Ali Keyhani

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DEVELOPMENT


The revised third edition of Design of Smart Power Grid Renewable Energy Systems integrates three areas of electrical engineering: power systems, power electronics, and electric energy conversion systems. The book also addresses the fundamental design of wind and photovoltaic (PV) energy microgrids as part of smart-bulk power-grid systems.

In order to demystify the complexity of the integrated approach, the author first presents the basic concepts, and then explores a simulation test bed in MATLAB® in order to use these concepts to solve a basic problem in the development of smart grid energy system. Each chapter offers a problem of integration and describes why it is important. Then the mathematical model of the problem is formulated, and the solution steps are outlined. This step is followed by developing a MATLAB® simulation test bed. This important book:

- Reviews the basic principles underlying power systems
- Explores topics including: AC/DC rectifiers, DC/AC inverters, DC/DC converters, and pulse width modulation (PWM) methods
- Describes the fundamental concepts in the design and operation of smart grid power grids
- Supplementary material includes a solutions manual and PowerPoint presentations for instructors
Written for undergraduate and graduate students in electric power systems engineering, researchers, and industry professionals, the revised third edition of *Design of Smart Power Grid Renewable Energy Systems* is a guide to the fundamental concepts of power grid integration on microgrids of green energy sources.

### ABOUT THE AUTHOR

Ali Keyhani, PhD, is a Professor in the Department of Electrical and Computer Engineering at Ohio State University. He is a Fellow of the IEEE and a recipient of Ohio State University, College of Engineering Research Award for 1989, 1999, and 2003. He has worked for Columbus and Southern Electric Power Company, Hewlett-Packard Co., Foster Wheeler Engineering, and TRW.

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