Distribution level FACTS devices for improved load capability and solar integration.

Flexible AC Transmission or FACTS devices, such as static compensators (STATCOMs) and Unified Power Flow Controllers (UPFCs) can be directly applied in the low voltage distribution system to regulate the network voltages while simultaneously balancing the network currents. This will allow a given distribution network to accommodate higher levels of distributed photovoltaic generation and, in many voltage limited cases, increase the capacity of the network to carry conventional loads.

This presentation will examine some recent advances in the application of silicon carbide to LV distribution level applications, progress in reducing the need for large DC bus capacitors, opportunities to host integrated storage and methods to best allocate limited FACTs device capacity in a LV network.

Professor Peter Wolfs is the Deputy Dean Research for the School of Engineering and Technology and the Director of the Power and Energy Center at Central Queensland University. Prior to 2013 he was the Western Power Chair in Electrical Engineering at the Curtin University of Technology, in Perth, Australia.

His research interests include power electronics applications in distribution networks and railway power systems, distribution system and demand modeling, the impact of energy storage and high levels of renewable energy penetration, distributed and networked control of distribution networks and the intelligent protection of distribution systems especially for bushfire prevention. At Curtin University he was the Program Leader for Smart Grids within the Center for Smart Grid and Sustainable Power Systems.
Professor Wolfs is the author of more than 200 journal and conference publications and has secured in excess of $3 Million AUD in competitive research funding. He serves on the Research Working Group of Smart Grids Australia, (SGA).

Professor Wolfs is a reviewer for the IEEE Transactions on Power Delivery, Power Electronics, Vehicular Technology, Circuits and Systems, Industrial Electronics, Sustainable Energy, the IEEE ECCE Conferences and the IEEE/ASME Joint Rail Conferences. Professor Wolfs was the Technical Chair of the IEEE Power and Energy Society Innovative Smart Grid Technology Conference, ISGT Asia 2011. He is a reviewer for the Australian Research Council Discovery, Linkage and Fellowship Grant Applications.

Professor Wolfs is the Chair of the Australian Committee for Power Engineering (ACPE). ACPE manages the Australasian Universities Power Engineering Conference series. The conference is in its 24th year and its papers appear in IEEE Xplore.

Professor Wolfs holds a PhD from the University of Queensland, a Master of Electronic Engineering from the Philips International Institute in Eindhoven, the Netherlands, and a Bachelor of Engineering Degree from Central Queensland University. He is a Senior Member of IEEE, A Chartered Professional Engineer and Fellow of Engineers Australia. He appears on the Australian National Professional Engineering Register as an Electrical Engineer. Professor Wolfs is a Registered Professional Engineer in the State of Queensland.

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