

Special Session on

High Capacity Power Converters for Renewable Energy Applications

Abstract:

In recent years, applications of power electronics in power systems have increased significantly, particularly in renewable energy harvesting and for addressing many of the power quality problems at distribution systems. The momentum behind increased adoption of power electronics in renewable energy conversion systems stems from their compactness and increased control flexibilities.

As large renewable power plants tend to be located far from consumption centres, integration of the power collected from these power plants represent a major challenge. For example, the electrical outputs of these renewable power plants could be DC or AC voltage with magnitude and frequency which are incompatible with the AC grids. Therefore, power electronic interfacing is needed to decouple the AC grids from the power plants, control active and power exchange with AC grid, and assist renewable power plants to ride-through different AC and DC network faults.

The main objective of the special issue is to provide a platform for researchers, and experts from academia and industry to discuss, share, exchange, and provide ideas, and also to identify unforeseen challenges and problems to be solved and worthy of further investigations. Therefore, the authors are invited to submit an abstract to this special issue, provided the subject of the abstract falls within one of the following areas.

The technical topics in this Special Session include:

Research and development on high power converters:

- Design
- Modulation
- Control
- Modelling
- Protection

New modulation and control strategies for HVDC converters:

- Half and full bridge modular multilevel converters
- Hybrid and modular converters with smart submodules
- New converter topologies
- Internal fault management and fault ride-through strategies of modular and hybrid converters

Modelling, control and stability of renewable energy power plants:

- Large and small signal stability
- Impedance based modelling and stability analysis.
- Dedicated control strategies weak ac networks with high penetration of distributed generations.
- New control strategies for small, medium and large-scale wind and solar power plants
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Enabling technologies for DC grids:

- New control and topologies of DC/DC converters for MVDC and HVDC grids
- Coordinated control and protection of DC grid
- DC circuit breakers
- New AC and DC fault ride-through strategies for DC grids
- Hybrid DC grids with VSCs and LCCs

Organizers:

Dr. Khaled Ahmed, University of Aberdeen, UK, Email: khaled@abdn.ac.uk

Dr. Grain P. Adam, University of Strathclyde, UK, Email: grain.adam@strath.ac.uk

Deadlines of the special session:

Final paper submission due : July 1, 2017
Notification of acceptance : September 1, 2017
Revised Paper submission : October 1, 2017
Conference Date : November 5-8, 2017

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