

## EU H2020 DTOceanPlus project: publication of design tools technical requirements and integration of 3 new partners

The first year of the project is reflected in the publication of the technical requirements of the 4 advanced design tools for tidal and wave energy systems that will constitute the new release of the suite called DTOcean. The General Assembly validated in May the integration of 3 new partners into the project.

### Structured innovation design tool

The addition of the structured innovation design tool in the DTOcean suite will facilitate the concept selection for ocean energy systems. Reviews and analyses of structured innovation best practices from standards and other sectors are now available in deliverable D3.1. This first step will enable the adaptation of the recommended modules suited to the needs of the ocean energy sector. This report also defines the 21 technical requirements that are specific to this tool.



[Deliverable D3.1 - Technical requirements for the implementation of structured innovation in ocean energy systems](#)

### Stage gate design tool

The addition of the stage gate design tool in the DTOcean suite will facilitate the objective assessment of ocean energy technologies and support decision making in the technology development process thanks to a common set of evaluation criteria. Deliverable D4.1 outlines the uses and benefits of the stage gate process which is currently being used in other industries. This report also defines the 17 technical requirements that are specific to this tool.



[Deliverable D4.1 - Technical requirements for the implementation of a world class stage gate assessment framework in ocean energy](#)

### Deployment design tools

Deliverable D5.1 defines the 90 technical requirements that are specific to the 6 modules of these tools:

- **Site Characterization.** This module will cover a wide spectrum of use cases, from the development of a project for a specific site to the treatment of more generic environmental conditions to evaluate a machine performance, for example for comparing different sites.
- **Energy Capture.** This module will have two main modes of operations: assessment of a user specified array layout and identification of the optimal array layout. Array layout refers to the spatial location of the machines within the specified lease area, while optimal array layout refers to a layout that maximizes the total mechanical energy absorbed by the converters throughout the year.
- **Energy Transformation.** This module will have two main use modes, whether the user wants to assess a specific technology in a specific development stage and under a control strategy; or a design mode where the main power take-off characteristics are functionally optimized for a selected criterion (e.g. cost, performance and reliability).
- **Energy Delivery.** This module will maximise the level and quality of the delivered power considering the cost and value of the solution proposed, as well as to ensure overall grid compliance.



- **Station Keeping.** The module will deal with the full design of gravity foundations, piles, anchors, mooring lines, mechanical design of the dynamic umbilical cable and its interaction with the other elements of the mooring system, defining a local optimal design solution based on the cost of components.
- **Logistics and Marine Operations.** This module will minimize the logistic costs associated with all lifecycle stages (installation, operation and maintenance, and decommissioning) of a given offshore renewable energy project, while considering suitable combinations of ports, vessels and support equipment that fulfil the logistical requirements, such as lifting and towing.



[Deliverable D5.1 - Technical requirements for the deployment design tools](#)

### Assessment design tools

Deliverable D6.1 defines the 35 technical requirements that are specific to the 4 modules of the assessment design tools:

- **System Performance and Energy Yield.** This module will provide and generate data performance at subsystem, device and array level as well as the downtime due to planned and unplanned operations.
- **Reliability, Availability, Maintainability and Survivability (RAMS).** This module will deliver to the end users a solution for assessing and evaluating the RAMS of the ocean energy system at three stages, namely the early stage, the mid stage and the late stage.
- **System Lifetime Costs.** This module will estimate the costs associated with the subsystems, devices or arrays throughout the project's lifetime, and ultimately the project's economic and financial viability.
- **Environmental and Social Acceptance.** For each lifecycle operation of a given project, the module will assess the potential environmental and social impacts in terms of pressure existence, receptor sensitivity and social acceptance. Carbon foot print will also be assessed Recommendations to reduce the potential environmental impacts and to increase social acceptance during the lifecycle will be proposed to the user.



[Deliverable D6.1 - Technical requirements for the assessment design tools](#)

### 3 new partners just joined the project

On 14 and 15 May, DTOceanPlus partners met for a General Assembly in Edinburgh and validated the integration of 3 new partners:

- **Energias de Portugal**, a major operator in the electricity sector in Europe, present in the Iberian Peninsula, Latin America, Africa and Macao.
- **Orbital Marine Power**, specialized in floating tidal stream turbines since the company's formation in 2002 in Orkney, Scotland.
- **Sabella**, a French tidal and ocean stream turbine developer, supplying reliable turnkey energy solutions worldwide since 2008.

These new arrivals have also just been validated by the European Union.

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## DTOceanPlus in short

**Subject:** development and testing of a suite of digital tools for the design of tidal and wave systems

**Duration:** 3 years (May 2018 to April 2021)

**Budget:** €8 million

**Funding:** EU Research and Innovation Programme H2020 (Grant Agreement No 785921)

**Leader:** Tecnalia (Spain)

**Partners:**



Learn more at [dtoceanplus.eu](http://dtoceanplus.eu)



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