

PROCEEDINGS

10th International Workshop on Large-Scale Integration of Wind Power into Power Systems as well as on Transmission Networks for Offshore Wind Power Plants



25 - 26 October 2011
Aarhus, Denmark

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PROCEEDINGS

10th International Workshop on Large-Scale Integration of Wind Power into Power Systems as well as on Transmission Networks for Offshore Wind Power Plants

25 - 26 October, 2011
Aarhus, Denmark

Edited by Uta Betancourt / Thomas Ackermann

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Welcome to the 10th International Workshop on Large-Scale Integration of Wind Power into Power Systems as well as on Transmission Networks for Offshore Wind Power Plants

It is a great pleasure to welcome you to the 10th edition of the *International Workshop on Large-Scale Integration of Wind Power into Power Systems as well as on Transmission Networks for Offshore Wind Power Plants* in Aarhus, Denmark.

With its 10th edition, the Wind Integration Workshop is celebrating a jubilee this year. The first edition of the workshop was held 11 ½ years ago at the Royal Institute of Technology, Stockholm, Sweden in March 2000.

The focus of the first edition of the workshop was on HVDC transmission technology, including HVDC transmission networks. Over the past years the key topics changed continuously, reflecting the shifting focuses in the area of wind integration, for instance modelling issues, national grid integration experience, market issues as well as grid code issues became key topics of the workshop. This way, the workshop developed into a renowned international platform for discussing the subject of grid integration of wind power into the existing power systems. By the way, this year HVDC transmission solutions have emerged again as one of the key topics of the workshop.

The general purpose of this workshop, however, has not changed over the past years: It is to get researchers, economists and practicing engineers from different fields relating to wind power and transmission systems to exchange their knowledge and discuss their experience in the area of large-scale integration of wind power into power systems and transmission networks for offshore wind farms. The emphasis of this workshop is again on both theoretical discussion and practical applications.

Because of the high interest in the workshop proceedings, we have submitted the proceedings from the past years to international libraries and organisations who operate citation index systems such as the (i) FIZ - Fach Informations Zentrum Karlsruhe, (ii) Elsevier, (iii) ETDE, (iv) Reuters, (v) Compendex, (vi) ThomsonCitationIndex. We will do the same with this year's proceedings, so that the proceedings become easier available for academia and industry world-wide.

The 10th *Wind Integration Workshop* forms the core of a whole Renewable Energy Week this year in Aarhus, Denmark with a number of related events such as *Tutorials for the Solar Integration Workshop* (October 23, 2011) and *Tutorials on Wind Turbine Modelling* (October 24, 2011), the 1st *Workshop on the Integration of Solar Power into Power Systems* (October 24, 2011), the *Fifth Workshop on Best Practice in the Use of Short-term Forecasting of Wind Power* (October 24th, 2011), the dedicated TSO-*Energinet.dk-day* (October 27, 2011) and two different *field trips* (October 27 and 28, 2011).

This workshop would not be possible without our sponsors and we like to thank them for their support. Our Gold Sponsors this year are: the engineering company **ALSTOM Grid** (France), the energy group **DONG energy** (Denmark) as well as the wind turbine manufacturers **Enercon** (Germany) and **Vestas** (Denmark), our Giga Sponsors: the engineering company **ABB** (Switzerland/Sweden) as well as the consulting and software company **DIgSILENT** (Germany) and **Siemens Wind** (Denmark). In addition, the workshop is supported by the Utility Wind Integration Group **UWIG** (USA). And above all, we would like to thank the Danish TSO **Energinet.dk** for its general support and local assistance.

We would also like to thank all those who supported the organizers of this workshop: Uta Betancourt and Jörg Braun (all Energynautics, Germany), Antje Orths (Energinet.dk) and the International Advisory Committee.

Have an inspiring stay in Aarhus and a fruitful workshop!

Thomas Ackermann
energynautics

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X. Fu, L.-A. Dessaint (École de Technologie Supérieure, Canada), R. Gagnon (IREQ/Hydro-Québec, Canada)

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Integration of Large Ccale Wind Power

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