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Special Issue Reprint

Emerging and Advanced Green Energy Technologies for Sustainable and Resilient Future Grid

Edited by: Surender Reddy Salkuti

This reprint presents various aspects of the future grid, which is the next generation of the electrical grid and will enable the smart integration of conventional, renewable, and distributed power generation, energy storage, transmission and distribution, and demand management. Renewable energy is crucial in transitioning to a less carbon-intensive economy and a more sustainable energy system. The high penetration and uncertain power outputs of renewable energy pose great challenges to the stable operation of energy systems. The deployment of the smart grid is revolutionary, and also imperative around the world. It involves and deals with multidisciplinary fields such as energy sources, control systems, communications, computational generation, transmission, distribution, customer operations, markets, and service providers. Smart grids are emerging in both developed and developing countries, with the aim of achieving a reliable and secure electricity supply. Smart grids will eventually require standards, policy, and a regulatory framework for successful implementation. This reprint addresses the emerging and advanced green energy technologies for a sustainable and resilient future grid, and provides a platform to enhance interdisciplinary research and share the most recent ideas.

