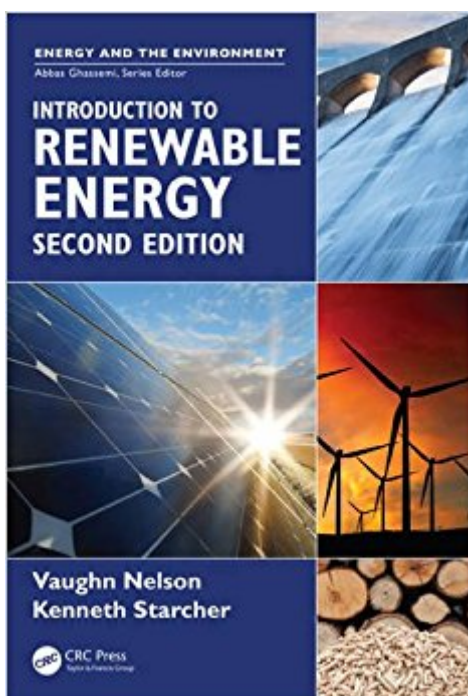


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Introduction To Renewable Energy, Second Edition (Energy And The Environment)



Synopsis

Introduction to Renewable Energy, Second Edition covers the fundamentals of renewable energy and serves as a resource to undergraduates in renewable energy courses, non-specialists within the energy industries, or anyone working to support the successful implementation of renewable energy. The second edition discusses developments that have occurred since the publication of the first edition and considers the growing environmental impact of human activity on planet Earth. Dedicated to converging science and technology in a way that ensures a sustainable future, this book outlines the basics of renewable energy and focuses on current and developing policies that support the shift to renewable energy. New in the second edition, the book addresses bioenergy, energy balance, biodiesel, photovoltaic applications, and climate change. The authors take a multidisciplinary approach and share their observations on trending technologies (including neuroscience, artificial intelligence, virtual reality (VR), nanotechnology, and genetic engineering) that they predict will have a significant impact in the next 25 years. Attributing the major problems in the world to overconsumption and overpopulation, they outline solutions that depend on global and local policies and work to reduce consumption, population growth, greenhouse gas emissions, environmental pollution, and military expenditures. In addition, the book proposes possible answers to our energy dilemma that include: Reduced demand of fossil fuels to depletion rate Transition to zero population growth and the beginning of a steady-state society A tax placed on carbon Implementing more policies and incentives to increase conservation and efficiency and to decrease the emissions of carbon dioxide "A basic introduction to renewable energy for non-engineering and physics students... a balanced book in terms of content and topics covered with limited interests for professionals working in the field." Radian Belu, University of Alaska Anchorage, USA

Book Information

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Customer Reviews

"Nelson and Starcher have put together a very complete picture of the development of renewable energy around the globe. The inclusion of chapters on the economics of power systems and institutional issues is commendable as these are often ignored or mentioned only in passing in other texts." — John Krohn, Arkansas Tech University, Russellville, USA "explores most of the basic modes of renewable energy at an introductory level, paying enough attention to institutional issues and environmental impacts. The writers succeed in keeping the reader interested throughout the book." — Marios Nestoros, Associate Professor, Department of Engineering, University of Nicosia, Cyprus "The book provides a wide-ranging overview of renewable energy technologies, in a single volume. The coverage of each technology is made much more interesting, and appears more relevant, by the incorporation of numerous examples of such systems in real-world operation." — Dr. William J. Smith, University College Dublin, Ireland "Overall, this textbook is good for an undergraduate introductory course in renewable energy. It provides numerous real world examples and updated data in the power industries." — Chean Chin Ngo, California State University, Fullerton, USA "This is a well-balanced book — enough detail to understand all sciences of renewable energy but understandable for a survey class that needs some basic mastery of all subjects with enough science and technology mixed in." — Thomas L Looker, Associate Professor, Edison State College, Piqua, Ohio, USA "The history included with each chapter provides a good base for students to build current concepts and knowledge upon. Anyone can benefit from this gentle introduction to renewables." — John van Loon, Mohawk College, Ontario, Canada "carefully crafted and supported with examples — I am sure that this book will serve as a good textbook for undergraduate students. In addition, this book will be a valuable resource for all students and engineers who study and work in renewable energy fields." — Neyt Ezgi, Turkish Naval Academy, Istanbul "This book provides a comprehensive overview on renewable energy industry, technology and research, presents solid knowledge and detailed information." — Lei Zhang, University of Maryland Eastern Shore, Princess Anne, USA "I like the outline of the text and think that it includes

a good balance of introductory information and technical details. Images used enhance the description of the text. The figures include recent data from government reports, which put the information in context.

— does a great job introducing the student to some of the biofuel technologies — the authors motivate the need for energy by talking about the environmental factors. As a researcher, I am impressed that a thorough analysis of the multiple sources of production of liquid fuel from biomass is included.

— Timothy Thibodeau, Castleton University, Vermont, USA — presents a — solid, comprehensive overview of the renewable energy field.

— Dr. William Kao, University of California Santa Cruz, Silicon Valley Extension, USA — the approach adopted by authors in this book to explain basics is easy to follow by students. — Topics are well selected and defined... — Ali Assi, Lebanese International University — a basic introduction to renewable energy — for non-engineering and physics students... a balanced book in terms of content and topics covered — with limited interests for professionals working in the field.

— Radian Belu, University of Alaska Anchorage, USA — Nelson and Starcher (both, Alternative Energy Institute, West Texas A&M Univ.) cover a wide range of fundamental topics related to renewable energy in this updated edition (1st ed., 2011). The 16-chapter volume begins by discussing basic but important issues such as energy in relation to society, the types and economics of energy, and climate change. Chapter 2 covers fundamental calculations in thermodynamics such as energy, power, heat, efficiency, etc., and the availability/consumption rate of energy sources including coal, natural gas, petroleum, and nuclear. The chapter concludes by stating that "[c]ontinued exponential growth is a physical impossibility in a finite (closed) system, and the Earth is a finite system." Chapters 3 through 8 discuss different aspects of solar energy. The following five chapters focus on other forms of renewable energy including wind, bioenergy, geothermal, and water, as well as energy storage. The last three chapters address nontechnical subjects including institutional and economic aspects of energy as well as predictions for the future. For each topic, Nelson and Starcher present key ideas, up-to-date data, and tangible examples that facilitate understanding of complex concepts. The authors also explain advantages and/or limitations for each technology. Part of the "Energy and the Environment" series.

— CHOICE, July 2016

Vaughn C. Nelson, PhD, has been involved with renewable energy since the early 1970s. Dr. Vaughn has published numerous papers and is the author of three books, including *Wind Energy* (2009, 2nd Ed 2013) and *Introduction to Renewable Energy* (2011) from CRC Press. His primary work has been on wind resource assessment, education and training, applied R&D, and rural

applications of wind energy. He has received three awards from the American Wind Energy Association. His degrees include a PhD in physics from the University of Kansas; an EdM from Harvard University; and a BSE from Kansas State Teachers College. Kenneth Starcher has a BS in physics/computer science at West Texas State University (1980). He received an MS in engineering technology at WTAMU (1995). Starcher has been a field worker at the Alternative Energy Institute (AEI) Wind Test Center since 1980. He has been the educational funnel for onsite training and public information for students and public workshops for AEI, and has served as a trainer at wind and solar training workshops locally, nationally, and internationally. He has also served as a research technician, research associate, assistant director, director, and associate director for AEI over the past 35 years.

Great book!

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