<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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</thead>
<tbody>
<tr>
<td>07:30-08:30</td>
<td>Registration</td>
<td>Session V</td>
<td>Session IV</td>
<td>Session III</td>
<td>EEE</td>
</tr>
<tr>
<td>08:00-08:40</td>
<td>Opening Ceremony</td>
<td>Session II</td>
<td>Session I</td>
<td>Session</td>
<td>EEE</td>
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<tr>
<td>08:40-10:40</td>
<td>Session I</td>
<td>Session II</td>
<td>Session III</td>
<td>Session</td>
<td>EEE</td>
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<tr>
<td>10:40-11:20</td>
<td>Lunch</td>
<td>Session V</td>
<td>Session IV</td>
<td>Session</td>
<td>EEE</td>
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<tr>
<td>11:20-13:00</td>
<td>Refreshments</td>
<td>Session VI</td>
<td>Session V</td>
<td>Session</td>
<td>EEE</td>
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<tr>
<td>13:00-14:00</td>
<td>Session</td>
<td>Session VI</td>
<td>Session V</td>
<td>Session</td>
<td>EEE</td>
</tr>
<tr>
<td>14:00-16:00</td>
<td>Workshop 1</td>
<td>Session VI</td>
<td>Session V</td>
<td>Session</td>
<td>EEE</td>
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<tr>
<td>16:00-17:00</td>
<td>Session V</td>
<td>Workshop 1</td>
<td>Session VI</td>
<td>Session</td>
<td>EEE</td>
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<tr>
<td>17:00-18:00</td>
<td>Welcome Reception</td>
<td>Welcome Reception</td>
<td>Welcome Reception</td>
<td>Welcome Reception</td>
<td>EEE</td>
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<tr>
<td>18:00-18:30</td>
<td>Poster I</td>
<td>Poster II</td>
<td>Poster III</td>
<td>Poster IV</td>
<td>EEE</td>
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<td>18:30</td>
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</table>

**Monday**
- Registration
- Session V
- Session I
- Lunch
- Refreshments
- Session
- Workshop 1
- Welcome Reception
- Poster I

**Tuesday**
- Session V
- Session II
- Session I
- Session II
- Lunch
- Refreshments
- Session
- Workshop 1
- Welcome Reception
- Poster II

**Wednesday**
- Session IV
- Session III
- Session III
- Session IV
- Lunch
- Refreshments
- Session
- Welcome Reception
- Poster III

**Thursday**
- Session V
- Session VI
- Session V
- Session VI
- Session
- Workshop 1
- Welcome Reception
- Poster IV

**Friday**
- Session IV
- Session II
- Session III
- Session
- Workshop 1
- Welcome Reception
- Poster
A message from the Chair of EWTEC2011

Dear EWTEC 2011 Delegates

Welcome to the 9th European Wave and Tidal Energy Conference (EWTEC) hosted by the Sustainable Energy Research Group at the University of Southampton.

The first EWTEC Conference was held in 1993 and has now become the most important global event in wave and tidal energy conversion. The Conference is held every two years, and in 2005 expanded to include the developing tidal energy sector.

The 9th conference - EWTEC 2011 in Southampton - will, I hope, provide a global focus for all activities in wave and marine current energy conversion technologies, research, development and demonstration. EWTEC2011 has already achieved many milestones, including providing a permanent web portal for the Conference series and receiving an unprecedented number of abstracts (350), with the result that 220 papers will be presented at this year’s Conference. For the first time, the EWTEC2011 Conference will include unique symposia, such as Policy, Showcasing UK and US activities and Marine Parks, and there will be an exhibition and special workshops throughout the week of the Conference. EWTEC2011 will be the largest yet with around 400 registrations and attended by representatives from 28 countries.

The last two years have witnessed considerable progress in wave and tidal energy development, with many large scale deployments occurring at sea. Of particular note was the recent announcement (by the UK’s Crown Estate) of a 1.6GW target of technology implementation by 2020 in sites in the Pentland Firth in the UK. This target alone represents a projected investment of over £4.3 billion and, if successful, has the potential to propel the UK and the implemented technologies associated with the project onto a higher platform towards achieving a truly global industry. It is important to remember that the developmental route of many of these technologies began through discussion and debate within the EWTEC conference series. Hence, all these activities will further enhance the standing of EWTEC, and the community needs to strengthen the conference series’ structures to allow the continuation of balanced debates that are needed to address this growth potential and the exploitation of wave and tidal energy resources for sustainable electricity production.

I would like to take this opportunity to express my heartfelt gratitude to all reviewers, without whom the high quality of the Conference’s technical programme would not have been achievable. I would also like to thank the sponsors of the Conference for making the enhanced social activities of EWTEC2011 possible and to my colleagues on the EWTEC2011 Management Committee for all their hard work and for contributing to the strategic planning that we hope will make EWTEC2011 a unique and successful event. I would like to conclude by thanking all attendees for coming to Southampton to support the wave and tidal energy research and development and to debate the pertinent issues related to this important energy field. I hope that for each of you, the EWTEC2011 Conference will be a memorable event.

Professor AbuBakr S. Bahaj
Chair of EWTEC 2011,
University of Southampton

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General Information

Venue
The ninth European Wave and Tidal Energy Conference 2011 is based at the University of Southampton’s Highfield campus. Upon arrival please make your way to the conference registration in the foyer of the Life Sciences building (85). Here you will receive your conference pack. The Life Sciences building also houses the oral presentation upload office, IT facilities and meeting/working areas. Please refer to the map at the end of this handbook.

The opening and closing ceremonies as well as the symposia, will take place in the conference’s main lecture theatre in building EEE (32). The three parallel oral technical sessions will be held simultaneously in the EEE (32), Nightingale (67) and Annex (2a) buildings, while the poster displays and sessions will be located in the Foyer of the Annex (2a) building.

Transportation
For information on how to reach the University of Southampton’s Highfield campus please see [http://www.soton.ac.uk/aboutus/whereissoton/index.html](http://www.soton.ac.uk/aboutus/whereissoton/index.html).

The Highfield campus is serviced frequently by local bus services, departing from the Uni-Link Interchange providing excellent connectivity to the city centre, airport and train stations.

If you are travelling by car, please use the University’s Hampton Car park. You will need to obtain a free parking permit from the registration desk (building 85). Please be aware that there are limited numbers of permits, so please advise us as soon as possible, should one be required. If you are staying in Halls of Residence accommodation, parking spaces and free permits will be provided for you there.

Should you require a taxi, we recommend Radio Taxis Ltd (0800 666666 / 02380 666666) or ATS Taxis Ltd (02380 222222).

Refreshments, Lunch and Evening Events
Morning and afternoon refreshments will be served in the Annex Foyer (2a) and the Staff Social Centre (38). Lunch will be served in the Staff Social Centre only. The Staff Social Centre is also the venue for Monday’s welcome reception and Thursday’s Curry Evening.

To avoid queues during breaks, please utilise all three entrances to the building (see map on p.16). There are six different service stations within the Staff Social Centre. Please use one of the service stations that the colour on your name badge coincides with.

Special dietary requirements
Vegetarian options will be regularly available. If you indicated any other special dietary requirements during your online registration, the catering staff on site and at the banquet will be aware of these. Please make yourself known to them.

Banquet
If you purchased banquet tickets with your registration, you will find these inside your name badge wallet. A limited number of further tickets will be available for purchase at the registration desk. The banquet will be held on Wednesday 7 September 2011 from 19:00 at the Botleigh Grange Hotel. Busses to the venue will be leaving from the Uni-Link Interchange on the Highfield Campus at 18:45. Return busses will be leaving from outside the venue from 22:30 depending on demand and will stop at major hotels and Halls of Residence accommodation as well as the University campus.

Internet access
On the back of your name badge you should find personalised log-in details for the University’s IT facilities and wireless internet available across the campus. Please be aware that by using these details, you agree to abide by the University’s terms and conditions for the use of computers and data communications networks.

Information
Conference information and help will be available in the Life Sciences building (85) throughout the conference. There will also be numerous conference helpers spread around campus, easily recognisable by their blue shirts. Please do not hesitate to ask should you have any questions.
Programme Information

Oral presentations
Please upload your presentation at least three hours prior to the start of your session. This is paramount to ensure smooth running of the programme. Staffed upload facilities are located in room 2213 in the Life Sciences building (85) and will be available 16:00-18:30 on Sunday and 8:00-18:00 Monday through Thursday. Each oral presentation should be 15 minutes in length, with a subsequent 5 minutes question time. It is essential that you keep to the allotted time, as you will otherwise disadvantage subsequent speakers. Be advised, that the session chairs have been asked to ensure that all presentations do not exceed the allotted time limit. They will therefore cut off any presentations that overrun.

Poster presentations
Posters will be displayed in the Foyer of the Annex building (2a) for two days (Mon-Tue for POSTER SESSION I, Wed-Thurs for POSTER SESSION II). During the poster sessions (session I: Tue 16:00-17:00, session II: Wed 16:00-17:00) the poster’s presenter should be stationed by his/her poster available to answer questions.

POSTER SESSION I: Please hand in your poster at the registration desk in the Life Sciences building (85) Sunday afternoon or Monday morning and collect it from the registration desk from 8:00 on Wednesday.

POSTER SESSION II: Please hand in your poster at the registration desk no later than Wednesday 9:00 and collect it from the registration desk in the Life Sciences building (85) Sunday afternoon or Monday morning and collect it from the registration desk from 16:00 on Thursday.

Awards
Throughout the technical programme delivery, oral and poster presentations will be judged based on their content and presentation. Awards for the best oral and poster presentations will be given during the closing ceremony.

Workshops
Workshop 1 (Sunday 14:00-18:20, Nightingale Theatre):
UK/Korea Ocean Energy Collaboration Workshop (capacity limited to 30 delegates)
Workshop 2 (Tuesday 16:30-18:00, Annex Theatre H):
Showcasing pan-European collaboration, the CORES project
Workshop 3 (Tuesday 16:30-17:30, Nuffield Theatre A):
Developments in the testing of Marine Turbine Blades led by NAREC
Workshop 4 (Wednesday 14:00-16:00, Nuffield Theatre A):
The DEXAWAVE development model – how to scale wave energy converters from 1:10 scale models to full size, commercial wave parks in Malta

Symposia
1. Policy Symposium (Monday 16:30-18:30):
The symposium will begin with five minute answers by the invited speakers to two questions and will be followed by interactive discussions between the speakers and the audience. The questions to be answered are:
   a. What do you understand to be the current direction of UK wave and tidal energy policy? Does it need to be changed? If so what changes do you think are required for technology rollout?
   b. Is the UK government aiding wave and tidal energy developers sufficiently? What additional mechanisms do you feel will be needed to deliver the scale up, expansion and installations of the technology?
   Chair: Geoff French, Scott Wilson
   Invited Speakers:
   - Gareth Davies, Aquatera
   - Ben Hamer, Halcrow
   - Charles Ogilvie, Energy Consultant
   - Doug Parr, Greenpeace

2. Showcasing the US Symposium (Monday 16:30-18:30):
The symposium focuses on the US’s Marine Energy Activities
   Chair: Mike Reed, US Department of Energy
   Invited Speakers:
   - Roger Bagbey, Cardinal Engineering
   - Rich Jepsen, Sandia National Laboratories
   - Angus Norman, Ocean Power Technologies
   - Tim Ramsey, US Department of Energy

3. Showcasing the UK Symposium (Wednesday 17:00-18:30):
The symposium focuses on the UK’s Marine Energy Activities and will consist of the following 20 minute presentations, followed by questions from the audience.
   Chair: AbuBakr Bahaj, University of Southampton
   a. TGL Tidal Stream Concepts and Developments - Alex Alliston, Rolls Royce Energy Systems
   b. The Evolution of Pelamis Wave Energy Convertors - Max Carcas, Pelamis Wave Power
   c. Status of Marine Current Turbine: SeaGen Technology and Beyond - Peter Fraenkel, Marine Current Turbines
   d. Predicting the True Cost of Power for New Technologies in the Marine Renewable Energy Sector - Paddy O’Kane, Aquamarine Power

4. Marine Parks Symposium (Thursday 16:30-18:00):
The symposium focuses on how to make the transition from a prototype to a full-scale marine energy farm and will consist of five minute presentations by the invited speakers, followed by interactive discussions between the speakers and the audience.
   Chair: George Eustice, MP Camborne, Redruth and Hayle
   Invited Speakers:
   - Antonio Sarmento, IST
   - Representative of Norway
   - Claire Gibson, Wave Hub
   - Representative from the Isle of Wight Council
### Sunday 4 September

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>14:00-18:20</td>
<td>UK/Korea Ocean Energy Collaboration Workshop Nightingale Theatre</td>
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<tr>
<td>16:00-18:30</td>
<td>Registration and presentation upload</td>
</tr>
<tr>
<td>16:00-21:00</td>
<td>Arlott Bar in Staff Social Centre is open</td>
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### Monday 5 September

<table>
<thead>
<tr>
<th>Time</th>
<th>Session I</th>
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<tbody>
<tr>
<td>10:00-11:10</td>
<td>Opening Ceremony: Welcome and introductions - Conference Chair Prof. AbuBakr Bahaj Welcome to the University of Southampton - Deputy Vice-Chancellor Prof. Phil Nelson The Governor of Hawaii Proclamation - Representative Cynthia Thielen Wave and Tidal Energy: An assessment from the UK’s Parliamentary Renewable and Sustainable Energy Group - Dr Alan Whitehead MP, Chairman of PRASEG EWTEC 2011: Plans for the week - Prof. AbuBakr Bahaj Policy and Strategies for the rollout of wave and tidal energy - Secretary of State for the Department of Energy and Climate Change: Mr Chris Huhne MP</td>
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<tr>
<th>Time</th>
<th>EEE Theatre</th>
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<tr>
<td>Time</td>
<td>Session II</td>
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<tr>
<td>13:00</td>
<td>Lunch / Exhibition</td>
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<tr>
<td>13:00</td>
<td>Wave energy resource and modelling</td>
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<td></td>
<td>Chair</td>
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<tr>
<td></td>
<td>Teresa Pontes, IDMEC/IST, PT</td>
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<td></td>
<td>David Ingram, University of Edinburgh, UK</td>
</tr>
<tr>
<td>14:40</td>
<td>Wave Hub test facility: sea state directional analysis from an array of 4 measurement buoys Jean-Baptiste Marie Gilles Saulnier, Christophe Maisondieu, Ian G Ashton, George H Smith - UK, FR, UK, UK</td>
</tr>
<tr>
<td>15:40</td>
<td>Characterization of Wave Climate at Hansholm Location with Focus on the Ratio between Average and Extreme Waves Heights Lucia Margheritini, Peter Frigaard, Vicky Stratiogki - DK, DK, BE</td>
</tr>
<tr>
<td>16:00</td>
<td>Refreshments / Exhibition</td>
</tr>
<tr>
<td>16:30</td>
<td>Symposium: Policy EEE Theatre</td>
</tr>
<tr>
<td>18:30</td>
<td>Welcome Reception</td>
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# Tuesday 6 September

<table>
<thead>
<tr>
<th>Time</th>
<th>EEE Theatre</th>
<th>Nightingale Theatre</th>
<th>Annex Theatre H</th>
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<tbody>
<tr>
<td>08:00</td>
<td><strong>Session III</strong></td>
<td><strong>Wave energy converter testing</strong></td>
<td><strong>Control of wave energy converters</strong></td>
</tr>
<tr>
<td><strong>Chair</strong></td>
<td>Richard Willden - University of Oxford, UK</td>
<td>Brian Holmes - HMRC, University College Cork, IE</td>
<td>Antonio Sarmento - Wave Energy Centre, PT</td>
</tr>
<tr>
<td>08:40</td>
<td>Appraising the Extractable Tidal Energy Resource of the UK's Western Coastal Waters</td>
<td>Experimental Wave Cancellation using a Cycloidal Wave Energy Converter</td>
<td>Control strategies for arrays of wave energy devices</td>
</tr>
<tr>
<td>09:00</td>
<td>Characterisation of a Tidal Energy Site: Hydrodynamics and Seabed Structure</td>
<td>Wave pressures and loads on a small scale model of the Svaneheia (Stavanger, Norway)</td>
<td>Control strategies for the ISWEC Wave Energy System</td>
</tr>
<tr>
<td></td>
<td>Matthew Easton, Astrid Harendza, David Wooff, Angus Jackson - UK</td>
<td>SSR pilot project</td>
<td>Giovanni Bracco, Ermanno Giorgelli, Giuliana Mattiazzo, Elisabetta Tedeschi, Marta Molinas - IT, IT, IT, NO, NO</td>
</tr>
<tr>
<td>09:20</td>
<td>Potential Array Sites for Tidal Stream Electricity Generation off the Pembrokeshire Coast</td>
<td>An Experimental Study on Generating Efficiency of a Wave Energy Converter &quot;Backward Bent Duct Buoy&quot;</td>
<td>Reactive Causal Control of a Linear Generator in Irregular Waves for Wave Power System</td>
</tr>
<tr>
<td>09:40</td>
<td>Modelling the hydrodynamic impacts due to tidal lagoons in the upper Bay of Fundy, Canada</td>
<td>Two-Dimensional Motions of a Shallow Draft Wave Energy Converter Undergoing Regular Wave Excitation</td>
<td>State dependent feed-forward control of a wave energy converter model</td>
</tr>
<tr>
<td></td>
<td>Andrew Cornett, Julien Cousineau, Ioan Nistor - CA</td>
<td>Sam Weller, Tim Stallard, Peter Stansby - UK</td>
<td>Philip Cross, James Taylor, George Aggulis - UK</td>
</tr>
<tr>
<td>10:00</td>
<td>The open boundary problem in basin scale modelling of tidal energy extraction</td>
<td>Experiments on the Wave Piston wave energy converter</td>
<td>Toward a biologically inspired, neural control mechanism for multiple degree of freedom wave energy converters</td>
</tr>
<tr>
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<td>Thomas Alan Adcock Adcock, Alistair G. L. Borthwick, Guy T Houlby - UK</td>
<td>Elisa Angellelli, Jens Peter Kofod, Barbara Zamattigh, Mirko Castagnetti, Kristian Glejbol - IT, DK, IT, IT, DK</td>
<td>Timothy R Munson, Alan F Murray, Robin Wallace - US, UK, UK</td>
</tr>
<tr>
<td>10:20</td>
<td>Comparison of different resolution models and observed current profiles in the Bay of Fundy, Canada using turbine-relevant metrics</td>
<td>Laboratory observations of waves in the vicinity of WEC arrays</td>
<td>Optimal Causal Control of an Ocean Wave Energy Converter in Stochastic Waves</td>
</tr>
<tr>
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<td>Joel Culina, Richard Karsten - CA</td>
<td>Merrick Haller - US</td>
<td>Jeff Scruggs, Steven Lattanzio - US</td>
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<tbody>
<tr>
<td>10:40</td>
<td><strong>Session IV</strong></td>
<td><strong>Modelling marine current energy converter arrays - 1</strong></td>
<td><strong>Novel designs and installations of marine energy converters</strong></td>
</tr>
<tr>
<td><strong>Chair</strong></td>
<td>Deborah Greaves - University of Plymouth, UK</td>
<td>Luke Myers - University of Southampton, UK</td>
<td>John Chaplin - University of Southampton, UK</td>
</tr>
<tr>
<td>11:20</td>
<td>Measurements of shoreline wave action to establish possible environmental and ecological effects from wave energy converter arrays.</td>
<td>A Large-Eddy Simulation Study of Wake Propagation and Power Production of an Array of Tidal-Current Turbines</td>
<td>Free floating clam wave energy converter</td>
</tr>
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<td>Robert Beharie - UK</td>
<td>Matt Churchfield, Ye Li, Patrick Moriarty - US</td>
<td>Francis Farley - UK</td>
</tr>
<tr>
<td>11:40</td>
<td>Short term temporal behavioural responses in Pollack, Pollachius pollachius to marine tidal turbine devices; a combined video and ADCP doppler approach.</td>
<td>A decision support tool for the optimisation of large tidal power arrays</td>
<td>WindWaveFloat: Combining offshore wind turbines and WEC in a single structure.</td>
</tr>
<tr>
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<td>Melanie Ann Broadhurst, Sue Barr -UK</td>
<td>Sonja Pans - UK</td>
<td>Kevin Banister, Dominique G Roddier - US</td>
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<tr>
<th>Time</th>
<th>Session V</th>
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<tbody>
<tr>
<td>12:00</td>
<td>Assessment Method of Sound Radiated by Cyclically Operating Wells Turbines</td>
<td>Modelling and Optimisation of Tidal Arrays</td>
<td>Irregular Deep Ocean Wave Energy Conversion Using a Cycloidal Wave Energy Converter</td>
</tr>
<tr>
<td>12:20</td>
<td>Hydrodynamics perturbations generated by waves and submerged structures such as energy converters.</td>
<td>Applying a numerical decision-making tool for tidal current turbine (TCT) planning projects to the Puget Sound estuary - Early Results</td>
<td>The bioWAVE and bioSTREAM Test Unit Gerdolt Klos, Carlos Andres Gonzalez, Zach Benitez - AU</td>
</tr>
<tr>
<td></td>
<td>Adrien Poupardin, Nicolas Bourneton, Gaëlle Perret, Gregory Pinon, Elie Rivaulet, Jérôme Brousard - FR</td>
<td>Thomas Roc, Kristian Thyng, Daniel Conley, Deborah Greaves - UK</td>
<td></td>
</tr>
<tr>
<td>12:40</td>
<td>Impact of climate change on wave energy generation near the Wave Hub, Cornwall, UK</td>
<td>Interaction Effect Analysis for Tidal Current Farm Feasibility Study Applied to Projects in Korea</td>
<td>Performance Evaluation of the Wavestar Prototype</td>
</tr>
<tr>
<td></td>
<td>Dominic Reeve, Shunqi Pan, Vanessa Magar, David Simmonds - UK</td>
<td>Chul Jo - KR</td>
<td>Morten Mejllide Kramer, Laurent Marquis, Peter Frigaard - DK</td>
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<table>
<thead>
<tr>
<th>Session V</th>
<th>Wave energy converter modelling - 2</th>
<th>Design and optimisation of marine current energy converters - 2</th>
<th>Wave energy converter power take off systems - 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Alain Clement - Ecole Centrale de Nantes, FR</td>
<td>Cameron Johnstone - University of Strathclyde, UK</td>
<td>Pierpaolo Ricci - Tecnalia, ES</td>
</tr>
<tr>
<td>14:00</td>
<td>Nonlinear Modelling of the Dynamics of a Free Floating Body</td>
<td>The GESMEY Project Design and development of a second generation TEC</td>
<td>Numerical and Experimental Investigation of Performance of Heaving WECs Coupled with DC Generators</td>
</tr>
<tr>
<td>14:40</td>
<td>A New Numerical Representation of Wave Energy Converters in a Spectral Wave Model</td>
<td>Effect of a diffuser on the power production of an ocean current turbine</td>
<td>A Novel High-Efficiency Impulse Turbine for Use in Oscillating Water Column Devices</td>
</tr>
<tr>
<td></td>
<td>Katherine Silverthorne, Matt Folley - UK</td>
<td>Josh Reinecke, Theodore W von Backstrom, Gerhard Venter, Johannes I. Van Niekerk - ZA</td>
<td>Shahab Nazari, Joao Amaral Teixeira, George Laird - UK</td>
</tr>
<tr>
<td>15:00</td>
<td>Parametric models for WEC performances</td>
<td>Design and model testing of an optimized ducted current turbine</td>
<td>Performance of a Wells turbine in a OWC device in comparison to laboratory tests</td>
</tr>
<tr>
<td></td>
<td>Remy Claude Rene Pascal, Ian Gordon Bryden, Gregory Payne - UK</td>
<td>Romain Luquet, Didier Frechou, Pierre Perdon, David Belleuvre, Paul Guinard - FR</td>
<td>Sergio Mario Camporeale, Pasquale G F Fillamorotti, Marco Torres - IT</td>
</tr>
<tr>
<td>15:40</td>
<td>Time Domain Modelling of Floating Wave Energy Devices Using Non-Linear Shock Protection Force Components</td>
<td>Structural and hydrodynamic model testing of the Transverse Horizontal Axis Water Turbine</td>
<td>Snapper WEC Device Development - The Grid Interface System</td>
</tr>
<tr>
<td></td>
<td>Donnacha G. Gallagher, Thomas Dooley, Paul McEvoy - IE</td>
<td>Guy J Houlby, Ross McAdam, Martin Oldfield - UK</td>
<td>Paul McKeever, Chong Ng, Brian Caffrey, Richard Crozier, Ed Spooner - UK</td>
</tr>
<tr>
<td>16:00-17:00</td>
<td>Annex Theatre H</td>
<td>Nuffield Lecture Theatre A</td>
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| Workshop 2: Showcasing pan-European collaboration, the CORES project | Workshop 3: Developments in the testing of Marine Turbine Blades led by NAREC |

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<thead>
<tr>
<th>Time</th>
<th>Session V</th>
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<th>Session V</th>
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</thead>
<tbody>
<tr>
<td>16:30</td>
<td>Workshop 2: Showcasing pan-European collaboration, the CORES project</td>
<td>Workshop 3: Developments in the testing of Marine Turbine Blades led by NAREC</td>
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## Wednesday 7 September

### 08:00

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<tbody>
<tr>
<td>Chair</td>
<td>Chul Jo - Inha University, KR</td>
<td>Merrick Haller - Oregon State University, US</td>
<td>Weon Koo - University of Ulsan, KR</td>
</tr>
<tr>
<td>08:40</td>
<td>Operational issues surrounding the use of towing tanks for performance quantification of marine current energy converters</td>
<td>A Review of Wave and Tidal Measurement Gauges for Use in Renewable Energy</td>
<td>A New Radial Self-rectifying Air Turbine for Use in OWC Wave Energy Converters</td>
</tr>
<tr>
<td>09:00</td>
<td>The Soderfors Project: Construction of an Experimental Hydrokinetic Power Station</td>
<td>Extreme value analysis of tidal current</td>
<td>Multi-objective Differential Evolutionary Algorithm for Preliminary Design of a Direct-Drive Power Take-Off</td>
</tr>
<tr>
<td></td>
<td>Katarina Yuen, Staffan Lundin, Märten Grabbe, Emilia Lalander, Anders Goude, Mats Leijon - SE</td>
<td>velocity perturbations</td>
<td>Marcos Blanco, Marcos Lafoz, Antonio Alvarez, Maria Isabel Herreros - ES</td>
</tr>
<tr>
<td>09:20</td>
<td>Arguments for modifying the geometry of a scale model rotor</td>
<td>Tidal Current Measurement Using the TanDEM-X Satellite Formation</td>
<td>Hydrodynamic and Electromechanical Simulation of a Wave Energy Converter with a Novel Non-Linear PTO</td>
</tr>
<tr>
<td>09:40</td>
<td>Scaling of a tidal turbine using non-dimensional parameters</td>
<td>VHF Ocean Radar for surface currents appraisal at ocean power sites</td>
<td>Design and Control of a Hydraulic Power Take-off for an Axisymmetric Heaving Point Absorber</td>
</tr>
<tr>
<td></td>
<td>Allan Mason-Jones, Daphne Maria O'Doherty, Cori Morris, Tim O'Doherty, Carl Byrne, Paul Prickett, Roger Grosvenor, Ieuan Owen, Sian Tedds, Rob Poole - UK</td>
<td>Malcolm Heron - AU</td>
<td>Kristof Schlemmer, Franz Fuchshumer, Norbert Böhmer, Ronan Costello, Carlos Villegas - DE, DE, DE, IE, IE</td>
</tr>
<tr>
<td>10:00</td>
<td>Experimental Investigation Of Horizontal Axis Tidal Stream Turbines</td>
<td>Study of Sea-State Variability and Wave Groupiness Using TerraSAR-X Synthetic Aperture Radar Data</td>
<td>Development of air turbines for small power OWC plants</td>
</tr>
<tr>
<td></td>
<td>Ieuan Owen, Rob Poole, Sian Tedds, Jill Leeson, Hossein Najafian, Tim O'Doherty, Allan Mason-Jones - UK</td>
<td>Teresa Pontes, Miguel Bruck, Eduardo Brito, Susanne Lehener - PT, DE, PT, DE</td>
<td>Alessandro Corsini, Franco Rispoli, Esmeralda Tuccimei - IT</td>
</tr>
<tr>
<td>10:20</td>
<td>Investigating experimental techniques used for measurement of the downstream wake of a tidal turbine</td>
<td>Using HF radar to measure the directionality of the wave energy resource.</td>
<td>Efficiency calculation of direct-drive power take-off</td>
</tr>
<tr>
<td></td>
<td>Samuel Rose, Andrew Good, Mairead Acheson, Gerard Hamill, Cameron Johnstone, Pauline MacKinnon, Des Robinson, Andy Grant, Trevor Whittaker - UK</td>
<td>Lucy Wyatt - UK</td>
<td>Francisco Garcia, Marcos Lafoz, Marcos Blanco, Luis Garcia-Tabares - ES</td>
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### 11:40

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<tr>
<td>Chair</td>
<td>Lucy Wyatt - University of Sheffield, UK</td>
<td>Bob Thresher - NREL, US</td>
<td>Stephen Salter - University of Edinburgh, UK</td>
</tr>
<tr>
<td>11:20</td>
<td>Wave resource characterization and WEC selection - a comprehensive methodology applied to NW Spain</td>
<td>Navier-Stokes Modelling for Contra-Rotating Tidal Turbines</td>
<td>Dynamic Mechanical Analysis of Rubber Used in Anaconda Testing</td>
</tr>
<tr>
<td></td>
<td>Gregorio Iglesias, Rodrigo Carballo - ES</td>
<td>Tom R McCombes, Cameron Johnstone, Andy Grant, UK</td>
<td>Valentin Heller, John R. Chaplin - UK</td>
</tr>
<tr>
<td>11:40</td>
<td>Sea state characterisation for Wave Energy performance assessment at the Biscay Marine Energy Platform</td>
<td>3D CFD modelling of tidal turbine performance with validation by laboratory experiments</td>
<td>Composite Blades for Tidal Turbines Versus Wind Turbines at Multi-Megawatt Scale</td>
</tr>
<tr>
<td></td>
<td>Pierpiero Ricci, Olivier Dupperray, Pedro Liria, José Luis Villate, Yago Torre-Enciso - ES</td>
<td>Richard McSherry, Jamie Grimwade, Ian Jones, Simon Mathias, Andre Mateus - UK</td>
<td>Mal Wadia, Marion Meunier, David Olsen, Luke McEwen - UK</td>
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Continued on next page
12:00  Incident wave climate at the OWC Pico plant: Validation of a feed-forward based propagation method (ANN) and a numerical simulation (SWAN) with measured data
12:20  Assessment of Wave Basin Homogeneity for Wave Energy Converter Array Studies. Louise O’Boyle, Bjoern Elsaesser, Matt Foley, Trevor Whittaker - UK
12:40  The accuracy of modelling waves at coastal locations

13:00  Lunch / Exhibition

13:00  Environmental and economic assessment

13:00  Wave energy converter arrays

13:00  Modelling marine current energy converter arrays - 2

13:00  Chair
Gregorio Iglesias - University of Santiago de Compostela, ES

13:00  Performance and economic feasibility analysis of 5 wave energy devices off the west coast of Ireland
Gordon Dalton - IE

13:00  Environmental aspects of developing Ireland’s Atlantic Marine Energy Test Site (AMETS)
Paddy Kavanagh, Mark Fielding - IE

13:00  Integrated WEC system optimisation - Achieving balanced technology development and economical lifecycle performance
Jochem Weber, Ronan Costello, John Ringwood, Thomas Soulard, Boris Teillant - IE

13:00  Applying Ecological Risk Assessment Methodology for Outlining Ecosystem Effects of Ocean Energy Technologies
Linus Hammar - SE

13:00  Adjusting the financial risk of tidal current projects by optimising the ’installed capacity/capacity factor’ratio already during the feasibility stage
Ralf BUCHER - UK

13:00  The Contribution of Environmental Siting and Permitting Requirements to the Cost of Energy for Marine and Hydrokinetic Devices
Andrea E. Copping, Simon H. Geerlofs - US

13:00  Development and validation of a high order numerical solver for cross-flow turbine hydrodynamics
Esteban Ferrer, Richard Wilden - UK

13:00  Results from blade element momentum and RANS analyses of a practical full-scale horizontal axis tidal current turbine
Gareth I Gretteng, David Ingram, Ian Bryden - UK

13:00  The accuracy of the actuator disc-RANS approach for predicting the performance and far wake of a horizontal axis tidal stream turbine
William M. J. Batten, Matt Harrison, AbuBakr S. Bahaj - UK

13:00  Prediction of long-term fatigue damage of a hydraulic cylinder of a wave energy converter subjected to internal fluid pressure induced by wave loads
Limin Yang, Torgeir Moan - NO

13:00  Evaluation of the durability of composite tidal turbine blades
Peter Davies, Germain Grégoire, Dominique Perreux, Amelie Buisseau, Benoît Gaurier - FR

13:00  The Development of a Tool for the Design and Optimisation of Tidal Stream Turbine Arrays
Mat Daniel Thomson, Robert I Rawlinson-Smith - UK

13:00  The Influence of Tidal Stream Turbine Spacing on Performance
Rami Malihi, Ian Masters, Alison J Williams, Nick Croft - UK

13:00  The applicability of semi-empirical wake models for tidal farms
Moritz Palm - NL

13:00  Impact of the separating distance between interacting wave energy converters on the overall energy extraction of an array
Bruno Borgrino - FR

13:00  The development of a tool for optimising arrays of wave energy converters
Benjamin Frederick Martin Child, Joao Manuel Bernardo Pinto da Cruz, Michael John Livingstone - UK

13:00  Experimental Evaluation of the Performances of an Array of Multiple Oscillating Water Columns
Davide Magagna, David Carr, Dimitris Siagonas, Aonghus McNabola, Laurence Gill, Gerald Muller - UK

13:00  Hydrodynamics around DEXA devices and implications for coastal protection
Mrko Castagnetti, Barbara Zanutigh, Jens Peter Kofood, Luca Martinelli, Lars Clausen - IT, IT, DK, IT, DK

13:00  On the Performance of a Resonant Breakwater for Protecting Coast
Pasquale Fabio Filianoti, Riccardo Tiscoppi - IT

13:00  Layout Optimisation of 1st-generation tidal energy arrays
Luke E Myers, AbuBakr S Bahaj - UK

13:00  Numerical analysis of the acceleration and wake effects resulting from changes in tidal turbine array position in a channel
Tim Daly, Luke Myers, AbuBakr S Bahaj - UK

13:00  Optimisation of Point-Absorber Arrays
Raffaeo Antonutti, Grant E. Hearn - IT, UK

13:00  Noise Modelling of Tidal Turbine Arrays for Environmental Impact Assessment
Thomas P Lloyd, Stephen R Turnock, Victor F Humphrey - UK

16:00  Poster Session II / Refreshments / Exhibition

17:00-18:30  Symposium: Showcasing the UK
EEE Theatre, see p.3 for details

19:00  Banquet, Botleigh Grange Hotel, Busses depart from Higli field Interchange at 18:45
### Thursday 8 September

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<tr>
<td>08:00</td>
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<tr>
<td>08:40</td>
<td>Chair</td>
<td>Matt Folley - Queen’s University, Belfast, UK</td>
<td>Frank Neumann - Wave Energy Centre, PT</td>
</tr>
<tr>
<td>08:40</td>
<td></td>
<td>Predicting the hydrodynamic pressure in a fixed and floating undamped OWC using a simplified piston model. Rebecca Sykes, Tony Lewis, Gareth Thomas - IE</td>
<td>Challenges Posed by the Integration of Wave Power onto the Irish Power System David Kavanagh, Andrew Keane, Damian Flynn - IE</td>
</tr>
<tr>
<td>09:00</td>
<td>Tidal Turbine Blade Load Experiments for Oscillatory Motion Ian Milne, Alexander Day, Rajnish Sharma, Richard Play, Simon Bickerton – NZ, UK, NZ, NZ, NZ</td>
<td>Assessment of Viscous Damping via 3D-CFD Modelling of a Floating Wave Energy Device Majid Ahmed Blinder, Aurélien Barbab, Pierre Ferrant, Lionel Gentaz - FR</td>
<td>Control strategies for the grid integration of wave energy converters at the Blascat Marine Energy Platform Elisabetta Tedeschi, Maitier Santos, Pierpaolo Ricci, Marta Molinas, José Luis Villate - NO, ES, ES, NO, ES</td>
</tr>
<tr>
<td>10:00</td>
<td>Interactions between Tidal Turbine Wakes: Experimental Study of a Group of 3-Bladed Rotors Tim Stallard, R Collings, T Feng, Jo Whelan - UK</td>
<td>Assessment of time-domain models of wave energy conversion systems Adi Kurniawan, Jürgen Hals, Torgeir Muan - NO</td>
<td>Flatness-Based Control of a Three-Phase Inverter Connected to Electrical Network Hani Alhamed Alqawaisi, Emmanuel Delaleau - FR</td>
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### Session X

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<tr>
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<tbody>
<tr>
<td>11:20</td>
<td>Chair</td>
<td>Tim O'Doherty - Cardiff University, UK</td>
<td>Ian Bryden - University of Edinburgh, UK</td>
</tr>
<tr>
<td>11:20</td>
<td></td>
<td>Parametrising turbulent marine flows for a blade element momentum model of tidal stream turbines Ian Masters, Michael Tognieri, Miles Willis - UK</td>
<td>Experimental Study of a 2D hydrofoil for application in ocean mooring systems Tiago M. Duarte, António J. N. A. Sarmento, Miguel F. P. Lopes - PT</td>
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<thead>
<tr>
<th>Time</th>
<th>Session XI</th>
<th>EEE Theatre</th>
<th>Nightingale Theatre</th>
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</tr>
</thead>
</table>
| 12:00 | Improved Design of High Solidity Wells Turbine  
Marco Torresi, Daniel Franco, Sergio M. Camporeale, Giuseppe Pascazio - IT  
A Method for Analysing Fluid Structure Interactions on a Horizontal Axis Tidal Turbine  
Rachel F Nicholls-Lee, Stephen R Turnock, Stephen W Boyd - UK  
Non-linear slack-mooring modelling of a floating two-body wave energy converter  
Pedro C. Vicente, Antonio F. O. Falcao, Paula A. P. Justino - PT | Marine energy converter deployment, operation and impacts | Design and optimisation of wave energy converters | Control of marine energy converters |
| 12:20 | Comparison of Two Alternative Hydraulic PTO Concepts for Wave Energy Conversion  
Ronan Costello, John V Ringwood, Jochem Webber - IE  
Device Modelling, Simulation and Vibration Analysis  
Barry J. Carnathers, Brett A. Marno - UK  
Dynamic Maintenance Strategy  
Idoia Iceta, Tim Smith - ES | Modelling and Control of the Wavestar Prototype  
Rico Hjerm Hansen, Morten M Kramer - DK  
The Sensitivity of Actuator-Disc RANS Simulations to Turbulence Length Scale Assumptions  
Tom Blackmore, William M. J Batten, Matt Harrison, AbuBakr S Bahaj - UK  
Deployment and Testing of Commercial Scale CETO Wave Energy Converter  
Laurence Mann, Jonathan Fievez, Raud Caljouw, David Harrowsfield - AU | | |
| 13:00 | Lunch / Exhibition | | | |
| 14:00 | Consideration of the Condition Based Maintenance of Marine Tidal Turbines  
Paul Prickett, Roger Grovenor, Carllon Byrne, Alan Mason Jones, Ceri Morris, Daphne O'Doherty, Tim O'Doherty - UK  
The Effect of Wave Climate on the Optimization of the Shape of a Wave Energy Collector by Genetic Algorithm  
Andrew Peter McCabe, George Aggidis, Martin Widden - UK  
An Independent Validation of the Optimality of Latching and De-clutching Control by Evolutionary Methods  
Kester James Gunn, C. James Taylor, Chris Lingwood - UK | The Impact of a Wave Farm in Southwestern England on Large Scale Sediment Transport  
Raul Gonzalez, Qiongping Zou, Shunqi Pan - UK  
On the maximum and actual capture width ratio of wave energy converters  
Aurelien Baharri, Jorgen Hals - FR, NO  
Evaluation of Maximum Power Point Tracking Methods in Hydrokinetic Energy Conversion Systems  
Jahangir Khan, Tariq Iqbal, John Quaioc, Ali Moshref, Gouri Bhuyan - CA | | |
| 14:20 | A Comparison of Underwater Noise at Two High Energy Tidal Stream Sites  
Miles Willis, Merin Antoine Broudie, Ian Masters - UK  
Design of a Floating Oscillating Water Column for Wave Energy Conversion  
Rui P. F. Gomes, Joao C. C. Henriquez, Luis M. C. Gato, Antonio F. O. Falcao - PT  
Implementation of Pitch Stability Control for a Wave Energy Converter  
Carlos Villegas, Haite van der Schaaf - IE, NL | Experiences from Field Testing with the BOLT Wave Energy Converter  
Ida Kathrine Bjørke, Jonas Sjölte, Even Hjeltand, Gaute Tjensvoll - NO  
Performance of a Wave Energy Converter with Mechanical Energy Smoothing  
Andreas Joseffson, Ansel Berghuvud - SE  
A Model for the Sensitivity of Non-Causal Control of Wave Energy Converters to Wave Excitation Force Prediction Errors  
Francesco Fusco, John Ringwood - IE | | |
| 14:40 | The Impact of a Wave Farm in Southwestern England on Large Scale Sediment Transport  
Raul Gonzalez, Qiongping Zou, Shunqi Pan - UK  
On the maximum and actual capture width ratio of wave energy converters  
Aurelien Baharri, Jorgen Hals - FR, NO  
Evaluation of Maximum Power Point Tracking Methods in Hydrokinetic Energy Conversion Systems  
Jahangir Khan, Tariq Iqbal, John Quaioc, Ali Moshref, Gouri Bhuyan - CA | | | |
| 15:00 | Islay Tidal Demonstration Array - The Development Process and Fishing Issues  
Alan Mortimer - UK  
An Innovative Way of Utilizing Wave Energy to Counteract Eutrophication and Hypoxia  
Lucia Margheritini, Lennart Claeson - DK, SE  
Study of a linear generator control used for inertial point absorbers  
Marcos Lafaz, Marcos Blanco, Sergio Liguerezana, Gustavo Navarro - ES | Obtaining tidal and wave measurements in the Inner sound of the Pentland Firth: Deployment and operational issues pertaining to the accurate quantification of flow properties  
Optimization of the dimensions of a gravity-based wave energy converter foundation based on the heave and surge forces  
Wei Li, Jens Eegstrom, Ling Hai, Stephanie Bontemps, Jan Isberg, Rafael Waters, Mats Leijon - SE  
A Geometrical Interpretation of Force and Position Constraints in the Optimal Control of Wave Energy Devices  
Giorgio Bacelli, John Ringwood - IE | | |
| 15:20 | Obtaining tidal and wave measurements in the Inner sound of the Pentland Firth: Deployment and operational issues pertaining to the accurate quantification of flow properties  
Optimization of the dimensions of a gravity-based wave energy converter foundation based on the heave and surge forces  
Wei Li, Jens Eegstrom, Ling Hai, Stephanie Bontemps, Jan Isberg, Rafael Waters, Mats Leijon - SE  
A Geometrical Interpretation of Force and Position Constraints in the Optimal Control of Wave Energy Devices  
Giorgio Bacelli, John Ringwood - IE | | | |
| 15:40 | | | | |

Thursday 8 September

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EEE Theatre
Symposium: Marine Parks
EEE Theatre, see p.3 for details
Curry Evening
Staff Social Centre
**Poster Presentations**

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<th>Poster Session I - Tuesday 16:00-17:00</th>
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| **Impact of Tidal Energy Converter (TEC) Array Operation on Sediment Dynamics**  
Simon Neill - UK | Techno-Economic analysis of tidal turbine installation and access  
Jason L Hayman, Stuart Easton, David A K Stoddart-Scott - UK |
| **Numerical Investigation into Hydrodynamics of Moored Floating Wave Energy Converters**  
Wanan Sheng, Tony Lewis, Ray Alcorn - IE | A Numerical Investigation into the Tuning of an Oscillating Water Column  
Tracy Somerville, Deborah Greaves, Alison Hunt-Raby - UK |
| **Energy extractors in turbulent flow: wake decay and implications for farm layout**  
Christian Jonsson, Peter Johnson, Ian Eames - UK | Sensors and Measurements inside the Second and Third Wave Energy Converter at the Lysekil Research Site  
Olle Svensson, Erland Strömstedt, Andrej Savin, Mats Leijon - SE |
| **Laboratory Testing of a Novel Float-Type Sea Wave Energy Converter Using a Smart Wave Generator**  
Ahmed Mohamed Reda El-Baz, Osama Abuel Moheimen Montasser, Alaaz Hasan El-Feky - EG | Computational Modelling of the OWEL Wave Energy Converter  
Mark Thomas Leyboorne, William Batten, AbuBaker S Bahaj, Ned Minns - UK |
| **Design of an experiment for field testing of the interactions between 1:10 scale horizontal axis tidal turbines in Strangford Lough, Northern Ireland**  
Laura Finlay, Ian Bryden - UK | Analysis of biological safety of orthogonal turbine  
Ekaterina Sultanova, Viacheslav Sobolev, Igor Usachev - RU |
| **An Investigation into the Possible Effects of Cavitation on an Horizontal Axis Tidal Turbine**  
Anne Blavette, Dara L. O'Sullivan, Michael G. Egan, Antony W. Lewis - IE |
| **Wave energy, a complement to the insular energetic systems.**  
Isidro Padron, Devis Avila, Enrique Melon, Marcos Morales, Ibulla Franquis - ES | Flexible Vane Turbine Tidal Current Energy Conversion Device - From Concept to Application  
Shujie Wang, Peng Yuan - CN |
| **Numerical simulation of a wave energy conversion system**  
Paul H Ackerman, Theodore W Von Backstrom, Johannes L Van Niekerk - ZA | Cost analysis of electric drive trains for tidal farm  
Sigurd Ovrebo - NO |
| **Identifying the Frontier of Knowledge for Marine Renewable Energy Research**  
Matthew Bernard Robert Topper, David M. Ingram - UK | Experimental Research on Tidal Current Power Station  
Fengmei Jing, Lin Cui, Jin Jiang, Liang Zhang - CN |
| **Numerical and Analytical Simulations of Wave Interference about a Single Row Array of Wave Energy Converters**  
Kieran Monk - Plymouth University, UK |  |

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<tr>
<th>Poster Session II - Wednesday 16:00-17:00</th>
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</table>
| **Diversification opportunities for businesses in the South West of England to engage with the growing Marine Renewable Energy market through supporting the wave energy industry.**  
Amanda Pound, Lars Johanning, Mike Reynolds - UK | Coordinators Overview of the FP7 CORES Project  
Raymond Alcorn, Anthony Lewis - IE |
| **Numerical and Experimental Investigation of a Novel Breakwater Combining Coastal Defence and Energy Generation for Near Shore Environment**  
Mark Hillmann, Ming Li, Stephen Quayle - UK | Flow Sensitivity to MHK Energy Generation from Currents Using the SNL -EFDC Model  
Scott C. James, Janet Barco, Erick Johnson, Sophia Lefantzi, Jesse D. Roberts - US |
| **Study of Coherent Structures Suitable for Numerical Testing of Tidal Current Energy Devices**  
Oghenevwori Patricia Okorie, Alan Owen, Pat Pollard, Mamdud Hossain - UK | Characterization of the tidal current resource and main constraints in Gibraltar Straits  
Pedro M. Mayorga, Jan E. Hanssen, Sara Robles, Miguel Bruno - ES |
| **Model study of the oceanography of the Pentland Firth and adjacent waters.**  
Peter Bowyer - UK | Wave power plant with air orthogonal turbine  
Viacheslav Sobolev, Boris Istordik, Yuly Shpilyanskiy - RU |

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<tr>
<td>Optimisation of Multiple Turbine Arrays in a Channel with Tidally</td>
<td>Ben Timmermans, Peter Challenor, Christine Gommenginger - UK</td>
</tr>
<tr>
<td>Reversing Flow by Numerical Modelling</td>
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<tr>
<td>Tim Divet, Ross Vennell, Craig Stevens - NZ</td>
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<tr>
<td>Tidal Turbine Wakes: Small Scale Experimental and Initial Computational</td>
<td>The Potential of Tidal Power from the Doragh Estuary</td>
</tr>
<tr>
<td>Modelling</td>
<td>Masoud Sadrinasab, Nader Shoaih - IR</td>
</tr>
<tr>
<td>Stephanie Ordonez-Sanchez - UK</td>
<td></td>
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<tr>
<td>All-Electric Wave Energy Power Take Off Generator Optimized by High</td>
<td>Paddle-Wheel Turbines for Tidal and Wave Energy Installed on Stable -</td>
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<tr>
<td>Overspeed</td>
<td>Unsinkable Floating Platform Based on Articulated Joints Truss</td>
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<tr>
<td>Jonas Sjølte, Ida Bjerke, Even Hjelten, Gauve Tjensvoll - NO</td>
<td>Technology</td>
</tr>
<tr>
<td>The SOWFIA Project: Streamlining of Ocean Wave Farms Impact Assessment</td>
<td>Design of a Turbine-Generator joint for an oscillating water column</td>
</tr>
<tr>
<td>Deborah Greaves, Daniel Conley, Catherine McClellan, Teresa Simas,</td>
<td>Bruno Pereiras, Danel Montoya, Antonio de la Villa, Francisco Castro,</td>
</tr>
<tr>
<td>Cristina Huertas Olivares, Brian Holmes, José Chambel Leitão, Hakim</td>
<td>Abdelatif el Marjani - ES, VE, ES, MA</td>
</tr>
<tr>
<td>Moussafir, Yago Torre-Encio, Felix Danon - UK, UK, UK, PT, ES, PT,</td>
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<tr>
<td>FR, ES, BE</td>
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<tr>
<td>Early Design Stage of a Floating OWC Off-shore Wave Energy Prototype</td>
<td>Tidal Stream Turbines and Sediment Dynamics: An Overview of Archetypal</td>
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<td>and Mooring Hinges</td>
<td>Factors</td>
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<tr>
<td>Diogo M. V. P. A. Coutinho, António Carlos Mendes, Joaquim Infante</td>
<td>Stephen Haynes - UK</td>
</tr>
<tr>
<td>Barbosa, Maria Amélia Ramos Loja - PT</td>
<td></td>
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### Committee Members, Sponsors and Exhibitors

#### Technical Committee
- Prof AbuBakr Bahaj (Chair) – University of Southampton – UK
- Prof António Falcão – Instituto Superior Técnico – Portugal
- Dr Alain Clément – École Central de Nantes – France
- Dr Andrew Grant – University of Strathclyde – UK
- Dr António Sarmento – Wave Energy Centre – Portugal
- Dr Cameron Johnstone – University of Strathclyde – UK
- Dr Gareth Thomas – University College Cork – Ireland
- Dr Henk Polinder – Delft University of Technology – The Netherlands
- Prof Ian Bryden – University of Edinburgh – UK
- Dr Kim Nielsen – Ramboll – Denmark
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