ENERPAC

LEVELLING AND FIXATION USING HYDRAULIC CYLINDERS

WIND ENERGY

THE RIGHT TOOL MAKES ALL THE DIFFERENCE

HYDRAULIC LEVELLING AND FIXATION SYSTEM

Wind is an important and growing source of energy around the globe. Consumer demand for cleaner, renewable energy has fueled increased investments in wind capacity installations.

As onshore and offshore wind farms become commonplace Enerpac provides total solutions for the installation, maintenance or decommissioning of wind turbines and their foundations.

All aspects of the production process are managed in-house and divided amongst different subsidiaries within Enerpac. This ensures a time and cost-efficient process under safe working conditions and guarantees that the high quality and environmental standards are being met.

GOAL ZERO

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LEVELLING OF THE TRANSITION PIECE

Grouted connections are widely used in offshore wind turbines to transfer multiple loads from their upper structures to their foundations. The foundations are commonly formed by two large steel structures: a monopile (MP) that is driven into the seabed and a transition piece (TP) that is fitted on top of the MP.

Six to twelve pre-installed hydraulic cylinders inside the TP make it possible to align the TP to a precise position, even if the MP was not completely levelled out in the first place. This ensures that the turbine will generate maximum yield.

For the precise and accurate levelling of the TP on the foundation pile, Enerpac can provide a hydraulic levelling system, containing aluminum spring return cylinders, each with a capacity and stroke that complies with your design of the application. The system can be supplied complete with Enerpac hoses and HPU's.

▲ Twelve pre-installed aluminium hydraulic levelling cylinders

FIXATION OF THE TRANSITION PIECE

Before the TP's will leave the manufacturing yard, six pre-installed horizontal positioned hydraulic cylinders will be mounted at the lower part of the TP for fixation during installation and grouting. The equipment connected to each cylinder traditionally contains six twin hose sets including for each cylinder a hose cutter. The fixation cylinders are required to remain pressurized during the grouting process by a manifold.

These cylinders are operated subsea and its plunger will need to be retracted after the hydraulic system will be depressurized. Retracting the plunger will be ensured by activating the hose cutter and a reinforced return spring that eliminates the risk of point load and contact corrosion with the MP.

Enerpac can provide a hydraulic levelling system, containing steel spring return cylinders for subsea use, each with a capacity and stroke that complies with your design of the application. The system can be supplied complete with Enerpac hoses and HPU's. Considering our health and the environment, Enerpac will discuss upfront the type of oil in order to pre-fill the equipment with water glycol or bio-degradable oil based on your project specific requirements.

Pre-installed horizontal hydraulic fixation cylinder ▶

NO OIL SPILL WITH THE USE OF AN REMOTE HOSE DISCONNECTOR®

Circular Economy

The Enerpac Remote Hose Disconnector® RHDC is tested, witnessed and **certified by Lloyds** till 100 meters subsea and can be reused. The RHDC will contribute to the vision of a circular economy.

The advantages of this system are:

- No oil spill in the sea during disconnection
- No need to use a hose cutting tool anymore
- No waste of materials (as part of Waste Management)
- Repeatable use, as part of Circular Economy
- Add Environmental Value!

Please contact Enerpac to discuss this alternative system in more detail.

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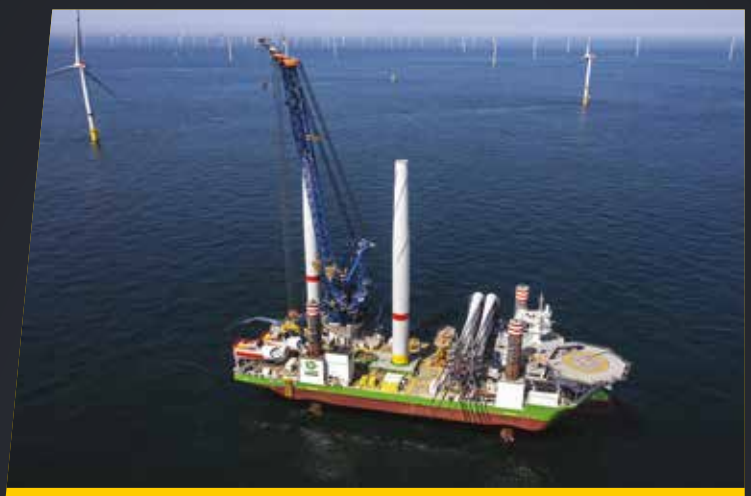
REFERENCE OFFSHORE WIND FARMS



Rentel offshore wind farm
Customer: DEME Offshore
Location: Belgian area of the North Sea

Number of turbines: 42

Saint Nazaire offshore wind farm
Customer: Smulders Projects and DEME Offshore
Location: Bay of Biscay off the Loire-Atlantique coast in France

Number of turbines: 80

MORE TOOL SOLUTIONS DESIGNED SPECIFICALLY FOR WIND ENERGY PROJECTS

Maintain bolt integrity with the complete line of Enerpac tensioners and torque wrenches.

Lift, push or pull power in a flat design from the leader in hydraulic cylinders.

Rely on the world-leading Equalizer wind turbine tower alignment tool designed to easily achieve bolt hole alignment.

Effortlessly speed up transition piece load out on the deck of the installation vessel by using Enerpac electrically-driven trolley system.
(used at the EnBW Hohe See offshore wind farm)

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