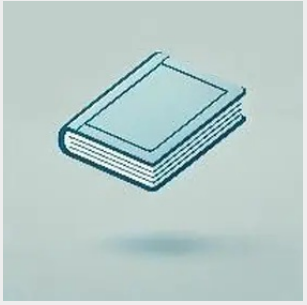
Refaat / Mohammed / Farrag

Smart Power Networks

Modeling, Design, Optimization, and Control



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The concept of a "smart grid" has evolved over the years as a sustainable way to modernize and improve the efficiency and reliability of the traditional electrical power system. This book provides comprehensive coverage of the fundamental concepts of smart grids and related advanced key technologies. It also covers the modeling and simulation of various smart grid architectures, using various software tools and packages, with a focus on the design of energy management, control, and optimization strategies. It includes various case studies on smart grid development to help readers understand the practical applications of the technology and how it can be implemented in different settings. Features - Addresses the most recent research and developments of smart grids and microgrids from an interdisciplinary approach. - Discusses methods and tools for the design and optimization of smart grids. - Offers in-depth coverage of smart grid technologies, and practical guidance on the implementation of smart grids. - Explains advanced smart grid modeling, monitoring, control, and protection, and advanced algorithms. - Includes several case studies, practical examples, and interactive diagrams and illustrations to make the concepts more engaging and accessible to a wider audience. - Provides comprehensive coverage of cybersecurity aspects and challenges that smart grid technology is facing. This is an essential resource for undergraduate or graduate courses covering modern power systems and the concept of smart grids. It also serves as a source for several training courses for utility engineers who aim to expand their knowledge on smart grids.

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