Centre for System Intelligence and Efficiency

You are cordially invited to CSIE,
Centre for System Intelligence and Efficiency Seminar on:

Operation of Future Power Systems with High Penetration of IBRs: A Stability-constrained Stochastic Scheduling Approach

Dr. Fei Teng
Senior Lecturer, Imperial College, London
Date: 27 October 2022 (Thursday)
Time: 10:30 am - 11:30 am
Venue: Executive Seminar Room (S2.2-B2-53)
School of EEE

This event is co-sponsored by IEEE PES Singapore Chapter and chaired by A/P Xu Yan.
Light refreshment will be provided.

Abstract: Future power systems are transitioning towards low inertia, low grid strength and low short-circuit level, driven by the large-scale integration of Inverter-Based Resources (IBRs). This leads to enormous challenges in optimising the system operation and designing an efficient electricity market. Given the more diverse operating conditions and increasing control interactions, the existing operational strategies, that decouple device-level control and system-level optimization, are not sufficient anymore to maintain the efficient and reliable operation of future power systems. This talk will present a new generation of system operation strategies to simultaneously optimise the control design and the operation decision through a stability-constrained optimization framework. We will briefly introduce our work on the development of efficient dynamics-aware stability constraints, the modelling of control capabilities of IBRs, the extension of the optimization framework and the uncertainty management in system dynamics.

Speaker*:* Dr Fei Teng received BEng from Beihang University (BUAA), China in 2009 and PhD from Imperial College London in 2015. He is currently the Director of Education in the Energy Futures Lab, a pan-university hub promoting inter-disciplinary research in energy, and a Senior Lecturer (Associate Professor) in the Department of Electrical and Electronic Engineering, Imperial College London. He holds visiting positions at MINES ParisTech, France and PolyU, Hong Kong. His research focuses on the power system operation with high penetration of Inverter-Based Resources (IBRs) and the cyber-resiliency of digitalised power grids. He is the editor of IEEE Transactions of Power Systems and IEEE

Open Access Journal of Power and Energy. He serves as Members-at-Large at IEEE Technical Committee on Cyber-Physical Systems and IEEE Technical Committee on Carbon Neutrality. He is the recipient of the Early Career Prize from Supergen Energy Networks and the Kan Tong Po International Fellowship from the Royal Society. He has authored more than 80 scientific publications in leading power system journals and conferences. His research has been funded by EPSRC, ESRC, Innovate UK, Research England, the Royal Society, EDF Energy, Hitachi Energy, and National Grid ESO.