



IEEE

Ottawa Section



Seminar by the IEEE Ottawa Section, IEEE Power and Energy Society Ottawa Chapter (PES), Instrumentation & Measurement Society Chapter (IMS), Reliability Society and Power Electronics Society Joint Chapter (RS/PELS), Communications Society, Consumer Electronics Society, and Broadcast Technology Society Joint Chapter (ComSoc/CESoc/BTS), IEEE Ottawa Educational Activities (EA) and Algonquin College IEEE Student Branch

The IEEE Ottawa Section is inviting all interested IEEE members and nonmembers to a seminar

Microgrid Stability Definitions, Analysis, and Modeling

By

Dr. Mostafa Farrokhabadi, Director of Technology at BluWave-ai, Ottawa

DATE: Tuesday, March 17, 2020.

TIME: Refreshments, Registration and Networking: 6:00 p.m.; Seminar: 6:30 p.m. – 7:30 p.m.

PLACE: Ciena Optophotonics Lab, Room T129, T-Building, School of Advanced Technology, [Algonquin College](#), 1385 Woodroffe Ave., Ottawa, ON Canada K2G 1V8.

PARKING: Parking at Lots 8 and 9 after 5 p.m. is \$5 flat rate, pay at a machine and display the ticket on your dashboard. Please respect restricted areas.

Abstract

A microgrid is defined as a group of Distributed Energy Resources (DERs) and loads that act locally as a single controllable entity and can operate in both grid-connected and islanded modes. Microgrids are considered a critical link in the evolution from vertically integrated bulk power systems to smart decentralized networks, by facilitating the integration of DERs. Entities, such as government agencies, utilities, military bases, and universities around the world are deploying microgrids, and an increasing number of these systems are expected to be developed in the next decade. In general, stability in microgrids has been treated from the perspective of conventional bulk power systems. However, the nature of the stability problem and dynamic performance of a microgrid are considerably different than those of a conventional power system due to intrinsic differences between microgrids and bulk power systems, such as size, feeder types, high share of Renewable Energy Sources (RES), converter-interfaced components, low inertia, measurement devices such as Phase-Locked Loop (PLL), unbalanced operation, etc.

This seminar discusses the findings of the award-winning IEEE PES Task Force on Microgrid Stability Definitions, Analysis, and Modeling, which defines concepts and identifies relevant issues related to stability in microgrids. The seminar presents definitions and classification of microgrid stability, considering pertinent microgrid features such as voltage-frequency dependence, unbalancing, low inertia, and generation intermittency. A few examples will be also presented, highlighting some of the stability classes discussed during the seminar.

Mostafa Farrokhabadi's Bio



Dr. Mostafa Farrokhabadi is the Senior Director of Technology at BluWave-ai, an internationally award-winning startup offering AI-enabled control and optimization solutions for smart grids. He has more than 8 years of experience in designing mission critical grid solutions for industry and academia, including technical leadership of a \$6M international consortium in Electric Grid Modernization, and Smart Grid projects with Hatch and Canadian Solar. Mostafa has authored/co-authored several high-impact technical papers and patents on intelligent control and optimization of renewable-penetrated grids.

Mostafa obtained his PhD in Electrical and Computer Engineering from the University of Waterloo. He has also studied and performed research in Sweden at KTH and Germany at KIT. During the course of his career, Mostafa has received multiple business, research, and teaching awards, including the prestigious University of Waterloo Doctoral Thesis Completion Award and Ottawa's Forty Under 40.

Mostafa has also led the award-winning IEEE Power and Energy Society Task Force on microgrid stability, an international coalition of 21 researchers from 14 institutions investigating stability issues in microgrids. Currently, he serves as an Associate Editor of the *IEEE Transactions on Smart Grid*.

Admission:

Free. Registration required.

Please register by e-mail contacting: ajit.pardasani@ieee.org or branislav@ieee.org.