

INTERNSHIP FLOATING WIND TURBINE MOORING OPTIMIZATION



INTRODUCTION:

For several years, PRINCIPIA is developing DEEPLINES WIND™ for design of floating wind turbine considering coupling between hydrodynamic and aerodynamic effects.

This is indeed a major progress for the design of Floating Offshore Wind Turbines (FOWT).

With FOW farm soon to reach a pre-commercial status, optimization of existing floating substructures becomes crucial in order to achieve a high level of industrialization and so, a low-cost mass-production of these items. Although floating wind has known a rapid increase of its technology and manufacturing readiness level, there remain key-challenges to address. SPAR-Buoy floaters are one of the most mature existing concepts, however these substructures are expected to be least popular than other concepts for the future floating wind farms. Despite their advantages over others concepts such as semi-submersibles, Spar-buoy floaters present large acceleration at nacelle, which in time will damage the controller and thus impact power production.

The purpose of this internship is to first assess the impact of the mooring system on the nacelle acceleration, and eventually to derive an optimized mooring system that would meet nacelle acceleration requirements.

SCOPE OF WORK:

The scope of work includes the 5 following tasks:

1. State-of-the-art on FOWT
2. Identify the main drawbacks of SPAR-Buoy floaters that could impact power production
3. Design a standard mooring system for an 8MW spar-buoy floater
4. Sensitivity studies on the impact of mooring arrangement and location along the SPAR over nacelle accelerations
5. Optimized mooring system with acceleration at nacelle under the limit set by turbine manufacturers

DELIVERABLES:

Technical report including

- ✓ State of the art
- ✓ Mooring Design
- ✓ Mooring optimizaton

GENERAL:

- ✓ Duration: 4 to 6 months
- ✓ Start date: Early 2020
- ✓ Location: PRINCIPIA offices in La Ciotat (Bouches du Rhône).
- ✓ To apply : job@principia.fr