

Special Issue

New Trends and Challenges in Modern Electrical Grids

Message from the Guest Editors

The advancement of power systems is mainly driven by the integration of renewable energy sources (RES) and energy storage systems (ESS), in parallel with the evolution of network architectures that host RES and ESS, especially toward DC and hybrid AC/DC architectures. This ongoing transformation requires robust, efficient, and intelligent solutions in order to provide reliable and sustainable energy in different contexts, such as buildings, microgrids, and urban energy districts. Current challenges related to RES and ESS comprise the conception of new hybrid topologies and conversion systems, as well as the development of new control strategies to achieve smarter grid interaction. Likewise, the use of emerging DC and DC/AC networks featuring power equipment such as lines and converters needs to revisit several aspects such as their modeling, system operation and management, protection, and diagnostics.

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