



## 1 December 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

#### [Powering the Blue Economy: Power at Sea Prize](#)

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) recently launched the [Powering the Blue Economy: Power at Sea Prize](#), which will award up to \$1.7 million to competitors to advance technologies that use marine energy to power ocean-based activities. Submissions for the Concept Phase are due 26 July 2024.

#### [Marine Energy Graduate Student Research Program](#)

The U.S. DOE's WPTO and the Oak Ridge Institute for Science and Education (ORISE) has 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.

#### [Calls for Abstracts](#)

The [Pan-American Marine Energy Conference \(PAMEC\) 2024](#) is still [accepting abstract submissions for posters](#) until 1 December 2023. PAMEC will take place 22-24 January 2024 in Barranquilla, Colombia.

The [Call for Abstracts](#) for the [International Conference on Ocean Energy \(ICOE 2024\)](#) is now open through 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.

### Call for Papers

The Marine Technology Society Journal is seeking manuscript submissions for a special issue on [Marine Energy - An Update on Developments Globally](#) through 1 March 2024. The issue will examine a variety of topics, including technology development, resource assessment, social and economic considerations, and the development of international standards and certification.

### Funding & Testing Opportunities

The U.S. DOE recently announced up to \$10 million in funding for the [Inspiring Generations of New Innovators to Impact Technologies in Energy 2024 \(IGNIITE 2024\)](#) program, led by the Advanced Research Projects Agency-Energy (ARPA-E). The new program will support early-career scientists and engineers seeking to develop impactful new energy technologies. Concept papers are due 5 January 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 countries and a selected number of non-EU/non-Associated Countries. Applications are due 28 February 2024.

### Career Opportunities

The University of Oxford is seeking [doctoral students](#) with interests in turbine hydrodynamics and design, resource modelling, naval architecture and ocean engineering, system optimization, and/or control co-design to work on the new CoTide (Co-design to deliver Scalable Tidal Stream Energy) programme. Applications are due 1 December 2023.

The Marine Offshore Renewable Energy Lab (MOREnergy Lab) of Politecnico di Torino, Italy, is looking for a [Postdoctoral Research Fellow](#) to carry out activities related to the techno-economic modelling and optimization of offshore renewable energy systems. Applications are due 15 December 2023.

The Environmental Fluid Mechanics group at the University of Washington is seeking a [PhD candidate](#) interested in wave-structure interaction, focusing on applications in marine renewable energy and coastal protection design. Applications are due 15 December 2023.

IFREMER, the French Institute for Ocean Science, has launched a call for proposals for [post-doctoral fellowships](#) focused on wave energy conversion, wave tanks, and hydrodynamics of floating structures. Applications are due 8 January 2024.

Oceantic Network (formerly the Business Network for Offshore Wind) is now accepting applications for its paid [2024 Summer Internship Program](#), which offers roles in Communications, Digital Tools, Education & Training, Marketing, Policy, and Supply Chain & Research. Applications are due 10 March 2024.

CorPower Ocean is hiring for multiple positions, including [Head of Product Certification](#), [Electrical Engineer](#), [Anchor System Design Engineer](#), [Electrical Project Leader](#), [Marine Operations Engineer](#), and [Software Engineer](#). View all available positions [here](#).

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## Upcoming Events

### Upcoming Webinars

ETIP Ocean, the European Technology & Innovation Platform for Ocean Energy, is hosting a webinar, “[Best practices for local community engagement](#)”, on 6 December 2023 at 3:00pm CET (2:00pm UTC). Register [here](#).

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](#).

### Upcoming Conferences

[Coastal Futures 2024](#) will take place 24-25 January 2024 in London, England and online. Register [here](#).

[Ocean Sciences Meeting 2024](#) will take place 18-23 February 2024 in New Orleans, Louisiana, U.S. Early bird registration is available through 10 January 2024 [here](#).

### Upcoming Workshops

In addition to the PAMEC 2024 Conference Program, PAMEC in partnership with key partners, is hosting several workshops prior to the conference. Pacific Northwest National Laboratory is hosting an [Ocean Thermal Energy Conversion \(OTEC\) Workshop](#) on 19 January to review OTEC technologies, discuss potential environmental effects, and examine additional uses of deep cold water. Register [here](#).

The PRIMRE team is also hosting a workshop on [Marine Energy Data Organized – PAMEC Workshop on PRIMRE and International Data Sharing](#) on 20 January to present on the resources available within PRIMRE and discuss opportunities for international databases to connect to the system. Register [here](#).

Fundy Ocean Research Centre for Energy (FORCE) is also hosting a workshop on [Monitoring for Interactions Between Marine Animals and MRE Devices](#) on 20 January to present on environmental monitoring around wave and tidal energy devices. Register [here](#).

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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.*

### **[Ocean Energy and Net Zero: An International Roadmap to Develop 300GW of Ocean Energy by 2050](#) – Gordon et al. 2023**

Ocean Energy Systems (OES), the International Energy Agency's Technology Collaboration Programme for ocean energy, is publishing its own roadmap, with the aim of outlining the steps that will be required to unlock the significant potential of the global wave and tidal stream energy sectors, enabling them to contribute to global Net Zero commitments. This report will quantify the level of financial investment, delivered via sustained policy support, that will be required to ensure that these emerging renewable technologies achieve commercial deployment on a global scale. This report will pay particular attention to the impact of market pull and technology push policy mechanisms and the role that they play in accelerating innovation across the wave and tidal stream sector, while maintaining cost-effective levels of investment.

### **[Impacts of membrane fouling on nanofluidic salinity gradient energy conversion process](#) – Mao et al. 2023**

Fouling in the membrane interior of engineered large sized charged nanopores can significantly impact the transmembrane ion transportation characteristic. Here impacts of fouling characteristics on the energy conversion performance are investigated. When the fouling located near the low concentration end, the shadowing effect that decreases the effective charged surface area plays a dominant role, which weakens the EDL overlapping degree, and lowers the energy conversion performance. Fouling also brings about blocking effect that narrows the ion transportation channel, and improves ion separation. When the fouling located near the high concentration side, the blocking effect could override the shadowing effect, leading to upgraded energy conversion performance.

### **[Evaluation of Model Predictions of the Unsteady Tidal Stream Resource and Turbine Fatigue Loads Relative to Multi-Point Flow Measurements at Raz Blanchard](#) – Mullings et al. 2023**

The next stage of development of the tidal stream industry will see a focus on the deployment of tidal turbines in arrays of increasing device numbers and rated power. Successful array development requires a thorough understanding of the resource within potential deployment sites. This is predictable in terms of flow speeds, based upon tidal constituents. However, the operating environment for the turbine is more complex than

the turbine experiencing a uniform flow, with turbulence, shear and wave conditions all affecting the loading on the turbine components. This study establishes the accuracy with which several alternative modelling tools predict the resource characteristics which define unsteady loading—velocity shear, turbulence and waves—and assesses the impact of the model choice on predicted damage equivalent loads.

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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 software for simulating devices, and processing and analyzing data.*

### [WEC-Sim v6.0 Release](#)

[WEC-Sim \(Wave Energy Converter SIMulator\)](#) is an open-source software for simulating wave energy converters. The software is developed in MATLAB/SIMULINK using the multi-body dynamics solver Simscape Multibody. WEC-Sim can model devices that are comprised of bodies, joints, power take-off systems, and mooring systems. WEC-Sim can model both rigid bodies and flexible bodies with generalized body modes. Simulations are performed in the time-domain by solving the governing wave energy converter equations of motion in the 6 Cartesian degrees-of-freedom, plus any number of user-defined modes. The [WEC-Sim Applications repository](#) contains a wide variety of scenarios that WEC-Sim can be used to model, including desalination, mooring dynamics, nonlinear hydrodynamic bodies, passive yawing, batch simulations and many others. The software is flexible and can be adapted to many scenarios within the wave energy industry.

### [Tsdats v0.7.0 Release](#)

[Tsdats](#) is an open-source Python framework developed by the Pacific Northwest National Lab that makes creating pipelines to process and standardize time-series data easier, clearer, and quicker to stand up, so that you can spend less time data-wrangling and more time on data analysis. Tsdats v0.7.0 features improved quality control functions, storage classes that are easier to configure, and a fresh look for the documentation website.

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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.*

### [Marine Energy Performance Metrics](#)

The Telesto Knowledge Hub is home to several pages focused on topics which cover all phases of marine energy development: lessons learned, economics, standards,

compliance, and performance metrics. The Performance Metrics page documents and summarizes metrics commonly used by DOE, national labs, industry, and academia in evaluating marine energy projects. The DOE's WPTO funded this compilation to create a metrics handbook, with enough detail to act as a standalone reference. To adequately analyze marine energy applications and advance technologies toward commercialization, relevant performance metrics must be properly assessed. These metrics are a necessary input for evaluating the economic and technical potential of marine energy technologies, tracking the evolution and growth of marine energy technologies, and guiding marine energy research.

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## **News & Press Releases**

### **[Nova consortium wins €20 million of EU funding to install 16 turbine SEASTAR project in Orkney](#) – Nova Innovation**

Nova Innovation has won EU funding for a 4 MW tidal energy farm that will be home to the largest number of tidal turbines anywhere in the world. Nova will lead a pan-European consortium that will kick-start mass manufacturing of tidal turbines in the tidal industry at Nova's headquarters in Edinburgh. The trailblazing project, unveiled at COP28, marks a crucial step in unlocking a new global source of renewable energy in the battle against climate change. The SEASTAR project builds on the achievements of Nova's Shetland Tidal Array (the world's first offshore tidal array) which has been powering homes, businesses, and the Shetland grid since 2016.

### **[Tidal stream steps up a gear in France](#) – Ocean Energy Europe**

French President Emmanuel Macron announced commercial tenders for tidal stream as part of the 'PPE' — the French energy strategy update — after saying 'we have to be at the top of our game in tidal stream'. This follows a recent announcement from the Minister of the Energy Transition of at least €65 million of funding, plus dedicated revenue support, for the pioneering tidal energy pilot farm project FloWatt. Both announcements demonstrate that France is ready to make the most out of the industrial opportunities associated with the commercialisation of the technology and recognises its key role in the energy transition.

### **[Interview: After taming the Adriatic Sea, Slovenian wave energy company sets course to the ocean](#) – Offshore Energy**

'Actions speak louder than words' might be the best proverbial phrase to use when trying to sum up the work of a Slovenia-based wave energy company Sigma Energy – which has developed and successfully tested a full-scale device in the Adriatic Sea – all without catching a single look from the public eye. Now, that is about to change as the hard work and the results start speaking for themselves, putting the spotlight on a relatively new, yet very decided, wave energy player. Over the past 15 years, Sigma Energy has been focused on developing wave energy technology primarily for deep water applications.

Throughout the period, the company conducted numerous tests, ranging from small-scale prototypes in wave tanks to full-scale devices deployed at sea.

### **[How do you capture the ocean's energy? Peek under the hood of a startup's 'anti-boat' power device – GeekWire](#)**

Oscilla Power, a startup developing devices that capture wave energy to produce electricity, has ocean-sized ambitions. The Seattle-based business envisions deploying thousands of devices along the U. S. West Coast that collectively could generate gigawatts of power. In early December, the startup aims to launch a one-sixth scale version of its Triton device for open-water testing on the coast of Maine. Thousands of miles and an ocean away, Oscilla has a smaller device, called the Triton-C, anchored off the island of O'ahu at the U.S. Navy Wave Energy Test Site. Once plugged into the grid — which could happen any day — the 100 kilowatt maximum system will generate power for roughly 25 homes at the Marine Corps base.

### **[Small Business Grant Program Helps Entrepreneurs Advance Water Power Initiatives – U.S. DOE](#)**

The Small Business Innovation Research (SBIR) program was founded in 1982 in recognition of the fact that small, young businesses are engines of technological innovation in the United States. The program provides financial support to these firms and entrepreneurs to move advancements in research to the market. The SBIR and associated Small Business Technology Transfer (STTR) programs are the largest sources of public funding for small business research in the United States and span 12 federal agencies, including the U.S. DOE. As part of DOE's SBIR/STTR programs, WPTO funds projects in a range of topics and subtopics in hydropower and marine energy. DOE released [Phase I topics for Fiscal Year 2024](#), which include several topics from WPTO.