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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 United States 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

Marine Energy Atlas User Review

The [PRIMRE](#) team requests your assistance in reviewing the [Marine Energy Atlas](#), an online, knowledge hub used to visualize, analyze, and download spatial data on marine energy. Please complete this [short survey](#) by 19 May 2023 to help us determine how researchers, developers, and other stakeholders use the Atlas and to get feedback on how to improve the resource.

Marine Energy Projects Database User Review

The PRIMRE team also requests your assistance in reviewing the [Marine Energy Projects Database](#), a knowledge hub that provides information on marine energy projects, test sites, devices, and organizations around the world. Please complete this [short survey](#) by 2 June 2023 to help us keep this resource up-to-date and useful for the international marine energy community.

Calls for Abstracts

The [Call for Abstracts](#) for the [University Marine Energy Research Community \(UMERC\) 2023 Conference](#) is now open through 12 May 2023. UMERC 2023 will take place on 4-6 October 2023 in Durham, New Hampshire, U.S. Apply for travel/registration support by 15 June 2023.

The Call for Abstracts is now open for the [Structures in the Marine Environment \(SIME\) 2023 Conference](#) until 12 May 2023. SIME will take place on 28 June 2023 in Glasgow, Scotland.

The [Call for Sessions and Town Hall Proposals](#) for Ocean Sciences Meeting 2024 is now open through 24 May 2023. Ocean Sciences Meeting 2024 will take place from 18-23 February 2024 in New Orleans, Louisiana, U.S. and online.

The [Call for Extended Abstracts](#) for the [Pan American Marine Energy Conference \(PAMEC 2024\)](#) is now open through 26 June 2023. PAMEC 2024 will take place on 22-24 January 2024 in Barranquilla, Columbia.

Funding & Testing Opportunities

The U.S. Department of Energy (DOE) has opened applications for the [Energy Transitions Initiative Partnership Project \(ETIPP\)](#) for remote and island communities seeking technical assistance to transform their energy systems and increase energy resilience until 19 May 2023.

The U.S. DOE's Office of Clean Energy Demonstrations has announced \$15 million for the [Energizing Rural Communities Prize](#) to help rural communities build capacity needed for clean energy development and deployment. Submissions for the first round are due 24 May 2023.

The U.S. Ocean Energy Safety Institute (OESI) has launched a [Request for Proposals](#) focused on two target areas: small-scale marine energy solutions that enhance the safety, security, and sustainability of offshore wind and oil & gas operations; and utility-scale marine energy solutions that enhance marine energy operations. Submissions are due 19 June 2023.

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the DOE's Water Power Technologies Office (WPTO), is now accepting [Request for Technical Support \(RFTS\) 10](#) applications until 7 July 2023.

Student & Employment Opportunities

The U.S. DOE's Office of Science has opened Fall term applications for the [Science Undergraduate Laboratory Internships \(SULI\)](#) program, [Community College Internships \(CCI\)](#) program, and [Visiting Faculty Program \(VFP\)](#). Applications are due on 25 May 2023.

Upcoming Events

Upcoming Webinar

ETIP Ocean, the European Technology & Innovation Platform for Ocean Energy, is hosting a webinar, "[Reducing costs & risks: Practical experience in the application of standards](#)", on 22 May 2023 at 4:00pm CEST (2:00pm UTC). This webinar will explore ways to facilitate the use of specifications and showcase examples of practical use in ocean energy technology development. Register [here](#).

Upcoming Forum

The Marine Scotland Directorate is hosting the first National Marine Planning Forum on 15 June 2023 to provide a wider stakeholder engagement platform to help inform stakeholders about the broader picture of National Marine Plan 2 development. Register [here](#) to attend in person by 5 May 2023 or [here](#) to attend virtually.

Upcoming Conferences

The [42nd International Conference on Ocean, Offshore and Arctic Engineering \(OMAE 2023\)](#) will take place on 11-16 June 2023 in Melbourne, Australia. Register [here](#).

The [33rd International Ocean and Polar Engineering Conference \(ISOPE 2023\)](#) will take place on 19-23 June 2023 in Ottawa, Canada.

Pacific Ocean Energy Trust is hosting [Ocean Renewable Energy Conference 2023](#) on 21-22 June 2023 in Portland, Oregon, U.S. Early bird registration is available [here](#) before 12 May 2023.

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.

[Impacts of seasonal flow variation on riverine hydrokinetic energy resources and optimal turbine location – Case study on the Rivière Rouge, Québec, Canada – Kirby et al. 2023](#)

Hydrokinetic energy resource assessment is a crucial prerequisite for strategic turbine deployment and energy extraction. Despite advancements in analytical tools, resource assessment is often completed without detailed investigation of spatial and temporal flow variation and implications on optimal turbine placement. A case study was conducted on the Rivière Rouge, Québec, Canada to estimate the hydrokinetic energy resource, to locate the optimal turbine placement, and to study the impact of seasonal flow variation. The primary optimal turbine location did not change, but the second, third, and fourth optimal locations were impacted. Assuming a hypothetical deployment of one turbine with a 1 m² swept area, the theoretical hydrokinetic energy resource for the site was 21.8 MWh per year in the optimal turbine locations and 6.2 MWh per year using the reach-averaged velocity.

[Feasibility of integrating a very large floating structure with multiple wave energy converters combining oscillating water columns and oscillating flaps – Cheng et al. 2023](#)

The installation of wave energy converters (WECs) along the facing-wave side of in-development or pre-existing offshore structures provides an effective cost-sharing solution. In this study, a time-domain numerical model based on the modal expansion theory and the nonlinear potential flow theory, is applied to optimize the size and layout

of an in-line array of oscillating water column (OWCs) and oscillating flaps (OFs) deployed along the facing-wave side of a very large floating structure (VLFS). The front/back-wall end of each OWC chamber is hinged by an OF device, and thus the number of OWCs is identical with that of OFs. Comparison with a typical OWC-VLFS integration shows that the addition of OFs can significantly reduce the vertical hydroelastic response of the VLFS.

Hybrid solar photovoltaic and salinity-gradient based osmotic energy conversion system with synergistic performance enhancement – Ren et al. 2023

Solar photovoltaic has become essential for generating renewable electricity to overcome global crisis of fossil energy. However, solar photovoltaic suffers from a dramatic decrement on its output power when panel surface temperature is extremely high. In addition, osmotic energy conversion is a fascinating route for utilizing energy existed between ionic aqueous solutions with salinity-gradient. Nevertheless, osmotic energy conversion also confronts a drawback of insufficient power density. When the ionic aqueous solution temperature increases, the osmotic power generation under salinity-gradient is improved owing to the strengthened ion selective diffusion. Under these circumstances, we present a hybrid solar photovoltaic and osmotic energy conversion system, and their power generation performance can be synergistically improved via heat transfer from solar photovoltaic panel to ionic aqueous solution using high thermal conductive copper heat pipes.

MRE Software Highlight

[MRE 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.

Wave Energy Converter Design Optimization Toolbox (WecOptTool) – Sandia National Laboratories

The WecOptTool is an open-source software for conducting optimization studies of wave energy converters (WEC) and their control strategies. The software uses a co-design (WEC & controls) approach where for each WEC design considered in the optimization, the optimal control strategy for that design is found. Practically, this is implemented as two nested optimization loops. One key feature is the use of a pseudo-spectral solution method capable of efficiently dealing with arbitrary nonlinear constraints, nonlinear dynamics, and both structured and unstructured controllers. This allows for the optimization study (e.g., to find the WEC geometry that results in the largest power capture performance) within the WEC's constraints (e.g., maximum power take-off force, maximum PTO extension, etc.). The code is written to support arbitrary optimization studies, control strategies, and constraints.

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 U.S. Department of Energy's National Renewable Energy Laboratory, Pacific Northwest National Laboratory, and Sandia National Laboratories recently launched a new Marine Energy Performance Metrics page on PRIMRE. The collection of metrics encompasses those that are commonly used for evaluating marine energy systems and can serve as a reference for device developers, researchers, regulators, and other stakeholders. These metrics are a necessary input for evaluating the economic and technical potential of marine energy technologies, tracking the evolution and growth of technologies, and guiding research and development and programs.

News & Press Releases

[ORPC and Shell Marine Renewable Program work together to initiate a Modular RivGen Power System demonstration in Lower Mississippi River](#) – Ocean Renewable Power Company (ORPC)

ORPC, an internationally recognized marine renewable energy developer whose power systems harness the energy of free-flowing rivers and tides, is working together with Shell Technology – Marine Renewable Program to initiate a Modular RivGen® Power System demonstration project in the Lower Mississippi River. The collaborative project represents an opportunity to showcase how the next generation of ORPC's proven hydrokinetic technology can provide highly predictable baseload electricity to help decarbonize onshore assets. Once deployed, the system can potentially support the electrification of Shell facilities, including providing power to EV chargers and supporting alternative fuels production. The initiation of the demonstration project builds off previous work completed by ORPC for Shell.

[EEL Energy's biomimetic tidal turbine exceeds expectations](#) – Offshore Energy

French company EEL Energy has informed about very encouraging results gained through the test campaign for its tidal energy device, which uses undulating membrane to produce energy. According to EEL Energy, it has successfully scaled up with a 30kW tidal generator tested in the harbor of Brest, in French region of Brittany, over the last nine months. Namely, the results of the pilot exceeded the company's expectations, and catapulted a physical limit that applies to all conventional tidal turbines, EEL Energy said. The company's undulating membrane generator managed to capture 62% of the energy of the current, exceeding for the first time the famous Betz law that sets a physical limit at 59%, EEL claims. EEL Energy said it plans to continue with the trials of its

technology, with its first pre-commercial 30-50kW machine planned for in-river testing in June 2023.

AW-Energy Signs MOU in Support of Namibia's Decarbonization Goals Using its Wave Energy Technology – 'Waveroller' – AW-Energy

AW-Energy, a leader in near-shore wave energy technology, has signed a Memorandum of Understanding (MOU) with Kaoko Green Energy Solutions (Pty) Ltd in Namibia. The MOU is devoted to the development of renewable energy and aims to produce green hydrogen from renewable energy sources including wave energy. Operated in three phases, Phase 1 will include a detailed site design and cover the fabrication and deployment of a WaveRoller wave farm on the coast of Swakopmund, Namibia, to deliver renewable power to support in-land resettlement and development. Phase 2 will assess the capacity for wavefarms in several locations in Namibia. The final Phase will expand wave energy plants to deliver power to the grid and help in new ways to provide energy for desalination and green hydrogen projects.

Wavepiston starts final factory acceptance tests and assembly of wave energy collectors – Offshore Energy

Danish company Wavepiston has made progress on the assembly and testing of its wave energy collectors ahead of deployment offshore Canary Islands. Wavepiston's team, together with the manufacturer Thune Eureka, are working at the Galician factory to produce the energy collectors for deployment at the company's first full-scale demonstration site at the Oceanic Platform of the Canary Islands (PLOCAN). The company's wave energy system consists of energy collectors placed in the ocean. The energy collectors produce pressurized seawater which is transported to the shore where power generation and reverse osmosis units for desalination are located. The assembly and factory acceptance test of the energy collectors for wave energy system are currently ongoing at Thune Eureka, before moving to Canary Islands to form a wave energy-powered desalination system.

Next Steps for Wales' Tidal Lagoon Challenge – Marine Energy Wales

Marine Energy Wales recently hosted a webinar to discuss the recent announcement by Welsh Government of a £750,000 funding pot for tidal lagoon research. The event, which drew an impressive number of attendees, provided valuable insight into the proposed research priorities, grant application process, and next steps for the Tidal Lagoon Challenge. The webinar was hosted by Marine Energy Wales' Project Manager Jay Sheppard, and Commercial Director Sarah-Joy Lewis from Local Partnerships LLP, who is supporting the Government to deliver their commitment to the Tidal Lagoon Challenge. Sarah-Joy Lewis outlined the three proposed research priorities and aims, before inviting comment and suggestions. She also covered the grant application process, due to be published in the next six months. The session ended with an outline of the next steps. Awards are due to be announced in Spring 2024.