Pile Run Mitigation Tool

Publieke samenvatting / Public summary

Aanleiding

This project addresses the critical issue of pile run events during the installation of offshore wind monopiles. Most offshore wind turbines are supported by large tubular structures, monopiles. These monopiles, currently weighing around 2000 tons, are increasing in size and weight to meet demands. A pile run event can occur when the weight of the monopile and driving assembly exceeds the soil resistance, causing rapid and uncontrolled accelerations of the pile. This can lead to damage to the installation vessel, the crane, and other essential equipment, especially in case of installation with a floating vessel. This can result in major project delays and increased maintenance demands. Thus, a pile run event poses significant risks to personnel, equipment, and project timelines.

Doelstelling

The project aims to further develop, and test two novel pile run mitigation tools: the Pile Run Parachute (PRP) and a Steel Plat Damper (SPD). Both tools slow the pile to a controlled speed by restricting water flow. The PRP is made from an impermeable textile supported by a mesh, making it lightweight and reusable. Similarly, the SPD is designed to control the descent of the monopile by allowing water to flow through a hole, thereby reducing the terminal velocity.

Korte omschrijving

Key research areas include: • Material and geometry: Studying the effects of different materials and geometries on the terminal velocity of the pile. • Dynamic Amplification Factor (DAF): Reducing the

Projectinformatie / Project information

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Algemene informatie / General information

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Temporary Works Design B.V.

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DAF to lower material strength requirements and improve design efficiency. • Operational aspects: Ensuring both the PRP and SPD are reusable with a quick-connect and disconnect system.

Resultaat

The project contributes to the TKI Offshore Energy Program including the themes of Cost Reduction and Value Optimization by lowering installation costs and improving safety and efficiency. It also supports Spatial, Environmental, and Societal Integration by promoting sustainability, reducing emissions, and minimizing environmental impact. The innovations contribute to smarter and less labor-intensive installation and maintenance in the offshore energy sector by mitigating the negative consequences of a pile run event. Since both tools are passive, they do not require additional labor. The project supports a feasible energy transition at sea through labor savings, cost reduction, and safer working conditions. By addressing these challenges, the project aims to enhance the feasibility and safety of current and future offshore wind projects.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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