OFWEC Project 3

Publieke samenvatting / Public summary

Doelstelling

Develop an optimized upper (fork-shaped) part of the Wedge Connection making it suitable for commercial scale wind farms. Focus will be put on compatibility with conventional methods of production, coating, transport and installation. Develop a new manufacturing technique for the Wedge Connection fasteners enabling the connection to be used for larger load levels and large-scale production. Obtain knowledge of potential sources of preload loss and how installation and fabrication tolerances influence this. Knowledge of the sensitivity to preload loss to determine if the Wedge Connection is maintenance free for life. Design of an alignment and quick connection system that will allow a fully assembled WTG to be placed on a foundation from a floating installation vessel. Method statements, designs and simulated confirmation of installation of a fully assembled WTG with a Wedge Connection using a floating installation vessel and how loads can effectively be secured on barges. Test the installation of a full-scale Wedge Connection with a floating installation vessel under realistic circumstances. A validation that the Wedge Connection can be installed with a floating installation v

Korte omschrijving

Offshore substructures for wind turbines typically feature several connections. Current connection types, bolted and grouted connections, have their challenges, they are expensive to install, and bolted L-flanges are reaching their capacity limits. For next generation wind turbines this issue will become

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat
C1 Connections B.V.

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critical at several interfaces. During OFWEC Project phase 1 & 2 partners demonstrated the Wedge Connection to be a very promising solution. Partners showed that the wedge connection has a much higher ultimate and fatigue resistance than an L-flange. OFWEC Project phase 2 also demonstrated that the connection requires improvements in the fabrication and design of the connection, confirmation that the connection is maintenance-free and the necessity for requirements for, and test of floating installation. In the OFWEC project phase 3, partners C1 Connections, Heerema Marine Contractors and TU Delft, with input of a wind turbine supplier will acquire further required knowledge and skills for these optimizations in order to make it a viable option to apply the Wedge Connection in commercial wind farms and enable installation of the Wedge Connection with floating installation vessels

Resultaat

The results of phase 3 of the OFWEC project are the following: All technical challenges will have been investigated and properly addressed that will allow adoption of the Wedge Connection in commercial scale wind farms without significant modifications to tools, production processes and equipment. Meanwhile a wind turbine supplier has applied the wedge connection in in the prototype of its next generation turbine. Investigations in improved production techniques will result in further costs reduction which is expected to make the wedge connection an attractive alternative to bolted L-flanges for tower to foundation and MP-TP connections. From the research into the effects of pre-load we expect that the connection can be proved to be maintenance free. Heerema has tested the installation of a tower with the wedge connection on a floating vessel demonstrating the feasibility of full-scale next generation wind turbines to be installed with floating installation vessels. Partners have actively shared knowledge of the connection technology with the industry through webinars, papers, conferences and one on one presentations, accelerating a smooth adoption by stakeholde

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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