European Academy of Wind Energy (EAWE)

6th PhD Seminar on Wind Energy in Europe

30th September and 1st October 2010

Norwegian University of Science and Technology, Trondheim, Norway

Seminar programme

29th SEPTEMBER 2010

15.00-19.00	**room G144**	**EAWE BOARD MEETING** Meeting room G144, Department of Electrical Power Engineering, NTNU
20.00		**EAWE BOARD DINNER** Restaurant AiSuma, Kjøpmannsgata 57
18.00		For other conference participants: Meet at Olav Tryggvason statue in the city centre (close to Thon hotel) for a walk in the city, led by NTNU PhD students. There will be the opportunity to buy food and drink.

30th SEPTEMBER 2010

08.30-09.00	**room EL6**	Registration and coffee
09.00-09.30		**CONFERENCE OPENING CEREMONY** - NOWITECH Director, John Olav Tande - EAWE President, Félix Avia Aranda - NOWITECH Lead Scientific Committee, Geir Moe - practical information
09.30-10.15		**GUEST LECTURE** by Finn Gunnar Nielsen, Statoil *Hywind, the world's first full scale floating wind turbine in operation*
10.15-11.15		**SESSION 1** *Introduction to Wind Energy*

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11.15-11.45		Coffee break and **POSTER SESSION P1** *Wind Field Measurements and Simulations*
11.45-12.30	room **EL6**	**SESSION 2** *Control and Design of Wind Turbines*

12.30-13.30	Lunch break

13.30-14.15	room **EL5**	**GUEST LECTURE** by Ivan Østvik, Norwind *An overview of bottom-fixed foundation concepts for offshore wind farms and installation aspects*
14.15-15.15		**SESSION 3A** *Rotor Design I*

room **EL6** **SESSION 3B**
Structural Aspects of Support Structure and Blades

15.15-16.00		Coffee break and **POSTER SESSION P2** *Electrical Operation, Structural Design and Maintenance* **NTNU laboratories** Visit to: wind and electrical lab
16.00-17.00	room **EL5**	**SESSION 4A** *Rotor Design II*

room **EL6** **SESSION 4B**
Maintenance of Offshore Wind Turbines

17.00	room **EL5**	Close of session

19.00	Meet at main building of NTNU for bus transfer to Studenterhytta in the hills west of Trondheim, where the **CONFERENCE DINNER** will take place.

1st OCTOBER 2010

09.00-10.00		**POSTER SESSION P3** *Rotor Design, Control and General Aspects* **NTNU laboratories** Visit to: marine (08.30), wind and electrical lab
10.00-11.00	room **EL5**	**SESSION 5A** *Wind Field Measurements and Simulations I*

room **EL6** **SESSION 5B**
Grid Integration of Wind Farms

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11.00-11.30		Coffee break		
11.30-12.30	**room** **EL5**	**SESSION 6A** *Wind Field Measurements and Simulations II*	**room** **EL6**	**SESSION 6B** *Drive Train and Electrical Power Production*

12.30-13.30	Lunch break

13.30-14.15	**room** **EL5**	**GUEST LECTURE** by Terje Gjengedal, Statnett *Offshore grid-challenges and opportunities*
14.15-14.45		**CLOSING CEREMONY** and presentation of awards

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Excursion Programme

1st OCTOBER 2010

15.15	Bus transfer to Smøla
	Bus leaving in front of the NTNU main building
19.00	Arrival at Smøla island
19.15	**DINNER AT GURISENTRET**
	Food will be provided by the seminar organisers
20.00	**GURISENTRET**
	Exhibition about wind on Smøla
21.30	Arrival at the fishing village Veiholmen
	Stay for the night, accommodation is arranged

2nd OCTOBER 2010

09.45	Bus transfer from Veiholmen to Smøla town hall
10.00-10.05	Welcome to Smøla
10.05-11.30	**TECHNICAL EXPLANATION WIND PARK SMØLA**
	Terje Gjengedal, Statnett
11.30-11.50	**INFLUENCE OF THE WIND PARK ON SMØLA COMMUNITY**
	Kai Holmen, Smøla business centre
11.50-12.10	**BIRD RESEARCH AT SMØLA WIND PARK**
	Kjetil Bevanger, Norwegian Institute for Nature Research
12.10-13.00	Lunch break
13.00	Bus transfer to Smøla wind park
13.15-14.15	**TOUR AT SMØLA WIND PARK**
14.30	Bus transfer back to Trondheim

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Oral Presentations

30th SEPTEMBER 2010

SESSION 1 – 10.15-11.15 – *Introduction to Wind Energy*

- Hybrid life-cycle assessment of wind power
  Anders Arvesen, NTNU

- Wind energy research in the age of massively parallel computers
  Michael Muskulus, NTNU

- The correlation between Wind Turbine Turbulence and Failure-Preliminary Work
  Peter Tavner, Durham University

- Forecasting of wind turbine loads based on SCADA data
  Claudia Hofemann, TU Delft

SESSION 2 – 11.45-12.30 – *Control and Design of Wind Turbines*

- Optimal Operation Planning for Wind Farms
  Natalia Moskalenko, Otto-von-Guericke-University

- Yaw stability of a free-yawing 3-bladed downwind wind turbine
  David R.S. Verelst, Risø DTU

- Aerodynamics of Diffuser-Augmented Wind Turbines
  Ben M. Geurts, TU Delft

SESSION 3A – 14.15-15.15 – *Rotor Design I*

- Bond Graph Modelling of Wind Turbine Rotor
  Yihan Xing, NTNU

- Modelling the Aerodynamics of Vertical-Axis Wind Turbines in Urban Wind Conditions
  Frank Scheurich, University of Glasgow

- Comparative Study of Distributed Active Load Control Concepts for Wind Turbine Blades
  Peter Bæk, LM Wind Power and Risø DTU

- Root Flow Aerodynamic Investigation of a HAWT
  Busra Akay, TU Delft

SESSION 3B – 14.15-15.15 – *Structural Aspects of Support Structures and Blades*

- Effect of Foundation Modeling Methodology on the Dynamic Response of Offshore Wind Turbine Support Structures
  Eric Van Buren, NTNU

- Sizing Process of a Semi-Submersible for Offshore Wind Generation
  Rafael Arias, Universidad Politécnica de Madrid

- Evaluation of Dual Axis Resonant Testing of Wind Turbine Blades
  Peter Greaves, Durham University

SESSION 4A – 16.00-17.00 – *Rotor Design II*

- Multidisciplinary Optimization of Flatback Airfoils for Large Wind Turbine Blades
  Mehdi Doosttalab, University of Applied Sciences Bremen

- Unsteady Quasi 3D Aerodynamic Code
  Néstor Ramos Garcia, DTU

- Stochastic modelling of lift dynamics in turbulent inflows
  Muhammad Ramzan Luhur, University of Oldenburg

- Conceptual Design of a Stall-Regulated Rotor for a Deepwater Offshore Wind Turbine
  Karl O. Merz, NTNU

SESSION 4B – 16.00-17.00 – *Maintenance of Offshore Wind Turbines*

- Analysis framework for the reliability and maintainability of offshore wind Turbines
  Zafar Hameed, NTNU

- Risk based maintenance of offshore wind turbines using Bayesian networks
  Jannie Jessen Nielsen, Aalborg University

- Remote Presence, Cost-Effective Robotic Inspection and Maintenance of Offshore Wind Turbines
  Øyvind Netland, NTNU

- Condition monitoring methods for offshore wind turbines
  Mahmoud Valibeiglou, NTNU

1st OCTOBER 2010

SESSION 5A – 10.00-11.00 – *Wind Field Measurements and Simulations I*

- Multifractal Analysis and Simulation of Wind Energy Fluctuations
  George Fitton, Université Paris Est

- Intermittent Structures in Atmospheric Wind Fields
  Örsan Yüksek, University of Oldenburg

- Turbulent Flow over Hills and a Call for Guidelines in Wind Tunnel Simulation
  Graciana Petersen, University of Hamburg

- Physical Modelling of a Wind Turbine
  Francesco Cuzzola, Meteorologisches Institut Hamburg

SESSION 5B – 10.00-11.00 – *Grid Integration of Wind Farms*

- A North Sea Super Grid for Offshore Wind Integration
  Til Kristian Vrana, NTNU

- Simulation of the Impact of Larger Offshore Wind Farm on System Stability
  Hui Guo, Otto-von-Guericke-University

- Dynamic Modelling of Wind Turbine and Power System for Fault Ride-through Analysis
  Fan Zhang, University of Strathclyde

- Large Scale energy storage for a 100% renewable electricity system in Germany
  Amany von Oehsen, Fraunhofer Institute for Wind Energy and Energy Systems Technology

SESSION 6A – 11.30-12.30 – *Wind Field Measurements and Simulations II*

- The 2D lid-driven cavity – Validation of CFD code to model non-Neutral Atmospheric
  Boundary Layer Conditions
  Tilman W. Koblitz, Risø DTU

- Forest Winds in Complex Terrain
  Ilda Albuquerque, GL Garrad Hassan

- Physical and Numerical Modelling of Flow over a Real Complex Terrain
  Domingo Muñoz-Esparza and Boris Conan, von Karman Institute for Fluid Dynamics

- Modelling of atmospheric boundary layer: Generation of shear profile in wind tunnel
  Tee Seong Yeow, Universidad Politécnica de Madrid

SESSION 6B – 11.30-12.30 – *Drive Train and Electrical Power Production*

- Efficiency of Wind Turbine Load Simulations with Specific Focus in Drive Train Dynamics
  Thomas Hecquet, Endowed Chair of Wind Energy

- The Effect of Wind Energy
  Ayobami Olanrewaju Makinde, Jubilee Comm

- Analysis of Switching Transients in Offshore Wind Parks with Focus on Prevention of Destructive Effects
  Amir Hayati Soloot, NTNU

- Worst Asymmetrical Short-Circuit Current
  Ivan Arana, DONG Energy

Poster Presentations

30th SEPTEMBER 2010

SESSION P1 – 11.15-11.45 – *Wind Field Measurements and Simulations*

- Flow Measurements in complex terrain using a 3D LIDAR Windscanner
  Nikola Vasiljevic, Risø DTU

- Lidar (Light Detection and Ranging) Measurement uncertainty in complex terrain
  Fernando Borbón Guillén, CENER

- Yaw Error Estimation Using Spinner Based LIDAR
  Knud Abildgaard Kragh, Risø DTU

- MCMC simulation of wind speed time series
  Jakov Krstulovic Opara, University of Split

- New Model Development Concerning Turbulence and Wakes
  Thomas Ternisien, CRES

- Assessing wind energy potential using the high resolution meso-scale model RAMS
  Nicolas Barranger, University of Athens

- Simulation and Prediction of Wakes and Wake Interaction in Wind Farms
  Søren J. Andersen, DTU

SESSION P2 – 15.15-16.00 – *Electrical Operation, Structural Design and Maintenance*

- State of the Art on Generator Technology for Wind Power Plants
  Zhang Zhaoqiang, NTNU

- Contribution to Study of Doubly-Fed Induction Generators: Operation under Network Disturbances
  Jean Patric da Costa, Fraunhofer IWES and University of Kassel

- A model based controller for Hybrid HVDC using in Offshore Wind Farms
  Raymundo E. Torres, NTNU

- Loads and dynamics in lattice tower support structures for offshore wind turbines
  Daniel Zwick, NTNU

- Mitigation of Aerodynamic and Hydrodynamic Induced Loads of Offshore Wind Turbines
  Tim Fischer, Endowed Chair of Wind Energy

- Novel coating system for rotating parts in offshore wind turbines
  Fahmi Mubarok, NTNU

1st OCTOBER 2010

SESSION P3 – 09.00-10.00 - *Rotor Design, Control and General Aspects*

- Root flapwise moment on downwind and upwind rotors with truss and tubular towers
  Marit Reiso, NTNU

- Models for global and local loads on wind turbines
  Roberto Longo, University of Genoa

- A numerical and analytical investigation of blade fatigue loads on the NREL 5MW wind turbine
  Mads Døssing, Risø DTU

- A Framework for Integrated Control System and Aeroelastic Design of Wind Turbines
  Fabiano Daher Adegas, Aalborg University

- Temporary Rotor Inertial Control of Wind Turbine to Support the Grid Frequency Regulation
  Bing Liu, NTNU

- Dynamic analysis of wind turbines from an integrated perspective
  Braulio Barahona Garzon, Risø DTU

- Space-related conflicts over offshore wind farms
  David Rudolph, University of Edinburgh

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