IEEE PES 2008 GENERAL MEETING SUPER SESSIONS

OVERVIEW

The "Super Sessions" at the IEEE PES 2008 General Meeting will consist of a series of presentations, using 2 or 3 half-day sessions, designed to fully explore the topic from different perspectives. The experts from several PES Technical Committees will address subjects that are of significant interest to the industry. The following is a summary of each of the Super Sessions.

- Wind Power Super Session
- Distributed Generation Super Session
- Nuclear Power Super Session
- Smart Grid Super Session
- Vision 2020 Super Session

WIND POWER SUPER SESSION

20% Electricity from Wind (Super Session)
Tuesday, 22 July, 2008 8:00 AM-12:00 PM

Session Summary: Over the past two years, a major effort was undertaken in the U.S. to examine the feasibility of providing substantial amounts of electricity to the Nation's electric power system from wind power. A group of nearly 100 individuals became engaged in a variety of capacities to consider a prospective picture of 20% electricity from wind by 2030. The results of their work are described in this panel session.

In parallel across the Atlantic, significant activities have been underway for several years to address issues associated with high penetrations of wind power. This panel includes reports from two of these efforts: the European Wind Integration Study, and a study of ultra-high wind energy penetration in the isolated island power system of Ireland.

Towards Successful Integration of Wind Power into European Electricity Grids: Challenges, Methods and Results (Super Session)
Tuesday, 22 July, 2008 2:00 PM-6:00 PM

Session Summary: Expansion of wind energy during the past years in numerous European countries has led to increased concerns how this volatile and only partly predictable energy source may be integrated into the existing power systems. Yet in the mean time much operational experience has been gathered and new concepts are being developed to cope with wind power fluctuations even far beyond those observed today. The newest developments are presented and discussed in this session, bringing together experts from academia and industry.

Advances in Wind Energy Conversion Technology (Super Session)
Wednesday, 23 July, 2008 9:00 AM-12:00 PM

Session Summary: The need for accurate dynamic models of wind plants for grid planning studies is increasing. Grid codes are also evolving that include more rigorous performance requirements. Since the equipment and models are continuously evolving, there is an ongoing need to update and validate wind plant models. Efforts are underway to accurately represent the various wind turbine models as well as validate the models by field tests. This panel looks at model development efforts as well as technologies for grid connection for on- and off-shore wind.

DISTRIBUTED GENERATION SUPER SESSION

Future Outlook and Application Status for Fuel Cells (Super Session)
Tuesday, 22 July, 2008 9:00 AM-12:00 PM

Session Summary: Fuel cell (FC) technologies have experienced exponential growth during the last decade, and the number of installed FC units for large-scale power generation applications has been increasing rapidly world-wide. Governmental policies, public opinion, and FC technological advances have all contributed to this phenomenal growth. It is expected that FC technology will continue to advance significantly in the 21st century, and FCs will be more widely implemented. However, a number of barriers must be overcome before FCs can be a reliable energy source.

Governmental policies and targets, R&D, application status, and the future outlook for FCs in power generation applications will be presented in this panel by representatives from the industry and government research laboratories.

Network Security Management Focused on Dispersed Generation (Super Session)
Tuesday, 22 July, 2008 9:00 AM-12:00 PM

Session Summary: The panel focuses on the present problems of secure power system operation due to high penetration of dispersed generation. Especially in Europe the penetration of DG has reached a very high level in some countries and it evokes a lot of problems with system operation. These problems are caused by the nonconformity of the system structure and the legal status of renewables. The panel presents the experiences from the Netherlands, Poland, Germany, Portugal, Russia, Denmark and France. Possible solutions for smart network security management by:

- Improving weather forecasts,
- Planning taking into account availability of energy,
- Optimal reserve management,
- Delivery of system services by DGs and
- Use of generation management

will be presented. All presented papers describe the results of complex studies which are practically implemented in the European TSOs or DSOs.

DISTRIBUTED GENERATION SUPER SESSION (cont'd)

Advances in Distributed Resources (Super Session)
Tuesday, 22 July, 2008 2:00 PM-5:00 PM

Session Summary: This session, the seventh of an annual series, focuses on distributed generation (DG) and distributed energy storage (DES), which comprise distributed resources (DR). The program includes: an update on sodium-sulfur (NaS) battery energy storage technologies; an overview of small-hydro systems; a discussion of the wide-ranging energy studies being carried out by Natural Resources Canada; a PV program in New Mexico with utility involvement using production-based incentives, and an overview of residential Combined Heat and Power (CHP) technologies.

The session will begin with a brief discussion of the DG & ES Working Group, including the range of technical interests and potential topics for future panel sessions. General Meeting (GM) attendees willing to join group efforts for future panel sessions are invited to attend the DG&ES Working Group meeting, usually scheduled for 5:00 p.m. on Tuesday at each GM.

NUCLEAR POWER SUPER SESSION

Nuclear Power I (Super Session)
Tuesday, 22 July, 2008 8:30 AM-12:00 PM

Session Summary: Recognized as environmentally neutral, nuclear power is experiencing renewed interest in addressing the expected growth in electric power demand of the 21st century. This interest has driven significant changes in the industry over the past 20 years that have redefined both the technologies and the methods of deployment of nuclear power generating stations.

This session will introduce the IEEE/PES Nuclear Power Engineering Committee that has been responsible for the creation and maintenance of the IEEE standards foundational to the industry for the past 40 years. Changes to reactor licensing practices in the US, an essential element in the renewal of US nuclear deployment, will be presented. Also, the latest evolutionary designs of the Boiling Water Reactor and CANDU technologies will be discussed.

Nuclear Power II (Super Session)
Tuesday, 22 July, 2008 2:00 PM-6:00 PM

Session Summary: Recognized as environmentally neutral, nuclear power is experiencing renewed interest in addressing the expected growth in electric power demand of the 21st century. This interest has driven significant changes in the industry over the past 20 years that have redefined both the technologies and the methods of deployment of nuclear power generating stations.

This session will review the beneficial impact of IEEE standards on the nuclear industry. Strategies for dealing with cyber security, a significant technical challenge in the age of digital controls, will be presented. And the latest evolutionary designs of Pressurized Water Reactors will be discussed.

SMART GRID SUPER SESSION

Emerging Technologies in Support of Smart Grids (Super Session)
Tuesday, 22 July, 2008 2:00 PM-6:00 PM

Session Summary: Emerging Technologies in Support of Smart Grids: Environmental concerns and power quality delivery needs have led regulators to sponsor new programs in energy efficiency, renewable energy capacity generation, and reliability improvements. Utilities are responding to those needs. Energy generation assets (e.g. wind, solar, storage) have become more attractive for big buy-out groups and investors and government and private investors started providing financial support to support technologies, such as "Smart Grid".

In general, smart grid could be described as the use of advanced technologies to improve the performance of electric utility systems with performance including:

- Efficiency and Utilization
- Power Quality and Reliability
- Utility Bottom Line
- Etc.

The foundation of smart grid is new distributed data communication, computing, and control technologies, comprising efficient transfer of data and control from/to/among many field units.

Many R&D initiatives are currently underway to develop a vision for the electric grid of the future. In this super session, prominent industry speakers will present some key technologies in Support of Smart Grids. The first session will address introduction, distribution system aspects, sustainable energy, and communication and information technology aspects. The second session will address wide area monitoring protection and control and FACTS.

VISION 2020 SUPER SESSION

Super Session 2020 (Super Session)
Thursday, 24 July, 2008 8:00 AM–5:00 PM

Session Summary: The Super Session "Vision 2020" leads the view to the not so far future. The authors of the 11 papers received are giving their views on how their technical field will give impact on the electric network development in the year 2020. The contributions covering the following technical fields:

- Digital Communication
- Cyber Security
- Dynamic Network Security
- AC and DC Transmission Systems

The contributions of the session are reflecting a wide span of technical fields and represent different PES committees like Substations, Power System Communication, Power System Dynamic Performance, and Transmission and Distribution.

The cross border discussion in this session with experts of several technical fields will widen the view on the network problems of tomorrow.