

Call for Papers

Special Section on Dynamic Modeling, System Identification, Analysis, and Control of Renewable Distributed Energy Resources for Grid Integration

Theme: Renewable energy resources will constitute the backbone of the sustainable energy systems of future and, due to their different characteristics and dependence on climate and geography, they will be scattered throughout the host power systems. Moreover, a majority of them must be interfaced with the host grids via electronic power converters. Furthermore, for superior energy yield, power quality, reliability, stability and safety, they must be regulated, or coordinated with the power system and/or the other distributed energy systems, via high-performance control schemes. For example, phenomena such as low-frequency and subsynchronous oscillations related to wind farms in Texas and west region in China have captured the attention of industry. Not only do interactions between wind farms and weak host grids but also interactions among interfacing converters may lead to oscillations with varying bandwidths. The construction of more high-voltage dc (HVDC) transmission systems and the emergence of multi-terminal dc (MTDC) grids are expected to raise the likelihood of such undesirable interactions. In distribution networks, high penetration of photovoltaic (PV) solar and energy storage systems indicates the co-existence and co-operation of hundreds or thousands of converters, whose interactions become challenging to characterize and counteract, based on the traditional techniques. The aforementioned issues therefore necessitate the adoption of simplified and/or aggregated, yet adequate, models, as well as innovative techniques for fast simulation, stability analysis, and control design. Such models can be further tuned using measurements through such system identification methods as least-square estimation, etc. Thus, the main objective of this special section is to seek quality publications that highlight recent advances and breakthroughs in the areas of modeling (including system identification through measurements), analysis, control, simulation, grid integration, and assessment of impact on the host power systems of renewable distributed energy resources. The topics of interest include, but are not limited to:

- Modeling and stability analysis of subsystem interactions in power grids with large-scale distributed renewable energy resources, including but not limited to interactions among converters, interactions among converters and synchronous generators, effect of droop control on stability, etc.
- Measurement-based system identification approaches for obtaining aggregated and simplified models for distributed renewable energy resources and systems
- Grid connection interface design for renewable power plants
- Linear and nonlinear control methods for distributed renewable energy resources and systems to mitigate harmonics, resonances and oscillations

Submission Guidelines

This special section solicits original work that is not under consideration for publication in other venues. Two-page extended abstracts are solicited for the first round of reviews. Please submit a PDF version of the abstracts including a cover letter with authors' contact information via e-mail to yazdani@ryerson.ca before the deadline. Authors of selected abstracts will be invited to submit the full papers in the second round. Authors must refer to the IEEE Transactions on Sustainable Energy authors' guide at <http://www.ieee-pes.org/publications/information-for-authors> for information on content and formatting of submissions. The direct link to the Manuscript Central for the submission of papers is <http://mc.manuscriptcentral.com/tste-pes>. In the Manuscript type drop-down menu box, the author must choose Special Section on "Dynamic Modeling, System Identification, Analysis, and Control of Renewable Distributed Energy Resources for Grid Integration".

Important Dates

February 8, 2018: Deadline for the submission of extended abstracts

April 9, 2018: Notification for full paper submission

July 9, 2018: Deadline for full paper submission

October 8, 2018: Final notification to the authors

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