IEEE PES DSASC Test Feeder Working Group

Minutes

Meeting on July 28nd, 2015
2015 PES General Meeting, Denver, CO

A formal meeting of the DSASC Test Feeder Working Group was held at 2015 PES General Meeting. Nineteen participants were in attendance:

Attendee	Affiliation
Jason Bank	EDD
J. K. Wang	Ohio State University
Joshua Hambrick	GE Energy Consulting
Greg Shirek	Milsoft Utility Solutions
Barry Mather	National Renewable Energy Laboratory
Kevin Schneider	Pacific Northwest National Laboratory
Saeed Rahimi	ABB Enterprise Software
Chi Tang	McMaster University
Jeff Smith	EPRI
Sandoval Carneiro Jr.	Retired
Jason Fuller	Pacific Northwest National Laboratory
Karen Butler	Texas A&M
Tim Heidel	ARPA-E
Yin Xu	Washington State University
Francesco Lamberti	University of Salerno
Andreas Procopiou	University of Manchester
Hao Zhu	University of Illinois U-C

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Liuxi (Calvin) Zhang	Nexant
Carleton Coffrin	NICTA

Action Items

1. Improve and do more tests on the time-series test feeders. Organize a panel talk.
2. Start a task force for test cases with subtransmission system.
3. Develop models in a wide spectrum of software for existing test feeders. Volunteers needed.
4. Consider the next set of test cases, such as the test feeders with renewables.

Contact Information

Working Group Chair: Jason Fuller (jason.fuller@pnnl.gov)
Working Group Secretary: Yin Xu (yxu2@eecs.wsu.edu)
Working Group Website:http://ewh.ieee.org/soc/pes/dsacom/testfeeders/index.html

Test Feeder Working Group Meeting Minutes

1. Jason summarized the past achievements of the WG:
   a. Seven new test feeders were developed in the past five years, including the 8500-node test feeder looking at the scalable solutions.
   b. The first (342-node) low voltage network test system was developed and posted on the WG website last year.
   c. The first European low voltage test feeder was introduced last year and a draft was posted on the WG website one week before this meeting.
   d. What's next? Start to create the next set of test feeders.
2. Discussions on the time-series test feeder.
   a. Not posted yet
   b. Loading levels/scenarios are accurate and realistic? Verification?

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c. Second-resolution load data for entire year
d. How to compare the results of different software/solvers?
e. A main purpose of test feeders is to test software/solvers. For example, the 8500-node test feeder is an accurate radial distribution feeder but not accurate in load levels. The load levels are multiplied up close to the voltage collapse point for the sake of exercising software/solvers.
f. General load shapes that represent most systems.
g. Load shapes are good for large aggregate values. For individual data, it is not that smooth.
h. For distribution system, we need to deal with secondary service transformer level. There still are pretty spiky behaviors.
i. The way to solve the circuit, e.g., not fixed time steps
j. Regulators may operate in a different way when considering time series compared with assuming everything is instantaneous.
k. Organize a panel talk?

3. The WG tests the test systems in a wide spectrum of software, such as Open-DSS, Windmil, SynerGEE, GridLAB-D, PSCAD, EMTP, etc. Volunteers are welcome to help on that.

4. Question: Does the WG focus on the steady state models?
   a. Three years ago, that was the case.
   b. The WG put together distribution short circuit analysis test case and the time-series test case, and will consider dynamics in the future.
   c. A possible dynamic test case for machine dynamics in the distribution level: a microgrid with a single-phase lateral.

5. Question: What is the largest test system? Does the WG plan to bring in any bigger test system?
   a. The 8,500-node test system
   b. A 10,000-node network system probably will be the next largest test system.
   c. What is a node? Any single-phase connection is considered as a node.

6. Question: Test systems with multiple feeders will be useful for studies such as service restoration. Does the WG plan to develop such test systems?

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a. Depends on whether the switching operations introduce new challenges for solvers, such as severe imbalance.
   b. It is important to have such test systems. The question is "are we the right WG for that?"
   c. Other WGs? e.g., the system modeling group.
   d. Test systems including subtransmission system. A task force?
7. Discussions on the European low voltage test system
   a. Yin introduced the basic information of the test system
   b. Key features:
        i. 50 Hz European system
        ii. low voltage system (416 V phase to phase)
        iii. time series simulation (1-minute-resolution 24-hourload shapes for 55 loads)
   c. The first European test feeder
   d. The test feeder is from UK. However, the distribution system from other parts of Europe may look different. So this test feeder may not be that generic for European style.
8. Suggestions on the next set of test cases
   a. Test feeders with DGs, renewable models, such as PV-based system

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