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Special Issue Reprint

Integration of AC/DC Microgrids into Power Grids

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AC/DC Microgrids are a small part of low voltage distribution networks that are located far from power substations, and are interconnected through the point of common coupling to power grids. These systems are important keys for the flexible, techno-economic, and environmental-friendly generation of units for the reliable operation and cost-effective planning of smart electricity grids. Although AC/DC microgrids, with the integration of renewable energy resources and other energy systems, such as power-to-gas, combined heat and power, combined cooling heat and power, power-to-heat, power-to-vehicle, pump and compressed air storage, have several advantages, there are some technical aspects that must be addressed. This Special Issue aims to study the configuration, impacts, and prospects of AC/DC microgrids that enable enhanced solutions for intelligent and optimized electricity systems, energy storage systems, and demand-side management in power grids with an increasing share of distributed energy resources. It includes AC/DC microgrid modeling, simulation, control, operation, protection, dynamics, planning, reliability and security, as well as considering power quality improvement, load forecasting, market operations, energy conversion, cyber/physical security, supervisory and monitoring, diagnostics and prognostics systems.

