

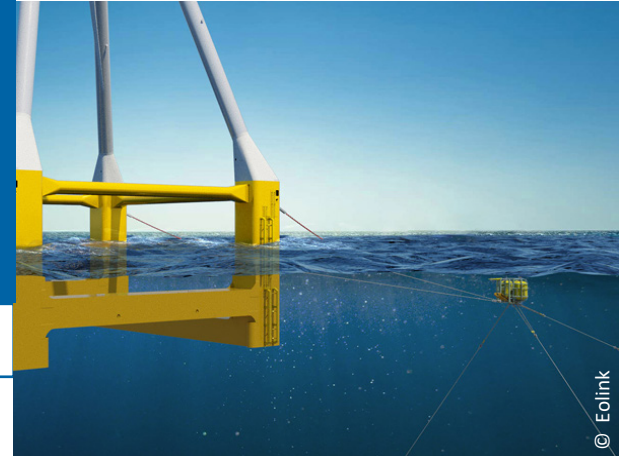
HT-20MW

Electrical connection hub and application for a wind turbine for a 20 MW wind turbine

DURATION: 36 months | LAUNCH: 2023 | BUDGET: €6,194K

CONTEXT

France wants to position itself as the world's leading manufacturer of floating wind turbines. To meet these ambitions, the industry needs to organise itself to offer more competitive solutions and develop its industrial facilities to produce locally and in series. Furthermore, extending the offshore interconnection grid is vital if the energy generated by floating wind turbines is to be fully exploited. **The first link in this grid is a high-power rotating electrical connection for machines that orient themselves into the wind. Mooring lines are also key components. While new materials are available, they do not yet have sufficient feedback to be deployed commercially on a large scale.**



TECHNOLOGIES



STAGES OF THE VALUE CHAIN



Design

OBJECTIVE

To design, test and certify a high-voltage rotating mechanical and electrical connection that is watertight and maintenance-free for 10 years

EXPECTED RESULTS

- Qualification of an in-service monitoring solution for dynamic cables
- Qualification of external protection solutions for mooring lines and dynamic cables
- Methodological note on fatigue and extreme loadings of mooring lines
- Numerical model of a 20 MW wind turbine for fixed and floating applications
- Design and demonstration of the wind turbine's rotating connection

SCIENTIFIC CONTENT

- Parameterisation and coding of the behaviour of polyamide mooring lines in commercial software
- Identification of failure modes for mooring lines and dynamic cables
- Local and global numerical modelling of the dynamic cable, carrying out sea trials for in-service monitoring
- Fatigue testing of dynamic cables and mechanical testing of mooring lines
- Analysis of standards and certifications for mooring lines and electrical connections
- Design and full-loading analysis of a 20 MW wind turbine
- Design, manufacture and assembly of the mechanical and electrical parts of the rotating connection
- Basin tests on a reduced-scale model of the 20 MW wind turbine

FINANCIAL SUPPORTS



PARTNERS

