European Offshore Wind Conference & Exhibition

(EOW 2011)

Amsterdam, The Netherlands
29 November - 1 December 2011

Volume 1 of 2

ISBN: 978-1-63266-164-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

All papers Copyright© 2011 by the respective author(s), and included in these proceedings by permission to the European Wind Energy Association.
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact the author(s) of the paper desired.

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

Integration of a Wind Farm with Offshore Oil/Gas Platforms Grid and With Onshore Electrical Grid 1
Wei He, Jorun Marvik, Kjetil Uhlen, Harald Svendsen, Zhe Chen, Gang Shi, Emilio Del Rio

Evaluation Of Two Novel Wake Models In Offshore Wind Farms 7
Jorge Garza, Andreas Blatt, Remi Gandoin, Shiu-Yeung Hui

Flux-Profile Characterization Of The Offshore ABL For The Parameterization Of CFD Models 17
J. Sanz Rodrigo

The French Call for Tender: A Way to Facilitate the Development of Offshore Wind Farms? 25
Fabrice Cassin

Joint Support Schemes And Efficient Offshore Investment: Market And Transmission Connection Barriers And Solutions 32
Sascha Thorsten Schroder, Lena Kitzing, Henrik Klinge Jacobsen, Lise Lotte Pade Hansen

Making Blue Energy Green – Environmental Impacts of Offshore Wind Farms 46
Sabrina Luitjens

Offshore Wind Project Risks: Experience, Assessment and Reduction 52
Bart Ummels, Gijs Hulscher, Anthony Crockford, Jan Coelingh

Show Me The Money - Rabobank International 62
Marc Schmitz

An Offshore Grid in Europe: Final Conclusions and Recommendations from the IEE project OffshoreGrid 70
J. De Decker, P. Kreutzkamp

Changes in the Utilisation of the Norwegian Hydro Reservoir by Balancing the North Sea Offshore Wind 80
Steve Voller, Gerard Doorman

Towards Wind Power Transmission And Transcontinental Interconnections In Mediterranean Region 90
George Caralis, Konstantinos Rados, Arthouros Zervos

Integration Of Wind Power With Multiple Oil And Gas Platforms In An Isolated Offshore System 98
Jorun I. Marvik, Harald G. Svendsen

DC Grids For Integration Of Large Scale Wind Power 106
Lorenzo Zeni, Temesgen Haileselassie, Georgios Stamatiou, Anders Geisler Eriksen, Joachim Holboll, Ola Carlsson, Kjetil Uhlen, Poul Sorensen, Nicolaos A. Cutululis

Out of Troubled Waters - Getting a Grip on Offshore Cabling 117
Thomas Boehme

RDS-PP A Designation System Used to Structure Information on OPEX, Plans and Documentation for Wind Power Plants, Both for Owner, Manufacturer and Operator 122
Ulrik Brandt

A Practical Approach to the Use of SCADA Data for Optimized Wind Turbine Condition Based Maintenance 132
Christopher S. Gray, Franz Langmayr, Nikolaus Haselgruber, Simon J. Watson

Risk-Based Operation And Maintenance For Offshore Wind Turbines 142
John Dalsgaard Sorensen, Jannie Jessen Nielsen

Key Logistics Challenges and Innovative Solutions 152
Thomas Karst

The Future Of Monopile Grouted Connections – A Client's Perspective 165
Julian Garnsey

Analysis Of Axial-Cyclic Loaded Piles From The Certifier's View 175
Michael Hauschildt, Marc Mittelstaedt, Jana Gehrmann-Vorbau, Fabian Kirsch, Thomas Richter

Estimation of the Vibration Decrement of an Offshore Wind Turbine Support Structure Caused by its Interaction with Soil 185
W. G. Versteijlen, A. V. Metrikine, J. S. Hoving, E. Smid, W. E. De Vries

Floating Wind Turbine Technologies and their Associated Risks 195
Charles R. Briggs

Concrete Gravity Foundations For Deeper Water: Giving The Industry More Choice 205
Gordon Jackson, Marcus Hollan

Design Of Efficient And Reliable Drive Trains For Large Offshore Wind Turbines 215
Andreas Vath, Sebastian Schmidt

Load Reduction For A Two-Bladed Upwind Turbine With Partial Pitch 224
Taeseong Kim, Bjarne S. Kallesoe, Michael Friedrich
Power System Architecture: Finding the Best Solution for a 5MW Wind Turbine 232
Rain Byars
Prediction Of Flutter Speed On A 10 MW Wind Turbine 242
Lars Froyd, Ole G. Dahlhaug, Morten H. Hansen
Low Cost Corrosion Protection For Offshore Wind 252
Ole Oystein Knudsen, Christian Simon, Hanno Schnars, Holger Huhn, Sibo Buter, Harald Van Der Mijle Meijer
The Offshore Market - Learnings and Current Challenges 262
George Friedrichs
New Concepts For Offshore Harbors – Innovative Logistical Solutions By Networking Of Port Locations 271
Frank Schnabel
Validated Measurements of a Floating LIDAR Device Based on Mechanical Stabilisation and Software Correction 272
Thomas Duffey, Dirk Devriendt, Nicolaz Guidon, Athanasios Kyriazis, Natalie Picot
Ocean Radar for Real-Time Current, Wave and Wind Measurements and Improved Forecasts 278
Vincent Mariette, Cedric Taillandier, Thomas Helzel
Meteorological Measurements At FINO1 During The Existence Of The Wind Farm Alpha Ventus 285
Friederike Kinder, Annette Westerhellweg, Thomas Neumann
Nacelle Lidar Power Performance Measurement In The Context Of The IEC 61400-12-1 Standard 294
R. Wagner, T. F. Pedersen, M. Courtney, I. Antoniou, S. M. Pedersen, M. Bardon, S. Davoust, T. Velociter, N. Le, A. S. Mouritzen
OWEZ – 6 Years Accident-Free 296
Alan Chivers
Safety In Offshore Engineering An Academic Course Covering Safety In Offshore Wind 303
D. J. Cerda Salzmann
Show Me The Money! - Project Finance in Offshore Wind - What Route Will The Market Take? 307
Jerome Guillet
Measurement Of High Frequency Pressure Fluctuations At German Off-Shore Platform Fino3 323
Andreas Jeromin, Alois Peter Schaffarczyk
A Study on the Arrangement of Rubber Fenders of 3MW Tripod Type Offshore Wind Turbine due to Boat Impact 332
Kang-Su Lee, Mann-Eung Kim, Jae-Hyung Choi, Dong-Jun Kim, Sang-Hyu Lee
Transient Recovery Voltages at the Main 132kV Line Bay GIS Circuit Breaker in a Windfarm 337
I. Arana, J. Okholm, J. Holboell
Evolution And Development Of Medium Voltage Equipment For Special Wind Farm Applications 342
Jose Maria Torres Novalbos, Inaki Blanco Bartolome
Contributions by Automation Technology to Improve the Overall Availability of Offshore Wind Parks 346
Vaheh Khachatouri, Jurgen Malin
An Industry Perspective On Foundation Design For The Offshore Wind Sector 356
L. Kirwan, P. Doherty, K. Gavin
Combining Offshore Wind And Marine (Wave/Tidal) Converters. The Answer To Cost Reductions? 366
Fiona Buckley
Optimisation Of Maintenance Strategies For Offshore Wind Farms A Case Study Performed With The OMCE-Calculator 376
R. P. Van De Pieterman, H. Braam, T. S. Obdam, L. W. M. M. Rademakers, T. J. J. Van Der Zee
Fluxes Estimation And The Derivation Of The Atmospheric Stability At The Offshore Mast Fino1. 386
Beatriz Canadillas, Domingo Munoz-Esparza, Thomas Neumann
Dynamic Modeling of Large Wind Farms Including Wake Effect 396
F. J. Sada Rodriguez, Antonios Marinopoulos, Muhamad Reza, Kailash Srivastava, Jiuping Pan, Mahyar Zarghami, Dirk Van Hertem
Making Offshore Wind Fuelled Electricity Competitive 403
John F. Hill
Operating Strategies for Pitch Regulated Turbines Under Typhoons 413
Juihung Liu, Yen-Chieh Wang, Jui-Tang Tseng, Kun-Ju Xie
Verification of Floating Wind Concept with Three Wind Turbines on One Floating Unit 418
Marc Lefranc, Anders Torud
Ultimate State Design Of A Deep Water Offshore Wind Turbine Support Structure For The Central Mediterranean Region 428
Thomas Gauci, Martin Muscat, Tonio Sant, Pierluigi Mollicone, Duncan Camillieri

Determination Of The Combined Vibrational And Acoustic Emission Signature Of A Wind Turbine Gearbox And Generator Shaft In Service As A Pre-Requisite For Effective Condition Monitoring 438
Slim Soua, Paul Van Lieshout, Asanka Perera, Bryan Bridge

Capacity Credit of Offshore Wind Farms in North Sea and Baltic Sea using the Example of Germany 448
P. Engel, T. Hartkopf

Capacity Credit of Offshore Wind Farms in North Sea and Baltic Sea using the Example of Germany 451
P. Engel, M. Sperling, T. Hartkopf

Motion and Performance Analysis of An Experimental Model Floating Wind Turbine 456
David Bonnici, Sean Agius, Tonio Sant, Daniel Micallef

Wind Farm Study 466
Ryo Amano, Pradeep Mohan Mohandas

Characterising Wind Farm Yield Fluctuations in the Central Mediterranean Sea – A Case Study in the Maltese Islands 469
Robert N. Farrugia, Tonio Sant, Peter Mifsud, Godwin Sant

GH Bladed's Linear Models Based H-Infinity Control For Offshore Wind Turbine 479
Asier Diaz De Corcuera, Aron Pujana-Arrese, Said Nourdine, Haritza Camblong, Joseba Landaluze

Model Experiments and Numerical Analyses of TLP for a 5MW Floating Wind Turbine 487
Hiroshi Yamaguchi, Masamitsu Kanda, Koji Suzuki, Akihiko Imakita, Toshiya Iwashita, Hirofumi Takano, Takeshi Ishihara

Evaluation Criteria for Marine Renewable Multi-purpose Platform 497
Goren Aguirre, German Perez, Raul Manzanas, Carlos Lopez, Israel Martinez, David Ingram

Non-linear Multi-Body Mooring System Model for Floating Offshore Wind Turbines 504
Denis Matha, Uwe Fechter, Martin Kuhn, Po Wen Cheng

Analysis of Load Conditions in Wind Turbine Components 514
Rasmus Schmidt Olsen, Joachim Holboell, Asger Jensen

Artificial Neural Networks For SCADA Database Load Forecasting 524
Claudia Hofemann

Planning of an Offshore Wind Farm in the Southwest Coastal Region 529
Moon-Seon Jeong, Chae-Joo Moon, Sang-Man Kim, Yeong-Jung Kim, Suck Na

Unsinkable-Stable Floating Truss Platform To Support Wing & Paddle Wheel Turbine Generators (Wind-Tidal-Wave) 535
Themistoklis Andreas Andrikopoulos

Wake Loads and Fatigue Load Certification in Offshore Wind Farms 545
Bjorn Schmidt, John King, Kimon Argyriadis, Graeme McCann

Proposal of New Class and Category for Wind Conditions in IEC 61400-1 556
H. Imamura, T. Kogaki, T. Ishihara, S. Tanigaki, H. Kubo, H. Shiraishi, Y. Ooguro

Dynamic Response Prediction Of Floating Offshore Wind Turbine System Using Fully Nonlinear Model 563
Takeshi Ishihara, Muhammad Bilal Waris, Ken Kagaya

Seismic Load Evaluation of Wind Turbine Support Structures with Consideration of Uncertainty in Response Spectrum and Higher Modes 573
T. Ishihara, G. Takamoto, M. W. Sarwar

The Simulation of Loads for Wind Turbine with Typhoon Effects 582
Kun-Ru Xie, Jui-Tang Tseng, Jui-Hung Liu

MicroDOT: Design of a 10W Prototype of the Delft Offshore Turbine 587
A. S. Kempenaar, N. F. B. Diepeveen, A. Jarquin Laguna

Dynamic Modeling of Fluid Power Transmissions for Wind Turbines 596
N. F. B. Diepeveen, A. Jarquin Laguna

Influence of a Boatlanding and J-tubes on Wave Loads and Wall Thickness of the Monopile Support Structure Design 605
M. L. A. Segeren

Impact of Model Uncertainties on the Design Loads of Large Wind Turbine Jacket Foundations 613
Anand Natarajan

Experimental and Numerical Methods for the Evaluation of Wave Loads on Offshore Platforms in Extreme Sea Conditions 622
Umberto Ghisaura, Stefano Brizzolara, Tonio Sant, Claire De Marco

Rave – Joint Research At Germany's First Offshore Wind Park Alpha Ventus 632
Michael Durstewitz, Bernhard Lange, Eva Otto, Sebastien Pfaffel

Motion Analysis And Hydrodynamic Force Calculation Of The 5MW Spar-Type Floating Offshore Wind Turbine 643
Min-Su Kim, Kang-Su Lee, Mann-Eung Kim, Hyunkyoung Shin

Coupled Large Eddy Simulation of Dynamically Controlled Wind Turbines 649
R. C. Storey, S. E. Norris, K. A. Stol, J. E. Cater
Safe Working Environment when Loading and Installing Offshore Wind Turbines from a Large JU Vessel 659
Asbjorn Mortensen, Sudhan Vincent
Experimental Design Of A Feasibility Study For Remote Inspection Of Wind Turbines 669
Gunnar D. Jensen, Oyvind Netland
Two Control Solutions For Wind Farm Management And Operation On The Grid 677
A. J. Brand, M. Soleimanzadeh
Is There a Need for Standard Guidelines for Pre-Consenting Survey Activities? 686
John Morse
Conceptual Design Of A DOT Farm Generator Station 696
D. Michailidis, N. F. B. Diepeveen
Enhanced Approach For Simulation Of Rotor Aerodynamic Loads 706
K. Boorsma, F. Grasso, J. G. Holierhoek
Italian Offshore Wind Potential Evaluation through GIS Tools and Data 717
D. Airoldi, C. Casale, E. Lembo, L. Serri
Plant Reliability - Which Turbine Needs Intervention, And When? 727
Anders Valland
Investigations on Scour at Tripod Foundation Structures in the German Offshore Test Site Alpha Ventus 733
A. Stahlmann, T. Schlurmann
Integrated Operations – A Success Story From The Oil & Gas Industry 737
Anders Valland
Modelling and Reactive Power Control Optimization of Advanced Static VAr Compensators for Offshore Wind Farm Connection 742
Zsuzsa Csetvei, Tonny Wederberg Rasmussen, Jan Okholm, David Taus Johnsen
New Methods for Balancing Offshore Wind Turbine Rotors including Blade Angle Measurements 750
Alexander Donth, Anke Grunwald, Christoph Heilmann, Michael Melsheimer
Validity Of Integrated Simulation Models Of Offshore Wind Turbines Verified By Alpha Ventus Measurements 757
Daniel Kaufer, Jan Dubios, Marc Seidel, Peter Schaumann, Martin Kuhn, Po Wen Cheng
Fault Protection of the Main Circuit of Full Power Converter Wind Turbines 765
Antonio Fidigatti, Paolo Baroncelli, Marco Carminati, Enrico Ragaini
Offshore Wind Market And Trends 773
Per Krogsgaard, Gi. Kongevej
Curved Vortex Filaments in Free Vortex Wake Analysis of Floating Wind Turbines 780
Friedemann Beyer, Thomas Sebastian, Denis Matha, Matthew A. Lackner

VOLUME 2

High Voltage And Medium Voltage Submarine Cables For Offshore Windfarms – State Of The Art And Future Trends 790
N. Kuljaza, M. Marelli, E. Zaccone
A Method And Tool To Optimise Wind Turbines For Offshore Applications 797
Michiel B. Zaaijer
Spatial and Temporal Variability of Wind Resources Off the Coast of South Carolina, USA 807
Ralph L. Nichols, Joel L. Kohn, Paul Gayes, Len Pietrafesa, Kehui Xu, Yanxia Ma, Elizabeth Kress, Eric Boessneck, Nick Rigas
Performance Assessment Of Floating Wind Turbines During Grid Faults 816
Olimpo Anaya-Lara, Atsede G. Endegnanew, John O. Tande, Harald Svendsen, Kjetil Uhlen, Sverre Gherde, Kristian Saetertro, Svein Gjolmesli
Power Output Optimisation From An Offshore Wind Farm 822
Muyiwa S. Adaramola, Per-Age Krogstad, John O. Tande, Olimpo Anaya-Lara, Kjetil Uhlen
Energy Considerations for Wind Turbines with Hydraulic Transmission Systems 826
Bjorn Skaare, Bo Hornsten, Finn Gunnar Nielsen
HVDC Grids For Offshore And Onshore Transmission 836
Magnus Callavik
Kriegers Flak – Combined Grid Solution Project 841
P. Jorgensen, M. L. Lundo

Local Dynamics Of Jacket Support Structures For Offshore Wind Turbines 846
Peter Schaumann, Jan Dubois, Martin Achmus, Khalid Abdel-Rahman, Marc Seidel
Uncertainty In The Application Of The Measure-Correlate-Predict(MCP) Method In Wind Resource Assessment 854
Sundus Cordelia Ramli, Mikkel Haugaard Windolf
Preliminary Analysis Of Wind Profiles Off The East Coast Of England 864
Rolando Soler-Bientz, Simon Watson
Transmission Expansion Planning In The Nordic System For Wind Power Integration Based On Ant Colony Optimization 871
Ida Fuchs, Terje Gjengedal
Preliminary Mesoscale Modelling Of The Offshore Wind Off The Eastern Coast Of England 878
J. G. Hughes, S. J. Watson, R. Soler-Bientz
Continuing Studies Programme Offshore Wind Energy for Specialists, Managers, and Executives 884
Moses Karn, Daniela Mullhauser, Juliane Reichel, Christoph Schwarzer, Urs Wahl
Statistical Analysis and Comparison of Harmonics Measured in Offshore Wind Farms 889
Lukasz Hubert Kocewiak, Jesper Hjerrild, Claus Leth Bak
A Framework And Model For Optimizing Maintenance And Logistics Activities 899
Matthias Hofmann, Elin Espeland Halvorsen-Weare, Lars Magne Nonas, Jorn Vatn
Fully Coupled Dynamic Response Of A TLP Floating Wind Turbine 909
G. K. V. Ramachandran, H. Bredmose, J. N. Sorensen, J. J. Jensen
Indicators For Environmental And Social Assessment Of Steel Support Structures 919
Peter Schaumann, Anne Bechtel, Hermann-Josef Wagner, Christoph Baack, Jessica Lohmann, Natalie Stranghoner, Jorn Berg
Mitigating Technical Risks In Offshore Wind Farms By Improved System Integration 925
Johannes Rosen
SOWiT Superconductivity for Offshore Wind Turbines 934
G. Gaudiosi, L. Martini
Atmospheric Stability Dependence Of SAR Wind Speed Retrieval In Japanese Coastal Areas 939
Yuko Takeyama, Teruo Ohsawa, Katsutoshi Kozai, Charlotte Bay Hasager, Merete Badger
Concept and Realization of NORDSEE OST - Germany's First Large-Scale Commercial Offshore Wind Farm 949
N/A
Offshore Wind Information Provisioning Using the IEC 61400-25 Standard and RESTful Web Services 976
Trinh Hoang Nguyen, Andreas Prinz, Trond Friiso, Rolf Nossum
Electrical Protection System At Nordsee OST - Follow Utility Approach To Get Maximum Operational Flexibility And Reliability For An Offshore Power Plant 984
Matthias Esken, Christian Feltes
Estimating The Cost Of Offshore Maintenance And The Benefit From Condition Monitoring 994
J. B. Feuchtwang, D. G. Infield
Motions of Floating Offshore Wind Turbines in an Array Considering the Influence of Wind and Waves 1004
M. Philippe, B. Borgarino, A. Babarit, P. Ferrant
Atmospheric Ice Accumulation and its Effect on a Typical 5-MW Wind Turbine in Different Operational Conditions 1012
Mahmoud Etemaddar, Martin O. L. Hansen, Torgeir Moan
Remote Sensing Best Practice 1022
Peter J. M. Clive
CFD Simulations And Measurements Of Wake Effects At The Alpha Ventus Offshore Wind Farm 1031
Annette Westerhellweg, Thomas Neumann
Improved Modeling of Wakes: Experimental Study and Experimentally Anchored Model 1040
C. Kress, S. Barber, N. Chokani, R. S. Abhari
Analysis of Pitch Gear Deterioration Using Indicators 1047
Jannie Jessen Nielsen, John Dalsgaard Sorensen
First Insight In Offshore Wind Profiles Up To 250 M Under Free And Wind Turbine Wake Flows 1057
Beatriz Canadillas, Thomas Neumann, Domingo Munoz-Esparza
OFFSHORE WIND FIELD: Application of Statistical Models as a Spatial Validation Technique 1068
R. Marujo, P. Costa, M. Fernandes, A. Estanqueiro
Near And Far Wake Blind Test Study For A Model Turbine Using BEM, AD And Full Rotor CFD 1076
L. Saelen, J. A. Melheim, M. Khalil, T. Hansen, P. E. Eriksen, P. A. Krogstad

C-GEN: A Robust Generator Technology For Offshore Direct Drive Wind Turbines 1082
Alasdair McDonald, Nazar Al-Khayat, Ayyapan Kumaraperumal, Mark Ravilious, Makhlouf Benatmane, Markus Mueller

Higher Harmonic Hydrodynamic Wave Loads On a Bottom Fixed Circular Cylinder At Finite Water Depth 1091
B. T. Paulsen, H. Bredmose, H. B. Bingham, N. G. Jacobsen

A Framework For Assessing Cumulative Effects: Meeting R3 Consent For Site And Zone Level Interaction 1101
Steve Freeman

Simulation Of Floating Offshore Wind Turbines By A Coupled Aeroelastic, Structural And Hydrodynamic Approach 1105
A. Heege, P. Bonnet, S. G. Horcas, A. Gaull, P. Cucchini, L. Bastard, J. L. Sanchez, L. Lens

Remote Sensing on Moving Offshore Platforms 1115
Mark Young, Holly Hughes, Tony Rogers, Gordon Randall, Katy Briggs

Impact of Large Neighbouring Wind Farms on Energy Yield of Offshore Wind Farms 1122
G. M. Smith, A. Neubert, W. Schlez

Comparisons Of Wave Kinematics Models For An Offshore Wind Turbine Mounted On A Jacket Substructure 1132
Torben J. Larsen, Taeseong Kim, Signe Schloer, Henrik Bredmose

Offshore~WMEP Monitoring Offshore Wind Energy Use 1140
P. Kuhn, S. Faulstich, P. Lyding, Khalid Rafik, Sebastian Pfaffel

Recent Views On The Public Acceptance Of Offshore Windfarms In Greece 1144
Asimina Karali, Konstantinos Gkarakis, Dimitrios Kaliampakos, Dimitrios Damigos

Wake Measurements On An Array Of Two Model Wind Turbines 1154
Fabio Pierella, Jan Bartl, Lars Saetran

Evaluation Of Turbine Wake Models In Offshore Wind Farms 1161
A. Bonanni, G. De Volder, T. Banyai, T. Quintino, G. Mitanidis, C. Lacor, H. Deconinck

Development of OPASS Code for Dynamic Simulation of Mooring Lines in Contact with Seabed 1171
J. Azcona Armendariz, X. Munduate Echarri, T. A. Nygaard, D. Merino Hoyos

Safeguarding Scarce Resources - Transferring Technicians Is Not Just A Taxi Ride Over Water 1180
Sue Crothers

Improving Offshore Wind Resource Assessments Using A Data Assimilation Technique 1183
Miguel Fernandes, Paulo Costa, Ana Estanqueiro

Reliability in Medium Voltage Converters for Wind Turbines 1191
Roman Grinberg, Stephan Ebner, Oscar Apeldoorn

Development Of Wind Power Forecast Quality For New Offshore Wind Farms 1195
Melih Kurt, Jan Dobschinski, Bernhard Lange, Arne Wessel

Influence Of Scour On The Dynamics Of Jacket Substructures For Offshore Wind Turbines 1203
Michael Muskulus

Characteristics Of Offshore Wind Speed Simulated With WRF in the Seas Around Japan 1209
Teruo Ohsawa, Nobuki Tsubouchi, Ryosuke Niwa, Jun Tanemoto, Susumu Shimada, Yuko Takeyama

Data Mining Of Offshore Wind Data Generated By CFD Solutions 1218
B. Uzunoglu

Small-Scale Testing of Laterally Loaded Bucket Foundations in Dense Sand 1223
Lars Bo Ibsen, Aligi Foglia

Impact Of High Modulus Fabric Solutions On Production Cost And Performance Of Wind Blades 1232
Georg Adolphs

Reflections on Reflexivity: Critical Material Supply Chain Problems Within An Actor-Network of Offshore Wind Energy 1235
Gabriel Bonfanti

Offshore Wind O&M Costs, Trends, And Strategies 1246
Bruce Hamilton

Touring Exhibition – Fascination Offshore 1253
Andreas Wagner, Christina Albrecht

Condition Monitoring With Ordinary Wind Turbine SCADA Data – A Neuro-Fuzzy Approach 1254
Meik Schlechtingen, Ilmar Ferreira Santos

Poland – New Offshore Wind Market In Europe 1263
Maciej Stryjecki

TILT - Transport & Installation Logistics Tool 1268
Jelte Kymmel, Marika Van Pol

V164-7.0 MW - "Big is Beautiful" 1274
N/A

Analysis of Maintenance Support Organization for Offshore Wind Farms 1280
Francois Besnard, Katharina Fischer, Lina Bertling, Chalmers Par Attermo, Thomas Stalin
Building BuitenZee - The Challenges to Overcome Realizing the Netherlands Next and Perhaps Last Offshore Wind Farm 1288
Daniel Brickwell
The Carbon Trust's Offshore Wind Accelerator (OWA): Marine Access, Transportation and Logistics 1295
Donald Brown, Phil De Villiers, Jan Matthiesen
Offshore Windpark Egmond aan Zee (OWEZ) - 6 Years Accident Free at The Netherland's First Offshore Windpark 1306
Alan Chivers
The Fundamental Work That Must Be Completed to Attract Investors "Best Practices and Challenges to Overcom" 1317
Frank Coenen
Drivetrain Life Monitoring for Improved O&M Planning 1322
John Coultate
UK Demonstration Site Update and Cost Reduction Pathways Project 1330
Gareth Craft
Marine Coordination - Maritime Safety and Health & Safety on Offshore Windfarms 1340
Peter Eade
Financial and Non-Financial Support Policies for Offshore Wind Deployment in the UK 1351
Duarte Figueira
Public Acceptance: Does Perceived Fairness Play a Role? 1360
Jeremy Firestone, Willett Kempton, Meredith Blaydes Lilley, Kateryna Samoteskul
Safety Management Systems for Offshore Wind Farms 1369
Garrad Hassan
Available, or Not Available: How to Define, Measure, and Guarantee the Performance of Offshore Wind Turbines 1376
Jens Goesswein
Network Code Requirements for Connection of Offshore Windfarms 1386
Torsten Haase, Helge Urdal, Wilhelm Winter, Ralph Pfeiffer
The Real Capital Expenditures - How Various Risk Events Occurring on Contract Prices Influences Costs 1394
Garrad Hassan
Ocean Wave Effects on Wind Power Production 1404
Alastair D. Jenkins
Vattenfall Wind Power 1416
Bent Johansen
EKF and Offshore Wind Power Financing 1430
Jorgern Kragh
RAVE and Beyond: Test Site or Testing at Sites? 1439
Bernhard Lange
The European Supergrid: A Phase 1 Feasibility Study 1451
Heather Laurie, Joe Corbett
National Renewable Energy Centre - Narec Offshore Demonstration Project 1464
N/A
Offshore Support Mechanisms in Europe 1472
Jacopo Moccia
EU Power Market Design to Support Offshore Grid Planning and Operations 1474
Karsten Neuhoff
NORSEWInD - The Story So Far 1481
A. Oldroyd
4.1-113...Design for Reliability 1489
Vincent Schellings, Henk-Jan Kooijman
Maritime Spatial Planning in the EU 1496
Haitze Siemers
Accelerating Foundation Installation - The Real Focus Point for Offshore Wind - Logistics 1502
N/A
Experience is a Hard Teacher; Paying for the Same Mistake Twice is Optional 1518
Bernard Van Hemert
Far and Large Offshore Wind Innovation Program (FLOW) 1530
Ernst Van Zuijen, Luuk Folkerts

Design of Reliable Drive Trains for Large Offshore Wind Turbines 1538
Andreas Vath
Soil Effect on the Vibrational Damping of a Monopile Based Offshore Wind Turbine 1547
A. V. Metrikine, J. S. Hoving, G. Tol, W. E. De Vries, E. Smid, S. Voormeeren
Improving the Planning Framework for Offshore Renewable Energies in Europe - Results from the Seanergy 2020 Project 1560
Karina Veum, Lachlan Cameron, Michiel Hekkenberg
Effective Maritime Spatial Planning - Case Study of Germany 1567
Andreas Wagner
Developing a New Regulatory Regime for Offshore Transmission Infrastructure 1575
Olivia Wooley
Author Index