MSc. Thesis Proposal

Title: Improvement of hydrodynamic loads modelling practices for floating offshore wind turbine platforms

Supervisors

João Muralha: researcher at blueOASIS
António Maximiano: Team Leader / Researcher at blueOASIS

Introduction

Motivation

The global wind offshore energy market is evaluated at more than 30 thousand millions US$ (https://www.polarismarketresearch.com/industry-analysis/offshore-wind-energy-market, 2022) and it is only expected to grow due to the rising demand for the decarbonization of the global economic, so the new and unique floating offshore wind turbine platforms have been designed over the past years. To keep driving innovation, it is important to ensure that used design tools can accurately model all physical phenomena.

Existing work

The work on improving and accessing the accuracy of mid-fidelity modelling tools applied to the area of floating offshore winds has been spearheaded by the International Energy Agency (IEA), which is a "*global network of researchers and policy experts sharing the latest technology research and best practices to advance wind energy deployment*" Wind portfolio through the OC (Offshore Code Comparison Collaboration) Projects. The first phase of the latest OC project, OC7, aims at developing a robust approach to model viscous loads in mid-fidelity tools.

Objectives

1. Literature review, on mid-fidelity modelling of hydrodynamic loads in offshore platforms.
2. Preparation of QBlade models, based onOC7 Phase the definition document.
3. Implementation of post-processing techniques, or in-code developments, for tuning of hydrodynamic model.

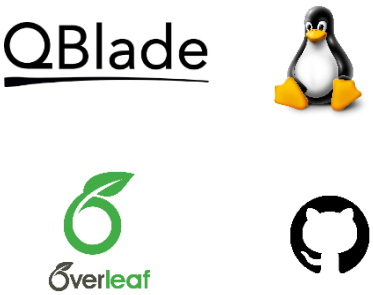
Requisites

Applicants must have:

- Coding experience with Python or similar.
- Good knowledge of numerical methods applied to offshore wind hydrodynamics and engineering.

Good to have:

- C++ experience.
- Linux experience.
- Latex experience.
- Git experience.



Location

Ericeira, Portugal or Utrecht, the Netherlands.
The student is required to be physically in the office at least 3 days per week.

Companies Involved

blueOASIS is a young team with more than 60 years of combined knowledge and experience on Aerospace, Mechanical, Naval and Maritime engineering. The multicultural and multidisciplinary team is committed to make our oceans safer and greener, using state of the art numerical and data science

tools. BlueOASIS focuses on renewable energies, ocean cleaning, decarbonization, sustainable offshore structures and green ships optimization.

References

https://www.polarismarketresearch.com/industry-analysis/offshore-wind-energy-market. (2022, June). Retrieved from https://www.polarismarketresearch.com/industry-analysis/offshore-wind-energy-market