ICRERA 2023

12th INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY RESEARCH AND APPLICATIONS

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Abstract

Title: Smart Grids for green and sustainable energy transition

Smart Grid (SG) is now the buzzword in the power industry all over the world. The rise of smart grid is a boon not only to society as a whole but to all who are involved in the electric power industry, its customers, and its many stakeholders. It presents one of the most significant evolutionary changes in power transmission and distribution. SGs are advanced technologies based on the intensive use of IT and communication technologies over the entire generation, transmission, and distribution systems of the electricity sector. They are generally recognized as an enabling technology for achieving sustainable energy transitions with the potential to support a broad range of advanced energy technologies on both the supply-side of the integration of a large scaleof renewable energy and distributed energy sources and demand-side of energy management.

The modernization of electric grids toward a smart grid is being carried out to improve reliability, facilitate integration of renewable energies, and improve power consumption management. Also, the electric power systems throughout the world are facing radical change stimulated by the pressing need to decarbonize electricity supply, to replace ageing assets and to make effective use of rapidly developing information and communication technologies. Thus, the development and the implementation of a smart grid for power supply is one of the pressing issues in modern energy economy and it is promoted by many governments as a way of handling energy independence, global warming and security of supply based on the introduction of modern communications infrastructure, sensing, metering technologies, and modern energy management techniques based on the optimization of demand, energy and network availability. This presentation addresses critical issues on smart grid challenges, development, and opportunities where the main objective of this presentation is to provide a contemporary look at the current state of the art in smart grid as well as to provide a better understanding of the technologies, potential advantages and research challenges of the smart grid and provoke interest among the research community to further explore this promising research area.