

DEWEK 2006: Preliminary Programme

Lectures

22.11.2006, Wednesday

08:00 Registration in the Foyer of the Conference Hall

Opening Session

Room: 1 - Chairman: J. P. Molly

09:00 Opening Session

Speakers will be published later

10:30 Coffee Break

Session No. 1: Wind Resource I

Room: 1 - Chairman: N. N.

11:00 **Analysis of Energy Yield Study Accuracy by Evaluation of Wind Farm Operational Data**

M. Strack, P. Spengemann, DEWI; V. Borget, DEWI France; J. Fischer, Bremer Landesbank

11:15 **Energy Prediction Uncertainty in Complex Terrain: a Case Study**

B. Ait-Driss, F. Pelletier, M. Dimitrijevic, C. Sibuet-Watters, Helimax Energy Inc., Canada

11:30 **Computer Tool to Identify Promising Areas for Wind Farm Installation and Energy Prediction**

A. L. de Sá, V. G. Guedes, CEPEL, Brazil; S. R. Melo, FPLF, Brazil; P. Bezerra, CHESF, Brazil

11:45 **A New Comprehensive Compendium of Statistical Wind Data for Germany**

J. Sebecker, B. Wichura, U. Behrens, Th. Deutschländer, Deutscher Wetterdienst

12:00 **Thermally Induced Boundary-Layer Flows Over Step-in-Roughness Changes and Topography**

P. A. Taylor, W. Weng, York University, Canada; H. Liu, ORTECH Consulting Inc., Canada

12:15 Discussion

12:45 Lunch Break

Session No. 2: Condition Monitoring

Room: 2 - Chairman: N. N.

11:00 **Managing Gearbox Failures, Condition Monitoring and Measurement**

D. Kitaljevich, GasTOPS Ltd., Canada; S. Leske, momac Maschinenbau GmbH & Co. KG

11:15 **Alpine Test Site Gütsch: Monitoring of a Wind Turbine under Icing Conditions**

R. Cattin, S. Kunz, G. Russi, METEOTEST, Switzerland; A. Heimo, Federal Office of Meteorology and Climatology, Switzerland; M. Russi, Elektrizitätswerk Ursern, Switzerland

11:30 **Continuous Natural Frequency Monitoring of Rotor Blades for Detection of Damages, Ice-foundation and Dynamic Overloads**

P. Volkmer, F. Müller, D. Volkmer, D. Schollbach

11:45 **Condition Monitoring and Maintenance Strategies for the Next Generation of Large Offshore Wind Turbines**

J. Giehard, P. Caselitz, ISET e. V.

12:00 **PREWIND - Development of a Methodology for Preventive Maintenance of Windturbines Through the use of Thermography**

C. Ferber, Technologie Transfer Zentrum Bremerhaven; V. Schulz, Fördergesellschaft Windenergie e. V.

12:15 Discussion

12:45 Lunch Break

Session No. 3: Modelling Wind

Room: 3 - Chairman: N. N.

11:00 **Direct Numerical Simulation of the Turbulent Flow Around an Airfoil for Wind Turbines Using Spectral/HP Method**

B. Stoevesandt, J. Peinke, ForWind; A. Shishkin, C. Wagner, DLR Göttingen

11:15 **New Aerodynamical Modelling of Vertical Axis Wind-Turbines with Application to Flow Conditions with Rapid Directional Changes**

A. P. Schaffarczyk, CE-Wind Schleswig-Holstein and University of Applied Sciences Kiel

11:30 **Comparison of Aerodynamic Loads from New Turbulence Models Deduced by Statistical Fluid-Mechanics with those used in Standard Guidelines**

H. Gontier, A. P. Schaffarczyk, CE-Wind Schleswig-Holstein and University of Applied Sciences Kiel; D. Kleinhans, R. Friedrich, Westfälische Wilhelms-Universität Münster

11:45 **GumbelWind – A Computer Code for Statistical Extrapolation of Ultimate Loads on Wind Turbines**

M. Hänler, U. Ritschel, Windrad Engineering GmbH

12:00 **Modelling of Offshore Wind Speed Conditions**

J. Tambke, L. von Bremen, ForWind; J. A.T. Bye, Univ. of Melbourne, Australia; B. Lange, ISET e.V.; L. Claveri, Finnish Meteorological Institute, Finland; C. Poppinga, Deutsche WindGuard Consulting GmbH; J.-O. Wolff, Univ. of Oldenburg

12:15 Discussion

12:45 Lunch Break

Session No. 4: Wind Resource II

Room: 1 - Chairman: N. N.

13:45 **Long-term Scaling of Site Measurements: Evaluation of Long-term Meteorological Data in France and Comparison of Correlation Methods**

P.-A. Monnier, V. Borget, DEWI France; M. Strack, DEWI

14:00 **Evaluation of ZephIR**

A. Albers, Deutsche WindGuard Consulting GmbH

14:15 **High Sophisticated On- and Offshore Investigations of Three Dimensional Wind Velocity and Direction Measurements by a Moved Sensory System**

C. Holze, Friedrich Wilhelm Bessel Institute and Centre of Applied Space Technology and Microgravity/Univ. Bremen; A. Schöne, Friedrich Wilhelm Bessel Institute/Univ. Bremen; J. Krieger, Friedrich Wilhelm Bessel Inst./Thales Instruments GmbH; A. Higgen, Thales Instruments GmbH; H.-J. Rath, Centre of Applied Space Technology and Microgravity/Univ. Bremen

14:30 **Applicability of the Reanalysis Data to Evaluate the Long-term Variation of Wind Speed in Asia**

S. Kitaya, Y. Yuuki, N. Hayasaki, H. Fukuda, CRC Solutions Corp, Japan

14:45 **UAV-based Aerial Photography as Support Tool for Wind Resource Estimations**

F. Dierich, I. H-P Waldl, Overspeed GmbH & Co. KG; W. Nebel, A. Schallenberg, University of Oldenburg

15:00 Discussion

15:30 Coffee Break

Session No. 5: Component Optimisation I

Room: 2 - Chairman: N. N.

- 13:45 **Defect Detection in Rotor Blades using Thermographic Inspection Techniques**
P. Meinschmidt, J. Aderhold, Fraunhofer-Institute for Wood Research (WKI)
- 14:00 **A New Design Approach for Composites with Improved Damping Properties**
M. Kochmann, I. Gebauer, D. H. Müller, Bremer Institut für Konstruktionstechnik - Universität Bremen
- 14:15 **Quality Improvement of Rotor Blades**
I. Gebauer, D. H. Müller, J.-H. Ohlendorf, M. Kochmann, L. Weigel, Univ. Bremen, Bremen Institute for Engineering Design
- 14:30 **Tuned Liquid Column Dampers in Wind Turbines, First Results of Full Scale Demonstration**
A.J. Wilmsink, S. Kuhnt, J.F. Hengeveld, Mecal, The Netherlands
- 14:45 **Gearless Transmissions for Large Wind Turbines.**
W. Rampen, Artemis IP Ltd, Scotland
- 15:00 **Discussion**
- 15:30 **Coffee Break**

Session No. 6: Wind Farm Effects

Room: 3 - Chairman: N. N.

- 13:45 **Farm Efficiencies in Large Wind Farms**
K. Mönnich, D. Zigras, DEWI
- 14:00 **New Developments in Precision Wind Farm Modelling**
W. Schlez, A. Neubert, J. Phillips, Garrad Hassan and Partners Ltd.
- 14:15 **Beyond the Ainslie Model: 3D Navier-Stokes Computation of Wind Flow through Large Offshore Wind Farms**
V. Riedel, T. Neumann, M. Strack, DEWI
- 14:30 **Verification of Wind Field Simulations**
H.-T. Mengelkamp, S. Huneke, J. Geyer, anemos Gesellschaft für Umweltmeteorologie mbH
- 14:45 **Aeroelastic Simulation of a Multi-MW Wind Turbine Operating in Wake**
J. J. Trujillo, University of Stuttgart
- 15:00 **Discussion**
- 15:30 **Coffee Break**

Session No. 7: Wind Power Forecast I

Room: 1 - Chairman: N. N.

- 16:00 **The Art of Energy Forecasting - Chances and Limitations**
J. Sander, Sander + Partner GmbH, Switzerland
- 16:15 **Artificial Intelligence in Operation: Application of two Different Forecast Models for the Prediction of Wind Power in Germany**
F. Schögl, R. Jursa, B. Langer, K. Rohrig, ISET e.V.
- 16:30 **Optimal Combination of Different Numerical Weather Models for Improved Wind Power Predictions**
R. Meyer, M. Lange, U. Focken, energy & meteo systems GmbH; M. Denhardt, Deutscher Wetterdienst; B. Ernst, F. Berster, RWE Transportnetz Strom GmbH
- 16:45 **Forecasting Wind Power in High Wind Penetration Markets, Using Multi-Scheme Ensemble Prediction Methods**
C. Möhrlen, J. U. Jørgensen, WEPROG; S. J. Lang, University College Cork, Ireland
- 17:00 **Next Generation Short-term Forecasting of Wind Power – Results of the ANEMOS Project.**
I. Waldl, Overspeed GmbH & Co. KG; G. Kariniotakis, Ecole des Mines de Paris, Center for Energy & Processes, France; for the ANEMOS Team
- 17:15 **Discussion**

Session No. 8: Component Optimisation II

Room: 2 - Chairman: N. N.

- 16:00 **The Wind Energy Sector Goes Offshore - Germany Establishes a Center of Competence for Wind Energy**
H.-G. Busmann, A. Berg-Pollack, C. Kensche, Fraunhofer Center for Windenergy and Maritime Technologies (CWMT)
- 16:15 **Problems of a Reliable Connection Between Steel Tower and Concrete Foundation**
M. Gutermann, Hochschule Bremen; K. Steffens, Prof. Dr.-Ing. Steffens Ingenieurgesellschaft mbH
- 16:30 **Feasibility Study for the Recycling of Composite Material (MaVeFa)**
T. Brahms, U. Kühne, Forschungs- und Koordinierungsstelle Windenergie (fk-wind); H. Albers, Hochschule Bremen
- 16:45 **Modern Technology with Traditional Looks: Windmill de Nolet**
E. Schröer, Mecal, The Netherlands
- 17:00 **A Damage Approach for Concrete Constructions Subjected to Multi-stage Fatigue Loading**
J. Göhlmann, J. Grünberg, University of Hannover
- 17:15 **Discussion**

Session No. 9: Power Performance

Room: 3 - Chairman: N. N.

- 16:00 **Exploiting Portfolio Effects in Diversified Project Bundles – A Quantitative Analysis of Potentials and Implications for Financial Engineering**
M. Strack, DEWI; A. Boensch, F. Hulsch, ENERTRAG Structured Finance; D. Hartmann, ENERTRAG AG
- 16:15 **Wind Farm Performance Verification**
H. Klug, H. Mellinghoff, DEWI
- 16:30 **The Influence of Meteorological Parameters on the Operational Behavior of a Multimegawatt WEC**
K. Bleibler, T. Kramkowski, DEWI; K. Braun, N. Cosack, Universität Stuttgart
- 16:45 **Detailed Analysis of the Wind Related Power Fluctuations and Energy Gain of a PMSM Wind Power Station**
S. Jensen, University of Kiel
- 17:00 **Getting Wind Turbine Power Curves from Fluctuating Data**
E. Anahua, J. Gottschall, St. Barth, J. Peinke, ForWind
- 17:15 **Discussion**

Poster Exhibition with Authors Presents

Hanse Saal - 17:30-19:00

The authors will be available for discussion of their posters and answering of questions.

Conference Dinner and Reception

Location: Town Hall of Bremen - 19:30

On the evening of the first conference day the Senat of the city state of Bremen will give at the historic town hall of Bremen a reception for the participants of the dinner. After the reception, the DEWEK conference dinner will be held at the same place.

23.11.2006, Thursday08:00 **Registration in the Foyer of the Conference Hall****Session No. 10: Wind Power Forecast II**

Room: 1 - Chairman: N. N.

- 08:30 **Short-Term Wind Energy Prediction Using On-Line Weather Forecast**
M. H. Abderrazzaq, Yarmouk University, Jordan

- 08:45 **Short-term Wind Power Prediction Using Neural Networks**
A. Hilden, J. Thiesen, Vejr2 A/S, Denmark
- 09:00 **A new Approach for Uncertainty Estimation in Wind Power Predictions**
U. Gräwe, J. Tambke, L. von Bremen, N. Saleck, ForWind
- 09:15 **Forecast Management for Effective Energy Capture Calculation at Offshore Wind Plant Locations**
M. Splett, J. Bendfeld, J. Voss; University of Paderborn
- 09:30 **Energy Economic Assessment of Large Scale Electricity Storage Applications in Central Europe - Does Growing Wind Power in Europe Boost the Economic Profitability of Storages and Vice Versa?**
C. Gatzel, University of Cologne (EWI)
- 09:45 **Discussion**
- 10:15 **Coffee Break**

Session No. 11: Rotor Blade-Design & Control

Room: 2 - Chairman: N. N.

- 08:30 **Rotor Blade Monitoring – The Technical Essentials**
H. Söker, DEWI; A. Berg-Pollack, C. Kensche, Fraunhofer Center Windenergie und Meerestechnik;
- 08:45 **Load Assumptions for the Design of Electro Mechanic Pitch Systems**
J.-B. Franke, A. Manjock, Germanischer Lloyd WindEnergie GmbH; H. Hemker, H. G. Osterholz, OAT GmbH
- 09:00 **H- based Independent Blade Pitch Control Design for Load Reduction on Large Wind Turbines**
M. Geyler, P. Caselitz, ISET e.V.
- 09:15 **Active Wind Turbine Control Utilizing Measurements from Fibre Optical Load Sensors to Adjust Individual Blade Angle Integrated in to an Electro-mechanical Pitch System**
J.-Th. Wernicke, R. Byars, J. Shadden, Ch. Schmoeller, WindForce GmbH; H. Kestermann, SSB GmbH & Co KG; P. Rhead, Insensys Ltd., UK; E. Bossanyi, Garrad Hassan & Partners Ltd., England
- 09:30 **New Results from the European SIROCCO Project: Silent Rotors by Acoustic Optimization**
Th. Lutz, W. Würz, A. Herrig, K. Braun, E. Krämer, Univ. Stuttgart; J. G. Schepers, A. P. W. M. Curvers, ECN, The Netherlands; S. Oerlemans, National Aerospace Laboratory NLR, The Netherlands; A. Matesanz, Gamesa Eólica, Spain; R. Ahrelt, T. Maeder, S. Herr, GE Wind Energy/GE Global Research
- 09:45 **Discussion**
- 10:15 **Coffee Break**

Session No. 12: Operational Experiences

Room: 3 - Chairman: N. N.

- 08:30 **+15 Years Operational Experiences with Wind Power ...and then...?**
M. Durstewitz, B. Hahn, K. Rohrig, ISET e.V.
- 08:45 **Error Statistics for the Gearbox in Drive Trains of WEC**
J. Holzmüller, 8.2 Ingenieurbüro Holzmüller Aurich
- 09:00 **Improving Wind Turbine Availability by Reliability Based Maintenance**
B. Hahn, ISET e.V.; H. Jung, Ingenieurgesellschaft Zuverlässigkeit und Prozessmodellierung (IZP)
- 09:15 **COST Action 727, Part 1: Overview of Atmospheric Icing on Structures - Final Report, Phase 1**
B. Tammelin, FMI, Finland; L. Makkonen, VTT, Finland; H. Dobesch, Austria
- 09:30 **COST Action 727, Part 2: Measuring Atmospheric Icing on Structures - Final Report, Phase 1**
S. Fikke, Norway; B. Wichura, Deutscher Wetterdienst; T. Laakso, VTT, Finland; G. Ronsten, FOI, Sweden
- 09:45 **Discussion**
- 10:15 **Coffee Break**

Session No. 13: Offshore Foundation

Room: 1 - Chairman: N. N.

- 10:45 **Influence of Wave Spreading in Short-term Sea States on the Fatigue of Offshore Support Structures at the Example of the FINO1-Research Platform**
C. Böker, P. Schaumann, University of Hannover
- 11:00 **Fatigue of Grouted Joint Connections**
F. Wilke, P. Schaumann, University of Hannover
- 11:15 **Offshore Gravity Foundations in Concrete - New Construction Technologies for the Future**
H. Mathis, F. Hasberger, G. Sutter, RSB Schalungstechnik GmbH&Co, Austria
- 11:30 **Prediction Of Monopile Deformation Under High Cyclic Lateral Loading**
P. Hinz, K. Lesny, W. Richwien, Univ. of Duisburg-Essen
- 11:45 **New BAUER Flydrill System Drilling Monopiles at Barrow Offshore Wind Farm, UK**
W. G. Brunner, Bauer Maschinen GmbH
- 12:00 **Discussion**
- 12:30 **Lunch Break**

Session No. 14: Design Loads

Room: 2

Chairman: N. N.

- 10:45 **The New Standard IEC 61400-1 ed. 3 and its Effect on the Load Level of Wind Turbines**
K. Freudenreich, K. Argyriadis, Germanischer Lloyd WindEnergie
- 11:00 **A Guide to Design Load Validation**
J. Kröning, DEWI-OCC; H. Söker, DEWI
- 11:15 **Experiences with the Extrapolation of Extreme Loads Using Probabilistic Methods According to IEC 61400-1 ed. 3: Wind Turbines - Part 1: Design Requirements**
A. Heitmann, H. O. Wulf, W. Petruschke, T. Hahm, TÜV NORD SysTec GmbH & Co. KG
- 11:30 **Determination of Extreme Winds According to the New IEC 61400-1, ed. 3**
W. Winkler, M. Strack, DEWI
- 11:45 **MEASNET LOADS – Commenting ‘IEC-Dash 13’**
O. Bruhn, Windtest Kaiser-Wilhelm-Koog GmbH; H. Söker, DEWI; M. Grapentin, Windtest Grevenbroich GmbH; H. Braam, Energy Research Centre of the Netherlands, The Netherlands; F. Mouzakis, Centre of Renewable Energy Sources, Greece; S. M. Petersen, RISØ National Laboratories Wind Energy Department, Denmark; T. Kleinselbeck, Wind Consult GmbH; A. O. Vazquez, CENER National Renewable Energies Centre, Espana
- 12:00 **Discussion**
- 12:30 **Lunch Break**

Session No. 15: Grid Integration I

Room: 3 - Chairman: N. N.

- 10:45 **Revised E.ON Grid Code Requirements for the Future Secure System Operation**
I. Erlich, J. Löwen, W. Winter, E.ON Netz GmbH
- 11:00 **Experience with more than 1000 Voltage dip Free Field Tests of Wind Turbines**
J. Möller, WINDTEST Kaiser-Wilhelm-Koog GmbH
- 11:15 **Extended Operating Control to Integrate German (Offshore) Wind Farms**
M. Wolff, R. Mackensen, G. Füller, B. Lange, K. Rohrig, ISET e. V.
- 11:30 **Influence of Transmission Lines on Grid Connection**
F. Santjer, DEWI; M. Marks, TU Clausthal

- 11:45 **HyWindBalance: New Markets for Wind Power by Combining Wind Farms and Hydrogen Storage Systems**
H.-P. Waldl, Overspeed GmbH & Co. KG; R. Steinberger, PLANET GbR
- 12:00 **Discussion**
- 12:30 **Lunch Break**

Session No. 16: Offshore Marine Environment

Room: 1 - Chairman: N. N.

- 13:30 **One Year Operation of Offshore Metmast Amrum-bank West**
J. Bendfeld, M. Splett, J. Voss, University of Paderborn; A. Higgen, J. Krieger, Thales Instruments GmbH
- 13:45 **Oceanographic Results of Two Years Operation of the First Offshore Wind Research Platform in the German Bight - FINO1**
K. Herklotz, Federal Maritime and Hydrographic Agency
- 14:00 **Offshore Wind Design Parameters – Status Report on the Research Project OWID**
T. Neumann, V. Riedel, DEWI; S. Emeis, M. Türk, FZ Karlsruhe (IMK-IFU); C. Illig, DEWI-OCC
- 14:15 **Influence of Irregular Wave Kinematics Description on Fatigue Load Analysis of Offshore Wind Energy Structures**
M. Kohlmeier, K. Mittendorf, A. Habbar, W. Zielke, University of Hannover
- 14:30 **Estimated Extreme Winds in the German Bight**
M. Türk, S. Emeis, Forschungszentrum Karlsruhe GmbH
- 14:45 **Discussion**
- 15:15 **Coffee Break**

Session No. 17: Aeroelastic & Multibody Simulation

Room: 2 - Chairman: N. N.

- 13:30 **Control Requirements for Load Mitigation of Aerodynamic and Hydrodynamic Loads of Offshore Wind Turbines**
T. Fischer, P. Passon, M. Kühn, University of Stuttgart
- 13:45 **On the Analysis of Dynamic Loads in Complete Wind Turbines using a Combined Multibody-System- and Finite-Element-Model**
B. Schlecht, T. Schulze, T. Hähnel, T. Rosenlöcher, M. Höfgen, TU Dresden (IMM)
- 14:00 **Aero-elastic Simulation of a Wind Turbine and Drive Train Resonance Analysis using the Multibody Simulation Code SIMPACK**
S. Hauptmann, N. Cosack, M. Kühn, University of Stuttgart; Lutz Mauer, INTEC GmbH
- 14:15 **Impact of Wind Turbine Drive Train Concepts on Dynamic Gearbox Loads**
A. Heege, J. Betran, Y. Radovic, SAMTECH Iberica, Spain; P. Viladomiu, M. Latorre, J. M. Cantons, ECOTÈCNIA s.coop.c.l., Spain
- 14:30 **Simulation of the Vibration Behaviour of Wind Turbines Considering Dynamic Loads**
P. W. Gold, R. Schelenz, A. Kube, D. Möller, RWTH-Aachen University
- 14:45 **Discussion**
- 15:15 **Coffee Break**

Session No. 18: Grid Integration II

Room: 3 - Chairman: N. N.

- 13:30 **Integration of Wind Power into the European Power Grid**
J. Müller, GENI - Gesellschaft für Netzintegration e.V.
- 13:45 **Virtual Power Plant for Balance Power**
J. Strese, STEAG Saar Energie AG

- 14:00 **Trading Wind Energy on Electricity Markets**
U. Focken, M. Lange, energy & meteo systems GmbH
- 14:15 **Advanced Tools for the Management of Electricity Grids with Large-Scale Wind Generation**
G. Kariniotakis, Ecole des Mines de Paris, Centre for Energy & Processes, France; I. Waldl, Overspeed GmbH & Co. KG; for the ANEMOS.plus Team
- 14:30 **WINDebit: an Alternative way to Handle Wind Farms Like Power Stations**
H. Krebs, E. Steinbach, Ingenieurbüro Kuntzsch GmbH
- 14:45 **Discussion**
- 15:15 **Coffee Break**

Session No. 19: Offshore Project Realisation

Room: 1 - Chairman: N. N.

- 15:45 **European Offshore Wind Farms - A Survey to Analyse Experiences and Lessons Learnt by Developers of Offshore Wind Farms**
A. Tiedemann, German Energy Agency GmbH
- 16:00 **WeserWind GmbH Builds First Offshore-Tripod**
C. Bussler, WeserWind GmbH Offshore Construction Georgsmarienhütte
- 16:15 **Measurement and Reduction of Offshore Wind Turbine Construction Noise**
K.-H. Elmer, W.-J. Gerasch, Universität Hannover; T. Neumann, J. Gabriel, DEWI; K. Betke, M. Schultz-von Glahn, ITAP
- 16:30 **Offshore Wind Farms (Project Financing)**
T. Hinsche, Commerzbank AG
- 16:45 **Technical Challenges and their Solution of the DOWNWinD Project in 45m Water Depth**
M. Seidel, D. Gosch, U. Peters, REpower Systems AG
- 17:00 **Discussion**
- 17:15 **Closing the Conference**
J. P. Molly, DEWI

Posters

Room: Hanse Saal

1 Performance Verification

- 1.1 **Performance Verification of Wind Farms on Operation in the State of Ceará – Brazil**
H. T. Ferreira, University of São Paulo, Brazil
- 1.2 **A Consideration on Definition of Complex Terrain**
N. Hayasaki, R. Tanikawa, CRC Solutions Corp, Japan; H. Matsumiya, Kyushu University, Japan; T. Kogaki, National Inst. of Advanced Industrial Science and Technology, Inst. of Energy Utilization, Japan
- 1.3 **Uncertainty of Annual Energy Production for a Specific Turbine Model Based on a Set of IEC 61400-12 Measurements**
H. Mellinghoff, U. Bunse, O. Haack, DEWI
- 1.4 **Micrositing of Small-Scale Wind Turbines is More Economical Viable for Rural Electrification in Sri Lanka**
M. Narayana, NERD Centre of Sri Lanka

2 New Developments

- 2.1 **The Latest Step of the Proven Mx Series – Design Changes & Operational Results of REpowers Latest Commercial Wind Turbine MM92**
C. Draheim, REpower Systems AG
- 2.2 **Wind Turbine Towers: Trends and Issues**
Z. Badar, A. Shah, V. R. Tanti, Suzlon Infrastructure Ltd., India
- 2.3 **Glassfibre Reinforced Plastics Rotor Blades – Rapid, Improved and Economical! Innovative Process-Technologies for Automised Technical Textile Handling**
C. Dörsch, I. Gebauer, D. H. Müller, Universität Bremen, Bremer Institut für Konstruktionstechnik

- 2.4 Integrated Software for Wind Turbine Design & Development Analysis**
C. Rachor, Y. Song, Romax Technology Ltd, Germany and UK; L. Seung-Kuh, Hyosung Corporation, South Korea
- 2.5 The Dynamic Wind Power Captureability of a High Performance SHWT - Zephyr's "Airdolphin"**
R. Ito, Zephyr Corporation, Japan; H. Matsumiya, Kyushu University, Japan; C. Arakawa, M. Iida, University of Tokyo, Japan
- 2.6 Control Method of Variable Speed Wind Turbine and its Effects Acted on Power Systems**
X. Zhang, Xi'an Jiaotong University, China; W. Wang, Xinjiang University, China; S.X.Ding, University of Duisburg-Essen
- 2.7 Development of BR-W Airfoils for Wind Turbine Rotor Blades to Operate in the Environmental Conditions of the Brazilian Northeast**
E. L. de Morais, L. A. J. Procopiak, LACTEC, Brazil; F. L. Galvão, O. C. do Amarante, Camargo-Schubert Engenharia Eólica Ltda; Brazil; P. B. de Carvalho Neto, P. C. de Souza Câmara, CHESF, Brazil
- 2.8 High Efficiency + Simplified Design – The VENSYS Low-Risk Approach to Reduce the Cost of Wind Energy**
S. Jöckel, D. Knünz, J. Millhoff, J. Rinck, VENSYS Energiesysteme GmbH & Co. KG
- 2.9 Design of Maintenance Free Bolted Joints in the Wind Turbine Generator Load Path**
J.-T. Wernicke, R. Byars, J. Shadden, WindForce GmbH; F. Scheuch, R. Kociorski, J. Meisterling PFW Technologies GmbH
- 2.10 Consultative Certification - A New Approach for Efficient Development and Certification of Wind Turbines**
N. Hille, A. Andreae, Germanischer Lloyd WindEnergie

3 Simulation I (Wind Turbine)

- 3.1 Design of Winglets for Retrofitting Wind Turbine Rotor Blades**
F. Richter, T. Rische, cp.max Rotortechnik GmbH & Co. KG
- 3.2 Data Reconciliation and Gross Error Detection of the Generator of a Wind Turbine**
O. Bennouna, N. Héraud, P. Poggi, G. Notton, Université de Corse, France; O. Malasse, 3SI-ENSAM, France;
- 3.3 Modelling of the Wind Turbine Rotor for Load Flow Studies**
A. R. Filgueiras, T. M. da mata Branco, A. P. de Moura, Universidade Federal do Ceará, Brazil
- 3.4 Energy Management for a Small Wind Turbine Controlling the Priority of the Loads Using the Simulation Program Matlab and the LCC Method**
I. Negrea, G. Dragusin, I. Visa, Transilvania University of Brasov, Romania

4 Simulation II (Wind)

- 4.1 Local Short-term Forecasting for Wind Power Plants in Brazil**
L. von Bremen, ForWind; L. Lisbôa, R. Haas, F. Araujo, C. Maciel, S. L. Abreu, S. Colle, LEPTEN/EMC/UFSC, Brazil
- 4.2 International State-of-the-art in Wind Power Forecasting and Future Developments**
M. Lange, U. Focken, energy & meteo systems GmbH
- 4.3 Simulation of Intermittent Wind Fields: A New Approach**
D. Kleinhans, R. Friedrich, Universität Münster; H. Gontier, A. P. Schaffarczyk, CE-Wind Schleswig-Holstein and University of Applied Sciences Kiel

- 4.4 Exploring the Upper Limit of the Surface Boundary Layer - Wind Power Estimation for Extreme Hub Heights**
R. Cordsen, I. H-P Waldl, Overspeed GmbH & Co. KG; J. Parisi, University of Oldenburg
- 4.5 Wind Power Prediction using Multi – Ensemble Numerical Weather Prediction System Approach**
Ü. Cali, B. Lange, K. Rohrig, Institut für Solare Energieversorgungstechnik e. V. (ISET); C. Moehrlen, J. U. Jørgensen, Weather & Wind Energy Prognosis (WEPROG)
- 4.6 Simulation of Turbulent Wind Fields with Multifractal Statistics**
M. Greiner, J. Cleve, Siemens AG
- 4.7 Application of a Micro-scale Wind Park Model**
G. Gross, Universität Hannover; N. Lanfer, geonet Hannover; C. Land, meteoterra, Rinteln
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