

What is power electronics?

This includes integration with the Internet of Things (IoT) and artificial intelligence (AI) for automated task solving and work optimization. 1. Introduction Power electronics is a key area of engineering focused on the efficient production, conversion, distribution and storage of electrical energy for various needs.

What is a smart electronic converter?

They are used in various areas of the power industry and are key to improving energy efficiency, and the integration of renewable energy sources and smart grids. Smart electronic converters are essential for modern power systems that strive for the greater efficiency, sustainability and smart management of energy resources.

What is a relevant classification of power electronic devices?

A relevant classification on this basis is power electronic devices with applications for: energy harvesting (oriented to energy sources); energy transmission and distribution (grid oriented) and efficient energy consumption (load oriented).

What are intelligent power electronic devices & systems?

Intelligent power electronic devices and systems use sensors, software algorithms and communication technologies to provide a number of additional functionalities compared to classical ones [9, 10, 11], as they adapt to different conditions and loads and can regulate power, voltage and current, to ensure optimal real-time performance.

The distributed generation (DG) utilities depicted with wind power plants, solar power plants, microgrid infrastructures, and even electric vehicles may penetrate to the advanced grid structure at ...

A smart grid is a power distribution network that utilises advanced ...

A must-read for professionals in power engineering and utility industries, and researchers and postgraduates in distributed electrical power systems, the book presents the features, solutions and ...

Power electronics plays a key role in the management and conversion of electrical energy in a variety of applications, including the use of renewable energy sources such as solar, ...

Electrical power systems have begun a transition process towards a new paradigm characterized by decarbonization, decentralization of generation, electrification of the economy, more ...

The major aim of this book, a monograph written by an international team of authors, is to present the features, solutions, and applications of the power electronics arrangements likely to be ...

A smart grid is a power distribution network that utilises advanced technologies, including power electronics, to optimise energy transmission and consumption. This involves the integration of ...

Power electronics in smart electrical energy networks

Power Electronics in Smart Electrical Energy Networks introduces a new viewpoint on power electronics, re-thinking the basic philosophy governing electricity distribution systems. The proposed concept ...

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