

June 28 2007

**IEEE POWER ENGINEERING SOCIETY
ENERGY DEVELOPMENT AND POWERGENERATION COMMITTEE**

**PANEL SESSION: EUROPE:IMPACT OF DISPERSED GENERATION ON POWER SYSTEM
STRUCTURE AND SECURE POWER SYSTEM OPERATION[#].**

**Room Technical CC, #12
(Tom Hammons and Zbigniew Styczynski)**

**IEEE 2007 General Meeting, Tampa, USA, 24-28 June 2007
Tuesday June 26, 2:00~6:00 pm**

Sponsored by: International Practices for Energy Development and Power Generation[#]

Chairs: Tom Hammons, University of Glasgow, Scotland, UK
Zbigniew Styczynski, University of Magdeburg, Germany

Dependency of Europe on imported primary energy increases from year to year. National programs inside the European Community have been directed to increase the share of renewable energy sources and efficiency of power generation by cogeneration of heat and power (CHP). The European Commission has set targets for renewable energy sources for each country for which the share has to be increased from 14% to 22% and the share of CHP has to be doubled from 9% to 18% by 2010.

Distinguished panelists with deep knowledge and first-hand experience on impact of dispersed generation on Power System Structure and Secure Power System Operation will make presentations in this Panel Session. They will discuss how the power system can be operated securely with such a large share of mostly non-dispatched power sources and how reserve power required in order to compensate for power fluctuations can be limited to ensure safe network operation? Some of the key persons of the European Commission advisory council "*Platform of the Electricity Network of the Future*" will participate.

This Panel Session panel fits very well with the scope of the advisory council of the European Commission "*Platform of the Electricity Network of the Future*".

The Panelists and Titles of their Presentations are:

1. Nouredine Hadjsaid, Director of IDEA, Grenoble, France. *Modern Power System as a Critical Infrastructure* (paper 07GM1008)
2. Johan Driesen, G. Deconinck, W. D'haeseleer, and Ronnie Belmans, KU Leuven, Leuven, Belgium. *Active User Participation in Energy Markets through Activation of Distributed Energy Resources* (paper 07GM 1111)
3. Pier Nabuurs Chief Executive Officer, KEMA, Arnhem, The Netherlands and Peter Vassen KEMA, *Dispersed Generation and System Structure - Active Asset Management for Improving of the Power System Security*. Invited Discusser.
4. Bernd Michael Buchholz, Director, PTD Services, Power Technologies, Siemens AG, Erlangen, Germany and Zbigniew Antoni Styczynski, President of the Centre of Renewable Energy Sachsonia Anhalt, Germany. *Communication Requirements and Solutions for Secure Power System Operation*; (paper 07GM0208)

[#]Document prepared and edited by T J Hammons

5. Antje Orths, Peter Børre Eriksen and Vladislav Akhmatov, Energinet.Dk, Analysis and Methods, Fredericia, Denmark. *Planning under Uncertainty—Securing Reliable Electricity Supply in Liberalized Energy Markets* (paper 07GM0778)
6. Bruno Meyer, Operations VP for Transmission & Distribution, EDF R&D, Clamart, France. *Distributed Generation: Towards an Effective Contribution to Power Systems Security* (paper 07GM0679)
7. Evangelos Dialynas and Nikos D. Hatziargyriou, National Technical University Athens, Athens, Greece. *Impact of Microgrids on Service Quality*; (paper 07GM1062)
8. Kurt Rohrig and Bernhard Lange, ISET Kassel, Germany. *Improvement of Power System Reliability by Prediction of Wind Power Generation* (paper 07GM0397)

Each Panelist will speak for approximately 20 minutes. Each presentation will be discussed immediately following the respective presentation. There will be a further opportunity for discussion of the presentations following the final presentation.

The Panel Session has been organized by Tom Hammons (Chair of International Practices for Energy Development and Power Generation IEEE, University of Glasgow, UK) and Zbigniew A. Styczynski (Director of Center for Renewable Energy Sachsonia-Anhalt and Professor at the Otto-von-Guericke-University Magdeburg, Germany).

Tom Hammons and Zbigniew Styczynski will moderate it.

PRESENTATIONS

The first presentation is by Noredine Hadjsaid, IDEA, France. It is entitled: *Modern Power System as a Critical Infrastructure*.

Nouredine Hadjsaid is a Director of IDEA, Grenoble, France and full Professor at the INPG in Grenoble. He was with VirginiaTech in 1999-2000 as a Visiting Professor. He is currently General Director of IDEA—France, and the President of CRIS (International Institute for Critical Infrastructure), Sweden. He conducts research on distributed generation, including renewable energy systems, power system planning and operation and security of critical infrastructures.

The second presentation is by Johan Driesen, G. Deconinck, W. D’haeseleer, and Ronnie Belmans, KU Leuven, Leuven, Belgium. It is entitled: *Active User Participation in Energy Markets through Activation of Distributed Energy Resources*.

Johan Driesen is an Associate Professor at the K.U.Leuven and teaches power electronics and drives. In 2000-2001 he was a visiting researcher in the Imperial College of Science, Technology and Medicine, London, UK. In 2002 he was with the University of California, Berkeley, USA. Currently he conducts research on distributed generation, including renewable energy systems, power electronics and its applications, for instance in drives and power quality.

Ronnie Belmans is a full professor with K.U.Leuven, teaching electrical machines and variable speed drives. He is an appointed visiting professor at Imperial College in London.

He was with the Laboratory for Electrical Machines of the RWTH, Aachen, Germany (Von Humboldt Fellow, Oct.’88-Sept.’89). From October 1989-September 1990, he was visiting associate professor at Mc Master University, Hamilton, Ont., Canada. During the academic year 1995-1996 he occupied the Chair at London University that was sponsored by the Anglo-Belgian Society. Dr. Belmans is a Fellow of the IEE (United Kingdom) (now IET) and a Fellow of IEEE. He is also Chair of the Board of Elia, the Belgian TSO.

The third presentation is by Pier Nabuurs, Chief Executive Officer and Peter Vaessen, KEMA, Arnhem, The Netherlands. It is entitled: *Dispersed Generation and System Structure - Active Asset Management for Improving of the Power System Security*. Peter Vaessen will present it.

Pier Nabuurs held jobs for many years in management of R&D at Philips and Océ. At Océ he became responsible for managing global purchasing in the supply chain. After that he was CEO of Océ-Belgium and Executive Director of the Strategic Business Unit Document Printing. His responsibility included the product development program. In January 2002 he became CEO of KEMA, an international company specialized in high-grade technical energy consultancy and R&D, inspection, testing and certification.

Peter Vaessen joined KEMA and has held several research positions in the field of large power transformers and measurements in high-voltage networks. From 1991 to 1996, he managed several realization projects, among them construction of Dutch 400 kV substations. As a consultant he has experience in the conceptual design of integrated electrical systems and innovative techniques and tools for transforming existing large-scale hierarchical systems into flexible dynamic structures, allowing economic utilization, competition and integration of RES and DG.

The fourth presentation has been prepared by Bernd Michael Buchholz, Director, PTD Services, Power Technologies, Siemens AG, Erlangen, Germany and Zbigniew Antoni Styczynski, President of the Centre for Renewable Energy Sachsonia Anhalt e.V., Magdeburg, Germany. It is entitled: *Communication Requirements and Solution for Secure Power System Operation*.

Bernd Michael Buchholz is director of the business unit “Power Technologies” in the “Service” division of the Power Transmission and Distribution group in Erlangen, Germany. Between 1995 and 2000 he worked as editor for the parts 4 and 7 of IEC 61850. He is the German member of the SC C6 of CIGRE “Dispersed generation in distribution systems”.

Zbigniew Antoni Styczynski became in 1999 the Head and the Chair of Electric Power Networks and Renewable Energy Sources of the Faculty of Electrical Engineering and Information Technology at the Otto-von-Guericke University, Magdeburg, Germany. Since 2006 he is also the president of the Centre of the Renewable Energy Sachsonia Anhalt. His special field of interest includes electric power networks and systems, expert systems and optimization problems. He is a senior member of IEEE, member of CIGRE SC C6, VDE ETG und IBN and fellow of the Conrad Adenauer Foundation.

The fifth presentation is entitled *Planning under Uncertainty—Securing Reliable Electricity Supply in Liberalized Energy Markets*. It has been prepared by Peter B. Eriksen, Antje G. Orths and Vladislav Akhmatov, all from Energinet.dk, Fredericia, Denmark.

Peter Børre Eriksen is head of *Analysis and Methods* of Energinet.dk, the Danish Transmission System Operator for Electricity and Gas. After a career in system planning for the Danish utility ELSAM he joined Eltra, the former Western Danish TSO in 1998, where he was leading the Development Department from 2000 until 2005. In 2005 the two regional TSOs on power (Eltra and Elkraft) and the TSO on natural gas (Gastra) merged forming the new national TSO Energinet.dk, which bears overall responsibility for power

and natural gas systems in Denmark. Peter Børre Eriksen is author of numerous technical papers on system modeling.

Antje G. Orths joined the Planning Department (*Analysis and Methods*) of Energinet.dk, the Danish TSO for Electricity and Gas in 2005. Before, she was a researcher at the OvG-University Magdeburg, Germany and also head of the group Critical Infrastructures at the Fraunhofer Institute for Factory Operation and Automation IFF in Magdeburg. Her special fields of interests include electric power networks and systems, modeling of dispersed energy resources, distribution network planning and optimization problems. She is member of the IEEE-PES, VDE-ETG and CRIS.

Vladislav Akhmatov since 2003 is with the Planning Department (*Analysis and Methods*) of Energinet.dk, the Danish TSO for Electricity and Gas. Before, he worked for the Danish electric power company NESA A/S, investigating power system stability of the eastern Danish power system with incorporation of large offshore wind farms. He has developed detailed wind turbine models for different power system simulation tools and carried out a lot of respective analyses. His special interests are power system analysis, wind power and simulation tools.

The sixth presentation has been prepared by Bruno Meyer, Operations VP for Transmission & Distribution, EDF R&D, France. It is entitled: *Distributed Generation: Towards an Effective Contribution to Power Systems Security*. Bruno Meyer will present it.

Bruno Meyer holds a degrees in physics from Unicamp (B.Sc.), Sao Paulo (M.Sc.) and Edinburgh (Ph.D.). He is Operations VP for Transmission & Distribution at EDF R&D. He joined EDF in 1985 where he has held several positions in the R&D Division as well as in the Marketing and Commerce Divisions. He is a Senior Member of IEEE, and is Region 8 Representative for IEEE PES. He is also an Eminent Member of Cigré.

The seventh presentation is entitled: *Impact of Microgrids on Service Quality* and has been prepared by Evangelos Dialynas and Nikos D. Hatziargyriou, National Technical University of Athens, Athens, Greece. It will be presented by Nikos D. Hatziargyriou.

Evangelos Dialynas is Professor of Electrical Power Systems at the School of Electrical and Computer Engineering of NTUA. His research interests include power system analysis, generation simulation and renewable energy sources.

Nikos D. Hatziargyriou is Professor at the Power Division of the School of Electrical and Computer Engineering of NTUA. His research interests include dispersed and renewable generation, artificial intelligence techniques in power systems and power system dynamic analysis and control. He is a Senior Member of IEEE, a member of CIGRE SC C6, and a member of the Technical Chamber of Greece.

The final presentation is by Kurt Rohrig, ISET Kassel, Germany. It is entitled: *Improvement of Power System Reliability by Prediction of Wind Power Generation*.

Kurt Rohrig is Head of ISET's Program Area Information and Energy Economy. He has worked with ISET since 1991 and has been the scientist-in-charge for projects handling the online monitoring and prediction of wind power for large supply areas – operated in co-operation with large power transmission

utilities. The computer models and approaches developed in his work are in operation with all the German transmission system operators that have high wind power penetration.

Bernhard Lange is head of Information and Prediction Systems of the Program Area Information and Energy Economy at ISET. After graduating he worked in Denmark with Risø National Laboratory and Wind World A/S. His main research interests for the last 10 years are wind power meteorology and wind farm modeling.