

IEEE Power Engineering Society Entity Annual Report

2015

Entity: Power System Dynamic Performance Committee

Chair: Pouyan Pourbeik

Vice-Chair: Claudio Cañizares

Secretary: Costas Vournas

1. Significant Accomplishments:

1.1. Task force / Working Group reports :

Three task forces completed their reports and these reports are now available on the PES Resource Center:

- Task Force on Microgrid Control – also won the PSDP Prize WG Award for 2015
- IEEE Technical Report PES-TR18, Benchmark Systems for Small-Signal Stability Analysis and Control, August 2015.
- IEEE Technical Report PES-TR19, Test Systems for Voltage Stability Analysis and Security Assessment, August 2015.

1.2. Panels sessions

At each PES General Meeting, the Committee actively sponsors a number of highly attended and successful panel sessions on imminent industry and research issues in the area of power system dynamics. The following panel sessions were set up by the Committee at the PES General Meeting in 2015:

- The Pathway for Synchrophasors into Control Centers (co-sponsored by PSO)
- Estimating Dynamic States for Real-Time Power Grid Operation
- System Model Validation per NERC Reliability Standards and Similar International Standards
- Impact of Renewable Energy Integration on Voltage Control Design
- Contribution to Bulk System Control and Stability by Distributed Energy Resources connected at Distribution Networks

1.3. Tutorials

The PSDP Committee, together with the Electric Machinery Committee, co-sponsored a very successfully tutorial at the PES General Meeting in 2015. The tutorial was titled:

“Tutorial on Renewable Energy Systems Modeling and Dynamic Performance”, and was attended by more than 30 individuals, with very positive feedback from the attendees.

2. Benefits to Industry and PES Members from the Committee Work:

The benefits of the work of the Power System Dynamic Performance Committee to the power and energy industry are as follows:

- Fostering high quality technical work in the area of power system dynamic performance and reporting on this work in the form of public IEEE Technical Reports (available on the PES Resource Center) and other avenues (such as journal and conference papers).
- Consistently organizing relevant panel sessions describing practical experiences and technical tools related to power system stability, control, and modeling, which address the latest industry initiatives and challenges.
- Providing an open forum for interaction among representatives of manufacturers, vendors, academics and researchers to raise, address, and resolve current technical issues facing the power industry related to power system dynamic performance.

3. Benefits to Volunteer Participants from the Committee Work:

The benefits to the Power System Dynamic Performance Committee volunteer participants are as follows:

- The Power System Dynamic Performance actively seeks the active participation of its members in its different activities with the goal of promoting and enhancing their professional development. Examples include: a) encouraging members to participate in different committee activities; b) promoting and organizing panel sessions of interest to PSDP members; c) imposing relatively short term limits (~2-years) on committee officers in order to allow for continuous renewal and involvement by the membership in the committee’s leadership; d) maintaining a balance between members from industry and academia among the committee leadership; e) also maintaining a balance between North American and those from outside North America who serve in the committee and subcommittee leadership positions, to ensure diversity and global representation to the extent possible.
- PSDP provides a forum through Panel Sessions, Special Technical Sessions, and presentation opportunities within its Committee/Subcommittee/Working Group/Task Force meetings to disseminate the latest important technical issues of interest to industry participants and researchers.
- Participants in the various activities of the PSDP Committee work have the opportunity of establishing contacts with leading international experts in power system dynamic performance.

PSDP’s Panel Sessions and other technical sessions provide timely state-of-art information on current industry topics of interest to volunteers.

4. Recognition of Outstanding Performance:

The following PSDP Committee members have been recognized in 2015 for their outstanding achievements:

- Nelson Martins, a longstanding and esteemed member of the committee, was awarded the IEEE PES Prabha Kundur Award for 2015.
- IEEE PES Technical Committee Distinguished Service Award was given to Costas Vournas, 2015
- The following committee members were elevated to the grade of IEEE Fellow in 2015: Mani Venkatasubramanian
- Thierry Van Cutsem was recognized for his service for the past two years as Committee Chair
- Lingling Fan was recognized for her service for the past two years as one of the Committee TCPCs
- Costas Vournas was recognized for his service for the past four years as the Power System Stability Subcommittee Chair
- 2015 Prize Paper Award: J. C. Mantzaris, A. Metsiou and C. D. Vournas, "Analysis of Interarea Oscillations including Governor Effects and Stabilizer Design in South-Eastern Europe", IEEE Trans. on Power Systems, Vol. 28, No. 4, Nov. 2013, pp. 4948-4956.
- 2015 WG Award: Task Force on TF on Microgrid control Chaired by Claudio Canizares.

5. Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):

PSDP coordinates with the CIGRE Study Committee C4 – System Technical Performance, in areas of mutual interest. PSDP has hosted over the past decade numerous meetings of CIGRE Working Group meetings on the Sunday of the IEEE PES General Meeting. Some of these areas of mutual interest have been on modeling of combined-cycle power plant, modeling of wind turbine generators, wide-area control and measurement, on-line dynamic security assessment, load modeling and application of phasor measurement units in monitoring and control of system dynamic performance. Again in 2015 we hosted several CIGRE WG meetings on the Sunday of the PES GM.

Many of the members of these CIGRE WGs have also actively participated and contributed to our panel sessions, task forces and committee and subcommittee activities, resulting in mutually beneficial exchange of areas between the two profession societies. Furthermore, in the past and presently, officers of PSDP also have served as a study committee chair of CIGRE.

PSDP is also closely working with the Power System Relaying Committee, as in the past, on many activities of mutual interest and there are standing liaisons between the two committees.

6. New Technologies of Interest to the Committee:

Here is a list of some of the new technologies that are of interest to PSDP Committee and are a part of the topics covered by many of our panel sessions, TFs and WGs:

- wind and solar power plants,
- microgrids,
- dynamic performance of high-voltage direct-current transmission,
- application of synchrophasor measurements to dynamic monitoring and control,
- application of high performance computing to dynamic security assessment, and
- the contribution of distributed energy sources, connected to distribution grids, to overall system dynamics, stability and security.

7. Significant Plans for the Next Period:

Continue to maintain the high quality and output of our TFs and WGs, and continue to increase the attractiveness of the various activities of our Committee to the industry. Presently, there are plans for five panel session to be held by the committee in 2016.

Submitted by: Pouyan Pourbeik, Chair

Date: October 27, 2015

Claudio Cañizares, Vice-Chair

Costas Vournas, Secretary