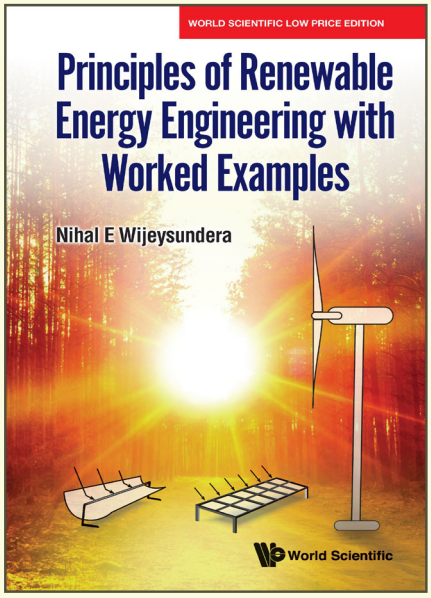
Principles of Renewable Energy Engineering with Worked Examples



By **Nihal E. Wijeysundera**

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ABOUT THE BOOK

In this volume, engineering principles of renewable energy are presented as extensions of the various subjects covered in regular engineering courses. Topics include solar thermal and solar PV power, wind power, energy storage, tidal power, wave power, and ocean thermal energy, and hydroelectric, geothermal and biomass systems.

The comprehensive textbook brings the principles of renewable energy engineering together in a single book equivalent to that of a standard engineering title.

A novel feature of this unique reference is the 30 worked examples and problems highlighted at the end of each chapter. Numerical answers are provided for all the problems. Readers should be able to avoid the need to refer to several books on individual energy sources to develop a course on renewable energy.

READERSHIP

Professionals, academics, researchers, undergraduate and graduate students in mechanical engineering, chemical engineering, civil engineering and energy studies.

CONTENTS

- Introduction to Energy Sources and Utilization
- The Solar Resource
- Solar Process Heat Production
- Solar Thermal Power Generation
- Solar Photovoltaic Power Generation
- Wind Power generation
- Energy Storage Systems
- Ocean Energy Conversion Systems
- Hydropower and Geothermal Power
- Energy from Biomass
- Appendix A1: Transmission and Absorption of Solar Radiation
- Appendix A2: Heat Transfer Correlations

ABOUT THE AUTHOR

Nihal E Wijeysundera received his BSc (Mechanical Engineering) from the University of Ceylon, Sri Lanka, PhD (Nuclear Reactor Physics) from the University of Birmingham, UK. He taught Mechanical Engineering at the University of Peradeniya, Sri Lanka, Drexel University, Philadelphia, USA, and the National University of Singapore, Singapore. He was a member of the International Solar Energy Society (ISES) from 1980–2003, a member of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) from 1986–2003, and was elected a fellow of the American Society of Mechanical Engineers (ASME) in 2002. He is the author of two textbooks: *Engineering Thermodynamics with Worked Examples* (2011 and 2017), *Principles Heating, Ventilation and Air Conditioning with Worked Examples* (2015).

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