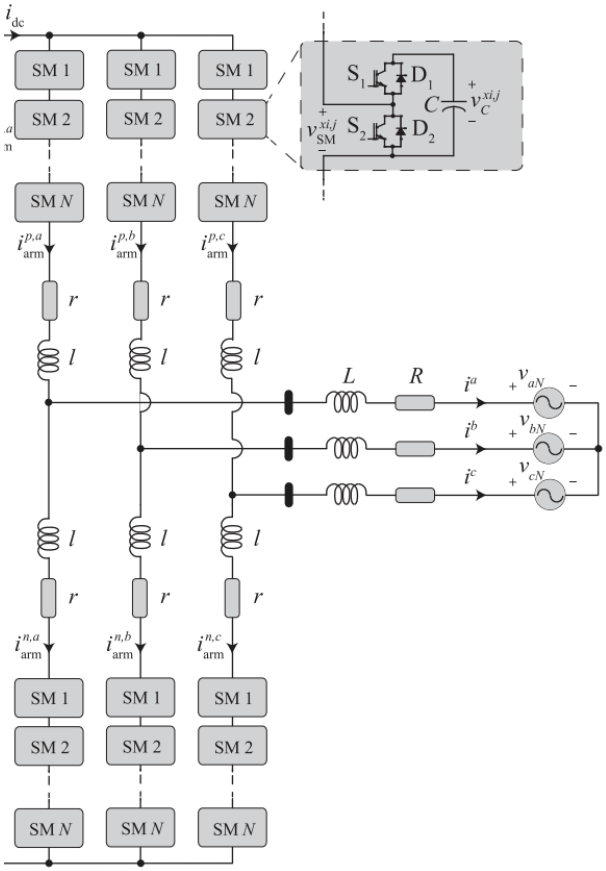
Lehrveranstaltungsankündigung

LV 431.316 Power Electronics for Power Engineering

(2SWS/3ECTS)

Course 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. This course provides a comprehensive description and overview of such HVDC systems.



Learning outcomes

1. Understand the principles of HVDC trans-mission systems and their differences with AC transmission.
2. Analyze and model line-commutated converters (LCCs) in the rectifier/inverter modes of operation to construct HVDC transmission systems.
3. Understand the differences among various HVDC transmission configurations.
4. Analyze and model voltage-sourced converters (VSCs) in the rectifier/inverter modes of operation to construct HVDC transmission systems.
5. Understand basics of operation, control and operational challenges of the modular multilevel converters (MMCs) for HVDC transmission systems.
6. Develop various control strategies for proper operation of the MMC-HVDC systems.

Instructor

Prof. Maryam Saeedifard received the Ph.D. degree in electrical engineering from the University of Toronto, in 2008. Since January 2014, she has been with the School of Electrical and Computer Engineering at Georgia Institute of Technology. She has received numerous awards for her research in power electronics.

Meeting Times:

Monday, 02.12.19 through Thursday 05.12.19, as well as Monday, 09.12.19 through Wednesday 11.12.19, 13:00h to 16:30h, including coffee break.