



The Dept. of Electrical Eng. and Comp. Sc. of the University of Liège
(research unit in Systems and Modelling)

The Benelux chapter of the IEEE Power Engineering Society

cordially invite you to attend the

SEMINAR by Prof. A.P. Meliopolous

Georgia Institute of Technology, School of Electrical and Computer Engineering, USA

“Modernization and Security Enhancement of the Electric Power Grid”

on May 24, 2007 at 10:00 AM

Location : Institut Montefiore, Sart Tilman B28 4000 Liège Room R3

Directions to reach us can be found at www.montefiore.ulg.ac.be (click on “Location”)

We would appreciate it if you could kindly confirm your presence by sending an e-mail to
Mrs. M.-B. Lecomte: lecomte@montefiore.ulg.ac.be 04 366 26 88

After the seminar and discussion period, a sandwich lunch will be offered. If you want to participate, you are kindly requested to mention it when confirming your presence.

For further information feel free to contact:

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Abstract of the talk

The risk of blackouts has increased with the growth and the complexity of the electric power grid with extreme impact of the economic infrastructure. The 1965 US Northeast blackout prompted Edward Teller (a member of the investigating “blue ribbon” committee) to compare the electric power system with a dinosaur: Big Body – Small Brain, reflecting on the fact that at the time the communications infrastructure and the transmittal of information to system operators were in a relatively primitive condition. The 2003 US-Canada blackout prompted the two-nation committee to identify “grid invisibility” as a major contributing factor reflecting on the fact that major contributing events in the system were gone unnoticed by system operators. The availability of critical system information in a timely manner has been recognized as the best defense against system blackouts. In this talk we will discuss present activities to modernize the electric power grid and to minimize the risk of wide spread blackouts. New technologies in hardware and software provide the potential to achieve the goal of controlling and operating the complex power grid and practically eliminating the possibility of blackouts. We will examine integration of GPS synchronized monitoring technology and the implications on the reliability and security of the system. A central problem is the real time identification of the operating conditions with certainty and reliability via a model based automation scheme. The promise of automation in the electric power grid is to make all data available in real time to all constituents of the electric power system enterprise. The data must be accurate and timely and the delivery reliable and secure. Raw data as collected from IEDs, relays, meters, fault recorders, PMUs, etc. many times do not meet the requirements of several applications and especially those related to the security of the system. We will discuss the concept of the SuperCalibrator that makes it possible to (a) correct time latencies of non-GPS-synchronized data and (b) perform applications at the substation level that have traditionally required centralized approaches, such as the state estimation function. Substation automation and GPS synchronization is the enabling technology that provides a fully decentralized approach to state estimation. The availability of filtered data with quantifiable accuracy (value and time) enables additional advanced applications that were not possible with earlier technologies. We focus on applications that enhance the security of the electric power grid. We will discuss distributed state estimation, transient stability monitoring, relaying monitoring and assessment, as well as alarm processing.

About the speaker



A. P. Meliopoulos was born on March 19, 1949 in Katerini, Greece. He obtained a Diploma in Electrical and Mechanical Engineering from the National Technical University in Athens, Greece in 1972 and a Master in EE (1974) and a Ph.D. degree (1976) from the Georgia Institute of Technology in Atlanta, Georgia, USA.

Dr. Meliopoulos' first professional association was with Western Electric (1971) in Atlanta, Georgia. After receiving a PhD degree in 1976, he joined the faculty of the Georgia Institute of Technology as an Assistant Professor (1976), Associate Professor (1982-88) and full professor (1989-present).

At this capacity, he is actively involved in education and research for improved safety and electromagnetic compatibility of electric power installations, protection and control of power systems and the application of new technology in these areas. Since 1999 he is the Georgia Tech site Director of PSERC, a power system research consortium of universities and industry.

Dr. Meliopoulos has pioneered several new analysis and design techniques for safety, protection and electromagnetic compatibility of electric power systems. Most well known is his invention of the Smart Ground Multimeter, the EPRI grounding analysis programs, the WinIGS (Integrated Grounding System analysis and design), the GEMI (Grounding and ElectroMagnetic Interference) computer code, the GPS-synchronized harmonic measurement and estimation system for wide area high voltage transmission systems, and the mGrid computer code – a methodology and implementation for precise analysis of multi-wire power systems with distributed energy resources.

Dr. Meliopoulos has modernized many power system courses at Georgia Tech, introduced new courses, initiated the power system certificate program for practicing engineers and most importantly he has introduced visualization and animation methodologies that dramatically increase the teaching efficiency of complex power system concepts.

Dr. Meliopoulos is a Fellow of the IEEE. He holds 3 patents, he has published two books, a chapter in the Standard Handbook for Electrical Engineers and over 200 technical papers. He has received a number of awards, including the Sigma Xi Young Faculty award (1981), the outstanding Continuing Education Award, Georgia Institute of Technology (2002), and three of his papers have received the best paper award (IEEE-PES-SC-1984, IEEE-PES-EC-1987, and IEEE-CSS-HICSS 2002).

Dr. Meliopoulos was named Georgia Power Distinguished Professor in 2006.

His outside interests include running, classical music, travel and gardening.