

Handbook of Renewable Energy Technology

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Effects of environmental, economic, social, political and technical factors have led to the rapid deployment of various sources of renewable energy-based power generation. The incorporation of these generation technologies have led to the development of a broad array of new methods and tools to integrate this new form of generation into the power system network. This book, arranged into six sections, highlights various renewable energy based generation technologies, and consists a series of papers written by experts in their respective fields of specialization.

The *Handbook of Renewable Energy Technology* will be of great practical benefit to professionals, scientists and researchers in the relevant industries, and will be of interest to those of the general public wanting to know more about renewable energy technologies.

Contents:

- **Wind Energy and Their Applications:**
 - Wind Energy Resources: Theory, Design and Applications (*Y Fang et al.*)
 - Wind Turbine Systems: History, Structure, and Dynamic Model (*S Masoud Barakati*)
 - Wind Turbine Generation Systems Modeling for Integration in Power Systems (*A Junyent-Ferré & O Gomis-Bellmunt*)
 - Technologies and Methods Used in Wind Resource Assessment (*R D Prasad & R C Bansal*)
 - Economic Analysis of Wind Systems (*R D Prasad & R C Bansal*)
 - Line Side Converters in Wind Power Applications (*A V Stankovic & D Schreiber*)
 - Wake Effects from Wind Turbines on Overhead Lines (*B Wareing*)
- **Solar Energy Systems:**
 - Solar Energy Calculations (*K E Holbert & D Srinivasan*)
 - Photovoltaic Systems (*R D Prasad & R C Bansal*)
 - Solar Thermal Electric Power Plants (*K E Holbert*)
 - Maximum Power Point Tracking Charge Controllers (*A Pandey et al.*)
 - Non-Grid Solar Thermal Technologies (*M S Seveda et al.*)
 - Solar Tunnel Dryer — A Promising Option for Solar Drying (*M S Seveda et al.*)
- **Bio Fuels:**
 - Biomass as a Source of Energy (*M S Seveda et al.*)
 - Forest Biomass Production (*S Pérez et al.*)
 - Bioethanol (*A Ortiz et al.*)
 - Biodiesel (*C J Renedo et al.*)
- **Ocean and Small Hydro Energy Systems:**
 - Technologies and Methods Used in Marine Energy and Farm System Model (*V P Kiranben & M P Suvin*)
 - Operational Challenges of Low Power Hydro Plants (*A Atputharajah*)
 - Frequency Control in Isolated Small Hydro Power Plant (*S Doolla*)
- **Simulation Tools, Distributed Generation and Grid Integration:**
 - Simulation Tools for Feasibility Studies of Renewable Energy Sources (*J A Martínez-Velasco & J Martin-Arnedo*)
 - Distributed Generation: A Power System Perspective (*H D Mathur et al.*)
 - DG Allocation in Primary Distribution Systems Considering Loss Reduction (*D Q Hung & N Mithulananthan*)
 - Renewable-Based Generation Integration in Electricity Markets with Virtual Power Producers (*Z A Vale et al.*)
- **Induction Generators, Power Quality, Power Electronics and Energy Planning for Renewable Energy Systems:**
 - Modern Power Electronic Technology for the Integration of Renewable Energy Sources (*Vinod Kumar et al.*)
 - Analysis of Induction Generators for Renewable Energy Applications (*K S Sandhu*)

- Control of Doubly Fed Induction Generators Under Balanced and Unbalanced Voltage Conditions (*O Gomis-Bellmunt & A Junyent-Ferré*)
- Power Quality Instrumentation and Measurement in a Distributed and Renewable Environment (*M Manana et al.*)
- Energy Resource Allocation in Energy Planning (*S Deshmukh*)

Readership: Academics and professionals in the energy research field.