

# RENEW2020

## PRELIMINARY PROGRAMME

12 – 15 October 2020

IST Congress Centre, Lisbon, Portugal

# SCHEDULE AT A GLANCE

<b>Monday, 12 October 2020</b>	
Registration (Hall 01 – from 8h00 onwards)	
<b>Instituto Superior Técnico – Congress Centre</b>	
<b>Opening Session – (9h00-9h20)</b>	
<i>Coffee-break (9h20-9h30)</i>	
<i>Session 1.1 (9h30-10h30)</i> <b>Wave Resource Assessment 1</b>	<i>Session 1.2 (9h30-11h00)</i> <b>German floating offshore wind cluster 1</b>
<i>Coffee-break (11h00 – 11h30)</i>	
<i>Session 2.1 (11h30-13h00)</i> <b>Wave Resource Assessment 2</b>	<i>Session 2.2 (11h30-13h00)</i> <b>German floating offshore wind cluster 2</b>
<i>Lunch (13h00-14h00)</i>	
<i>Session 3.1 (14h00-15h30)</i> <b>Wave Resource Assessment 3</b>	<i>Session 3.2(14h00-15h30)</i> <b>ARCWIND project on Floating Offshore Wind 1</b>
<i>Coffee-break (15h30-16h00)</i>	
<i>Session 4.1 (16h00-17h30)</i> <b>Oscillating Water Columns</b>	<i>Session 4.2(16h00-17h30)</i> <b>ARCWIND project on Floating Offshore Wind 2</b>
<b>Tuesday, 13 October 2020</b>	
Registration (Hall 01 – from 8h00 onwards)	
<i>Session 5.1 (9h00-10h30)</i> <b>Wave Energy Devices 1</b>	<i>Session 5.2 (9h00-10h30)</i> <b>Wind Energy Devices 1</b>
<i>Coffee-break (10h30-11h00)</i>	
<i>Session 6.1 (11h00-12h30)</i> <b>Wave Energy Devices 2</b>	<i>Session 6.2 (11h00-12h30)</i> <b>Operation and Maintenance of Offshore Wind 1</b>
<i>Lunch (12h30-14h00)</i>	
<i>Session 7.1 (14h00-15h30)</i> <b>Wave Energy Devices 3</b>	<i>Session 7.2 (14h00-15h30)</i> <b>Operation and Maintenance of Offshore Wind 2</b>
<i>Coffee-break (15h30-16h00)</i>	
<i>Session 8.1 (16h00-17h30)</i> <b>Wave Energy Devices 4</b>	<i>Session 8.2 (16h00-17h30)</i> <b>Condition based Maintenance of Offshore Wind Devices</b>
<b>Wednesday, 14 October 2020</b>	
Registration (Hall 01 – from 8h00 onwards)	
<i>Session 9.1 (9h00-10h30)</i> <b>Extreme loads and response of floaters</b>	<i>Session 9.2 (9h00-10h30)</i> <b>Moorings systems and power cables 1</b>
<i>Coffee-break (10h30-11h00)</i>	
<i>Session 10.1 (11h00-12h30)</i> <b>Control of wave energy devices</b>	<i>Session 10.2 (11h00-12h30)</i> <b>Moorings systems and power cables 2</b>
<i>Lunch (12h30-14h00)</i>	
<i>Session 11.1 (14h00-15h30)</i> <b>Economic Considerations</b>	<i>Session 11.2 (14h00-15h30)</i> <b>Moorings systems and power cables 3</b>
<i>Coffee-break (15h30-16h00)</i>	
<i>Session 12.1 (16h00-17h30)</i> <b>Multiuse Platforms</b>	<i>Session 12.2 (16h00-17h30)</i> <b>Materials and Structural Design</b>

<b>Thursday, 15 October 2020</b>	
<b>Registration (Hall 01 – from 8h00 onwards)</b>	
<i>Session 13.1 (9h00-10h30)</i> <b>Wave and Wind Energy</b>	<i>Session 13.2 (9h00-10h30)</i> <b>Tidal Energy Devices 1</b>
<i>Coffee-break (10h30-11h00)</i>	
<i>Session 14.1 (11h00-12h30)</i> <b>Solar and Wind Energy</b>	<i>Session 14.2 (11h00-12h30)</i> <b>Tidal Energy Devices 2</b>
<i>Lunch (12h30-14h00)</i>	
<i>Session 15.1 (14h00-15h30)</i> <b>Marine Vehicles</b>	<i>Session 15.2 (14h00-15h30)</i> <b>Tidal Energy Devices 3</b>
	<i>Session 16.2 (16h00-17h30)</i> <b>Power assessment and fluctuating loads in tidal energy devices</b>

## Papers per session:

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### **Wave Resource Assessment 1 (3)**

Effects of varying the transmission coefficient in SNL-SWAN for a wave farm in Peniche (2139)

V. Fanti, J. Jacob, A. Pacheco, C. J. E. M. Fortes & E. Didier

Assessment of the wave resource in the Azores coastal area (2145)

M. Gonçalves & C. Guedes Soares

Validation of a spectral wave model for wave energy assessments in the Bay of Cadiz (0056)

M. Legaz, S. Ponce de León & C. Guedes Soares

### **Wave Resource Assessment 2 (3)**

Assessment of the wave power resource at Madeira archipelago with SWAN model (2146)

D. Silva & C. Guedes Soares

Developing marine renewable energy in the Mediterranean: The case of PELAGOS project (0055)

T.H. Soukissian, G. Veldeki, M. Damasiotis, C. Perakis, D. Barkouta, I. Chatjigeorgiou & V. Bougiouri.

Stochastic storm models for design of wave energy converters and marine structures (2148)

V. Laface, F. Arena & E. M. Bitner-Gregersen

### **Wave Resource Assessment 3 (3)**

Change of wave energy resources in Japan during 5 decades (1092)

B. Kamranzad & K. Takara

Assessing climate change effects on the wave energy in the Canary Islands (064)

M. Gonçalves, M. Bernardino & C. Guedes Soares

Environmental wave contours for the West Coast of Fuerteventura (2147)

G. Clarindo & C. Guedes Soares

### **Wave Energy Devices 1 (3)**

Identifying compatible locations for wave energy exploration with different wave energy devices in Madeira Islands (041)

S. Ramos, H. Diaz, G. Lavidas & C. Guedes Soares

Upscaling wave energy converters: Size vs. modularity (027)

J. Scriven, J. Cruz & M. Atcheson Cruz

A feasibility study on downsizing of power take off system of wave energy converters (038)  
J. Tan, H. Polinder, P. Wellens & S. Miedema

### **Wave Energy Devices 2 (3)**

Joint optimisation of geometry and mass distribution of wave energy converters (1083)  
A. Garcia-Teruel & D. I. M. Forehand

Evaluation of the power performance of various wave energy conversion concepts for Faroese coastal waters (042)  
B. Joensen, B. A. Niclasen & H. B. Bingham

A hydrodynamic model of the M4 wave energy converter using the Moving Frame Method (2131)  
J. Nyland, D. Lande-Sudall, P. K. Stansby & T. Impelluso

### **Wave Energy Devices 3 (3)**

Power fluctuation analysis for WEC farms (2118)  
F. Ferri

Validation study for a heaving sphere in waves (2155)  
H. Islam & C. Guedes Soares

Design and evaluation of linear and rotational generator scale models for wave tank testing (2128)  
Z. Shahroozi, M. Eriksson, M. Göteman & J. Engström

### **Wave Energy Devices 4 (2)**

Experimental study of a navigational buoy powered by wave energy through triboelectric nanogenerators (2136)  
D. Clemente, T. Cabral, P. Rosa-Santos, F. Taveira-Pinto, C. Rodrigues, J. M. Correia, A. Pereira, J. Ventura, N. Mathias, R. Marini & T. Morais

Wave power extraction by a submerged piezoelectric plate (0077)  
S. Zheng, M. H. Meylan, D. Greaves & G. Iglesias

### **Oscillating Water Columns (3)**

Numerical assessment of wave induced loads on an Oscillating Water Column carapace (0049)  
M. Batlle Martin, G. Pinon & J. Reveillon

Preliminary experimental results of a 1:10th-scale model of the spar-buoy OWC for oceanographic purposes (0068)  
C.. L. G. Oikonomou, R. P. F. Gomes, L. M. C. Gato, A. F. O. Falcão

Hydrodynamic performance assessment of dual chamber shoreline Oscillating Water Column devices (2160)  
K. Rezanejad, A. Abbasnia & C. Guedes Soares

### **Extreme loads and response of floaters (3)**

Response of the multi-float WEC M4 in focussed waves using SPH (1117)  
E. Carpintero Moreno, G. Fourtakas, P. K. Stansby & A. J. Crespo

SPH modelling of extreme loads exerted onto a point absorber WEC (1084)  
A.J. Crespo, P. Roperro, J.M. Dominguez, M. Gómez-Gesteira, C. Altomare, B. Tagliafierro & G. Viccione

Comparison of dynamic mesh methods in OpenFOAM for a WEC in extreme waves (1108)  
E. Katsidoniotaki & M. Göteman

### **Control of wave energy devices (3)**

Black-box modelling of a three-hinge-barge wave energy device via forces responses (2112)  
F. Jaramillo-Lopez, B. Flannery, J. Ringwood & J. Murphy

Linear optimal control on a multi-PTO wave energy converter M4 with performance analysis (1118)  
Z. Liao, G. Li & P. K. Stansby

Effect of non-ideal power take-off on the electric output power of a wave energy converter under suboptimal control. (0059)

M. F. Pettersen, P. B. Garcia-Rosa, M. Molinas & O. B. Fosso

### **Wave and Wind Energy**

Multi-criteria analysis to rank offshore renewable technologies to support deep-water oil and gas production (011)

A. R. Novgorodcev Jr. & A. Jarquín-Laguna

Selection of a PTO and a relief valve for the Roccella Jonica wave power plant (1106)

A. Scialò, J. C. C. Henriques, G. Malara, F. Arena & L. M. C. Gato

Design of power take-offs for combined wave and wind harvesting floating platforms. (2141)

J. F. Gaspar, M. Kamarlouei, M. Calvário & C. Guedes Soares

### **Multiuse Platforms (3)**

Floating power plant hybrid wind-wave platform: CFD simulations of the chamber geometry (0072)

M. Antón, C. Eskilsson, J. Andersen, S. Thomas & M. B. Kramer

Development and validation of a coupled numerical model for offshore floating multi-purpose platforms (024)

L. Li & M. Collu, Y. Gao, C. Ruzzo, F. Arena, F. Taruffi & S. Muggiasca & M. Belloli

On the arrangement of two experimental activities on a novel multi-purpose floating structure concept (2151)

C. Ruzzo, A. Romolo, G. Malara, F. Arena, F. Taruffi, S. Muggiasca, M. Belloli, B. Bouscasse, J. Ohana, A. Santoro, K. Aubriere, G. Brizzi, M. Collu, P. Corvaglia & F. Lagasco

### **Wind Energy Devices (4)**

Breaking wave loads and  $y+$  value on offshore wind turbine monopoles (078)

E. M. Chatzimarkou, C. Michailides & T. Onoufriou

Mean second-order wave drift forces contour of a floating structure concept for wind energy exploitation (0058)

T. P. Mazarakos & S. A. Mavrakos

Hydrodynamic investigation of a large monopile for offshore wind applications: numerical and experimental approaches (0047)

A. Moghtadaei, M. Karimirad, C. Young & T. Whittaker

### **Economic Considerations**

Technological and commercial comparison of OWC and SSG wave energy converters built into breakwaters (082)

I. Margheritini, P. Frigaard & G. Iglesias.

The economics of floating offshore wind - A comparison of different methods (040)

A. Garcia-Teruel & H. Jeffrey

Dynamic HV Cables with AL conductors for Floating Offshore Wind Turbines: A cost & behavior comparative study. (1107)

K. Grivas, A. Moraiti, G. Georgallis, G. Rinaldi & P. R. Thies.

### **German floating offshore wind cluster 1 (3)**

Design of production networks for the production of floating substructures for offshore wind turbines (1077)

B. Illgen, J. Sender, H. Herholz & W. Flügge

Concept of a scalable hybrid microgrid for offshore oil and gas platforms using floating wind turbines (2300)

I. M. Iqbar, F.O.B.Othman, H.E. Lee, F. Adam, J. Großmann & M. Beyer

Recommendations for the coupled analysis of floating wind turbines on different floater concepts (ORAL PRESENTATION ONLY)

A. Manjock & K. Argyriadis

### **German floating offshore wind cluster 2 (3)**

Impact damages to organic coating systems of offshore wind turbines - corrosion progress and repair strategies (1076)  
M. Irmer, A. Momber, T. Marquardt & W. Flügge

An advanced structural mechanical approach to fatigue lifetime prediction of submarine cables (1079)  
C. Otto, C. Schuett, S. Koslec & P. Menzel

Universal gravity anchor solution for floating substructures – experimental studies in a wave flume (1103)  
R. Topp, F. Adam, T. Baldock & C. M. Wang

### **ARCWIND project on Floating Offshore Wind 1 (3)**

Response dynamics of a free-float capable tension leg platform for a 10 MW wind turbine at the Northern Iberian Peninsula (003)  
E. Uzunoglu & C. Guedes Soares

Hybrid scaled testing of a 10MW TLP floating wind turbine using the SiL method to integrate the rotor thrust and moments (061)  
F. Vittori, O. Pires, J. Azcona, E. Uzunoglu, C. Guedes Soares, R. Zamora Rodrigues & A. Souto-Iglesias

Tuned mass damper effects on the tendon responses of a novel 10 MW multi-body floating offshore wind turbine platform . 0012  
Y. Yang, M. Bashir, C. Sakaris, S. Loughney, J. Wang, C. Michailides & C. Li

### **ARCWIND project on Floating Offshore Wind 2 (3)**

Application of a Multiple-Attribute Decision-Analysis methodology for site selection of floating offshore wind farms off the West coast of Ireland (2138)  
S. Loughney, J. Wang, M. Bashir, M. Armin & Y. Yang

Grid capacity for floating offshore wind integration The Portuguese Case (1078)  
N. Amaro, A. Egorov & F. Reis

Transportation tests of CENTEC-TLP concept in waves (1112)  
J. Mas-Soler, E. Uzunoglu, C. Guedes Soares, G. Bulian & A. Souto-Iglesias

### **Operation and Maintenance of Offshore Wind 1 (3)**

Failure Mode Identification and Effect Analysis of Offshore Wind Turbines and Substations (2149)  
H. Díaz & C. Guedes Soares

Failure analysis of floating offshore wind turbine technologies (1099)  
M. Shafiee, G. Stamelos, M. M. Aziminia, T. Elusakin, T. Adedipe & F. Dinmohammadi

Improvements in the O&M modelling of floating offshore wind farms (1089)  
G. Rinaldi, P. R. Thies & L. Johanning

### **Operation and Maintenance of Offshore Wind 2 (3)**

Deep reinforcement learning for maintenance planning of offshore vessel transfer (008)  
J. Chatterjee & N. Dethlefs

A Review of maintenance strategy optimization for wind energy (0069)  
M. Li, X. Jiang, H. Polinder & R. R. Negenborn.

Optimal maintenance management of offshore wind farms by genetic algorithms (1116)  
T. Benmessaoud & F. P. García Márquez

### **Condition based Maintenance of Offshore Wind Devices (3)**

An Online ANFIS-PF hybrid RUL prediction model with an application to gearbox (1101)

A. Govahianjahromi, D. Lee & C. K. Mechefske

Detection of structural defects in wind turbine blades employing Guided Waves and Machine Learning methods (2119)

P. Sanchez Granados, C. Q. Gómez Muñoz & F. P. García Márquez

Pitch bearing case study with supervisory control data of 7MW wind turbine (1090)

W. Song, K. A. Karikari-Boateng & H. Lee

### **Tidal Energy Devices 1 (3)**

Implementing varying blade profile and Reynolds Number in BEMT code (0026)

I. Evans, M. Togneri, T. Lake, R. Gwenter, I. Masters, G. Pinon & M. Slama

Hydrodynamic analysis of turbine control through blade-deformation (076)

F. Zilic de Arcos, C. R. Vogel & R. H. J. Willden

Blade root load variations on two scaled industrial tidal turbines. (0039)

M. Slama, G. Pinon, M. Togneri, E. Jump, B. Gaurier, G. Germain, F. Represas, J. Grande, E. Nicolas & J. Marcille.

### **Tidal Energy Devices 2 (3)**

Experimental investigation of the performance of a sidewall-constrained tidal turbine fence (0045)

S. Ettema, J. McNaughton, C.R. Vogel & R.H.J. Willden

Experimental testing of the performance and interference effects of a cross-stream array of tidal turbines (0010)

J. McNaughton, B. Cao, S. Ettema, F. Zilic de Arcos, C. R. Vogel & R. H. J. Willden.

Laboratory scale tests of a floating tidal turbine (0044)

S. Walker, L. Cappiotti, I. Simonetti & A. Esposito

### **Tidal Energy Devices 3 (3)**

Analysis of fixed turbine operating conditions with and without a shock capture scheme (2144)

L. M. Flores Mateos & M. Hartnett

Hybrid viscous/inviscid modelling of a hydrokinetic turbine performance and wake field (0054)

M. Gregori, D. Calcagni, F. Salvatore, F. Di Felice, F. Alves Pereira & R Camussi.

Unsteady loading of a floating tidal turbine oscillating in a pendulum motion (2154)

M. H. B. Osman & R. H. J. Willden

### **Moorings systems and power cables 1 (3)**

Round robin testing of synthetic fibre ropes for application in marine renewable energy (1121)

F. Khalid, P. Halswell, P. Davies, P. R. Thies, N. Lacotte & L. Johanning

Performance assessment of a tether component installed on elastic mooring lines for floating wave energy converters (0015)

S.-H. Yang & J.W. Ringsberg

Experimental study of nonlinear behaviour of a nylon mooring rope at different scales (2153)

S. Wang, S. Xu, C. Guedes Soares, Y. Zhang, H. Liu & L. Li

### **Moorings systems and power cables 2 (3)**

Effect of mooring line attachment point on parametrically excited motions and power extraction in the Spar-buoy OWC device (005)

G. Giorgi, G. Bracco, G. Mattiazzo & R. P.F. Gomes

Efficiency of an oscillating water column device for several mooring systems (0036)

D. N. Konispoliatis, A. S. Mavrakos & S. A. Mavrakos.

Experiment aided development of a hybrid mooring and foundation concept for marine energy applications (1086)  
G. Rinaldi, J. Morton, P. R. Thies, M. Sansom & L. Johanning

### **Moorings systems and power cables 3 (3)**

Taut elastic mooring characteristics for the multi-float M4 wave energy converter (1111)  
P. K. Stansby & E. Carpintero Moreno

Assessment of potential sites for a non-linear mooring system in floating offshore wind applications (1104)  
F. Khalid, P. R. Thies, D. Newsam & L. Johanning

Survivability analysis of the mooring system of a combined wave and wind harvesting concept (2143)  
M. Kamarlouei, J. Gaspar, T. S. Hallak, F. Thiebaut & C. Guedes Soares

### **Materials and Structural Design (3)**

Structural analysis of the offshore wind turbine tower. (0057)  
M. Legaz, P. Mayorga, J. Fernandez, J. Muñoz & M. Bruno

Computation of discretization error bounds on the fatigue damage of a shear plate (2124)  
L. Mell, V. Rey, F. Schoefs & B. Rocher

Towards a high-fidelity simulation environment for structural integrity assessment of floating wind energy platforms (2140)

I. Souto-Canteli, M. Penalba, M. Martinez-Agirre, M. Ezkurra, J.-A.R Esnaola, I. Llavori, J.-I. Aizpurua

### **Marine Vehicles (3)**

New approaches for renewable energy management in autonomous marine vehicles (2114)  
P.J. Bernalte, F.P. García Márquez, S. Marini, F. Bonofoglio, L. Barbieri, N. Gjerci, E. Ottaviani, S. Govindaraj, S. Coene, A. But, J. Pedersen, C. Vetke, F. Madricardo, F. Fogliani, M. Antonini, S. Montenegro, P. Weiss, K. Nowak, M. Peer, T. Gobert, A. Turetta, E. Chatzidouros, D. Lee, T. Yamas & M. Papaelias

Semi-empirical model study of propulsion with in-line tandem flapping hydrofoils (2134)  
D. B. S. Lopes, J. A. C. Falcão de Campos, A. J. N. A. Sarmiento & G. Vaz

Modelling and assessment of ROV capacity within an autonomous offshore intervention system (2122)  
C. Zhao, P. R. Thies, J. Cowles & L. Johanning

### **Solar and Wind Energy (2)**

Hydrodynamic investigation of design parameters for a cylindrical type floating solar system (0073)  
D. Friel, M. Karimirad, T. Whittaker & J. Doran

Development of a universal useable and in series production manufacturable buoyancy body design for TLP and semi-submersible (2115)  
M. Lutz, D. Walia & F. Adam

Installation of pre-assembled offshore floating wind turbine using a floating vessel (1075)  
M. A. A. A. Hassan & C. Guedes Soares.

### **Power assessment and fluctuating loads in tidal energy devices (3)**

Coupled flow-wave modelling for regional tidal site characterization in the English Channel (2130)  
J. Hardwick, I. G. C. Ashton, E. Mackay, H. C. M. Smith & P. R. Thies

Application of VMEA to assess uncertainties affecting tidal devices: preliminary findings using tank-scale turbines (0025)  
E. Jump, I. Papachristou, A. Macleod, M. Slama, G. Pinon, F. Represas, J. Grande, E. Nicolas J. Marcille & M. Togneri

Turbulence characterization at tidal-stream energy site in Alderney Race (1115)  
A. Sentchev, M. Thiébaud & S. Guillou