



DEPARTMENT OF ENERGY TECHNOLOGY
AALBORG UNIVERSITY

Guest lecture:

**The Smart Grid Design, Evolution and Future Trends in
Croatia**

by

**Professor Igor Kuzle, Head of the Department of Energy
and Power Systems at the University of Zagreb**

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Aalborg University, Department of Energy Technology, Pontoppidanstræde 101, room 21



Abstract

Due to the rapid increase in global energy consumption and the diminishing of fossil fuels, the customer demand for new generation capacities and efficient energy production, delivery and utilization keeps rising. In order to ensure reliable operation of the electric power system, it is required to keep the balance between total generation and consumption of power in real-time. The environmental concerns due to conventional power plants have given impetus for widespread utilization of renewable energy based distributed generation technologies. The increasing of distributed generation and renewable energy sources increases the stochastic element related to the generation side while increasing demand fluctuations of new consumers, such as electric heating and electric vehicles, decrease the overall predictability of demand. This creates a challenge of efficiently integrating these low carbon technologies and, at the same time, finding the optimal control that maximizes the utilization of their flexibility. As a consequence, the concepts pertaining to a smart grid with advanced functional architecture are evolving to incorporate these technologies and for meeting real-time load demand. It is expected that through development of a strong smart grid, overall power grid security and efficiency can be largely improved and significant growth of relevant industrial sectors can be achieved.

This lecture presents a brief overview for recent and expected advancements in the smart power grid in Croatia.

About the lecturer.

Igor Kuzle is a Full Professor and the Head of the Department of Energy and Power Systems at the Faculty of Electrical Engineering at the University of Zagreb.

His scientific interests include problems in electric power systems dynamics and control, unit commitment, maintenance of electrical equipment, as well as power system analysis, smart grids and integration of renewable energy sources.

He serves in more than 10 international journals as an associate editor or as a member of editorial boards. Igor Kuzle published three books and more than 200 journal and conference papers including technical studies for utilities and private companies. He served as chairman and participant in organization of few international scientific conferences and workshops. Also, he was the project leader for more than 60 technical projects for industry and electric power companies. Since 2012, he has been a member of Croatia TSO Coordination Group for Connection of renewable energy sources and member of Advisory expert committee of the Ministry of Environmental and Nature Protection in the evaluation of environmental impacts of the wind farms. He is a member of technical commission for assignation of Croatian quality mark of Croatian Chamber of Economy and a member of Croatian Chamber of Electrical Engineers and a Licensed Engineer since 1994.