

5 Postdoc positions opening – Geomechanics for Offshore Wind Turbines

As part of large project (SAGE-SAND) funded by the Energy Transition Fund in Belgium, there are 5 post-doc positions opening that will be co-supervised by the different partners (KULeuven, UCLouvain, ULiège). The duration of the project is 3 years and include large scale pile tests and monitoring, advanced micromechanical characterization and testing (SEM, X ray microtomography, etc...), micromechanical modelling (Discrete Element method, Phase field modelling) and macroscale numerical nonlinear and dynamic modelling.

The post-doc positions will be supervised by Hadrien Rattiez at UCLouvain (Hadrien.rattiez@uclouvain.be) Stijn François and Georgios Anogiatis at KULeuven (stijn.francois@kuleuven.be ; george.anoyatis@kuleuven.be) and Frédéric Collin at ULiège (f.collin@uliege.be) and will be part of a larger team including industrial partners, members of research institutes and other researchers from different universities.

Abstract of the project

The foundations of Offshore Wind Turbines (OWT) represent a large share of their installation costs and environmental impact. In order to improve both aspects, this project investigates the evolution during multiple years of soils' mechanical properties, called soil ageing, and the alternative use of vibratory driving for installation and decommissioning of offshore (mono)piles. Unique full-scale tests with extensive monitoring, advanced laboratory tests and numerical modeling at multiple spatial scales will provide guidelines for future projects.

Descriptions of the positions

- PDR1: Large scale pile tests and modelling via an engineering-oriented approach [KULeuven]. Main supervisor: Georgios Anogiatis (george.anoyatis@kuleuven.be), co-supervision: Hadrien Rattiez, Stijn François.
- PDR2: Advanced numerical modeling of pile installation and extraction using Material Point Method in dynamic regime [KULeuven]. Main supervisor: Stijn François (stijn.francois@kuleuven.be), co-supervision: Hadrien Rattiez.
- PDR3: Vibro-drivability for the installation and extraction of piles in offshore conditions [UCLouvain]. Main supervisor: Hadrien Rattiez (Hadrien.rattiez@uclouvain.be), co-supervision: Georgios Anogiatis, Stijn François.

- PDR4: Phase field modeling framework for degradation at microscale and numerical upscaling by FEMxFEM approach [UCLouvain]. Main supervisor: Hadrien Rattiez (Hadrien.rattiez@uclouvain.be), co-supervision: Frédéric Collin.

- PDR5: Impact of aging effects on the pile response investigated by FEMxFEM and FEMxDEM approaches [ULiege]. Supervisor: Frédéric Collin (f.collin@uliege.be).

Contact and application

Interested candidates should send an application (including a CV, a cover letter describing interests and qualifications related to the topic(s) and two reference Professors, all compiled in a single PDF file) to the main supervisor associated to the position described above.

The successful applicants are due to start between November 1st, 2022 and January 1st, 2023.