Internship (MSc thesis project)
Restoring North Sea biodiversity by redesigning scour protection to create safe shelter for marine life

Starting Date: January 2024
Duration: 6 months
Location: Enschede, Netherland
Contract hours: full time

Job Description

Wind farms are no-fishing areas due to the underwater structures. Those structures that are used as scour protection can create a very suitable place for reviving the marine creatures. The scouring problem happens where (granular) bed material is removed by the hydrodynamic forces around the turbines' monopile foundation. The most common strategy to date to prevent damage caused by scouring is to place stones on the seabed around these foundations, our goal is to design an optimal nature inclusive designed (NID) structure for biodiversity enhancement around monopiles that can also contribute as scour protection.

Stones or other under water added structures can be a good shelter for marine life, within a cooperation with Wageningen university biologist, we are trying to find a new, cost-effective, and easy-to-apply protection method for scouring to enhance the biodiversity considerably. Advanced Tower System B.V. works on a dedicated design, which they want to optimize and validate.

It is possible to reduce time and cost by doing part of the research in numerical model simulation. The optimized numerical simulation will be tested with the physical scaling model (lab test) and final designing will be installed in the sea for monitoring.

Numerical verification with experimental tests can create the ability to prepare a practical nature inclusive scour protection design. Green energy production with positive biological impact.

Your role:

1. Simulating the wave and current induced flow with turbulent characteristics near the designed NID element boundaries.
2. Optimizing the design to reduce the scour and scour protection structure.
3. Analyzing the behavior of fluid flow around Advanced Tower Systems B.V. biofriendly-models of scour protection in 3D with a CFD method and obtaining the loads acting on the seabed around the monopile.

You're the right fit if:

- You are currently pursuing a master's degree in mechanical engineering (fluid dynamic).
- You have knowledge of numerical analysis and algorithm development.

- You have knowledge of CFD (not essential).
- You possess a structured, proactive, and independent working attitude.
- You have excellent English communication skills.

In return we offer you:

- Monthly full-time internship allowance.
- Engaging in interesting activities and getting to know the practical work of engineering.
- Full participation in projects.
- Hybrid working mode.

Important: please note that in order to be considered for an internship, **you need to be registered as a student during the entire internship period.** Formal documentation (proof of enrollment) will be requested. Please note that the contents of our regular internship assignments are not suitable for professionals (and/or MBA students) with professional work experience.