DEWEK 2015
19 / 20 May 2015
Bremen, Germany

12th German Wind Energy Conference

Program and Registration
Wind power is the workhorse of the German Energiewende (energy transition). It accounts for every third kilowatt hour of electricity generated from renewable energy sources in Germany. Wind energy thus made a significant contribution towards achieving last year’s record level of 27.8 percent of renewables in our electricity mix. For the first time, more electricity was generated from solar, wind, hydropower and biomass than from lignite. It is our intention to ensure that this positive trend continues, especially by making more use of offshore wind energy and by developing further suitable onshore sites for wind energy.

Last year’s amendment of the Renewable Energy Sources Act (EEG) marked an important step forward for wind energy. With annual expansion corridors of 2,500 MW for onshore wind plus repowering, and of 800 MW for offshore wind and the extension of the compressed-tariff model, we are securing the home market of the German wind industry for the long term. We are thus responding to the special importance of the wind sector in terms of energy, structural and industrial policy. Wind power technology has developed into a showcase of German industrial performance and has created thousands of new jobs.

If we are to make full use of the potential, however, the wind industry will now need to play its part as well. We need further improvements in the cost efficiency both of investments in and of the operation of wind turbines, as well as a greater contribution towards energy and grid security, and more research and development to achieve this. This is also the aim of the funding provided towards energy research by the Federal Ministry for Economic Affairs and Energy. The key challenges here are to improve the yield and the reliability of wind turbines over a period of more than 25 years.

A major factor in the continued expansion of wind energy will be the integration of the electricity into the public electricity grids. We need more research into the grid connection of offshore wind farms, load and production management, wind-specific aspects of energy storage and the improvement of wind forecasts.

German companies, universities and research institutes are among the global leaders in the field of wind energy technology. Through their intensive cooperation, they are helping to secure access to international markets. The German wind industry is competing successfully with specific solutions for the deep-sea application of wind turbines, for rotor blade and turbine concepts for cold climates, and for the environmentally compatible design of turbines and installation processes. The Economic Affairs Ministry is giving intensive backing to these efforts, with a view to achieving a high level of value added in Germany whilst also reducing the industry’s dependency on the domestic market by boosting the ratio of exports.

An exchange of experience between wind turbine manufacturers and component suppliers, universities and research institutes is of great importance.
for a successful development of wind energy. The large number of international participants and the wide range of conference topics are proof of DEWEK’s position as a leading wind energy conference.

I wish all participants at DEWEK 2015 an interesting and successful conference.

Yours sincerely,
Sigmar Gabriel
Federal Minister for Economic Affairs and Energy

WELCOME ADDRESS
BY OLAF LIES

Dear Participants of DEWEK 2015,
since the first DEWEK, already 23 years ago, wind energy development has experienced rapid growth. Whereas in 1993 the wind energy capacity installed world-wide amounted to just about 3,000 MW, in 2014 4,750 megawatts of new capacity were installed onshore in Germany alone. Additionally, offshore wind energy in Germany reached an installed capacity of approximately 1,400 MW by the end of the year. These figures show that wind energy has evolved from a marginal phenomenon to an important part of our energy supply system.

Lower Saxony with its many wind-rich sites in coastal areas has a significant share in this development. Approximately one quarter of the wind energy capacity installed in Germany is located in this federal state. The continued development of wind energy onshore and offshore, will strengthen the particular role of Lower Saxony in the energy transition. Wind energy plays a key role in making the energy transition a success, because only by making adequate use of existing potential, Germany will be able to achieve its energy and climate targets. The development of wind energy also has contributed significantly to the establishment of new companies in the region and has developed into a success story particularly in regions previously regarded as economically underdeveloped. In 2013 the number of people employed in Lower Saxony in the field of renewable energies was 55,000, of which 32,000 jobs were created by the wind industry.

The global new investment in renewable energies in 2013 was USD 250 billion minimum. By 2035 global investment in the supply of power and heat from renewable energies is expected to double. Therefore the energy transition in Germany and the global growth in renewables offer excellent economic and employment-related opportunities for Lower Saxony. For a further successful development of wind energy it will be important to continue reducing the costs of power generation, to improve the reliability of wind turbines and to advance system integration. Offshore wind energy, although still rather expensive in comparison with other renewable energy sources, can contribute to system stability and the security of energy supply due to a high number of operating hours and full-load hours.

DEWEK as a forum for exchanging ideas and networking for experts and stakeholders from research and industry has played an important part in the further development of wind energy for many years.

I wish all participants of DEWEK 2015 a successful conference with interesting discussions and valuable impulses for their work.

Yours sincerely,
Olaf Lies
Minister for Economic Affairs, Labour and Transport of Lower Saxony

WELCOME ADDRESS
BY DR. JOACHIM LOHSE

The 12th German Wind Energy Conference DEWEK on 19 and 20 May 2015 will once again bring a large number of experts from the field of wind energy research and development to Bremen, which reflects the high priority attached to wind energy in the federal state of Bremen.

Since the beginning of the nineties, the city-state of Bremen has been supporting the development of wind energy. Favorable conditions were established for the use of onshore wind energy and for attracting companies of the wind industry to the region. Today we can see the results of the political decisions and framework established during the past 20 years:

Bremen and the surrounding region have evolved into a center for wind energy. Numerous companies have set up business in the area and developed an excellent network. The University of Bremen and the University of Applied Sciences Bremerhaven have established a research infrastructure that is renowned nationally and internationally.

The use of wind energy also has developed rapidly. In 2014 Bremen was the federal state with the largest installed wind energy capacity in relation to its land area. In numbers of wind turbines installed in relation to area in 2014, Bremen came close behind the top-ranking state of Schleswig-Holstein. In 2011, the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES) established a potential of approximately 200 megawatts of wind energy capacity, 80% of which had already been developed by the end of 2014. For a densely populated city state with a small land area these are excellent results.

These figures also show, however, that there are only very few areas left that can be used for wind energy in future. The focus therefore will be on the repowering of existing wind turbines and the use of sites in or near industrial areas.

Offshore wind energy on the other hand has a much larger potential and has been supported by the state of Bremen for many years. The Offshore Terminal Bremerhaven (OTB) scheduled for completion within the next few years will provide another strong impetus for the energy transition and the growth of the wind energy sector. In 2014 the 258 offshore wind turbines...
installed in the German North Sea and Baltic Sea exceeded for the first time the total capacity of one gigawatt. Bremen is following this development with keen interest and pride and is relying on wind energy – onshore and offshore – as a means to achieve the energy transition.

The compromise achieved in the reformation of the Renewable Energy Sources Act (EEG) after an unnecessarily great deal of back and forth, has established a reliable foundation for the further development of wind energy. Wind energy will continue to play a leading role in the energy transition.

I am sure that DEWEK 2015 once more will give new momentum to the further development of wind energy technology. I wish the conference every success and all delegates a pleasant stay in Bremen.

Yours sincerely,
Dr. Joachim Lohse
Senator for Environment, Urban Development and Transportation of the Free Hanseatic City of Bremen

OPENING WORDS
BY THE ORGANIZERS

2014 has been a record year for wind energy in Germany. The new installed capacity of 4,745 MW onshore and 1,437 MW offshore marks a growth rate never reached before and underlines the importance of the German wind energy market, also on an international level. This development is to a great deal due to the nuclear disaster 2011 in Fukushima, Japan, after which Germany decided to opt out of nuclear power and to initiate a turnaround in energy policy. Throughout Germany new designated areas for wind energy use were assigned, and the development of these new wind farm areas is reflected by the current figures of new installations. A significant growth of wind energy is also to be expected for 2015 and 2016. This development is accelerated by the efforts of the market players to make use of the available sites before the implementation of the planned tendering system in 2017.

This fundamental system change of promoting wind energy in Germany and its perspectives for the wind industry in Germany, will also be an important topic at the DEWEK on 19/20 May 2015 in Bremen. Therefore, in addition to the traditional sessions with top-class technical papers, the organizers have included a panel discussion in the DEWEK program, on the first conference day, at which the subject „EEG 3.0 / Tendering System“ will be discussed with key players of the industry.

As always, the exchange of specialist knowledge on current topics in the field of wind energy research and application will be in the focus of the 12th German Wind Energy Conference DEWEK 2015. The fact that the DEWEK has established itself as an internationally renowned technical-scientific forum for wind energy experts is shown once more by the high number of 200 abstracts submitted for the conference.

Quite a number of contributions deal with Remote Sensing Measurements, especially LiDAR measurements for onshore and offshore wind energy sites. In view of the growing dimensions of wind turbines, simulation and testing of rotor blades are also becoming more important. Furthermore, DEWEK 2015 features special sessions dealing with New Developments, Operational Experiences und Grid Integration.

Traditionally the two days of the DEWEK are also an excellent opportunity to meet colleagues from universities and research institutes as well as engineers and business partners from the industry. The accompanying exhibition where companies and research institutes present their products and services offers the chance to discuss technical details or simply have a chat with colleagues of other companies. With presenters and delegates from 20 countries the conference is also an ideal platform for keeping up-to-date with the latest developments in other countries.

To relax after a day of intensive talks and discussions, enjoy the conference dinner in the beautiful wine cellar of the historical Bremen Town Hall. Good food accompanied by drinks and live music will turn the evening into a perfect get-together at the end of the first conference day. In this spirit we warmly welcome you to Bremen and wish you an interesting 12th German Wind Energy Conference and many valuable new contacts and insights.

Francisco Martinez
Managing Director

Jens Peter Molly
Managing Director

CONFERENCE PROGRAM
GERMAN WIND ENERGY CONFERENCE DEWEK 2015

Tuesday and Wednesday 19/20 May 2015,
Congress Centrum Bremen (CCB)

As always, the duration of the German Wind Energy Conference is restricted to two days, allowing three sessions held in parallel to present 100 papers, while still leaving enough time for discussions during the sessions. Parallel sessions were planned in such a way that DEWEK 2015 participants will have the opportunity to attend as far as possible lectures dealing with similar subject areas. The conference language will be English and German in all sessions with simultaneous translation.

The program of the DEWEK 2015 consists of a total of 100 oral presentations in 20 thematic sessions, during which 5 oral presentations each will be given. Since the length of the lectures is restricted to 15 minutes, about 30 minutes per session are left for discussions. Apart from the oral contributions, about 100 contributions will be presented as posters in the Foyer (Room 4). The poster area will be open during the entire conference, to enable participants to have a look at the posters at any time. Additionally, there will be a special poster session on Tuesday, 19.05.2015, at 17:30 h, during which the authors will be present to discuss their work with the experts interested. The beer reception taking place in the Foyer at the same time is a good opportunity for networking with the other participants.
English/German Simultaneous Translation During the Conference
The conference languages will be English and German with simultaneous translation, but the written papers and posters, as well as all other publications will be in English only. The oral presentations are marked in the final program according to the language spoken by the speaker so that the participants will have the chance to prepare themselves with the headphones in advance. A simultaneous translation during the poster session is not available.

DEWEK 2015

Panel Discussion: EEG 3.0 – TENDERING SYSTEM

Session 7, Wednesday, 19 May 2015
Join a panel discussion in the afternoon of the first conference day with the subject “EEG 3.0 – Tendering System”! Discussing the tendering system planned under the EEG 3.0, which causes some concern among the wind industry because of the possible consequences of such a fundamental system change. The panel discussion moderated by Andreas Neumann of Radio Bremen will address the most important aspects of a German tendering system and also present the successful auction model in Brazil. Competent panelists from the wind industry and government as well as a representative of the Brazilian government institution EPE have been invited and will guarantee an interesting and informative discussion. For more details see page 14.

DEWEK 2015 EXCURSION

Thursday, 21 May 2015:
Technical Excursion to Interesting Wind Power Locations
On 21 May, the day after the conference, we offer our traditional one-day excursion to interesting wind power locations. The first destination has already been defined, it is the “Dynamic Nacelle Testing Laboratory” of Fraunhofer IWES in Bremerhaven. Further destinations in Bremerhaven/Cuxhaven will follow and will be published on dewek.de as soon as more information is available.

Price: € 60.- (incl. V. A. T./ lunch included)

For booking please use the conference online registration. 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.

Departure: 08:30 hrs
Return: 18:00 hrs

Details about the “Dynamic Nacelle Testing Laboratory”
- Prime mover: 10 MW Twin Direct Drive
  (15 MW overload capability up to 6min.)
- Artificial grid: 44 MVA converter capacity
- Measurements: over 600 synchronous, high-defintion measurements channels

DEWEK 2015 EXHIBITION

Tuesday and Wednesday, 19 / 20 May 2015
The conference will be accompanied by an exhibition in the “Hanse-Saal” of the Congress Centrum Bremen opened on 19 May, 8:00 h. The exhibition will be open during the whole two days of the conference. Admission to the exhibition is free.
The expected number of 35 exhibitors documents the great interest of wind turbine suppliers, certification bodies, research institutes, service providers, project developers and component suppliers in this accompanying exhibition. The exhibition offers a good opportunity for an active exchange of information between exhibitors and conference participants, an important feature of each technical/scientific event. Our foreign guests in particular will welcome the possibility to make contact with the various suppliers and scientific institutions of the German and international wind energy market.

LOCATION OF ROOMS
IN THE CONGRESS CENTRUM BREMEN
PROGRAM STRUCTURE

19.05.2015, TUESDAY

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<td>11.00 - 12.45</td>
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<td>2. Site Assessment and Economic Viability</td>
<td>3. Operational Experiences</td>
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20.05.2015, WEDNESDAY

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LECTURES

19.05.2015, TUESDAY

08:00 Registration in the Foyer of the Conference Hall

OPENING SESSION

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

09:00 Welcome
J. P. Molly, Managing Director, UL International GmbH (DEWI)
F. Martinez, Managing Director, UL International GmbH (DEWI)

Opening Words
Olaf Lies, Minister for Economic Affairs, Labour and Transport of Lower Saxony

Germany’s Research Programme for Renewable Energy
Dr. Georg Menzen, Federal Ministry for Economic Affairs and Energy (BMWI)

10:30 Coffee Break

SESSION NO. 1: NEW DEVELOPMENTS

Room 1: Borgward Saal
Chairpersons: N. N.

11:00 Tuned Mass Dampers for Application in Onshore and Offshore Wind Turbine Towers (D)
K.-H. Hanus, S. Glanzner, ESM Energie- und Schwingungstechnik Mitsch GmbH

11:15 Multidisciplinary Optimisation of a Slip Synchronous PM Generator (SSPMG) (E)
J. N. Stander, G. Venter, M. J. Kamper, Stellenbosch University, South Africa

11:30 Development of a Medium Scale Research HAWT for Inflow and Aerodynamics Research in the Large Wind Tunnel of TU Berlin (E)

11:45 Design and Wind Tunnel Testing of a Leading Edge Slat for a Wind Turbine Airfoil (E)
A. Manso Jaume, J. Wild, DLR Institut für Aerodynamik und Strömungstechnik; T. Homeyer, M. Hölling, J. Peinke, ForWind-Oldenburg

12:00 Estimation-based Torque Tracking Control for a Nacelle Test Rig (E)
M. M. Neshati, University of Bremen; L. Chen, J. Wenske, Fraunhofer IWES, Bremerhaven

12:15 Discussion
12:45 Lunch Break

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 2: SITE ASSESSMENT AND ECONOMIC VIABILITY

Room 2: Kaisen Saal
Chairpersons: V. Köhne, S. Herzog

11:00  Turbulence Assessments in the Absence of Measurements – an Evaluation Study (E)
D. Hilbert, Senvion SE; C. Schmitt, M. Weimbs, juwi Energieprojekte

11:15  Foresighted Planning of LiDAR Measurement Campaigns by Using Error Maps (E)
T. Klaas, D. Callies, P. Kühn, L. Pauscher, Fraunhofer IWES, Kassel

11:30  Mobile LiDAR Mapping of Utility-Scale Wind Farms (E)
M. Zendehbad, N. Chokani, R. S. Abhari, ETH Zürich, Switzerland

11:45  Creation of Incentives for Capacity Checks to Support the Development of Adjacent Wind Farms (D)
M. Rodenhausen, Siemens AG; R. McKenna, KIT Karlsruhe

12:00  From Wind Speed to Market Value and from Yield to Revenue (E)
H.-T. Mengelkamp, anemos Gesellschaft für Umweltmeteoro logie mbH; E. Kühnen, enervis energy advisors GmbH

12:15  Discussion
12:45  Lunch Break

SESSION NO. 3: OPERATIONAL EXPERIENCES I

Room 3: Lloyd
Chairpersons: A. Schaffarczyk, J. Schwabe

11:00  Practical Experiences from a Load Measurement Campaign for the Assessment of the Remaining Service Life of Wind Turbines (E)
C. Heilmann, M. Melsheimer, A. Grunwald, BerlinWind GmbH; R. Kamieth, R. Liebich, TU Berlin

11:15  Evaluation of a Wind Turbine Fatigue Load Monitoring System Based on Standard SCADA Signals in Different Wind Farm Flow Conditions (E)
L. Vera-Tudela, M. Kühn, ForWind-Oldenburg

11:30  3D Laser Optical Measurement of the Rotor Blade Angle (D)
T. Kleinselbeck, D. Hagedorn, WIND-consult GmbH

11:45  Field Studies on Absolute Blade Angle Deviations at Wind Turbine Rotors and their Impact on Lifetime Consumption and Yield (E)
M. Melsheimer, A. Grunwald, C. Heilmann, BerlinWind GmbH

12:00  Survey on Wind Farm O&M in Japan (E)
A. Yoshimura, ITOCHU Techno-Solutions Corporation (CTC), Japan; K. Tanaka, M. Lida, The University of Tokyo, Japan; S. Adachi, Sompo Japan Nipponkoa Risk Management, Japan; T. Takimoto, A. Sasaki, M. Itoh, New Energy and Industrial Technology Development Organization, Japan

12:15  Discussion
12:45  Lunch Break

SESSION NO. 4: APPLICATION OF REMOTE SENSING

Room 1: Borgward Saal
Chairpersons: M. Kühn, H. Mellinghoff

13:45  Low-level Jet Climatologies for Northern and Southern Germany from SODAR and RASS Measurements (E)
S. Emeis, S. Helgert, Karlsruhe Institute of Technology

14:00  Vertical Wind Speed Distribution and Low-Level Jet at Braunschweig Airport (E)
B. Bernalte, A. Lampert, D. Wulff, Th. Kenuell, K. zum Berge, TU Braunschweig

14:15  Bias of Mean Wind Estimate due to Non-Perfect Availability of Remote Sensing Data (E)
G. Peters, Metek GmbH; B. Hennemuth, Consult. Meteorol.

14:30  Field Results of New Sodar Transducer Horn (E)
A. Hastings-Black, Vaisala Inc, USA

14:45  A New Bistatic Wind LiDAR for Highly Resolved Wind Vector Measurements (D)
M. Eggert, C. Gutsmuths, H. Müller, H. Többen, Physikalisch-Technische Bundesanstalt

15:00  Discussion
15:30  Coffee Break

SESSION NO. 5: LOADS

Room 2: Kaisen Saal
Chairpersons: T. Rosenlöcher, H. Bolte

13:45  Numerical Investigation of the Load Reduction Potential of a Flexible Hub Mounting on Two-bladed Wind Turbines (E)
B. Luhmann, P. W. Cheng, Universität Stuttgart; H. Seyedin, Skywind GmbH

14:00  Stochastic Model for Indirect Estimation of Instantaneous and Cumulative Loads in Wind Turbines: A Systematic Approach for Offshore Wind Farms (E)
P. G. Lind, J. Peinke, ForWind-Oldenburg; M. Wächter, Fraunhofer IWES, Oldenburg

14:15  Numerical Study of Rotational Effects on Wind Turbines (E)
I. Herraez, J. Peinke, Forwind-Oldenburg; B. Stoevesandt, Fraunhofer IWES, Oldenburg

14:30  New Infrastructure and Test Procedures for Analyzing the Effects of Wind and Grid Loads on the Local Loads of Wind Turbine Drivetrain Components (D)
C. Liewen, D. Radner, D. Bosse, R. Schelenz, G. Jacobs, CWD – Center for Wind Power Drives Institut für Maschinenelemente und Maschinengestaltung

14:45  CFD Analysis of 10-MW Wind Turbines (E)
V. Leble, Y. Wang, G. Barakos, University of Liverpool, UK

15:00  Discussion
15:30  Coffee Break

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 6: ICING AND CLIMATE IMPACT
Room 3: Lloyd
Chairpersons: S. Barth, B. Neddermann

13:45 Development of Ice Classes for the Certification of Wind Turbines Under Icing Conditions (E)
K. Freudenreich, M. Steiniger, DNV GL Renewables Certification, Hamburg; X. Gu, P. Thomas, Fraunhofer IWES; Ville Lehtomäki, VTT Technical Research Centre of Finland

14:00 Durable Hydrophobic Coatings for Icing Protection of Wind Energy Plant (E)
K. Lummer, N. Rehfeld, V. Stenzel, Fraunhofer IFAM

14:15 Performance of ENERCON Wind Turbines Under Icing Conditions in Europe (E)
U. Heikkilä, R. Gugerli, M. Müller, S. Koller, R. Cattin, Meteotest, Switzerland

14:30 Development of a Rain and Particle Erosion Test Scenario to Enhancing the Rotor Blade Performance and Durability (E)
J. Liersch, J. Michael, Key Wind Energy GmbH; M. Mühlbauer, P. U. Thamsen, TU Berlin

14:45 Influence of Wind Conditions Under Icing Conditions on the Result of a Risk Assessment (D)
F. Storck, TÜV NORD SysTec GmbH & Co. KG

15:00 Discussion
15:30 Coffee Break

SESSION NO. 7: PANEL DISCUSSION:
EEG 3.0 – TENDERING SYSTEM
Room 2: Kaisen Saal

16:00 Panel Discussion: EEG 3.0 – Tendering System
Key players discuss the expectations for a German tendering system, considering also experience with Brazilian auction model

Moderator: Andreas Neumann, Radio Bremen

Panelists:
- Stefan Wenzel, Minister for the Environment, Energy and Climate Protection, Lower-Saxony
- Juarez Castrillon Lopes, EPE (Empresa de Pesquisas Energética, Brazil)
- Thorsten Falk, BMWi, III/5 - Federal Ministry for Economic Affairs and Energy, Work group tendering system for wind power
- Hermann Albers, BWE
- Dr. Klaus Meier, WPD
- Holger Meents, Bremer Landesbank
- Dr. Jörg Buddenberg, EWE

SESSION NO. 8: OFFSHORE FOUNDATIONS
Room 1: Borgward Saal
Chairpersons: P. Schaumann, J. Ibsoe

Room 1: Borgward Saal

16:00 Influence of the Loading Frequency on the Fatigue Performance of Submerged Small-Scale Grouted Joints (E)
A. Raba, P. Schaumann, ForWind-Hannover

16:15 Novel Test Facilities for Grouted Connections (E)
M. Werner, L. Lohaus, D. Cotardo, Leibniz Universität Hannover

16:30 Offshore Pile Design in the Light of Test Results (D)
M. Baeßler, BAM Federal Institute of Materials Research and Testing

16:45 Monopod Bucket Foundations Under Lateral Cyclic Loading (E)
A. Foglia, Fraunhofer IWES, Hannover; L. Bo Ibsen, Aalborg University, Denmark

17:00 Numerical Simulation of Cyclic Horizontally Loaded Piles Under Special Loading Conditions (D)
J. Albiker, M. Achmus, K. Thieken, Leibniz University of Hannover

17:15 Discussion

SESSION NO. 9: SIMULATION TURBINE CONTROL
Room 3: Lloyd
Chairpersons: T. Kramkowski, N. N.

16:00 Numerical Modelling for Optimization of Wind Farm Turbine Performance (E)
M. O. Mughal, M. Lynch, F. Yu, B. McGann, F. Jeanneret, J. Sutton, Curtin University, Perth

16:15 Multivariable Control Model for Simulation and Control Design of Wind Turbines (E)
B. Ritter, H. Fürst, Industrial Science GmbH; U. Konigorski, TU Darmstadt; M. Eichhorn, IAV GmbH

16:30 Investigation of the Interaction Between Wind Turbines and Atmospheric Flow with a Coupling of the Aeroelastic Code FAST and the LES Code PALM (E)
M. Bromm, M. Kühn, ForWind-Oldenburg

16:45 Correlation-Model of Rotor-effective Wind shears and Wind Speed for LiDAR-based Individual Pitch Control (E)

17:00 Collaborative Research on Wind Turbine load Control under Realistic Turbulent Inflow Conditions (E)

17:15 Discussion
20.05.2015, WEDNESDAY

08:00  Registration in the Foyer of the Conference Hall

SESSION NO. 10: LIDAR I

Room 1: Borgward Saal
Chairpersons: A. Rettenmeier, T. Neumann

08:30  “GW Wakes”: Measurements of Wake Effects in “alpha ventus” with Synchronised Long-Range LiDAR Windsanners (E)

08:45  Analysis of Wake Sweeping Effects Based on Load and Long-Range LiDAR Measurements (E)
H. Beck, J.-J. Trujillo, M. Kühn, ForWind-Oldenburg

09:00  Fraunhofer IWES Wind LiDAR Buoy Validation (D)
C. Rudolph, J. Gottschall, G. Wolken-Möhlmann, T. Viergutz, B. Lange, Fraunhofer IWES, Bremerhaven

09:15  Offshore Wind Turbine Power Performance Measurement Using a Nacelle Mounted LiDAR and a Sector Scanning LiDAR from the Transition Piece (E)
A. Vignaroli, R. Wagner, M. Courtney, DTU Wind Energy, Denmark; S. McKeown, R. Cussons, SSE, UK; R. Krishna Murthy, M. Boquet, Leosphere, France; S. Davoust, Avent Technology, France

09:30  Measurement of Turbine Inflow with a 3D WindScanner System and a SpinnerLiDAR (E)
A. Vignaroli, R. Wagner, N. Angelou, M. Sjöholm, T. Mikkelsen, DTU Wind Energy, Denmark

09:45  Discussion

10:15  Coffee Break

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.

Beer Reception & Networking
The beer reception taking place in the Foyer at the same time is a good opportunity for networking with the other participants.

CONFERENCE DINNER WITH LIVE MUSIC

Location: Bremer Ratskeller – 20:00

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

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 11: OFFSHORE GENERAL
Room 2: Kaisen Saal
Chairpersons: K. Herklotz, T. Verfuß

08:30  Design Tool for Offshore Wind Farm Clusters (E)
I. Waldl, Overspeed; C. Hasager, G. Giebel, DTU Wind Energy, Denmark; G. Schepers, ECN, Petten, The Netherlands

08:45  Weather Risk Optimization over the Offshore Wind Farm Project Life Cycle (E)
M. Wiggert, G. Wolken-Möhlmann, Fraunhofer IWES, Bremerhaven

09:00  Load Reduction for Floating Offshore Wind Turbines Using Tuned Liquid Column Dampers (E)
H. R. Karimi, Y. Si, University of Agder, Norway

09:15  Simulation-based Evaluation of Operation and Maintenance Logistics Concepts for Offshore Wind Power Plants (D)
T. Münsterberg, C. Jahn, Fraunhofer Center for Maritime Logistics and Services

09:30  A New Efficient Technology to Reduce Offshore Piling Noise (D)
B. Bruns, C. Kuhn, IGB TU Braunschweig; K.-H. Elmer, OffNoise-Solutions GmbH

09:45  Discussion

10:15  Coffee Break

SESSION NO. 12: SIMULATION BLADE
Room 3: Lloyd
Chairpersons: A. v. Wingerde, J. P. Molly

08:30  Numerical Investigation of Unsteady Aerodynamic Effects on Thick Flatback Airfoils (E)
G. Bangga, Th. Lutz, E. Krämer, Institute of Aerodynamics and Gas Dynamics (IAG), University of Stuttgart

08:45  Analysis of a Structural-Aerodynamic Coupled Method for Nonlinear Aeroelastic Response of Large-Scaled HAWT (E)
P. Lyu, M. Liao, Northwestern Polytechnical University, China

09:00  Damping Model for Fatigue Test Planning of a Wind Turbine Blade (E)
H. Gu Lee, KIMS-WTRC, Korea

09:15  RANS Based Prediction of the Airfoil Turbulent Boundary Layer – Trailing Edge Interaction Noise for Mildly Separated Flow Conditions (E)
Th. Lutz, J. Dembowski, E. Krämer, University of Stuttgart

09:30  Parameterized Analysis of Swept Blades Regarding Bend-Twist Coupling (E)
A. Sevinc, O. Bleich, A. Reuter, Fraunhofer IWES, Bremerhaven; C. Balzani, Leibniz Universität Hannover

09:45  Discussion

10:15  Coffee Break

SESSION NO. 13: LIDAR II
Room 1: Borgward Saal
Chairpersons: J. Rauch, N. N.

10:45  Calibration Procedures for Nacelle-Mounted Profiling LiDARs (E)
A. Borraccino, M. Courtney, R. Wagner, DTU Wind Energy, Denmark; M. Harris, C. Slinger, ZephIR Lidar, UK; S. Davoust, Avent Lidar, France

11:00  Determination of Stationary and Dynamical Power Curves in Inhomogeneous Wind Flow Using a Nacelle-based LiDAR System (E)

11:15  Comparison of the Rotor Equivalent Wind Speed of Ground- and Nacelle-based LiDAR (D)
M. Hofsäß, D. Kozlowski, P. W. Cheng, Stuttgarter Lehrstuhl für Windenergie (SWE); T. Siebers, Kenersys GmbH

11:30  Power Curve Filtered with TI Measured with a Two-Beam Nacelle LiDAR (E)
R. R. Lamata, DONG Energy Wind Power, Denmark; B. Canadillas, U. Bunse, UL International GmbH (DEWI)

11:45  Robust Low Cost Offshore Power Curve Tests with LiDAR (E)
P. J. M. Clive, SgurrEnergy Ltd, UK

12:00  Discussion

12:30  Lunch Break

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SESSION NO. 14: SIMULATION TURBINE AND COMPONENTS
Room 2: Kaisen Saal
Chairpersons: P. W. Cheng, K. Grigutsch

10:45 Improved Design of Wind Turbines by Combining of Measurement and Simulation (E)
Th. Rosenlöcher, B. Schlecht, Technische Universität Dresden

11:00 Development of Active Load Alleviation Methods for Large Wind Turbines (E)
A. E. Öngüt, S. Flock, R. Schelenz, G. Jacobs, M. Behr, RWTH Aachen University

11:15 Numerical Investigation on Tower Effects for Downwind Turbines (E)
B. Stoevesandt, F. Habib, B. Mehra, Fraunhofer IWES, Oldenburg; H. Rahimi, J. Peinke, ForWind-Oldenburg

11:30 Parametric Model Generation and Automated Sizing Process for the Analysis of Wind Turbine Blades (D)
S. Dähne, C. Willberg, DLR e. V.

11:45 Development and Validation of Comprehensive Structural Rotorblade Design and Simulation Tool (PMV) with Flexible Pre and Post Processing Interfaces (E)
G. Pechlivanoglou, O. Eisele, G. Weinzierl, T. Philippidis, SMART BLADE GmbH; I. Masmanidis, University of Patras, Greece

12:00 Discussion
12:30 Lunch Break

SESSION NO. 15: SIMULATION WIND I
Room 3: Lloyd
Chairpersons: H.-T. Mengelkamp, M. Strack

10:45 MCP: Squeezing Uncertainty out of the Long-Term Wind Climate (D)
J. Sander, Sander + Partner

11:00 Complex Micro Siting Optimization: Experimental Validation in an Atmospheric Boundary Layer Wind Tunnel (E)
J. M. L. Mattuella, A. M. Loredo-Souza, Universidade Federal do Rio Grande do Sul-UFRGS, Brazil

11:15 Improve the Power Forecast of a Wind Power Plant with Mathematical Optimization Methods (E)
F. Jung, C. Büskens, University of Bremen; M. Siefert, Fraunhofer IWES, Kassel

11:30 Characterization of Mesoscale Wind Fluctuations in Space and Time (E)
A. Mehrens, L. von Bremen, D. Heinemann, ForWind-Oldenburg

11:45 Brazilian Wind Indexes (E)
J. Lopes, G. Haydt, F. Rosa, EPE, Brazil

12:00 Discussion
12:30 Lunch Break

SESSION NO. 16: OFFSHORE WIND CONDITIONS
Room 1: Borgward Saal
Chairpersons: S. Emeis, D. Stein

13:30 Status and Outlook of the Meteorological Long-Term Measurements at FINO1
T. Neumann, R. Frühmann, F. Bégué, UL International GmbH (DEWI)

13:45 Advances in Monitoring, Simulation and Short-Term Forecasting at the Offshore Wind Farm “EnBW Baltic 1” (D)
M. Dörenkämper, L. von Bremen, C. Junk, G. Steinfeld, D. Heinemann, M. Kühn, ForWind-Oldenburg

14:00 Shadow Effects in an Offshore Wind Farm – Potential of Vortex Methods for Wake Modelling (E)

14:15 Offshore Wake Model Validation – Methodology for Linking Model Results and Operational Data (E)
N. Mittelmeier, T. Blodau, Senvion SE; M. Kühn, ForWind-Oldenburg

14:30 Validation of Wind Turbine Wake Model Results Using In-Situ Measured Water Properties (D)
A. Schneehorst, J.-G. Fischer, K. Herklotz, Federal Maritime and Hydrographic Agency (BSH)

14:45 Discussion
15:15 Coffee Break

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 17: GRID INTEGRATION
Room 2: Kaisen Saal
Chairpersons: O. Carlson, N. N.

13:30  A Process to Enable Wind Turbines to Provide Control Reserve at Minimum Loss of Energy Yield (D)
J. Liersch, J. Michael, Key Wind Energy GmbH;
V. Marschner, TU Berlin

13:45  Methodology for the Evaluation of Wind Turbine Harmonic Emissions (E)
S. Tentzerakis, F. Santjer, M. Bärschneider,
UL International GmbH (DEWI)

14:00  Aspects for Improvement of Measurement and Assessment Procedures of Harmonic Emission of Wind Power Plants (D)
Fritz Santjer, UL International GmbH (DEWI); Bernd Weise,
DlgsILENT GmbH; T. Pausch, J. Brombach, FGW e.V.

14:15  Trade-off Between Storage and Inter-Country Transmission Needs in a European Energy System Dominated by Renewable Sources (E)
A. Kies, L. von Bremen, ForWind-Oldenburg; K. Nag, E. Lorenz,
D. Heinemann, University of Oldenburg

14:30  Reliability Indexes of Wind Farms in Brazil (E)
J. Lopes, G. Haydt, F. Rosa, EPE, Brazil

14:45  Discussion

15:15  Coffee Break

SESSION NO. 18: SIMULATION WIND II
Room 3: Lloyd
Chairpersons: B. Lange, N. N.

13:30  Choice of Wind Flow Models for Energy Yield Assessment (E)
C. Abiven, Natural Power, France

13:45  Sensitivity of Analytical Wake Models to Parameter Settings
C. Schmitt, juwi Energieprojekte GmbH; C. Meissner,
WindSim AS, Norway

14:00  Topographic Effects on the Wakes of a Large Wind Farm (E)
C. Peralta, C. Y. Chang, J. Schmidt, B. Stoevesandt,
Fraunhofer IWES, Oldenburg; J. Caldas, E. L. Zaparoli,
Casa dos Ventos Energias Renováveis, Brazil

14:15  Extensive Verification of WRF Mesoscale Model Downscaling (E)
J. Bethke, J. Kampmeyer, H.-T. Mengelkamp, anemos GmbH;
D. Callies, Fraunhofer Institut for Wind Energy and Energy System Technology (IWES)

14:30  Large Eddy Simulation of the Flow Around a Wind Turbine Blade (E)
X. Huang, M. Meinke, W. Schröder, RWTH Aachen University

14:45  Discussion

15:15  Coffee Break

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 19: CFD MODELING
Room 1: Borgward Saal
Chairperson: B. Stoevesandt, K. Mönnich

15:45   Wake Modelling of an Offshore Wind Farm Using OpenFOAM (E)
A. Javaheeri, B. Canadillas, UL International GmbH (DEWI)

16:00  Determining Offshore Mast Shadow Correction Functions with CFD Methods
F. Wilts, F. Kinder, T. Neumann, UL International GmbH (DEWI)

16:15   An Extensive Validation of CFD Flow Modelling (E)
P. Leask, DNV GL, Oldenburg; A. Poenariu, DNV GL, Hamburg;
D. Medici, DNV GL, Italy; U. Horn, DNV GL, UK; J.-F. Corbett, DNV
GL, Denmark

16:30  Studying the Effect of Blade Deflections on the Aerodynamic Performance of Wind Turbine Blades Using OpenFOAM (E)
B. Dose, J. Peinke, ForWind-Oldenburg; B. Stoevesandt,
Fraunhofer IWES, Oldenburg

16:45   How Much Do CFD Models Improve the Accuracy of the Flow Modelling? (E)
B. Jimenez, D. Rimpl, K. Mönnich, UL International GmbH (DEWI),
Oldenburg

17:00  Discussion

SESSION NO. 20: OFFSHORE TURBINE AND COMPONENTS
Room 2: Kaisen Saal
Chairpersons: B. Bulder, N. N.

15:45   Measurement-based Investigations of Directional Dependence of Extreme Load Parameters for Offshore Wind Turbines (D)
B. Schmidt, S. Marx, M. Hansen, Leibniz Universität Hannover

16:00  Determination of the Reliability for a Multimegawatt Offshore Gearbox (D)
D. Strasser, F. Thoma, S. Yüksek, P. Schmaltz, Bosch Rexroth AG

16:15   Model Testing and Numerical Simulation in Floating Offshore Wind Turbine Design – Overview and Conclusions from Practical Applications (E)
D. Matha, F. Beyer, F. Sandner, P. W. Cheng, University of Stuttgart

16:30  Stability Analysis of Floating Wind Turbine Using 1/64 Scale Model (E)
T. Koyanagi, K. Karikomi, S. Iwasaki, A. Nakamura;
Mitsubishi Heavy Industries, Japan

16:45   Inspecting Defective Rotor Blades by Thermographic Monitoring from Greater Distances: A Review on Results of the Three-Year Project IKARUS (D)
R. Krankenhagen, T. Worzewski, M. Doroshtnasir,
BAM Federal Institute for Materials Research and Testing

17:00  Discussion

SESSION NO. 21: ROTOR BLADES
Room 3: Lloyd
Chairpersons: N. N.

15:45   Investigating the Aerodynamic Implications of Slender Wind Turbine Blade Design (E)
F. Berger, M. Kühn, ForWind-Oldenburg

16:00  Blade Bearing Testrig (E)
M. Stammli, Fraunhofer IWES, Hannover; S. Sagner, Senvion SE

16:15   Tolerance Management and Online Process Assurance in the Production Chain of Rotor Blades (D)
B. Wieland, N. Liebers, DLR e.V., Braunschweig; H. Ucan, DLR e.V.,
Stade

16:30  High Resolution X-ray Inspection of Rotor Blades (E)
W. Holub, U. Haßler, Fraunhofer Development Center X-ray Technology EZRT Fürth

16:45   Detection of Wake Impingement by Rotor Loads (E)
C. L. Bottasso, S. Cacciola, J. Schreiber, TU München

17:00  Discussion

CLOSING THE CONFERENCE
Room 1: Borgward Saal

17:15   J. P. Molly, UL International GmbH (DEWI)
1. Verification
1.1 Performance Verification of Wind Turbines and Wind Farms
F. Flottemesch, T. Wobben, Ecofys Germany/Netherlands
1.2 Impact of Market-Value Based Remuneration on Design and Operation of Wind Turbines
N. Cosack, LEINE LINDE SYSTEMS GmbH; M. Becker, Kenersys GmbH
1.3 Estimation Method of the Subsidy for Wind Produced Electricity
M. Capellaro, TUM Lehrstuhl für Windenergie
1.4 The Wind Farm Whisperers: Data Acquisition and Analysis for Offshore Wind Farm Optimization
P. J. M. Clive, SgurrEnergy Ltd, UK
1.5 Operational Assessment of Power Production
A. Strunk, J. Meis, J. Brombach, EWC Weather Consult GmbH

2. New Developments
2.1 FWT 3000 – Experiences with the Prototype
D. Lahr, H. Zint, FWT Production GmbH
2.2 The Development of Pressure Rigidised Blades – The Challenges
J. N. Stander, G. Venter, Stellenbosch University, South Africa
2.4 Multi-Megawatt Wind Turbine Drive Train with Multiple High-Speed Generators
S. Serowy, F. Barenhorst, R. Schelenz, G. Jacobs, RWTH Aachen University
2.5 Oral presentation in session 1
2.6 The Next Generation of Flexible Crane Systems in Wind Turbine Nacelles
J. R. Hansen, Terex MHPS GmbH
2.7 Passive Load Reduction in Wind Turbine Blades with an Adaptive Camber Airfoil
G. Pechlivanoglou, Smart Blade; H. Spiegelberg, TU Darmstadt; M. D. Lennie, TU Berlin
2.8 Bearing Upgrades Improve Field Performance and Lead to Future Design Practices
F. Platz, G. Tolle, Timken Europe, France
2.9 Probabilistic Approach to Predict Impact of Tolerances on Performance of Wind Turbine Blades
J. Bijlani, P. Sudhakar, R. Hansen, J. Madsen, LM Wind Power A/S, Denmark

3. Testing
3.2 Optimized Materials for Wind Turbines
J. Mosch, L. Kirsch, A. Kühn, B. Wieland, DLR

3.4 Experimental Fatigue Assessment of High Strength Bolts with Large Diameters in Consideration of Boundary Layer Effects
R. Eichstädt, P. Schaumann, Leibniz Universität Hannover; M. Oechsner, F. Simonsen, TU Darmstadt
3.5 Experimental and Numerical Generation of Turbulent Inflow Conditions for Wind Turbine Airfoils
A. Fischer, Th. Lutz, E. Krämer, University of Stuttgart; U. Cordes, K. Hufnagel, C. Tropea, TU Darmstadt
3.6 Direct Roving Placement for the Production of Wind Energy Rotor Blades
Y. Grohmann, N. Stoffers, A. Kühn, T. Mahrhholz, DLR e.V., Stade
3.8 Wind Tunnel Applications for Wind Energy in Brazil
V. G. Guedes, A. A. Mustto C., A. V. Pinto Junior, CEPEL, Brazil
3.9 Automated and Quality Assured Production Chain for Rotor Blades
H. Ucan, N. Stoffers, DLR e.V., Stade

4. Simulation I (Wind Turbine)
4.1 Industry 4.0 in the Wind Power Industry on the Example of Intelligent Hydraulic Bolting to Meet the VDI / VDE 2862 Part 2
P. Junkers, HYTORC Barbarino & Kilp GmbH
4.2 Remaining Life Time Prognosis of Wind Turbine Supporting Structures
C. T. Geiss, C. U. Große, Technical University Munich
4.4 The Dynamic Response of Wind Turbine Blades Under the Transient Loads
Y. Yaojie, L. Mingfu L. Pin, Northwestern Polytechnical University, China
4.5 Characteristic Load Cases for Rotor Blade Design
H. Gontier, T. Rolf, D. Schulze, WINDnovation GmbH
4.7 Vertical Axis Wind Turbines from a Certification Point of View  
K. Freudenreich, R. T. Bayo, C. Martens, DNV GL, Hamburg; L. Vita, DNV GL, Denmark

4.8 Advanced Airfoil Simulations Based on Reynolds-Averaged Navier-Stokes Equations  
M. Schramm, B. Stoevesandt, Fraunhofer IWES, Oldenburg; J. Peinke, ForWind-Oldenburg

4.9 The Dynamic Stability Analysis of Wind Turbines Under Different Control Strategies  
L. Mingfu, Y. Yaojie, L. Pin, Northwestern Polytechnical University, China

4.11 Oral presentation in session 5

4.12 Consideration of Flexible Gears for Detailed Gearbox Analysis  
C. Schulz, S. Mulski, A. Caballero, SIMPACK AG

4.13 Reliable Validation of Load Simulation Models  
J. Gerlach, K. Grigutsch, DEWI-OCC Offshore and Certification Centre GmbH

5. Simulation II (Wind)

5.3 WindSage: Combining Multiple NWPs with Deep Neural Networks (DNN) for an Improved Wind Power Forecast  

5.4 An Accurate Wind Resource Assessment in Complex Terrain Using Numerical Simulations  
Y. Kim, T. Lutz, University of Stuttgart

5.5 Oral presentation in session 18

6. Measurements

6.4 Analysis of Low Level Jets in Northern Germany  
S. Meves, GEOMAR; E.-M. Nikolai, WKN AG

6.5 Effects of Rotor Induction on the Propagation of Disturbances Towards Wind Turbines  
M. Boquet, S. Davoust, A. Abdelsalam, R. Rutteman, Avent Lidar Technology, France; J. W. Wagenaar, K. Boorsma, ECN Wind Energy, Netherlands

6.6 Advanced Use of MCP Methods to Correlate Short Term Measurement Data with Long Term Data  
R. Friedl, RSC GmbH

6.7 Rotor Unbalance Detection and Mitigation  
V. Petrovic, C. L. Bottasso, S. Cacciola, M. Capellaro, D. Castro Uriegas, TU München

6.8 Laser Based Geometry Measurement of Rotor Blades  
J. D. Mayer, C. Lucks, Windcomp GmbH

6.9 A New Approach to Elimination of Aerodynamic Imbalances of Wind Turbines  
S. Bartholomay, M. Hillman, T. Rische, cp.max Rotortochten GmbH & Co. KG

6.10 Structural Vibration Measurements at Wind Turbines Using Video-based Tracking  
C. Heilmann, A. Grunwald, M. Melsheimer, J. Müller, M. Peters, BerlinWind GmbH

6.11 Oral presentation in session 15

6.12 On the Cup Anemometer Working Condition Monitoring  
S. Pindado, A. Martinez, E. Vega, A. Sanz-Andrés, E. Meseguer, L. García, Universidad Politécnica de Madrid, Spain

6.13 Analytical and Experimental Analysis of the Wake Effects on Turbines in Wind Farms to Optimize the Overall Energy Production.  
J. Weiß, S.-E. Rosenow, W2E Wind to Energy GmbH; R. McKenna, Karlsruhe Institute for Technology (KIT)

6.14 Met Mast Based Model for Turbulence Assessments in Central and Southern Germany  
T. Zirngibl, S. Kartun, TÜV Süd Industrie Service GmbH

6.15 Assessment of LiDAR Correction for Wind Measurements in Complex Terrain  
F. Bégué, T. Neumann, UL International GmbH (DEWI)

7. Lidar/Sodar Measurements

7.1 The First Measurement Campaign of Mitsubishi Electric’s Wind LiDAR in European Test Site  
M. Imaki, N. Kotake, S. Kameyama, H. Asada, T. Harada, H. Tanaka, M. Enjo, Mitsubishi Electric Corporation, Japan

7.2 High-Availability Wind LiDAR System Adapting to Atmospheric Environment for Reliable Wind Resource Assessment  
N. Kotake, M. Imaki, S. Kameyama, H. Asada, T. Harada, H. Tanaka, M. Enjo, Mitsubishi Electric Corporation, Japan

7.3 Turbine Mounted Pulsed LiDAR for Performance Verification in Complex Terrain  
L. Wagner, GWU-Umweltechnik GmbH; S. Davoust, Avent Lidar Technology, France; T. Burchhart, R. Zauner, Verbund GmbH, Austria; J. Parplies, C. Schmitt, juwi Energieprojekte GmbH; C. Gray, Uptime Engineering GmbH, Austria

7.4 Assessment of Turbulence Measurements for Offshore Turbine Testing with Nacelle-based LiDAR  
R. Gandoin, DONG Energy Wind Power, Denmark

7.5 Classification and Sensitivity Analysis of Turbine-mounted and LiDARS  
A. Woodward, J. Medley, M. Pitter, C. Slinger, M. Harris, ZephIR Lidar, UK

7.6 LiDAR Use Cases for the Acquisition of High Value Data Sets  
P. J. M. Clive, SgurrEnergy Ltd, UK
7.7 A Comparison of 2- and 5-Beam Nacelle Mounted LiDAR Measurements on an Offshore Wind Turbine
P. J. M. Clive, SgurrEnergy Ltd, UK

7.8 A Detailed Analysis of Ship-LiDAR Measurements with Comparison to FINO1
G. Wolken-Möhmann, J. Gottschall, B. Lange, Fraunhofer IWES, Bremerhaven

7.9 Oral presentation in session 4
7.10 Representativeness of Short-Term Wind Profile Measurements with Remote Sensing Devices and Consideration of Seasonal Effects
A. Westerhellweg, D. Fabian, J. Raabe, UL International GmbH (DEWI), Oldenburg

8. Grid Integration
8.1 Advanced Integration of Offshore Wind Energy into the Grid System by Power to Gas
J. Bendfeld, Y. Bouyraaman, S. Krauter, University of Paderborn

8.2 Facing the European Perspective: Revision of Wind Power Upscaling
B. U. Schyska, L. von Bremen, ForWind-Oldenburg

8.3 Oral presentation in session 17
8.4 Probabilistic Wind Farm Group Forecasting Using Bayesian Model Averaging
H. G. Beyer, P. P. Revheim, University of Agder, Norway

9. Operational Experiences
9.1 Oral presentation in session 6
9.2 Economical Risk Simulation of Maintenance Contracts of Wind Farms
D. Althaus, J. Haushild, IQZ GmbH; J. Liersch, Key Wind Energy GmbH

9.3 Regional Contribution to the Wind Energy Development in Germany – Analysis of Selected Administrative Districts until end of 2014
C. Ender, B. Neddermann, UL International GmbH (DEWI)

9.4 Wind Energy Development in Germany – Analysis of the Development in the DIBT Wind Zones Until end of 2014
C. Ender, B. Neddermann, UL International GmbH (DEWI)

9.5 Land Requirement Values for Wind Farms
B. Neddermann, T. Schorer, UL International GmbH (DEWI)

9.7 Wind Farm Development in Turkey
Prof. Dr. Tanay Sidki Uyar, Head, Energy Section, Marmara University, Istanbul Turkey

10. Offshore
10.1 Additive Manufacturing and Spare Parts Logistics in Offshore Wind Energy
A. Barz, H.-D. Haasis, Institute of Shipping Economics and Logistics, Bremen; K. Lange, School of International Business and Supply Chain Management (HIWL), Bremen

10.2 Performance of Merra Data in Offshore Wind Energy Applications
J. Bendfeld, University of Paderborn; S. Balluff, RWE Npower, UK

10.3 Oral presentation in session 11
10.4 Supply Chain Concept for Industrial Assembling of Offshore Wind Jackets
G. Michels, Salzgitter AG

10.5 Radial Bolted Connection Between Monopile and Transition Piece
L. Meesenburg, P.E. Concepts GmbH

10.6 Geotechnical Stability Verification of Offshore Foundations with Respect to Scouring in the North Sea in Accordance with BSH
A. Ahmari, E. Fitti Paldi, SGS Germany GmbH

10.8 Process FMEA: Preventive Risk Measures for Offshore Wind Farm Projects
J. Dimas, Trianel Windkraftwerk Borkum GmbH & Co. KG

10.9 Oral presentation in session 11
10.10 Adverse Weather Risk: Impact, Assessment and Mitigation Approaches
M. Wiggert, G. Wolken-Möhmann, Fraunhofer IWES, Bremerhaven

10.11 Realistic Scenario for the Development of Offshore Wind Power in Germany
B. Neddermann, T. Neumann, UL International GmbH (DEWI)

11. Monitoring
11.2 Bolted Joint Lifetime Monitoring
A. Etxezarreta, I. Alberdi, Erreka Fastening solutions, Spain

12. Influence on Environment
12.1 RAVE Underwater Operational Noise Measurements in the Offshore Wind Park alpha ventus – Final Results
H. van Radecke, M. Benesch, University of Applied Sciences Flensburg

12.4 Environmental Impacts of Noise, Vibrations and Electromagnetic Emissions from Marine Renewables (MARVEN)
F. Thomsen, M. Kosecka, DHI, Denmark; J. Gabriel, UL International GmbH (DEWI); A. Gill, Cranfield University, UK; P. Sigray, Swedish Defence Research Institute; A. Norro, Museum – Operational Directorate Natural Environment Management, Belgium; T. Folegot, Quiet Oceans, France; M. Andre, Universitat Politècnica de Catalunya, Spain; D. Risch, Scottish Association for Marine Science, UK
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21.05.2015, THURSDAY

**EXCURSION**

Technical Excursion to Interesting Wind Power Locations

On 21 May, the day after the conference, we offer our traditional one-day excursion to interesting wind power locations. The details can be found on page 8 and on www.dewek.de.

Departure: 08:30 hrs
Return: 18:00 hrs
**Scientific Committee**

Prof. Dr. Ola Carlson  
Swedish Wind Power Technology Centre, Sweden

Prof. Dr. Po Wen Cheng  
Stuttgarter Lehrstuhl für Windenergie (SWE)

Dr. Peter Eecen  
ECN Wind Energy, Netherlands

Prof. Dr. Stefan Emeis  
Karlsruhe Institute of Technology (KIT)

Dipl.-Ing. Kai Grigutsch  
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Prof. Dr. Clemens Hoffmann  
Fraunhofer IWES Kassel

Peter Hjuler Jensen  
DTU Wind Energy, Denmark

Dipl.-Ing. Volker Köhne  
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Prof. Dr. Martin Kühn  
Carl-von-Ossietzky Universität Oldenburg

Dipl.-Ing. Jens Peter Molly  
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Dipl.-Ing. Bernd Neddermann  
DEWI

Dr. Thomas Neumann  
ForWind – Center for Wind Energy Research

Prof. Dr. Joachim Peinke  
WindForS – Wind Energy Research Cluster

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University of Bergen, Norway

Prof. Dr. Joachim Reuder  
Fraunhofer IWES Bremerhaven

Prof. Dr. Alois Schaffarczyk  
Fachhochschule Kiel

Prof. Dr.-Ing. Peter Schau mann  
Leibniz Universität Hannover

Dipl.-Ing. Joachim Schwabe  
WIND-Consult

**DEWEK Abstracts**

Abstracts of all papers and posters will be published in the Book of Abstracts (available at the conference or soon on dewek.de)

**Preliminary list of Exhibitors on DEWEK 2015**

Firms registered until 19th of March:

- Ammonit Measurements GmbH; A3
- Berlin Wind GmbH; C1
- UL International GmbH (DEWI); C12
- Enercon; B3
- Ge:Net GmbH; A1
- GWU-Umwelletechnik GmbH; B4
- Hytorc; F1
- Institut für Mechatronik e. V.; B2
- LEINE LINDE SYSTEMS GmbH; B1
- MesH Engineering; D5
- Metek; C4
- Sander & Partner; A4
- SIMPACK GmbH; D1
- WindForS – Wind Energy Research Cluster; D4
- Woodward Kempen GmbH; F2

**GENERAL INFORMATION**

**Conference venue:** Congress Centrum Bremen (CCB)  
Theodor-Heuss-Allee  
(directly behind the central station, Exit Bürgerweide)  
D-28215 Bremen

Sessions will be held in accordance with the program structure. A simultaneous English-German-English translation is offered in all three conference rooms (not available for the poster session). The poster exhibition in the Foyer will remain open during the entire conference. On Tuesday, 19 May 2015, from 17:30 h until 19:00 h the authors will be available for discussion at their poster boards. Opening hours of the company exhibition in the “Hanse Saal” are from 8:00 to 19:30 on 19 May and from 08:00 to 17:45 on 20 May. The layout of the conference hall is shown on page 9.

**Important Phone Numbers:**

Emergency Call (Police / Fire Brigade): 110 / 112

Medical Service (Emergency/ Weekend Duty): (0421) 192 92

Taxi Companies:  
Taxi-Ruf: (0421) 140 14  
Taxi-Roland: (0421) 144 33

**Organiser’s Office**

For further information concerning DEWEK 2015 please contact:

UL International GmbH  
- DEWEK 2015 -  
Ebertstrasse 96, D-26382 Wilhelmshaven, Germany  
Tel: +49 (0) 4421 / 4808-0, Fax: +49 (0) 4421 / 4808-843  
email: dewek@dewi.de

Contacts:  
Carsten Ender, Barbara Jurok (Organization)  
Bernd Neddermann, Thomas Neumann (Scientific Committee)

During the conference, the organiser’s office and registration desk are located in the foyer near the entrance of the CCB. Opening hours are from 8:00 to 18:00 on both conference days.

**Catering**

During breaks, coffee/tea and lunch will be served in the Congress Centrum on both conference days.

**Conference Dinner with Live Music**

The conference dinner on the evening of 19 May 2015, 20:00 h, will take place at the Bremer Ratskeller (address see below). It is within walking distance (approx. 20 minutes from CCB) or a short taxi ride. Please note that the dinner is not included in all conference fees (see price table on page 37). The price for an extra dinner is EUR 90.- (incl. V.A.T.) per accompanying person. Please indicate the number of additional persons on your registration form.

Bremer Ratskeller, Am Markt, 28195 Bremen, Tel: 0421/321676  
www.ratskeller-bremen.de

**Check-in**

Check-in for the conference is possible on both conference days, 19 and 20 May 2015, from 08:00 h at the registration desk in the foyer of the Congress Centrum Bremen.
HOW TO GET THERE:

By Car
Follow the signs to the City Centre (Centrum) and then to Messe Bremen/ Congress Centrum Bremen/ÖVB Arena. Directly beside the Congress Centrum is a multi-storey car park and in front a large parking area (Bürgerweide). For parking fees see: www.dewek.de (Accommodation/ Travel).

From the Central Station
Directly behind the Central Station (exit Bürgerweide). Only 3 minutes on foot. Train links with hourly departures. Almost 50 ICE and InterCity connections daily.

From the Airport
Only 15 minutes by taxi or tram (line 6 to “Blumenthalstrasse”). Nonstop flights from many major cities in Europe or via Frankfurt or Munich.

By Tram and Bus
3 bus services get you to the conference venue: service 24 (get off at “Blumenthalstrasse”), 26 and 27 (get off at “Messe_Centrum”) and tram lines 6 and 8 (“Blumenthalstrasse”).

CONFERENCE FEES

<table>
<thead>
<tr>
<th>Normal fee</th>
<th>Late fee until 11 May 2015</th>
<th>On-site fee after 11 May 2015</th>
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<tbody>
<tr>
<td>Two-day admission with conference dinner</td>
<td>€ 880.-</td>
<td>€ 930.-</td>
</tr>
<tr>
<td>Two-day admission without conference dinner</td>
<td>€ 790.-</td>
<td>€ 840.-</td>
</tr>
<tr>
<td>One-day admission without conference dinner</td>
<td>€ 550.-</td>
<td>€ 600.-</td>
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<table>
<thead>
<tr>
<th>Students **</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Two-day admission without conference dinner</td>
<td>€ 280.-</td>
<td>€ 340.-</td>
</tr>
<tr>
<td>One-day admission without conference dinner</td>
<td>€ 215.-</td>
<td>€ 270.-</td>
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</table>

<table>
<thead>
<tr>
<th>Extras</th>
<th></th>
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<tbody>
<tr>
<td>Additional dinner</td>
<td>€ 90.-</td>
<td>€ 90.-</td>
</tr>
<tr>
<td>Excursion</td>
<td>€ 60.-</td>
<td>€ 60.-</td>
</tr>
</tbody>
</table>

* All Prices incl. 19% V. A. T. (Please note: Payment only by credit card)
** Full time students only. Maximum age is 30. Proof by a valid student ID.

Please note:
- Authors will also have to register for the conference and will be charged the applicable fee.

Unless specified otherwise, the registration fee includes:
- Participation in the conference and exhibition
- Book of abstracts & Conference proceedings
- Coffee/tea during breaks & lunch each day

REGISTRATION

For registration we use the online tool “Blue Bookings” of Blue Projects who will collect the payment on behalf of UL International GmbH (DEWI). Please use for your registration and payment the conference web site www.dewek.de.

Please contact Blue Projects directly, if you have questions regarding registration and payment:

Email manuela@blueprojects.eu
Phone +49 (0) 176 609 576 36

Please note that the registration is valid - and will be confirmed by Blue Projects – only after receipt of the full payment.
Important Notes:
On check-in at the DEWEK 2015 you will be given a badge which should be worn visibly at all times. If you lose or find a badge, please report to the Registration Desk. Lost badges cannot be replaced. The organizers cannot be held responsible for injury to conference attendees or for damage to, or loss of their personal belongings, regardless of case. Attendees are advised to make their own insurance arrangements.

TERMS AND CONDITIONS (BLUE PROJECTS)
If you have any questions please contact Blue Projects via phone (+49 (0) 176 609 576 36) or by e-mail (manuela@blueprojects.eu)

Payment
Payment will be collected by Blue Projects GmbH on behalf of UL International GmbH (DEWI). The invoice will be sent by e-mail. After payment has been received your conference ticket will be sent by e-mail.

Right of Revocation
You can revoke your registration without giving reasons within 14 days after registration by a statement in text form (e.g. letter, e-mail). The latest possible date of revocation is 30.04.2015, thereafter it is no longer possible to revoke the registration. For compliance with the revocation deadline it is sufficient to send the revocation on time. The revocation is to be sent to: Blue Projects GmbH, Manuela Schamberger, St.-Wendel-Str.50, 81379 München or by e-mail to manuela@blueprojects.eu.

Refund Information (Cancellation)
After the 14 day-period of revocation, the following conditions apply for cancellation:

Cancellation until 03.04.2015: Refund of registration fee minus 60 Euro administration fee.
Cancellation until 30.04.2015: Refund of 50 % of the registration fee.
Cancellation after 30.04.2015: No refund.
The ticket can be transferred to another person.
Contact manuela@blueprojects.eu

Student Rate
The reduced fee for students is only applicable for full-time students up to the maximum age of 30. Students must show their valid student ID for the current term at the conference check-in desk. Otherwise the higher regular conference fee will be charged.

OTHER TERMS AND CONDITIONS
Conference Access
The admission to the conference is only possible for delegates whose conference fees have been paid in full.

Our staff at the conference check-in desk is instructed to charge the full conference fees if participants cannot present a confirmed registration. Any fees paid double will be refunded immediately upon receipt of payment at our account.

Excursion
The booking of the excursion is only valid after having paid the fee. Please note that the excursion is not included in the conference fees, but must be paid separately. If there are not enough participants, the excursion will be cancelled and the money refunded.

ACCOMMODATION
The conference hotel is the Maritim Hotel, which has a direct access to the Congress Centrum Bremen. Other hotels in Bremen with a certain quantity of room reservations for the conference are also available. For hotel reservations, please contact:

Granevento GbR
Christian Strasser
Carl-Schurz-Straße 5, D-28209 Bremen
Phone: +49 (0) 421 / 43 18 08 55
Fax: +49 (0) 421 / 43 18 08 56
Email: info@granevento.de

A hotel reservation form of Granevento is available on the DEWEK 2015 website www.dewek.de (Accommodation) or under http://www.granevento.de/booking/dewek/en.

HOTELS WITH ROOM RESERVATIONS FOR THE CONFERENCE

Maritim Hotel Bremen
Distance to Venue: Approx. 0.14 km
Single Early Bird: €126.00* Breakfast incl. / Double Early Bird: €157.00* Breakfast incl.

Dorint Park Hotel Bremen
Distance to Venue: Approx. 0.42 km
Single Early Bird: €120.00* Breakfast incl. / Single: €130.00* Breakfast incl.

InterCityHotel Bremen
Distance to Venue: Approx. 0.52 km

Best Western Hotel zur Post
Distance to Venue: Approx. 0.56 km
Single Early Bird: €92.00* Breakfast incl. / Double Early Bird: €115.00* Breakfast incl.

Star Inn Hotel Columbus Bremen
Distance to Venue: Approx. 0.56 km
Single: €71.00* Breakfast excl. / Double: €81.00* Breakfast excl.

Best Western Hotel Schaper Siedenburg
Distance to Venue: Approx. 0.72 km
Single: €84.00* Breakfast incl. / Double: €110.00* Breakfast incl.

* Average price per room night (VAT included) during the selected period. Please note that the room rate per night can vary on some days.
Our comprehensive range of services for manufacturers of wind turbines and components as well as wind farm developers, operators, owners, lenders and investors include:

- Wind Turbine Testing
- Wind Measurements
- Energy Yield Assessment
- Due Diligence Services
- Power Curve Verification
- Research & Studies, Seminars

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- Flexible Approach
- Dedicated Team of Experts
- State-of-the-Art Test and Measurement Equipment

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