EERA DeepWind'2019
16th Deep Sea Offshore Wind R&D Conference, Trondheim, 16 - 18 January 2019

Wednesday 16 January		
09.00	Registration & coffee	
	Opening session – Frontiers of Science and Technology Chairs: John Olav Tande, SINTEF and Trond Kvamsdal, NTNU	
09.30	Opening and welcome by chair	
09.40	Cooperation on offshore wind, DTU president Anders Overgaard Bjarklev, NTNU rector Gunnar Bovim, and SINTEF CEO Alexandra Bech Gjørv	
10.00	Nuno Quental, Policy Officer, European Commission, DG Research and Innovation	
10.30	Experiences from Hywind Scotland and the way forward for floating offshore wind, Jon Barratt Nysæther, Technology Manager, Hywind at Equinor	
11.00	A vision for offshore wind in Norway, Tor-Eivind Moen, VP market development new energy, ABB and Einar Wilhelmsen, Zero	
11.30	North Sea Energy Infrastructure: status and outlook; Patrick Piepers, head of Asset Management Offshore, Tennet	
11.55	Closing by chair	
12.00	Lunch	
	Parallel sessions	
	A1) New turbine and generator technology Chairs: Karl Merz, SINTEF Energi Prof Gerard van Bussel, TU Delft	**C1) Met-ocean conditions** Chairs Joachim Reuder, Univ of Bergen, Erik Berge, Meteorologisk institutt
13.00	Introduction by Chair	Introduction by Chair
13.05	The X-Rotor Offshore Wind Turbine Concept, W.Leithead, University of Strathclyde	The Influence of Unstable Atmospheric Conditions on the Motions and Loads on a Floating Wind Turbine, R.M.Putri, University of Stavanger
13.30	Comparison of the capacity factor of stationary wind turbines and weather-routed energy ships in the far-offshore, J.Roshamida, LHEEA, Ecole Centrale de Nantes	Representative Selection of a Set of Environmental Conditions for Fatigue Analysis of Floating Offshore Wind Platforms, S.Kanner, Principle Power Inc.
13.50	Development of coupling module between BHawC aeroelastic software and OrcaFlex for coupled dynamic analysis of floating wind turbines, V.Arramounet, INNOSEA	Processing of sonic measurements for offshore wind turbine relevance, A. Nybø, Univ in Bergen
14.10	A new approach for comparability of two- and three-bladed 20 MW offshore wind turbines, F.Anstock, Hamburg University of Applied Science	Uncertainties in offshore wind turbulence intensity, S.Caires, Deltares
14.30	Closing by Chair	Closing by Chair
14.35	Refreshments	
	A2) New turbine and generator technology (cont.)	**C2) Met-ocean conditions (cont.)**
15.05	Introduction by Chair	Introduction by Chair
15.10	Damping analysis of a floating hybrid wind and ocean-current turbine, S.V.Kollappillai Murugan, Halmstad University	COTUR - estimating the Coherence of TURbulence with wind lidar technology, M.Flügge, NORCE Technology
15.30	On Design and Modelling of 10 MW Medium Speed Drivetrain for Bottom-Fixed Offshore Wind Turbines, S.Wang, NTNU	Towards a high-resolution offshore wind Atlas - The Portuguese Case, T.Simões, LNEG
15.50	Modelling the dynamic inflow effects of floating vertical axis wind turbines, D.Tavernier, Delft University of Technology	The DeRisk design database: extreme waves for Offshore Wind Turbines, F.Pierella, DTU
16.10	Closing by Chair	Closing by Chair
18.00	Conference reception 18.10 Nidaros Cathedral Boy's Choir – Nidaros Cathedral 18.45 Reception at restaurant To Tårn	

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Thursday 17 January		
	Parallel sessions	
	D1) Operation & maintenance Chairs: Thomas Welte, SINTEF Energi Sebastian Pfaffel, Fraunhofer IEE	**E1) Installation and sub-structures** Chairs: Arno van Wingerde, Fraunhofer IWES, Prof. Michael Muskulus, NTNU
09.00	Introduction by Chair	Introduction by Chair
09.05	Evaluation and Mitigation of Offshore HVDC Valve Hall Magnetic and Electric Field Impact on Inspection Quadcopter, M. Heggo, University of Manchester	Fatigue sensitivity to foundation modelling in different operational states for the DTU 10MW monopile-based offshore wind turbine, G. Katsikogiannis, NTNU
09.30	Piezoelectric Patch Transducers: Can alternative sensors enhance bearing failure prediction? L. Schilling, Hamburg University	Ultra-High Performance Concrete Lightweight Jackets, J.Markowski, Leibniz Univ Hannover
09.50	Excluding context by means of fingerprint for wind turbine condition monitoring, K. López de Calle, IK4-TEKNIKER	Integrated Project Logistics and Costs Calculation for Gravity Based Structure, N.Saraswati, TNO
10.10	Condition monitoring by use of time domain monitoring and pattern recognition, Aasmund Barikmo, VibSim	Effects of wind-wave misalignment on a wind turbine blade mating process, A.S.Verma, NTNU
10.30	Refreshments	
	D2) Operation & maintenance (cont.)	**E2) Installation and sub-structures (cont.)**
11.00	Drivetrain technology trend in multi megawatt offshore wind turbines considering design, fabrication, installation and operation, F. K. Moghadam, NTNU	Upscaling and levelised cost of energy for offshore wind turbines supported by semi-submersible floating platforms, Y.Kikuchi, Univ of Tokyo
11.20	Operation & Maintenance Planning of Floating Offshore Wind Turbines using Stochastic Petri Networks, O.Adedipe, Cranfield University	Wave Cancelling Semi-Submersible Design for Floating Offshore Wind Turbines, Wei Yu, University of Stuttgart
11.40	Recommended Key Performance Indicators for Operational Management of Wind Turbines, S. Pfaffel, Fraunhofer IEE	Summary of LIFES50+ project results: from the Design Basis to the floating concepts industrialization, G.Pérez, TECNALIA
12.00	Closing by Chair	Closing by Chair
12.05	Lunch	
	B1) Grid connection and power system integration Chair: Prof Olimpo Anaya-Lara, Strathclyde University Salvatore D'Arco, SINTEF Energi	**G1) Experimental Testing and Validation** Chairs: Luca Oggiano, IFE, Marit Kvittem, SINTEF Ocean, Amy Robertson, NREL
13.05	Introduction by Chair	Introduction by Chair
13.10	Power quality in offshore grids; Prof. Elisabetta Tedeschi, NTNU	Experimental modal analysis of aeroelastic tailored rotor blades in different boundary conditions, J.Gundlach, German Aerospace Center
13.35	Reducing Rapid Wind Farm Power Fluctuations Using Energy Storage of the Modular Multilevel Converter, S.Sanchez, NTNU	Low-frequency second-order drift-forces experimental validaton for a Twin Hull Shape Offshore Wind Platform – SATH, A.M.Rubio, Saitec Offshore Technologies
13.55	An Improved and Expanded Fault Detection and Clearing Strategy Application to a Hybrid Wind Farm integrated to a Hybrid HVDC Main Transmission Level Converter, J.K. Amoo-Otoo	Numerical prediction of hydrodynamic coefficients for a semi-sub platform by using large eddy simulation with volume of fluid method and Richardson extrapolation method, J.Pan, Univ Tokyo
14.15	Prolonged Response of Offshore Wind Power Plants to DC Faults, Ö. Göksu, DTU	Assessment of Experimental Uncertainty in the Hydrodynamic Response of a Floating Semisubmersible, Including Numerical Propagation of Systematic Uncertainty, A.Robertson, NREL
14.35	Refreshments	
	B2) Grid connection and power system integration (cont.)	**G2) Experimental Testing and Validation (cont.)**
15.05	Control challenges for grid integration; Nikos Cutululis, DTU	A review of heave plate hydrodynamics for use in floating offshore wind sub-structures, K. Thiagarajan, University of Massachusetts
15.25	Design and Build of a Grid Emulator for Full Scale Testing of the Next Generation of Wind Turbines, Chong Ng, ORE Catapult	Variable-speed Variable-pitch control for a wind turbine scale model, F.Taruffi, Politecnico di Milano
15.45	Heuristics-based design and optimization of offshore wind farms collection systems, J.A. Pérez-Rúa, DTU	Experimental Investigation of a Downwind Coned Wind Turbine Rotor under Yawed Conditions, C.W.Schulz, Hamburg University
16.05	Resonance Characteristics in Offshore Wind Power Plants with 66 kV Collection Grids, A.Holdyk, SINTEF	Enhanced Yaw Stability of Downwind Turbines, H.Hoghooghi, ETH Zürich
16.25	Closing by Chair	Closing by Chair
16.30	Refreshments	
17.00	Poster session	
19.00	Conference dinner	

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17.00 **Poster Session with refreshments**

Session A

1. Electrical Collector Topologies for Multi-Rotor Wind Turbine Systems, I.H. Sunde, NTNU

Session B

2. Virtual Synchronous Machine Control for Wind Turbines: A Review, L. Lu, DTU
3. Use of energy storage for power quality enhancement in wind-powered oil and gas applications, E.F.Alves, NTNU-IEL

Session C

4. The OBLO infrastructure project – measurement capabilities for offshore wind energy research in Norway, M. Flügge, NORCE Technology
5. Abnormal Vertical Wind Profiles at a Mid-Norway Coastal Site, M. Møller, NTNU
6. Wind power potential and benefits of interconnected wind farms on the Norwegian Continental Shelf, I.M. Solbrekke, UiB
7. Wind conditions within a Norwegian fjord, Z. Midjiyawa, NTNU

Session D

8. Experimental study of structural resonance in wind turbine's bearing fault detection, M.A. Rasmussen, NTNU
9. New coatings for leading edge erosion of turbine blades, A. von Bonin, NTNU

Session E

10. Mooring System Design for the 10MW Triple Spar Floating Wind Turbine at a 180 m Sea Depth Location, J.Azcona, CENER
11. Consideration of the aerodynamic negative damping in the design of FWT platforms, C.E. Silva de Souza, NTNU
12. Hydrodynamic Loads on a Floating Spar Offshore Wind Turbine Using Relaxation and Impulse Wave Generation Methods, A.Moghtadaei, Queen's University Belfast
13. Code-to-code comparison of hydrodynamic loads on a tension-leg platform wind turbine in regular waves using OpenFOAM and FAST, H.S. Brede, Queen's University Belfast
14. Wind-Wave Directional Effects on Fatigue of Bottom-Fixed Offshore Wind Turbine, S.H.Sørum, NTNU
15. Numerical Study of Load Effects On Floating Wind Turbine Support Structures, S.Okpokparoro, University of Aberdeen
16. Conceptual Design of a 12 MW Floating Offshore Wind Turbine in the Ulsan Offshore Area, Korea, P.T.Dam, University of Ulsan
17. Motion Performances of 5-MW Floating Offshore Wind Turbines under Combined Environmental Conditions in the East Sea, Korea, Y.Yu, University of Ulsan
18. Influence of ballast material on the buoyancy dynamics of cylindrical floaters of FOWT, C.Molins, UPC-BarcelonaTech
19. Hydrodynamic analysis of a novel floating offshore wind turbine, W.Shi, Dalian University of Technology
20. A tool to simulate decommissioning Offshore Wind Farms, C. Desmond, University College Cork
21. Identification of distributed beam properties from shell models for finite element analysis of offshore wind turbine structures, B.Hofmeister, Leibniz University Hannover
22. Code-to-Code Comparison of Numerical Integrated Models of the 10MW Telwind Floating Wind Turbine, J.Azcona, CENER
23. Can cloud computing help bend the cost curve for FOWTs? P.E.Thomassen, Simis AS
24. Performance study for a simplified floating wind turbine model across various load cases, F.J.Madsen, DTU
25. Simulation Methods for Floating Offshore Wind Turbine Farms with Shared Moorings, P.Connolly, University of Prince Edward Island
26. Spatial met-ocean data analysis for the North Sea using copulas: application in lumping of offshore wind turbine fatigue load cases, A. Koochekali, NTNU
27. Numerical design concept for axially loaded grouted connections under submerged ambient conditions, P.Schaumann, Leibniz University Hannover, ForWind

Session F

28. Collection Grid Optimization of a Floating Offshore Wind Farm Using Particle Swarm Theory, M.Lerch, IREC
29. Investigating the influence of tip vortices on deflection phenomena in the near wake of a wind turbine model, L.Kuhn, Technical University Berlin

(The list of posters continues at the next page.)

19.00 Dinner

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Thursday 17 January	
17.00	**Poster Session with refreshments (cont.)**

Session G

30. On the effect of hydrodynamic modelling on the response of a floating offshore wind turbine with flexible platform, S. OH, ClassNK
31. Implementation of potential flow hydrodynamics to time-domain analysis of flexible platforms of floating offshore wind turbines, S .OH, ClassNK
32. Validation against at-sea data of Bladed numerical model of a 2MW wind turbine on an Ideol floating platform, A.Alexandre, DNV GL
33. The physical representation of a catenary mooring system for floating wind energy platforms in a laboratory environment, C.Desmond, University College Cork
34. Validating numerical predictions of floating offshore wind turbine structural frequencies in Bladed using measured data from Fukushima Hamakaze, H.Yoshimoto, Japan Marine United Corporation
35. Prediction of dynamic response of a semi-submersible floating offshore wind turbine in combined wave and current condition by a new hydrodynamic coefficient model, Y.Liu, University of Tokyo
36. Sensitivity of the natural frequency of fixed offshore wind turbines to variations in site conditions, E.Petrovska, University of Edinburgh
37. The experimental investigation of the TELWIND second loop platform, T.Battistella, IH Cantabria
38. Model validation through scaled tests comparisons of a semi-submersible 10MW floating wind turbine with active ballast, R.F.Guzmán, University of Stuttgart

Session H

39. Linear dynamics and modal analysis of a wind turbine array, K.Merz, SINTEF

19.00	Dinner

Friday 18 January		
	Parallel sessions	
	H) Wind farm control systems Chairs: Karl Merz, SINTEF Energi Prof Olimpo Anaya-Lara, Strathclyde University	**F) Wind farm optimization** Chairs: Yngve Heggelund, NORCE Henrik Bredmose, DTU Wind Energy
09.00	Introduction by Chair	Introduction by Chair
09.05	Development of the Hywind Concept, Bjørn Skaare, Equinor	Analysis of wake effects on global responses for a floating two-turbine case, A. Wise, NTNU
09.25	A survey on wind farm control and the OPWIND way forward, Leif Erik Andersson, NTNU	Effect of Wake Meandering on Aeroelastic Response of a Wind Turbine Placed in a Park, B. Panjwani, SINTEF
09.45	Hierarchy and complexity in Control of large Offshore Wind Power Plant Clusters, A. Kavimandan, DTU	Effect of wind flow direction on the loads at wind farm, R. Kazacoks, Strathclyde University
10.05	Verification of Floating Offshore Wind Linearization Functionality in OpenFAST, J. Jonkman, NREL	How Risk Aversion Shapes Overplanting in Offshore Wind Farms, E.B. Mora, EDF Energy R&D
10.25	Closing by Chair	Closing by Chair
10.30	Refreshments	
	Closing session – Strategic Outlook Chairs: John Olav Tande, SINTEF and Michael Muskulus, NTNU	
11.00	Introduction by Chair	
11.05	Real time structural analyses of wind turbines enabled by sensor measurements and Digital Twin models, M. Graczyk, SAP Norway Engineering Center of Excellence	
11.35	Next Generation Offshore Wind Turbines; Dr. Fabian Vorpahl, Leading Expert Offshore & Loads, Senvion GmbH	
12.05	The way forward for offshore wind, Aidan Cronin, chair ETIPwind	
12.35	Poster award and closing	
13.00	Lunch	

Side event: IEA Wind Task 30 Offshore Code Comparison Collaboration, Continued with Correlation and unCertainty (OC6) Project.
1st Full Committee Meeting. January 18, 2019. 9:00 – 17:00. Meeting Room is upstairs from where the conference sessions are held.