HyPE-ST (Hydraulic Pile Extraction – Scale Tests)

Publieke samenvatting / Public summary

Dismantling offshore wind farms at the end of their operational life requires full or partial removal of foundation structures such as monopiles. Removing entire piles could be more economical than partial removal because underwater cutting can be avoided and more steel can be sold for its scrap value.

One method for full pile removal is hydraulic extraction. This method involves sealing the pile and pressurising a fluid inside its void, thus pushing the pile upward. Before applying this method offshore on full scale using expensive vessels and equipment, a better understanding of the pile-soil interaction, leakage of fluids and the residual mechanical force required under different circumstances is needed. It is therefore proposed to perform a series of scale tests in a laboratory.

Objective

The objective of the scale tests is to gather data to help better understand the pile-soil interaction, the potential leakage of fluids and the residual mechanical force required under different circumstances. The scale tests are a prerequisite for the application of hydraulic pile extraction on full scale. The risk of full pile removal by means of pressurisation would be exceptionally high without such prior scale tests. Certification bodies, marine contractors, offshore wind farm owners, insurance companies and their marine warranty surveyors would not accept such an innovative removal method if no test results were available.

Short description

Projectinformatie / Project information

Projectnummer / Project number
TEWZ118015
Subsidiebedrag / Grant amount
€ 666.988,00

Algemene informatie / General information

Penvoerder / Secretariat
innogy Offshore Wind Netherlands B.V.

Publicaties en materialen / Publications and attachments

- **06.09.2021**

  Eindrapport TEWZ118015

Links

- More information on the HyPE-ST project can found on the GROW website.
- Afgedankte monopiles werken zichzelf met waterdruk uit de bodem (Article in Cobouw in Dutch, 2020)

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The involved project partners will be innogy (coordinating the project), Deltares (providing infrastructure and performing tests), TNO (responsible for desktop study), IHC (proving equipment), DOT and Jan De Nul Group (both providing funding and know-how on offshore installation and removal/decommissioning of foundations). The industrial partners will fund 50% of the non-subsidised costs incurred by the research institutes.

The set-up of the scale tests would consist of a water basin filled with soil at the bottom. A scaled pile would be impact driven vertically into the soil. After waiting for a period of time (to allow for setup), the sealed pile will be connected to a single pump or multiple pumps via a hose. The pump(s) would generate a certain pressure and flow rate which can be adjusted as the extraction proceeds.

Result

The deliverable of the project will be a written report describing the scale tests and the results in quantitative and qualitative terms. The recorded data will be made available to the project partners along with the final report. Further development of the technology towards a higher TRL will be facilitated by the results presented in the final report.

Website

More information on the HyPE-ST project can found on the GROW website.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
Voor meer informatie over de Topsector Energie, ga naar **www.topsectorenergie.nl**.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar **www.rvo.nl/tse**.