

Diamond tagline system

Publieke samenvatting / Public summary

Doelstelling

The Diamond tagline system consists of 4 winches operating in tandem to provide the desired control of the lifted load. Different modes of operation in the control system offer the possibilities of pure yaw and combined yaw/tilt control. This research project targets proving the performance of this system, both as a valid replacement of the current traverse tagline system and as the superior option for the installation of the next generation offshore wind turbines. The proof will be delivered through the analysis of the performance of both the existing solutions and the newly developed system, using simulations including the necessary details for a reliable comparison. Different operations will be assessed, from quasi-static scenarios to situations with dynamic loads and movement of both the vessel+crane and the target. Finally, a physical scale model of the crane and load control system will be built, to be able to show the system's principles and performance in different operating modes.

Korte omschrijving

Did you know that most downtime in the installation of offshore wind turbines is incurred in the process of blade mating? This project is aimed at reducing the installation costs of offshore wind turbines, through a new load control system which, compared to the current traverse tagline system, enables better blade root control for blade mating operations and supports installation at oblique blade angles, meeting the needs for installation of tomorrow's largest wind turbines. In this research, the performance during all load handling tasks -

Projectinformatie / Project information

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Subsidiebedrag / Grant amount

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Algemene informatie / General information

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from load-out to installation - will be analyzed. Furthermore, dynamic analyses will be performed to investigate the system's usability for blade mating operations involving motion of the host jack-up and target structure as well as the potential for controlling the lifted load when transported by a feeder vessel. As a definitive proof, a prototype will be built to show the working principles and performance.

Resultaat

The primary results of the research are as follows: • Objective confirmation of feasibility and performance of Diamond tagline system • Determine the tagline performance while the blade is exposed to high wind excitation • Determination of best tagline configuration for motion compensation during blade mating in case of jack-up+crane and nacelle/hub dynamics. • Determination of best tagline configuration for feeder operations. • Framework for optimal integration of the Diamond tagline system in crane design(s) • Simulation model which can be used for analyses of blade installation in different operational scenarios and environmental conditions • A scale model demonstrating principles, feasibility and performance of Diamond tagline system.

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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