



Energy Systems Engineering: Evaluation and Implementation, Second Edition

By Francis Vanek, Louis Albright, Largus Angenent



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The defining guide to energy systems engineering--updated for the latest technologies

"Broad in scope, with focused instructional detail, this text offers a uniquely excellent, student-accessible educational resource for integrating thermodynamic, alternative, and renewable energy conversion processes." -- Professor Randy L. Vander Wal, Department of Materials Science and Engineering, Penn State University

"A carefully written book, providing good breadth as well as depth on major conventional and sustainable energy systems." -- Professor David Dillard, Department of Engineering Science & Mechanics, Virginia Tech

Fully revised throughout, *Energy Systems Engineering*, Second Edition discusses fossil, nuclear, and renewable energy sources, emphasizing a technology-neutral, portfolio approach to energy systems options. The book covers major energy technologies, describing how they work, how they are quantitatively evaluated, their cost, and their benefit or impact on the natural environment.

Evaluating project scope, cost, energy consumption, and technical efficiency is clearly addressed. Example problems help you to quantify the performance of each technology and better assess its potential. Hundreds of illustrations and end-of-chapter exercises aid in your understanding of the concepts presented in this practical guide.

Coverage includes:

- Systems and economic tools for energy systems
- Climate change and climate modeling
- Fossil fuel resources
- Stationary combustion systems
- Carbon sequestration
- Nuclear energy systems
- Solar resource evaluation
- Solar photovoltaic technologies

- Active and passive solar thermal systems
- Wind energy systems
- New chapter on energy from biological sources
- Transportation energy technologies
- Systems perspective on transportation engineering

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Editorial Review

About the Author

Francis M. Vanek, Ph.D., is a lecturer and research assistant in the Departments of Mechanical & Aerospace Engineering and Civil & Environmental Engineering and the Systems Engineering Program at Cornell University, where he specializes in energy efficiency, alternative energy, and energy for transportation. He is also a consultant with Taitem Engineering in Ithaca.

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