



**22 September 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**

### Marine Energy Graduate Student Research Program

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) and the Oak Ridge Institute for Science and Education (ORISE) recently opened applications for the [2024 Marine Energy Graduate Student Research Program](#), which supports graduate students working on marine energy by providing access to expertise, resources, and capabilities available at DOE offices, national laboratories, government and industry partners, and other approved facilities. Applications are due 1 December 2023.

### WEC Seals Survey

Pacific Northwest National Laboratory (PNNL) is conducting a project to understand lifetime prediction of sealing materials in Wave Energy Converter (WEC) Hydraulic Power Take-Off Systems and requests your participation in this [brief survey](#) that will help gather information about different WECs, types of polymer sealing materials, and their applications, as well as exposures of these materials. Responses are due 30 September 2023.

### Calls for Abstracts

The [Call for Abstracts](#) for [OCEANS 2024 Singapore](#) is now open through 15 October 2023. OCEANS will take place in 14-18 April 2024 in Singapore.

The [Call for Abstracts](#) for the [43rd International Conference on Ocean, Offshore & Arctic Engineering \(OMAE 2024\)](#) is now open through 26 October 2023. OMAE 2024 will take place 9-14 June 2024 in Singapore.

### Funding & Testing Opportunities

The U.S. DOE's Wind Energy Technologies Office and WPTO, and the Department of Interior's Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement have published a [Notice of Intent](#) to issue a funding opportunity to improve the reliability of mooring lines and to reduce noise associated with installing fixed-bottom offshore wind energy foundations. This funding opportunity is expected to be released in October 2023.

The U.S. DOE is now accepting applications for the [Renewable Energy Siting through Technical Engagement and Planning \(R-STEP\)](#) program, which seeks to expand the decision-making capacity and expertise of state and local governments around large-scale renewable energy planning, siting, and permitting. Applications are due 3 November 2023.

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program is now accepting [Request for Technical Support 11 applications](#) until 3 November 2023. Applicants can apply to work with approved facilities on tank and flume testing, lab/bench testing, numerical modeling and analysis, and open water support.

### Career Opportunities

PNNL is seeking a [Post Bachelor Research Associate - Marine Technology Electrical Engineer](#) to join its multidisciplinary team of engineers and scientists developing and assessing technology for the marine environment. Applications are due 24 September 2023.

PNNL is also seeking a [Post Doc Research Associate - Coastal Ocean Modeling](#) to conduct coastal modeling research related to: 1) wave and/or tidal modeling for energy resource characterization using unstructured-grid models; 2) modeling of wave-current interaction; and 3) multi-scale modeling and analysis of coastal processes under further climate. Applications are due 1 October 2023.

The European Marine Energy Centre (EMEC) is looking for an experienced [Operations and Maintenance Manager](#) to ensure assets are fit for purpose and that day-to-day operations are planned and executed safely and in accordance with requirements of EMEC's Integrated Management System and policies. Applications are due 4 October 2023.

The National Renewable Energy Laboratory (NREL) is seeking a [Postdoctoral Researcher](#) to support projects evaluating and characterizing wave energy measurement technologies, developing wave measurement calibration methods, and researching methods to improve wave measurements. Applications are due 20 October 2023.

NREL is also seeking an [Undergraduate/Graduate Intern](#) to join its Energy Conversion and Storage Systems Center (ECaSS) to support water power technology and modeling analysis.

The University of Minnesota Duluth is looking for a [Postdoctoral Associate](#) (Job ID# 357743) to work in Dr. Craig Hill's research lab focusing on marine renewable energy development and Powering the Blue Economy applications.

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## Upcoming Events

### Upcoming Webinars

Marine Energy Wales is hosting a [Funding Webinar: SMART Flexible Innovation Support](#) for its members from 9:00-10:00am UTC on 26 September 2023. The webinar will feature a series of presentations on the funding and support available followed by a question-and-answer period.

OES-Environmental is hosting a public webinar, "[Coordinating and Disseminating Research on Environmental Effects of Marine Renewable Energy](#)" from 8:00-9:30am PDT (3:00-4:30pm UTC) on 28 September 2023. During the webinar, the team will provide updates on progress and what's to come in the 2024 State of the Science report, and then be joined by two presenters to highlight research on underwater noise and collision risk, as well as practical applications of OES-Environmental resources. Register [here](#).

### Upcoming Conferences

The University Marine Energy Research Community (UMERC) is hosting the [2<sup>nd</sup> Annual UMERC Conference](#) on 4-6 October 2023 in Durham, New Hampshire, U.S. Register [here](#).

Marine Renewables Canada is hosting the [2023 Marine Renewables Canada Conference](#) on 4-6 December 2023 in Ottawa, Ontario, Canada.

WavEC Offshore Renewables, in collaboration with the Netherlands Embassy, is organizing the [2023 WavEc Seminar](#) in Lisbon, Portugal.

### Upcoming Workshops

PNNL and the Atlantic Marine Energy Center (AMEC) are hosting two stakeholder workshops on environmental effects of marine energy on [3 October 2023 from 8:30-12:30 EDT](#) and on [7 October 2023 from 12-4 EDT](#), before and after [UMERC](#). The workshops will discuss the effects of tidal energy on the marine environment. Anyone is welcome to attend the workshops, but online registration is encouraged. Additional information on the workshops will be available on the event pages soon, and shared via emails with those who register.

The Argentine Network of Marine Energies, in collaboration with the Center for Ocean Energy Research (COER), Maynooth University, Ireland, and the Marine Offshore Renewable Energy Lab are hosting the [8th Wave Energy Workshop](#) in conjunction with the 2023 Argentine Meeting on Marine Energies (ENAEM 2023) on 6-8 November 2023 in Buenos Aires, Argentina.

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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.

### [Research on analysis method of measurement uncertainty in the power performance assessment of tidal energy converters](#) – Xia et al. 2023

The analysis on the measurement uncertainty of output power in the field test of tidal energy converters is an important process to evaluate the power characteristics performance of the tested tidal energy converter. Based on the field test data of the power characteristics performance assessment of a tidal energy converter, the measurement uncertainty calculation results of output power is analyzed. The research results show that the output power curve with measurement uncertainty information of the tested tidal energy converter that drawn in this paper, can reflect the discreteness and uncertainty of the output power during the field test period. The sensitivity coefficient of tidal current velocity is a component that has a significant impact on the combined uncertainty of output power of tidal energy converters.

### [Techno-economic feasibility of marine eco-parks driven by wave energy: A case study at the coastal arid region of Mexico](#) – Gorr-Pozzi et al. 2023

Harnessing wave energy has become a potential ocean renewable resource that can provide significant benefits to mitigating coastal vulnerability and climate change. However, most wave energy projects still face different challenges that limit their financing and commercial deployment. This paper aims to evaluate the techno-economic feasibility of 0.5 MW Marine Ecoparks as maritime clusters coupled with wave energy converter, seawater desalination, and marine aquaculture modules to produce the water-energy-food nexus and boost, symbiotically, the viability of the wave energy sector and the blue economy in the arid coastal communities of Baja California, a Mexican Pacific region with a mid-wave energy resource.

### [Experimental study of the absorption refrigeration using ocean thermal energy and its under-lying prospects](#) – Hu et al. 2023

The construction of a maritime cold chain network with islands as node is an important avenue for the economic development of the island, in which efficient refrigeration technology is essential to the development of the marine industry. Motivated by the substantial resources of tropical ocean, an absorption-compression refrigeration device is constructed and its technical feasibility is firstly demonstrated by experiment, achieving a refrigerating capacity of 6.8 kW and 10.2 kW at the evaporation temperature of  $-24.5\text{ }^{\circ}\text{C}$  and  $-18\text{ }^{\circ}\text{C}$ , respectively. The pressure rise by the compressor has been reduced by 185 kPa when compared to traditional vapor-compression refrigeration. The energy-saving potential of different refrigeration methods is also summarized, with the proposed refrigeration achieving the highest level of energy-efficient ratio,  $\text{EER} = 6.57$ .

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## Marine Energy Software Highlight

*[Marine Energy Software](#) is a collection of commercial and open-source software relevant to marine energy development, including simulating devices, and processing and analyzing data.*

### [WEC-Sim Training Course at UMERC](#)

The WEC-Sim development team will host a workshop at UMERC about WEC-Sim capabilities and applications. The workshop will have two sessions: The first session is aimed for new and existing users of WEC-Sim to learn the basic purpose, use-cases, structure, and theory of WEC-Sim. In the second session, the attendees will learn about the advanced capabilities of WEC-Sim. Advanced features include nonlinear excitation forces, passive yaw, large horizontal displacements, integration with MoorDyn, PTO-Sim, generalized body modes, multiple conditions runs, and visualization capabilities.

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## Telesto Highlight

*[Telesto](#) provides information and guidance for testing, measurement, and data analysis for marine energy research, development, and demonstration, as well as additional resources.*

### [Launch of New Version of Telesto](#)

The PRIMRE team recently launched a new and improved version of [Telesto](#), which is home to open-source wiki pages and structured databases that provide information about the development life cycle of marine energy, including planning, design and build, testing, deploying, and decommissioning. Incorporated within Telesto is information on [performance metrics](#), economics, compliance, standards, and lessons learned from lab and field testing. For example, the PRIMRE team conducted interviews with subject matter experts to collect [lessons learned](#) from past and present marine energy research, development, and deployment projects in the United States. Telesto presents the main lessons learned across a variety of themes and features links to relevant resources throughout PRIMRE. Telesto also provides useful information for calculating the [levelized cost of energy](#) of devices, a [testing facilities database](#), information on Technology Performance Level assessments and more.

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## News & Press Releases

### [Historic Wave Energy Legislation Unanimously Passes California Legislature & Heads to Governor Newsom's Desk – Eco Wave Power](#)

Eco Wave Power commends the California State Senate for unanimously passing California Senate Bill 605 (“SB 605”), a legislative initiative that directs the California Energy Commission to evaluate the feasibility, costs, and benefits of using wave energy

and tidal energy across California's 840-mile coastline. Per the amended bill, the California Energy Commission will work with various state agencies, including the California Coastal Commission, the Ocean Protection Council, and other stakeholders to identify suitable locations for wave energy and tidal energy projects in both state and federal waters. Once signed into law by Governor Newsom, SB 605 will become the first legislation in America focused on the study, assessment, and promotion of wave energy.

### **Spain backs Carnegie with €1.2M for CETO wave energy device deployment – Offshore Energy**

The Spanish government has awarded €1.2 million to Carnegie Clean Energy's AGUAMARINA project to enhance and extend the deployment of its CETO wave energy device at Biscay Marine Energy Platform (BiMEP) in the Basque Country. The funding has been granted to Carnegie Clean Energy's Spanish subsidiary Carnegie Technologies Spain, as part of the country's first competitive call of the *Renamrinas Demos Program*, which funds marine renewable energy projects in Spain. The supported AGUAMARINA project will extend and enhance the deployment of CETO in Spain, and according to Carnegie, it complements the recently awarded €3.75m EuropeWave contract to manufacture, deploy and operate its CETO technology at BiMEP for a year.

### **CorPower Ocean partners with California's AltaSea to prepare US expansion. – CorPower Ocean**

Swedish wave energy developer CorPower Ocean recently announced that it has signed a Memorandum of Understanding with America's largest blue economy research and development center AltaSea at the Port of Los Angeles in preparation for its US expansion. The agreement will provide access to facilities and resources at AltaSea's 35-acre campus located in the Port of Los Angeles – the nation's busiest seaport. CorPower will look to develop ocean energy solutions in America. The announcement comes as the US continues to encourage the introduction of new renewable energy sources, including a \$369 billion investment in climate and energy programs through the Inflation Reduction Act of 2022.

### **Industry unites to praise 'fantastic day' for UK tidal energy sector – Offshore Energy**

Industry associations, research centers and supported developers have all unanimously welcomed the results of the latest renewables auction in the UK – where 53MW of tidal stream projects won contracts – deeming the outcome a 'resounding vote of confidence' in the increasingly mature tidal energy sector. Seven developers including British, Spanish and US companies, secured contracts to develop a total of 53MW of tidal stream energy across four locations in the UK. These include Orbital Marine Power, which was awarded two further contracts for difference (CfDs) totaling 7.2MW – building on the previous year's allocation round where it also secured contracts for the same capacity. The CfDs will allow Orbital to expand its development of projects in Orkney with the construction of six floating tidal energy turbines now covered by the CfD scheme.

## [A \(Virtual\) Deep Dive Into Marine Energy's Capabilities](#) – NREL

There is big energy lying under the waves that crash on our shores and in the tides that come in and out each day like clockwork: so much power that, if we tapped all the marine energy we have access to, it would be equivalent to nearly 60% of the United States' power generation in 2019. Even if we capture only a portion of this potential, marine energy could make significant contributions to our electricity needs. How researchers at NREL are working to tap that potential is where it gets really interesting. And now, teachers, students—and anyone else with a passion for renewables—can visit Renewable Energy Discovery (REDi) Island to virtually see cutting-edge marine energy technologies in action. REDi Island is a new educational resource developed by the water power team at NREL and IKM 3D with funding from the U.S. DOE's WPTO. Dive in to explore all that water power has to offer.