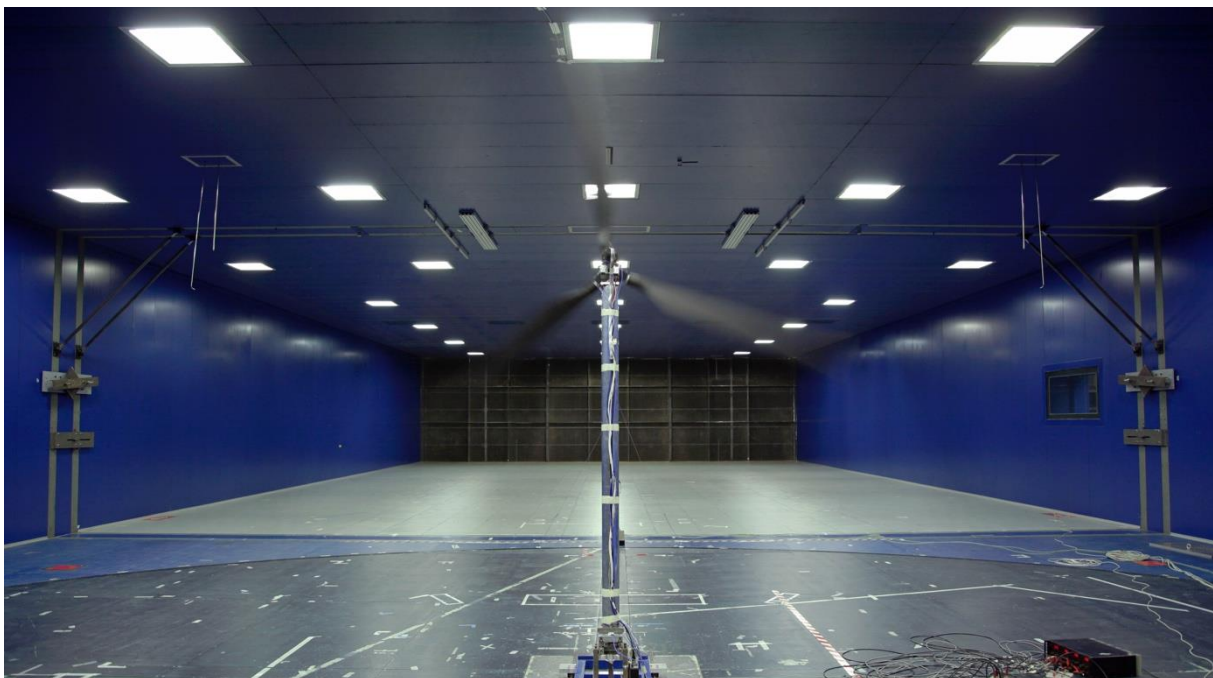


D3.2 Wind turbine scaled model

The Politecnico di Milano 10MW Wind Tunnel Model (PoliMi 10MW WTM) has been designed and built to perform wind tunnel tests of floating offshore wind turbines. The model has been designed with the DTU 10 MW reference wind turbine as a target, in terms of aerodynamic and structural behaviour. The testing procedure is based on a Hardware-In-the-Loop approach: the motion due to the hydrodynamic interaction between the substructure and the sea will be provided by means of a mechanical system. This approach implies the capability for the turbine to bear the imposed accelerations in low and wave frequency ranges. To correctly simulate the aerodynamic forces, the model has its own motors and actuators to perform the control of the main shaft and to manage the Individual Pitch Control.

Deliverable 3.2 describes all the features of the wind tunnel model. In particular, the report contains a detailed description of the model. All the machine parameters are given, covering the aerodynamic data as well as the structural and functional aspects of the mechanical design. The different chapters give the following information:

- The aerodynamic data of the blade: airfoil profile description and its aerodynamic coefficients, the blade twist angle, chord lengths and blade thickness as function of the blade station
- Tower and blades structural data
- Mechanics, mechatronic and functional description of nacelle and hub and all the actuators data



PoliMi 10 MW Wind Turbine Model in the Atmospheric Boundary Layer test section of PoliMi tunnel (GVPM)