

| OSES2018 DAY 0   Tuesday July 3, 2018   SOFITEL HOTEL           |           |   | DAY ZERO |
|---|-----------|---|----------|
| TIME  | SESSION   | ACTIVITY  |          |
| 1830-2030   | MEETING   | OSES2018 FOUNDERS MEETING   |          |
| OSES2018 DAY 1   Wednesday July 4, 2018   LORD DEARING BUILDING |           |   | DAY ONE  |
| TIME  | SESSION   | ACTIVITY  |          |
| 0900-1000   | BREAKFAST | ARRIVAL / CHECK-IN / DELICIOUS BREAKFAST  |          |
| 1000-1010   | INTRO     | OPENING REMARKS and WELCOME<br>OSES CHAIRS: <i>Seamus Garvey, Tonio Sant, Rupp Carriveau</i><br>UNIVERSITY OF NOTTINGHAM, NINGBO PROVOST: <i>Dr. Chris Rudd</i>   |          |
| 1010-1050   | S1        | SESSION 1: PLENARY TALK<br><b>An Overview of China Offshore Wind Power Developments, Opportunities and Technical Challenges</b><br><i>Dr. Endi Cui</i><br>Corporate Chief Engineer and General Manager of Offshore Business Unit of GOLDWIND              |          |
| 1050-1250   | S2        | SESSION 2: OFFSHORE ENERGY GENERATION TECHNOLOGIES: WIND<br>PANEL LEAD: <i>Dr. Zhiwen Wang</i> , Research Fellow, Dalian Maritime University  |          |
| 1050-1110   | S2.1      | <b>Progress in Developing the Compressor/Expander Machines for "WindTP"</b><br><i>Seamus Garvey</i><br>University of Nottingham, UK   |          |
| 1110-1130   | S2.2      | <b>Optimization of Wind Speed Augmentation Device for a Small Wind Turbine System</b><br><i>Chanaka Weerasena, Byung Ha Kim, S.D.G.S.P. Gunawardane, Young Ho Lee</i><br>Korea Maritime and Ocean University, Korea; University of Peradeniya, Sri Lanka  |          |
| 1130-1150   | S2.3      | <b>Reduction of Gust Impact on Hydro-Mechanical Wind Power System based on Feedforward Control using Lidar</b><br><i>Chen Wenting, Lin Yonggang and Li Wei</i><br>State Key Laboratory of Fluid Power and Mechatronic Systems, Zhejiang University, China |          |
| 1150-1210   | S2.4      | <b>Effects of Trailing-Edge Flaps on the Load Reduction of Offshore Floating Turbines under Surge and Pitch Motions</b><br><i>B.F. Xu, J.H. Feng, J.F. Cao, H.M. Liu and Z.Z. Zhao</i><br>Hohai University and Yangzhou University, China                 |          |
| 1210-1230   | S2.5      | <b>Levelised Cost of Energy Analysis for Offshore Wind considering Scales and Lifetimes</b><br><i>S. Joshi, V.N. Dinh, E. McKeogh</i><br>Centre for Marine and Renewable Energy Ireland (MaREI)   |          |
| 1230-1250   | S2.6      | <b>Body-yawing Semisubmersible Floating Wind Turbine Platforms</b><br><i>Seamus Garvey, Mike Simpson</i><br>University of Nottingham, UK  |          |
| 1250-1350   | LUNCH     | REVITALIZING LUNCH  |          |
| 1350-1430   | S3        | SESSION 3: PLENARY TALK<br><b>The Future Marine Renewable Energy System</b><br><i>Dr. Jochen Bard</i><br>Fraunhofer IEE   |          |
| 1430-1550   | S4        | SESSION 4: OFFSHORE ENERGY GENERATION TECHNOLOGIES: WAVE AND TIDAL<br>PANEL LEAD: <i>Prof. Tonio Sant</i> , Associate Professor, Dept. of Mechanical Engineering, University of Malta   |          |
| 1430-1450   | S4.1      | <b>A Review of Tidal Power Generation, Tidal Turbine Design and Operation Optimisation</b><br><i>Zhijing Wang, Zhengwei Wang</i><br>Tsinghua University, China  |          |
| 1450-1510   | S4.2      | <b>Application of a Negative Stiffness Mechanism on a Pitching Wave Energy Device</b><br><i>A. Kurniawan, X. Zhang</i><br>Aalborg University, Denmark; University of Western Australia  |          |
| 1510-1530   | S4.3      | <b>Hardware-in-the-Loop Test Rig for a Raft-Type Wave Energy Converter</b><br><i>Changhai Liu, Qingjun Yang, Gang Bao</i><br>Harbin Institute of Technology, China  |          |
| 1530-1550   | S4.4      | <b>Flexible Thin-Film Triboelectric Nanogenerators for Harvesting Water Wave Energy</b><br><i>Guang Zhu</i><br>University of Nottingham, Ningbo China; Chinese Academy of Sciences, Beijing   |          |
| 1550-1600   | BREAK     | NETWORKING BREAK  |          |
| 1600-1740   | S5        | SESSION 5: OFFSHORE ENERGY STORAGE TECHNOLOGIES: ROTATING INERTIA and HYDRAULIC APPLICATIONS<br>PANEL LEAD: <i>Dr. Lindsay Miller</i> , Principal, Environmental Energy Institute, University of Windsor  |          |
| 1600-1620   | S5.1      | <b>Power Flows Within the SHyKESS System</b><br><i>Adam Hoskin, Seamus Garvey</i><br>University of Nottingham, UK   |          |

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| 1620-1640  | S5.2           | <b>Fatigue in Flywheel Energy Storage and Ramifications for Inertia Replacement Systems</b><br><i>James Rouse, Seamus Garvey, Bruno Cárdenas and Adam Hoskin</i><br>University of Nottingham, UK   |
| 1640-1700  | S5.3           | <b>A First Embodiment of a Marine Floating Platform with Integrated Energy Storage</b><br><i>D. Buhagiar, T. Sant, R.N. Farrugia, L. Aquilina, D. Farrugia and F.M. Strati</i><br>University of Nottingham, UK   |
| 1700-1720  | S5.4           | <b>StEnSea – Results from the Pilot Test at Lake Constance</b><br><i>Jochen Bard, M. Puchta and Ch. Dick</i><br>Fraunhofer Institute for Energy Economics and Energy System technology IEE, Germany  |
| 1720-1740  | S5.5           | <b>Onshore Pumped Storage by Counter-Rotating Type Pump-Turbine Unit</b><br><i>LuLu Zhai, Pin Liu, Toshiaki Kanemoto and Zuchao Zhu</i><br>Institute of Ocean Energy, Saga University, Japan; Zhejiang Province Key Laboratory of Fluid Transmission Technology, Zhejiang Sci-Tech University, China |
| <b>OSSES2018 DAY 2   Thursday July 5, 2018   LORD DEARING BUILDING</b> |                |  |
| <b>TIME</b>  | <b>SESSION</b> | <b>ACTIVITY</b>  |
| 0800-0900  | BREAKFAST      | DELICIOUS BREAKFAST  |
| 0900-0940  | S6             | SESSION 6: PLENARY TALK<br><b>Future Challenges in the Large Scale Roll Out of Offshore Wind Energy</b><br><i>Professor Simon Watson</i><br>Delft University of Technology   |
| 0940-1120  | S7             | SESSION 7: OFFSHORE ENERGY STORAGE TECHNOLOGIES: COMPRESSED AIR<br>PANEL LEAD: <i>Dr. Mal Heron</i> , Ocean Radar Consultant, PortMap Remote Ocean Sensing Pty Ltd   |
| 0940-1000  | S7.1           | <b>Review of Compressed Air Energy Storage in Aquifers</b><br><i>Chaobin Guo, Cai Li, Wenzhen Yuan</i><br>Chinese Academy of Geological Sciences, China; University of Sydney, Australia   |
| 1000-1020  | S7.2           | <b>Steel Wire Wound Pressure Vessels for Stationary CAES Applications</b><br><i>Bruno Cardenas, James P. Rouse, Adam Hoskin, Seamus D. Garvey</i><br>University of Nottingham, UK  |
| 1020-1040  | S7.3           | <b>Cost Analysis of Two Offshore Hydro-pneumatic Energy Storage Concepts</b><br><i>T. Sant, R. N. Farrugia, D. Farrugia, D. Buhagiar, and F. M. Strati</i><br>University of Malta  |
| 1040-1100  | S7.4           | <b>A Preliminary Techno-economic Assessment of a Hybrid Energy System with Battery-UWCAES Energy Storage in an Island</b><br><i>Zhiwen Wang, Wei Xiong, Rupp Carriveau, David S.-K Ting, Zuwen Wang</i>  |
| 1100-1120  | S7.5           | <b>Dynamic Performance Improvement of a CCGT Power Plant via CAES Integration</b><br><i>Decai Li, Jihong Wang</i><br>University of Warwick, UK   |
| 1120-1200  | S8             | SESSION 8: PLENARY TALK<br><b>Development and Future Prospects for Tidal Energy</b><br><i>Professor Zhengwei Wang</i><br>Tsinghua University   |
| 1200-1300  | LUNCH          | NETWORKING LUNCH   |
| 1300-1420  | S9             | SESSION 9: POLICY AND ECONOMIC CONSIDERATIONS FOR OFFSHORE ENERGY AND STORAGE<br>PANEL LEAD: <i>Dr. Rupp Carriveau</i> , Director, Environmental Energy Institute, Turbulence and Energy Lab, University of Windsor  |
| 1300-1320  | S9.1           | <b>Should Canada Pursue or Support Offshore Wind Development?</b><br><i>Lindsay Miller and Rupp Carriveau</i><br>Environmental Energy Institute, University of Windsor   |
| 1320-1340  | S9.2           | <b>Impacts of Coal-Fired Power Plant Retrofit on Wind Power Integration and Pollution Mitigation: a Case Study of Jilin Province in China</b><br><i>Mengjia Ren and Jiahai Yuan</i><br>Carnegie Mellon University, USA; North China Electric Power University, China                                 |
| 1340-1400  | S9.3           | <b>Potential for Carbon Savings from Liquid-Air and Pumped-Thermal Electricity Storage Systems</b><br><i>S. Georgiou, N. Shah, C.N. Markides</i><br>Imperial College London, UK  |
| 1400-1420  | S9.4           | <b>Levelized Cost of Electricity with Storage Degradation</b><br><i>Chun Sing Lai, Giorgio Locatelli, Andrew Pimm, Xuecong Li*, Loi Lei Lai</i><br>University of Leeds, UK; Guangdong University of Technology, China  |
| 1420-1430  | BREAK          | REFLECTION BREAK   |
| 1430-1630  | S10            | SESSION 10: OFFSHORE ENERGY AND STORAGE SUPPORTING TECHNOLOGIES<br>PANEL LEAD: <i>Dr. Alex Slocum</i> , Neil and Jane Pappalardo Professor of Mechanical Engineering, Mac Vicar Faculty Fellow, MIT  |
| 1430-1450  | S10.1          | <b>Offshore Platforms for Harvesting Renewable Energy and Minerals from Seawater</b><br><i>Alexander Slocum, M.N. Haji, J.M. Kluger, and A. Patel</i><br>Massachusetts Institute of Technology, USA  |
| 1450-1510  | S10.2          | <b>Two Dimensional Similarity Modeling and Experimental Analysis of a Flexible Riser in an Offshore Compressed Air System</b><br><i>Bo Hu, Zhiwen Wang, Hongwang Du, Wei Xiong, Rupp Carriveau, David S.-K. Ting, Zuwen Wang</i>   |

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| 1510-1530  | S10.3          | <b>Isothermal Piston Gas Compression</b><br><i>Weiqing Xu, Z.Y. Du</i><br>Beihang University, China, Beijing Key Laboratory, China  | DA        |
| 1530-1550  | S10.4          | <b>Solid Oxide Fuel Cells</b><br><i>Jun Yang, Jianxin Wang, Wanbin Guan</i><br>Ningbo Institute of Materials and Technology Engineering, Chinese Academy of Sciences  |           |
| 1550-1610  | S10.5          | <b>Meandering of Wind Turbine Wake Flow</b><br><i>Xuerui Mao, Soledad Le Clainche, José M. Vega</i><br>University of Nottingham, Nottingham, UK; Technical University of Madrid, Spain  |           |
| 1610-1630  | S10.6          | <b>Large Eddy Simulation of the Wind Turbine Wake under Various Atmospheric Conditions</b><br><i>Yang Tao, Daniel Cabezon, Xuerui Mao</i><br>University of Nottingham, UK; EDP Renewables   |           |
| 1630-1710  | S11            | <b>SESSION 11: SPECIAL REMOTE ADDRESS</b><br><b>Offshore Renewables in the UK: Past, Present, and Future</b><br><i>Adrian Fox</i><br>The Crowne Estate  |           |
| 1930-2200  | BANQUET        | <b>BANQUET</b><br>NEW GRAND CENTURY HOTEL   |           |
| <b>OSSES2018 DAY 3   Friday July 6, 2018   LORD DEARING BUILDING</b> |                |   |           |
| <b>TIME</b>  | <b>SESSION</b> | <b>ACTIVITY</b>   | DAY THREE |
| 0800-0900  | BREAKFAST      | <b>DELICIOUS BREAKFAST</b>  |           |
| 0900-0940  | S12            | <b>SESSION 12: PLENARY TALK</b><br><b>Airborne Wind - Offshore and Onshore</b><br><i>Dr. Joseph Coleman</i><br>University of Limerick   |           |
| 0940-1210  | S13            | <b>SESSION 13: OFFSHORE ENERGY AND STORAGE TECHNOLOGIES: BATTERIES AND CAPACITORS</b><br><b>PANEL LEAD: <i>Professor Seamus Garvey</i>, Director of the Rolls-Royce UTC in Gas Turbine Transmission Systems, University of Nottingham, UK</b>   |           |
| 0940-1000  | S13.1          | <b>Effect of Defects in Silicon Material on Electrical and Electrochemical Performance</b><br><i>T. Jiang, F. Tang, Y. Zhou, G. Z. Chen</i><br>Wuhan University of Science and Technology, China; University of Nottingham Ningbo, China  |           |
| 1000-1020  | S13.2          | <b>Direct Observation of Lithium Dendrite Growth on Graphite Negative Electrode by Operando EC-AFM</b><br><i>Guohong Hu, Deyu Wang and Cai Chen</i><br>Ningbo Institute of Materials Technology & Engineering Chinese Academy of Sciences, China  |           |
| 1020-1040  | S13.3          | <b>Energy Storage in Supercapattery for Marine Application</b><br><i>George Z. Chen</i><br>University of Nottingham Ningbo, China   |           |
| 1040-1100  | S13.4          | <b>High-Voltage Electrolytes Based on Fluorinated Solvents for Li-ion Batteries</b><br><i>Lan Xia, George Z. Chen</i><br>University of Nottingham Ningbo, China   |           |
| 1100-1110  | BREAK          | <b>REFLECTION BREAK</b>   |           |
| 1110-1130  | S13.5          | <b>Supercapacitor and Battery Platforms</b><br><i>Mingzhi Dai, Xingye Zhang, Cheng Zhong, Changhe Huo, Yun Zhu, and Cai Shen</i><br>Ningbo Institute of Materials and Technology Engineering, Chinese Academy of Sciences   |           |
| 1130-1150  | S13.6          | <b>Offshore Energy Storage in Supercapacitors with Sea-Water-Like Electrolytes</b><br><i>Biyash Bhattacharya, Bamidele Akinwolemiwa, Chaohui Wei, Di Hu, George Z. Chen</i><br>Energy Engineering Research Group, Faculty of Science and Engineering, University of Nottingham Ningbo China   |           |
| 1150-1210  | S13.7          | <b>New Routes for Preparation of Activated Carbon for Supercapacitors</b><br><i>Yao Chen, George Zheng Chen</i><br>Wuhan University of Science and Technology; University of Nottingham Ningbo China  |           |
| 1210-1310  | LUNCH          | <b>NETWORKING LUNCH</b>   |           |
| 1310-1440  | S14            | <b>SESSION 14: CLEEN2040 INNOVATIVE ENERGY PROCUREMENT WORKSHOP</b><br>Participants will be introduced to the Climate Led Energy Evolution Network (CLEEN) 2040 and will be led through the latest in global trends in energy procurement.<br><i>Chairs: Professor Rupp Carriveau and Professor Lindsay Miller</i><br>Environmental Energy Institute, University of Windsor, Canada |           |
| 1440-1510  | S15            | <b>SESSION 15: OSES SOCIETY: INDUSTRY PROGRESS AND FUTURES PANEL</b><br><b>PANEL LEADS: <i>Seamus Garvey, Tonio Sant, Rupp Carriveau</i></b><br>OSSES2018 Chairs  |           |