



**30 June 2023**

The Portal and Repository for Information on Marine Renewable Energy ([PRIMRE](#)) provides access to marine energy data, information, and resources in the U.S. and internationally. The bi-weekly PRIMRE Blast highlights relevant announcements and upcoming events; new content in the [Knowledge Hubs](#); and international marine energy news. [Email us](#) to contribute!

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## **Announcements**

### Request for Information

Pacific Northwest National Laboratory is requesting information from developers, owners, and/or manufacturers of wave energy converters (WECs) capable of deployment and operation of their WEC to power offshore aquaculture operations. The [Request for Information](#) is open through 11 August 2023.

### InDEEP Applications Open

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) launched the [Innovating Distributed Embedded Energy Prize \(InDEEP\)](#), which will award up to \$2.3 million to competitors investigating novel technologies for harnessing and converting the power of ocean waves into usable types of energy. Phase I applications are due 25 August 2023.

### Calls for Abstracts

The [Call for Short Abstracts](#) for the [3rd International Congress on Marine Energy CEMIE-Océano](#) is now open through 30 June 2023. Extended abstracts will be due by 18 August 2023. The conference will take place 5-7 September 2023 in Puerto Morelos, Mexico.

The [Call for Abstracts](#) for the International Conference on Oceanography and 19th French-Japanese Symposium of Oceanography ([COAST CAEN](#)) is open through 7 July 2023. The event will take place on 24-27 October 2023 in Caen, France.

The [Call for Extended Abstracts](#) for the [Pan American Marine Energy Conference \(PAMEC\)](#) has been extended through 10 July 2023. PAMEC 2024 will take place on 22-24 January 2024 in Barranquilla, Columbia.

The American Geophysical Union (AGU) has opened the [Call for Abstracts](#) for the [AGU Fall Meeting 2023](#) through 2 August 2023. The meeting will take place on 11-15 December 2023 in San Francisco, CA, U.S. and online. Please consider submitting an abstract to [Marine Energy to Power the Blue Economy session](#).

The [Call for Abstracts](#) for the Argentine Meeting on Marine Energies (ENAEM) and 8<sup>th</sup> Center for Ocean Energy Research (COER) Wave Energy Workshop is now open through 13 August 2023. [ENAEM-COER 2023](#) will take place on 6-8 November 2023 in Buenos Aires, Argentina.

The [Call for Abstracts](#) for the [104<sup>th</sup> American Meteorological Society \(AMS\) Annual Meeting](#) is now open through 24 August 2023. The event will take place from 28 January to 1 February 2024 in Baltimore, Maryland, U.S.

#### Funding & Testing Opportunities

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the DOE's WPTO, is now accepting [Request for Technical Support \(RFTS\) 10](#) applications until 7 July 2023.

The U.S. DOE WPTO has released a [funding opportunity](#) to support projects focused on advancing the tidal and current energy industry, including a community-led development project. Concept papers are due by 13 July 2023.

#### Student & Employment Opportunities

St. Peter's College, in association with the University of Oxford's Department of Engineering Science, invites applications for a full-time [Career Development Fellowship in Fluid Mechanics](#) with a focus on ocean engineering or related field. Applications are due 5 July 2023.

Pacific Northwest National Laboratory is seeking a [Coastal Modeler](#) with a strong background in coastal oceanography and estuarine hydrodynamics and modeling experience with state-of-the-art coastal ocean models. Applications are due 6 July 2023.

The University of Strathclyde is advertising a [PhD studentship position](#) that will contribute to the project: AI-Based Approaches for Ocean Forecast and Development of Ensemble Ocean Climate Data. Applications are due 31 August 2023.

Littoral Power Systems is seeking a [R&D Project Manager](#) with technical knowledge or experience to work on projects related to harnessing energy from ocean waves; river, tidal and ocean currents; and riverine hydroelectric resources.

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## Upcoming Events

### Upcoming Webinar

The PRIMRE team is hosting a webinar on 23 August 2023 from 10:00-11:00am MDT (4:00-5:00pm UTC). During the webinar, the [Modular Ocean Data Acquisition \(MODAQ\)](#) system, [Marine Energy Data Pipeline](#), and [Marine and Hydrokinetic ToolKit \(MHKiT\)](#) teams will provide a demonstration of how these three national lab developed data collection and processing tools can be utilized together collect, process, standardize, and analyze data. Register [here](#).

### Upcoming Workshop

The U.S. WPTO is hosting a [Water-Energy Nexus Strategy Workshop](#) on 25 July 2023 from 11:00am-5:00pm EDT (3:00-9:00pm UTC) to discuss the interdependent linkage of water and energy resources. Join to learn more about WPTO's strategy development and to provide input on the objectives, questions, and directions being explored.

### Upcoming Conferences

The Supergen Offshore Renewable Energy Hub is hosting its [Early Career Researcher Forum](#) on 11 July 2023 and the [Supergen ORE Annual Assembly](#) on 12 July 2023 in Southampton, England. Register for the Forum [here](#), and for the Assembly [here](#).

[HYDROVISION International 2023](#) is taking place on 11-13 July 2023 in Charlotte, North Carolina, U.S. Register [here](#).

### Upcoming Symposium

The International Network on Offshore Renewable Energy (INORE) is hosting the [24th INORE Symposium](#) on 7-11 November 2023 in Viana do Castelo, Portugal. Symposium activities, food, and lodging are free; attendees cover travel. Graduate students, early-stage researchers, and young professionals in offshore renewable energy can apply to attend through 31 July 2023.

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## New Documents on Tethys Engineering

*[Tethys Engineering](#) hosts thousands of documents on the technical aspects of marine energy research and development, including journal articles, conference papers, and reports.*

### [A comparison of the power potential for surface- and seabed-deployed tidal turbines in the San Juan Archipelago, Salish Sea, WA – Calandra et al. 2023](#)

The San Juan archipelago lies along the axis of tidal movement between Straits of Juan de Fuca and Strait of Georgia in the Salish Sea. The amplitude of the tidal exchange produces significant tidal currents between the islands, as well as in Rosario Strait to the east and Haro Strait to the west. These currents are of interest as a future source of

electrical power generation, given the archipelago's dependence on electricity supply by a subsea cable from the United States mainland. Here, we evaluate the tidal current energy potential in this region through a re-analysis of measurements collected by the National Ocean Service (NOS) and a high-resolution numerical model. Given the considerable variations in water depth and vertical velocity profiles across candidate tidal energy sites, we consider the trade-offs between tidal turbines deployed from a floating platform and those anchored to the seabed.

### **Wave and Floating Wind Energy: Opportunities for Sharing Infrastructure, Services and Supply Chain – Offshore Wind Consultants 2023**

Wave Energy Scotland (WES) commissioned Offshore Wind Consultants (OWC) to investigate the potential benefits that could be realised both to the wave energy industry and floating wind projects through the sharing of assets and/or deployment and operational activities. The report first introduces the rationale for the project, core objectives and scope of work before detailing the approach to definition and selection of sharing scenarios, the evaluation of cost and wider benefits of these scenarios and the assessment of their feasibility. The report concludes with a clear output of the sharing opportunities that have the greatest potential along with a proposed roadmap for implementation of these and recommendations for next steps.

### **Thermodynamic process control of ocean thermal energy conversion – Fan et al. 2023**

The small temperature difference in ocean thermal energy conversion (OTEC) causes the high sensitivity of thermodynamic process to perturbations such as temperature and power load, which requires an efficient control strategy of thermodynamic process for OTEC. To this aim, an integral dynamic model is established to study the dynamic response of thermodynamic process in an OTEC system. To ensure the system efficiency and operating safety of power cycle, a multi-objective active-disturbance rejection control (ADRC) strategy is proposed and compared with corresponding single-objective ADRC and PI controller. Multi-objective ADRC includes a load-following control loop and two auxiliary control loops (evaporator control loop and condenser control loop).

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## **Marine Energy Projects Database Highlight**

*The [Marine Energy Projects Database](#) provides up-to-date information on marine energy projects, test sites, devices, organizations, and technologies around the world.*

### **3MW Lanzarote Wave Park – Bombora Wave**

Lanzarote has a large and consistent ocean energy resource along its northern coastline. Bombora's fully submerged mWave™ wave energy converter has been selected to deliver clean renewable energy into the islands power supply, whilst preserving the island's rugged and pristine coastal environment. Cabildo de Lanzarote, the island's governing body, through a collaboration agreement with Enzen have partnered with

Bombora to deliver this commercial grid connected wave energy project. The first phase of the project will see a single mWave with 3MW of generating capacity installed. The power generated by the submerged wave energy device will supplement the island's existing electricity supply of which 91% is produced from fossil fuels (diesel and gas).

### **Living Bridge – New Energy Corporation**

The project is a collaborative effort led by University of New Hampshire (UNH) with its departments of Civil Engineering, Mechanical Engineering, Sociology and the Center for Ocean Engineering partnering with the New Hampshire Department of Transportation and the National Science Foundation. The tidal turbine, an EVG-025H (25kW) turbine was installed underneath the Portsmouth Memorial Bridge. With multi-directional flow capabilities and salt water rated coatings and materials, this turbine was designed to handle the bi-directional flows and corrosive environment at this location. New Energy's turbine provides base load power to the smart service systems and sensors mounted on the bridge. These sensors collect data and assist in measuring bridge conditions, traffic management, environmental stewardship and estuarine water quality.

### **WSE King Island Project – Wave Swell Energy (WSE)**

Wave Swell Energy (WSE) installed its UniWave200 unit off King Island on January 10, 2021. WSE worked with Hydro Tasmania, the island's energy and network provider, to connect the unit to the local grid and the unit exported its first power into the King Island grid on June 18, 2021. Hydro Tasmania separately monitored the energy produced by the unit to ensure it met the requirements of the King Island grid. The wave energy produced complemented Hydro Tasmania's existing hybrid grid, further diversifying the renewable sources and reducing diesel consumption on King Island. The unit was successfully decommissioned in March 2023.

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## **MHKDR Highlight**

*The Marine Hydrokinetic Data Repository ([MHKDR](#)) is the repository for all data collected using funds from the U.S. DOE's WPTO, including results from tank tests and open sea trials.*

### **HERO WEC V1.0 - WEC-Sim Model – National Renewable Energy Laboratory (NREL) (data from 2022, last updated 2023)**

This zip file contains the files that are needed to simulate NREL's HERO WEC (Hydraulic and Electric Reverse Osmosis Wave Energy Converter). This requires the user to have already installed WEC-Sim. In addition to the standard toolboxes that are required to run WEC-Sim the user will also need the Simscape Fluids and Simscape Driveline packages. The zip file includes a Simulink-based WEC Sim model of the first gen Hydraulic PTO (power take-off), a MCR (multi condition run) script, and more.

### [HERO WEC V1.0 - SolidWorks Model](#) – NREL (data from 2022, last updated 2023)

The attached zip file includes a SolidWorks pack-and-go assembly of NREL's HERO WEC (hydraulic and electric reverse osmosis wave energy converter) V1.0. This model does not include all aspects of the design (i.e., RO (reverse osmosis) system, electrical enclosure, hose, cable) it only includes the WEC and PTO (power take-off) design.

### [HERO WEC V1.0 - WEC-Sim Detailed Simulation Runs and Summary Data](#) – NREL (data from 2022, last updated 2023)

Data sets from simulation runs include 144 wave cases that were run based on the WEC-Sim model. Each run was simulated using a Pierson-Moskowitz irregular wave spectrum with a 200 second ramp time and a total simulation time of 2,200 seconds. Summary data set includes a spreadsheet and image files with matrices that are associated with data from simulation runs. All matrices cover the same significant wave height and wave periods from the sim runs, in the same increments.

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## News & Press Releases

### [Oxford University to lead tidal energy project for carbon emission reduction and energy security](#) – University of Oxford

The University of Oxford is to lead an ambitious £7 million project to help deliver scalable, affordable and sustainable tidal stream energy. Besides boosting energy security, this could help enable tidal stream energy make a meaningful contribution to achieving UK Net Zero goals. ‘Co-design to deliver Scalable Tidal Stream Energy’ (CoTide) will bring together three multi-disciplinary teams from the universities of Oxford, Edinburgh, and Strathclyde. Backed by investment from the Engineering and Physical Sciences Research Council (EPSRC), the project will address the key challenges that are currently preventing the tidal energy sector from reaching its full potential. CoTide will focus on developing state-of-the-art tidal stream turbine systems.

### [Marine Energy Research Australia spearheads world-leading wave energy hydrodynamics project.](#) – CorPower Ocean

Marine Energy Research Australia (MERA) is set to deliver an extensive study focused on wave energy hydrodynamics, to drive performance, reduce cost and accelerate commercialisation. This University of Western Australia research centre is joining forces with Swedish wave energy technology developer CorPower Ocean and industry partner Australia Ocean Energy Group (AOEG) to deliver the work. Funding has been secured through the Australian Research Council’s Linkage Project scheme. Uniting world-leading expertise from across industry and academia, the project aims to harness a unique combination of numerical, laboratory and field data. This includes operational data from CorPower Ocean’s first full scale wave energy deployment taking place in northern Portugal, through the HiWave-5 Project.

## **Global OTEC Awarded an Approval in Principle for a Barge to Support its Floating Ocean Thermal Energy Conversion System – Global OTEC**

Global OTEC has been granted Approval in Principle (AiP) by Lloyd's Register (LR) for a barge to support the world's first-of-a-kind floating Ocean Thermal Energy Conversion (OTEC) system. The 1.5MW floating unit named Dominique, is being designed by Global OTEC and set to be installed in São Tomé and Príncipe in 2025. The project illustrates a pioneering example where diesel fuel imports can be replaced with clean, baseload energy from the ocean. The LR AiP process provides technology developers with early confidence that their technology is capable of being appraised against existing codes and standards. The award of the AiP, acknowledges that the Global OTEC's technology barge can meet the necessary requirements for providing a structural basis for the OTEC technology.

## **Irish hydrokinetic turbine developer finds Japanese partner for global market roll out – Offshore Energy**

Irish-based company GKinetic Energy and Japanese pump manufacturer Torishima Service Solutions Europe have signed a letter of intent (LOI) to jointly develop a partnership structure and commercial model for global roll out of hydrokinetic technology. Torishima, an original equipment manufacturer of some of the world's most advanced high energy machinery, is a customer-led company whose experienced team offers a range of maintenance services that complement the needs for the commercial roll out and ongoing support and optimization of GKinetic's hydrokinetic solutions. The global reach and large 'water footprint' of Torishima match very well with GKinetic's range of solutions, solving a need for reliable, baseload energy supply at a time where energy security has never been higher on the agenda, the companies said.