



EERA DeepWind'2017

14th Deep Sea Offshore Wind R&D Conference, Trondheim, 18 - 20 January 2017

Wednesday 18 January	
09.00	Registration & coffee
	Opening session – Frontiers of Science and Technology Chairs: John Olav Tande, SINTEF/NOWITECH and Michael Muskulus, NTNU/NOWITECH
09.30	Opening and welcome by chair
09.40	Welcoming note by Deputy Mayor Hilde Opoku
10.00	<i>Progress in offshore wind research and innovation</i> , John Olav Tande, director NOWITECH
10.30	<i>European wind research cooperation</i> - Peter Hauge Madsen, DTU
11.00	<i>NORCOWE – highlights and future challenges</i> , Kristin Gulbrandsen Frøysa, director NORCOWE
11.30	<i>HyWind Scotland</i> , Bjørn Johansen, Statoil
11.55	Closing by chair
12.00	Lunch
	Parallel sessions
	A1) New turbine and generator technology Chairs: Karl Merz, SINTEF Gerard van Bussel, TU Delft
	C1) Met-ocean conditions Chairs: Halfdan Agustsson, Kjeller Vindteknikk, Birgitte Rugaard Furevik, met.no
13.00	Introduction by Chair
13.05	<i>Can a wind turbine learn to operate itself?</i> M. Collu, Cranfield University
13.30	<i>A step approach to model floating wind turbines: application to a novel type of tension-leg concept</i> , P. Bozonnet, IFP Energies Nouvelles
13.50	<i>Development of a 12MW Floating Offshore Wind Turbine</i> , H. Shin, University of Ulsan
14.10	A comparison of two fully coupled codes for integrated dynamic analysis of floating vertical axis wind turbines, B.S. Koppel, Ventolines BV
14.30	Closing by Chair
14.35	Refreshments
	A2) New turbine and generator technology (cont.)
	C2) Met-ocean conditions (cont.)
15.05	Introduction by Chair
15.10	<i>The Multi Rotor Solution for Large Scale Offshore Wind Power</i> , P. Jamieson, University of Strathclyde
15.30	<i>The C-Tower Project – A Composite Tower For Offshore Wind Turbines</i> , T. van der Zee, Knowledge Centre WMC
15.50	<i>Support structure load mitigation of a large offshore wind turbine using a semi-active magnetorheological damper</i> , R. Shirzadeh, ForWind – University of Oldenburg
16.10	Closing by Chair
18.00	Conference reception including <ul style="list-style-type: none"> - Welcoming note by Deputy Mayor Hilde Opoku - Organ recital at Nidarosdomen Cathedral - Light food and drinks reception at Two Towers

Side event: EERA SP offshore wind meeting 16.30 – 17.45



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Thursday 19 January		
Parallel sessions		
	D1) Operations & maintenance Chairs: Thomas Welte, SINTEF Energi AS Stefan Faulstich, Fraunhofer IWES	E1) Installation and sub-structures Chairs: Hans Gerd Busmann, Fraunhofer IWES Michael Muskulus, NTNU
09.00	Introduction by Chair	Introduction by Chair
09.05	<i>A metaheuristic solution method for optimizing vessel fleet size and mix for maintenance operations at offshore wind farms under uncertainty</i> , E.Halvorsen-Weare, SINTEF Ocean	<i>Results of a comparative risk assessment of different substructures for floating offshore wind turbines</i> , R. Proskovics, ORE Catapult
09.30	<i>Optimizing Jack-up vessel strategies for offshore wind farms</i> , M. Stålhane, NTNU	<i>Conceptual optimal design of jackets</i> , K. Sandal, DTU
09.50	<i>Short-Term Decision Optimisation for Offshore Wind Farm Maintenance</i> , C. Stock-Williams, ECN	<i>Fatigue behaviour of grouted connections at different ambient conditions and loading scenarios</i> , A. Raba, ForWind – Leibniz University Hannover
10.10	<i>Improved short term decision making for offshore wind farm vessel routing</i> , R. Dawid, Strathclyde University	<i>Analysis of experimental data: The average shape of extreme wave forces on monopile foundations</i> , S. Schløer, DTU Wind Energy
10.30	Refreshments	
	D2) Operations & maintenance (cont.)	E2) Installation and sub-structures (cont.)
11.00	<i>Experience from RCM and RDS-PP coding for offshore wind farms</i> , R.Sundal, Maintech	<i>Fatigue Crack Detection for Lifetime Extension of Monopile-based Offshore Wind Turbines</i> , L. Ziegler, Ramboll
11.20	<i>Enhance decision support tools through an improved reliability model</i> , S. Faulstich, Fraunhofer IWES	<i>Fabrication and installation constraints for floating wind and implications on current infrastructure and design</i> , D. Matha, Ramboll
11.40	<i>Technology for a real-time simulation-based system monitoring of wind turbines</i> , D. Zwick, Fedem Technology/SAP SE	<i>TELWIND- Integrated Telescopic tower combined with an evolved spar floating substructure for low-cost deep water offshore wind and next generation of 10 MW+ wind turbines</i> , B. Counago, ESTEYCO SAP
12.00	Closing by Chair	Closing by Chair
12.05	Lunch	
	B1) Grid connection and power system integration Chairs: Prof Kjetil Uhlen, NTNU Prof Olimpo Anaya-Lara, Strathclyde University	G1) Experimental Testing and Validation Chairs: Tor Anders Nygaard, IFE Ole David Økland, MARINTEK, Amy Robertson, NREL
13.05	Introduction by Chair	Introduction by Chair
13.10	<i>HVDC-connection of Large Offshore Wind Farms Using a Low-Cost Hybrid Converter</i> , I. Haukaas, NTNU	<i>Model testing of a floating wind turbine including control</i> , F. Savenije, ECN
13.35	<i>Generator Response Following as a Primary Frequency Response Control Strategy for VSC-HVDC Connected Offshore Windfarms</i> , R. McGill, NTNU	<i>The Tripple Spar campaign: Model tests of a 10MW floating wind turbine with waves, wind and pitch control</i> , H. Bredmose, DTU
13.55	<i>Scale models of Modular Multilevel Converters</i> , K. Ljøkelsøy, SINTEF Energi	<i>Validation of a time-domain numerical approach for determining forces and moments in floaters by using measured data of a semi-submersible wind turbine model test</i> , C. Luan, NTNU
14.15	<i>Experimental validation of high definition modular multilevel converter</i> , R. Torres-Olguin, SINTEF Energi AS	<i>Nacelle Based Lidar Measurements for the Characterisation of the Wake on an Offshore Wind Turbine under Different Atmospheric Conditions</i> , D. Trabucchi, University of Oldenburg
14.35	Refreshments	
	B2) Grid connection and power system integration (cont.)	G2) Experimental Testing and Validation (cont.)
15.05	<i>Strategies towards an Efficient future North Sea Energy Infrastructure (SENSEI)</i> , F. Papanthasiou, ECN	<i>Testing philosophies for floating wind turbines in coupled model tests</i> , E.L. Walter, DNV GL
15.25	<i>A hybrid wind-diesel-battery system for fish farming applications</i> , M. Holt, NTNU	<i>On the impact of non-Gaussian wind statistics on wind turbines – an experimental approach</i> , J. Schottler, ForWind – University of Oldenburg
15.45	<i>Assessing the impact of sampling and clustering techniques on offshore grid expansion planning</i> , P. Härtel, Fraunhofer IWES	<i>Wind Tunnel Wake Measurements of Floating Offshore Wind Turbines</i> , I. Bayati, Politecnico di Milano
16.05	<i>Multistage grid investments incorporating uncertainty in offshore wind development – A North Sea case study</i> , H. Svendsen, SINTEF	<i>Lidars for Wind Tunnels – an IRPWind Joint Experiment Project</i> , M. Sjöholm, DTU Wind Energy
16.25	Closing by Chair	Closing by Chair
16.30	Refreshments	
17.00	Poster session	
19.00	Conference dinner	



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Thursday 19 January

17.00

Poster Session with refreshments

Session A

1. *Power quality studies of a Stand-Alone Wind Powered Water Injection System without Physical Inertia*, A. Gaugstad, NTNU
2. *Multibody Analysis of Floating Offshore Wind Turbine System*, Y. Totsuka, Wind Energy Institute of Tokyo Inc.
3. *Winglet Design for Wind Turbine Application*, F. Mühle, NMBU
4. *Investigation of design driving load cases for floating VAWT with pitched blades*, F. Savenije, ECN
5. *SKARV – Preventing bird strikes through active control of wind turbines*, K. Merz, SINTEF Energi AS
6. *An elemental study of optimal wind power plant control*, K. Merz, SINTEF Energi AS

Session B

7. *Inertia Response from HVDC connected Full Converter Wind Turbines*, J. Ødegård, Statnett
8. *Investigation of power sharing solutions for offshore wind farms connected by diode rectifier for HVDC grid*, I. Flåten, NTNU
9. *Offshore Wind Power Plants with 66 kV Collection Grids – Study of Resonance Frequencies*, A. Holdyk, SINTEF Energi
10. *Grid Integration of offshore wind farms using a hybrid composed by an MMC with an LCC-based transmission system*, R. Torres-Olguin, SINTEF Energi
11. *Review of Investment Model Cost Parameters for VSC HVDC Transmission Infrastructure*, T.K. Vrana, SINTEF Energi

Session C

12. *Meteorological Phenomena Influences on Offshore Wind Energy*, S. Ollier, Loughborough University
13. *Availability of the OBLO infrastructure for wind energy research in Norway*, M. Flügge, CMR
14. *Demonstrating the improved performance of an Ocean-Met model using bi-directional coupling*, A. Rasheed, SINTEF ICT
15. *A comparison of short-term weather forecast with the measured conditions at the Hywind Demo site*, L. Sætran, NTNU

Session D

16. *Diagnostic monitoring of drivetrain in a 5-MW spar type floating wind turbine using frequency domain analysis*, M. Ghane, NTNU
17. *Risk-based planning of operation and maintenance for offshore wind farms*, M. Florian, Aalborg University
18. *Improving fatigue load estimation of wind turbines using a neural network trained with short-duration measurements*, J. Seifert, University of Oldenburg
19. *Recommended practices for wind farm data collection and reliability assessment for O&M optimization*, T. Welte, SINTEF Energi
20. *Integration of Degradation Processes in a Strategic Offshore Wind Farm O&M Simulation Model*, T. Welte, SINTEF Energi
21. *Experiences from Wind Turbine Pilot Test of a Remote Inspection System*, Ø. Netland, NTNU
22. *A Framework for Reliability-based Controller Scheduling in Offshore Wind Turbines*, J-T.H. Horn, NTNU
23. *End-of-Life Management and Life Extension Decision Making for Offshore Wind Turbines*, M. Shafiee, Cranfield University
24. *Key performance indicators for wind farm operation and maintenance*, H. Seyr, NTNU
25. *Optimization of data acquisition in wind turbines with data-driven conversion functions for sensor measurements*, L. Colone, CREST – Loughborough University

Session E

26. *Design and Fatigue Analysis of Monopile Foundations to Support the DTU 10 MW Offshore Wind Turbine*, J.M Velarde, NTNU
27. *Conceptual optimal design of jackets*, K. Sandal, DTU
28. *Design load basis of a 10MW floating wind turbine: substructure modelling effects*, M. Borg, DTU Wind Energy
29. *New Foundation Models for Integrated Analyses of Offshore Wind Turbines*, A.M. Page, NTNU
30. *Damage assessment of floating offshore wind turbines using latin hypercube sampling*, K. Müller, University of Stuttgart
31. *Development and validation of an engineering model for floating offshore wind turbines*, A.Pegalajar-Jurado, DTU Wind Energy
32. *Improved estimation of extreme wave loads on monopiles using First Order Reliability Method*, A. Ghadirian, DTU
33. *A 3D fem model for wind turbines support structures*, C. Molins, Universitat Politecnica de Catalunya
34. *Fully integrated load analysis included in the structural reliability assessment of a monopile supported offshore wind turbine*, J. Peeringa, ECN
35. *Parametric study of mesh for fatigue assessment of tubular joints using numerical methods*, J. Mendoza, NTNU
36. *Lifetime extension for large offshore wind farms: Is it enough to reassess fatigue for selected design positions?* C. Bouty, NTNU
37. *Optimization of offshore wind farm installations*, S. Backe, University of Bergen
38. *Influence of met-ocean condition forecasting uncertainties and biases on weather window predictions for offshore operations*, T.Gintautas, Aalborg University
39. *Modelling of Marine Operations in the Installation of*
40. *Offshore Wind Farms*, A. Dewan, ECN
41. *Effect of irregular second-order waves on the fatigue lifetime of a monopile based offshore wind turbine in shallow waters*, F. Pierella, IFE
42. *A review of slamming load application to offshore wind turbines from an integrated perspective*, Y. Tu, NTNU

Session F

43. *Offshore Turbine Wake Power Losses: Is Turbine Separation Significant?*, P. Argyle, CREST, Loughborough University



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44. *The effect of rotational direction on the wake of a wind turbine rotor – an experimental comparison study of aligned co- and counter rotating turbine arrays*, F. Mühle, NMBU
45. *Experimental study on the optimal control of three in-line turbines*, J. Bartl, NTNU
46. *A step towards a reduced order modelling of flow characterized by wakes using Proper Orthogonal Decomposition*, E. Fonn, SINTEF ICT
47. *Explaining the Torque vs TSR curve of a 5MW NREL reference turbine*, M.S. Siddiqui, SINTEF ICT
48. *A 3D Vs 2.5D Vs 2D CFD analysis of 5MW NREL reference wind-turbine to study impact of bluff sections*, M. Tabib, SINTEF ICT
49. *Simulating Single turbine and associated wake development - comparison of computational methods (Actuator Line Vs Sliding Mesh Interface Vs Multiple Reference Frame) for an industrial scale wind turbine*, M.S. Siddiqui, SINTEF ICT
50. *Development of a hybrid Vortex Particle-Mesh Method and its application to modelling flow around aerofoils and cylinders*, F.G.Fuchs, SINTEF ICT
51. *2D VAR single Doppler LIDAR vector retrieval and its application in offshore wind energy*, R. Calhoun, Arizona State University

Session G

52. *IRPWIND ScanFlow project*, C. Hasager, DTU Wind Energy
53. *Comparison of Numerical Response Predictions for a Bottom Fixed Offshore Wind Turbine*, S.H. Sørum, NTNU
54. *Comparison of the effect of different inflow turbulences on the wake of a model wind turbine*, I. Neunaber, University of Oldenburg
55. *IRPWIND ScanFlow Public database*, J.W. Wagenaar, ECN
56. *Wind Tunnel Hybrid/HIL Tests on the OC5/Phasell Floating System*, I. Bayati, Politecnico di Milano
57. *Comparison of simulations on the NewMexico rotor operating in yawed conditions*, L. Oggiano, IFE
58. *Reproduction of steep long crested 2D irregular waves with CDF using the VOF method*, L.Oggiano, IFE
59. *Calibration and Validation of a FAST model of the MARINTEK Hybrid Semisubmersible Experiment*, G. Stewart, NTNU
60. *The TripleSpar campaign: Implementation and test of a blade pitch controller on a scaled floating wind turbine model*, W. Yu,, University of Stuttgart
61. *A computational fluid dynamics investigation of performance of tip winglets for horizontal axis wind turbine blades*, K. Sagmo, NTNU
62. *Numerical study of irregular breaking wave forces on a vertical monopile for offshore wind turbines*, A. Aggarwal, NTNU
63. *Modelling of the Viscous Loads on a Semi-Submersible Floating Support Structure Using a Viscous-Flow Solver and Morison Formulation Combined with a Potential-Flow Solver*, S. Burmester, MARIN



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Friday 20 January		
Parallel sessions		
	X) Floating wind turbines Chairs: Tor Anders Nygaard, IFE Ole David Økland, MARINTEK, Amy Robertson, NREL	F) Wind farm optimization Chairs: Yngve Heggelund, CMR Henrik Bredmose, DTU Wind Energy
09.00	Introduction by Chair	Introduction by Chair
09.05	<i>Sensitivity Analysis of Limited Actuation for Real-time Hybrid Model Testing of 5MW Bottom-fixed Offshore Wind Turbine</i> , M. Karimirad, MARINTEK	<i>Influence of turbulence intensity on wind turbine power curves</i> , L.M. Bardal, NTNU
09.25	<i>OC5 Project Phase II: Validation of Global Loads of the DeepCwind Floating Semisubmersible</i> , A. N. Robertson, NREL	<i>A test case of meandering wake simulation with the Extended-Disk Particle model at the offshore test field Alpha Ventus</i> , J. Trujillo, University of Oldenburg
09.45	<i>Joint industry project on coupled analysis of floating wind turbines</i> , L. Vita, DNV GL	<i>A comprehensive multiscale numerical framework for wind energy modelling</i> , A. Rasheed, SINTEF ICT
10.05	<i>Using FAST for the design of a TLP substructure made out of steel reinforced concrete composite components</i> , P. Schünemann, University of Rostock	<i>Application of a Reduced Order Wind Farm Model on a Scaled Wind Farm</i> , J. Schreiber, Technische Universität München
10.25	Closing by Chair	Closing by Chair
10.30	Refreshments	
Closing session – Strategic Outlook Chairs: John Olav Tande, SINTEF/NOWITECH and Trond Kvamsdal, NTNU/NOWITECH		
11.00	Introduction by Chair	
11.05	<i>ETIP wind Strategic Research and Innovation Agenda</i> , Aidan Cronin, Siemens Wind Power	
11.35	<i>Bringing trust to the Internet of Things – When valuable insights can be gained from data to support critical decisions in industry, issues such as the quality and integrity of the data has to be included in the risk picture</i> , M.R. de Picciotto, S. George, DNV GL	
12.05	<i>A new approach for going offshore</i> , Frank Richert, SkyWind	
12.35	Poster awards and closing	
13.00	Lunch	

Side event: IEA OC5 meeting 10.45 – 17.30