IEEE Transactions on Industrial Electronics

CALL FOR PAPERS

"Methods and Systems for Smart Grids Optimisation"

The Theme: The environmental and energetic problems leads the international politics of energy development towards a reduction of pollutant emissions, a rational use of energy resources and the use of renewable energy resources as strategic targets. In order to achieve an effective reduction of greenhouse gas emissions, the future electrical distribution networks will allow the connection of Distributed Generation systems (DG) mostly based on renewable sources. The wide use of DG is also supported by the continuous technological development, the spread of automation in control and management of electrical networks and by the liberalization of energy markets. Nevertheless, the gradual increase of DG penetration, especially of renewable type, will determine a deep revision of methodologies for planning and management of electrical distribution networks.

The future electrical distribution networks should be smart and evolving from the current passive systems to active networks, managed through systems based on Information Communication Technology (ICT). Among the intelligent distribution network management methods, that allow maximizing the energy exploitation from renewable source, reducing possible drawbacks, the Smart Grid represents an emerging paradigm of special scientific and practical interest and a new frontier for the industrial electronics.

In order to ensure the management of renewable sources the Smart Grids, hierarchical control systems, interacting with each other, should be developed. Energy storage systems will be required in order to mitigate the effects of intermittent energy production from renewable sources. The Smart Grid will fully take advantage of the opportunities of competitive electricity market, will include consumers and their behavior in the project, improving the power quality and, especially, will have the ability to detect, analyze and solve problems. The more widespread application of artificial intelligence methods based on next generation ICTs for Smart Grids management and the resulting availability of enormous amounts of information, will, however, determine the need to govern the management of more and more complex systems. In this framework, the role of the industrial electronics is central and new systems allowing smart reconfigurations to different situations, optimizing both generator and load side are required. Universal systems should be able to switch from stand-alone to grid-connected and vice versa in real-time and without reducing the quality of electricity. Topics of interest of this Special Section include, but are not limited to:

- Smart sensors and remote measurement and monitoring systems for smart grids
- New power converter topologies for smart grid operations and optimization
- New control methodologies for intelligent power converters in smart grids
- Fault management in smart grid
- Numerical Methods for smart grids optimization
- Distribution Flexible AC Transmission System for smart grids
- Methodologies for optimal planning of smart grids
- Management of a local energy market within the smart grid
- Coordinated management of energy resources in smart grids
- Protection systems for smart grids
- Demand side management methods for smart grids.

Manuscript Preparation and Submission:

Follow the guidelines in "Information for Authors" in the IEEE Transaction on Industrial Electronics http://tie.ieee-ies.org/tie/
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: "SS on Methods and Systems for Smart Grids Optimisation".

Timetable:

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