

IEEE Power Engineering Society Entity Annual Report

2015

Entity: Transmission and Distribution Committee

Chair: John McDaniel

Vice-Chair: Dan Sabin

Secretary: Gary Chang

1. Significant Accomplishments:

a) Standards, Guides and Reports Summary

Capacitor Subcommittee

- i. PAR for the revision of IEEE Std 824, Standard for Series Capacitor Banks in Power Systems approved on 9/3/15.

Distribution Subcommittee

- i. IEEE Std 1782, IEEE Guide for Collecting, Categorizing, and Utilizing Information Related to Electric Power Distribution Interruption Events approved by IEEE-SA.
- ii. New IEEE Std 1695, Guide to Understanding, Diagnosing and Mitigating Stray and Contact Voltage currently in recirculation ballot. Expect IEEE-SA approval in early 2016.
- iii. PAR for new IEEE Std 1806, Guide for Reliability Based Placement of Overhead and Underground Switching and Overcurrent Protection Equipment Up to and Including 38 kV approved on 11/24/14.
- iv. PAR for new IEEE Std P2030.8, Standard for the Testing of Microgrid Controllers approved on 6/11/15.

Engineering in the Safety, Maintenance and Operation of Lines (ESMOL) Subcommittee

- i. IEEE Std 1071, Application Guide for an Engineered Restoration Program for Failed Transmission Structures is currently in Pre-ballot. Balloting and approval is expected in 2016.

General Systems Subcommittee

- i. PAR for new IEEE Std 1870, Guide for the Parameter Measurement of AC Transmission Lines approved on 9/3/15.

- ii. PAR extension for the revision of IEEE Std 1243, Guide for Improving the Lightning Performance of Transmission Lines approved on 9/3/15.

HVDC & FACTS Subcommittee

Overhead Lines Subcommittee

- i. IEEE Std 1835, NACE International and IEEE Joint Standard Practice for Atmospheric (Above Grade) Corrosion Control of Existing Electric Transmission, Distribution, and Substation Structures by Coating Systems approved by IEEE-SA.
- ii. IEEE Std 1839, NACE International and IEEE Joint Standard Practice for Below-Grade Corrosion Control of Transmission, Distribution, and Substation Structures by Coating Repair Systems approved by IEEE-SA.
- iii. IEEE Std 1895, NACE International and IEEE Joint Standard Practice for Below-Grade Inspection and Assessment of Corrosion on Steel Transmission, Distribution, and Substation Structures approved by IEEE-SA.
- iv. IEEE Std C135.90, IEEE Standard for Pole Line Hardware for Overhead Line Construction approved by IEEE-SA.
- v. PAR for the Corrigendum of IEEE Std PC135.80-2012, Standard for Fasteners for Overhead Line Construction - Corrigendum 1: Table 5 - Dimensions of Hex Nuts approved on 9/3/15.

Power Quality Subcommittee

- i. IEEE Std 519, IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems approved IEEE-SA.
- ii. IEEE Std 1453, IEEE Approved Draft Recommended Practice for the Analysis of Fluctuating Installations on Power Systems approved by IEEE-SA.
- iii. IEEE Std 1564, IEEE Guide for Voltage Sag Indices approved by IEEE-SA.
- iv. PAR for the Revision of IEEE Std 1159, Recommended Practice for Monitoring Electric Power Quality approved on 3/26/15.

b) Tutorials and Panels Summary

- i. Smart Distribution Systems (tutorial)
- ii. Distribution Volt-var Control and Optimization (tutorial)
- iii. Placement of Automated Distribution Protective and Switching Devices for Reliability (panel)
- iv. Everything Old is New Again (panel)
- v. Power Quality Issues with Grid Modernization Technologies (panel)

- vi. Experiences and System Requirements for Power Quality Data Analysis (panel)
- vii. Challenges of Voltage and Reactive Power Control from Renewable Resources (panel)
- viii. Distribution Resiliency: Performance of Distribution Systems during Major Events (panel)
- ix. Harmonics from 2kHz to 150kHz: Immunity, Emission, Assessment and Compatibility (panel)
- x. Protection Design for Smart Distribution (panel)
- xi. Role of DERMS/DMS in Managing Distributed Energy Resources (DER) (panel)
- xii. Analysis of Subsynchronous Interactions in Systems with Renewable Generation Resources (panel)
- xiii. Modeling and Computer Simulation of Induction Machines for Transient Analysis (panel)
- xiv. Volt/VAR Control in the Era of Smart Grid (panel)
- xv. Application of IEEE Std. 1564-2014 for Voltage Sag Indices (panel)
- xvi. Lesson Learned from the Smart Grid Demonstration Projects (panel)

c) Other Committee and Subcommittee Activities

- i. TF on Capacitor Geomagnetic Disturbance Mitigation is currently working on paper. It is expected to be out in 2016.

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

The scope of the Transmission and Distribution Committee is the treatment of all matters related to the design, theoretical and experimental performance, installation, and service operation of parts of electric power systems which serve to transmit electric energy between the generating sources and substations or customer points of common coupling through AC or DC lines. In 2015 the committee has provided benefit to industry by:

- Developing and managing standards and guides pertaining to capacitors, distribution systems, lightning, power quality, overhead lines and the design and integration of renewable energy.
- Providing tutorials and panel sessions on timely topics including wind and solar integration, smart grid in transmission and distribution, and distributed energy resources.
- Providing industry with a venue for participating in cutting edge research and best practices dialogs; and participating in the standards making process with over twenty projects in progress or under consideration.

3. Benefits to Volunteer Participants from the Committee Work:

- a) Offering participants an opportunity to work with acknowledged leaders in shaping the T&D industry and informing on T&D issues.
- b) Affords industry leadership role for volunteer participants.

4. Recognition of Outstanding Performance:

- I. Betty Tobin received the Award for Excellence in Power Distribution Engineering for *Outstanding Contributions to Distribution Secondary Networks*.
- II. Mani Venkata received the Douglas M. Staszaesky Distribution Award for *Contributions to the Design and Implementation of State of the Art, Smart Distribution Systems*.
- III. Richard Piwko received the Nari Hingorani FACTS Award for *Development of Master Level Controls and Leadership in Implementation of Pioneering FACTS Projects in North America*.

The following members of the T&D Committee were elevated to IEEE Fellow this past year: Vivek Agarwal, Alberto Borghetti, Surya Santoso and Rajeev Thottappillil.

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

- a). Smart Grid Coordinating Committee
- b). 1547.7 Working Group
- c). PES Emerging Technology Coordinating Committee
- d). PES Wind Integration Coordinating Committee
- e). Liaison with PSPI
- f). Liaisons with numerous IEC, CIRED and CIGRE committees
- g). Liaisons with numerous NESC and ANSI committees.

6. New Technologies of Interest to the Committee:

There are several areas of New Technology interest with the T&D Committee. Smart Grids continue to be of interest, especially Smart Meters and their requirements. Another area of interest to the committee are microgrids.

8. Significant Plans for the Next Period:

- a) With the reorganization of the PES, the following subcommittees will be moving:
 - i. General Systems will move to the Analytics Methods for Power Systems Committee (minus the Lightning Performance of OH Lines WG, which will stay within T&D)
 - ii. Integration of Renewable Energy into T&D Grids will move to the Energy Development & Power Generation Committee.

Submitted by: John McDaniel

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