DEWEK 2010

10th German Wind Energy Conference

Preliminary Programme

ENGLISH

Opening Words by the Organisers

The German Wind Energy Conference will be held this year for the 10th time and has become even more important for the wind energy development and research community in Germany and abroad than before. Since the last DEWEK 2008 the North-West Region of Germany has gained particular importance through the strong offshore development in the German Bight. In addition to this regional industry concentration a wind energy R&D triangle has been set up by ForWind (Universities of Oldenburg, Bremen, Hannover), the newly founded Fraunhofer IWES in Bremerhaven and the long-established DEWI in Wilhelmshaven. The funding for wind energy research and industrial development was increased considerably by the German federal government and by the federal states to support the deployment of reliably operating offshore wind farms, which are considered more and more as an own national energy source independent of external political conflicts and interests.

With 215 paper proposals we received 27 % more than last time - obviously a consequence of the world-wide increased R&D efforts and of our decision to offer a conference concentrated on topics of interest for engineers and researchers. Because of the high number of papers received which had to be accommodated in two days of conference, we decided to have three parallel sessions also during the last section of the second conference day. In this way we were able to fit in a total of 105 oral presentations, ten more than before. We hope that all those who are not having an oral presentation will understand our position not to change the successful two-day format of the conference which finally guarantees the attendance of the always busy representatives from industry and research. With abstracts from 21 countries DEWEK 2010 again proves its international reputation as R&D event. We would like to thank the scientific committee for the difficult work to select from the high number of excellent papers those which will be held as oral presentations. Many papers are related to the offshore application of wind turbines and wind farms - an area of special challenge for all. With this focus the conference is very well placed in Bremen, because both, Lower Saxony and Bremen, invest strongly in their North Sea harbours to develop industrial locations for the offshore wind energy industry.

This high interest underlines that the DEWEK 2010 is really the technical/scientific market place for the technology transfer of the current on- and offshore wind energy developments. The ongoing size growth of wind turbines but also the efforts to increase the technical reliability brings new solutions, developments, test and research challenges. But the technical side of the wind energy development is only one part of the R&D field. Long term energy yield and short term power supply predictions by wind farms have at least the same importance for economically successful wind energy applications. Many research papers will deal with this part presenting solutions or first ideas how to diminish the uncertainties of the output prognoses.

The accompanying exhibition in the attractive Hanse Hall supports the transfer of information and offers the direct contact with companies and universities. Compared to previous DEWEK conferences, many new companies ordered a booth, demonstrating the growing interest in this very specific market place. Of course we offer again our interesting traditional technical excursion the day after the conference and also the dinner in the beautiful wine cellar of the historical Bremen town hall on the evening of the first conference day. With this large variety of interesting papers and events the DEWEK 2010 conference is an even better opportunity than ever to meet colleagues from industry and research institutions.

In this spirit we warmly welcome you in Bremen and wish you an interesting 10th DEWEK and many valuable new contacts.

Jens Peter Molly (Managing Director)

Cristina A.C. Molly (Organisation)

Bernd Neddermann (Scientific Committee)

Many Thanks to the Sponsors of DEWEK 2010

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Coffee Break 17.11.10

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Make a note in your diary now: HUSUM WindEnergy 2010, 21 – 25 September

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Next dates:
18 – 22 Sept. 2012
23 – 27 Sept. 2014

Registration DEWEK 2010 - 10th German Wind Energy Conference

Herewith I register for the 10th German Wind Energy Conference (DEWEK 2010).

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Conference Fees (incl. V.A.T. 19%) please tick:

Normal fees	**Registration and receipt of payment until / by 01.10.2010**	**after 01.10.2010**
Two-days admission (with conference dinner)	☐ EUR 589.-	☐ EUR 689.-
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Student fees *		
Two-days admission (without conference dinner & lunch)	☐ EUR 170.-	☐ EUR 225.-
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17.11.2010	☐ EUR 125.-	☐ EUR 175.-
18.11.2010	☐ EUR 125.-	☐ EUR 175.-

*** Full time students only. Maximum age is 30. Proof by presentation of a valid student ID.**

Please note that authors, too, will have to register for the conference and pay the appropriate fee.

Additionally to the conference I like to register for the following:

Extra Conference Dinner (accompanying persons):

☐ I order ..... conference dinner(s) **extra** for € 79.- (incl. V. A. T.) each.

Technical Excursion (for details see programme on www.dewek.de):

☐ I participate in the excursion on 19.11.2010 and pay additionally to the conference fee € 50.- (incl. V. A. T.)

Unless specified otherwise, the registration fee includes:

- Participation in the conference
- Book of abstracts & Conference proceedings on CD
- Coffee/tea during breaks, 2 lunches (not for students)

After receipt of your registration we will send you an invoice. Please note that the registration is valid - and will be confirmed by us - only after receipt of the full payment. The confirmation must be presented at the conference as proof of the payment, otherwise our staff at the conference check-in desk is instructed to charge the full conference fees. Any fees paid double will be refunded immediately upon receipt of payment at our account. **Early registration fees can be accepted only if the payment is received by us until/by 1.10.2010. If we have not received any payment from you by this deadline, your first invoice will be cancelled and you will get a new invoice for the higher conference fee.** All bank charges must be covered by the transmitter. A payment during the conference can be made only in the form of cash, ec-card or credit card (VISA or MasterCard). Payment for registration has to be settled in EURO. Cancellation fees and other conditions are specified in the programme.

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DEWEK 2010

17th - 18th November 2010
Congress Centrum Bremen (CCB)

Lectures
17.11.2010, Wednesday

08:00 **Registration in the Foyer of the Conference Hall**

Opening Session
Room 1: Borgward Saal
Chairperson: J. P. Molly

09:00 **Opening Address**
J. P. Molly, DEWI GmbH
Opening Words
Dr. Stefan Birkner, State Secretary in the Ministry of the Environment and Climate Protection of Lower Saxony
Up-to-date details see: www.dewek.de
10:30 **Coffee Break**

Session No. 1: General Offshore Research
Room 1: Borgward Saal, Chairpersons: M. Durstewitz, J. Kutscher

11:00 **RAVE - Joint Research Development and Testing at Alpha Ventus (E)**
M. Durstewitz, B. Lange, U. Krengel, Fraunhofer IWES
11:15 **Final Results of the Joint Project "Development of LIDAR Wind Sensing for the German Offshore Test Site" (D)**
A. Rettenmeier, M Hofsäß, Endowed Chair of Wind Energy, University of Stuttgart; M. Wächter, M. Kühn, J. Peinke, ForWind, Carl von Ossietzky Universität; T. Neumann, H. Mellinghoff, DEWI GmbH; Y. Käsler, S. Rahm, DLR, German Aerospace Center; B. Siegmeier, Multibrid GmbH; J. Rauch, German Federation of Windpower e.V. (FGW)
11:30 **One Year of Lidar Measurements at FINO1-Platform: Comparison and Verification to Met-Mast Data and a View to the Vertical Wind Profile above the Mast (D)**
A. Beeken, T. Neumann, B. Cañadillas, DEWI GmbH
11:45 **New Tasks for FINO1 – The Research Platform after Installation of the First German Offshore Wind Farm "Alpha-Ventus" and the Start of the RAVE Research Programm**
T. Neumann, A. Beeken, A. Westerhellweg, B. Cañadillas, DEWI GmbH; K. Herklotz, O. Outzen, Bundesamt für Seeschifffahrt und Hydrographie
12:00 **Greening Blue Energy (E)**
S. Luitjens, E.ON Climate & Renewables GmbH
12:15 **Discussion**
12:45 **Lunch Break**

Session No. 2: Wind Resource
Room 2: Kaisen Saal, Chairpersons: H.-T. Mengelkamp, K. Mönnich

11:00 **Austrian Wind Atlas and Wind Potential Analysis (E)**
A. Krenn, H. Winkelmeier, Energiewerkstatt, Austria; R. Cattin, Meteotest, Switzerland; H. Truhetz, Wegener Zentrum für Klima und Globalen Wandel, Karl-Franzens-Universität Graz, Austria; M. Biberacher, Operations Office Research Studios, Austria
11:15 **MEASNET Procedure „Evaluation of Site-Specific Wind Conditions" Released (E)**
M. Strack, on behalf of the Measnet Expert Group "Site Assessment", Deutsche WindGuard Consulting GmbH; D. Foussekis, CRES, Greece; E. Cantero, CENER, Spain; K. Mönnich, DEWI GmbH; N. G. Mortensen, Risø DTU, Denmark; S. Müller, Wind Consult; D. Ortiz, Barlovento, Spain; A. Guetschow, Windtest Kaiser-Wilhelm-Koog; F. Schmidt, Windtest Grevenbroich GmbH
11:30 **Means for Improving the Accuracy of Wind Resource and Energy Production Assessments (E)**
H. Schwartz, anemos-jacob GmbH
11:45 **Long-Term Wind Speed Trends in Germany (E)**
W. Winkler, GL Garrad Hassan, Oldenburg
12:00 **MM5-Wasp Coupling for EYA in Complex Topographical and Meteorological Conditions: The Case of Lake Turkana (Kenya) 300 MW Wind Farm (E)**
L. Claveri, DEWI GmbH; M. Burlando, F. Durante, DEWI Italy
12:15 **Discussion**
12:45 **Lunch Break**

Session No. 3: Monitoring
Room 3: Lloyd, Chairpersons: M. Krämer, N. N.

11:00 **Early Detection of Bearing Damages in Wind Energy Plants (D)**
B. Hacke, G. Poll, Inst. für Maschinenelemente Konstruktion und Tribologie, Leibniz Universität Hannover
11:15 **"Black Box" for Measuring Extreme and Fatigue Loads on Wind Turbine Components (D)**
J. Böcker, U. Kühne, G. Singh, Hochschule Bremerhaven; Institute for Wind Energy fk-wind; H. Hinrichs, Projekt GmbH
11:30 **Weak Point Analysis of Offshore Sensor Systems for Structural Health Monitoring (D)**
T. Heusinger von Waldegge, Inst. for Marine Resources (IMARE); J.-U. Jakomeit, Fraunhofer Institute for Wind Energy and Energy System Technology (IWES)
11:45 **Damage Identification at Offshore Wind Energy Converters Using the Multi-Parameter Eigenvalue Problem (E)**
R. Rolfes, G. Haake, J. Reetz, M. Häckell, Inst. of Structural Analysis, Leibniz Universität Hannover
12:00 **Structural Investigations and Monitoring Results on a Prototype of Offshore Wind Turbines of Multibrid M5000 Series (D)**
R. G. Rohrmann, S. Thöns, W. Rücker, S. Said, W. Schmid, Federal Inst. for Materials Research and Testing (BAM); S. Bicker, OWT Offshore Wind Technology GmbH
12:15 **Discussion**
12:45 **Lunch Break**

Session No. 4: Economics
Room 1: Borgward Saal, Chairpersons: P. Spengemann, N. N.

13:45 **The Modern Portfolio Theory applied to Wind Farms Financing (E)**
P. Chaves, P. Spengemann, K. Mönnich, DEWI GmbH
14:00 **Development of a Scoring Model for Wind Farm Portfolio Evaluation Based on Empirical Analysis (E)**
A. Boensch, L. Hoffmann, ENERTRAG Structured Finance AG
14:15 **Trends in Finance for Wind – Can ECA's and DFI's Fill the Gap Left by the Banks (E)**
E. Sejersen, Vestas Wind Systems A/S, Denmark
14:30 **Improving Instead of Repowering: A Technical, Ecological and Economic Approach (E)**
H. Seifert, Hochschule Bremerhaven, fk-wind; H. Bolte, T. Rotermund, Energiekontor AG; J. Kröning, DEWI - OCC GmbH
14:45 **Wind Turbine Blade Heating – Does it Pay? (E)**
R. Cattin, Meteotest, Switzerland
15:00 **Discussion**
15:30 **Coffee Break**

Session No. 5: Wind Modelling
Room 2: Kaisen Saal, Chairpersons: J. Schwabe, N. N.

13:45 **Dynamical Downscaling of Wind Fields for Wind Power Applications (E)**
H.-T. Mengelkamp, S. Huneke, J. Geyer, anemos Gesellschaft für Umweltmeteorologie mbH
14:00 **Wind Speed Reductions in and Wake Length of Wind Parks (E)**
S. Emeis, Karlsruhe Institute of Technology, Inst. for Meteorology and Climate Research
14:15 **Estimation of Zero Plane Displacement Heights in The Vicinity of a Forest (E)**
J. Junge, A. Westerhellweg, DEWI GmbH
14:30 **Uncertainties in Wind Power Measurements Under Offshore Conditions. A Large Eddy Simulation Study (E)**
B. Cañadillas, T. Neumann, DEWI GmbH
14:45 **Turbulence Intensity and High Wind Speeds above Complex Terrain: Measurements and CFD-Modelling (E)**
S. Bourgeois, Meteotest, Switzerland; H. Winkelmeier, Verein Energiewerkstatt, Austria; C. Meissner, WindSim, Norway
15:00 **Discussion**
15:30 **Coffee Break**

Session No. 6: New Developments
Room 3: Lloyd, Chairpersons: M. Kühn, N. N.

13:45 **Design of an Electromechanical Pitching System for Wind Turbines, Taking into Account Dynamic Effects (E)**
S. Mtauweg, B. Schlecht, Th. Rosenlöcher, TU Dresden, Inst. für Maschinenelemente und Maschinenkonstruktion

(D) = Lecture in German, (E) = Lecture in English

14:00 **Further Development of a 5 MW Turbine towards a 6.15 MW Turbine – Experience After One Year of Onshore Operation (D)**
B. Johannsen, J. Goesswein, REpower Systems AG

14:15 **Tube Roller Bearing Fights Slippage Risk at Fast Rotating Shafts of Wind Gearboxes (D)**
C. Hoffinger, Schaeffler Tech. Schweinfurt

14:30 **Development of the New Permanent Excitated Direct-Drive Train (D)**
M. Bergemann, J. Beyer, Schuler AG

14:45 **Superconducting Generator for Wind Turbines – Possible Nacelle Mass Reductions for Direct Drive Offshore Turbines (E)**
T. Zirngibl, TÜV SÜD Industrie Service GmbH; A. B. Abrahamsen, E. Seiler, Risø-DTU, Denmark; N. Mijatovic, DTU, Denmark

15:00 **Discussion**

15:30 **Coffee Break**

Session No. 7: Simulation Wind Turbine

Room 1: Borgward Saal, Chairpersons: J. Beurskens, R. Rolfes

16:00 **Possibilities of an Automatised Modelling Process to Generate and Analyse Reliable Flexible Multibody-System Models of Wind Turbines (E)**
Th. Rosenlöcher, B. Schlecht, Th. Schulze, TU Dresden, Inst. für Maschinenelemente und Maschinenkonstruktion

16:15 **Evaluation and Verification of CFD-Simulation Using OpenFOAM for Wind Turbines (E)**
B. Stoevesandt, J. Stander, N. Kirrkamm, J. Peinke, ForWind, Carl von Ossietzky University of Oldenburg

16:30 **Methodology and Results of Loads Analysis of Wind Turbines with Advanced Aeroelastic Multi-Body Simulation (E)**
D. Matha, S. Hauptmann, T. Hecquet, Endowed Chair of Wind Energy, Universität Stuttgart

16:45 **Consideration of Unsteady Inflow Conditions in Wind Turbine CFD Simulations (E)**
K. Meister, Th. Lutz, E. Krämer, Inst. of Aerodynamics and Gas Dynamics, University of Stuttgart

17:00 **Generic Generator Model for RMS Simulation of Wind Turbines with DFIG or Full Size Inverters (E)**
J. Fortmann, REpower Systems AG; C. Feltes, I. Erlich, University of Duisburg-Essen; S. Engelhardt, J. Kretschmann, Woodward SEG GmbH & Co. KG; M. Janssen, Converteam GmbH

17:15 **Discussion**

Session No. 8: Offshore Wind Conditions

Room 2: Kaisen Saal, Chairpersons: B. Cañadillas, S. Emeis

16:00 **Adaption of Turbulence Parameterization in Reynolds-averaged Wind Field Simulation Models to Offshore Conditions (E)**
R. Foreman, S. Emeis, Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research

16:15 **Application of a Large-Eddy Simulation Model to the Analysis of Flow Conditions in Offshore Wind Farms (D)**
G. Steinfeld, J. Tambke, J. Peinke, D. Heinemann, ForWind, Carl von Ossietzky University of Oldenburg

16:30 **Meso-Scale Wind Flow Simulations Over the North Sea (D)**
J. Tambke, ForWind, Carl von Ossietzky University of Oldenburg; K. Suselj, Jet Propulsion Laboratory - NASA, USA; Y.-M. Saint-Drenan, Fraunhofer IWES; J. A. T. Bye, School of Earth Sciences, The University of Melbourne, Australia; J.-O. Wolff, ICBM, Carl von Ossietzky University of Oldenburg

16:45 **Offshore Platform FINO 2 - Three Years of Wind Measurement (D)**
S. Müller, J. Schwabe, T. Kleinselbeck, WIND-consult GmbH

17:00 **Results from the FINO3 Wind Energy Research Platform in the North Sea: A 9 Months Comparison to Simultaneous FINO1 Data. (E)**
D. Kindler, GL Renewables Consulting & Engineering (WINDTEST Kaiser-Wilhelm-Koog GmbH)

17:15 **Discussion**

Session No. 9: Sensors & Radar

Room 3: Lloyd, Chairpersons: D. Kühnel, A. Reuter

16:00 **Development and Characterisation of Highly Resolving Wind Speed and Direction Sensors (E)**
H. Heißelmann, J. Puczylowski, M. Hölling, M. Wächter, J. Peinke, ForWind, Carl von Ossietzky University of Oldenburg

16:15 **Direction Sensitivity of Anemometers (D)**
H. Mellinghoff, O. Haack, DEWI GmbH

16:30 **Ice Detection by Multiplex Sensing (E)**
H. Seifert, M. Gontares, Hochschule Bremerhaven, Institute for Wind Energy fk-wind

16:45 **Radar Requirements for Wind Turbines in Accordance with International Recommendations (Claims of Eurocontrol and Impact on Permits) (D)**
A. Frye, EADS

17:00 **Active Obstacle Lighting with Primary Radar (D)**
T. Herrholz, ENERTRAG Windfeld Systemtechnik GmbH; K. Vangen, OCAS AS, Norway

17:15 **Discussion**

Poster Exhibition with Authors Present

Room 4: Foyer, Poster Session - 17:30-19:00

The authors will be available for discussion of their posters and answering of questions. A simultaneous translation is not available.

Conference Dinner

Location: Bremer Ratskeller - 20:00

Bremer Ratskeller, Am Markt, 28195 Bremen, Tel: 0421/321676

18.11.2010, Thursday

08:00 **Registration in the Foyer of the Conference Hall**

Session No. 10: Wind Power Forecasting

Room 1: Borgward Saal, Chairpersons: D. Heinemann, K. Rohrig

08:30 **Ad-Hoc Analysis of Mean Sea Level Pressure Observations to Enhance Shortest-Term Wind Power Predictions (E)**
N. Busch-Saleck, L. von Bremen, D. Heinemann, ForWind, Carl von Ossietzky University Oldenburg

08:45 **Four-dimensional Data Assimilation & its Application for Short-Term Wind Power Prediction (E)**
L. von Bremen, J. Jiang, D. Heinemann, ForWind, Carl von Ossietzky University Oldenburg

09:00 **Estimate Severe Offshore Wind Power Fluctuations for Better Grid Integration (E)**
L. von Bremen, N. Busch-Saleck, D. Heinemann, ForWind, Carl von Ossietzky University Oldenburg

09:15 **Using Ensembles for Large-scale Forecasting of Wind Power in a European SuperGrid Context (E)**
C. Möhrlen, WEPROG GmbH; J. U. Jørgensen, WEPROG ApS, Denmark

09:30 **Influence of Vertical Wind Shear on IEC and Langevin Power Curves (E)**
M. Wächter, T. Mücke, Ö. Yüksek, J. Peinke, ForWind, Carl von Ossietzky University Oldenburg

09:45 **Discussion**

10:15 **Coffee Break**

Session No. 11: Operation

Room 2: Kaisen Saal, Chairpersons: V. Köhne, N. N.

08:30 **Assessing the Impact of Serial Defects on the Performance of Offshore Wind Projects (E)**
R. E. Redfern, M. J. Gleeson, J. L. Phillips, GL Garrad Hassan, UK

08:45 **Simulation of Construction Supply Chains in Offshore Wind Energy (E)**
K. Lange, H. Schütt, Inst. of Shipping Economics and Logistics; R. Heidmann, Logistik Service Agentur

09:00 **Operation & Maintenance Cost Estimator - Estimate Future O&M Cost for Offshore Wind Farms (E)**
R. P. van de Pieterman, H. Braam, L. W. M. M. Rademakers, T. S. Obdam, Energy Research Centre of the Netherlands (ECN), The Netherlands

09:15 **Optimising Maintenance Data Management to Boost Turbine Efficiency (D)**
S. Faulstich, P. Lyding, B. Hahn, K. Rafik, Fraunhofer-IWES

09:30 **Wind Turbine Reliability Analysis (E)**
M. Lange, GL Garrad Hassan, Oldenburg; M. Wilkinson, GL Garrad Hassan, UK

09:45 **Discussion**

10:15 **Coffee Break**

(D) = Lecture in German, (E) = Lecture in English

Session No. 12: Operation Loads & Damping

Room 3: Lloyd, Chairpersons: C. Nath, B. Schlecht

08:30 **Enhancement of Wind Turbine Structural Damping by Using Passive, Active and Semi-Active Structural Control Devices for Tower Load Reduction (E)**
A. Rodríguez T., C. E. Carcangiu, I. Pineda, M. Martin, Alstom-Power Wind, Spain; T. Fischer, B. Kuhnle, M. Scheu, Endowed Chair of Wind Energy, Universität Stuttgart

08:45 **Active Damping of the Tower Side-to-Side Oscillation (E)**
D. Duckwitz, M. Geyler, Fraunhofer IWES

09:00 **Individual Pitch Control with Tower Side-to-Side Damping (E)**
F. Heß, G. Seyboth, Robert Bosch GmbH

09:15 **Load Analysis of Look-Ahead Collective Pitch Control Using LIDAR (E)**
D. Schlipf, T. Fischer, Endowed Chair of Wind Energy, Universität Stuttgart; C. E. Carcangiu, M. Rossetti, Alstom Wind S.L., Spain; E. Bossanyi, Garrad Hassan Ltd, UK

09:30 **PROTEST – Procedures for Testing and Measuring Wind Energy Systems, Drive Train Case Study II (E)**
H. Söker, O. Monux, DEWI GmbH; B.-M. Ehlers, F. Stache, SUZLON Energy GmbH; K. Smolders, J. Peeters, Hansen Transmissions International nv, Belgium; T. Hequet, Endowed Chair of Wind Energy, Universität Stuttgart

09:45 **Discussion**

10:15 **Coffee Break**

Session No. 13: Lidar

Room 1: Borgward Saal, Chairpersons: A. Beeken, A. Rettenmeier

10:45 **Introduction and First Results from Research Project for Testing Lidar Measurements at Great Hub Heights on a Semi-Complex Site (E)**
D. Callies, S. Hagemann, P. Kühn, B. Hahn, B. Lange, Fraunhofer-IWES

11:00 **Statistical Load Estimation Using a Nacelle-Based Lidar System (E)**
O. Bischoff, M. Hofsäß, A. Rettenmeier, D. Schlipf, Endowed Chair of Wind Energy, University of Stuttgart; B. Siegmeier, Multibrid GmbH

11:15 **Validation of a Dynamic Meandering Model with Near Wake Lidar Measurements (E)**
J. J. Trujillo, M. Kühn, ForWind, Carl von Ossietzky University Oldenburg; O. Bischoff, M. Hofsäß, A. Rettenmeier, D. Schlipf, Endowed Chair of Windenergy, University of Stuttgart

11:30 **Kinetic Energy Flux Measured by LIDAR and its Impact on Wind Turbines Power Performance. Onshore and Offshore Comparison (D)**
A. Bégué, B. Cañadillas, A. Beeken, T. Neumann, H. Mellinghoff, DEWI GmbH

11:45 **How to Gain Acceptance for Lidar Measurements (E)**
A. Albers, A. Wiard Janssen, J. Mander, Deutsche WindGuard Consulting GmbH

12:00 **Discussion**

12:30 **Lunch Break**

Session No. 14: Grid Integration

Room 2: Kaisen Saal, Chairpersons: B. Lange, J. Rauch

10:45 **WEC Technology beyond the Requirements of the German EEG 2009 (D)**
M. Schellschmidt, S. Adloff, S. Wachtel, ENERCON GmbH

11:00 **Improvement of Power System Dynamic Voltage Stability by Means of Controlling the Doubly-Fed Induction Generators with Ancillary Service Bonus Certificate (E)**
L.-J. Cai, J. Fortmann, REpower Systems AG; I. Erlich, Inst. of Electrical Power Systems, University of Duisburg-Essen

11:15 **An Improved Fault Ride-Through Capability for Grid Connected Doubly Fed Induction Generator Based Wind Turbines (D)**
C. Dziendziol, J. P. da Costa, T. Degner, Fraunhofer IWES; S. Heier, Kassel University

11:30 **Fault Ride Trough Tests Based on Low Voltage Measurements and Their Feed Back to the Medium Voltage Equipments (D)**
F. Santjer, R. Klosse, DEWI GmbH; J. Jahn, SMA Solar Technology AG

11:45 **Harmonic Current Emission of Wind Farms Exceeding the Limiting Values (D)**
F. Santjer, DEWI GmbH

12:00 **Discussion**

12:30 **Lunch Break**

Session No. 15: Rotor Blade I

Room 3: Lloyd, Chairpersons: H. Seifert, H. Söker

10:45 **Numerical Prediction of Airfoil Aerodynamics for Thick Profiles Applied to Wind Turbine Blade Roots (D)**
M. Wolf, A. P. Schaffarczyk, University of Applied Sciences Kiel; A. Jeromin, FEZ FH Kiel GmbH

11:00 **Lift Measurements in Turbulent Flow Conditions (E)**
J. Schneemann, P. Knebel, P. Milan, J. Peinke, ForWind, Carl von Ossietzky University Oldenburg

11:15 **Fixed Leading Edge Auxiliary Wing as a Performance Increasing Device for HAWT Blades (E)**
G. Pechlivanoglou, C. N. Nayeri, C. O. Paschereit, TU-Berlin HFI / ISTA

11:30 **Integration of a WT Blade Design Tool in XFOIL/XFLR5 (E)**
G. Pechlivanoglou, D. Marten, C. N. Nayeri, C. O. Paschereit, TU-Berlin HFI / ISTA

11:45 **Advanced Fatigue Damage Computation of a Rotor Blade Using a "Mixed Non-linear FEM and Super Element Approach" (E)**
A. Heege, J. L. Sanchez, P. Bonnet, SAMTECH Iberica, Spain; G. Adolphs, Owens Corning Technical Fabrics, Spain

12:00 **Discussion**

12:30 **Lunch Break**

Session No. 16: Offshore Foundation/Structures I

Room 1: Borgward Saal, Chairpersons: K. Kloske, P. Schaumann

13:30 **Feasibility of Monopiles for Large Offshore Wind Turbines (E)**
M. Seidel, REpower Systems AG

13:45 **Bending Tests on Grouted Joints for Monopile Support Structures (E)**
S. Lochte-Holtgreven, P. Schaumann, ForWind, Institute for Steel Construction, Leibniz University Hannover; F. Wilke, Bilfinger Berger Ingenieurbau GmbH

14:00 **Piled Foundations for Offshore Wind Turbines - Does Cyclic Soil Behaviour Matter? (D)**
F. Kirsch, Th. Richter, GuD Consult GmbH; W. Rücker, Bundesanstalt für Materialforschung und -prüfung

14:15 **Soil Response of Offshore Wind Turbines – Stiffness and Damping of Monopile Foundations (E)**
M. Rodenhausen, T. Fischer, Endowed Chair of Wind Energy, Universität Stuttgart; C. L. Thilsted, N. J. Tarp-Johansen, DONG Energy, Denmark

14:30 **Seabed Investigation for Offshore Wind Farm Foundations – Improving Data Quality and Prediction Reliability Through Advanced Multichannel Seismic Surveys (D)**
F. Meier, V. Spieß, T. Mörz, Fraunhofer IWES; H. Keil, T. Schwenk, Universität Bremen/MARUM

14:45 **Discussion**

15:15 **Coffee Break**

Session No. 17: Grid Technology

Room 2: Kaisen Saal, Chairpersons: S. Heier, F. Santjer

13:30 **Design and Operation Characteristics of Long Three-Core Submarine Cables (E)**
T. Dong, H. Brakelmann, University Duisburg-Essen; V. Waschk, nkt cables GmbH

13:45 **Grid Impedance Determination - Influence of Energy-Flow Direction (E)**
H. Langkowski, M. Jordan, T. D. Thanh, D. Schulz, Helmut-Schmidt-University Hamburg

14:00 **HVAC Grid Connection of Large Offshore Wind Farms (D)**
K. Messoll, S. Heier, University of Kassel

14:15 **BorWin1 – the First HVDC Grid Connection for Offshore Wind (D)**
G. Stark, ABB AG; B. Jacobson, B. Westman, J. Roos, ABB AB, Sweden

14:30 **Reactive Power Balance in Offshore Generation and AC Transmission System (D)**
B. Valov, Fraunhofer IWES; S. Heier, Universität Kassel

14:45 **Discussion**

15:15 **Coffee Break**

Session No. 18: Rotor Blade II

Room 3: Lloyd, Chairpersons: C. Kensche, A. van Wingerde

13:30 **Investigation on Fatigue Properties in Wind Blade Structural Composites with Fiber Misalignment (E)**
A. S. Barros, Tecsis Tecnologia e Sistemas Avançados LTDA, Brazil; M. C. Rezende, Divisão de Materiais - AMR/IAE, Centro Técnico Aeroespacial

(D) = Lecture in German, (E) = Lecture in English

- CTA, Brazil; E. Abramof, Laboratório Associado de Sensores e Materiais - LAS, Instituto Nacional de Pesquisas Espaciais - INPE, Brazil

13:45 **Fatigue Evaluation of Structural Bondings (E)**
R. Kickert, U. Weerts, O. Meister, Leichtwerk AG; M. Knops, REpower Systems AG

14:00 **Sub-Component Testing of Adhesive Bond Lines for Wind Turbine Blades (E)**
F. Sayer, A. Antouniou, A. M. van Wingerde, Fraunhofer IWES; F. Kleiner, M. Trusheim, Henkel AG & Co. KGaA

14:15 **Requirements Analysis for Automated Production of Rotor Blade Components (E)**
M. Rolbiecki, J. H. Ohlendorf, K.-D. Thoben, D. H. Müller, University of Bremen, BIK

14:30 **Sustainable Recycling of Rotor Blades in Cement Plant (D)**
E. Schmidl, S. Hinrichs, Holcim (Deutschland) AG

14:45 **Discussion**

15:15 **Coffee Break**

Session No. 19: Offshore Foundation/Structures II

Room 1: Borgward Saal, Chairperson: J. P. Molly, J. Kröning

15:45 **Integrated Simulation of the Repower 5 MW Offshore Wind Turbine With Jacket Support Structure Validated by Alpha Ventus Measurement Data (E)**
J. Dubois, P. Schaumann, Leibniz Universität Hannover; C. Böker, REpower Systems AG

16:00 **Different Approaches to Modelling Jacket Support Structures and Their Impact on Overall Wind Turbine Dynamics (E)**
D. Kaufer, T. Fischer, Endowed Chair of Wind Energy, University Stuttgart; F. Vorpahl, Fraunhofer-IWES; W. Popko, Risø-DTU, Denmark

16:15 **Load Analysis of the Upwind Jacket Reference Support Structure (E)**
T. Fischer, Endowed Chair of Wind Energy, Universität Stuttgart; W. Popko, J. D. Sørensen, Risø-DTU, Denmark; M. Kühn, ForWind, Carl von Ossietzky University Oldenburg

16:30 **Offshore Wind Turbines on TLPs – Assessment of Floating Support Structures for Offshore Wind Farms in German Waters (E)**
A. R. Henderson, K. Argyriadis, J. Nicholls, GL Garrad Hassan, Germany/UK

16:45 **Research at the First German Offshore Wind Park Alpha Ventus – RAVE Instrumentation and Sensor Data Processing of AV07 (E)**
D. Kühnel, T. Neumann, DEWI GmbH

17:00 **Discussion**

Session No. 20: Grid Management

Room 2: Kaisen Saal, Chairpersons: U. Focken, B. Neddermann

15:45 **Towards 100% Renewables and Beyond Power: The Possibility of Wind to Generate Renewable Fuels and Materials. (E)**
M. Sterner, C. Pape, Y.-M. Saint-Drenan, A. v. Oehsen, Fraunhofer Institute for Windenergy and Energy System Technology; M. Specht, U. Zuberbühler, Centre for Solarenergy and Hydrogen Research (ZSW)

16:00 **Energy Management Capabilities of Oil and Gas Platforms in the Norwegian Sea for Assisting Large Scale Off-Shore Wind Integration (E)**
D. Radan, Ø. Lund Bø, IRIS - Inter. Research Institute of Stavanger, Norway; H. G. Beyer, University of Agder, Norway

16:15 **Practical Experiences with Virtual Power Plant Operation in Germany (D)**
U. Focken, T. Klose, M. Lange, W. Krause, energy & meteo systems GmbH

16:30 **European Electricity Grids for Wind Integration in 2030 and 2050 (D)**
J. Tambke, L. von Bremen, M. Schmidt, G. Steinfeld, ForWind, University of Oldenburg; J. De Decker, 3E nv, Belgium; J.-O. Wolff, ICBM, University of Oldenburg

16:45 **Anemos.Rulez: Extreme and Ramp Event Alarming to Support Stability of Energy Grids (E)**
H.-P. Waldl, P. Brandt, Overspeed GmbH & Co. KG

17:00 **Discussion**

Session No. 21: Acoustics

Room 3: Lloyd, Chairpersons: H. Klug, N. N.

15:45 **Aerodynamic and Acoustic Design of Wind Turbine Airfoils with Trailing-Edge Flap (E)**
Th. Lutz, A. Wolf, IAG, University of Stuttgart

16:00 **Improved Wind Turbine Noise Prediction Tools for Low Noise Airfoil Design (E)**
M. Kamruzzaman, Th. Lutz, E. Krämer, IAG, University of Stuttgart

16:15 **Impact of Suction on Boundary-Layer and Noise Emission of Wind Turbine Airfoils (E)**
A. Wolf, Th. Lutz, W. Würz, E. Krämer, IAG, University of Stuttgart; O. Stalnov, A. Seifert, TAU, Tel-Aviv University, Israel

16:30 **New Hydro Sound Dampers to Reduce Underwater Pile Driving Noise Emissions (E)**
K.-H. Elmer, Neustadt, Germany

16:45 **Ear Training on Wind Turbine Noise**
P. Dutilleux, J. Gabriel, P. Dutilleux, DEWI GmbH

17:00 **Discussion**

Closing the Conference

Room 1: Borgward Saal

17:15 J. P. Molly, DEWI GmbH

Posters

Room 4: Foyer (without simultaneous translation)

1 Performance Verification

1.1 **Behaviour of Electrical Power and Rotor Loads on a Stall Regulated Wind Turbine with Change of Generators with Different Capacities**
R. Kumaravel, S. A. Mathew, CWET, India

1.2 **Turbine Evaluation Based on IRR Calculation for Windfarm Development & Importance of Micrositing**
R. Hamamcı, İ. Kuriş, E. Kıran, Eksim Yatırım Holding A.Ş.

1.3 **Estimation of Electricity Generation of a Wind Turbine of the Binalood Wind Power Plant Using Artificial Neural Network**
H. Sheikhani, Research Center of Khorasan Razavi Gas Company, Iran; M. Jamil, Materials and Energy Research Center, Iran

1.4 **Wake Losses in Wind Farms – Not only a Problem of the Flow Model**
H. Schwartz, anemos-jacob GmbH

1.5 **Experimental Investigation of the Dynamical Behavior of a Floating Wind Turbine Model**
S. Rockel, M. Hölling, J. Peinke, ForWind, Carl von Ossietzky University Oldenburg

1.6 **Wind Power Generation Energy Efficient Issues**
P. Costa, Instituto Politécnico de Viana do Castelo, Portugal; A. Carvalho, A. P. Martins, Universidade do Porto, Portugal

2 New Developments

2.2 **Advanced Surface Technology for Wind Turbines – What can be Learned from the Aviation Sector?**
V. Stenzel, Fraunhofer Institute for Manufacturing Technology and Applied Materials Research - IFAM

2.4 **Fast Dynamic Braking with Disk Brakes: Solution for Grid Codes**
U. Peters, J. Altemark, Svendborg Brakes A/S Deutschland

2.5 **Challenges in Applying Permanent Magnet (PM) Technology to Wind Power Generators**
P. Kurronen, The Switch, Finland; M. Haavisto, Magnet Technology Centre, Finland; J. Pyrhönen, Lappeenranta University of Technology, Finland

2.6 **Gearbox Protection Concept for Wind Turbines: New Mechanical Approaches to Prevent Undesired Gearbox and Bearing Loads**
T. Korzeniewski, PowerWind GmbH

2.8 **Repower 3.2M114 – The Next Evolutionary Step of Onshore Turbine Technology**
M. Baranowski, REpower Systems AG

2.9 **Boundary Layer Suction by Wind Turbine Blades**
B. S. Heinzelmann, P. U. Thamsen, Technical University of Berlin

2.10 **Game Changers Ahead – Newly Developed Epoxy Systems to Reduce Total Costs**
C. Scheuer, Hexion Specialty Chemicals GmbH

2.11 **New 1700V 3600A IGBT modules for high reliability Windpower applications**
B. Aydin, C. Corvasce, R. Schnell, L. Feller, ABB Switzerland Ltd, Switzerland

2.12 **New Developments in the Requirements on the Automation Technology for Wind Turbines**
V. Khachatouri, Bachmann electronic GmbH, Austria

2.13 **Automated Handling of Dry Carbon and Prepreg Materials for the Serial Production for Aeronautical and Automotive Applications**
H. Apmann, T. Flessner, A. Hemmen, M. Herkt, Premium AEROTEC GmbH

(D) = Lecture in German, (E) = Lecture in English

2.14 VERGNET GEV HP 1MW for Remote Areas and Weak Grids
P. Larsonneur, VERGNET, France

3 Simulation I (Wind Turbine)

3.1 Experimental & Numerical Study on an Advanced Vertical Axis Savonius Rotor
M. Jamil, S. Alizadeh, Materials & Energy Research Centre (MERC), Iran; S. H. Rasouli, Islamic Azad University, Iran

3.2 Simulink Implementation of Direct Vector Control – A Modular Approach on Wind Turbine Model Application
N. Rosmin, Universiti Teknologi Malaysia & Loughborough University, UK; S. J. Watson, Loughborough University, UK

3.3 Flow Control Using Plasma Actuators at the Root Region of Wind Turbine Blades
O. Eisele, G. Pechlivanoglou, C. N. Nayeri, C. O. Paschereit, TU-Berlin HFI / ISTA

3.4 Development of an Object-oriented Wind Turbine Simulation Software with Model Structure Dynamics: First Results Verified via Code-to-Code Comparison
M. Strobel, F. Vorpahl, C. Hillmann, R. Samlaus, U. Wihlfahrt, Fraunhofer-IWES

3.5 Reliability Testing: Why is a 240 Hours Test not Always Better than a 120 Hours Test? Monte Carlo Simulation and the Implication on Installation Schedules
J. D. Nielsen, Vestas Offshore A/S, Denmark

3.6 Parameter Estimation for Control Design Models Based on Operational Modal Analysis Techniques
M. Geyler, Fraunhofer IWES

3.7 Simulation of Unsteady Flow Field Around a Savonius Wind Turbine
N. Abbaspour, K. Abbaspourrsani, Islamic Azad University, Iran; H. Forozan, H. A. Salaryan, Maritime University of Nowshahr, Iran

4 Simulation II (Wind)

4.1 CFD Analysis of Flow Separation on Thick Airfoils with Fluidic Devices
G. Eschmann, cp.max Rotortechnik GmbH & Co. KG

4.2 Integration of Atmospheric Stability in Wind Power Assessment Through CFD Modeling
O. Texier, N. Girard, J. Degelder, MAIA EOLIS, France; T. Clarenc, C. Bezault, Meteodyn, France

4.3 A Guide to Vertical Extrapolation of Turbulence in Forests
H. S. Pedersen, W. Langreder, Suzlon wind energy A/S, Denmark

4.4 Investigation of the Atmospheric Boundary Layer Characteristics Over Complex Terrains
A. M. Loredo-Souza, J. M. L. Mattuella, M. G. K. Oliveira, Universidade Federal do Rio Grande do Sul - UFRGS, Brazil

4.5 A Study on Extreme Wind Speed in East Asia (2)
H. Kubo, R. Tanikawa, N. Hayasaki, T. Takagi, ITOCHU Techno-Solutions Corp, Japan; H. Mathumiya, HIKARUWIND Lab, Japan

4.6 Prediction of Extreme Wind Events by Utilisation and Application of WPEFI (Weather Pattern Extreme Forecast Index)
T. I. Petroliagis, M. Jacques-Coper, L. v. Bremen, D. Heinemann, ForWind, Carl von Ossietzky University Oldenburg; R. Hagedorn, ECMWF, European Centre for Medium-Range Weather Forecasts, UK

4.7 How to Construct a Reliable Ensemble Forecast
J. Dobschinski, A. Wessel, B. Lange, Fraunhofer IWES; L. von Bremen, ForWind, Carl von Ossietzky University Oldenburg

4.8 Operation Management for Coping with Wakes within Offshore Wind Farms
H.-U. Kobialka, V. Schulz, Fraunhofer IAIS; M. Splett, J. Bendfeld, University of Paderborn

4.9 Comparing WAsP and CFD Wind Resource Estimates
R. Pereira, R. Guedes, MEGAJOULE Inovação, Lda, Portugal; C. Silva Santos, ISEP – Engineering Institute of Porto, Portugal

4.12 Application of Mesoscale Modeling in Wind Resource Estimates
G. O. Chagas, C. C. Soares, Megajoule Inovação & Universidade de Aveiro, Portugal; R. André Guedes, Megajoule Inovação, Portugal

4.14 Turbulence Models In CFD Simulations of Wind Turbine Wakes
A. P. Petry, D. E. Ludwig, D. G. R. de Freitas Filho, Universidade Federal do Rio Grande do Sul, Brazil

5 Wind Resource/Potential

5.1 Wind Atlas – Wind Energy Resources on the Map of Finland
J. Latikka, B. Tammelin, FMI, Finland

5.2 Wind Potential in Essaouira (Morocco)
M. Enzili, CDER, Morocco; Y. Nachit, M. Aderni, M. Daoudi, University Hassan II, Morocco

5.3 Jarandaq Site Data Study for Wind Energy Development
A. Rezaeirad, Material and Energy Research Center, Iran; K. Abbaspoursani, N. Abbaspour, Islamic Azad University, Iran

6 Measurements

6.1 Calculation of the Heat Flux in an Area with Continental Climate for Adapting Model Parameters
T. Zirngibl, T. Arnold, TÜV SÜD Industrie Service GmbH

6.2 Analysis of Extreme Wind Conditions Based on Real Wind Measurements and Verification via Existing Models
T. Zirngibl, S. Gresser, TÜV SÜD Industrie Service GmbH

6.3 The Growing Importance of Measurement Solutions in Wind Energy
A. Schäfer, Hottinger Baldwin Messtechnik GmbH (HBM)

6.4 Modern Methods for the Detection of the Wind Potential - The Growing Market Demands Adapted Measuring Technology -
F. Goroncy, Age of Wind AG

6.5 Vestigio Venti - On the Trail of the Wind Development of a Method for the Detection and Classification of Wind Flows and Their Potential Impact on Wind Energy Converters
J. Liersch, Key Wind Energy GmbH; A. F. Raab, Technical University of Berlin; F. Goroncy, Age of Wind AG

6.6 Wind Farm Siting in an Industrial Zone: Using a Wind Lidar for Turbulence Measurement and Resource Assessment
R. Lemoine, 3E, Belgium

6.7 Intermittent Structures in Atmospheric Wind Fields
Ö. Yüksek, T. Mücke, J. Peinke, ForWind, Carl von Ossietzky University Oldenburg

6.8 Seasonal Correction of Short-term SODAR and LIDAR Measurements for Use in Energy Yield Assessments of Wind Farms
K. Görner, A. Westerhellweg, DEWI GmbH; S. Brillet, VALOREM, France

6.9 Rotor Unbalance Measurements at Wind Energy Converters Compared to Vibration Measurements according to VDI3834
M. Melsheimer, A. Donth, A. Grunwald, C. Heilmann, BerlinWind GmbH

7 Grid Integration, Storages

7.1 Future Challenges of Grid Integration
L. M. Lobato, A. Molina, Energy to Quality, Spain

7.2 The Role of the Different Forecasts Used in Combined Renewable Power Plants
K. Lesch, F. Schlögl, Fraunhofer-IWES

7.3 Provision of Tertiary Control by a Regenerative Virtual Power Plant
M. Speckmann, K. Direkvuttikul, Fraunhofer-IWES

7.5 European Volatility Analysis of Wind Power for Large Scale Grid Integration
J. Weinem, T. Sperling, EuroWind GmbH

7.6 Fulfilment of the Most Demanding Grid Connection Requirements with a Modern DFIG Wind Turbine Technology
M. Kosbab, REpower Systems AG

7.7 Balancing Feed-in Fluctuations of Offshore Wind Farms with Biogas Fired Turbines
J. Bendfeld, M. Tigges, M. Splett, University of Paderborn / WUZ

7.8 Wind Park Electrical Model for a Real-time Park Controller Test Bed
M. Hau, M. Geyler, Fraunhofer-IWES

7.9 The Role of Wind Energy in a 100% Renewable Energy Based Power Supply by 2050
H. Lehmann, K. Müschen, C. Vollmer, U. Kaulfersch, Umweltbundesamt

7.10 Power Output Characteristics of Offshore Wind Farms – Modelling of Feed-in Fluctuations at German Offshore Wind Farm Locations
M. Splett, J. Bendfeld, University of Paderborn / WUZ

7.11 Variation of Dynamical Grid Characteristics Influenced by Wind Energy (Offshore & Onshore)
M. Fette, R. Lüttig, System & Dynamik Consultancy; J. Bendfeld, M. Splett, University of Paderborn / WUZ

7.12 Simulation Model and Investigation of DFIG Integration in Weak Networks during Unbalanced Voltage Conditions
J. P. da Costa, S. Heier, Kassel University; F. Gafaro, T. Degner, Fraunhofer-IWES; H. Pinheiro, Federal Univ. of Santa Maria, Brazil

(D) = Lecture in German, (E) = Lecture in English

7.13 **Electric Vehicles as Accelerators for Offshore-Expansion?**
J. Gabriel, M. Buchmann, Bremer Energie Institut

8 Operational Experiences

8.1 **Safely Achieving Installation Preloads for Screwed Connections per DIN 18800 with the DISC™ "Reaction Disc" from HYTORC – Which Makes Nearly Maintenance-free Screwed Connections Possible.**
P. Junkers, HYTORC-S a division of Barbarino & Kilp GmbH

8.2 **Integrated Offshore Monitoring System**
B. van Leersum, ATO, The Netherlands

8.4 **Proactive Maintenance of Offshore Wind Farms**
V. Schulz, H.-U. Kobialka, Fraunhofer IAIS; J. Bendfeld, M. Splett, Univ. of Paderborn / WUZ; M. Fette, R. Lüttig, System & Dynamik Consultancy

8.5 **Wind Power Forecasting Considering Icing**
R. Oechslin, G. Mayr, University of Innsbruck, Austria; S. Dierer, R. Cattin, Meteotest, Switzerland

8.6 **Cold Climate Wind Energy Outlook**
M. Durstewitz, Fraunhofer-IWES; I. Baring-Gould, NREL, United States; T. Laakso, Pöyry Energy Oy , Finland; R. Cattin, Meteotest, Switzerland; A. Lacroix, Natural Resources Canada; G. Ronsten, WindREN AB, Sweden; L. Tallhaug, Kjeller Vindteknikk AS, Norway; T. Wallenius, E. Peltola, VTT, Finland; A. Krenn, H. Winkelmeier, Energiewerkstatt Verein, Austria

9 Offshore Turbine

9.1 **Delivering on the Offshore Ambitions – The Vestas Strategy**
B. Mørup, Vestas Offshore, Denmark

9.3 **Methodological Approach for a Systematic Analysis, Evaluation and Optimization of Operation and Maintenance Processes within an Offshore Wind Farm - SystOp Offshore Wind -**
M. Seyfert, S. Greiner, H. Albers, Hochschule Bremen

9.5 **Characterisation of Soil Properties under Cyclic Loading**
J. Hebig, T. Mörz, Fraunhofer IWES; S. Kreiter , B. Ossig, MARUM - Center for Marine Environmental Sciences / FB05 University Bremen & GEO-Engineering.org GmbH

10 Offshore Conditions

10.1 **Wave Measurements for Offshore Wind Power Work and Safety**
J. Bendfeld, M. Splett, University of Paderborn / WUZ

10.2 **5 Years Offshore Metmast Amrumbank West**
J. Bendfeld, M. Splett, University of Paderborn / WUZ

10.3 **Functional Design for an Offshore Metmast**
J. Bendfeld, M. Splett, University of Paderborn / WUZ; J. Krieger, Thales Instruments GmbH

10.4 **Underwater Operational Noise Measurements in the Offshore Wind Park alpha ventus, Project Description and First Results**
M. Benesch, H. van Radecke, University of Applied Sciences Flensburg

10.5 **Sediment Spill during Installation of Offshore Wind Farms**
F. Ladage, O. Stoschek, E. Precht, DHI-WASY

10.6 **Reliable Weather Window Statistics for Installation and Service Planning of Offshore Wind Farms**
G. Wolken-Möhlmann, B. Lange, Fraunhofer IWES

10.7 **Impact of Neighbouring Wind Farm Wakes on Energy Yield of Offshore Wind Farms**
A. Neubert, A. R. Henderson, J. Clayton, W. Schlez, GL Garrad Hassan, Germany / UK

10.8 **Results of Underwater Sound Research Projects Focussed on Construction Noise Caused by Offshore Wind Farms**
J. Gabriel, T. Neumann, DEWI GmbH; T. Grießmann, J. Rustemeier, Institut für Statik und Dynamik, Univ. Hannover; K. Betke, Institut für technische und angewandte Physik GmbH (itap); Kai Herklotz, Bundesamt für Seeschifffahrt und Hydrographie (BSH)

10.9 **Comparison of Turbulence Spectra Derived from Lidar and Sonic Measurements at the Offshore Platform FINO1**
B. Cañadillas, A. Bégué, A. Beeken, T. Neumann, DEWI GmbH

10.10 **see Session 05**

10.11 **Direction Dependency of Offshore Turbulence Intensity in the German Bight**
A. Westerhellweg, B. Cañadillas, T. Neumann, DEWI GmbH

10.12 **Horizontal Correlation of the Wind Flow Within the Region of an Offshore Wind Farm – PDF Studies Based on LES Data**
T. Neumann, B. Cañadillas, DEWI GmbH

10.13 **Oceanographic Observations at FINO1 and the Offshore Wind Farm "alpha ventus"**
J. G. Fischer, K. Herklotz, C. Senet, O. Outzen, R. Hahn, Federal Maritime and Hydrographic Agency (BSH)

11 Monitoring

11.1 **High Availability of the IT Communication Network in an Offshore Wind Park**
Z. Marciniak, MARC Systems GmbH

11.2 **Potential Cost of the IT Infrastructure Damages in an Offshore Wind Park**
Z. Marciniak, MARC Systems GmbH

11.4 **Robust Control of Wind Turbine Systems with Limited Communication Capacity**
H. R. Karimi, University of Agder, Norway

11.5 **Classification of Wind Action and Power System Disturbance Using Wavelet Transformation and Pattern Recognition Techniques**
J. Mirsada, S. Avdakovic, A. Lukac, M. Music, PE Elektroprivreda of Bosnia and Herzegovina, Bosnia and Herzegovina; A. R. Khatib, University of Hail, Saudi Arabia; A. Nuhanovic, M. Kusljugic, University of Tuzla, Bosnia and Herzegovina

11.6 **Advanced Technologies for Condition Monitoring**
U. Oertel, S. Biehl, H. Fritsch, my-sen GmbH

11.7 **Vibration Analysis for Structures of Offshore Wind Energy Plants**
P. Kraemer, C.-P. Fritzen, University of Siegen

11.8 **Results and Experience from the Research Project IMO-WIND**
W. Rücker, R. G. Rohrmann, S. Thöns, V. Trappe, W. Habel, Federal Institute for Materials Research and Testing (BAM); C.-P. Fritzen, University Siegen

12 Others

12.1 **Innovative Financing Model for Small Utilities Regarding Renewable Energies**
C.-E. Gärtner, BVT

12.2 **Mixed Wind Farm and Solar Power Plant Portfolio – Risk Analysis and Sensitivity Study**
H.-T. Mengelkamp, D. Bendel, anemos Gesellschaft für Umweltmeteorologie mbH

12.3 **Wind Turbine Technology in India and its Impact**
R. Kumaravel, S. A. Mathew, Centre for Wind Energy Technology, India

12.4 **Offshore Consulting Experiences**
B. Quader, Hanseatic Power Cert; A. Behrens, 8.2 Consulting AG

12.6 **Acoustics of Wind Farm Projects in France under the Framework of ICPE**
P. Dutilleux, DEWI GmbH

12.7 **Maximum Yield from Symmetrical Wind Farm Layouts**
W. Schlez, A. Shah, A. Neubert, GL Garrad Hassan Germany

12.8 **A New Look on Wind Energy in Brazil**
M. A. G. Drummond, J. H. G. Lima, S. F. Silva, Eletrobras, Brazil

12.9 **Meteorological Explanation of Wake Clouds at Horns Rev**
S. Emeis, Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research

19.11.2010, Friday

Excursion

On 19 November, the day after the conference, we offer in our traditional one-day excursion a visit of a 5 MW wind turbine, offshore foundation manufacturers and the production facility of a wind turbine manufacturer.

More details of the excursion will be published soon on the conference web site under the menu item "Excursion".

08:30 - 18:00	Excursion by bus to visit different locations in Bremerhaven and Cuxhaven
Price:	50.- € (incl. V. A. T. / lunch included)

For booking please use the conference registration form. Bookings during the conference can only be accepted if the excursion is not fully booked. If there are not enough participants, the excursion will be cancelled and the money refunded.

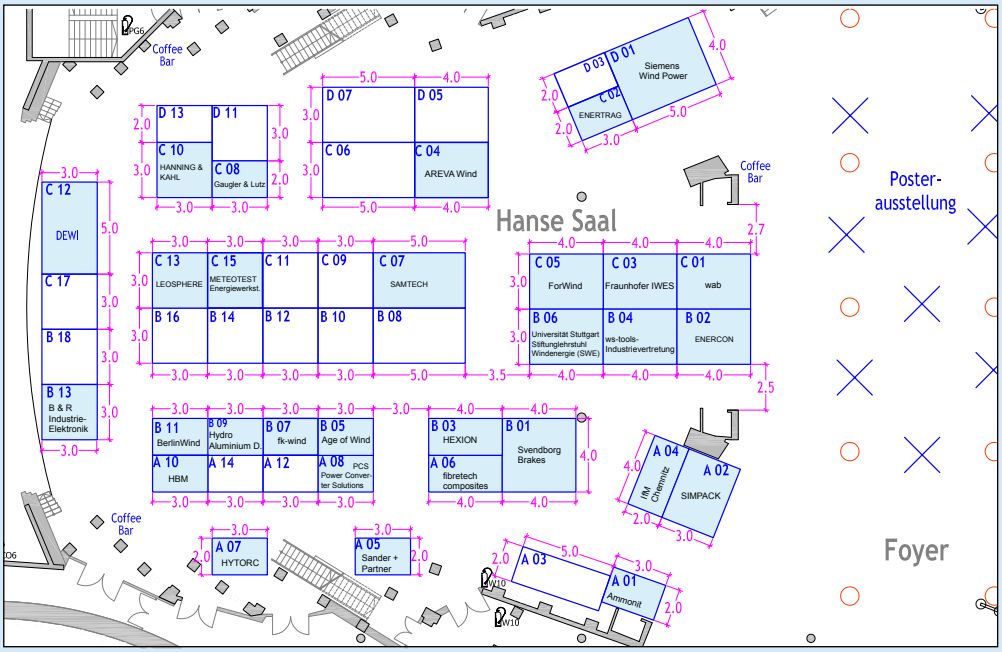

Fig. 1: Floor plan of the DEWEK 2010 exhibition

DEWEK 2010

10th German Wind Energy Conference

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- ☐ 46,00 EUR / m² plus 19% V.A.T. (for research institutes and universities, space only)

The exhibition in the „Hanse Saal“ is accessible during the whole time of the conference for all participants and visitors

Yes - we order a booth area at the DEWEK 2010 of: _____m² **(min. 6 m²)**

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