

Internship opportunity for Master or Engineer students in spring 2026

Investigation of aero-hydrodynamic loads on offshore wind monopile foundations

Offshore wind energy is one of the most promising alternatives for enhancing energy diversity in communities. Bottom-fixed monopile structures serve as cost-effective foundations for wind turbines, harnessing wind energy from offshore sources. Currently, offshore wind energy is being developed on a larger scale, commonly referred to as wind farms. Over the past decade, extensive research has been conducted based on classical offshore engineering, and this knowledge is now being applied to the offshore wind sector. While wave-structure interactions and soil-pile interactions have been well-studied, our understanding of the comprehensive multiphysical interactions remains limited.

To advance our understanding of the load and structural responses of monopiles, the Stochastic Load on Offshore Piles (SLOOP) project was initiated in 2025 funded by LabEX ORACLE. This multidisciplinary research project integrates ocean engineering (LHEEA, École Centrale Nantes) with geotechnics (GeM, Nantes University, and GC, University of Gustave Eiffel).

As part of the project, we are looking for a dynamic student to work in the LHEEA (IIHNE team) at École Centrale Nantes for an internship. The objective of the internship is to investigate aero-hydrodynamic loads on offshore wind monopile foundations. Linear and nonlinear hydrodynamic loads for the bottom-mounted rigid structure are computed using boundary element method solver (Nemoh) and Morison's elements. The computation of internal loads will be developed based on a modal approach. Additionally, a servo-aerodynamic solver will be used to calculate aerodynamic loads. Finally, this study will characterize the contributions of different load components on the structures by analyzing both linear and nonlinear hydrodynamic and aerodynamic loads.

The internship will take place within the LHEEA in Nantes. The intern will receive a stipend of approximately 600 Euros/month during a 6-month (or 5-month) internship. The candidate should have a strong background in hydrodynamics and programming (Matlab/Python or Fortran). Fluency in English is preferred.

To apply, please send a CV and cover letter to
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