HVDC Transmission Systems
Based on Modular Multilevel Converters

Maryam Saeedifard
School of Electrical and Computer Engineering
Georgia Institute of Technology
maryam@ece.gatech.edu

PSERC Public Webinar
Tuesday, February 3, 2015
2:00-3:00 p.m. Eastern Time (11:00-12:00 p.m. Pacific)

Description: The continuously increasing demand for electric power and the need for efficient grid integration and transmission of remote large-scale renewable energy resources have revived the interest in High-Voltage Direct Current (HVDC) systems. The HVDC systems based on the Voltage-Sourced Converter (VSC) are a promising technology for (i) expansion of the power networks for large cities, (ii) grid integration of renewable energy resources, i.e., hydropower and offshore wind farms, (iii) long-distance bulk power transmission, (iv) interconnection of asynchronous power grids, and (v) electrification of isolated loads, islands, and oil and gas stations.

The key enabling technology for VSC-HVDC systems is efficient, scalable, and fault-tolerant high-power VSCs. The Modular Multilevel Converter (MMC) topology is a newly introduced VSC which, conceptually, does not have the drawbacks of the existing high-power VSCs. The emergence of the MMC has opened up a new avenue for research and development of not only the VSC-HVDC systems but also for other emerging applications including interfacing energy storage devices to the utility grid, collection systems of offshore wind farms, and medium-voltage high-power adjustable speed drives. This presentation deals with control and operational challenges of the MMC-HVDC systems.

Biography: Maryam Saeedifard received the Ph.D. degree in electrical engineering from the University of Toronto, in 2008. Since January 2014, she has been an assistant professor in the School of Electrical and Computer Engineering at Georgia Institute of Technology. Prior to joining Georgia Tech, she was an assistant professor at Purdue University. She is the recipient of the Richard M. Bass Award Outstanding Young Power Electronic Engineer Award of the IEEE Power Electronic Society in 2010. Her research interests include power electronics and its applications in power systems and vehicular electrification.
Registration for Webinar Participation: None required. There is no charge for participating!

Participation by Webinar: There are several options for participating.

- **Recommended option:** We will be using the Adobe Connect webinar platform. You will be able to watch the presentation slides on your computer from the designated site https://connect.asu.edu/pserc and listen to the webinar through your computer’s speakers or headphones. To join the webinar, enter firstname lastname (organization). Click here for the connection details and instructions for testing your connection. If you cannot hear the presenter, check to make sure your speaker is not muted in Adobe Connect. You may also be able to use the app “Adobe Connect™ Mobile” to participate via smartphone or tablet.

- You can also listen to the audio over the public phone bridge at 712-432-0800 (passcode: 937250#). Should you not be able to connect to the webinar, you can also download the slides from the PSERC website and listen to the audio over the phone bridge.

- You can watch the archived webinar at a different time by clicking here and then on the link for this webinar.

Asking Questions During the Webinar: You are invited to submit questions or comments during the webinar using the Adobe Connect webconferencing platform. Just enter your question into the Q&A box.

Professional Development Hour Certification: PDH certification is available for PSERC members (only). Send an email requesting PDH certification to pserc@asu.edu with the subject “PDH”. Include the name and title of each participant.

Assistance: If you have any questions, please call 480-965-1643 or email pserc@asu.edu.

PSERC’s Webinar Coordinator: Venkataramana Ajjarapu, Iowa State University, vajjarap@iastate.edu.

Professor Ajjarapu welcomes your feedback on PSERC webinars and suggestions for future ones.