



Aeolus Monopile Gripper & Seafastening Structures

Simple and easy-to-use design that **unleashed**
the **operational potential** of Aeolus





Aeolus

Van Oord's jack-up vessel Aeolus is used for many offshore wind installation projects. To maximize the efficiency of the wind turbine installation process of Aeolus, van Oord approached TWD for the design of its monopile gripper and seafastening structures.

Monopile Gripper

For the monopile gripper, we designed it to work at Aeolus' keel level. This allows the system to guide and stabilize the piles as close to water as possible. Access all around the gripper enables the crew to use the gripper as a working platform at intermediate levels. In transit, the gripper can be folded by a winch and skidded fully inboard. This occupies minimal deck space and limits the amount of ballasting required. The multi-step jacking and skidding processes are fully automated using integrated position sensors. With its highly efficient pile orientation mechanism and precise inclination adjustments, this state-of-the-art gripper outperforms all the existing alternatives.



The good collaboration and installation results encouraged Van Oord to return to TWD with a request for a mirrored version of the gripper on jack-up vessel Wind Osprey. Both Aeolus and Wind Osprey were mobilized to install wind turbines on Gemini Offshore Wind Farm.

Seafastening Structure

Aeolus is one of the few vessels that is capable of transporting and installing wind turbine generator (WTG) components. To reduce the costs of mobilization, we created smart and easy connections to the deck that allowed for grillage installation with a single lift. This enabled Aeolus to mobilize multiple grillages at the same time and reduce mobilization time. Due to the high gravity center of the towers, extra attention was paid on fatigue and vortex-induced-vibration studies. Apart from towers, we also designed the nacelle grillages and the cantilevered blade support structures for Aeolus.

Project highlights

- Adjustable height between deck and keel level
- Highly efficient pile orientation mechanism
- Precise inclination adjustment
- Mobilization with single lift
- Folded and fully inboard during transit

