



Fault Management for Emerging Energy Systems

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Abstract: *Dc distribution systems are being widely adopted in many industrial, commercial and military energy systems such as commercial buildings, data centers, railway electrification systems, off-shore wind farms, and shipboard power systems. A dc distribution system can improve energy efficiency and reduce the size or weight of power systems. A typical dc distribution system, like the ones mentioned, includes multiple power electronics converters, distributed capacitors, active loads, and short lines with low impedance. Thus, in case of a short circuit fault, the dc fault current increases extremely fast without zero-crossing. This is a great challenge for dc system protection. In addition, in-line dc series arc faults are also a potential threat that must be detected and localized to reduce fire hazards. In this talk, we will discuss comprehensive protection approaches leveraging the converter fault current limiting function as well as an advanced fault localization approach to achieve reliable fault detection, localization, and isolation. In addition, a recent R&D work on intelligent sensor framework development for grid protection with extremely high DER penetration will also be briefly discussed.*

Biography: *Dr. Xianyong Feng is a power systems scientist with the Center for Electromechanics, The University of Texas at Austin. He is conducting cutting-edge research related to modeling, simulation, and experimental tests for microgrids and other mission critical energy systems. Some of these efforts are supported by DOD, DOE and utility industry. Previously, he worked at ABB, Raleigh, NC, and interned at ExxonMobil, Houston, TX. He has authored or co-authored over 50 technical papers and book chapters, and holds 8 US patents. His research interests include the areas of power system modeling and control, microgrids, and electric ships. More broadly, Dr. Feng has extensive R&D experience in areas of smart grid cyber-security, distributed energy integration, and transportation electrification. Dr. Feng is a member of IEEE and a Registered Professional Engineer in the State of North Carolina.*