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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

[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.

[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.

[Calls for Abstracts & Papers](#)

The [Call for Abstracts](#) for [OCEANS 2024 Halifax](#) is now open through 26 April 2024. OCEANS Halifax will take place 23-26 September 2024 in Halifax, Nova Scotia, Canada.

The University of Southampton has extended the Call for Abstracts for the [11th Partnership for Research in Marine Renewable Energy \(PRIMaRE\) Conference](#) until 22 April 2024. The PRIMaRE Conference will take place 27-28 June 2024 in Southampton, England.

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

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.

The U.S. DOE recently announced an [intent to provide nearly \\$5 million](#) in funding for programs that accelerate the commercialization and adoption of water power systems and solutions. DOE anticipates opening this funding opportunity in April or May 2024.

Career Opportunities

Aquatera is hiring a [Senior Consultant/Project Manager](#) to support the Island Centre for Net Zero project (ICNZ), as well as working on other decarbonisation projects in Aquatera's portfolio with connection to ICNZ. Applications are due 8 April 2024.

The University of Southampton is seeking a [Post-doctoral Research Fellow](#) to work on the Offshore Renewable Energy Supergen Hub project and focus on geotechnical challenges linked to the growth of UK offshore renewables. Applications are due 11 April 2024.

The European Marine Energy Centre (EMEC) is looking for a [Senior Electrical Engineer](#) to manage operations of EMEC's electrical systems, ensuring they meet client requirements, and that they are operated to relevant standards. Applications are due 22 April 2024.

The Institute of Social Anthropology at the University of Bern seeks to appoint a full-time [PhD Researcher](#) to study environmental justice issues around wave and tidal power in East Asia, Southeast Asia, and Canada. Applications are due 28 April 2024.

The University of Southampton is also offering a [PhD Studentship](#) focused on developing robotic ground investigation tools for offshore renewable energy and infrastructure in support of the ROBOCONE project. Applications are due 30 April 2024.

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.

Upcoming Events

Upcoming Webinars

The TEAMER program is holding a one-hour webinar/workshop, “Waves of Opportunity: How to Write a Successful TEAMER Application”, on 8 April 2024 at 11:00am PST (6:00pm UTC) with a focus on how to write a successful TEAMER application. [Register here.](#)

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.](#)

Upcoming Workshops

The IMPACT project recently announced that its [Wave Energy Rig Testing Workshop: Bridging the Gap between Research and Deployment](#) will take place on 12 April 2024 in Perugia, Italy. The event will showcase how rig testing can contribute to accelerating the development of the European wave energy sector, and feature presentations from international and Italian experts from both academia and industry.

The Supergen ORE Hub is hosting a [Masterclass on Advanced Experimental Fluid Mechanics for Offshore Renewable Energy](#) on 22 April 2024 at the University of Plymouth in England. Participants will be introduced to facilities at the Coast Laboratory and the new UK Floating Offshore Wind Turbine Test Facility, Babbage wind tunnel, and Hexapod. [Register here.](#)

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

Pacific Ocean Energy Trust is hosting the [Ocean Renewable Energy Conference \(OREC 2024\)](#) on 20-23 May 2024 in Portland, Oregon, U.S. Early registration is available until 5 April 2024.

The [43rd International Conference on Ocean, Offshore and Arctic Engineering \(OMAE 2024\)](#) will take place on 9-14 June 2024 in Singapore.

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 Thermal Energy Conversion \(OTEC\) Economics: Updates and Strategies](#) – Vega & Martin 2024

Ocean Thermal Energy Conversion (OTEC) is a renewable ocean energy that relies on naturally occurring temperature gradients in the ocean. Due to the vast resource availability provided by the ocean, it has captured the minds of scientists, academics, and entrepreneurs since Jules Verne's 20,000 Leagues Under the Sea inspired initial research in the 1800s. Still, like many technologies when compared to the status quo, the early-stage economics of OTEC can be a challenge. This report refrains from technical details on OTEC, technical information previously published by Dr. Vega and his colleagues is available online, rather we will explore the current costs of OTEC and in what cases it may be economically applied today.

[The potential of salinity gradient energy based on natural and anthropogenic resources in Sweden](#) – Essalhi et al. 2024

This paper presents assessment of natural and anthropogenic sources of blue energy within Swedish territory to identify suitable spots for implementing new projects. The natural energy potential of salinity gradients was found to be higher in southwest Sweden, and a national energy resource potential of 2610.6 MW from seawater/river water mixing will be reduced to a technical potential ranging from 1044.3 MW to 1825.4 MW considering technical and environmental constraints. It has been found that the theoretical extractable energy potential in Sweden is equivalent to 13% of the total electricity consumption and 6.2% of the total final energy consumption by energy commodities.

[Wave energy conversion by an array of oscillating water columns deployed along a long-flexible floating breakwater](#) – Cheng et al. 2024

Large-scale spatial configurations combining Wave Energy Converters (WECs) and coastal attenuating-wave facilities have the potential to exploit marine renewable energy sustainably. In this study, an integrated concept of multiple Oscillating Water Columns (OWCs) and a very long floating breakwater is introduced. Associated energy extraction, gap resonance and hydroelastic interaction problems are examined. A coupled numerical simulation methodology consisting of a Finite Volume Method (FVM) based solver and a Finite Element Method (FEM) solver, is developed to investigate the strong fluid and structure coupled problem. The fluid-structure information is matched in real-time and

the flexible modes of the floating breakwater are obtained by imposing a restrained beam inside the pontoon.

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.

Montenegro Demonstration of Sigma Energy WEC – Sigma Energy

After two and half years of development, Sigma Energy deployed the first full-scale Sigma WEC prototype offshore Bar in Montenegro. The 30-kW device was deployed in July 2022 and showed promising results when exposed to major storms. The deployment is the result of Sigma Energy's successful application to the public call "Supplement to SME Instrument – Phase 2" for co-funding the project of developing the Sigma WEC full-scale device. The investment is co-financed by the Republic of Slovenia and the European Union from the European Regional Development Fund.

Sabella D10 tidal turbine at Ushant Island - Phase 3 – Sabella

After the successful re-immersion of the D10 turbine in April 2022 and its reconnection to the Ushant Island electricity grid, the third test and production campaign of the D10 tidal turbine started as planned after a period of testing and adjustments. The latest milestone was achieved at the end of September 2023, when, on average, the turbine generated over 25% of the electricity consumed on Ushant Island thanks to the high water velocities of the spring tides. According to Sabella, on several instances the power production exceeded 50% of total power in the island's energy mix.

ISWEC Inertial Sea Wave Energy Converter – Wave for Energy s.r.l & Eni

The ISWEC point absorber consists of a floating hull with a gyroscopic mechanism inside that transforms the pitching caused by waves into electricity. The energy produced is thus made available for offshore infrastructures, smaller islands or small coastal communities. The heart of the machine is the gyroscopic system: two flywheels of 10 tons placed in rotation that generate the inertial reaction torques that arise from the interaction between their speed and the pitching motion of the hull on two internal precession shafts, on which the permanent magnet electric generators are keyed.

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: Biofouling Analysis for Wave Energy Piston Design - Load Cell Data](#) – Triton Systems, Inc. (data from 2021, last updated 2024)

Biofouling and corrosion are a major concern for all ocean-deployed components, especially when mechanical motion is involved. Triton Systems has developed the concept of a biofouling mitigation seal as part of the piston sealing assembly for the Triton Wave Energy Converter (TSI-WEC). Triton placed two prototype Power Take-Off (PTO) assemblies in a biofouling tank at the Pacific Northwest National Laboratory, one with a biofouling mitigation seal and one without, allowing for an evaluation of seal effectiveness at the prevention of biofouling. Results from this testing will be used to improve seal design and material selection, mitigating risk of premature failure during open water testing and evaluation.

[RANS Simulation VBM of Single Full Scale DOE RM1 MHK Turbine](#) – University of Washington (data from 2013, last updated 2020)

Attached are the .cas and .dat files along with the required User Defined Functions (UDFs) and look-up table of lift and drag coefficients for Reynolds Averaged Navier-Stokes (RANS) simulation of a single full scale DOE Reference Model 1 (RM1) turbine implemented in ANSYS FLUENT CFD-package. In this case study, the flow field around and in the wake of the full scale DOE RM1 turbine is simulated using Blade Element Model (a.k.a Virtual Blade Model [VBM]) by solving RANS equations coupled with $k-\omega$ turbulence closure model. It should be highlighted that in this simulation the actual geometry of the rotor blade is not modeled. The effects of turbine rotating blades are modeled using the Blade Element Theory.

[Wave Energy Prize - 1/50th Testing - RTI Wave Power Oscillating Wave Surge Converter](#) - Ricardo Detroit Technical Center (data from 2015, last updated 2020)

This submission of data includes all the 1/50th scale testing data completed on the Wave Energy Prize for the RTI Wave Power team, and includes:

- 1/50th test data (raw & processed)
- 1/50th test data video and pictures
- 1/50th Test plans and testing documents
- SSTF_Submission (summarized results)

News & Press Releases

[UK's Industrial Doctorate Centre for Offshore Renewable Energy secures \\$7.5M funding](#) – Offshore Energy

The Industrial Center for Doctoral Training in Offshore Renewable Energy (IDCORE) has secured £6 million (around \$7.5 million) from the UK's funding body, the Engineering and Physical Sciences Research Council (EPSRC), allowing the program to continue delivering education and expanding the partnership for another five years. The

importance of ORE research and cooperation between academia and industry was fortified following the UK's investment in centers for doctoral training (CDT). This funding allows CDTs such as the University of Edinburgh's IDCORE program to continue and expand its reach and impact in ORE. UK's Science, Innovation, and Technology Secretary recently announced that £1 billion had been allocated to 65 different CDTs, focusing on doctoral training in engineering and physical sciences.

CalWave Selected as Technology Provider for Wave Energy Project in British Columbia – CalWave

CalWave, a California-based wave energy technology developer, has been selected as the technology provider for a wave energy project at Yuquot, British Columbia, with the Mowachaht/Muchalaht First Nation (MMFN). Located on Nootka Island, just off the west coast of Vancouver Island, Yuquot is the traditional home of the MMFN. It was also the site of first contact between European explorers and Indigenous peoples on the west coast of North America, when Captain James Cook moored his ship in Nootka Sound in 1778. The community existed for thousands of years as a center of fish and fur trading until the late-20th century, when almost all residents were forced to relocate to Vancouver Island. Now, the MMFN is working to reclaim their land, rebuild their community, and harness the energetic North Pacific waves to help power their new microgrid and establish energy independence.

CorPower Ocean selected to join the EIC Scaling Club network. – CorPower Ocean

CorPower Ocean recently announced that it has been selected by the EIC Scaling Club as one of the highest-potential European deep tech scale-ups poised to make a positive, global impact. The EIC Scaling Club today unveiled the selection of the first 48 European deep tech scale-ups to join its curated community of standout companies, investors, corporate innovators, mentors, media firms and other industry stakeholders. CorPower Ocean will join the international high-level network effective immediately. Ahead of the 'Ignition Forum' event held on 9-10 April in Brussels and Leuven, Belgium, the EIC Scaling Club shared the 48 names of the initial cohort of deep tech scale-ups that stand to benefit from its wide range of services. CorPower Ocean was carefully selected based on a number of factors and falls one within four predefined market sector opportunities, namely Renewable Energies.

Construction of the Ocean Thermal Energy Conversion (OTEC) prototype to be tested at PLOCAN begins – PLOCAN

The Austrian company AGRU and the Hidramar shipyard in the port of Las Palmas have started the construction of a prototype that will advance Ocean Thermal Energy Conversion (OTEC) technology in regions prone to severe weather conditions, which will be tested at the PLOCAN test site. The structure, which consists of a cylindrical hull, a cold water pipe and a gimbal connection point, is being manufactured by AGRU in Austria and by the Hidramar shipyard in Gran Canaria, and the 1:5 scale prototype is

expected to be ready for installation at PLOCAN in the coming months, where it will be subjected to the conditions of the Atlantic Ocean for approximately 12 months.

Eco Wave Power's 'significant milestones' keep optimism for future energy project opportunities alive – Offshore Energy

Eco Wave Power is among the companies that felt the impact of the unpredictability surrounding the economy in 2023. However, the Swedish-Israeli wave energy player still managed to boost its revenues by 1076% and cut its net loss by 36% last year compared to 2022. As a result, the company ended 2023 with \$8.4 million in cash and deposits but its net financial income dropped from \$706,000 in 2022 to \$547,000. With the economic ecosystem in turmoil, while climate action dragged its feet, many renewable companies faced financial woes in 2023. Amidst economic uncertainty, Eco Wave Power saw substantial growth in 2023, with the revenue for the fiscal year ending December 31, 2023, rising by \$280,000 and marking a 1076% increase to \$306,000 compared to \$26,000 in 2022. This increase primarily stemmed from feasibility study services rendered in the U.S., Israel, and Morocco.

Corvus Orca – first marine ESS to be awarded ClassNK Type Approval – Corvus Energy

Corvus Energy, the leading provider of marine battery and fuel cell systems, recently announced that their Corvus Orca Energy Storage System (ESS) has received Type Approval from the Japanese class society, ClassNK. This is the first-ever marine battery to get this type of approval since the ClassNK rules for marine ESSs came into effect in January 2023. With both energy and high power, the Orca ESS system is suitable for a variety of marine applications and vessel types. No other marine ESS can compete with the installation count. To date more than 600 vessels and port applications have an Orca system installed worldwide. This product has set a new industry standard in marine with the highest safety, reliability and performance of any system in the market.