
Seminar title: Robust operation of microgrids under uncertainties

Microgrid is an effective solution to integrate distributed generation resources. In Singapore, Nanyang Technological University is now building a microgrid called *Renewable Energy Integration Demonstrator for Singapore* (REIDS) in Semakau Island. However, uncertain renewable power such as wind and solar photovoltaic generation and uncertain load demands can introduce tremendous difficulties for energy management and voltage regulation in microgrids. This presentation will firstly introduce the REIDS project and then details a robust operation method to coordinate different controllable resources (including micro-turbine, energy storage unit, and demand response, capacitor banks, on-load-tap-changers, as well as converters) at different timescales to achieve robust energy management and voltage regulation against uncertain renewable power generation and load demands.



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Dr Yan Xu obtained his B.E. and M.E. degrees from South China University of Technology, Guangzhou, China, and PhD degree from University of Newcastle, Australia, in 2008, 2011, and 2013, respectively. After his PhD graduation, he conducted postdoctoral research at University of Sydney with the *University of Sydney Postdoctoral Research Fellowship* (only 10 awarded internationally for all areas per year). In 2016, he joined Nanyang Technological University with the *Nanyang Assistant Professorship* (only 10 awarded internationally for all areas per year).

Dr Xu's research areas include power system stability, control and optimization, microgrid, and data-analytics for smart grid applications. He has published 105 SCI-indexed international journal papers (including 65 in IEEE Transactions and 23 in IET Journals). He has also authored over 50 international conference papers and 2 book chapters. He has received 7 times of IEEE and IET paper contest and conference best paper awards. Dr Xu is a senior member of the IEEE, and serving as an Editor for IEEE Transactions on Smart Grid.
