13th German Wind Energy Conference

17 / 18 October 2017
Bremen, Germany

Program and Registration
Welcome Address by Stefan Wenzel

Dear DEWEK 2017 participants,

Twenty-five years have passed since the first German Wind Energy Conference, DEWEK, was held in 1992. In the intervening period, modern wind energy utilization witnessed development, both technical and economic, we were only capable of dreaming of at the time. Thus, today it is no longer a niche technology, but rather an established and growing component of our power supply.

At the time of the inaugural DEWEK conference, Germany’s onshore wind energy output in operation was a mere 180 MW. New-build facilities generally had a capacity of less than 200 kW rated output and 500 kW-class installations were on the verge of being launched onto the market.

Today the picture is a very different one: at the end of 2016 we generated more than 45,900 MW across Germany: about 250 times more than in 1992. Newly installed onshore wind turbines have an average rated output of 2.85 MW. Along with their capacities, the turbines’ dimensions have grown remarkably. In recent years wind energy utilization in Germany has also successfully mastered leaping into the water. By the end of 2016 a total of approximately 4,100 MW was generated by offshore wind in the North Sea and the Baltic Sea and fed into the grid.

Indeed, it is a great pleasure to observe that wind energy has undergone impressive technological developments and matured into a form of power generation that is also able to compete in terms of price. Behind this success story lie enormous efforts in research and development in wind energy utilization. The DEWEK continually stimulates this progress by acting as a platform for exchange among wind energy experts.

Against the backdrop of the Paris climate agreements, we cannot afford to simply rest on our laurels, rather we must continue to implement the shift from fossil fuels and nuclear energy towards renewable energy with more determination than ever. In doing so, wind energy on land and at sea plays a key role in the energy sector.

The transition of the national subsidy system to competitive tendering puts the focus in further extending wind energy increasingly on improving efficiency: a wide variety of topics in research and development, ranging from optimizing the facility concepts of today to developing and testing new systems and technological links exist. DEWEK will surely not lack for topics of scientific work and debate in the future. I am confident that we are well positioned to meet the challenges the future holds.

Yours sincerely,
Stefan Wenzel
Minister for the Environment, Energy and Climate Protection of Lower Saxony
The information to be exchanged at DEWEK 2017 is reflective of the progress wind energy has achieved globally. This year the worldwide installed wind power capacity surpassed the 500 GW milestone. Asia, Europe and North America are the leading continents of activity, respectively led by the countries of China, Germany and the United States. In 2016, wind power satisfied 13% of Germany’s electricity demand, and the industry employed over 140,000 of its people. At the end of 2016 nearly 30 countries – representing every continent except Antarctica – had more than 1 GW of installed capacity. In addition to year-on-year capacity growth, the wind industry is witnessing growth in other ways: ever-larger turbine capacities, taller towers, bigger wind farms. Installations are expanding into more challenging environments and imposing new engineering and logistical challenges. Offshore wind is migrating into deeper waters and farther from shore, and floating foundations are no longer just an R&D concept. Repowering is becoming a significant business as the previous generation of turbine technology gives way to the new. And expectations for longer-life systems – on the order of 30 years or more – is becoming the norm; 20 years is passé.

These trends are indications of a maturing industry having evolved for a few decades. Designs and materials have gotten better; systems and controls have gotten smarter; sensors and data are more ubiquitous; modeling techniques are cleverer than ever; capacity factors are setting new records. Unprecedented amounts of information are available to engineers, meteorologists, material scientists, and analysts. The cost of wind-based energy has reached – and even surpassed in some locales – parity with conventional power sources, ensuring the future growth of demand for wind energy among electricity consumers. Despite such impressive progress, there remains much we don’t understand. Turbines and wind farms in general still don’t perform ideally. Premature materials and component failures still occur. Inflow conditions remain a partial mystery, as do wake behavior, turbulence characterization, and other features of the operating environment. The list of examples is long. Einstein put the situation this way: “The more I learn, the more I realize how much I don’t know.” Those assembled at DEWEK 2017 share this realization. Many of the industry’s best and brightest are gathering once again to share new knowledge and exchange ideas for further advancements. Held biennially, DEWEK has established itself as an internationally renowned technical-scientific forum.

This year’s conference in beautiful Bremen promises plenty of opportunities for dialogue and comradery. In addition to attending the technical sessions, be sure to review the high-quality posters, visit the exhibition hall, and take advantage of the networking breaks and meals. The conference dinner will take place at the Bremer Ratskeller – a beautiful wind cellar below the historic Bremen town hall.

Welcome to DEWEK 17 and have an enjoyable time!

Following the proven concept, the duration of the German Wind Energy Conference is restricted to two days, allowing three sessions held in parallel for the oral presentations, while still leaving enough time for discussions during the sessions. Parallel sessions were planned in a way that DEWEK 2017 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 2017 consists of 18 thematic sessions, during which 4-5 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, there will be a poster exhibition in 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 poster pitching during the sessions on the first conference day and a special poster session on the same day at 17:30 h, during which the authors will be present to discuss their DEWEK contribution with the experts interested. The beer reception taking place in Room 4 & Foyer at the same time is a good opportunity for networking with the other participants.

**DEWEK 2017 PANEL DISCUSSION:**

**TENDERS FOR WIND ENERGY**

**11.15 - 12.30, Wednesday, 18 October 2017**

Join a panel discussion in the morning of the second conference day with the subject “Tenders for Wind Energy – First Experiences and Outlook for the Market Development”! Discussing the tendering system under the EEG 3.0, the experiences after two bidding rounds and the impact on the wind market in Germany. The panel discussion moderated by Nicole Weinhold, editor in chief of Erneuerbare Energien, will address the most important aspects of a German tendering system. Competent panelists from the wind industry and government have been invited and will guarantee an interesting and informative discussion. For more details see page 14.
DEWEK 2017 EXHIBITION

Tuesday and Wednesday, 17 / 18 October 2017

The conference will be accompanied by an exhibition in the “Hanse-Saal” of the Congress Centrum Bremen opened on 17 October, 8:00 h. The exhibition will be open during the whole two days of the conference. Admission to the exhibition is free. 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.

SCIENTIFIC COMMITTEE

Bruce Bailey, VP Renewable Energy (UL International)  
Prof. Dr. Ola Carlson, Swedish Wind Power Technology Centre, Sweden  
Prof. Dr. Po Wen Cheng, Stuttgarter Lehrstuhl für Windenergie (SWPTC)  
Dr. Peter Eecen, ECN Wind Energy, Netherlands  
Prof. Dr. Stefan Emeis, Karlsruhe Institute of Technology (KIT)  
Dipl.-Ing. Kai Grigutsch, DEWI-Occ  
Dipl.-Ing. Volker Köhne, DNV GL - Energy  
Prof. Dr. Martin Kühn, Carl-von-Ossietzky Universität Oldenburg  
Anand Natarajan, DTU Wind Energy, Denmark  
Dipl.-Ing. Bernd Neddermann, UL DEWI  
Dr. Thomas Neumann, UL DEWI  
Prof. Dr. Joachim Peinke, ForWind - Center for Wind Energy Research  
Dr. Andrew Clifton, WindFor5 - Wind Energy Research Cluster  
Prof. Dr. Joachim Reuder, University of Bergen, Norway  
Prof. Dr. Andreas Reuter, Fraunhofer IWES Bremerhaven  
Anna Maria Riverola, UL AWS Truepower, Spain  
Prof. Dr. Kurt Rohrig, Fraunhofer IWES Kassel  
Prof. Dr. Alois Schaffarczyk, Fachhochschule Kiel  
Prof. Dr.-Ing. Peter Schaumann, Leibniz Universität Hannover  
Dipl.-Ing. Joachim Schwabe, WIND-Consult  
Santi Vila, UL AWS Truepower, Spain

BREMEMEN
PROGRAM STRUCTURE

17.10.2017, TUESDAY

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<th>Time</th>
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<td>11.00-12.45</td>
<td>1. Simulation Wind 1</td>
<td>2. Fault Detection</td>
<td>3. Offshore - Floating Lidar / Turbine</td>
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<td>17.30-19.00</td>
<td>Poster Session – Authors present</td>
<td>Beer Reception and Networking</td>
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18.10.2017, WEDNESDAY

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<td>11. Lidar - Onshore</td>
<td>12. Operational Data / Performance</td>
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<td>15.45-17.15</td>
<td>16. Life Time Extension / O&amp;M</td>
<td>17. Simulation Wind 2</td>
<td>18. Offshore Condition / Operation</td>
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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)
LECTURES – 17.10.2017, TUESDAY

08:00 Registration in the Foyer of the Conference Hall

OPENING SESSION
Room 1: Borgward Saal

09:00 Opening Words
Ingo Rübenach, VP DACH & Eastern Europe (UL International)
Bruce Bailey, VP Renewable Energy (UL International)
Opening Address
Ronny Meyer, State Council of the Senator for Environment, Urban Development & Transportation of the Free Hanseatic City of Bremen
Germany’s Research Programme for Renewable Energy
Dr. Georg Menzen, Federal Ministry for Economic Affairs and Energy (BMWi)
Status and Outlook on the Development of Wind Turbine Technology
Prof. Dr. Andreas Reuter, Fraunhofer IWES

10:30 Coffee Break

SESSION NO. 1: SIMULATION WIND
Room 1: Borgward Saal — Chairpersons: T. Mengelkamp, B. Stoevesandt

11:00 Study of Multimodal Probability Distributive Function and its Effects in Windy States of India (E)
M. C. Lavanya, K. Boopathi, T. S. Kumar, R. Katyal, N. Nishanthini, National Institute of Wind Energy Chennai
11:15 Influence of Turbulence Characteristics on Power Production
F. Kelberlau, T. Bracchi, NTNU, Trondheim
11:30 Multiple Synoptic Scale Correlate Predict (MSSCP) (E)
H. Frey, WindDataSuite
11:45 Anemos Wind Atlas Improvements Based on a New Remodelling Approach
M. Schneider, A. Glücksmann, A. Weiter, H.-T. Mengelkamp, anemos GmbH

12:00 Discussion & Poster Pitching
12:45 Lunch Break

SESSION NO. 2: FAULT DETECTION
Room 2: Kaisen Saal — Chairpersons: P. W. Cheng, H. Söker

11:00 Failure Behaviour of Power Converters in Wind Turbines (D)
K. Pelka, K. Fischer, Fraunhofer IWES, Hannover
11:15 Extreme Yaw Misalignment Stress Test on a Multi-MW Wind Turbine
S. S. Iyer, H. S. Pedersen, N. G. C. Janssen, E. G. Marin, ROMO Wind
11:30 Fatigue Load Estimation Based on SCADA Data: Towards a Grey Box Model (E)
J. Seifert, L. Vera-Tudela, M. Kraft, M. Kühn, ForWind, Oldenburg
11:45 Development of a Condition Monitoring Sensor to Detect White Etching Cracks in Wind Turbines using a 4MW Nacelle Test Bench (E)
C. Bernabéu Rojo, G. Jacobs, R. Schelenz, F. Barenhorst, RWTH Aachen University

12:00 Discussion & Poster Pitching
12:45 Lunch Break

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 3: OFFSHORE - FLOATING LIDAR / TURBINE  
Room 3: Lloyd — Chairpersons: A. Rettenmeier, T. Neumann

11:00 Floating LiDAR Measurements: Use a Fireship in the North Sea to Retrieve Long-Term Wind Profiles  

11:15 Measuring Wind Resources with a LiDAR from a Ferry Boat: Results for a Route in the Baltic Sea (E)  
J. Gottschall, E. Catalano, M. Dörenkämper, Fraunhofer IWES Northwest, Bremerhaven

11:30 About the Frequency Dependency of Floating-Lidar Motion Effects (E)  
G. Wolken-Möhlmann, L. Baise, D. Kuchma, Tufts University, Medford

11:45 Floating LiDAR Update and Future Applications (E)  
J. Gottschall, C. Rudolph, Th. Viergutz, B. Lange, Fraunhofer IWES Northwest, Bremerhaven

12:00 Discussion & Poster Pitching

12:45 Lunch Break

SESSION NO. 4: OFFSHORE - WAKES  
Room 1: Borgward Saal — Chairpersons: D. Stein, B. Lange

13:45 Far Wake Offshore Wind Farm Interaction: First Results of the WIPAFF Project  
B. Cañadillas, R. Foreman, T. Neumann, UL International GmbH (UL DEWI); S. Siedersleben, S. Emeis, Karlsruhe Institute of Technology; B. Djath, J. Schulz-Stellenfleth, Helmholtz Centre Geesthacht; A. Platis, J. Bange, University of Tübingen; A. Lampert, Technical University of Braunschweig

14:00 Near and Far Field Offshore Wind Turbine Wake Effects Depicted by Satellite SAR in the German Bight (E)  
B. Djath, J. Schulz-Stellenfleth, Helmholtz-Zentrum Geesthacht (HZG); B. Canadillas, T. Neumann, UL International GmbH (UL DEWI); A. S. K. Siedersleben, S. Emeis, Karlsruhe Institute of Technology; A. Platis, J. Bange, University of Tübingen; A. Lampert, K. Baerfuss, Technische Universität Braunschweig

14:15 High-Resolution SAR-Based Wind Fields Over Offshore Wind Farms: Assessment of Shadowing Effects and Resulting Power Yield Reduction  
S. Jacobsen, A. Pleskachevsky, German Aerospace Center (DLR)

14:30 The Local Wind Field at Offshore Wind Parks and in their Wake – Its Measurement and Interaction with Airborne Operations (E)  
T. Rausch, K. Bärfuss, S. Kocks, P. Frost, T. Feuerle, P. Hecker, A. Lampert, Technische Universität Braunschweig

14:45 Discussion & Poster Pitching

15:30 Coffee Break

SESSION NO. 5: IMPROVEMENT TURBINE OPERATION  
Room 2: Kaisen Saal — Chairpersons: A. Natarajan, A. Schaffarczyk

13:45 Blade-Root Based Multi-Camera System for Induced Blade Twist Measurements at Wind Turbine Rotors during Operation (E)  
C. Heilmann, A. Grunwald, M. Melsheimer, BerlinWind GmbH

14:00 Increasing Turbine Lifetime with Findings of 5000 Operational Years of Blade Monitoring  
D. Brenner, J. Reimers, Weidmüller Monitoring Systems GmbH

14:15 Performance Monitoring using Spinner Anemometry (E)  
H. Hohlen, ROMO Wind Deutschland GmbH

14:30 Meteorological Icing Condition Detection in Wind Farm with Ceilometer (E)  
J. Paldanius, Vaisala Oyj, Vantaa; M. Tuononen, Finnish Meteorological Institute, Helsinki

14:45 Discussion & Poster Pitching

15:30 Coffee Break

SESSION NO. 6: STANDARDS - SITE CONDITIONS  
Room 3: Lloyd — Chairpersons: J. Rauch, N. N.

13:45 Evolution of Site-Specific Assessment Requirements in Wind Turbine Certification according to IEC Standards (E)  
L. Steer, DEWI-OCC GmbH

14:00 Site Calibration compared between Ed.1 and Ed.2 of the IEC 61400-12-1  
H. Mellinghoff, UL International GmbH (UL DEWI)

14:15 Practical Comparison of IEC 61400-12-1 Site Calibration Correction Methodologies (E)  
G. Calvo, F. Pintilie, K. Gracie-Orr, Sgurrenergy, Glasgow

14:30 Update on the Works on IEC 61400-15 for Wind Resource Assessment, Energy Yield Analysis and Site Suitability Input Estimation  
K. Mönnich, UL International GmbH (UL DEWI)

14:45 Discussion & Poster Pitching

15:30 Coffee Break

SESSION NO. 7: GRID INTEGRATION  
Room 1: Borgward Saal — Chairpersons: O. Carlson, K. Rohrig

16:00 Development of New Measurement and Analysis Methods for Harmonic Evaluation of Wind Turbines and Farms for Grid Connection (D)  
F. Santjer, UL International GmbH (UL DEWI)

16:15 Investigation of Rotor Model Complexity for Electrical Certification Test of WEC on Test Benches (D)  
T. Jersch, C. Mehler, M. Neshati, Fraunhofer IWES Northwest

16:30 Optimum Wind Turbine-Site Matching for Power System Optimisation (E)  
A. Kies, Jonas Hoersch, D. Schlachtberger, T. Brown, S. Schramm, Frankfurt Institute for Advanced Studies; B. Schyska, ForWind, Oldenburg

16:45 Quantification of Grid Related Energy Yield Losses: Experience Gained in Germany Offshore (E)  
M. Strack, Deutsche WindGuard Consulting GmbH

17:00 Discussion & Poster Pitching

(D) = Lecture in German, (E) = Lecture in English
SESSION NO. 8: SIMULATION WIND TURBINE
Room 2: Kaisen Saal — Chairpersons: J. Twele, C. Bottasso

16:00 Design Load Determination by Detailed Flexible Multibody-System Simulation Models (E)
B. Schlecht, T. Rosenlöcher, Technische Universität Dresden
16:15 Experimental Identification of Modal Parameters of a Wind Turbine and Comparison to Multibody Simulations (E)
J. Zierath, S.-E. Rosenow, R. Bockhahn, W2E Wind to Energy; R. Rachholz, A. Schulze, Ch. Woernle, University of Rostock
16:30 Integrated Substructure Analysis for Wind Turbines under Seismic Loading (E)
M. Kretschmer, P. W. Cheng, University of Stuttgart
16:45 Load-Direction-Derived Support Structures for Wind Turbines: A Lattice Tower Concept and Preparations for Future Cerifications (D)
A. Struve, T. Faber, University of Applied Sciences Flensburg; R. Damiani, J. Jonkman, National Renewable Energy Laboratory, Golden, U.S.; T. Ummenhofer, Karlsruhe Institute of Technology
17:00 Discussion & Poster Pitching

SESSION NO. 9: NOISE EMISSIONS
Room 3: Lloyd — Chairpersons: O. Bunk, S. Schulz

16:00 Comparison of Noise Emissions Characteristics of Large Modern Wind Turbines for Normal and Noise Reduced Operation Modes (E)
L. Chamerois, eol-C, Montpellier
16:15 Acoustic and Seismic Emissions from Wind Turbines (E)
F. Calarco, P. W. Cheng, Stuttgarter Wind Energy (SWE); T. Zieger, J. Ritter, Karlsruhe Institute of Technology (KIT)
16:30 Interaction of Low-Frequency Micro-Seismic and Acoustic Emissions of Wind Turbines with Different Foundation Designs (E)
S. Chrisopoulos, P. Kudella, T. Triantafyllidis, Karlsruhe Institute of Technology (KIT); T. V. Gortsas, University of Patras, Greece
16:45 Aeroacoustic Assessment of Rotor Blades by Means of Numerical Methods (D)
B. Faßmann, N. Reiche, R. Ewert, M. Herr, J. Delfs, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)
17:00 Discussion & Poster Pitching

POSTER EXHIBITION WITH AUTHORS PRESENT
Room 4: 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
Location: Bremer Ratskeller - 20:00

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

(D) = Lecture in German, (E) = Lecture in English
09:15 Case study: Comparison of two Nacelle Mounted LiDAR Technologies for a Wind Turbine Yaw Misalignment Analysis. (E)  
A. Pradel, UL International GmbH (UL DEWI); J. Dalmas, VALEMO; C. Lepaysan, EPSILINE

09:30 Realistic Simulations of Extreme Load Cases with LiDAR-Based Feedback Control (E)  

09:45 A Comparison of Nacelle Mounted Scanning LiDAR Based Measurement Methods for the Detection and Characterisation of Wind Turbine Wake Direction (E)  
P. E. Olmos Aguirre, A. J. Keane, SgurrEnergy, Glasgow

10:00 The Influence of Terrain Complexity and Measurement Setup on the Accuracy of Ground Based Doppler Wind LiDARS (E)  
T. Klaas, Y. Chen, L. Pauscher, Fraunhofer IWES, Kassel

10:15 Discussion

10:45 Coffee Break

SESSION NO. 12: OPERATIONAL DATA / PERFORMANCE
Room 3: Lloyd — Chairpersons: M. Kühn, T. Schorer

09:00 Chances and Challenges of EEG 2017 with a Focus on the Potential Stabilizing Effects on Project Risks and Cash Flows (E)  
F. Hulsch, ENERTRAG Aktiengesellschaft; M. Strack, Deutsche WindGuard Consulting GmbH

09:15 The Market Value of Wind Power (E)  

09:30 A Discussion of Production Loss Factors in Operation Based on a Statistical Evaluation of Operating Wind Farm Assets (E)  
P. Spengemann, T. Werner, wpd windmanager GmbH & Co. KG

09:45 Big Data Approach of Wind Resource and Operational Data Analysis (E)  
M. Strack, Deutsche WindGuard Consulting GmbH; R. Pförtner, Svevind AB

10:00 The Devil in Disguise: Pitfall of Scaling Production Data to 20 Years (E)  
M. V. Sørensen, W. Langreder, EMD International A/S, Denmark

10:15 Discussion

10:45 Coffee Break

PANEL DISCUSSION
Room 2: Kaisen Saal

11:15 Panel Discussion: Tenders for Wind Energy – First Experiences and Outlook for the Market Development  
Moderator: Tilman Weber, Erneuerbare Energien
Panelists:
- Andreas von Bobart, VDMA Power Systems / GE Renewable Energy Deutschland
- Holger Meents, Bremer Landesbank
- Thorsten Falk, BMWi, III/5 - Federal Ministry for Economic Affairs and Energy
- Holger Gassner, innoE SE
- Thoralf Herbold, GÖRG

12:30 Lunch Break

SESSION NO. 13: LIDAR - PERFORMANCE VERIFICATION
Room 1: Borgward Saal — Chairpersons: A. Clifton, H. Mellinghoff

13:30 Optimisation of Wind Farm Performance with the Use of Nacelle Mounted LiDAR (E)  
A. Pradel, N. Breteil, UL International GmbH (UL DEWI)

13:45 Power Curve Verification According to IEC61400-12-1:2017 Utilizing Remote Sensing on the Ground and a Nacelle Mounted LiDAR (E)  
V. Netesov, Ventus Energia S.A., Uruguay

14:00 Evaluation on the Prediction Error of Profile Assessments versus MCP Correlation for 6-Months Wind Measurements (E)  
A. Westerhellweg, B. Schulz, UL International GmbH (UL DEWI)

14:15 LiDAR in Complex Terrain: Comparison of the CFD Correction Tools Provided by WindSim and Meteodyn WT with Cup Anemometer Data (E)  
S. Koller, S. Bourgeois, Meteotest, Switzerland

14:30 Forecast the LiDARs Accuracy and Precision in Complex Terrain with Neural Network Tools (E)  
P. Mazoyer, M. Boquet, Leosphere

14:45 Discussion

15:15 Coffee Break

SESSION NO. 14: OFFSHORE WIND CONDITIONS
Room 2: Kaisen Saal — Chairpersons: B. Tinz, R. Frühmann

13:30 Meteorological Analysis of Ramps in Energy Output from German North Sea Offshore Wind Parks (E)  
S. Emeis, Karlsruhe Institute of Technology

13:45 Simulating Large Offshore Wind Farm Clusters with Engineering Models (E)  
V. Barth, T. Neumann, UL international GmbH (UL DEWI); S. Siedersleben, S. Emeis, Karlsruhe Institute of Technology, IMK-IFU

14:00 Derivation of an Offshore Wind Index for the German Bight from High-Resolution Mesoscale Simulation Data of Over a Decade (E)  
M. Dörenkämper, B. Stoevesandt, D. Heinemann, Fraunhofer IWES, Oldenburg

14:15 OBLEX-F1: The Offshore Boundary Layer Experiment at FINO 1 – Experimental Setup and First Results (E)  
J. Reuder, University of Bergen

14:30 RAVE Reloaded – Research at Alpha Ventus Continues with New Focus (E)  
B. Lange, A. Hofmann, Fraunhofer IWES, Bremerhaven

14:45 Discussion

15:15 Coffee Break
SESSION NO. 15: ROTOR BLADES / SIMULATION
Room 3: Lloyd — Chairpersons: A. v. Wingerde, T. Kramkowski

13:30 Influence of 3-D Airfoil Polars for Rotor Blade Models on Wind Turbine Loads (E)
L. Steer, DEWI-OCC GmbH
13:45 Usage of Nonlinear Finite Beam Elements in Rotor Blade Models for Load Calculations of Wind Turbines (D)
C. Schubert, U. Jungnickel, Institut für Mechatronik e.V. Chemnitz; G. Pokriefke, T. Bauer, J. Rieke, Nordex Acciona Windpower
14:00 Wireless Inertial Measurements on Wind Turbine Rotor Blades
F. Berkemeyer, W. Lang, University of Bremen
14:15 Time Domain Flutter Analysis of Swept Rotor Blades (E)
J. D. Polman, C. Balzani, Leibniz Universität Hannover
14:30 An Experimental and Computational Investigation of Wind Turbine Blade-Tower Aerodynamic Interaction (E)
Y. Shkara, A. Werkmeister, R. Fontecha, G. Jacobs, R. Schelenz, RWTH Aachen
14:45 Discussion
15:15 Coffee Break

SESSION NO. 16: LIFE TIME EXTENSION / O&M
Room 1: Borgward Saal — Chairperson: P. Eecen, K. Grigutsch

15:45 Life Time Extension Analysis– Real Case (E)
Á. Sedano, S. López, J. J. Ripa, UL International GmbH (UL DEWI)
16:00 Fatigue Load Reconstruction on Wind Turbine Structures with Structural Health Monitoring (D)
M. Schedat, T. Faber, Flensburg University of Applied Sciences
16:15 Bearing Lifetime Optimization with Ceramic Greases (E)
H. Streitz, Bathan AG, Switzerland
16:30 Accurately Forecasting O&M Costs and Quantifying OPEX Risk (E)
J. Coultate, E. Golyshova, Romax InSight
16:45 Managing Main Bearing Failures (E)
D. Moss, R. Smith, Romax InSight
17:00 Discussion

SESSION NO. 17: SIMULATION WIND 2
Room 2: Kaisen Saal — Chairpersons: S. Emeis, M. Strack

15:45 Using SCADA Data for Mesoscale Model Verification (D)
A. Weiter, M. Schneider, D. Peltret, H.-T. Mengelkamp, anemos GmbH
16:00 Short-term Wind Speed and Power Prediction for Offshore Wind Farms Using Neural Networks (E)
S. Balluff, J. Bendfeld, Paderborn University; S. Krauter, Kompetenzzentrum für nachhaltige Energietechnik (KET)
16:15 Modified Weibull Scaling for Wind Resource Assessment (E)
D. A. Gallacher, Sgurrenergy, Glasgow
16:30 Prediction of the Wind Field in Moderate Terrain Using the Navier-Stokes Solver WindStation (D)
A. M. Gameiro Lopes, Universidade de Coimbra; O. Herrera Sánchez, T. Sperling, H. Koch, R. Daus, R. Braun, EuroWind GmbH
16:45 Wind Flow Modelling in Mountainous Areas with Nocturnal Katabatic Winds (E)
M. Ranaboldo, E. Monfort, J. Vidal, UL-AWS Truepower; G. E. Varela-Lopes, R. Bispo, UL International GmbH (UL DEWI)
17:00 Discussion

SESSION NO. 18: OFFSHORE CONDITION / OPERATION
Room 3: Lloyd — Chairpersons: K. Herklotz, A. Kriener

15:45 Platform Based Infrared Sea Surface Temperature measurement: Experiences from a one Year Trial in the North Sea (E)
R. K. Frühmann, T. Neumann, H. Decke, UL International GmbH (UL DEWI)
16:00 Environmental Contours Based on Kernel Density Estimation (E)
A. F. Haselsteiner, J.-H. Ohlendorf, K.-D. Thoben University of Bremen, ForWind
16:15 An Innovative Hybrid Substructure Made of High-Strength Concrete and Ductile Cast Iron for Offshore Wind Turbines (E)
M. Stümpel, S. Marx, P. Schaumann, Leibniz Universität Hannover; G. Seidl, Ssf Ingenieure AG; Joachim Göhlmann, grbv Ingenieure im Bauwesen GmbH & Co. KG
16:30 SMART Weather Risk Sharing – Based on a Systematic Weather Risk Assessment (D)
M. Wiggert, T. Panteleon Fraunhofer IWES, Bremerhaven
16:45 Vessel Guideline for the Installation of Offshore Wind Farms (D)
F. D. Lüdecke, G. Wolken-Möhlmann, T. Panteleon, Fraunhofer IWES Bremerhaven; A. Hurtado, Technische Universität Dresden
17:00 Discussion

CLOSING THE CONFERENCE
Room 1: Borgward Saal

17:15 Conference closing

(D) = Lecture in German, (E) = Lecture in English
2. TESTING

2.2 Mechanical Torque Measurement of a Wind Turbine Drive Train under Test on the Nacelle Test Bench Dynalab
H. Zhang, N. Eich, M. Pilas, Fraunhofer IWES, Bremerhaven

2.3 IEA Wind TCP Task 35 Full Size Ground Testing for Wind Turbines and their Components. Defining Unified Test Load Cases for Nacelle Design Validation Tests
T. Duda, G. Jacobs, D. Bosse, RWTH Aachen University

2.4 Influence on MN•m Torque Measurement in Multi-MW Nacelle Test Benches
S. Kock, G. Jacobs, D. Bosse, RWTH Aachen University

2.6 Influence of the Detail of an Onshore Wind Turbine Model in Respect to the Soil and Structure to the Load Calculation
A. Werkmeister, G. Jacobs, R. Schelenz, J. Berroth, P. Michel, R. Fontchea, RWTH Aachen

2.7 Transience Statistics for Fatigue Load Assessment
G. More, SgurrEnergy, Glasgow

3. SIMULATION WIND & TURBINE

3.1 see Session 1
3.3 The Principles of Measure-Correlate-Predict Methods
D. Hanslian, Academy of Sciences, Prague

3.4 see Session 1
3.5 Reconstruction of Speed, Direction, and Turbulence Data across Meteorological Towers to improve Wind Farm Production Estimates
T. Lambert, B. O’Loughlin, N. Robinson, UL AWS Truepower

3.7 A Generic Comparison of Offshore Site Conditions between Europe and USA
G. Wolken-Möhlmann, L. Baise and E. Hines, Tufts University, Medford

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4. MEASURING METHODS

4.1 Rotor Blade Temperature Monitoring with Material Integrated Wireless Sensor Tags
F. Berkemeyer, M. Salas, G. Dumstorff, W. Lang, IMSAS University of Bremen; M. Brink, J.-H. Ohlendorf, K.-D. Thoben, BIK Univ. of Bremen

4.2 Measuring Lightning Currents on Wind Turbines
J. Birkl, DEHN+SÖHNE GmbH + Co. KG.; E. Shulzenko, Technische Universität Ilmenau

4.3 Measurements of Atmospheric Turbulence with a Customized 2d-ALCA
T. Reichsteina, J. Puczylowski, M. Hölling, ForWind Oldenburg; D. Stein, GL Garrad Hassan Deutschland GmbH

4.4 See Session 2

4.5 See Session 5

P. J. M. Clive, SgurrEnergy

4.7 See Session 15

4.8 Wind-LiDAR with Improved Range Resolution
E. Brinkmeyer, P. Markmann, G. Peters, Metek GmbH; C. Bollig, A. Falkenberg, Abacus Laser

4.9 Development of an On-Site Device to Measure Corrosion Load and Impact to Rotor Blades of a Wind Turbine
M. Wagner, R. Jatkowski, Seilpartner Windkraft GmbH; M. Mühlbauer, P. U. Thamsen, TU Berlin

4.10 Implementation of the FINO-Wind Database Standardisation for the FINO Platforms

4.11 The First Demonstration of Power Performance Stabilization by LiDAR-Assisted Turbine Control
Y. Kamada, T. Maeda, K. Morimoto, Mie University, Japan; N. Kotake, Y. Kajiyama, S. Kameyama, Mitsubishi Electric Corporation, Japan

5. REMOTE SENSING

5.1 Performance of MERRA2 Data Compared to Floating LiDAR
J. Bendfeld, S. Balluff, S. Wübbeke, S. Krauter, Paderborn University

5.4 See Session 3

5.5 See Session 13

5.6 Windcube LiDAR: Assessment of the Repeatability and Stability Through Years of Validation
P. Mazoyer, F. Rebeyrat, C. Hermaszweski, Leosphere

5.7 See Session 11

5.8 Velocity Linear Display (VLD) LiDAR Methods
P. J. M. Clive, SgurrEnergy, Glasgow
GENERAL INFORMATION

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

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, 17 October 2017, 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 17 October and from 08:00 to 17:45 on 18 October. The layout of the conference hall is shown on page 6.

Important Phone Numbers
Emergency Call (Police / Fire Brigade): 110 / 112
Medical Service (Emergency / Weekend duty): (0421) 192 92
Taxi-Ruf: (0421) 140 14
Taxi-Roland: (0421) 144 33

Conference Office
For further information on DEWEK 2017 please contact:
UL international GmbH – DEWEK 2017
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 (Organization)
Bernd Neddermann (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
The conference dinner on 17 October 2017, 20:00 h, will take place at the Bremer Ratskeller (address 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 25). The price for an extra dinner is EUR 79.- (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 is possible on both conference days, 17 and 18 October 2017, 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
Directly behind Messe Bremen/Congress Centrum Bremen/ÖVB Arena.

By Tramway 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

Registration and receipt of payment (2017)

<table>
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<tr>
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<th>Normal fee</th>
<th>Late fee until 11 Oct</th>
<th>On-site fee after 11 Oct</th>
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<tr>
<td>Two-day admission</td>
<td>€ 969.-</td>
<td>€ 1,019.-</td>
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<td>Two-day admission</td>
<td>€ 890.-</td>
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<tr>
<td>One-day admission</td>
<td>€ 620.-</td>
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<td>without conference dinner</td>
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Students **

| Two-day admission     | € 280.-             | € 340.-               |
| without conference dinner |                   |                       |
| One-day admission     | € 215.-             | € 270.-               |
| without conference dinner |                   |                       |

Extras

Additional dinner

|                        | € 79.-               | € 79.-                |

* 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,
- early fee ticket prices are valid for registrations until 31.08.2017.
- that authors, too, 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 (UL DEWI). Please use www.dewek.de for your registration and payment.

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 2017 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 22.09.2017, 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, Robert-Heger-Str.24, 81927 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 01.09.2017: Refund of registration fee minus 60 Euro administration fee.
- Cancellation until 15.09.2017: Refund of 50% of the registration fee.
- Cancellation after 22.09.2017: 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.

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:

Hotelservice-Deutschland.de c/o Granevento GbR
Christian Strasser
Carl-Schurz-Straße 5, D- 28209 Bremen
Phone: +49 (0) 4 21 / 172 413 70
Fax: +49 (0) 4 21 / 172 413 71
info@hotelservice-deutschland.de

A hotel reservation form of Hotelservice-Deutschland.de is available on the DEWEK 2017 website www.dewek.de (Accommodation) or under https://booking.hotelservice-deutschland.de/booking/congresses/dewek?locale=en.

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