

## Building Energy-Smart Homes

by Paul Fiset

**E**nergy is important. We need it to live and work, for comfort and convenience, for health and safety. With little thought, we flip the various energy switches in our lives every day, and out it flows.

But do we need this much juice? Convincingly, Bruce Harley say no and provides a prescription for reduced energy dependence. In his book *Insulate and Weatherize* (Taunton Press, 2002, \$19.95 softcover, 202 pages), Harley shows that in the long run, it's easier, cheaper, and healthier to build homes that use less energy.

### Wrong Title, Good Organization

*Insulate and Weatherize* is the wrong name for this book. I was prepared to read a book about insulation, housewrap, and caulking. To be sure, those topics are covered, but this isn't a handbook teaching us how to tighten our homes — it's much more.

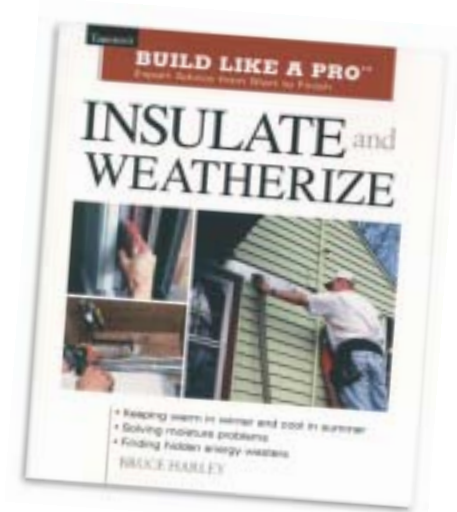
Harley's philosophy is smart and clear: Homes function as systems, interdependent webs composed of environment, materials, and people. Good design is not about cellulose vs. fiberglass, electric vs. gas, and spot vs. central ventilation. Rather, the level of comfort, protection, and affordability provided by the completed structure measures success. This book shows us how the system works. In the process, we learn how to build better homes.

The book's organization is top-notch. The choice of topics is intelligent and the presentation attractive. Each of the ten chapters found in the table of contents is broken into page-numbered subsections directing the reader to a corresponding discussion. Chapters always begin with a short introduction that accurately previews what will be covered. Page-numbered

subsections listed in the table of contents are faithfully reproduced at the beginning of every chapter. All even-numbered pages have useful sidebars with headings like "Pro Tip" and "In Detail" that elaborate on topics presented in the text. All ten chapters are formatted exactly alike, making navigation a pleasure. The book is richly illustrated with color photographs, drawings, charts, and tables on every page. It feels like a 50-50 mix of illustrations to written text. The pictures have been carefully chosen and are supported by excellent captions. The text is well written and technically solid.

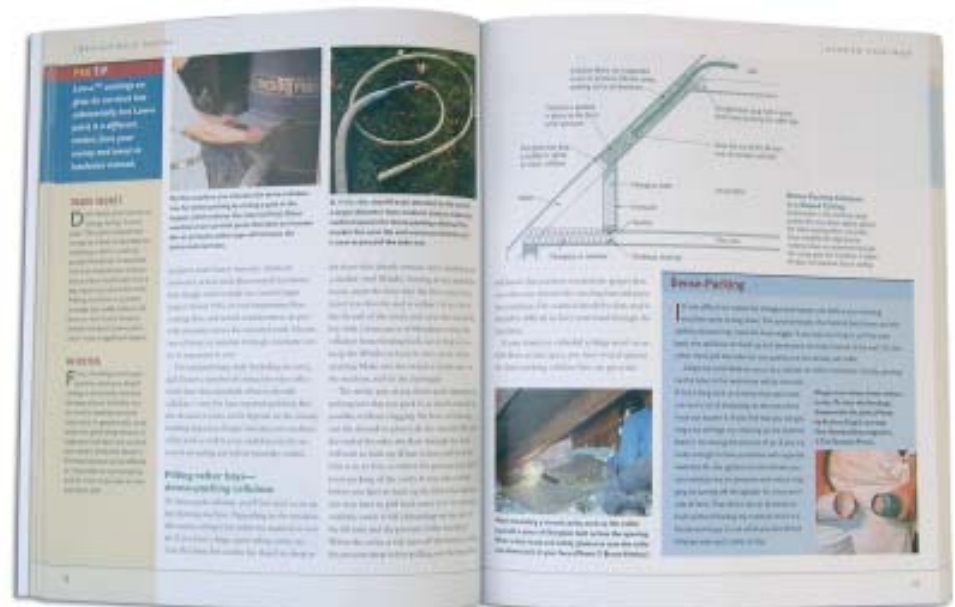
### Beyond the Basics

Chapter 1, "Energy Basics," provides a thoughtful discussion that goes beyond what builders are served in most trade books and magazines. We learn how heat moves through the interplay of wind, the stack effect, and mechanical systems. The concept of "defined thermal boundaries" is introduced, and the relationship between energy conserva-



tion, moisture, and structural durability is explored. The four pages of cost-benefit analysis provided at the end of the chapter ties the knot. The presentation is stimulating and easy to understand. To be sure, this chapter is a primer, not a scientific thesis. The discussion establishes a firm footing for subsequent chapters about air sealing, ventilation, insulation, heating, air conditioning, lighting, and renovations.

Harley doesn't take the shortcuts that others often do; he digs in. For example, when talking about the importance of sealing recessed lights, he doesn't simply refer the reader to appropriate manufacturer warnings and codes. He's



already checked the safety codes and provides instructions regarding sizes, clearances, and the methods needed to seal the units. Likewise, when he discusses insulating methods in chapter 4, he doesn't shy away from providing specific details. He describes the tools, equipment, materials, and methods needed to blow dense-packed cellulose in a way that will make a first-time installer feel confident. The discussion typically goes beyond what's expected, providing valuable insight about not only how but why we should do something. Frequently, he tells how to specify and calculate the materials needed to complete a project.


Harley is at his best talking about mechanical systems. Discussions about ventilation systems (chapter 3), heating systems (chapter 6), air conditioning (chapter 7), and heating hot water (chapter 8) were, for me, high

points. I rarely see the workings of mechanical systems explained so well. He clearly communicates how these systems work and then offers sound advice telling us how to improve the things that really matter. His message is delivered at a level most builders and technically advanced homeowners will easily relate to and appreciate.

### Minor Oversights

The book is excellent, not perfect. Hot climates are not ignored, but there is a heavy bias toward cold-climate and mixed-climate building. And although the text is referenced adequately, it would have been better if more links to product manufacturers and suppliers were included throughout. My biggest criticism regards the lightweight coverage provided in the final chapter, "Appliances and Lights." A pie chart shows that lighting and appliances use

26% of all residential energy and consume 45% of the energy dollars expended by the average household. That's 20% more money than space heating! Yet the book skates over this topic with eight pages of the most basic coverage. In my view, this chapter is an opportunity missed.

The stated target for this book, like all of Taunton's books in the Build Like a Pro series, is the advanced homeowner. I agree this is a good book for technically astute homeowners. But I wouldn't stop there. I would encourage any member of a building crew to read this book. The information provided is a must for new builders, and I believe every builder will benefit from reading the advice given by this energy pro. 

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