



2011 8th International Conference on the European Energy Market (EEM)

25-27 May 2011
Zagreb, Croatia

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2011 8th International Conference on the European Energy Market (EEM)

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Welcome



Marko Delimar

Serbus*

It is a pleasure to welcome you to the 8th International Conference on the European Energy Market – *dobro nam došli!*

This conference is a well-established forum for the exchange of ideas, open and direct discussion on the development of the energy market in Europe. It has achieved a considerable success during the past seven editions covering the electricity and gas markets policies and experiences, power sector impacts on climate change and industry developments at the European level.

The creation of a genuine competitive market for energy is one of Europe's paramount objectives – providing all consumers a reasonable choice between different companies supplying gas and electricity at affordable prices, and making this market accessible for all the suppliers, with emphasis on those investing in renewable energy. Market framework and mechanisms, opportunities and limitations, with technical, economic and legal aspects are all impartially discussed at this conference, including topics such as energy diversification and security of supply.

Making this market a reality will depend significantly on a reliable and coherent energy network in Europe, and therefore, on infrastructure investment. This seems to be a hot topic at this conference, with a number of important sessions focusing on the development of the European grid.

In the regular conference program, we had the total of 575 participating authors who initially submitted 280 abstracts. In a two-step review process, we finally arrived at 150 papers being presented in 24 sessions. The whole peer-review process included more than 80 experts from all around the globe. In addition, we have three insightful special-sessions and six distinctive keynote presentations. The details of these contributions as well as the conference schedule can be found on the following pages.

For these three days, experts from around Europe and beyond meet to discuss the best approach to accelerate the development of the energy market and to move it in the right direction. The conference technical and social program is designed for us to interact, network and share. We hope to learn from one another and converge to clear deliverables for further steps.

Numerous people and organisations have contributed to this event. Their contributions are gratefully acknowledged and appreciated.

On the behalf of the entire organising team and partner institutions, I wish you a pleasant stay in Zagreb and a productive and memorable conference!

Marko Delimar
EEM 11 Chair

* *Servus* (or *serbus*, as often pronounced in Zagreb) is a salutation used in parts of central and eastern Europe. In the old days quite formal and usually accompanied by raising of the hat and a small bow, nowadays it is a friendly and often informal greeting. The word originates from Latin and means "at your service".

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Keynote Presentations

Are Current Electricity Markets Suitable to Integrate Non-Dispatchable Producers?

Summary

The electricity market structure, involving generally a pool, a futures market and a bilateral trading floor, was designed before the large integration of non-dispatchable sources, particularly wind power. This presentation addresses the suitability of the current electricity market structure for producers relying on non-dispatchable energy sources. Considering the intrinsic variability and uncertainty of the production level of non-dispatchable sources, appropriate changes in the current market structure are discussed to adapt such structure to an increasingly non-dispatchable generation mix.



Antonio J. Conejo

Antonio J. Conejo, full professor at the Universidad de Castilla-La Mancha, Spain, received the M.S. from MIT and the Ph.D. from the Royal Institute of Technology, Sweden. He has published over 100 papers in SCI journals and is the author or coauthor of books published by Springer, John Wiley, McGraw-Hill and CRC. He has been the principal investigator of many research projects financed by public agencies and the power industry and has supervised 13 PhD theses. He is the Editor-in-Chief of the IEEE Transactions on Power Systems and an IEEE Fellow.

Possibilities of Active Contribution of Prosumers in Balancing of Power Systems

Summary

Electrical power systems were mainly developed by adapting the supply side while less attention was given in controlling the demand side. During the effort to integrate large amounts of renewable energy sources, the implementation of demand response mechanisms may provide considerable options for continuous adaptation of the demand to the actual system needs. In liberalised market environments, small electricity consumers become potential prosumers. Aggregated under an eligible market entity, and connected through ICT, prosumers may compete with conventional technologies. System operators regard demand response mechanisms as effective measures to deal with high penetration of renewable energy sources, however many questions remain open. Main challenges are related to assessing prosumers dynamics (behavioural aspects, technical constraints and response time limitations), establishing appropriate regulatory frameworks, and financial settlement systems for demand response providers.



Wil L. Kling

Prof. **Wil L. Kling** received his M.Sc. degree in electrical engineering from the Technical University of Eindhoven in 1978. Since 1993 he has been a (part-time) professor in the Department of Electrical Engineering at Delft University of Technology, and since 2000 also at Eindhoven University of Technology in the field of intelligent Power Systems. Since 2008, he is a full-time professor at Eindhoven University of Technology where he is leading research programs on distributed generation, integration of wind power, network concepts and reliability. Prof. Kling is involved in scientific organisations such as CIGRE and the IEEE. As Netherlands' representative, he is a member of CIGRE Study Committee C6 Distribution Systems and Dispersed Generation, and the Administrative Council of CIGRE.

Planning the Grid for 2020 and Beyond – the Role of ENTSO-E

Summary

The significance of bringing a European overview in planning the electricity grid in view of the EU energy policy targets has become a necessity given the central role of transmission infrastructure in enabling the relevant policies. On one hand, 20-20-20 targets set by the EU climate and energy package drive the effort to create the conditions that support the integration of renewable energy sources, the efficiency in electricity consumption, and the reduction of CO₂ emissions. On the other hand, it is evident that a longer term vision is needed, anchored to the year 2050 when the EU decarbonization objectives must be observed. ENTSO-E addresses

both issues, first with its biennial Ten-Year Network Development Plan, and also with its recently announced Study Roadmap 2050 towards the Modular Pan-European Electricity Highways System.



Dimitrios Chaniotis

Dimitrios Chaniotis is working as Senior Advisor for System Development, with focus on areas such as the Ten-Year Network Development Plan, and the Network Codes for grid connection. He started his career at the R&D centre of EDF in France in 2001 working on the areas of congestion management and market power. In 2003 he joined RTE France, working on capacity allocation mechanisms on interconnections and market coupling. Mr Chaniotis holds a PhD in electrical engineering from the University of Illinois, and an MBA from INSEAD.

The Game Changers in Energy Markets

Summary

Integration of smart technologies into the distribution networks, into homes and now also into the EVs offers a completely new and unprecedented portfolio of services transforming the Energy Markets. For the first time the ubiquitous convergence of information, processing capacity and electricity is allowing for the new business models, for new incentive schemes and for new level of customer empowerment. The granularity, accuracy and timely availability of information enables the intake of much larger amounts of renewable generation, allows for Demand Response schemes as well as the peer-to-peer Virtual Power Plant collaboration. This game changing in the Energy Markets is at its beginning as several aspects still needs to be clarified. Many questions remain to be solved about accurately forecasting customer behavior, about auditability and traceability of decisions, clear definition of roles, responsibilities and possible liabilities and finally the necessity to remain within the technical constraints of a balanced electricity network, within the contractual service level agreements agreed between the engaged partners and within the positive ROI of the financial business case.



Bastian Fischer

Bastian Fischer is a recognized industry leader with an extensive experience in the Utility industry, in IT technology, customer management and smart grid & smart home area. A regular speaker on the theme of Utility industry innovation, he is an active contributor to a variety of customer thought leadership initiatives and industry press articles on international level. Before joining Oracle, Bastian Fischer held several leadership roles focusing on the Utility Industry transformation in USA, APAC and Europe. With his wealth of international experience and a profound understanding of IT as an enabler of change and innovation, he is currently leading the Oracle Utilities team in EMEA, setting the focus on strategic projects and smart grid initiatives as well as providing direction to the largest utility customers. Bastian leads the Oracle Executive Customer Advisory Board for Utilities, setting the roadmap to enabling utilities in the roll-out of smart grid projects, embracing industry breakthrough innovations and adopting new and innovative business processes.

Ancillary Services Market in the South East Europe

Summary

The Transmission System Operator (TSO) has the central role in coordination of secure operation of the electric power system including adequate level of electric power quality and minimal influence on environment. The one of the main tasks of TSO is to provide ancillary services required for reliable and safe electric power system operation. The main ancillary services are: frequency control, voltage control, spinning reserve, cold reserve and black start. All necessary ancillary services must be accurately planned, including the determination of their costs, and their influence on electric power transmission price. Ancillary services pricing policies should promote the efficient use of and investment in generation, transmission and consumption.

In grid codes of South-East European countries different ancillary services exist and TSOs provide them based on different principles (some are mandatory some are commercial sometime exist bilateral contracts sometime exist markets). Despite the differences, there is a growing demand to trade certain services across national borders. Current EU cross-border congestion management rules make it very difficult to trade non-schedulable power/energy services over the borders since the whole capacity allocation mechanism was designed for scheduled transactions.



Igor Kuzle

Igor Kuzle is a Professor at the Department of Power Systems, Faculty of Electrical Engineering, University of Zagreb. His interests include power system dynamics and control, connection and influence of renewables on the power system operation. He was a project leader for over 40 industry projects. He is member of Croatian National Committee CIGRE Executive Board, Member of the Technical Commission for Assignment of Croatian Quality Mark of Croatian Chamber of Economy, IEEE Croatia Section Chair, IEEE PES Chapter Representative for Central Europe and IEEE IAS Chapter R8 Chair.



Dubravko Sabolić

Dubravko Sabolić obtained his B.Sc., M.Sc., and Ph.D. degrees in Electrical Engineering and a M.Sc. in Economics from the University of Zagreb. From 2001 to 2004 he served as a Commissioner at the Telecommunication Council of the Republic of Croatia, the regulatory authority for telecom markets. Now he works as the CEO of the national electricity system operator called HEP–Transmission System Operator. He is also active as an Assistant Professor at the University of Zagreb, Faculty of Electrical Engineering and Computing, where he teaches Engineering Economics for undergraduate students. At the University of Osijek, Croatia, he teaches Electricity Markets for graduate students.

3rd Package and European Power Systems of the Future

Summary

This session will cover the following topics:

- * Framework Guidelines and Codes
- * Process, development and follow-up
- * Key areas of interest
- * Benefits, challenges and open issues



Tahir Kapetanović

Tahir Kapetanović is Director Electricity at the Austrian Energy Regulatory Authority E-Control since 2001 (www.e-control.at). In ERGEG he is the co-chair of the Electricity Network & Market TF (www.energy-regulators.eu). He was a member of the Advisory Council and Chair of the WG Network Operations in the EU TP Smart Grids 2005-2009. Since 2009 he is a member of Smart Grids Forum and chairs WG3 of the EC TF for Smart Grids. Before E-Control, he spent ten years on different assignments in the industry, four years in academic research and lectured in power systems, security of supply and energy management, at the University of Zagreb, Imperial College of London and Vienna University of Technology. He holds Dipl.-Ing., MSc and PhD in Energy and Power Systems.

Special Sessions

The Economics of Smart Grid

Chair: Dirk Van Hertem, K.U. Leuven

Abstract

Smart grids are a hotly debated topic in the power and energy sector, but in the end there needs to be a business case. Smart grids have different facets depending on the market participant and on the regulatory framework in which they are deployed. This session will discuss some of the ways smart grids can be economic, e.g. through the aggregated use of resources, coordination using decentralized actors or using the optimal local mix of energy sources. The session will conclude with the view of the transmission system operator.

Outline

- * Daan Six, VITO (Belgium), Aggregators in smart grids and the ADDRESS FP7 project
- * Sebastian Lehnhoff, University of Oldenburg (Germany), Coordination and Organization of Decentralized Actors in Future Smart Grids - Challenges and Solutions
- * Pierluigi Mancarella, University of Manchester (UK), Multi-generation economics
- * Bernd Klöckl, APG & ENTSO-E (Austria), Smart grid economics from the TSO point of view
- * General debate: all presenters.

The Development of the European Power Grid

Chair: Władysław Mielczarski, Technical University of Lodz, Poland

Abstract

The development of the European power grid and international power lines is a crucial measure for the implementation of the European energy policy. The European power interconnected system allows for the realization of three main goals of the European policy: increase of security of supply, enhancement of electricity market operation and accommodation of energy produced by renewable resources. The first step done by the European Union in 2006 included the selection of power transmitting lines and the nomination of some of them as the European priority projects and projects of the European interest. European Energy Coordinators (M. Monti, M. Adamowitz and W. Mielczarski) designated in September 2007 have been supervising the development of the main projects identifying and removing the barriers.

The subsequent step is the publication of Green Paper on 17 November 2010, in which European Commission indicates a need for the further development of power transmission system including long distance lines (Electricity Highways) and direct current lines as the supplementation to the existing system of alternating current. Engineers, economists and researchers face large challenges in the introduction of new ideas to system operation as well as the line construction and the implementation of the common market rules.

The panelists J-A. Vinois, DG Energy, European Commission; R. Belmans, Katholieke Universiteit Leuven; T. Kapetanović, E-Control; D. Sabolić, Croatian TSO will discuss the development of the common European power grid.

The Dissemination Session of the European FP7 Project REALISEGRID

Chair: Gianluigi Migliavacca, RSE S.p.A., Italy

Abstract

The session presents the final results of the European research project REALISEGRID. This project, encompassing the period September 2008 till May 2011, was co-financed by the European Commission (DG-ENERGY) and aimed at pursuing a threefold target:

- * analyze the most promising technologies able to improve the reliability, capacity and flexibility of the transmission network, together with the possibility of more effectively integrating them into the transmission planning procedures;
- * study the impact of different regulatory and socio-economic scenarios on the energy exchanges in Europe in a long term perspective (up to 2030);
- * Implement a set of methodologies and tools to assess the benefits deriving from the expansion of the transmission grid towards the extension of current planning criteria.

Outline

- * Overview of the project (Gianluigi Migliavacca, RSE)
- * MARKAL-TIMES modelling of long term scenarios for generation and load up to 2030 (Maurizio Gargiulo, E4SMA)
- * Current approaches to the planning of the transmission infrastructures in Europe: issues and criticalities (Gianluca Fulli, EC JRC)
- * A new approach to analyze transmission investments based on investment signals (Klemens Reich, APG)
- * A new cost-benefit analysis approach to prioritize pan-European grid investments (Gianluigi Migliavacca, RSE)
- * TSO remuneration policies as a driver for a more efficient investment policies (Matteo Urbani, OME)
- * Approval procedures and consensus for building transmission lines: obstacles and solutions (Ana Ciupuliga, TUDelft)
- * General debate: what is the best investment policy to achieve the goals of RES integration, IEM creation and security of supply? How could the typical lag between generation and transmission evolution be reduced? (All presenters)

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