auxiliary heating requirements of a given passive solar design. This procedure may be used to refine or fine tune a preliminary design based on the schematic-design guidelines or may be used during proposal evaluation to compare the merits of various candidate designs. (Author).

Solar Energy Update

The European Passive Solar Handbook

Energy and water development appropriations for 1990

A Design Manual

Solar Buildings and Neighborhoods

Easily Design a Truly Green House for Colorado and the West

Provides comprehensive information on the design and application of passive solar-energy systems and assesses twenty-seven design patterns that offset a variety of factors influencing the effectiveness of solar heating

A unique and revolutionary text which explains the principles behind the LT Method (2.1), a manual design tool developed in Cambridge by the BRE. The LT Method is a unique way of estimating the combined energy usage of lighting, heating, cooling and ventilation systems, to enable the designer to make comparisons between options at an early, strategic stage. In addition, Energy and Environment in Architecture the book deals with other environmental issues such as noise, thermal comfort and natural ventilation design. A variety of case studies provide a critique of real buildings and highlight good practice. These topics include thermal comfort, noise and natural ventilation.

This building bulletin provides advice for architects and engineers involved in passive solar design of new schools and remodelling of existing schools. A number of case studies illustrate the range of passive solar features used within the UK.

Energy Research Abstracts

The Passive Solar House

Ecohouse: A Design Guide

Passive Solar Buildings

Guidelines for Home Building, [Santa Fe, New Mexico]

hearings before a subcommittee of the Committee on Appropriations, House of Representatives, One Hundred First Congress, first session