

International Journal of Electrical Power & Energy Systems

Call for Papers

Special Issue on:

Dynamic Modeling, Analysis and Control of Power Systems with High-penetration of Power Electronics

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Recent years have witnessed a rapid development of power electronics in modern power systems, including renewable power generation, high-voltage dc (HVDC) transmission, flexible ac transmission system (FACTS), energy storage, microgrid and active front-end loads. The unique characteristics of power electronic devices, especially their fast response, wide-band performance and reconfigurable control, are transforming system dynamics and bringing new stability concerns as well as additional control flexibility.

For instance, on the generation side the power electronics interfaced renewable power generations are changing the profile of power sources previously dominated by rotary synchronous machines. These static generators with high uncertainty, low inertia and fast switching speed not only impact the classical stability aspects, but also cause emerging instability problems. On the transmission side, FACTS, LCC/VSC-HVDC and the growing-up energy storage are reshaping the configuration of traditional ac grids, driving the transmission systems to become easily controllable and more resilient to failures and attacks. On the distribution side, the increasing use of active-front-end loads, electric vehicles, distributed generations and etc. are creating two-way interactive interfaces as well as reliability & quality issues between consumers and providers. Therefore, the increasing penetration of power electronics into current power systems poses a lot of new challenges that need to be studied in depth.

As one of the efforts, this special issue is devoted to the dynamic modeling, analysis and control of power systems with high-penetration of power electronics. Prospective authors are invited to submit original contributions and survey papers in these areas. Papers dealing with real-world problems and practical applications of advanced modeling, analysis, simulation, monitoring and control techniques are particularly encouraged. Topics of main interest include but are not limited to:

- Report and investigation of power system dynamics & stability issues with the active participations of power electronics
- Novel dynamic modeling and stability analysis methods for power-electronics-enabled power systems
- Advanced control, monitoring and protection techniques for power systems with a high share of power converters
- Off-line, real-time and hardware-in-the-loop simulations of power electronics & systems
- Advances in FACTS, LCC/VSC-HVDC, microgrid, energy storage and mobile power systems, with an eye to transforming system dynamics
- Power-electronics-interfaced renewable power generations and the dynamic features
- New applications of power electronics for improving the dynamic performance of power & energy systems

All submissions are subject to the journal's peer-review procedures. The authors should follow the journal's Author Guide at <http://ees.elsevier.com/ijepes/> when preparing papers for submission to the Special Issue.

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