

Special Section on:

## Power-electronics-enabled Autonomous Power Systems

**P**OWER SYSTEMS are going through a paradigm change from centralized generation to distributed generation and further onto smart grid. A huge number of relatively small distributed energy resources (DERs), including wind farms, solar farms, electric vehicles and energy storage systems, and flexible loads are being integrated into power systems through power electronic converters. This imposes great challenges to the stability, scalability, reliability, security and resiliency of future power systems. Field experience in recent years has shown that large-scale deployment of DERs affects the stability of current power systems, which are dominated by synchronous machines (SMs). It is vital to develop appropriate control architecture and technologies so that all these different players are able to take part in the regulation of future power systems in an autonomous and responsible way. During the last decade, significant developments have been made to operate power electronic converters as virtual synchronous machines (VSMs), which offers a promising way for all the DERs and flexible loads to follow the same mechanism of conventional synchronous machines. Other techniques have been proposed or are under study. The objective of this special section is to join the forces of the communities of control/systems theory, power electronics and power systems to address from a practical point of view various emerging issues of power-electronics-enabled autonomous power systems and pave the way for large-scale deployment of DERs and flexible loads.

Editors invite original manuscripts presenting recent advances in these fields with special reference to the following topics and their implementation:

- ✓ Virtual Synchronous Machines
- ✓ Droop Control
- ✓ Synchronverters
- ✓ Topologies of Enabling Power Electronic Converters
- ✓ Grid Regulation of Distributed Energy Resources
- ✓ Autonomous Demand Response
- ✓ Control and Stability of Microgrids
- ✓ Power System Protection
- ✓ Fault Ride-through.

### Manuscript Preparation and Submission

Check carefully the style of the journal described in the guidelines “Information for Authors” in the IEEE- IES web site: <http://www.ieee-ies.org/pubs/transactions-on-industrial-electronics> .

Please submit your manuscript in electronic form through: <https://mc.manuscriptcentral.com/tie-ieee/>.

On the submitting page, in pop-up menu of manuscript type, select: “**SS on Power-electronics-enabled Autonomous Power Systems**”, then upload all your manuscript files following the instructions given on the screen.

*Corresponding Guest Editor*

**Prof. Qing-Chang Zhong**  
 Illinois Institute of Technology  
 10 West 35th St,16 C2-2  
 Chicago, IL 60616, USA  
 EMAIL: [zhongqc@iit.edu](mailto:zhongqc@iit.edu)

*Guest Editor*

**Prof. Frede Blaabjerg**  
 Aalborg University  
 Pontoppidanstraede 101  
 76, 9220 Aalborg , Denmark  
 EMAIL: [fbl@et.aau.dk](mailto:fbl@et.aau.dk)

*Guest Editor*

**Prof. Carlo Cecati**  
 University of L'Aquila  
 DISIM, Via Vetoio  
 67100 L'Aquila - Italy  
 EMAIL: [c.cecati@ieee.org](mailto:c.cecati@ieee.org)

#### Timetable

Deadline for manuscript submissions:	Information about manuscript acceptance:	Publication date:
<b>June 30, 2016</b>	Autumn, 2016	Spring, 2017