

Decarbonisation at the Sharp End: Protection and Control of Net-Zero Smart Grids

by

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Abstract

Modern society is dependent on flexible electrical energy, available on demand, at an affordable social and environmental cost. Today, most of our electrical energy is produced by converting the carbon stored in coal or natural gas into heat energy and then via turbines and synchronous generators into electrical energy.

To address the challenges of global warming and reduce our reliance on ‘pre-historic’ solar energy stored in fossil fuels, and exploit ‘real time’ solar energy available via wind, waves, photovoltaic, solar thermal, bio-mass and hydro, Professor Crossley has spent 40 years researching, designing and implementing new protection and control techniques to incorporate these green, but often intermittent energy resources, into electricity networks that have become ‘smarter’, but also less stable, significantly more complex and less resilient to extreme weather events and physical/cyber-attacks. The presentation will discuss how digitalisation and the use of more advanced protection and control techniques will help keep the lights on, and ensure future Net-Zero energy networks are both affordable and reliable from a societal and environmental perspective, whilst ensuring future resilient, self-healing network designs can cope with High Impact Low Probability (HILP) events, which for many reasons are becoming more frequent.

Biography



Prof Peter Crossley FCSEE, SMIEEE, CEng, BSc – Manchester (1977), PhD – Cambridge (1983). He is Professor of Power System Protection and Control at the University of Exeter and also a consultant and educator for various government, public and private organisations. Prior to his move to Exeter in 2021, he was Director of the EPSRC Centre for Doctoral Training in Power Networks and Professor of Power Systems at the University of Manchester. During a 45 year academic and industrial career, he published 114 Journal papers and nearly 300 Conference papers on topics related to power systems, connection of renewables into transmission and distribution networks, smart grids, power system protection and control, digitisation of power networks and the design of Intelligent Electronic Devices. His recent Awards and Honours are IEEE Distinguished Lecturer, Chinese Society for Electrical Engineering Fellow and Foreign Expert, CIGRE award for outstanding technical contribution to protection and automation,

Guest Professorships at Tsinghua, Beijing Jiaotong, China State Grid and Overseas Expert for China State Foreign Expert Bureau ‘111’ project at Beijing Jiaotong University.

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Time	: 2:00pm – 2:45pm
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**** ALL ARE WELCOME ****