

Seminar jointly organized by ICEE & HKU-EEE Dept

Title: Smart Grid Research: A Sustainable Development for The Future World

Speaker:

Dr. C.Y. Chung
Associate Professor and Convenor
Power System Research Group,
Department of Electrical Engineering,
The Hong Kong Polytechnic University

Date: Thursday, 3 March 2011

Time: 2:30 pm

Venue: Room 603, Chow Yei Ching Building

Abstract:

Many countries have pushed forward development of power systems with smart grid, seen as a way of improving energy utilization, coping with global energy crisis and environmental pollution. In 2009, US President Barack Obama proposed that a smart grid should be established to achieve efficient power transmission from the east to west coast in the United States. Meanwhile, the State Grid Corporation of China has announced that a unified smart grid will be completed all around China before 2020. Smart grid provides many R&D opportunities, huge commercial markets, and significant contribution to national development. This seminar will focus on only two important aspects of R&D on smart grid, which need urgent attention in Hong Kong:

1) Electric Vehicle (EV) Charging: EVs are considered to be the most promising mode of transportation in the near future, but will have a significant effect on smart grid operations. In the 2009-10 budget, delivered by our Financial Secretary, Mr. John Tsang, the government will help promote the use of EVs in Hong Kong to improve the quality of life. Indeed, governments of China, Japan and Korea have committed to support the development of EV charging infrastructure and to provide incentives for use of EVs. This seminar will report the latest R&D on EV charging in Hong Kong and also discuss future challenges.

2) Advanced power system planning and operational tools: Existing commercial planning and operational tools have been developed with conventional optimization techniques. In solving different optimization problems with conventional techniques, accuracy of system models often needs to be sacrificed. Conventional techniques often provide only local optimal solutions, or still worse, unacceptable solutions, due to their inherent limitations. Decisions made with existing commercial tools are unable to achieve secure and economic operation of smart grids. Recently, computational intelligence techniques have received much attention from power system researchers and can be used to develop a new generation of planning and operation tools. This seminar will review the latest research achievements in applications of computational intelligence techniques in power system optimization problems, and potential research areas in emerging power system planning and operations practices.

Biography of the speaker:

Dr C.Y. Chung passed the B. Eng. degree in electrical engineering with first class honors from The Hong Kong Polytechnic University (HKPolyU), Hong Kong, China, in 1995. Later, in 1999, he received his Ph.D. also from the same institution. After completing Ph.D., he worked in Powertech Labs, Inc., Surrey, BC, Canada, where he was responsible for development of power system stability analysis tools. Software package “Small Signal Analysis Tool (SSAT)” developed by him has been widely used by many power utilities around the world, including China Southern Power Grid Company (CSG) and CLP Power. Besides, he has conducted stability studies for many power companies in USA, Canada, Taiwan and Australia. He has also delivered lectures and speeches at many workshops and seminars and has made plenary presentations in international conferences on power system stability.

Dr Chung joined the Department of Electrical Engineering of HKPolyU in 2001 and is currently Associate Professor and Convenor of Power Systems Research Group. He has set up the “Computational Intelligence Applications Research Laboratory (CIARLab)” in the department and has made significant achievements in the development of advanced algorithms for power engineering problems. He has published over 30 top quality journal papers in IEEE Transactions and IEE/IET Proceedings in the last six years. In 2010, he was appointed by Automotive Parts and Accessory Systems (APAS) R&D Centre of The Hong Kong Government as the leader of the R&D group for drawing a roadmap and conducting long-term research for

electric vehicle charging in Hong Kong. Besides, he is also very active in areas of power system stability/control, planning and operation, power markets, renewable energy and power quality. He has published over 160 publications and owns a patent on power system modeling for stability analysis, which has been licensed to industry.

Dr Chung was the Chairman of IEEE Hong Kong Joint Chapter of PES/IAS/PELS/IES in 2007-2009. During his tenure as chairman, the Joint Chapter received the 2008 IEEE PES Outstanding Small Chapter Award and the 2009 IEEE IAS Outstanding Small Joint Chapter Award. He was the Technical Chairman of IET APSCOM2009 International Conference, and Honorary Secretary of IEEE DRPT2004 International Conference and IEEE IAS 2005 Annual Meeting. He is now the Chair of IEEE Hong Kong Section and Honorary Secretary of Power and Energy Section of IET Hong Kong.

Organizer: Prof. F.F. Wu