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Weintraub, Irwin

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## Review: Energy Efficiency Manual

By Donald R. Wulfinghoff

Reviewed by Irwin Weintraub  
*Brooklyn College Library, USA*

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Wulfinghoff, Donald R. *Energy Efficiency Manual*. Wheaton, MD: Energy Institute Press, 1999. 1536 pp. ISBN 0-9657926-7-6. US\$199.95

In today's fast paced world where we spend a good part of each day in buildings at work and play, it is important to plan building energy systems that meet our needs for heating, cooling, air flow, and lighting successfully and efficiently. The *Energy Efficiency Manual* offers up-to-date and practical solutions for energy planning applicable to building environments in one comprehensive volume. Wulfinghoff presents the information you need to plan, design, and construct efficient energy systems in homes, businesses, institutions, factories, farms, and other buildings. This easy-to-read, heavily illustrated work will be used over and over again by architects, engineers, contractors, code officers, environmental advocates, students, and homeowners who are dedicated to producing energy activities that save resources, are cost effective, reliable, and function at maximum efficiency. Nontechnical language is used throughout and terms are explained and illustrated when appropriate. Thus, the volume will appeal to a wide audience of users who are involved in building maintenance and those who just want to read it and learn more about energy conservation concepts.

The Manual is arranged in two parts. Part I, "Energy Measures," presents 400 specific energy efficiency improvements and cost saving activities. The measures are arranged under 10 sections covering boiler plants, chiller plants, service water systems, air handling systems, air conditioning systems, building air leakage, building insulation, control and use of sunlight, artificial lighting, and independent components such as motors and pumps. Since many energy projects serve several parts of a building or facility, readers will find practical solutions to all their energy efficiency questions in this section. I chose some entries at random and was impressed with the wide coverage of nearly all aspects of energy design. There are measures for efficient operation of low load heating systems; managing refrigerants in cooling equipment; reducing energy consumption of water pumps; regulating outside air intake and building pressurization; improving the efficiency of heating with radiators and convectors; reducing air leakage through windows and window frames; insulating roofs to prevent heat loss during cold weather; using daylight to save energy in open buildings; spatial layout of fixtures and wiring to provide efficient lighting; and eliminating excess output in constant flow fans. Each measure gives an explanation of

the activity and its relevance to building operation including a ratings and evaluation scoreboard that assesses the overall efficiency of the activity in terms of savings potential, rate of return, reliability and ease of retrofit or initiation. An economics summary estimates savings potential, cost, and payback period for the measure. A "traps & tricks" alert offers suggestions for avoiding pitfalls that will keep the measure running for the long term.

Part II, "Reference Notes Section," supports the measures in part I by offering more information and facts regarding equipment, principles of operation, installation and operating practices, calculation tools, and air and lighting requirements. It reads like a reference book on energy that you would browse for an overall view of the topic. I browsed the 56 reference notes and was pleasantly surprised at the wealth of knowledge I gained from this section alone.

You don't have to be an engineer to appreciate the *Energy Efficiency Manual*. It is well written with clear and precise explanations that anybody with a basic knowledge of energy concepts can understand. Readers may consult it to learn about a concept that interests them or they can browse the measures or reference notes for an overall view of energy efficiency in buildings. Supplementing the text are 850 eye-catching illustrations, tables or charts, and an index to lead you to a measure or reference note for your needs.

Although Wulfinghoff spent 20 years writing the Manual, he does not claim to have complete or perfect knowledge of each topic and points out that the book should not be used as your sole source of information. Nevertheless, he is a professional engineer and president of his own firm. He has lectured at universities, industry conferences and seminars, and is the author of many publications on energy research and application. He has been a consultant to industry and government and is a construction industry arbitrator-mediator. He is dedicated to designing energy efficient systems, and his experience and knowledge of the field come across loud and clear. Wulfinghoff has little patience for gimmicks and products that claim to conserve resources without examining how they apply to overall energy systems in buildings. If you are going to plan and install energy systems for a building, he urges you do it right and save money and resources in the long run.

Forget other energy efficiency publications in your home or office collection. Wulfinghoff's *Energy Efficiency Manual* makes them obsolete. This is the manual that building engineers will consult first when planning an energy activity. It will serve the industry as a reputable and widely consulted publication for many years to come.

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Irwin Weintraub <[irwinw@brooklyn.cuny.edu](mailto:irwinw@brooklyn.cuny.edu)>, Life Sciences Specialist,  
Brooklyn College Library, 2900 Bedford Avenue, Brooklyn, New York 11230-  
2889, USA. TEL: 1-718-951-5340.

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