

IET *Electric Power Applications* Call for Papers

SPECIAL ISSUE ON:

Medium Voltage Power Electronic Technologies for Electrical Energy Generation, Conversion and Storage

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In contrast to the existing state-of-the-art power system, the grid of the future will be based on decentralised power generation, higher distances between source and load, a bidirectional power flow, and a distributed power generation, which is independent from the load. This will lead to meshed grids with a great deal of production and storage capacity directly connected not only to low voltage (< 1kV) and high voltage grids, but also to medium voltage (MV) distribution grids (< 40kV) by means of power electronic converters. In addition to the existing MVAC grids, introduction of MVDC grids is expected to support this transformation of energy systems.

High-power MV power electronic technologies will play a key role in this process. The converters will have to ensure grid stability (i.e. frequency control, voltage control, grid restoration, system and operation management) associated with the requirement of high reliability and efficiency, low harmonics and low costs. New MV multilevel circuit topologies and wide-band gap power semiconductors, supported by advanced control algorithms, enable promising solutions to replace or enhance the performance of conventional AC systems as well as emerging DC systems. Irrespective of AC or DC grids, large capacity, volatile and scattered, renewable energy generation requires flexible and efficient power electronics interfaces both for the grid connection as well as for integration of large-scale energy storage technologies. MV grids are therefore expected to undergo a large transformation in the coming years, which is only possible if supported by the advancement of MV power electronics.

This Special Issue focuses on (but is not limited to) the following topics:

- Multilevel converter topologies for MV applications
- Solid state transformers for high power applications
- Novel applications of modular multilevel converters
- MV high power variable speed drives
- Wind energy generation and conversion technologies
- Photovoltaic energy generation high power converters
- MVDC collection and distribution power distribution networks
- Advanced control methods for high power converters
- Applications of real-time hardware-in-the-loop systems for large scale systems
- PHIL test systems for MV converters and drive/generation systems
- Robust and grid code compliant drive and generation converters
- Power electronics solutions for energy storage integration, including flywheels

All papers must be submitted through the journal's ReView system:
<https://www.iet-review.rivervalleytechnologies.com/journal/epa>

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