

Special section on: “Control and Grid Integration of MW-Range Wind and Solar Energy Conversion Systems”

The Theme: The increasing penetration of electrical energy from intermittent sources, particularly wind and solar energy can affect power system stability, especially in the case of weak grids. Several countries have modified their grid codes to address this problem and nowadays it is expected that renewable energy sources of intermittent nature, e.g. wind energy conversion systems, should remain temporarily connected during typical faults to avoid compromising the stability of the entire power system. Moreover in some grid codes it is suggested or mandatory that intermittent energy conversion systems should provide ancillary services, e.g. frequency and voltage regulation using droop control, synthetic inertia emulation, etc.

The rated power of Wind Energy Conversion Systems (WECS) has been steadily increasing and is currently approaching 10MW. For this new generation of high power WECSs, new power converter designs with high power densities are required. It is also important to develop control systems for the successful grid integration of these new large WECSs. Intermittent power sources may also be installed in locations where grid integration faces additional challenges such as when the power conversion stage is moved off-shore for instance. In addition to efficiency and reliability, size and weight will be important because expensive infrastructure is required to support the components required for off-shore power conversion. Other important issues are the selection of the topology for grid collection, e.g. parallel vs. series and the methodology/control system for the transmission of energy.

In the last ten years considerable research effort has been put into the field of grid integration of intermittent energy sources, mainly wind energy systems and PV systems. The main objective of this Special Section dedicated to the **Control and Grid Integration of MW-Range Wind and Solar Energy Conversion Systems** is to highlight the latest advances in this field. Topics of interest of this Special Section include, but are not limited to:

- Power electronic and control methods to connect large Multi-MW WECs to the electrical system providing ancillary services. For instance droop control, synthetic inertia emulation, power smoothing schemes, active filtering, etc.
- Power electronic, control and hardware topologies for grid collection and energy transmission from off-shore power conversion systems.
- Design and control of high power to volume ratio and/or high power to weight ratio power converters for wind and solar energy applications.
- Novel power electronic topologies for grid integration of wind turbines, wind farms and photovoltaic systems. Including but not limited to: active NPC converters, power converters with flying capacitors, modular multilevel converters, etc.
- Novel control systems and power electronic topologies required to provide fault ride-through capability to wind and solar energy conversion systems.

Manuscript Preparation and Submission

Follow the guidelines in “Information for Authors” in the IEEE Transaction on Industrial Electronics:

<http://www.ieee-ies.org/pubs/transactions-on-industrial-electronics>

Please submit your manuscript in electronic form through Manuscript Central web site: <http://mc.manuscriptcentral.com/tie-ieee>. On the submitting page #1 in popup menu of manuscript type, select **Control and Grid Integration of MW-Range Wind and Solar Energy Conversion Systems**. Papers with experimental validation will be preferred.

SS Guest Editors email: SSgint@ieee-ies.org

<i>Corresponding Guest Editor</i> Roberto Cárdenas	<i>Guest Editor</i> Jon Clare	<i>Guest Editor</i> Marcelo Pérez
Electrical and Electronics Engineering Department, University of Chile, Av. Tupper 2007, Santiago, Chile, Tel: + 56 2 978 4203, Fax +56 2 6720162, email: rcd@ieee.org .	School of Electrical and Electronic Engineering, University of Nottingham, Nottingham University Park, NG7, 2RD, Tel +0115 951 5356, Fax +0115 951 5616, email: jon.clare@nottingham.ac.uk .	Department of Electronic Engineering, Santa María Technical University, Avenida España 1680, Valparaíso, Tel. +56 32 2654761, Fax +56 32 2654191, email: marcelo.perez@usm.cl .

Timetable

Deadline for manuscript submissions
Information about manuscript acceptance
Estimated publication date

Jul the 31th, 2016
September 2016
December 2016