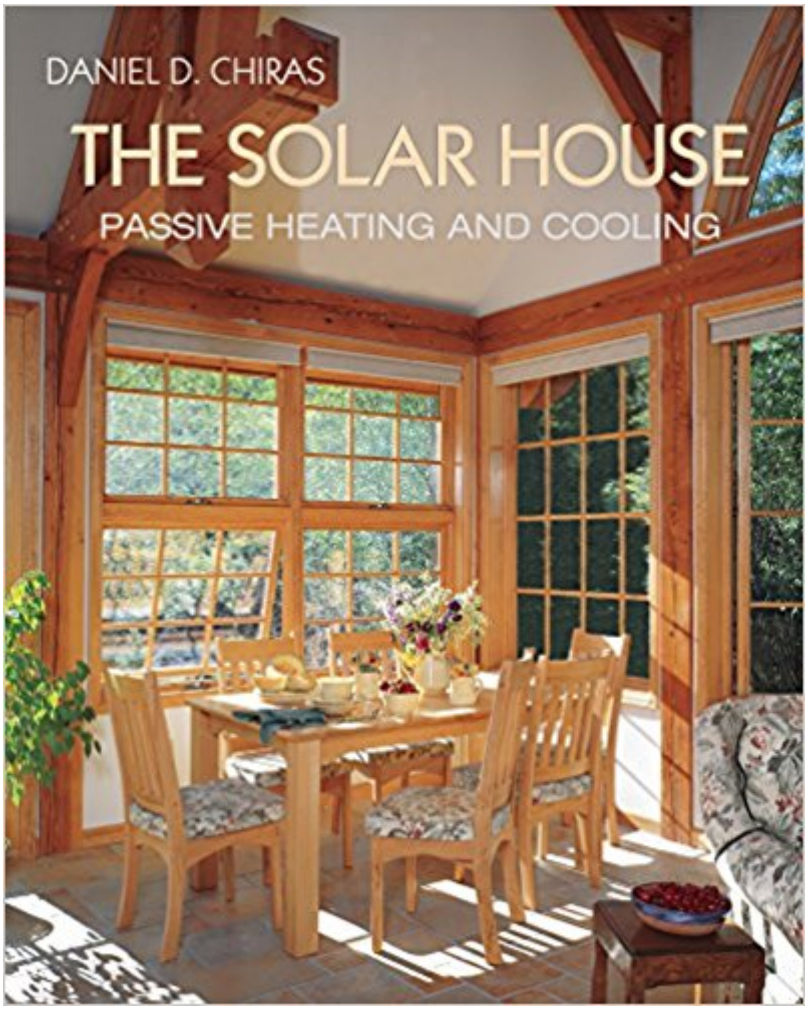
The Solar House: Passive Heating And Cooling



Synopsis

Passive solar heating and passive coolingÃ¢â ¬â •approaches known as natural conditioningÃ¢â ¬â •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 egregiousÃ¢â ¬â •and entirely avoidableÃ¢â ¬â •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.

Book Information

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Customer Reviews

"An excellent guide for embracing ecologically-friendly living."--Midwest Book Review

Dan Chiras paid his last electric bill in June of 1996. It is not that he has disavowed the use of electricity and modern conveniences, but rather that he has turned to the sun and wind to meet his family’s needs. In 1995, Dan, a former full-time college professor with years of experience in sustainable development, built a state-of-the-art rammed earth tire and straw bale home in Evergreen, Colorado. He installed solar electric panels on the roof; a year or so later he installed a small wind generator. Since that time, he has met nearly all of his electrical needs for his home and office from these clean, renewable sources. Dan also heats his home in the foothills of the Rocky Mountains 8000-feet above sea level with energy from the sun thanks to passive solar design. For backup heat on those cold winter nights, he burns a cord of wood a year, gathered free from his community. His annual gas bill, mostly for showers and cooking, runs about $120 a year - about $2 to $3 per month for natural gas and $10 per month to read the meter! Dan has spent much of the past 30 years studying sustainability and applying what he has learned in solar energy, natural building, and green building to his residences, and most of the last ten years sharing the practical knowledge he has gained through writing, lectures, slide shows, and workshops. Dan has published 21 books to date including several college and high school textbooks: Environmental Science: Creating a Sustainable Future, Natural Resource Conservation, Human Biology, and Biology: The Web of Life. His high school environmental science text, Environmental Science, was selected as the official book of the U.S. Academic Decathlon’s 1991 competition. In the early 1990s, Dan published two trade books on environmental issues and sustainability for a general audience: Beyond the Fray: Reshaping America’s Response and Lessons from Nature: Learning to Live Sustainably on the Earth. Since 1995, Dan has focused most of his attention on residential green

building. He has written extensively on the subject. His is books include: The Natural House: A Complete Guide to Healthy, Energy Efficient, Environmental Homes; The Natural Plaster Book; The Solar House: Passive Heating and Cooling; Superbia! 31 Ways to Create Sustainable Suburbs; and The New Ecological Home. His newest book, EcoKids: Raising Kids Who Care for the Earth will be published in the Spring of 2005 by New Society Publishers. Dan also writes extensively for magazines, journals, newsletters, and newspapers. He has published nearly 250 articles on environmental issues, sustainability, natural building, natural plaster, green building, and passive solar heating and cooling. His articles appear regularly in Home Power, Mother Earth News, Natural Home, and The Last Straw. Dan also writes frequently for World Book Encyclopedia (Science Year) and Encyclopedia Americana. He authored a 12-page article on the environment for Encyclopedia Americana. Dan has written environmental pollution section for World Book Encyclopedia's annual publication, Science Year, since 1993. In 1997, he wrote an extensive piece for World Book on population growth and its many implications. Dan also wrote the ecology and air pollution sections for Encyclopedia Americana. In addition to his writing, Dan has served as an adjunct professor at the University of Colorado in Denver and the University of Colorado at Denver. He has been a visiting professor at the University of Washington, where he taught a course on environmental science. He currently is a Melon Visiting Professor at Colorado College where he teaches courses on renewable energy, ecological design, and sustainable development. Through his writing and teaching in the 1980s and early 1990s, Dan played a leading role in promoting critical thinking, an understanding of the root causes of environmental issues, systemic solutions to environmental problems, sustainable development. He pioneered a systems approach to sustainable development and has played a lead role in articulating the principles, policies, and practices of sustainable development which seeks ways that business and society can prosper within a healthy environment. He is currently focusing most of his research and writing on sustainable building and sustainable communities. Dan's free time is spent mountain biking, canoeing, playing music, and gardening. For more information visit danchiras.com.

I bought this book thinking it would provide more than a brief and fluffy survey of this popular topic. However, the book is really lacking in detail and rigor. You will not find a detailed analysis of any design, but there are general descriptions and comments about several concepts. The author rambles, the diagrams are simplistic, the tables incomplete, and the analysis is shallow. I was particularly interested in passive cooling in hot climates and this subject was covered, but not in useful detail. Basically the author surveys common techniques and makes a few comments. The

implication is that there is little actual knowledge on the subject of passive cooling of houses, but several attractive ideas that may have potential. You may learn something from this book and avoid some basic pitfalls, but it is only a general introduction and not actually very useful.

I learned so much from this book when I was designing my house in VT that I was able to design a super energy efficient passive solar heated house in northern VT that uses less heat than the similar sized house in suburban Boston, MA that I previously lived. If you're looking to design and build a new house or retro fit an existing one in a cost effective manner which will let you save a lot of money this book can teach you a lot of what you need to know and is well worth the cost

I love this book. It is very informative and laid out in a way that is easy to understand. I heard the author speak a few months ago and I'm happy to report that his book is as interesting as his presentation.

Decent, simple diagram type graphics, with good information on Passive Solar heating. A great first book to satisfy anyone's curiosity on what it is all about.

It's nice to have some how to practical information about different building systems. Not only did this book open my eyes to things I had yet to learn, it's makes me want to build a house even more. Thanks.

This book is excellent in its descriptions of the building and construction side of going solar. It is a little light on the tecnical side of photvoltaics but Solar Energy International has a great book for that. The Appendices at the rear are great resources for folks who want to contact experts or become experts themselves.

Such a broad spectrum of green building techniques to incorporate. Looking forward to diving deeper and checking out his other works too.

great

Edition: A Comprehensive Guide to Solar Water and Space Heating Systems (Mother Earth News Wiser Living Series) Passive Income Millionaire: Passive Income Streams Online To Make $200-10,000 A Month In 90 Days And Work From Home (Passive Income, Online Business, Passive Income Streams) Solar Power: The Ultimate Guide to Solar Power Energy and Lower Bills: (Off Grid Solar Power Systems, Home Solar Power System) (Living Off Grid, Wind And Solar Power Systems) The Passive Solar Energy Book: A Complete Guide to Passive Solar Home, Greenhouse and Building Design The Passive Solar House: Using Solar Design to Heat and Cool Your Home (Real Goods Independent Living Book) PASSIVE INCOME:14 Ways to Make $5,000 a Month in Passive Income - Online Business Ideas, Home-Based Business Ideas, Passive Income Streams, and More! Passive Income: 5 Ways to Make Passive Income While You Sleep: Take a Step Closer to Financial Freedom (Financial freedom, Internet marketing, Business online, Passive income Book 1) Passive Income Strategies: Practical Ways to Make Passive Income Even With a Full-Time Job: Lifestyle changes that bring in passive income Passive Income: The Ultimate Guide to Financial Freedom: (Multiple Passive Income Streams, Quit Your Job, Passive Income Ideas, Make Money Online, Financial Freedom) Passive Income: Four Beginner Business Models to Start Creating Passive Income Online (Passive Income Streams, Online Startup, Make Money Online, Financial Freedom Book 1) PASSIVE INCOME :MUTUAL FUND (Book #3): Make Your Money Work for you by Mutual Fund (passive income in 90 days,passive income top 7 ways to make $500-$10k a month in 70 days) (MONEY IS POWER) PASSIVE INCOME: TOP 7 WAYS to MAKE $500-$10K a MONTH in 70 DAYS (top passive income ideas, best passive income streams explained, smart income online, proven ways to earn extra income) Passive Income Online: 5 Highly Profitable Ways To Make Money Online (Passive Income, Automatic Income, Network Marketing, Financial Freedom, Passive Income Online, Start Ups, Retire, Wealth, Rich) DIY Solar Water Heating: Solar Water Heater Plans Heating and Cooling of Buildings: Principles and Practice of Energy Efficient Design, Third Edition (Mechanical and Aerospace Engineering Series) Heating and Cooling Essentials Heating and Cooling Essentials Lab Workbook Practical Problems in Mathematics for Heating and Cooling Technicians (Practical Problems In Mathematics Series)