

University of
Waterloo



**Department of
Electrical and Computer Engineering**

SEMINAR

Speaker

**Prof. Göran Andersson
Electric Power Systems
Swiss Federal Institute of Technology (ETH), Zürich
Invited By: Prof. Claudio Canizares**

Topic

Visions of Future Energy Networks

Date

Thursday, December 8th, 2005

Time

10:00 – 11:30am

Room

EIT 3142

ALL ARE WELCOME!
Please see attached abstract.

Visions of Future Energy Networks

Today's energy infrastructures were developed to efficiently and reliably supply customers with electricity, mostly from large, centrally located power stations. Recent political, economic and ecological developments however show trends, for which the existing operation strategies and infrastructures are not anymore suited. Liberalization processes, mature small-scale, highly efficient generation technologies, and CO₂ awareness to name only a few of those trends. The project *Visions of Future Energy Networks* was initiated in 2003 with the goal to design a new energy supply infrastructure based on new system and technological developments. Using a green field approach, all existing structures are neglected except loads and customer expectations. The new infrastructure should be capable of integrating all available and foreseeable technologies and demands. The proposed infra-structures are optimized for different criteria, e.g. emissions, costs, efficiency or reliability of supply. A key element of the project is the combined optimization of electrical, chemical (i.e. gas, hydrogen) and thermal supply infrastructures. Major advantages compared with the existing systems will be identified and used to show how to evolve today's infrastructure to get to the optimum. Additionally, missing technologies and characteristics will be identified.

Göran Andersson (M'86, SM'91, F'97) was born in Malmö, Sweden. He obtained his M.S. and Ph.D. degree from the University of Lund in 1975 and 1980, respectively. In 1980 he joined ASEA, now ABB, HVDC division in Ludvika, Sweden, and in 1986 he was appointed full professor in electric power systems at the Royal Institute of Technology (KTH), Stockholm, Sweden. Since 2000 he is full professor in electric power systems at the Swiss Federal Institute of Technology (ETH), Zürich. His research interests are in power system analysis, simulation and control. He is a member of the Royal Swedish Academy of Engineering Sciences and Royal Swedish Academy of Sciences, and he is active in IEEE PES.