

TETHYS ENGINEERING BLAST



27 March 2020

[Tethys Engineering](#) is an online knowledge base that facilitates the exchange and dissemination of information on the technical and engineering aspects of marine renewable energy. The bi-weekly *Tethys Engineering Blast* highlights new publications in the [Tethys Engineering Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest.

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Announcements

Survey to Explore Regulatory and Political Barriers

On behalf of the DTOceanPlus consortium, WavEC Offshore Renewables is conducting an [online survey](#) to determine to what extent the legal, institutional, and political frameworks currently in place in several E.U. Member States are acting as barriers to wave and tidal energy project deployment. The questionnaire is open until Monday 6 April 2020.

AWTEC Call for Abstracts Extended

Abstracts are currently being accepted for the [5th Asian Wave and Tidal Energy Conference \(AWTEC 2020\)](#), which will be held in Hobart, Australia from 8-12 November 2020. Abstracts must now be submitted through the presentation portal before 31 March 2020. Authors of accepted abstracts will then be required to submit a full paper through the conference portal before 20 June 2020.

Call for Papers

The Marine Technology Society Journal is accepting manuscript submissions for a [special issue](#) entitled, *Utilizing Offshore Resources for Renewable Energy Development: Marine Renewable and Offshore Wind Energy*. The deadline for manuscript submissions is 22 June 2020.

Funding Opportunities

The [Selkie Project](#) is inviting wave energy developer companies to tender their services to validate the five tools developed during the project. Further information and details for application are available [here](#). The application deadline is 30 March 2020.

The Supergen Offshore Renewable Energy (ORE) Hub has extended its [second round of Flexible Funding](#) which will award a total of up to £1.2 million to seed areas that complement existing research, fill gaps, or add cross cutting activities to explore the transfer of research findings between sectors within ORE. Expressions of Interest must now be submitted by 17 April 2020 at 5:00pm GMT.

The Blue-GIFT (Blue Growth and Innovation Fast Tracked) project has announced the [2nd call for applications](#). The project aims to help Atlantic Area companies test the next generation of MRE technology in real sea environments. Applications close 30 April 2020 at 17:00 UTC.

Upcoming Events

Upcoming Webinar

Pacific Ocean Energy Trust (POET) is starting a series of webinars on west coast ocean energy, with a focus on floating offshore wind, entitled, *The Science of Offshore Renewable Energy Effects – What Do We Know and What Do We Still Need to Learn?* The webinars will feature experts in the field who will share what they know, engage in dialogue with participants, and help move the conversation along as floating offshore wind becomes established in a responsible manner. The first webinar will be held on 15 April from 10:00-11:30am PT on what we have learned from marine renewables and the relationship to floating offshore wind, featuring speakers from Pacific Northwest National Laboratory's Coastal Division. Join the webinar [here](#).

Upcoming Workshop

In collaboration with MaRINET2, WavEC Offshore Renewables will be hosting a short course entitled, *Installation and O&M of Offshore Renewable Energy Systems*. The short course will take place in Viana do Castelo, Portugal from 13-14 May 2020. There is no registration fee, and travel & subsistence support is available to early-stage researchers and postgraduate students. Registration closes 7 April 2020.

Conference Updates

[Waterpower Week in Washington 2020](#) has been cancelled and the [International Conference on Ocean Energy \(ICOE\)](#), originally scheduled for May, has been postponed until 2021. Registrations will be automatically be refunded in the method that payment was submitted.

The [Offshore Technology Conference \(OTC 2020\)](#), originally scheduled for May, has been postponed to the third quarter of 2020. Organizers are working to confirm dates in August or September.

[All-Energy & Dcarbonise 2020](#), originally scheduled for May, have been postponed to 14-15 September 2020. The co-located events will remain in Glasgow, Scotland.

New Documents on *Tethys Engineering*

[Experimental analysis of wave energy converters concentrically attached on a floating offshore platform](#) – Kamarlouei et al. 2020

This paper presents an initial experimental study of wave energy converters concentrically arranged and attached on a floating offshore platform model. The 1:27 scale model, has been designed, built and tested, in two main situations, without and with twelve cone shape wave energy converters. To simulate the power take-off system in each wave energy converter, rotational friction dampers have been installed on the joints of the floaters arms to the platform deck.

[Wave-Turbulence Decomposition Methods Applied to Tidal Energy Site Assessment](#) – Perez et al. 2020

High levels of turbulence have been proven to substantially increase the blade loadings on tidal turbines, outlining the need of properly characterizing turbulence parameters in tidal energy sites. The presence of long surface gravity waves may cause a significant bias on the estimation of these parameters, which requires wave-turbulence decomposition methods that are currently missing from guidelines. Here, three techniques of decomposing wave and turbulence are tested: the stopband filter (SB), moving average filter (MA), and synchrosqueezing wavelet transform (SWT).

[Decision framework for ocean thermal energy plant site selection from a sustainability perspective: The case of China](#) – Zhang et al. 2019

Site selection is a key factor to the success of ocean thermal energy conversion (OTEC) project. It is a multi-criteria decision making (MCDM) problem with a series of conflicting criteria involved. However, limited studies were found concerning this area and problems existing in classical MCDM methods tended to fail OTEC site selection decisions. Therefore, this paper proposes an extended MCDM method and establishes a new decision-making framework to select the optimal location.

[CFD modelling of a small-scale fixed multi-chamber OWC device](#) – Shalby et al. 2019

In this paper, an incompressible three-dimensional CFD model is constructed to simulate a fixed Multi-Chamber oscillating water column device. The CFD model is validated; the simulation results are found to be in good agreement with experimental results obtained

from a scale physical model tested in a wave tank. The validated CFD model is then used for a benchmark study of 96 numerical tests. These investigate the effects of the power take-off (PTO) damping caused by the PTO system on device performance.

[Performance evaluation of a submerged tidal energy device with a single mooring line](#) – Guo et al. 2020

A submerged tidal energy device with contra-rotating Diffuser Augmented Tidal Turbines (DATTs) has been investigated in this paper. The device is moored to the seabed with a single mooring line, which limit it to operate at mean water depth, but otherwise allows it to float freely with the tidal current, like a kite in the wind, to harness tidal current energy. This research focuses on the evaluation of stability and power generation of the submerged tidal energy device based on 1:5th scaled model tests and the full-scaled prototype sea trials.

[Effect of different molecular weight polyethylene glycol on flat sheet cellulose acetate membranes for evaluating power density performance in pressure retarded osmosis study](#) – Sharma et al. 2019

Pressure retarded osmosis (PRO) power plants generate power from mixing of saltwater and freshwater by means of membrane systems. In this paper we present a model which describes the complete power station, suitable to optimize the power station both with respect to system parameters and in operating conditions. Special attention is dedicated to the flow model of the “core” membrane unit. It considers the relevant water and salt flows in the system, and accounts for irreversible losses in the flow across the membrane as well as through the membrane unit, and in the surrounding pump-turbine system.

News & Press Releases

[Eco Wave Power Installs a Combined Wave and Solar System in Gibraltar](#) – Eco Wave Power

Onshore marine energy developer, Eco Wave Power (EWP) installed a new combined wave and solar system in the EWP grid connected wave energy power station in Gibraltar, in line with its’ newly submitted patent for a combined wave and solar power station. EWP integrated eight solar panels, on the surface of its eight floaters. Each panel has the installed capacity of 330 watts; thus, all eight panels have an installed capacity of 2.640 kw. The equipment, installation and grid connection works added around 1.46% to the construction cost of the Gibraltar wave energy power plant and is expected to decrease in costs when implemented in EWP’s commercial scale installations.

[MeyGen Granted £1.545M for Pioneering Subsea Hub from the Scottish Government](#) – SIMEC Atlantis Energy

SIMEC Atlantis Energy Limited has been awarded a £1.545 million grant from the Scottish Government's Saltire Tidal Energy Challenge Fund to develop a subsea tidal turbine connection hub for the next phase of development of the MeyGen tidal power array, the world's largest tidal stream power project. The awarded funding will be used to design, procure, install, connect and commission the subsea hub and associated subsea connection infrastructure, which is a key enabler for future array phases, as it will deliver cost reductions in power production by connecting multiple turbines to a single export cable.

[The Push for Tidal Power Faces its Biggest Challenge Yet](#) – Smithsonian Magazine

It's a glorious autumn morning on Brier Island, Nova Scotia, with birdsong in the air and the sun glinting off the rips of Grand Passage. I hurry down to the harbor to meet Jason Hayman and Jason Clarkson, who work for Sustainable Marine Energy, the Scotland-based company that developed the Plat-I. Before Hayman's company can start churning out Plat replicants, though, he must first overcome a monstrous challenge: operating his technology 140 miles to the northeast, in the funnel-shaped Bay of Fundy, which has the world's largest tidal range—54 feet.

[In depth with the TIGER tidal stream project](#) – The Engineer

Over the next three years, the Anglo-French Tidal Stream Industry Energiser Project, or TIGER, is aiming to demonstrate that tidal stream energy is a maturing technology which, with a revenue support mechanism to allow significant deployment, could reduce its costs to a competitive level with nuclear power. Last autumn the €46.8m (£38.9m) project was awarded €28m (£23.3m) from the European Interreg France (Channel) England programme to install up to 8MW of generating capacity at a number of sites around the south coast of England and the north of France.

[WESE & SEA Wave launch a platform for ocean energy data sharing](#) – WavEC Offshore Renewables

An online platform, MARENDATA, has been launched in collaboration by the WESE and SEA Wave projects to disseminate environmental monitoring data collected within the marine energy industry. Co-funded by the European Maritime and Fisheries Fund, both WESE and SEA Wave are undertaking bespoke environmental research campaigns to better understand the potential environmental effects associated with deploying and operating some of the world's leading marine energy technologies.