

MHM-EMR

Mooring health monitoring for offshore renewable energy systems

DURATION: 36 months (2017-2020) | BUDGET: €588K

CONTEXT

Mooring systems used for floating offshore wind turbines differ significantly from those used by the oil & gas sector due to high dynamics in shallow waters. **Currently proposed solutions to satisfy these new constraints employ new dispositions and materials whose long-term behaviour is poorly known and remains non-qualified.**

OBJECTIVE

To define a methodology for in-service monitoring of floating wind turbine mooring systems

MAIN ACHIEVEMENTS

- Development of an in-service monitoring methodology based on accessible measurements and digital tools
- Testing of this methodology at sea on a reduced scale and on a numerical model of a full-scale floating wind turbine verified through tank tests

CONCLUSION

MHM-EMR has enabled the development of a methodology for monitoring mooring lines, including not only appropriate instrumentation, but also behavioural simulation algorithms. This methodology constitutes an essential building block for the elaboration of digital twins, the development of which will be initiated in the framework of the SUBSEE 4D project.



TECHNOLOGIES



STAGES OF THE VALUE CHAIN



Design



O&M

RESOURCES GENERATED

- **State of the art** of feedback from the offshore oil sector and in-service monitoring projects
- **Methodology** for in-service monitoring of floating wind turbine mooring lines
- **Recommendations document** for the implementation of this methodology
- **Algorithms for periodic updating** of global parameters, tension estimation in the mooring lines and supervised anomaly detection based on float movements
- **1 publication:** Decurey *et al.* (2020) Model of Bio-Colonisation on Mooring Lines: Updating Strategy Based on a Static Qualifying Sea State for Floating Wind Turbines. *Journal of Marine Science and Engineering*, Vol. 8, 108

PARTNERS



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