

Nr. 9 HEWIS – High Efficient Windfarm Installation System

Background:

Offshore wind farms are increasingly being planned with newly developed turbines in the 10 MW und larger class, which are also to be erected at locations with greater water depths and distances from the coastline. The existing installation logistics have reached their limits under these framework conditions, especially for foundation installation. The potential for saving time and costs in the installation of offshore wind farms lies in the optimisation of logistics and the installation process.

Content:

The project should help to install offshore wind farms more efficient. The core of the system is the division of the installation into two ship units. The usual „jack-up“ ship remains in the construction site, while the newly developed installation ship delivers the components and is also integrated into the installation. The requirement for this is an optimised motion behaviour of the ship, without minimized ship motions safe operation of the ship's crane is not possible. With this crane, the foundations are transferred to the jack-up platform. From there they are installed in the seabed. Meanwhile, the installation ship can return to the previous foundation and install the scour protection. So far, this protection against erosion of the foundations has been achieved by two rock layers, a gravel and a cover layer. However, this is expensive, slow and has an impact on the existing ecosystem. In the HEWIS concept, scour protection based on geotextile sand containers is used, which can be put over the foundation with a special lifting gear with only one crane operation and placed on the seabed in a controlled manner. This system was successfully tested in a model test. In addition to this the installation process of the foundation was investigated and a corresponding installation ship was designed. A method for the simulation of crane operations offshore was developed.



Leadpartner:

Co-partner:

Results:

A prototype (lifting tool for the installation of scour protection systems for offshore wind farms) was developed with the following specifications*:

- Scour protection and installation traverse
- Net construction
- Geotextile sand containers

*all details with reservation



Advantages:

- Installation of offshore wind turbine foundation faster, cheaper and with a smaller CO₂ footprint
- Reduction of installation time by min. 35%
- No biological and environmental intervention in the existing ecosystem

These improvements in installation technology, logistics and scour protection will enable wind farms to be installed more efficiently and with lower emissions in the future.

Partners:



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