



Hydraulic solutions for offshore wind

The world of high-pressure hydraulics is constantly in motion. Within this dynamic the Dutch hydraulics specialist Holmatro is continuously developing high-quality solutions for industrial applications. After more than 50 years' experience as a supplier to the shipbuilding and oil & gas industries, Holmatro developed the first TP levelling set in 2009, used in the construction of the Belgian offshore wind farm Belwind. The set proved to be so successful that they were also used during the construction of subsequent offshore wind farm projects, such as Walney, London Array, Westernmost Rough, Dudgeon and many more.

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Since the introduction of the TP levelling set in 2009, Holmatro has significantly expanded its product range for offshore wind applications. Besides hydraulic solutions to level wind turbine foundations, the company has proven itself in the field of TP fixation, jacket fixation, cutting applications, seafastening equipment and skidding solutions. Holmatro tools are also used for lifting, weighing and levelling offshore platforms, the calibration of tension-leg platform (TLP) load cells and are integrated on pipe-laying vessels to support heavy lifting and moving applications.

TP levelling and fixation

Wind turbine foundations consist of two large steel structures: a monopile (MP) that is driven into the seabed and a transition piece (TP) that is placed on top of the MP for accessibility and final alignment. When positioning a TP on a MP special custom-made cylinders are used. The Holmatro cylinders have an enormous lifting capacity and operate on 720 bar. By making use of a high-pressure system it is

possible to use relatively small and compact cylinders, which make it ideal for these applications, as available space is a key point during construction. Once perfect horizontal levelling is achieved, the TP is fixed in place by means of hydraulic fixation cylinders. Grout is poured into the hollow space between the TP and MP to permanently anchor the two elements to each other. During the curing process, the cylinders keep the elements precisely in position, regardless of weather conditions. Another method of installing is by means of flange connection. Holmatro can also help at this point by providing a special solution for pre-tensioning the bolts by using torque tools.

Time is of the essence for our clients. Holmatro is in constant consultation with both users and owners during installation, making sure operations run smoothly and without any complications. This means the job is done in a safe and controlled manner, saving them valuable time throughout this whole process.



Seafastening

Seafastening solutions are used when transporting MPs, TPs and related installation equipment overseas to a wind farm. Many years ago, Holmatro designed the first seafastening systems suitable for extreme conditions for Seajacks and GeoSea. Holmatro has been improving and co-developing new types of systems ever since. Holmatro designed and patented a double-acting locknut cylinder especially for this application, which allows the object to be fixed and released in a controlled manner and can even be used for alignment purposes. Holmatro also has its fair share of fixing systems for Hydrohammers and Noise Mitigation Systems.

Lifting, weighing and levelling

CNGS Group installed the topside of the LAM-E Platform in the Caspian Sea, offshore Turkmenistan in August 2016. After completing the construction of the LAM-E topside the 2,400 m offshore platform needed to be transported to her location in the Caspian Sea. Once in situ, the topside had to be levelled on the jacket construction. Because the total weight of the topside was unknown at the start of the project, CNGS required an integrated weighting function in the cylinders with a total capacity of 4,000 tons. Holmatro developed 500 ton cylinders with integrated pressure transmitters. The pressure transmitters were connected to a portable data logger using measuring cables. To level the topside on the jacket construction, Holmatro produced 150 ton pulling cylinders.

Holmatro cylinders are regularly used during the construction of offshore platforms to lift, weigh, or level the platforms or parts thereof. For example, for the jacket construction of the Wiking wind farm substation, the substation foundation

was a six-legged jacket structure with a total weight of 2,400 tons. For support purposes during construction, Holmatro delivered 400 tons double-acting pulling cylinders. 150 ton double-acting cylinders were used to anchor and position the six legs of the structure.



Load-cell calibration

The Snorre oil field is located in the Norwegian North Sea, 200 km from the coast. One of the platforms, the Snorre A, is anchored (TLP) to the seabed with steel cables. In order to retain, measure and monitor the pre-tensioning of the cables, each leg of the platform includes constructions that are fitted with load-cells. These load cells are periodically re-calibrated. This is done by lifting the weight of the platform off the load cells. The cylinders and accompanying products had to meet an enormous package of requirements due to the harsh conditions

on the oil platform. Holmatro supplied 64 cylinders for the TLP system, each with a capacity of 536 tons. In addition to the cylinders, the corresponding control and storage for the hydraulic system was also delivered. And the required documentation was drawn up in line with the legal requirements for the offshore platform.

Roller box lifting

One of the main characteristic features of a pipe-laying vessel is the “stinger”. Roller boxes are designed to carry the welded pipeline on the stinger and support it into the water. For this reason they have to be adjustable in different height positions, according to the calculated allowable bending curve. Standard steel pulling cylinders turned out to be too heavy for the crew to handle, since they had to be relocated quite often. In cooperation with Allseas, Holmatro designed an easy to handle lightweight aluminium pulling cylinder. It is now safer and easier to set the height of the roller boxes on Allseas’ vessels.



‘Together with Holmatro’s global sales and service dealer network - fully trained in Holmatro’s own training centre – we guarantee the same Holmatro standard of quality and a perfect after sales service for all our products all around the globe.’



Topside Lifting System (TLS)

During the construction of the world’s largest lifting vessel, the “Pioneering Spirit”, the need arose for extra support for the lifting system to allow safe dismantling, installation and transport of large drilling platforms. To compensate for the interplay of forces, the inner supports (Inboard Support) of the 16 lifting beams (TLS beams) were equipped with 52 (grey coloured) Holmatro cylinders, each with a lifting capacity of 280 tons. The cylinders, classified by Lloyd’s Register, were coated with offshore-grade surface treatments, which made them suitable for use in the most extreme conditions. High-grade composite bearings were included in the design, in order to prevent metal to metal contact in the cylinders, thus increasing durability.

Skidding systems

Nowadays available deck space is a high priority amongst the installation companies. This in combination with the desire to take on more load in one go, plus the ever growing dimensions of TPs and MPs, has created a need for proper and innovative solutions. Taking on more load often means putting items on deck outside the reach of the crane. Once loaded and in place these items need to be shifted horizontally over the deck to come within reach of the crane. Using third parties with SPMT’s to execute the work isn’t always efficient due to space, availability and operational speed. Holmatro has designed a modular skidding system that allows installation companies to



execute these operations themselves in a controlled and safe manner. Due to the modular setup of this system and its components the possibilities are endless. Therefore it is “the” must have when it comes to any kind of horizontal displacement of heavy loads offshore.

Dutch quality and reliability

Holmatro products are developed, manufactured and tested in-house. The result: traditional Dutch quality, durability, reliability and solidness. Essential to all Holmatro products is the control of immense power. You must be able to rely on that for every application under any circumstances. To ensure this, regular maintenance and periodic certification is essential; as well as the deliberate and safe use of your hydraulic equipment. Working safely is not only more efficient but also contributes to the increased lifespan of the tools. Our tools are high quality and extremely durable, not least because of our extensive service program.

(Inter)national sales network

Besides the head office in the Netherlands, Holmatro has manufacturing plants and sales offices in the Netherlands and the United States. We have representative offices in the People’s Republic of China, the United Kingdom and Poland, as well as local sales engineers in Germany, Croatia, and India. Together with Holmatro’s global sales and service dealer network - fully trained in Holmatro’s own training centre – we guarantee the same Holmatro standard of quality and a perfect after sales service for all our products all around the globe.

For more information about Holmatro and our offshore wind solutions visit us at the Offshore Wind Energy 2017 in London, booth S-M60 or at the Offshore Energy 2017 in Amsterdam, booth 1.055.

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