

Grid Integration of Wind Energy Conversion Systems

By Siegfried Heier

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Wind energy is a reliable, natural and renewable electrical power supply. The high installed capacity of today's wind turbines and decreasing plant costs have shown that wind power can be competitive with conventional, more heavily polluting, fuels in the long term.

Focusing on the electrical engineering aspects of wind energy, this completely revised edition provides a detailed treatment of electrical and mechanical components and their interdependency, power control and supervision in wind power plants, and the grid integration facility. The book incorporates all the recent technical developments in electrical power conversion systems and essential operating conditions.

- Provides guidelines for the design, construction and installation of wind power plants
- Presents the history of wind technology, wind resources and economics of wind energy generation
- Introduces operating results and cost considerations
- Describes the fundamental characteristics and theoretical tools of electrical and mechanical components
- Discusses conventional and new types of generators, converters and power electronics
- Offers a comprehensive treatment of grid integration including the effect of power fluctuations on harmonics
- Focuses on improved use of grid capacities and grid support for fixed-and variable-speed controlled wind power plants
- Outlines power conditioning and control systems to ensure the safe operation of plants

Fully revised and updated, this new edition will continue to be the definitive resource for researchers and practitioners involved in the planning, installation and grid integration of wind turbines and power plants. The thorough approach will also prove highly beneficial to university students and practitioners in wind engineering, turbine design and manufacture and electrical power engineering.

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Editorial Review

Review
"…a useful addition to the literature." (*Electrical Apparatus*, August 2006)

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From the Back Cover
Environmental concerns about rising pollution levels and climate change have focused the world's attention on the necessary reduction of harmful emissions from energy-producing processes. The generation of electricity from renewable sources such as wind offers considerable scope for the production of clean and sustainable power. However, in order for the technology to be economically viable, we need to develop efficient conversion systems that integrate this energy into existing power supply structures. Fully revised and updated, *Grid Integration of Wind Energy Conversion Systems, Second Edition* provides a comprehensive treatment of the field, taking into account important innovations in this progressive technology. With new material on energy converters, improved grid capacity, changes in legislation, and economic considerations, this text outlines practical ways in which wind power can make a major contribution in a competitive energy market.

Key features:

- Presents guidelines for the design and installation of wind power plants.
- Includes information on the latest energy converters, grid compatibility, and remedial measures against grid effects and resonances.
- Discusses power conditioning and control systems to ensure the safe operation of plants.
- Considers cost implications and current legislation behind plant construction and maintenance.

This book is an excellent guide for practising engineers and researchers working with wind power plants and their integration into the electrical grid. It is also a valuable resource for graduate students taking courses in wind and power engineering.

Users Review

From reader reviews:

Carl Kile:

The book Grid Integration of Wind Energy Conversion Systems make you feel enjoy for your spare time. You may use to make your capable far more increase. Book can to become your best friend when you getting stress or having big problem using your subject. If you can make studying a book Grid Integration of Wind Energy Conversion Systems to be your habit, you can get more advantages, like add your capable, increase your knowledge about a few or all subjects. It is possible to know everything if you like open and read a book Grid Integration of Wind Energy Conversion Systems. Kinds of book are several. It means that, science e-book or encyclopedia or others. So , how do you think about this book?

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Terry Buehler:

Grid Integration of Wind Energy Conversion Systems can be one of your beginning books that are good idea. All of us recommend that straight away because this guide has good vocabulary that may increase your knowledge in vocab, easy to understand, bit entertaining however delivering the information. The article author giving his/her effort that will put every word into joy arrangement in writing Grid Integration of Wind Energy Conversion Systems yet doesn't forget the main place, giving the reader the hottest and also based confirm resource facts that maybe you can be one of it. This great information could drawn you into brand new stage of crucial considering.

Edward Grimes:

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