



## Power Systems Engineering Research Center

# HVDC Transmission Systems Based on Modular Multilevel Converters

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PSERC Public Webinar  
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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.

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**PSERC's Webinar Coordinator:** Venkataramana Ajjarapu, Iowa State University, [vajjarap@iastate.edu](mailto:vajjarap@iastate.edu).

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