



**28 July 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**

### 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 31 August 2023.

### Request for Information

PNNL is also 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 now open through 31 August 2023.

### WES Competition

Wave Energy Scotland (WES) is looking for continuous cost reduction opportunities to follow in the footsteps of the current cohort of wave energy technologies on their path towards commercial projects, and is inviting wave energy specialists, concept designers, and solution architects to enter the [Direct Generation Concept Design Competition](#). Pre-proposals are due 18 August 2023.

### InDEEP Applications

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) has 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.

### Request for Information

The U.S. Office of Science and Technology Policy and Ocean Policy Committee are requesting information for the development of a [National Strategy for a Sustainable Ocean Economy](#). The request seeks public input on what the goals and outcomes of the National Strategy should be, and how the Federal Government can best advance sustainable management of ocean, coastal, and Great Lakes resources and ecosystems of the United States. Responses due 28 August 2023.

### InterOPERA Stakeholder Committee

The [“Enabling interoperability of multi-vendor HVDC grids” \(InterOPERA\)](#) project, funded by Horizon Europe, is [looking for experts](#) to join its Stakeholder Committee. Applications are due 30 September 2023.

### Calls for Abstracts

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.

The Marine Alliance for Science and Technology for Scotland (MASTS) recently opened the [Call for Abstracts](#) for the [MASTS Annual Science Meeting](#) through 8 September 2023. The meeting will take place 5-7 December 2023 in Glasgow, Scotland.

The [Call for Abstracts](#) for the [Ocean Sciences Meeting \(OSM 2024\)](#) is now open through 13 September 2023. OSM will take place 18-23 February 2023 in New Orleans, Louisiana, U.S. Please consider submitting an abstract to the session on [Offshore Renewable Energy: Resource Characterization & Environmental Impacts](#).

## Funding & Testing Opportunities

The Horizon Europe Framework Programme has launched a [Call for Proposals](#) focused on the development of innovative power take-off and control systems for wave energy devices. Submissions are due 5 September 2023.

The U.S. Department of Commerce and National Oceanic and Atmospheric Administration (NOAA) [recently announced](#) the [Ocean-Based Climate Resilience Accelerators](#) program, which will foster public-private partnerships to help support small businesses that are developing sustainable technologies, including renewables. Applications are due 11 September 2023.

The National Science Foundation and U.S. DOE WPTO [recently announced](#) a special funding focus on new science and engineering proposals submitted to the [Engineering Research Initiation \(ERI\) solicitation](#) focused on marine energy and powering the blue economy. ERI supports eligible new researchers, educators, and innovators. Proposals are due 15 September 2023.

The European Commission is accepting proposals for the [Innovation Fund's Third Small-scale Call for Projects](#) through 19 September 2023. The call will provide grants to small-scale projects with a capital expenditure between €2.5 and €7.5 million in the areas of renewable energy, decarbonisation, energy storage, and carbon capture, use, and storage.

## Career Opportunities

Pacific Northwest National Laboratory is seeking a [Post Masters Research Associate - Marine Technology Electrical Engineer](#) to join a multidisciplinary team developing and assessing technology for the marine environment, including marine energy and environmental monitoring systems. Applications are due 7 August 2023.

Rutgers University's Wang Hydro-environment Informatics Research Lab is offering [Multiple PhD/Master Student Openings](#) to support projects related to tidal and wave energy resources, advanced sensor development, and understanding ice melting.

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## **Upcoming Events**

### Upcoming Webinars

The Oak Ridge Institute for Science and Education (ORISE) is hosting an informational webinar on 2 August 2023 at 2:00pm EDT (6:00pm UTC) to discuss the process and benefits of becoming a host institution for the [Marine Energy Graduate Student Research Program](#), which provides funding for master's and PhD students to work for 6 months to a year. Register [here](#).

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 data collection and processing tools can be utilized together collect, process, standardize, and analyze data. Register [here](#).

### Upcoming Conferences

The [15th European Wave and Tidal Energy Conference \(EWTEC 2023\)](#) will take place on 3-7 September 2023 in Bilbao, Spain. Register [here](#).

The [3rd International Congress on Marine Energy CEMIE-Océano](#) will take place on 5-7 September 2023 in Puerto Morelos, Mexico. Register [here](#) by 4 August 2023.

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](#).

### 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.*

### **Powering Arctic Observations with Marine Energy – DOE et al. 2023**

Arctic observations are becoming increasingly valuable, but the types and frequencies of measurements are constrained by power needs. In situ power generation by marine renewable energy would increase the frequency of observations and reduce or eliminate service trips for battery replacements. This report discusses how marine renewable energy could be developed to power instruments currently being used in the Arctic. Offshore wind, algal derived biofuels, seafloor geothermal and solar power all have potential in the Arctic but this report only discusses energy generated from water. Wave motion and tidal currents are explored as having potential to be used for energy extraction and the powering of sensors at sea. These resources are investigated for Arctic locations and recommendations are made for future studies of specific use cases.

### **Tidal range resource of the Patagonian shelf – Barclay et al. 2023**

With vast potential for renewable energy conversion, the ocean could help reduce our reliance on fossil fuels. Of the various forms of ocean energy, tidal range power is both mature and predictable, dating back to 1966. However, only a few regions of the world are suited to tidal range power. Here, we examine the tidal range potential of the

Patagonian shelf – estimated to contain over 100 GW of tidal dissipation. We use a high resolution global tidal atlas (TPXO9) to examine this resource from theoretical and technical perspectives. The theoretical resource is 913 TWh (104 GW) – considerably exceeding neighbouring Argentina’s electricity demand (~143 TWh in 2021). We find that due to near-resonance with the semidiurnal tides, the resource is concentrated in two regions – Golfo de San Matías, and Bahía Grande to Río Grande.

### **Performance Analysis of a 10 MW Ocean Thermal Energy Conversion Plant Using Rankine Cycle in Malaysia – Thirugnana et al. 2023**

Ocean thermal energy conversion (OTEC) is a solution for environmental and climate change issues in the tropics. The OTEC potential in Malaysia using ocean conditions and bathymetry data has been previously studied and demonstrated. Following this, it is vital to perform a basic performance analysis of a 10 MW Rankine Cycle OTEC plant using the Malaysian ocean conditions. In this paper, the results of heat and mass balance will be reported for a 10 MW Rankine cycle OTEC plant which uses heat exchangers of plate-type and anhydrous ammonia as its working fluid. The value of a minimum objective function ( $\gamma$ ) is derived by total heat surface area ( $A_T$ ) divided by the net power ( $P_N$ ).  $\gamma$  decreases when the inlet temperature difference (inlet temperature of warm seawater ( $T_{WSW}$ )—inlet temperature of cold seawater ( $T_{CSW}$ )) increases.  $P_N$  is clarified to be approximately 70–80% of the  $P_G$  (gross power) using Malaysian ocean conditions.

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## **Marine Energy Atlas Highlight**

*The [Marine Energy Atlas](#) is an interactive mapping tool that maps high-resolution, spatially comprehensive data on global wave, tidal, riverine, ocean current, and ocean thermal resources.*

### **Buoy Locations Available**

Are you looking for wave measurements? Through the Marine Energy Atlas, you can select a location and find nearby wave buoys. This is a quick and easy way to locate relevant buoys and data managed through the National Oceanic and Atmospheric Administration’s National Data Buoy Center and University of California San Diego’s Coastal Data Information Program. Up-to-date and historical data on wave parameters such as wave height and peak period are available for each buoy.

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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.*

### **FloWatt – Hydroquest & Qair**

This pilot farm including 7 HydroQuest machines will be the most powerful in the world and it will allow to outline the tidal industrial sector. With a predictable power production and a strong deposit in Europe, including 3.5 GW in France, the sector will perfectly suit to the future energy mix based upon renewables.

### **Jaffa Port Power Station – Eco Wave Power**

Eco Wave Power is replacing its off-grid R&D wave energy power station in Jaffa Port, Israel to a 100KW grid-connected power station. The project is being executed with funding from the Israel Ministry of Energy and in collaboration with EDF Renewables IL with whom the company has entered into a joint venture collaboration. Grant funding from Israeli Ministry of Energy was announced in July 2023 for the upcoming station's connection to the power grid. This will be the first grid connected wave energy power station in Israel.

### **MeyGen Pentland Firth Phase 1c – SIMEC Atlantis Energy**

The MeyGen features SIMEC Atlantis' longest-deployed turbine in continual operation since December 2018, when it formally entered a planned operational period of 25 years. The 3.5km site covers some of the fastest flowing waters in the UK, just 2km from Scotland's north-east tip. This unseen and sometimes forgotten site has some of the strongest tidal flows found anywhere in the world and presents a predictable source of renewable electricity.

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## **News & Press Releases**

### **U.S. Department of Energy Invests Nearly \$10 Million to Advance Marine Energy – DOE**

The U.S. DOE recently announced nearly \$10 million for seven innovative projects that will accelerate development and testing of marine energy technologies. Marine energy resources—such as wave, tidal, and ocean and river currents—are abundant, predictable, and complement other renewable energy sources. These investments advance research on wave-powered technology for use in seawater desalination and support a feasibility study for a potential ocean current test facility. The seven projects announced today are part of DOE's Water Power Technologies Office's Powering the Blue Economy™ Initiative, and six advance solutions that could provide low-cost, emission-free, and drought-resistant drinking water in disaster-relief situations and to small communities.

### **Power sales from MeyGen bring in €4.5M to SIMEC Atlantis as co-location with storage emerges as option – Offshore Energy**

According to the financial statement from SIMEC Atlantis for the full year ended December 31, 2022, the power sales from the MeyGen project rose from €2.7 million in 2021 to €4.5 million in 2022. The company said the rise reflects the successful deployment of two turbines in March and September 2022 at the MeyGen offshore site,

located between Scotland's northernmost coast and the island of Stroma. Now, the company is looking into the opportunity to combine two of its core business areas – tidal stream energy and battery energy storage systems (BESS). According to the company, it is exploring the co-location of tidal energy, as the most predictable source of renewable energy, with BESS to deliver a real baseload solution.

### **The City of Fort Bragg and Oneka Technologies Partner to Deploy the First Wave-Powered Desalination Demonstration Site in California – Oneka Technologies**

Drought in California has occurred in varying degrees throughout history. However, in recent years, the impacts of severe drought conditions on the City of Fort Bragg's water supply left the community vulnerable during summer months. Given the combination of the water needs of the city, the Blue Economy Initiative, and the potential of the California coast for wave-powered desalination with its 840 miles of coastline and powerful, year-round waves, it was a natural fit for the City of Fort Bragg to partner with Oneka Technologies to deploy California's first wave-powered desalination project. For the pilot project, an Iceberg-class unit, the 9th generation of this technology which has been refined over 7 years in the ocean environment, will be deployed along the Fort Bragg coast.

### **Oscilla Power starts building smaller version of its utility-scale Triton wave energy device – Offshore Energy**

US-based wave energy developer Oscilla Power has started with the construction of 1:6 scale version of its 1MW Triton wave energy converter. The company said it started drivetrain integration activities at its facility in Seattle, with the aim to deploy the system off the coast of Maine later in 2023. Oscilla Power's Triton wave energy device is a multi-mode point absorber that consists of a geometrically optimized surface float connected to a ring-shaped, vertically asymmetric heave plate. To remind, Oscilla Power's 100kW Triton-C wave energy device is still dockside in Honolulu where it is undergoing final testing and troubleshooting while the company waits for the U.S. Navy to complete upgrades on its berth at the Wave Energy Test Site (WETS) in Kaneohe Bay before starting with the deployment operation.

### **Eco Wave Power Conducts an Official Site Visit with Rogan Associates at Greece's Port of Heraklion to Discuss the Next Steps for the Planning of the 2MW Wave Energy Project – Eco Wave Power**

Inna Braverman, Chief Executive Officer of Eco Wave Power Global, traveled to Greece for an official site visit of the Heraklion breakwater in Crete, which is currently being analyzed for a potential 2MW wave energy power station. During the visit, the representatives from Eco Wave Power and Rogan Associates S.A. inspected the breakwater at the Port of Heraklion, from both the shore and the seaside, and held meetings to provide updates regarding the milestones achieved so far in the planning of the project. The next steps of the project will be to conduct further studies and analyses of

the site, with Rogan Associates S.A. focusing on the civil engineering and pricing for a 2 MW installation, and Eco Wave Power working on the detailed project design.

### **Waves4Power Selected for Launch Alaska's Tech Deployment Track – Waves4Power**

Following a competitive global application process, Waves4Power was among 21 companies selected for Launch Alaska's 2023 Tech Deployment Track. When the program kicks off in Anchorage in September, Waves4Power will present its green energy wave power technology to a curated group of volunteer advisors for invaluable feedback. Over the coming months, we will work alongside Alaska partners to vet and develop partnership and project opportunities in communities around the state. Successful program graduates will end the program with a variety of promising, in-progress projects and an invitation to join the Launch Alaska Portfolio with continued support and connections to opportunities in Alaska.