

# IEEE Power Engineering Society Entity Annual Report

2013-2014

**Entity: Power System Dynamic Performance Committee**

**Chair: Thierry Van Cutsem**  
**Vice-Chair: Pouyan Pourbeik**  
**Secretary: Claudio Cañizares**

## **1. Significant Accomplishments:**

### **1.1. Task force / Working Group reports :**

Two award winning Task Forces have issued their reports in 2013 and 2014, respectively:

- IEEE Task Force Technical report on Identification of Electromechanical Modes in Power Systems, Special Publication TP462, June, 2012 (PSDP WG Award in 2013)
- IEEE Task Force Report, Dynamic Models for Turbine-Governors in Power System Studies, Technical Report PES-TR1, January 2013 (PSDP WG Award in 2014).

Interestingly enough (per information from resource center) the IEEE TF Report on Dynamic Models for Turbine-Governors in Power System Studies is one of the most downloaded reports from the new IEEE PES Resource Center.

### **1.2. Compendium**

In 2014 the Task Force on Power System Restoration Dynamics completed its work and was disbanded after issuing the compendium entitled “Power System Restoration Dynamics – Issues, Techniques, Planning, Training & Special Considerations” available from the IEEE Resource Center. This document gathers information from panel papers, transaction papers and includes discussions and closures prepared specifically for the publication. It was one of the first to be posted on the IEEE Resource Center.

The TF on Impact of Industry Restructuring on System Dynamic Performance had completed its work in 2012, but due to technical delays, its final report was made available on the IEEE PES Resource Center in 2014.

### **1.3. 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 General Meeting 2013:

- Identification of Electromechanical Modes in Power Systems
- Modeling and Dynamic Performance of Wind and Solar Generation
- From Wide-Area Warnings to Discrete Stability Controls
- Modeling and Assessment of Cyber-Physical Power Systems
- Advanced Pumped Storage Modeling

and the following at the General Meeting 2014:

- Industry experience with wide-area coordinated voltage control
- Microgrid Control
- Future Trends and Directions in Dynamic Security Assessment
- Modeling and Model Validation of Renewable Energy Power Plants
- Test Systems for Oscillation Damping and Voltage Stability Analysis

### **1.4. New Task Forces**

A new TF on “Adjustable Speed Pump Storage Modeling” was established in 2013 and started its activities in 2014.

A new Task force on the “Contribution to Bulk System Control and Stability by Distributed Energy Resources Connected to the Distribution Network” was established in 2013 and had its kick-off meeting during the 2014 General Meeting. It will sponsor a panel session at the 2015 General Meeting, and is expected to trigger interest amongst a large audience.

## **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 industry are as follows:

- Provided high quality technical work in the area of power system dynamic performance and reported the results to the industry through various avenues.
- Organized and presented relevant Panel Sessions describing practical experiences and technical tool related to power system stability, control, and modeling.
- Provided a forum for interaction between 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 panels sessions of interest to PSDP members; c) imposing relatively short term limits (~2-years) of committee officers in order to allow for more members to assume positions of leadership; d) maintaining a balance between members from industry and academia among the committee leadership; e) having members from different countries serve in different leadership positions.
- 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.
- PSDP provides volunteers a forum for addressing topics of interest to the industry in general and the participants in particular.
- Participants in the PSDP's 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 the past two years for outstanding achievements:

- IEEE PES Technical Committee Distinguished Service Award was given to Innocent Kamwa, 2013
- 2013 IEEE Herman Halperin Electric Transmission and Distribution Award given to Vijay Vittal, 2013
- The following committee members were elevated to the grade of IEEE Fellow in 2013: Sandro Corsi, Bruce Fardanesh, Kipling Morison and Bikash Pal.
- J. Rommes, N. Martins, and F. D. Freitas received the prize paper award, 2013
  
- IEEE PES Technical Committee Distinguished Service Award was given to Thierry Van Cutsem, 2014
- The following committee members were elevated to the grade of IEEE Fellow in 2014: Peter Donalek
- The inaugural PES Prabha Kundur Award was awarded to Pete Sauer, 2014

- Joe Chow received the Charles Concordia award, 2014
- H. Bai and V. Ajjarapu received the price paper award, 2014

## **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.

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.

PSDP has also closely worked with the Power System Relaying Committee in the past on many activities of mutual interest and has a standing liaison from that committee in our committee. For instance, the Committee is kept informed of the activities of the Working Group J13 “Modeling of Generator Controls for Coordinating Generator Relays” of the Power System Relaying Committee

## **6. New Technologies of Interest to the Committee:**

Here is a non-exhaustive list of developments of top interest to our committee:

- Wind and solar power plants
- Microgrids
- Dynamic performance of high voltage direct current grids
- Application of synchrophasor measurements to dynamic monitoring and control
- Application of high performance computing to dynamic security assessment
- Contribution to overall system dynamics, stability and security of distributed energy sources connected to distribution grids

## **7. Significant Plans for the Next Period:**

Maintain the high quality and increase the attractiveness of the various activities of our Committee!

**Submitted by: Thierry Van Cutsem, Chair**  
**Pouyan Pourbeik, Vice-Chair**  
**Claudio Cañizares, Secretary**

**Date: December 2014**