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Introduction to VSC HVDC Technology

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Abstract

HVDC VSC technology has developed extremely quickly and offers many attractive alternatives over the more mature LCC HVDC technology. This introduction to VSC presents the basic VSC system configurations. The operation of VSC technology, VSC control systems, including the flexibility of VSC convertors control systems, as well as a comparison of VSC and LCC HVDC technologies will be discussed. As the simulation of VSC MMC technology presents several EMT simulation challenges, the current status of simulation and model development will be presented. A sample of simulation results discussing the unique issues for start-up and DC line recovery for VSC systems will also be introduced.

Who Should Attend

This presentation is an introduction to VSC technology. The target audience is broad and aimed for anyone associated with power system and HVDC transmission. While the topic is technical in nature and directed towards power system engineers, system regulators, system and renewable energy developers, and power system operators would benefit from understanding some VSC HVDC fundamentals.

Presenter

Randy Wachal graduated from the University of Manitoba with BSc EE in 1981. Randy joined Manitoba Hydro where he worked for 13 years on the Nelson River HVDC System as a Control Design and Commissioning Engineer. In 1995, Randy joined the Manitoba HVDC Research Centre where he is currently the Engineering Systems Manager. Randy has been involved in specification, PSCAD simulation, commissioning and lifetime investigation studies on a number of HVDC and SVC systems. Randy is a professional engineer registered in Manitoba, a senior member of IEEE, a member of Cigre, and currently Cigre WG Conveyor of B4-57 on DC Grid HVDC VSC Modeling.