PRIMRE BLAST

3 May 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!

Announcements

MECC Applications Open

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) recently opened applications for the sixth annual Marine Energy Collegiate Competition (MECC), which asks student teams to integrate marine energy with blue economy applications such as ocean-powered autonomous vehicles, aquaculture, and desalination. Applications are due 6 May 2024.

InDEEP Phase II

The U.S. DOE's WPTO has launched Phase II of the Innovating Distributed Embedded Energy Prize (InDEEP) to encourage innovation in distributed embedded energy converter technology to generate new, precommercial materials for wave energy. Phase II provides a pathway for competitors to build and test their concepts. This is the final opportunity for new teams to enter the prize. The deadline to submit concepts is 7 May 2024.

SULI & CCI Applications Open

The U.S DOE Office of Science is now accepting applications for the Science Undergraduate Laboratory Internships (SULI) program and the Community College Internships (CCI) program for the Fall 2024 term. Through SULI and CCI, undergraduates and recent graduates can gain hands on experience at the DOE national laboratories. Applications are due 22 May 2024.

ETIPP Applications Open

The U.S. DOE recently announced that applications are open 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.

Calls for Abstracts

The Call for Abstracts for the International Conference on Ocean Energy (ICOE 2024) is still open. ICOE 2024 will take place on 17-19 September 2024 in Melbourne, Australia.

The Call for Posters for Structures in the Marine Environment (SIME 2024) is now open through 3 May 2024. SIME 2024 will take place on 22-23 May 2024 in Edinburgh, Scotland.

The Call for Abstracts for OCEANS 2024 Halifax has been extended to 10 May 2024. The conference will take place on 23-26 September 2024 in Halifax, Nova Scotia, Canada.

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.

Funding & Testing Opportunities

The Marine Fund Scotland is now open to support eligible individuals, businesses, organizations, and communities in delivering projects which contribute to an innovative and sustainable marine economy, reducing carbon emissions, and supporting coastal communities. Applications for the first round are due 9 May 2024.

The U.S. DOE recently announced $25 million in funding to support clean energy technology deployment on Tribal lands. DOE is soliciting applications from Indian Tribes, which include Alaska Native Regional Corporations and Village Corporations, Intertribal Organizations, and Tribal Energy Development Organizations. Applications are due 30 May 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.

Career Opportunities

The University of Oxford is offering three Postdoctoral Research Assistant positions focused on Integrated Engineering Models for Tidal Energy Systems, Naval Architecture for Tidal Energy Systems, and Tidal Stream Resource Assessment. Applications are due 6 May 2024.

The European Marine Energy Centre (EMEC) is looking for a Project Officer, a graduate Commercial Officer, and a graduate Environment and Consents Officer to support its portfolio of projects, including marine renewable energy projects. Applications are due 17 May 2024.

The Engineering and Physical Sciences Research Council's Centre for Doctoral Training in Net Zero Maritime Energy Solutions, with support from the University of Liverpool and others, is offering a funded PhD position focused on process-based model tools for prediction of scour around offshore structural foundations. Applications are due 20 May 2024.

Dehlsen Associates is seeking a Mechanical Engineer to assist with a variety of projects within its portfolio of marine renewable energy technologies, including Aquantis tidal energy, Centipod wave energy, and SeaHawk floating wind.

Global OTEC is looking for a Technical Project Manager to manage complex projects related to the development and deployment of its ocean thermal energy conversion (OTEC) technology.

Upcoming Events

Upcoming Hackathon

Mercator Ocean International, an implementer of the European Union (EU) Copernicus Marine Service, is organizing #OceanHack4EU, an online hackathon on 3-7 June 2024 that encourages teams to find data-driven solutions to various ocean challenges. Participation is free.

Upcoming Webinars

The Supergen Offshore Renewable Energy (ORE) Hub is hosting a webinar, "Testing the Critical Link - Physical Testing of Dynamic Power Cables", on 8 May 2024 from 11:00am-12:00pm UTC. This webinar will provide a brief review of typical test setups and recommended test practices and present a case study and characteristic results of a mechanical cable test campaign, quantifying cable stiffness and fatigue. Register here.

The U.S. DOE's WPTO is hosting its next WPTO Semiannual Stakeholder Webinar on 9 May 2024 from 12:30-2:00pm ET (4:30-6:00pm UTC). Staff will dive into funding opportunities, how the office is working with partners globally, and other accomplishments, news, and updates.

Upcoming Workshops

The Marine Technology Society and Pacific Northwest National Laboratory are hosting the 15th Buoy Workshop on 20-23 May 2024 in Sequim, Washington, U.S. The workshop will focus on research and advancements in oceanographic, weather, and other buoy systems. Register here.

The Oceanic Platform of the Canary Islands (PLOCAN) is hosting its 2024 Glider School, which is a leading hands-on ocean-glider technology training forum, from 21-25 October 2024 in Telde, Gran Canaria, Canary Islands, Spain. Applications to attend are due 30 June 2024.

Upcoming Conferences

The Ocean Energy Europe Conference & Exhibition (OEE 2024) will take place on 5-6 November 2024 in Aviemore, Scotland.

The Ocean Thermal Energy Association recently announced that the Universidade Federal do Rio de Janeiro is hosting the 10th International Ocean Thermal Energy Conversion Symposium on 4-5 December 2024 in Rio de Janeiro, Brazil. More information coming soon.

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.

Workshop on Tidal Current Extractable Energy: Modelling, Verification and Validation – International Energy Agency (IEA) Ocean Energy Systems (OES) 2024

> The primary goal of this report is to showcase diverse ocean modeling strategies employed globally in tidal energy assessments and to address challenges faced by experts in this field. The report aims to conduct a comparative analysis of results from various ocean models, focusing on two case studies – a temperate and a tropical site - to offer solutions for refining tidal resource modeling. Additionally, it introduces key input databases available for ocean modeling, and provide an overview of both commercial and open-source ocean modeling tools.

Forecast-based stochastic optimization for a load powered by wave energy – Dillon et al. 2024

> Stand-alone renewable energy systems, which harness and use electricity without connection to a distribution grid, can benefit from using resource forecasts when making real-time decisions on how to manage power. An example of this is an ocean observation system that uses a wave energy converter (WEC) and battery bank to produce and store electricity in order to meet electrical load requirements for oceanographic sensors and instrumentation. By using wave forecasts to optimize the power consumption of this system, it is possible to reduce the size of the WEC and battery bank needed, thereby reducing the overall system's cost and complexity. In this paper, we assess the benefits of forecasting for a generic wave-powered ocean observation system.

Feasibility and challenges of high-pressure pressure retarded osmosis applications utilizing seawater and hypersaline water sources – Lee et al. 2024

> Pressure retarded osmosis (PRO) harnesses salinity gradient energy through the mixing of freshwater and saltwater, addressing the demand for sustainable energy sources. PRO typically utilizes river water or secondary wastewater as the feed solution, paired with seawater reverse osmosis (SWRO) brine as the draw solution. However, the limited

availability of low-saline water presents a significant obstacle to energy generation. Therefore, the feasibility of a high-pressure PRO process utilizing seawater as the feed solution and hypersaline water as the draw solution was assessed to generate sustainable blue energy. Seawater has the potential to achieve the maximum extractable Gibbs-free energy through high-pressure PRO by maximizing the feed/draw ratio.

Marine Energy Atlas Update

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.

Deeping Linking in the Marine Energy Atlas

The Marine Energy Atlas has been updated with deep links (i.e., URL tracking for visible layers and location), which allow most views within the Atlas to be sharable. This feature allows users to share a link of the Marine Energy Atlas with the view and layers they have selected. For example, you can now share a link to European Wave Energy Projects that will load all of the OES project layers and center the map on Europe. Additional improvements include minor bug fixes to enhance the user experience like more intuitive behavior for the point query selector.

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.

Mocean Energy Blue X – Mocean Energy

The Mocean wave energy converter (WEC) is a hinged raft. Wave forcing and the bodies' dynamic responses leads to a motion about the hinge (called flex), which drives a power take-off mechanism that converts the kinetic energy into electricity. It has seven degrees of freedom. The innovation of the Mocean WEC is in the design of the shapes of the bodies, which dramatically improves its dynamics and thus power absorption. The configurations are based around varying the ratio and position of the water-plane area to the submerged volume, where the water-plane area affects the hydrostatic restoring force and the volume affects the mass and added mass.

Cobscook Bay Single TidGen Tidal Turbine Test – Ocean Renewable Power Company

ORPC's TidGen® Power System harnesses energy from tidal currents to provide predictable, renewable power for community-scale microgrids and utility-scale electricity networks. Prior to testing a full-scale iteration of the TidGen device, ORPC tested a single turbine TidGen system during summer 2023 in Cobscook Bay. Information

gathered during the single turbine TidGen test phase is being utilized to complete designs, installation plans, and buildout for the full scale TidGen device.

CalWave Technologies xWave – CalWave Technologies

Unlike conventional technologies that extract wave energy at the ocean surface, CalWave's patented xWave™ architecture operates fully submerged at a range of different water depths and distances to shore, achieving high performance and unlocking the ability to be fully shut down in storm conditions. This unique approach enables several advantageous operating abilities: It survives stormy seas and extreme conditions, causes no visual impact, and allows for unique control of structural loads by eliminating excessive loads during storms that drive up the cost of systems without substantially contributing to annual energy production.

News & Press Releases

Carnegie brings MoorPower demonstrator back to shore for maintenance – Offshore Energy

Following the initial phase of operations offshore North Fremantle in Western Australia, Carnegie Clean Energy has brought its MoorPower demonstrator back to port for inspection and maintenance, with redeployment expected in several weeks. At the beginning of the year, Carnegie deployed the MoorPower demonstrator off the coast of North Fremantle and has gathered over 2,000 hours of operational data. This deployment is said to represent a critical milestone in validating the technology's functional operation, reliability and performance. Testing being undertaken includes the evaluation of control systems and transition procedures. The data from the demonstrator's operation is being evaluated and serves to validate the accuracy of the MoorPower models, allowing further optimization of the system for future commercial applications.

Mocean Energy's wave energy converter back to shore after 12-month offshore testing – Mocean Energy

Mocean Energy's Blue X wave energy converter and Verlume's Halo underwater battery storage system have returned to shore after over 12 months of testing at sea off Orkney as part of the Renewables for Subsea Power (RSP) project that combines wave energy with subsea storage to power subsea equipment. This £2 million RSP project, which connected the Blue X wave energy converter with Verlume's Halo underwater battery storage system, completed a 12-month test program at sea at the beginning of March, with the goal of reaching the finish line this spring. The next steps include removing all equipment from the marine site, ahead of inspection and clean down onshore in Orkney, and moving to Verlume's operations facility in Dyce, Aberdeen.

Tidal test site in Massachusetts first in US to receive federal license – Offshore Energy

> Marine Renewable Energy Collaborative (MRECo), a non-profit corporation dedicated to sustainable development of ocean renewable energy, has secured an eight-year pilot license from the U.S. Federal Energy Regulatory Commission (FERC) to conduct tests on tidal turbines at the Bourne tidal test site (BTTS) in Bourne, Massachusetts. The BTTS stands as the sole tidal test site in the U.S. to attain this license. With this license, the turbines can directly feed renewable electricity into the grid. The BTTS enables tidal turbine developers to test prototypes up to three meters in diameter. With the FERC license, MRECo can oversee testing in the ocean currents of the Cape Cod Canal, assessing turbine efficiency, generation capacity, durability, and environmental impact.

Testing the Waters: Scotland Surges Ahead on Ocean Power – Undark Magazine

> By a quirk of geography, the Orkney islands, located off the northern tip of Scotland, are unusually well positioned to bear witness to the ocean's might. On the archipelago's western shores, waves crash relentlessly against the rocks. And within its numerous channels, the tides push an enormous volume of water from the North Atlantic to the North Sea and back again, twice every day, squeezing between and around the islands of Rousay, Westray, Eday, and a myriad of other ones. No wonder the European Marine Energy Center, one of the world's leading agencies for developing and testing wave and tidal power technologies, chose to set up shop here; the nonprofit agency hosts both wave and tidal power testing facilities on Orkney.

Danish wave energy firm launches crowdfunding campaign, aims to raise up to €1.5M – Offshore Energy

> Danish company Wavepiston has launched a crowdfunding campaign with the ambition of raising up to €1.5 million that will be used for its wave energy technology. The €1.5 million expected to be raised in 2024 will be instrumental in further demonstrating and commercializing the wave energy technology, Wavepiston said. Specifically, these funds will be allocated towards demonstrating time-series data from the full-scale system, continuing technology development and developing commercial pilot wave farms. This is anticipated to pave the way for strategic partnerships in 2025 with investors and partners possessing a broad industry network and invaluable scaling experience within the offshore and renewables sectors.