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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

OES-Environmental 2024 State of the Science Report Released

[OES-Environmental](#) recently released the [2024 State of the Science Report: Environmental Effects of Marine Renewable Energy Development Around the World](#) at the International Conference on Ocean Energy in Melbourne, Australia! The *2024 State of the Science Report*, available on [Tethys](#), brings together the most up-to-date information on potential environmental effects of marine renewable energy; shares helpful resources, such as education and outreach tools, strategies to aid consenting, and data information systems; and identifies a path forward.

2025 Marine Energy Fellowship

The U.S. Department of Energy's (DOE's) Water Power Technologies Office (WPTO) and the Oak Ridge Institute for Science and Education (ORISE) recently opened applications for the [2025 Marine Energy Fellowship](#). The program features one track for graduate students working on marine energy-focused research theses or dissertations and a new post-graduate track for recent graduates focused on advancing their careers in marine energy. Applications are due 6 December 2024 and 7 March 2025 depending on the applicant's desired start date.

Call for Workshops

The Oceanic Network has opened the [Call for Workshops](#) for the [2025 International Partnering Forum \(IPF\)](#) through 1 November 2024. IPF 2025 will take place from 28 April to 1 May 2025 in Virginia Beach, Virginia, U.S.

Funding & Testing Opportunities

UK Research and Innovation has opened a follow-on [funding opportunity](#) to build on existing engineering and physical sciences research outputs to accelerate economic, societal, policy and environmental benefits. Applications must build on prior Engineering and Physical Sciences Research Council funding. Applications are due 24 September 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 \(RFTS\) 14](#) applications through 4 October 2024 to support marine energy testing and development projects. Open Water Support applications can be submitted any time.

The U.S. National Science Foundation (NSF) opened applications for its [Engineering Research Initiation program](#), which aims to enhance engineering research capacity by supporting new academic investigators who have not received significant federal funding, and includes a special topic focused on Marine Energy and the Blue Economy. Applications are due 9 October 2024.

The Ocean Energy Safety Institute (OESI) has published a [Request for Proposals](#) to support research pathways across oil and gas, wind energy, and marine energy. OESI anticipates awarding up to \$16 million to foster enhanced safety protocols, improved technologies, and new insights into risk management. Proposals are due 18 October 2024.

The U.S. DOE's WPTO recently opened the [Oceans of Opportunity: U.S. Wave Energy Open Water Testing](#), which will provide up to \$112.5 million in funding to advance the commercial readiness of wave energy technologies through open water testing and system validation. WPTO is hosting an informational webinar on 9 October. Concept papers are due 25 October 2024.

Career Opportunities

The U.S. DOE WPTO is seeking a [Marine Energy Fellow](#) to engage with the DOE's Arctic Energy Office in Alaska. The Fellow will learn how WPTO and Arctic Energy Office carry out their work on water-power related topics within the state of Alaska. Applications are due 20 September 2024.

The Pacific Marine Energy Center (PMEC) at Oregon State University is recruiting two [Post-Doctoral Scholars](#) to develop numerical and scaled physical models of sub-surface wave energy converters, autonomous underwater vehicle recharging, and real-time hybrid simulation of offshore wind turbines. The tentative closing date is 20 September 2024.

The European Marine Energy Centre (EMEC) is looking for a [Metocean Data Engineer](#) to implement and oversee environmental data management across EMEC's technical services. Applications are due 23 September 2024.

The University of Minnesota Duluth is inviting applications for two tenure-track Assistant Professor positions in [Mechanical & Industrial Engineering](#) (364278) and in [Electrical Engineering](#) (364279) to focus on marine energy. Applications are due 1 October 2024.

Upcoming Events

Upcoming Webinar

OES-Environmental is hosting a public webinar, "[The State of the Science on Environmental Effects of Marine Renewable Energy](#)", on 2 October 2024 from 8:00-9:30am PDT (3:00-4:30pm UTC). During this webinar, OES-Environmental will present on findings from the recently released [2024 State of the Science Report: Environmental Effects of Marine Renewable Energy Development Around the World](#). [Register here](#).

Upcoming Conferences

The [7th Asian Offshore Wind, Wave and Tidal Energy Conference \(AWTEC 2024\)](#) will take place on 20-24 October 2024 in Busan, Korea.

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

Marine Renewables Canada is hosting the [Marine Renewables Canada 2024 Conference](#) on 19-21 November 2024 in Halifax, Nova Scotia, Canada.

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.

[High-dimensional control co-design of a wave energy converter with a novel pitch resonator power takeoff system](#) – Devin et al. 2024

Researchers are exploring adding wave energy converters to existing oceanographic buoys to provide a predictable source of renewable power. A "pitch resonator" power take-off system has been developed that generates power using a geared flywheel system designed to match resonance with the pitching motion of the buoy. However, the novelty of the concept leaves researchers uncertain about various design aspects of the system. This work presents a novel design study of a pitch resonator to inform design decisions for an upcoming deployment of the system. The assessment uses control co-design via WecOptTool to optimize control trajectories for maximal electrical power production while varying five design parameters of the pitch resonator.

[A deep-learning approach for 3D realization of mean wake flow of marine hydrokinetic turbine arrays](#) – Zhang et al. 2024

We present a novel convolutional neural network (CNN) algorithm to reconstruct turbulence statistics in the wake of marine hydrokinetic (MHK) turbine arrays installed in large meandering rivers. To train the CNN, we utilize large eddy simulation (LES) data depicting the wake flow from a single row of turbines. Once trained, the CNN is deployed to forecast the wake flow of MHK turbine arrays under different hydrodynamic conditions and for varying waterway plan-form geometry. Validation of the CNN predictions are conducted using independently performed LES. Our findings demonstrate the capacity of CNN to accurately predict the wake flow of MHK turbine arrays at significantly reduced computational cost compared to LES.

[Power absorption and dynamic response analysis of a hybrid system with a semi-submersible wind turbine and a Salter's duck wave energy converter array](#) – He et al. 2024

A multi-energy system that integrates a floating offshore wind turbine (FOWT) with wave energy converters (WEC) is an effective way to commercialize new offshore energy and the levelized cost of energy in the future. This paper proposes a FOWT-WEC hybrid system concept consisting of a semi-submersible FOWT with a Salter's duck (SD) WEC array. A coupling framework is established based on OpenFAST and ANSYS-AQWA. A preliminary feasibility study is conducted on the power absorption and motion response of the hybrid system to evaluate the interaction between the SD WEC array and the FOWT. Systematic studies demonstrate that the SD WEC array significantly reduces the motion response of the hybrid system in terms of pitch and heave.

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.

[Dive Into the Marine Energy Atlas](#)

The Marine Energy Atlas is a free interactive mapping tool that allows anyone to access the data they need to harness the power of oceans and rivers. The Marine Energy Atlas supports everything from project siting to device design by providing access to high resolution comprehensive data sets. This tool was created in collaboration with the U.S. DOE's WPTO, National Renewable Energy Laboratory, Pacific Northwest National Laboratory, and Sandia National Laboratories. Check out the [Dive Into the Marine Energy Atlas video](#) on YouTube now!

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.

APL WEC-UUV System (TigerRay and BlueROV2) – University of Washington Applied Physics Laboratory (APL)

This is an R&D project sponsored by the U.S. Navy to investigate at-sea charging of unmanned underwater vehicles. The WEC-UUV system combines a wave energy converter (TigerRAY, a unit of SeaRay by C-Power) with an Uncrewed Underwater Vehicle (UUV, BlueROV2 by BlueRobotics). The UUV charges from the WEC while inside a docking station that is integrated with the subsurface heave plate. When an operator is within range of the WEC, the UUV can be operated via Wi-Fi.

Orbital Marine Power Westray Tidal Array – Orbital Marine Power

The Westray Tidal Array project aims to install around 70 of Orbital Marine Power's O2 tidal turbine devices at Westray Firth, Orkney, with a total generating capacity of 170 MW. To ensure station-keeping, each device will be attached via four mooring lines connected to either rock drilled or gravity anchors and there will be four anchors per device, or anchor sharing if deemed technically achievable following detailed design. The site is expected to need up to five 33 kV electrical export cables.

Svanøy Havbruk – Havkraft

A project with Svanøy Havbruk in Norway to deliver power from a 300 kW OceanOne low-rider powerplant to electrify a fishfarm, replacing diesel-fuels. The project is currently planned to be installed on site in 2025. The project is supported by Innovation Norway with NOK 8,7 million and loans from Sparebanken Vest.

News & Press Releases

Innovative wave energy project receives green light from EU – WEDUSEA

A €19.6 million partnership project, which aims to be the stepping stone towards large scale wave energy commercialisation, has received formal go-ahead from the European Union. WEDUSEA is a pioneering collaboration between 14 partners, spanning industry and academia from across the UK, Ireland, France, Germany and Spain. It is co-ordinated by the Irish company OceanEnergy. The project is co-funded by the EU Horizon Europe Programme and by Innovate UK, the UK's innovation agency. The WEDUSEA project will demonstrate a grid connected 1MW OE35 floating wave energy converter at the European Marine Energy Centre (EMEC) wave energy test site at Billia Croo in Orkney, Scotland. A rigorous technical and environmental demonstration will happen over a two-year period in Atlantic wave conditions.

Lloyd's Register and Orbital Marine Power to commence IECRE certification of the world's largest tidal energy converter – Lloyd's Register

Lloyd's Register, an IECRE accepted renewable energy certification body (RECB) with a scope in marine energy, has signed an agreement with Orbital Marine Power Ltd to commence the certification process for the world's largest tidal energy converter (TEC). Once in operation, Orbital's next generation O2-X TEC will be capable of delivering 2.4MW of electrical power. The assessment will be undertaken in accordance with the international standard for Technology Qualification (IEC TS 62600-4) and the associated IECRE operational document (OD 310-4). Lloyd's Register has assigned ten discipline specialists to assess various aspects of the TEC against the aforementioned documents, and other applicable IEC and ISO standards. The outcome from a primary assessment will result in an IECRE Feasibility Statement for the TEC.

MEGA WAVE PTO Project: Revolutionising Wave Energy System Design to Accelerate EU's Net-Zero Targets – Ocean Energy Europe

The MEGA WAVE PTO project is set to transform the future of renewable energy by harnessing the untapped power of ocean waves. Kicked-off in May, this ambitious project aims to develop an innovative, scalable, and easily maintainable all-electric modular power take-off (PTO) system, designed to convert ocean waves into clean, reliable energy sources. The innovative MEGA WAVE PTO system will cover a broad range of capacities from kilowatts (kW) to megawatts (MW), making it suitable for a wide range of wave energy devices. By leveraging C-GEN's modular design, which incorporates advanced components such as a magnetic gear and generator, the system offers numerous benefits compared to existing technologies.

TEAMER Network Director Announces RFTS 13 Technical Support Recipients – TEAMER

On September 10, 2024, the U.S. TEAMER program announced the selection of 13 projects through its thirteenth RFTS, reflecting a total funding amount of nearly \$2.1 million. These projects will receive support for testing expertise and access to numerical modeling, laboratory or bench testing, tank/flume testing, and expertise within the growing TEAMER Facility Network. Selected applicants, along with their supporting Facility, will now submit their completed Test Plans, a requirement before assistance activities can commence. Supported by the U.S. Department of Energy and directed by the Pacific Ocean Energy Trust, TEAMER accelerates the viability of marine renewables by providing access to the nation's best facilities and expertise to solve critical challenges, build knowledge, foster innovation, and drive commercialization.

Anglesey tidal energy project moves forward as environmental plan completes – Offshore Energy

Natural Resources Wales has completed the Environmental Monitoring and Mitigation Plan (EMMP) for the Marine Characterization Research Project (MCRP), led by Menter

Môn. The EMMP, developed with input from environmental stakeholders and an advisory group, is part of the marine license for the Morlais tidal energy project. It aims to protect marine mammals, seabirds, and migratory fish during tidal device deployment in the Morlais zone. According to Menter Môn, baseline data collected by the MCRP will be available via The Crown Estate's Marine Data Exchange, with continuous analysis informing updates to the EMMP as tidal energy projects expand.

University of Michigan Awarded NSF Grant to Establish the GO Blue Center for Growing Ocean Energy Technologies and the Blue Economy – University of Michigan

The University of Michigan has announced the establishment of the Center for Growing Ocean Energy Technologies and the Blue Economy (GO Blue), a significant initiative under the umbrella of the National Science Foundation's Industry-University Cooperative Research Centers (IUCRC) program. This center, a collaborative effort among the University of Michigan, Stevens Institute of Technology, and Texas A&M-Corpus Christi, aims to accelerate marine energy innovation and foster the development of the blue economy. The GO Blue Center is designed to address pressing global challenges in marine energy and the blue economy by bridging the gap between academia, industry, and government labs.