

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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**Modeling, Control and Stability Analysis for Integrating Electric
Vehicles into the Smart Grid**

by

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Time : 16:00 – 17:00
Venue : HG01

ABSTRACT

Smart grid is being promoted by many countries and cities as a way of improving energy utilization, coping with global energy crisis and environmental pollution. Survey shows aggregate global spending of US\$200 billion on smart grid technologies during the period 2008 to 2015. This roadmap is expected to be extended to 2030. In the coming two decades, significant R&D effort is undoubtedly required to understand and apply advanced technologies for setting up reliable, stable, efficient and environmental friendly smart grids.

Electric vehicles (EVs) are considered to be the most promising mode of transportation in the future. EVs offer environmental and energy security advantages by way of reduced use of oil and lower greenhouse gas emissions, compared to conventional gasoline vehicles. The governments of many countries and cities have committed to support the development of EV charging infrastructure and provide incentives for use of EVs. Penetration of EVs and EV charging facilities is expected to increase dramatically in coming years. However, it is clearly that EV charging is one important piece of the smart grid and full integration of EVs will pose significant challenges to the operation of smart grid.

This seminar will review the latest development, challenges and opportunities of EV charging. Impacts of massive EV charging on modeling, control and stability analysis will also be discussed.

BIOGRAPHY



Dr C.Y. Chung received the B.Eng. degree (with First Class Honors) and the Ph.D. degree in electrical engineering from The Hong Kong Polytechnic University, Hong Kong, China, in 1995 and 1999, respectively. After his Ph.D. graduation, he worked in the Electrical Engineering Department at the University of Alberta, Edmonton, AB, Canada, and Powertech Labs, Inc., Surrey, BC, Canada. Currently, he is the Leader of the Power Systems Research Group and an Associate Professor in the Department of Electrical Engineering, The Hong Kong Polytechnic University.

Dr Chung's research interests include smart grid, renewable energy, power system stability/control, planning and operation, computational intelligence applications, power markets and electric vehicle. His research work has not only generated 35 IEEE Transactions papers, 21 IET (IEE) journal papers and 19 other SCI journal papers, but has also resulted in successful transference of three new commercial software packages developed for power system analysis. Software package "Small Signal Analysis Tool (SSAT)" developed by him has been widely used by over 80 power companies and 60 universities.

Dr Chung was the Past Chairman of the IEEE Hong Kong Section, IEEE Hong Kong Joint Chapter of PES/IAS/PELS/IES and IET (Hong Kong) PES. He was the Co-Chair of IEEE PES APPEEC2013 and IEEE ICHQP2012, Vice-Chairman of IET APSCOM2012, Technical Chairman of IET APSCOM2009, and Honorary Secretary of IEEE DRPT2004 International Conference and IEEE IAS 2005 Annual Meeting. Dr Chung is currently the IEEE PES Region 10 North Chapter Representative. He is also a member of Editorial Board, IET Generation, Transmission & Distribution. He is a Fellow of IET and a Senior Member of IEEE.

ALL ARE WELCOME!