



## 26 January 2024

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**

#### Community Energy Innovation Prize

The U.S. Department of Energy (DOE) launched the [Community Energy Innovation Prize](#) to award cash prizes and mentorship opportunities to organizations supporting innovation, entrepreneurship, capacity building, and economic development in communities historically underrepresented in climate and energy technology funding. Applications for the Clean Energy Ecosystem and Manufacturing Ecosystem Track are due on 2 February 2024.

#### InDEEP Phase 2

The U.S. DOE's Water Power Technologies Office (WPTO) has launched Phase 2 of the [Innovating Distributed Embedded Energy Prize \(InDEEP\)](#) to encourage innovation in distributed embedded energy converter (DEEC) technology to generate new, precommercial materials for wave energy conversion. Join the [Webinar on Technology Performance Level \(TPL\) Assessment 2.0](#) on 31 January to learn more about InDEEP and useful tools. Submissions due 26 April 2024.

#### New Funding for U.S. Colleges & Universities

The U.S. DOE's WPTO and Wind Energy Technologies Office (WETO) have released a [\\$14.5 million funding opportunity](#) to support foundational research at U.S. institutions of higher education to address challenges facing marine and ocean renewable energy industries and spur innovation and development. Concept papers are due 20 February 2024.

## MassCEC Request for Information

Massachusetts Clean Energy Center (MassCEC) is [seeking input and information](#) related to needs and gaps pertaining to offshore wind and ocean renewable energy testing and validation assets and sites through 2 February 2024.

## Calls for Abstracts

The University Marine Energy Research Community (UMERC) and Marine Energy Technology Symposium (METS) have opened the [Call for Papers](#) for the [2024 UMERC+METS Marine Energy Research Conference](#) until 1 March 2024. The conference will take place 7-9 August 2024 in Duluth, Minnesota, U.S.

The [Call for Abstracts](#) for the [International Conference on Ocean Energy \(ICOE 2024\)](#) is open until 5 March 2024. ICOE 2024 will take place 17-19 September 2024 in Melbourne, Australia.

The [Call for Abstracts](#) for the [Asian Offshore Wind, Wave and Tidal Energy Conference \(AWTEC 2024\)](#) is now open through 20 March 2024. AWTEC will take place on 20-24 October 2024 in Busan, Korea.

## Funding & Testing Opportunities

The U.S. DOE's is now accepting applications for [Phase I Release II](#) of its Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. Letters of intent are due 2 February 2024 and full submissions will be due 12 March 2024.

The European Commission's Horizon Europe Framework Programme has opened a [Call for Additional Activities for the European Partnership for a Climate Neutral, Sustainable and Productive Blue Economy](#). This call is open to companies from European Union (EU) countries and a selected number of non-EU/non-Associated countries. Applications due 28 February 2024.

The Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the U.S. DOE and directed by the Pacific Ocean Energy Trust (POET), is accepting [Request for Technical Support \(RFTS\) 12](#) applications through 1 March 2024 to support marine energy testing and development projects. Open Water Support applications can be submitted any time.

The UK Research and Innovation (UKRI) recently announced the [Ayrton Fund](#), which is a UK government commitment of up to £1 billion that aims to accelerate the clean energy transition in developing countries, by creating and demonstrating innovative clean energy technologies and business models. Applications close on 9 April 2024.

## Career Opportunities

Swansea University is advertising a [fully funded PhD opportunity](#) on fatigue-resistant elastomers with integrated electrodes for modular self-sensing wave energy converters. Applications are due 26 January 2024.

Pacific Northwest National Laboratory (PNNL) is looking for a [Post Masters Research Associate - Human Dimensions of Energy Systems](#) to join the Operational Systems Engineering group within its Earth Systems Science Division. Applications are due 11 February 2024.

Nova Innovation is seeking a [Procurement Manager](#) to develop and manage Nova's supply chain relationships, [Project Engineer](#) to support the technical delivery of their marine energy projects, and [Office Administrator](#) to manage a diverse range of general office activities.

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## Upcoming Events

### Upcoming Webinars

The [IMPACT](#) and [VALID](#) projects are jointly hosting a webinar, "[Harnessing Ocean Power: Progressing with Wave Energy Converter Technology through Rig Testing](#)", on 31 January 2024 from 2:00-3:00pm CET (1:00-2:00pm UTC). Register [here](#).

PNNL and the National Renewable Energy Laboratory are hosting an informational [Marine Energy Career Panel](#) on 7 February 2024 from 3:00-4:30pm PST that will feature National Laboratory staff who are working to advance the marine energy industry. The webinar is aimed at current students and those interested in working in the marine energy industry. Register [here](#).

### Upcoming Conferences

Marine Energy Wales is hosting [Marine Energy Wales Conference 2024](#) on 13-14 March 2024 in Swansea, Wales.

The North Carolina Renewable Ocean Energy Program is hosting the [13<sup>th</sup> Annual North Carolina Renewable Energy Symposium](#) on 8-9 April 2024 in Wanchese, North Carolina, U.S. Register [here](#) by 22 March 2024.

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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.*

### [Long-term assessment of wave conditions and wave energy resource in the Arctic Ocean](#) – Christakos et al. 2024

It was recently shown that the Arctic has been warming much faster than the rest of the globe during the last decades. This warming has reduced the ice extent significantly, which will strongly impact the wave climate in the Arctic regions, thus affecting the design of marine structures, operations, and energy resources. This study focuses on the higher latitudes, and uses the advanced wave hindcast NORA3, which covers a big part of the North Atlantic and the whole Arctic Ocean, to analyze the spatio-temporal

properties of wave height and wave energy flux during the last three decades. The most energetic waves in the Arctic Ocean are observed in the Greenland Sea and the Barents Sea. The study shows that the substantial diminishing of sea ice in the Arctic induces local and regional changes in both mean and extreme wave conditions.

### **[Effect of the dielectric membrane channel on salinity gradient energy conversion](#) – Liu et al. 2024**

There is growing interest in harnessing energy from salinity gradients because it is readily available in nature. However, the energy harvesting system is not a separate liquid region but a coupling of solid membrane and liquid that leads to a distinct ions transport behaviors. Here, we propose a coupling model containing membrane and fluidic domain to study the effect of dielectric membrane on energy conversion performance. The results show that the surface charge of nanopore is strongly dependent of solution property (ion concentration and pH) and membrane property. The dielectric membrane promotes the surface charge and electrostatic interaction that enhances the energy conversion performance.

### **[Review and assessment of the German tidal energy resource](#) – Korte et al. 2023**

Tidal energy technology has matured in recent years and has the potential to balance Europe's future power grid. While reviews of the tidal energy resource exist for a number of European countries, along the German North Sea coast is overlooked so far. This paper closes this gap and provides a comprehensive review and assessment of the German tidal energy resource. Germany's North Sea coast is characterised by comparatively low current velocities and shallow waters. Using available data from the EasyGSH-DB North Sea Model, Germany's practical tidal energy resource is estimated in a range between 66.6 and 565.8 GWh y<sup>-1</sup> to, excluding the most energetic sites in the estuaries of Elbe, Weser, and Ems.

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## **Marine Energy Projects Database Update**

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

### **[Etel Estuary Tidal Energy Trial](#) – Nova Innovation**

Scottish company Nova Innovation installed one of its tidal energy turbines at the Étel Estuary located in France's Brittany region in March of 2023. The installment in France was delivered as a part of the European Union's ELEMENT (Effective Lifetime Extension in the Marine Environment for Tidal Energy) project in partnership with the European Climate, Infrastructure, and Environment Executive Agency (CINEA).

## **Bermuda Seabased Power Park – Seabased**

With a 40MW capacity, the park will fuel the island's grid, providing roughly 10% of Bermuda's energy needs. On an island beleaguered by the high cost of imported fossil fuels, Seabased wave power parks offer a renewable solution that reduces the cost of electricity and provides energy security. As part of the project, Seabased has been working with stakeholders in Bermuda and is finalizing an Environmental Impact Report.

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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.*

## **Modeling the Integration of Marine Energy into Microgrids - Wave Resource Assessment – University of Alaska Fairbanks (data from 2023, last updated 2023)**

This submission has wave resource assessments which were conducted for six locations based on International Electrotechnical Commission (IEC) requirements using the DOE WPTO Hindcast data and MHKiT (Marine and Hydrokinetic Toolkit). The locations are chosen to provide varying wave climates and include PacWave South, OR; Wave Energy Testing Site (WETS), HI; Molokai, HI; St. Paul, AK; Yakutat, Ak; and Sebastian, FL. It includes the data gathered and the resulting report. This submission also includes a link to Hindcast dataset and some relevant software.

## **DAISY Acoustic Measurements in Agate Pass, WA – University of Washington (data from 2022, last updated 2023)**

Acoustic data and metadata from Drifting Acoustic Instrumentation SYstem (DAISY) testing in Agate Pass (separating the north end of Bainbridge Island and the Kitsap Peninsula in Puget Sound), WA in April 2022. The goal was to characterize radiated noise from a cross-flow turbine deployed from a moored vessel. As discussed in the accompanying report, sound produced by the turbine was below the ambient noise floor at the surveyed ranges.

## **MBARI WEC 2021 deployment – Sandia National Laboratories (data from 2021, last updated 2023)**

This dataset includes data from the Monterey Bay Aquarium Research Institute (MBARI) wave energy converter (WEC) and a nearby located Sofar Spotter buoy. The Monterey Bay Aquarium Research Institute has developed and deployed a small two-body point absorber wave energy device suitable to autonomous underwater vehicle, sensor system, and even aquaculture farm needs. For more information on the MBARI WEC see the research journal attached in the submission.

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## News & Press Releases

### [Record-breaking testing reveals potential for next generation marine turbine](#) – University of Galway

University of Galway has announced successful testing of a next generation marine hydrokinetic turbine foil for renewable energy. The technology was designed by US-headquartered global leader in marine energy Ocean Renewable Power Company (ORPC) Ireland and fabricated by ÉireComposites, based Inverin, Co Galway. The testing programme is part of the €3.9 million European Commission's Horizon 2020-funded CRIMSON project and involved 1.3 million fatigue cycles on the turbine foil – the highest number ever reported on a full-scale marine energy component in dry laboratory conditions. The tests were led by the Sustainable and Resilient Structures Research Group at University of Galway, which is part of the Enterprise Ireland-supported technology centre Construct Innovate and the University's Ryan Institute.

### [France's new lab for tidal turbine development opens its doors](#) – Offshore Energy

France's Ifremer and HydroQuest have set up a joint laboratory for the development of offshore tidal turbines. Supported by the National Research Agency, the goal of the laboratory is to develop analysis tools and support for the design of tidal turbines adapted to marine constraints. Ifremer and HydroQuest launched the joint VERTI-Lab laboratory on January 11 to create specific analysis tools and support for the design of tidal systems and facilitate the development of commercial farms. "This joint laboratory, the first at Ifremer with an industrial player, should allow us to build together the tools necessary for the development and monitoring of commercial tidal farms. The experimental data will be used to validate the numerical developments and the design of new generations of tidal turbines," said Gregory Germain, Researcher at Ifremer.

### [Project update Vestmanna: Minesto CEO comments on the multiple ongoing activities](#) – Minesto

Minesto, leading ocean energy developer, continues to push the preparations to completion for commissioning of Dragon 12 in Vestmanna, Faroe Islands. Minesto's CEO Dr Martin Edlund recently commented on the multiple ongoing activities. The Dragon 12 is the world's first utility-scale tidal dragon. It has been through an installation and recovery cycle. Under extreme weather conditions with heavy snow and wind, the Minesto team has continued on-site work. Now final preparations are being made before installation and production commences. Commissioning a first full-scale unit, precision and carefulness is essential. Minesto's drone footage of the first launch of Dragon 12 is available at Minesto youtube channel.

### [Seaturns setting the stage for full-scale production with start of wave energy prototype testing](#) – Offshore Energy

After validating its technology in European wave basins at a small scale, French start-up Seaturns is now progressing to the next stage by starting tests on a 1:4-scale prototype at the Ste Anne du Portzic site in Brittany, France. Seaturn installed the demonstrator at the Ifremer test site in October 2023, in Sainte-Anne du Portzic, close to Brest. The wave energy power generation solution is, according to Seaturns, characterized by its innovative mooring and simple design, making it robust. The technology being developed uses an internal water pendulum inside a cylindrical floater. Following a series of technical and economic studies, together with numerous tests in European wave basins at the universities of Aalborg, Porto, Santander, and École Centrale de Nantes, the next step for the wave energy project is underway.

### **The Yoga of Energy (Specifically, Ocean Energy) – National Renewable Energy Laboratory**

To shapeshift into the yoga pose called “destroyer of the universe,” a human must gumbly a leg behind their neck to point their toes directly at the sky. For non-gumbys, that feat might seem superhuman or even metahuman—is that a person or a pretzel? Now, an ultraflexible metamaterial could perform equally-super feats to generate clean energy from the abundant but often overlooked energy that vibrates through our world. Introducing: the yoga of energy. “There’s a lot of potential energy that exists out there in daily life,” said James Niffenegger, a mechanical engineer at the National Renewable Energy Laboratory (NREL). Waves constantly roll toward shore; buildings sway in wind; cars depress pavement. All these seemingly minor movements contain potential renewable energy. We just need a way to harness it. The yoga of energy could help.

### **Hydrokinetics. Sabella placed in compulsory liquidation. Will the Ushant demonstrator continue to supply the island? – France Info (translated from French)**

Three months after being placed in receivership in October, the Sabella company has just been put into compulsory liquidation. The assets and 19 employees were taken over by Entech, a partner company from Quimper, but not the D10 demonstrator which supplies the island of Ouessant with electricity. It has been operational since April 2022 and distributes 250 kW of electricity, which corresponds to more than 75% of the electricity needs of the island of Ouessant. The tidal turbine submerged in the Fromveur, the first tidal turbine connected to the electricity network, could even reach 1MW of productive capacity. However, the future of this demonstrator, called D10, is compromised. This Friday, January 19, the Quimper court decided to put the company Sabella, operating the tidal turbine, into compulsory liquidation, three months after the latter was put into receivership.