

The logo features the text "OCEAN ENERGY" in a bold, dark blue, sans-serif font, with "ERA-NET COFUND" in a smaller, similar font below it. The text is centered and overlaid on a background of stylized, flowing blue and yellow waves.

# **OCEAN ENERGY**

## **ERA-NET COFUND**

## **Projects selected under Cofunded Joint Call 2017**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 731200.

# OCEANERA-NET COFUND Overview

**OCEANERA-NET COFUND** is an initiative of eight national and regional government agencies from six European countries, which has received funding from the European Union under the Horizon 2020 Programme for Research and Innovation. The participating countries / regions are: the Basque Country, Brittany, Ireland, Pays de la Loire, Portugal, Scotland, Spain and Sweden.

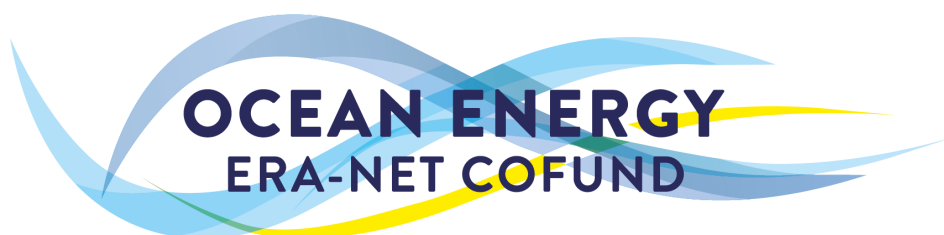
The aim is to coordinate support for **research and development in ocean energy**, to encourage collaborative projects that tackle some of the key challenges identified for the sector as it progresses towards commercialisation.

**Key objectives** are to maintain and grow Europe's world leading position in ocean energy, help bring innovative low carbon energy solutions closer to commercial deployment, drive down the levelised cost of energy (LCoE), create growth and jobs and reduce the environmental impact of the energy system.

The projects described in this brochure have been selected under the Cofunded Joint Call 2017 and are part funded by the national / regional funding organisations and the European Commission.

For more details, please contact Karen Fraser @ [karen.fraser@scotent.co.uk](mailto:karen.fraser@scotent.co.uk)

<https://www.oceancofund.eu/>



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## COMPETITIVE FOUNDATION FOR TIDAL TURBINE

# CF2T

**COORDINATOR:** SABELLA, France: Erwann Nicolas, e.nicolas@sabella.bzh

**PROJECT PARTNERS:**

ALLIA, France: Thomas Cador, t.cador@rblrei-france.com

SAITEC, Spain: David Carrascosa, davidcarrascosa@saitec.es

RISE, Sweden: Henrik Linnarsson, henrik.linnarsson@ri.se

ALKIT Communication, Sweden: Mathias Johanson, mathias@alkit.se

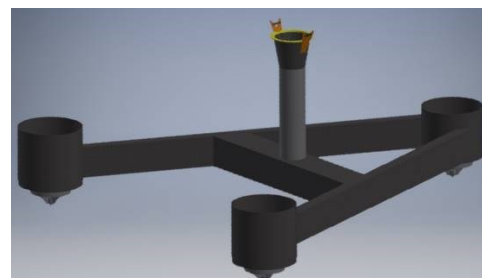
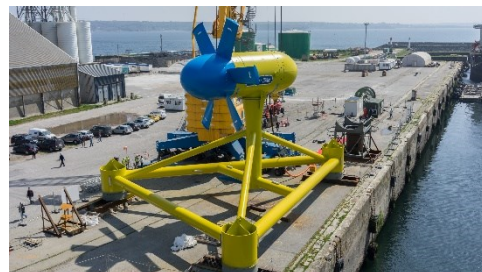
**PROJECT DESCRIPTION / OBJECTIVES:**

By investigating ways of reducing CAPEX costs and improving reliability of the foundation structure, this project aims at reducing the overall LCOE of tidal turbines by three mains objectives:

- Hybrid material to reduce construction costs by 30% and decrease the CAPEX
- Modular foundation to reduce installation costs and decrease the CAPEX
- Monitoring frameworks to improve the reliability of the foundation and decrease the OPEX

**KEY DELIVERABLES**

- Development of a hybrid structure using steel and concrete
- Modular interfaces to allow installation in several packages
- Adaptive interface with seabed
- Implementation of a dedicated structure health monitoring
- Tests at sea



**START DATE:** 01/03/2018

**DURATION:** 35 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 2,942,028€

OCEANERA-NET COFUND Funding: 1,491,505€



## INNOVATIVE THERMAL EXCHANGERS

# INNOTEX

**COORDINATOR:** NAVAL ENERGIES, France: Bertrand Clauzade, bclauzade@naval-energies.com

**PROJECT PARTNERS:** INTEGASA, Spain: Juan Macias, jmacias@integasa.com

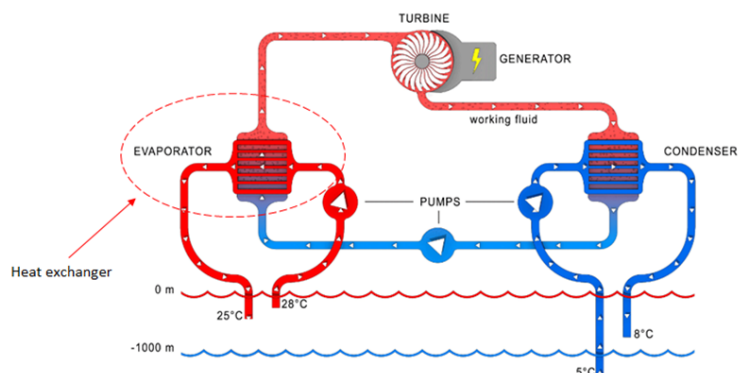
### PROJECT DESCRIPTION / OBJECTIVES:

The INNOTEX project's objective is to validate the performance of an innovative heat exchanger technology for Ocean Thermal Energy Conversion (OTEC) application, to bring it from TRL 4 to TRL 6. The results will make a significant contribution to the development of future OTEC commercial plants. The Rankine cycle of the OTEC thermal power plant operates with a temperature difference of around 25°C. This data implies, among other things, that the evaporator can operate with a small difference in temperature to optimise the available thermal gradient. This led Naval Energies to select the falling film NH<sub>3</sub> evaporator from all other types of evaporators. The first qualifying tests with smooth tubes confirmed this. The INNOTEX project will make it possible to test improved tubes, to increase thermal evaporation performance and optimise the overall energy performance of the OTEC plant. The improved tubes that will be tested in a 300kW model built by INTEGASA are corrugated, grooved and finned tubes.



**NAVAL**  
**ENERGIES**

**Integasa**  
HEAT EXCHANGERS



**START DATE:** 15/10/2018

**DURATION:** 24 Months

### PROJECT COSTS AND FUNDING:

Total Project Costs: 951,084€

OCEANERA-NET COFUND Funding: 368,639€

# RESOURCE CHARACTERISATION TO REDUCE THE COST OF ENERGY THROUGH COORDINATED DATA ENTERPRISE

## RESOURCECODE

**COORDINATOR:** European Marine Energy Centre, Scotland, UK: Ruari Brooker, [r.brooker@emec.org.uk](mailto:r.brooker@emec.org.uk)

**PROJECT PARTNERS:**

IFREMER, France: Nicolas Raillard, [nicolas.raillard@ifremer.fr](mailto:nicolas.raillard@ifremer.fr)

OceanDataLab, France: Fabrice Collard, [oceandatalab.com](http://oceandatalab.com)

SmartBay Ireland, Ireland: Rogerio Chumbinho, [rogerio.chumbinho@smartbay.ie](mailto:rogerio.chumbinho@smartbay.ie)

Ecole Centrale Nantes, France: Yves Perignon, [yves.perignon@ec-nantes.fr](mailto:yves.perignon@ec-nantes.fr)

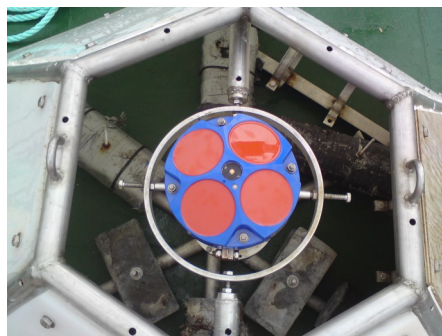
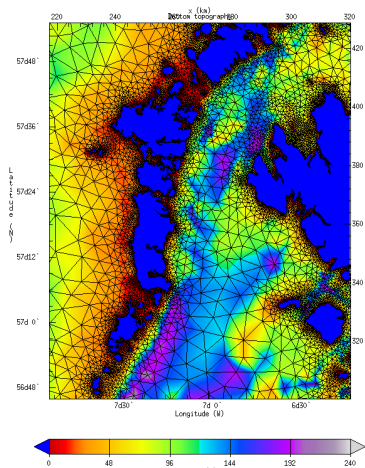
University College Dublin, Ireland: Frederic Dias, [frederic.dias@ucd.ie](mailto:frederic.dias@ucd.ie)

University of Edinburgh, Scotland, UK: Brian Sellar, [brian.sellar@ed.ac.uk](mailto:brian.sellar@ed.ac.uk)

Innosea, France: Hakim Mouslim, [hakim.mouslim@innosea.fr](mailto:hakim.mouslim@innosea.fr)

**PROJECT DESCRIPTION / OBJECTIVES :**

Create an integrated marine data toolbox that will enable developers of ocean energy devices and arrays, and their suppliers, to make optimised technical and commercial decisions. The project brings together an international consortium of businesses and Marine Renewable Energy (MRE) test sites supported by established academic partners that seek to increase the competitiveness of wave and tidal energy across Europe.



**START DATE:** 01/03/2018

**DURATION:** 36 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 1,612,584€

OCEANERA-NET COFUND Funding: 1,093,535€

# SYSTEMATIC EVALUATION AND ANALYSIS OF BLADES FOR A 2MW FLOATING TIDAL ENERGY CONVERTER

## SEABLADE

**COORDINATOR:** EireComposites, Ireland: Tomas Flanagan, [t.flanagan@eirecomposites.com](mailto:t.flanagan@eirecomposites.com)

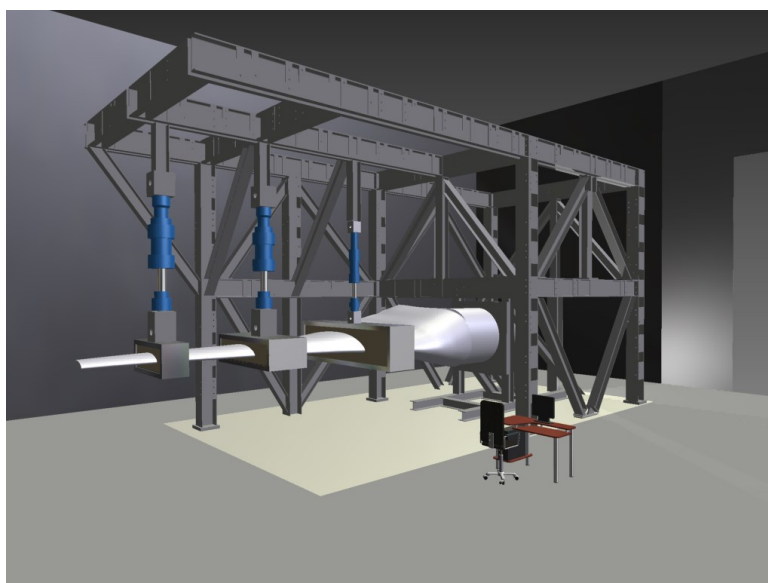
**PROJECT PARTNERS:**

NUI Galway, Ireland: Jamie Goggins, [jamie.goggins@nuigalway.ie](mailto:jamie.goggins@nuigalway.ie)

Orbital Marine Power, Scotland, UK: James Murray, [j.murray@orbitalmarine.com](mailto:j.murray@orbitalmarine.com)

**PROJECT DESCRIPTION / OBJECTIVES:**

This project will accelerate the development of a commercial-ready, cost-effective tidal blade product. The key objective is to gather sufficient test data to validate a 20-year design life for the blades. This will result in more reliable blades that will lead to reduced maintenance and increased productivity and revenue. The project will, therefore, reduce the commercial risks associated with tidal energy. The overall impact of the project will be a reduced LCOE for the European citizen who will be the ultimate end user and beneficiary of the project. These objectives will be achieved by bringing together a strong, transnational consortium which includes a pioneering Scottish tidal turbine developer (Orbital Marine Power), a highly innovative blade manufacturer (ÉireComposites) and an Irish University with world-leading facilities for tidal blade testing (NUI Galway).



**START DATE:** 3/10/2018

**DURATION:** 24 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 636,330 €

OCEANERA-NET COFUND Funding: 391,132 €

# RESHAPING EFORCIS: WAVE ENERGY CONVERTER FOR OFFSHORE SMALL POWER APPLICATIONS

## SPhorcis

**COORDINATOR:** Smalle Technologies, Spain: Hector Martin, [hmartin@smalletec.com](mailto:hmartin@smalletec.com)

**PROJECT PARTNERS:**

SmartBay Ireland, Ireland: Rogerio Chunbinho, [rogerio.chunbinho@smartbay.ie](mailto:rogerio.chunbinho@smartbay.ie)

**PROJECT DESCRIPTION / OBJECTIVES:**

SPhorcis is a device that will harvest energy from two axis instead of just one. This will extend the scope of the base technology to all Data and AToN buoy sizes, new types of floating platforms (wave riders, fishing buoys, aquaculture cages) or even sailboats. In the course of the project, the base device will move from TRL4 to TRL8. Information on robustness, survivability and O&M will be collated and investigated in the SmartBay Test Site to bring the technology closer to market by project end.

SPhorcis is an innovative solution that gives wave energy harvesting a new focus: off-grid low power production. The solution is cost-effective as it is based on simplicity to generate electricity, targeting less energy-demanding equipment. SPhorcis has been designed from a holistic approach, i.e. to harvest energy from small to big waves, thus it can be used worldwide. The small energy demand for marine offshore equipment can therefore be met on the spot through SPhorcis.

**KEY DELIVERABLES:**

- SPhorcis and BePhorcis design
- Sea Tests report



**START DATE:** 03/10/2018

**DURATION:** 30 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 431,143€

OCEANERA-NET COFUND Funding: 280,895€

## TOWARD AN INDUSTRIALIZED SINGLE POINT MOORING SYSTEM

# TIM

**COORDINATOR:** GEPS TECHNO, France: Philippe Magaldi, [philippe.magaldi@geps-techno.com](mailto:philippe.magaldi@geps-techno.com)

**PROJECT PARTNERS:**

EOLINK, France: Marc Guyot, [marc.guyot@eolink.fr](mailto:marc.guyot@eolink.fr)

IFREMER, France: Marc le Boulluec, [marc.le.boulluec@ifremer.fr](mailto:marc.le.boulluec@ifremer.fr)

TTI Marine Renewables Ltd, Scotland: Ben Yeats, [yeats@tensiontech.com](mailto:yeats@tensiontech.com)

**PROJECT DESCRIPTION / OBJECTIVES:**

TIM proposes to develop a standardised offshore mooring system that permits the dynamic movement of a wave or tidal energy converter, and supplies the generated electrical power to a fixed point on the seabed. The TIM project has been conceived from the recognised need for standardised products that can withstand the rigours of the deployed environment and serve the wave and tidal, and potentially other Marine Renewable Energy (MRE) sectors, driving down the cost of energy.

**OBJECTIVES:**

- Adopt the recommended practices of relevant offshore industries
- Exploit the learning of two sea-trial experiences (at TRL 5 & TRL7)
- Define basic and detailed design specifications at components level for promising SPM solutions
- Implement a safe, robust and rapid SPM installation process
- Monitor the behaviour and impact of SPM system in real sea environment conditions
- Collect and report performance data focusing on key technical challenges (e.g. fatigue)
- Assess the commercial prospects of selected SPM designs

**START DATE:** 01/04/2019

**DURATION:** 24 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 499,497€

OCEANERA-NET COFUND Funding: 295,566€



## TARGETED OPTIMAL PITCH MODULE FOR FLOATING TIDAL ENERGY

# TOPFLOTE

**COORDINATOR:** Orbital Marine Power, Scotland, UK: James Murray, [j.murray@orbitalmarine.com](mailto:j.murray@orbitalmarine.com)

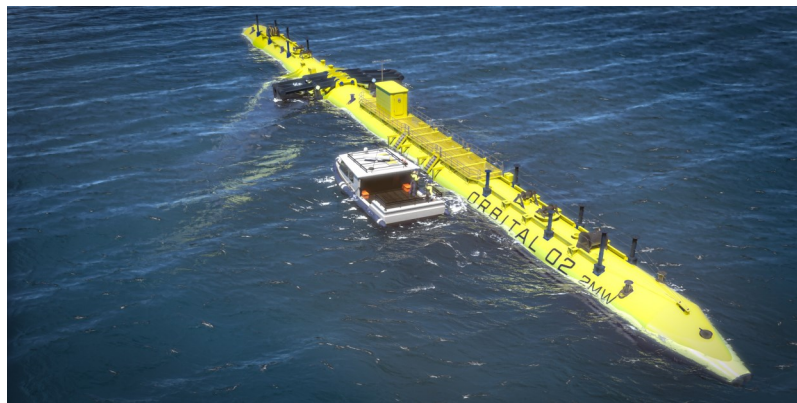
**PROJECT PARTNERS:**

AB SKF, Sweden: Mats Benjaminsson, [Mats.Benjaminsson@skf.com](mailto:Mats.Benjaminsson@skf.com)

**PROJECT DESCRIPTION / OBJECTIVES:**

TOPFLOTE will design, fabricate and performance test a blade pitch regulation module for floating tidal generation units. Two units will be incorporated for performance testing into the twin 1 MW drivetrains of the Orbital O2 2MW turbine, scheduled to be installed at the European Marine Energy Centre, Orkney in 2020. Integration of a two-bladed pitch system module for floating tidal energy will enable optimal performance of the drive-train through advanced torque load control and deliver a number of direct and indirect cost benefits:

- Direct benefits include improved control of drivetrain torque forces facilitating a 50% increase in the swept area of the device;
- Indirect benefits include facilitating removal of the mooring turret subsystems reducing fabrication costs and structural complexity and increasing unit packing density.



*TOPFLOTE and SEABLADE technologies will be tested alongside the Orbital O2 2MW commercial demonstrator turbine*

**START DATE:** 01/10/2018

**DURATION:** 29 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 2,285,056€

OCEANERA-NET COFUND Funding: 1,244,229€

## UNIVERSAL MOORING, ANCHOR & CONNECTIVITY KIT DEMONSTRATION

# UMACK

**COORDINATOR:** CorPowerOcean, Sweden: Matthew Dickson, matt@corpzerocean.com

**PROJECT PARTNERS:**

Sustainable Marine Energy, Scotland, UK: David Stoddart-Scott, david.stoddart-scott@sustainablemarine.com

TTI Marine Renewables Ltd, Scotland, UK: Ben Yeats, yeats@tensiontech.com

European Marine Energy Centre, Scotland, UK: Matthew Finn, matthew.finn@emec.org.uk

University of Edinburgh, Scotland, UK: Henry Jeffrey, henry.jeffrey@ed.ac.uk

**PROJECT DESCRIPTION**

- Develop and demonstrate a technical anchor for multiple sea-bed types to replace the generally used Gravity Based Anchors (GBAs);
- Develop a coupled marine operations strategy based on a quick connect solution, to reduce deployment and retrieval time and complexity, as well as simplify vessel requirements;
- Demonstrate best practice within the ocean energy sector by running parallel Power Take-Off (PTO) and marine operations programmes, de-risking the overall demonstration of full-scale devices by de-coupling DRY and WET verification before full system demonstration.



**START DATE:** 01/09/2018

**DURATION:** 35 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 3,824,762€

OCEANERA-NET COFUND Funding: 2,010,405€

## WAVE+ ENERGY PROJECT

# WEP+

**COORDINATOR:** Neureus Technologies, Spain: Aitor Echeandia, aitor.echeandia@neureus.com

**PROJECT PARTNERS:**

Ecole Centrale Nantes, France: Thomas Souldard, thomas.souldard@ec-nantes.fr

Aquatera, Scotland, UK: Natalia Rojas, Nataliarojas@aquatera.co.uk

Autoridad Portuaria de Las Palmas, Spain: Cesar Martin Fuentes, cmartin@palmasport.es

Plataforma Oceanica de Canarias (PLOCAN), Spain: Xabier Remirez, xabier.remirez@plocan.eu

Université de Nantes, France: Salvy Bourget, salvy.bourget@univ-nantes.fr

**PROJECT DESCRIPTION / OBJECTIVES:**

The aim of this project is to deliver smoothed and code compliant power to an established electrical grid through the operation of the point absorber W1, equipped with a linear switched reluctance generator (developed by Wedge Global), in conjunction with a newly designed energy storage system. The project will also aim to improve and demonstrate the reliability and performance of the existing electronics by testing and validating in a real sea environment with a connection to the grid in Gran Canaria Island. This will result in this technology progressing from TRL 6 to TRL 7.



WEP+

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**START DATE:** 01/10/2018

**DURATION:** 18 Months

**PROJECT COSTS AND FUNDING:**

Total Project Costs: 645,635€

OCEANERA-NET COFUND Funding: 571,199€



**CF2T**

**INNOTEX**

**RESOURCECODE**

**SEABLADE**

**SPHORCIS**

**TIM**

**TOPFLOTE**

**UMACK**

**WEP+**

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**OCEAN ENERGY**  
**ERA-NET COFUND**

**[www.oceancofund.eu](http://www.oceancofund.eu)**