MOTIVATION

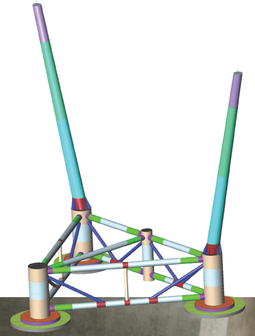
The open sea is a very aggressive environment, which largely affects the maintenance costs of the offshore installations. A massive amount of steel goes into offshore assets, which explains why corrosion accounts for approximately 60% of offshore maintenance costs.

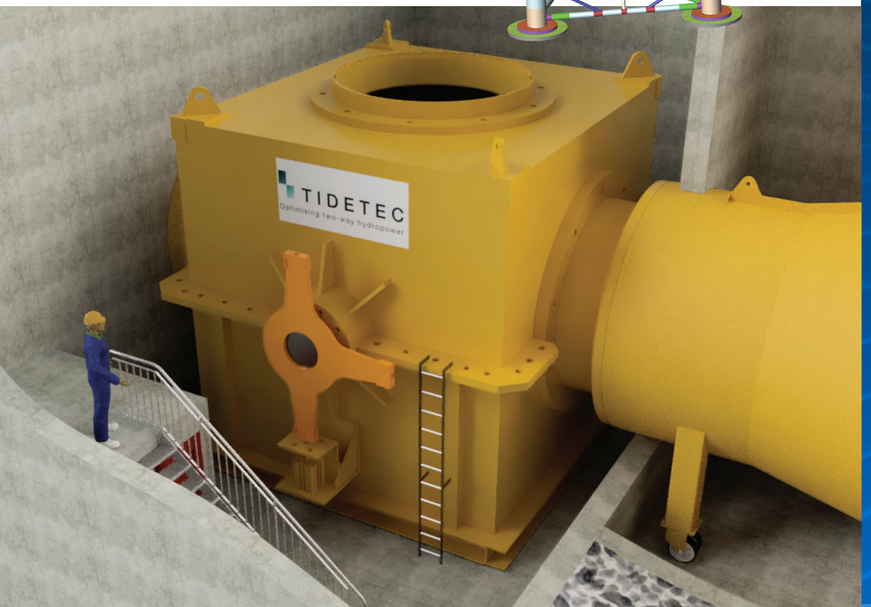
Despite the convenient immunity to corrosion and superior fatigue performance of Fibre Reinforced Polymers (FRP), none of the structures of the Floating Offshore Wind Turbine concepts that have reached a high TRL are based on these materials. If we look at the field of tidal power generators, the use of FRP materials for rotor blades is common but, with rare exceptions, the platform structure -the major cost item- is made of steel.

The reasons for this oversight are; the lack of design and assessment (certification) guidelines; the existence of different technology gaps that have to be filled to demonstrate the full feasibility of using FRP materials in the offshore industry; and, the need to prove a significant lower life cycle reduction with their application.

OBJECTIVE

The overall objective of the FIBREGY project is to enable the extensive use of FRP materials in the structure of the next generation of large Offshore Wind and Tidal Power platforms. In order to achieve this objective, the project will develop, qualify and audit innovative FRP materials for offshore applications, elaborate new design procedures and guidelines, generate efficient production, inspection and monitoring methodologies, and validate and demonstrate advanced software analysis tools.





FIBREGY

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FIBREGY

Development, engineering, production and life cycle management of improved FIBRE-based material solutions for the structure and functional components of large offshore wind enerGY and tidal power platforms

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952966.

SOME FACTS

STARTING DATE: 01/01/2021
PROJECT DURATION: 36 MOS.

8.0 M €
TOTAL BUDGET

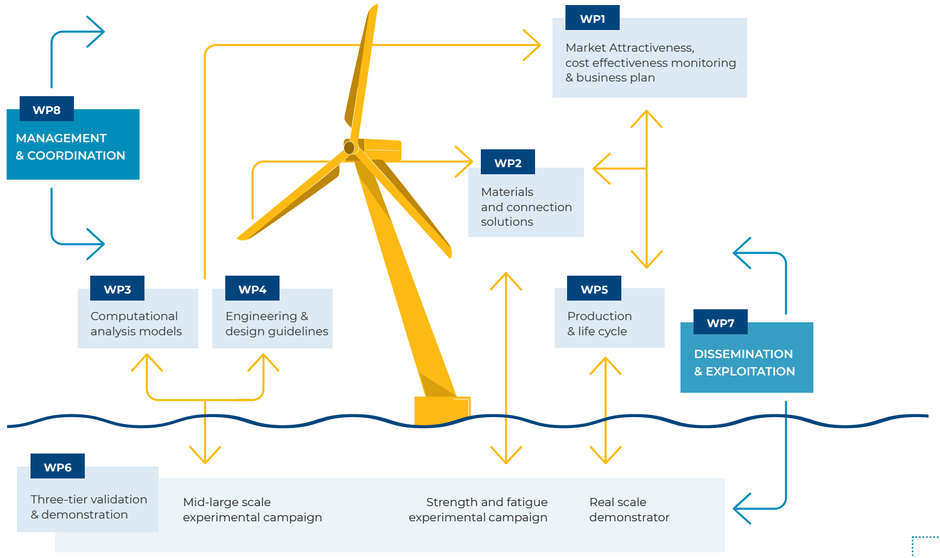
6.5 M €
MAX GRANT AMOUNT

>900 PM
TOTAL EFFORT

12
PARTNERS FROM 7 COUNTRIES

>40
RESEARCHERS

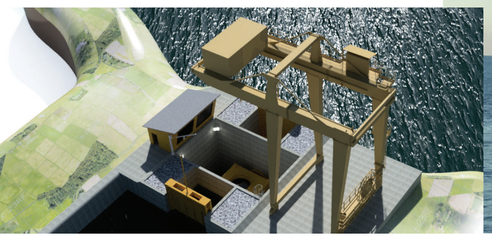
80%
TOTAL EFFORT DEVOTED TO ENGINEERING, DEVELOPMENT, BUILDING AND TESTING



MAIN ACTIVITIES

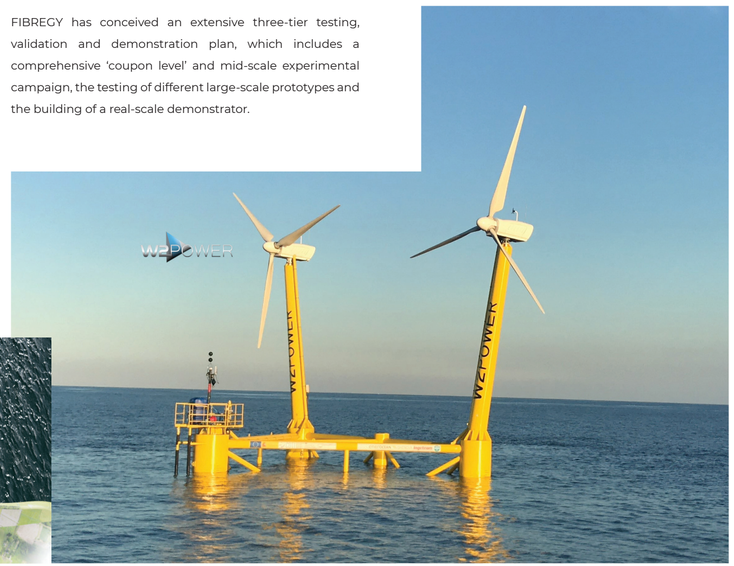
The different objectives of the FIBREGY project will be achieved through 6 technical work-packages; market attractiveness, cost-benefit analysis and business plan; fibre-based materials and assembling solutions; Development and validation of computational models; design, engineering and development of guidelines; optimized production procedures; and, technology validation and demonstration.

To ensure the industrial relevance of the project outcomes, the different activities will be focused on two specific offshore energy concepts, targeted as the most promising for the market uptake: Enerocean's W2Power twin wind turbine platform and Tidetec's turnable tidal turbine. Anyhow, the experience acquired throughout the project will be generalized to other concepts.



DEMONSTRATION

FIBREGY has conceived an extensive three-tier testing, validation and demonstration plan, which includes a comprehensive 'coupon level' and mid-scale experimental campaign, the testing of different large-scale prototypes and the building of a real-scale demonstrator.



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EXPECTED MAIN IMPACTS

The research on high performance/cost ratio FRP materials, the re-engineering and optimization of the two targeted platforms, the development of advanced maintenance solutions as well as the application of innovative production and building technologies, are expected to allow reducing dramatically the LCoE of the offshore renewable energy generation compared to current technology baseline.

CAPEX REDUCTION
GOAL ~10%
- Reduction of engineering, development and testing time.
- Reduction of the weight of the structure and components.
- Optimized design and manufacturing processes (modular building strategy).
- Readiness of the concepts for serial and automated production.

OPEX REDUCTION
GOAL ~30%
- Increase of reliability.
- Increase of fatigue life.
- Immunity to corrosion.
- Improved fouling release.
- Advanced predictive maintenance.

INCREASE OF OPERATING LIFE
GOAL >0,5%
- Increase of fatigue life.
- Immunity to corrosion.
- Advanced predictive maintenance.
- Improved seakeeping.
- Reduced overhauling time.

REDUCTION OF ENVIRONMENTAL IMPACT
GOAL >35%
- Higher efficiency.
- Lower equivalent GHG emissions.
- Increase of platform lifespan.
- Use of advanced dry coatings.
- Higher recyclability rate.

LCoE REDUCTION