



IEEE Hamilton Section



Technical Meeting

Wind Generation Scheme for High Voltage DC

Topic: A Proposed Wind Generation Scheme for High Voltage DC Generation, Interconnection and Transmission

Speaker: Omid Beik, PhD student at McMaster University

Date: Wednesday 2014-Dec-10

Time: 6:45 PM - 9:00 PM

Cost: None (Free parking after 6:00 PM)

Location: Meeting Room 1D, McMaster Innovation Park,
175 Longwood Road, Hamilton, ON L8P 0A1

Free coffee and cookies.

Register here (so we get enough refreshments) <https://meetings.vtools.ieee.org/m/29687>

ABSTRACT

Off-shore wind generation has been at the center of much attention in recent years resulting in many research publications, and an increasing number of installed systems by a variety of industrial organizations, electrical grid operators and utilities. This presentation reviews the state-of-the-art of wind generation schemes, wind turbine characterization, transmission and interconnection systems used in off-shore wind farms, including HVAC and HVDC. Power conversion components such as turbine-generator, both gearbox coupled and direct drive, power electronic converters and other components will be discussed. A new wind generation scheme will be proposed by the presenters. The scheme uses a high voltage, multiphase hybrid generator (HG), so called due to the mix of permanent magnet (PM) and wound field (WF) rotor excitation, together with a passive multiphase rectifier and associated DC/DC converters. Compared to the existing wind generation systems the proposed scheme hardware is much simplified and the system efficiency is improved. Hence, the scheme results in reduced system cost due to reduced component count and complexity, in particular the power electronic converters and transformers. The presentation will include results from a prototype hybrid generator that is designed, built and tested in the laboratory and is a low power, low voltage example of the hybrid generator used in the proposed system.

Speaker Biography

Omid Beik received his BSc degree with honor from Yazd University Yazd, Iran in 2007. He received his MSc with distinction from Shahid Beheshti University-Abbaspour College of Technology, Tehran, Iran in 2009. He started his PhD at Power Conversion group at the University of Manchester, UK in 2011. In January 2013 he moved to the Department of Electrical and Computer Engineering at McMaster University with his supervisor to continue his PhD. He has over three years of industrial experience in the area of Electric Machines and Power Electronics design for renewable and Electric Vehicle application. His research currently is focused on Electric Machine design, Drives and Power Electronics application for renewable energy systems and Hybrid Electric Vehicles power-train.