D7.11 Design Practice for 10MW+ FOWT Support Structures

This deliverable provides the summarized, condensed and scrutinized findings obtained throughout the LIFES50+ project with respect to design practices of FOWT substructures.

The project covered the following topics

- site-selection and design basis definition
- upscaled design of existing floating substructures
- LCOE, LCA and risk assessment
- concept evaluation and concept comparison and design considerations for all life cycle stages
- identification of critical design load cases and environmental conditions
- numerical model development and numerical model verification.

The lessons learned, findings, methodologies and knowledge generated within the project related to the design of FOWT substructures for large wind turbines are documented here. In particular information is provided on necessary pre-design requirements and specifications, experimental and numerical design practices, as well as LCOE, risk and industrialization considerations. The advances with respect to the state-of-the-art design practices for floating wind systems are high-lighted so that they may be implemented in both research and industry. The results provide practical guidance regarding the design process of technically and particularly economically viable 10MW+ floating platforms.

An important project result is the publication of two 10MW public substructures which are based on the real designs of the two selected designers Olav Olsen and Nautilus. These designs are optimized using numerical optimization procedures and design related constraints that were collected throughout LIFES50+.