



**14 June 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**

### ETIPP Applications Open

The U.S. Department of Energy's (DOE) is accepting applications for the [Energy Transitions Initiative Partnership Project \(ETIPP\)](#), which provides technical assistance for remote and island communities to bolster their energy resilience through tailored solutions, through 10 July 2024.

### Power at Sea Prize Submissions Open

The U.S. DOE Water Power Technologies Office (WPTO) is accepting submissions for the [Powering the Blue Economy: Power at Sea Prize](#), which awards competitors to advance technologies that use marine energy to power ocean-based activities, through 26 July 2024.

### Calls for Abstracts

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

The [Call for Abstracts](#) for the [3rd GloFouling Research & Development Forum and Exhibition on Biofouling Prevention and Management for Maritime Industries](#) is now open through 15 June 2024. The event will take place 4-8 November 2024 in Busan, South Korea.

The Ocean Thermal Energy Association has opened the Call for Speakers for the [10<sup>th</sup> International Ocean Thermal Energy \(OTEC\) Symposium](#) through 31 July 2024. The symposium will take place 4-5 December 2024 in Rio de Janeiro, Brazil.

The Call for Abstracts for [7<sup>th</sup> Asian Offshore Wind, Wave and Tidal Energy Conference \(AWTEC 2024\)](#) has been extended through 31 July 2024. AWTEC will take place 20-24 October 2024 in Busan, South Korea.

The [Call for Abstracts](#) for the [Offshore Technology Conference \(OTC 2025\)](#) is open through 10 September 2024. OTC will take place 5-8 May 2025 in Houston, Texas, U.S.

### Funding & Testing Opportunities

Energiaren Euskal Erakundea / Ente Vasco de la Energía has opened an [investment support programme to support demonstration and validation activities of innovative technologies for wave and offshore wind energy](#), with the potential to contribute to greater adoption of renewable energies. Applications are due 19 June 2024.

The Championing Coastal Coordination (3Cs) initiative is seeking to enhance and progress coordination for coastal sustainability and resilience in England and is seeking Expressions of Interest for its [2024/2025 funding round](#). Expressions of Interest are due 20 June 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 \(RFTS\) 13](#) applications through 28 June 2024 to support marine energy testing and development projects. Open Water Support applications can be submitted any time.

The U.S. Advanced Research Projects Agency-Energy (ARPA-E) recently announced up to \$150 million in funding through its [Vision OPEN Call](#) to develop ground-breaking systems that provide abundant primary energy, enable intermodal energy transport, and sustainably meet demand for polymer and other materials. Concept papers are due 16 July 2024.

### Career Opportunities

The European Marine Energy Centre (EMEC) is looking for a [Project Portfolio Manager](#) to manage the delivery of decarbonisation projects underneath the Islands Centre for Net Zero (ICNZ) and a [Business Development Coordinator](#) to identify, develop, and secure opportunities for EMEC to grow its portfolio of projects. Applications are due 21 June 2024.

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## Upcoming Events

### Upcoming Webinars

Australia's Blue Economy Cooperative Research Centre is hosting a webinar, "[Cultural Licence to Operate in the Blue Economy](#)", on 19 June 2024 from 4:00-5:00pm AEST (6:00-7:00am

UTC). The webinar will explore outcomes from a trans-Tasman scoping project funded to build a Cultural Licence to Operate framework that helps to create the ecosystem for an ethical, equitable, dynamic, and responsive system. [Register here.](#)

Mercator Ocean International and Ocean Energy Europe are organizing a webinar, “[Copernicus Marine Service: A Game-Changer for Ocean Energy Sector](#)”, on 19 June 2024 at 1:00pm UTC. The webinar will present examples of how you can use Copernicus Marine Service products in your ocean energy projects or research. [Register here.](#)

### Upcoming Workshops

Pacific Northwest National Laboratory is hosting a three-part virtual workshop on understanding Pacific Northwest community, tribal, and other public information needs around marine carbon dioxide removal (mCDR) and marine renewable energy (MRE). The workshop will take place in three two-hour sessions. Please save these dates and [register for the workshop](#) to participate:

- 17 June 2024, 1:00-3:00pm PDT: Kickoff Meeting and mCDR-focused discussion
- 18 June 2024, 1:00-3:00pm PDT: MRE-focused discussion
- 21 June 2024, 10:00am-12:00pm PDT: Bridging mCDR and MRE needs

### Upcoming Conferences

The [11th Partnership for Research in Marine Renewable Energy \(PRIMaRE\) Conference](#) will take place on 27-28 June 2024 in Southampton, England.

The [University Marine Energy Research Community \(UMERC\) + Marine Energy Technology Series \(METS\) Conference 2024](#) will take place on 7-9 August 2024 in Duluth, Minnesota, U.S.

### Upcoming Symposium

The International Network on Offshore Renewable Energy (INORE) is accepting applications from graduate students, early-stage researchers, and young professionals in offshore renewable energy to attend its [2024 European Symposium](#) through 18 June 2024. The symposium will take place from 26 August to 1 September 2024 in Aberdeen, Scotland and is free to attendees.

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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.*

### **Spotlight on Ocean Energy – Ocean Energy Systems (OES)**

The selection of 20 representative projects exemplifies the diverse range of ocean energy resources and technologies, including tidal and current energy, wave energy, salinity gradient energy, and ocean thermal energy conversion (OTEC). Each project has been chosen to illuminate the innovative advancements driving the growth of this promising

sector. Behind these projects stands dedicated teams whose unwavering commitment has driven continuous advancements in the field. Year after year, these teams have achieved significant milestones, progressing to higher Technology Readiness Levels (TRLs), succeeding in extended operational periods, and demonstrating increased reliability.

### **Wave energy converter arrays: A methodology to assess performance considering the disturbed wave field – Zou et al. 2024**

Wave Energy Converters (WECs) often face power fluctuations due to wave variability, making grid integration costly. To mitigate this, placing multiple WECs in an array can reduce both power variability and expenses. Prior research has limited consideration of the impact of individual WECs on the disturbed wave field. Therefore, a novel simulation framework is proposed which is capable of evaluating the disturbed wave field by coupling a time domain hydrodynamics solver (ProteusDS) and a spectral wave field propagation model (Simulating Waves Nearshore (SWAN)). Numerical simulations are conducted for three different WEC archetypes (RM3, RM5, and Triton) under four representative sea states. The framework is compared with two lower-fidelity models to highlight key array effects.

### **Accelerated Lifetime Testing of Main Shaft Seals for Tidal Turbine Rotors – Skinner et al. 2024**

This report briefly discusses the observations and results from accelerated lifetime testing performed by the National Renewable Energy Laboratory (NREL) on the main shaft seal for the Verdant Power fifth-generation (Gen5) underwater tidal energy converter turbine, which successfully performed at the Roosevelt Island Tidal Energy project in 2020–2021. To evaluate a 5-year service interval (SI) for this component, the main shaft seal was operated nearly continuously for 137 days at a rotational velocity of 160 rotations per minute while the test stand recorded water pressure, barrier fluid pressure, temperature, and number of cycles, representing ~ 40% of the SI. An additional separate test was conducted to measure the aging behavior of the rubber drive rings.

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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.*

### **Morlais – Menter Môn**

Morlais is a Menter Môn commercial project and is currently the largest consented tidal energy site in Europe. The Morlais project manages a 35 km<sup>2</sup> area of seabed off the coast of Holy Island, Anglesey and has the potential to put Ynys Môn on the map in terms of tidal stream energy. The project and the way in which it will operate is unique in that Morlais will install the necessary infrastructure in the zone, including a connection to the national grid and an onshore substation near Ynys Lawd (South Stack) and Parc Cybi,

and will then rent berths to various turbine development companies so they can deploy their own tidal devices to generate electricity. The developers will become tenants of Morlais and pay for the right to use the site and infrastructure.

### **Yongsoo Oscillating Water Column (OWC) – Korea Research Institute of Ships and Ocean Engineering (KRISO)**

The Yongsoo OWC is a 500 kW fixed oscillating water column wave energy converter installed at berth 1 of the KRISO-WETS test site. The construction of the Yongsoo OWC pilot plant was completed in July 2016, predating the establishment of the test site. An OWC consists of a hollow structure open to the sea below the water surface. Wave action alternately compresses and decompresses trapped air within the hollow chamber, forcing it to flow through a turbine coupled to a generator. The plant is equipped with impulse turbines and 250 kW generators, and is grid-connected by a 22.9 KV AC underwater cable. The Yongsoo pilot plant is 37 m long and 31 m wide, equipped with two axial-flow impulse turbines and two 250 kW generators, and is grid-connected by a 22.9 kV AC underwater cable.

### **Ramsey Sound Regeneration Tidal Project – Cambrian Offshore**

The Ramsey Sound Regeneration Project is a partner in the Interreg TIGER Project, a €48m ERDF fund to increase tidal energy deployment. The overarching aim of the regeneration project is to re-power the Ramsey Sound site (Pembrokeshire, UK) and install up to 1 MW of new turbine capacity. Cambrian Offshore SW Ltd was formed to gain the assets of Tidal Energy Ltd (TEL) and the Ramsey Sound site and upgrade these to provide an operational tidal turbine and tidal energy site. Ramsey Sound is a key tidal deployment site, having consent, grid connection and ROC accreditation. The site has maximum flows 3.4 m/s and a combined power estimate of 74.9 GWh/yr.

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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.*

### **TEAMER: Drifting Hydrophone System - Block Diagram and Pre-Amplifier Calibrations** **– Pacific Marine Energy Center (PMEC) / PacWave Oregon State University 2024**

This data release is part of TEAMER RFTS 2, where the Cooperative Institute for Marine Resources Studies (CIMRS) at Oregon State University is performing hardware and software development and integration of four newly designed drifting hydrophone systems for underwater noise measurements at marine renewable energy projects. These new acoustic systems will provide advanced technology support available for use at both tidal and wave energy deployments adding additional resources to the limited amount of drifting hydrophone technologies that are available to the marine energy community

## **[2017 Western Passage Tidal Energy Resource Characterization Measurements](#) – National Renewable Energy Laboratory 2017**

These data are from tidal resource characterization measurements collected between April and July 2017 in Western Passage near Eastport, Maine, USA. The dataset contains the following four sub-datasets, each of which is described in more detail in the README.pdf. A bottom-mounted Teledyne RDI Workhorse 600 kHz acoustic Doppler current profiler (ADCP) was deployed at 44.92015 N, 66.98915 W in ~50 m of water from 3 April to 18 July (106 days).

## **[Wave Energy Prize - 1/20th Testing - Harvest Wave Energy Oscillating Wave Surge Converter](#) – Ricardo Detroit Technical Center 2016**

Data from the 1/20th scale testing data completed on the Wave Energy Prize for the Harvest Wave Energy team, including the 1/20th scale test plan, raw test data, video, photos, and data analysis results. The top-level objective of the 1/20th scale device testing is to obtain the necessary measurements required for determining Average Climate Capture Width per Characteristic Capital Expenditure (ACE) and the Hydrodynamic Performance Quality (HPQ), key metrics for determining the Wave Energy Prize (WEP) winners.

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## **News & Press Releases**

### **[Green Marine \(UK\) and Ocean Kinetics Form JV Partnership to Decommission OpenHydro Tidal Turbine in Scotland](#) – Green Marine (UK)**

Scottish firms Ocean Kinetics and Green Marine (UK) have formed a Joint Venture Partnership to decommission OpenHydro's tidal energy platform in the Orkney Islands. Work is rapidly advancing to remove the steel superstructure installed in 2006 at EMEC's Fall of Warness test site which OpenHydro used to streamline its tidal turbine technology development. EMEC awarded the decommissioning contract in early April. The OpenHydro test rig consisted of two steel piles drilled and grouted into the seabed, with a steel superstructure attached to the piles to provide a working area. The turbine component was previously fixed to the piles using two steel collars, which allowed the unit to be raised and lowered into the tide using two 15 tonne hydraulic winches. The decommissioning work scope involves the entire removal of the steel superstructure, Diamond Wire Cutting of the piles, along with cable disconnection and termination.

### **[CalWave and AltaSea at the Port of Los Angeles Sign MOU to Advance Toward Wave Energy Projects Offshore California](#) – CalWave**

CalWave, a Berkeley-based wave energy technology manufacturer, has signed a memorandum of understanding with AltaSea at the Port of Los Angeles, establishing a formal partnership to work toward establishing a local wave energy industry and building projects off the coast of California. The Port of Los Angeles is the busiest seaport in the

Western Hemisphere and has long served as North America's largest trade gateway based on container volumes and value of trade. Now, with help from AltaSea, it can serve as a center of innovation for offshore renewable energy, including both wave and offshore wind. With 180,000 square feet of Blue Economy incubator space on 35 acres of land in a sheltered harbor, AltaSea aims to create focal points of collaboration by initially focusing on the oceanic fields of regenerative aquaculture, renewable energy, and blue technology & underwater robotics.

### **TEAMER introduces new tidal test site for open-water testing – Offshore Energy**

The U.S. TEAMER program has added the Bourne tidal test site (BTTS), operated by the Marine Renewable Energy Collaborative of New England, as its newest open-water testing facility. Located in the seven-meter deep waters of the Cape Cod Canal in Massachusetts that experiences flows over 1,5 meters per second, the grid-connected testing platform permits open-water testing of prototype tidal devices up to three meters. The platform, supported by three piles, features a central lifting arm for the deployment and retrieval of turbines up to 3 meters in diameter. The test aperture width avoids blocking issues typical of bulkhead or barge testing. The BTTS was established in November 2017. The site is suitable for testing tidal energy components or turbines up to three meters in diameter with a maximum output of 100 kW.

### **Seabased and the BIDC Sign MOU for Wave Power Park to Fuel Green Hydrogen in Barbados – Seabased**

The Barbados Investment and Development Corporation (BIDC) and Seabased Group have signed a memorandum of understanding (MOU) to build a wave power park as part of Barbados' effort to advance green hydrogen research and development. Barbados aims to be the leading Caribbean entity driving the green hydrogen transition. The MOU, signed on June 7th 2024, outlines the establishment of a 2 megawatt (MW) pilot wave power park, which will be expanded to 10MW or more. It will serve as input to the BIDC's green hydrogen facility. BIDC and Seabased will collaborate to amplify bold and innovative blue economy development for Barbados. Green hydrogen is considered one of the most promising fuels for greenhouse gas (GHG) emissions reduction in hard-to-abate sectors such as maritime shipping.

### **Project update Vestmanna: Service and inspection of Dragon 12 – demonstration site attracting international study visits – Minesto**

After four months of grid-connected operation, the Dragon 12 was recovered successfully on the 6th of June for onshore inspection and maintenance program. This is the first inspection of the unit, covering all systems and components. The Dragon 12 will be reinstalled when these activities are completed. One Dragon 4 unit has been installed since March, with a couple of hardware upgrades compared to previous campaigns. The second Dragon 4 is currently in Minesto's workshop in Gothenburg getting the same upgrades fitted. Having installed powerplants contributes to progress in environmental

monitoring, which is valuable for next phase of build-out in Hestfjord. This monitoring includes sound measurements, bird studies, and whale monitoring.

### **Wavepiston completes full-scale energy collector installation off Gran Canaria coast – Offshore Energy**

Danish company Wavepiston has finished another round of installation of a full-scale energy collector on the Wavepiston string off the coast of Gran Canaria, Spain. As previously reported, Wavepiston installed its first full-scale energy collector on the Wavepiston string at the Oceanic Platform of the Canary Islands (PLOCAN) in Gran Canaria back in February 2024. As previously reported, Wavepiston installed its first full-scale energy collector on the Wavepiston string at the Oceanic Platform of the Canary Islands (PLOCAN) in Gran Canaria back in February 2024. Recently, Wavepiston commenced the SHY project (Seawater Hydraulic PTO using dynamic passive controller for wave energy converters), with consortium members all over Europe that joined together at Kronborg Slot in Elsinore, Denmark.