



DTOcean+ EU project will provide advanced design tools for ocean energy systems innovation, development and deployment

An ambitious new EU project has been set up to accelerate the commercialisation of the ocean energy sector

DTOcean+ is funded by Horizon 2020, the EU's research and innovation programme. It will accelerate the commercialisation of the ocean energy sector by developing and demonstrating an open source suite of design tools for the selection, development, deployment and assessment of ocean energy systems (including sub-systems, energy capture devices and arrays). This 3-year project (1 May 2018 – 30 April 2021) has a total budget of 8 million euros.

The DTOcean+ consortium has been formed to bring together representatives of all key user and stakeholder groups and developers of Europe's leading ocean energy sub-systems, devices and arrays. Representatives of the 15 partners met in Derio, near Bilbao (Spain) to launch the project from 14 to 16 May 2018 at the kick-off meeting (KoM) organized by Tecnalia, the project leader. Mr. Paolo Tacconi, project officer from the Innovation & Network Executive Agency (European Commission) actively participated. It is also worth mentioning that international collaboration is developed to avoid duplication, ensure replication and gain global acceptability of the design tools. Representatives of two US institutions, Sandia National Laboratory and National Renewable Energy Laboratory, participated to the KoM.

The first day of the KoM was presented a global overview of the project and contractual aspects. The second day, the consortium went through the technical work packages and had three technical sessions. A technical visit to the BiMEP open-sea wave energy test facility was organized the last day to learn first-hand of the technical developments and design challenges of one of the partners, Ocean Tec.

An integrated set of tools to support the entire technology innovation process of ocean energy systems

Technologies which harness ocean energy are not yet mature enough for widespread use. At present they all possess performance, reliability and survivability challenges, which lead to high costs of energy in comparison with other energy sources. Such challenges can be overcome with the correct tools and processes to support market growth and technology innovation.

DTOcean+ will develop and demonstrate a suite of 2nd generation advanced design tools for the selection, development and deployment of ocean energy systems, aligning innovation and development processes with those used in mature engineering sectors:

- Technology concept selection will be facilitated by a structured innovation design tools,

- Technology development will be enabled by a stage-gate design tool,
- Deployment optimization will be implemented by deployment and assessment design tools.

The integrated tools will be demonstrated in the setting of real world technology deployment projects, with access to these projects being provided by the project's industrial and commercial partners. The project will create a set of digital models which will also provide a common language for the entire ocean energy sector.

Reducing technological and financial risks and improving cost effectiveness of ocean energy technologies

Users of the DTOcean+ suite of tools will be able to generate designs for innovative ocean energy technologies and deployments. These designs will be optimised for a wide variety of key metrics including lifetime costs, reliability, availability, maintainability, survivability, performance, environmental impact and socio-economic impact. Designs generated using DTOcean+ will also balance technological and financial risk which, in combination with greatly improved cost effectiveness, ensure that ocean energy technologies become significantly more commercially attractive. Within 5 years of completing the project it's expected that the results will contribute to achieving a significant increase in the number of ocean energy technologies successfully brought to market, improvement in performance uncertainty contributing to achieving up to 6% and 8% reduction in Levelized Cost of Energy (LCoE) for wave and tidal respectively, significant reduction in operating and maintenance (O&M) costs and reductions in installation costs.



Project partners

Consortium partners

Tecnalia (Spain), University of Edinburgh (United Kingdom), Energy Systems Catapult (United Kingdom), Wave Energy Scotland (United Kingdom), France Energies Marines (France), WavEC (Portugal), Aalborg Universitet (Denmark), Electricité de France (France), Enel Green Power (Italy), Naval Energies (France), Bureau Veritas (France), Oceantec Energias Marinas (Spain), Nova Innovation (United Kingdom), Corpower Ocean (Sweden), Open Cascade (France)

International partners

Sandia National Laboratories (USA), National Renewable Energy Laboratory (USA)



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