

Seaway Heavy Lifting took delivery of the Oleg Strashnov on March 31st 2011, and soon after delivery the vessel headed for the offshore wind farm installation project on Sheringham Shoal. The scope for this project included the installation of monopiles and transition pieces, and two substations. Today's market is quite clearly focused on installation activities of wind farms. The market for installation of topsides and subsea templates is expected to grow in about two year's time. At present, the focus in the oil and gas market is on exploration of new discoveries. Development of new fields has started, so a boom may soon be on the horizon. A look at the Oleg Strashnov, and her early projects. It's a pretty picture.

The Oleg Strashnov threatens to be a major player in a market requiring the installation of ever larger structures, whether used in offshore oil and gas or in offshore wind projects. Installation jobs often need to be carried out in deep water, necessitating a dynamically positioned vessel. Examples are the installation of large and heavy subsea structures, TLP/Spar foundations and topsides. For offshore wind projects, both the foundations (jackets or monopiles and transition pieces) and the turbines are a promising market. The basic design of the vessel was developed by GustoMSC in close cooperation with Seaway Heavy Lifting. IHC Offshore and Marine was selected as the building yard. Under a separate contract with IHC Merwede, GustoMSC delivered the 5,000 ton heavy offshore crane.

The Oleg Strashnov in more detail

The Stanislav Yudin and Oleg Strashnov experience in offshore wind farm projects

Seaway Heavy Lifting has long recognised potential for its vessels in the offshore wind farm installation sector. In 2009 the Stanislav Yudin started operations with the installation of 140 monopiles for the Greater Gabbard project. SHL developed a special lifting frame to guide the monopiles during installation. The two substitution platforms for this project were also installed by the Stanislav Yudin. Delivery of the Oleg Strashnov is now creating new opportunities. Her first job was the installation of two substations at the Sheringham Shoal wind farm. As the vessel was already in the field, the two substations were transported to the site on a barge. Despite a considerable swell, the Oleg Strashnov installed the first substation - weighing about 1,000 tons - on May 8th and the second on May 10th 2011.

After this success, the vessel continued to install the 90 monopiles and transition pieces. For this operation, the home port was Flushing and per turn 4 monopiles and transition pieces were

loaded, with a new load every 6 days.

The vessel anchored at each new wind turbine location and - even in significant waves up to 2.5 m - this work took only 3 hours. Although the vessel is equipped with a DP-3 positioning system, the anchor system was selected for two main reasons: the water depth was too shallow for proper DP operations, and the horizontal forces necessary to keep the monopiles in a perfect vertical plane could be generated with the anchor system. With the specially developed installation frame, a monopile was lowered to the seabed using the main hoist of the crane. The hammer hangs in the auxiliary hook, allowing the operation to be carried out smoothly. The vessel installs the transition piece directly, also carrying out the grouting and the leveling. The full cycle time from mooring, through installation

up to grouting and leveling takes only 20 hours. Accordingly, a fully erected foundation is ready to accept the tower and nacelle each day. As the Oleg Strashnov was loading the monopiles and transition pieces in Flushing, the sailing time was a significant portion of the overall cycle time; each haul takes about 19 hours, leaving port and arriving on location. This is a part in the logistic process which could be improved by shuttling with barges and keeping the installation vessel in the field.

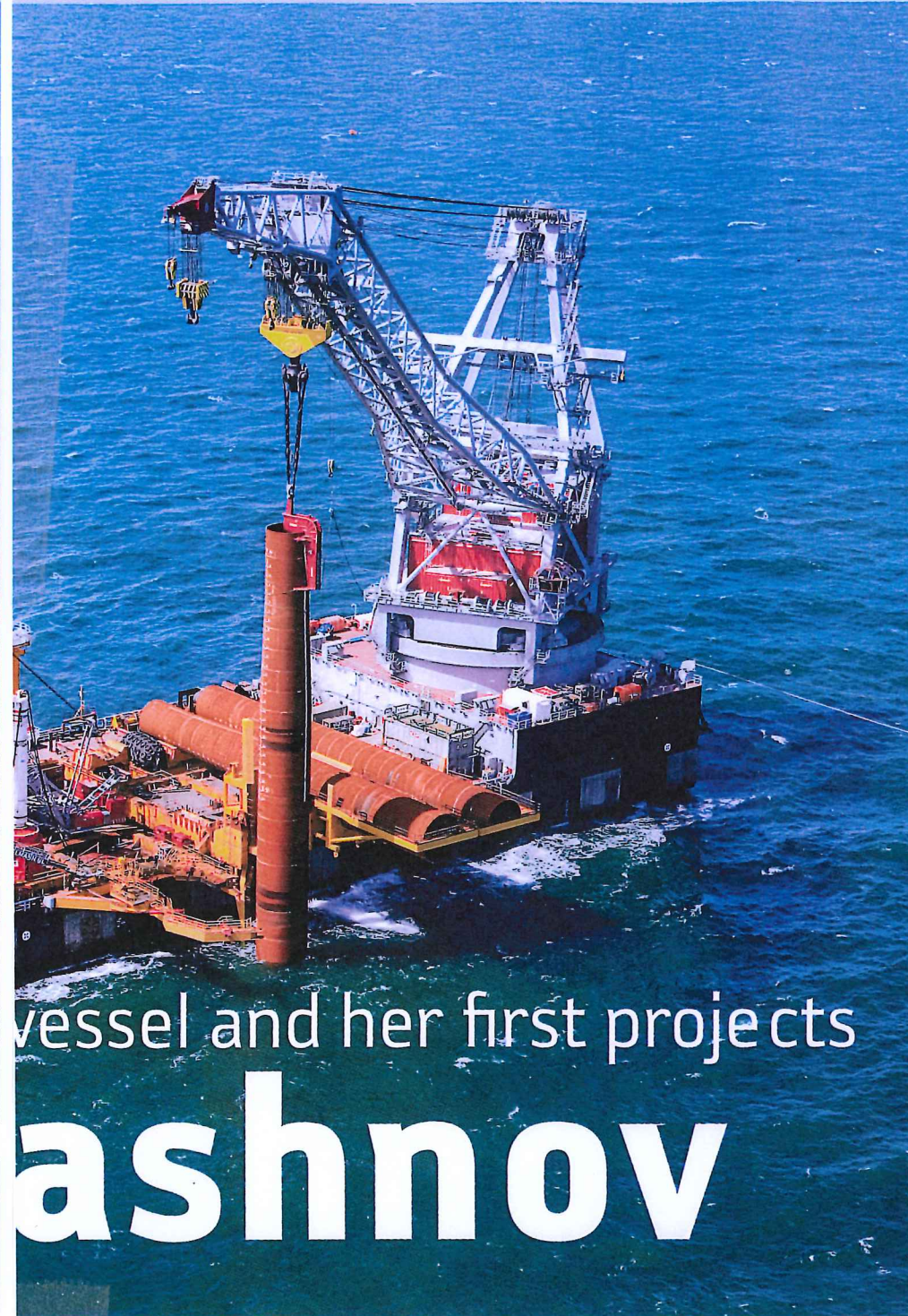
The secret of SHL's competitive edge in the offshore installation of wind farms lies in the contracting method. SHL offers a lump sum project and an installation on schedule. Risks for downtime are for the account of SHL. Seaway Heavy Lifting is quite confident that with the



By Wim van der Velde, SHL and Gerrit Jan Schepman, GustoMSC

The vessel and her first projects

Oleg Strashnov



The anchors are typically placed at a significant distance from the vessel with the aid of anchor-handling tugs.

Rapid ballast system

The ballast system is a critical issue for the Oleg Strashnov. No less than eight ballast pumps, with a total capacity of 20,000 m³/hour, are distributed over four ballast rooms. Ballast water is used to modify the vessel's draught and to compensate for heeling during slewing of the load with the crane. The ballast tanks used for anti-heeling are located in the hull sponsons on the sides. As these tanks are located furthest away from the centerline, they have a greater anti-heeling effect for the same amount of ballast water. GRP was used for the larger diameter pipes to save weight and minimize maintenance.

Lengthy sea trials and crane tests

Before delivery the Oleg Strashnov sea trials lasted no less than three entire weeks. This was due to the fact that all speed and maneuvering trials had to be performed at two distinct draughts, and that the setting out and retrieval of the positioning anchors was a lengthy process. The failure mode effect analysis tests also took quite some time, given the number of distinct but interconnected systems on board. The crane tests were performed at the Maasvlakte site. The maximum overload of 5,500 tons and 360 degrees slewing with 4,500 tons in the hook were the most remarkable.

5,000 ton SWL

The large 5,000 ton crane on the aft deck is of the GDC-5000-ED type from GustoMSC. It can revolve unrestricted through 360 degrees thanks to its slip rings located at the centre of rotation. The crane has a lifting capacity of 5,000 tons on its main hoist at a distance of 32 meters. At her maximum outreach of 84.5 metres, the crane can lift 740 tons. The main hoist can lift loads up to 98 meters above the main deck.

A unique feature of the crane is its hinged A-frame, allowing it to be lowered for passage under bridges over the Suez Canal or Bosphorus. The crane itself, including its counterballast, weighs almost 6,000 tons and can draw up to 6,500 kW of electrical power when in operation.

present track record of the two vessels, installation work for offshore wind farms will prove a major, especially in the case of deeper waters with higher wave conditions. The Oleg Strashnov is the perfect fit for the installation of substations. With the larger wind farms, the substations will grow to 4,500 tons which could all be lifted by this vessel. Seaway Heavy Lifting also sees opportunities for the installation of complete wind turbines, although some consultation with the manufacturers will be required.

Hull design

Around the lowest waterline, at a draught of 8.5 metres, the Oleg Strashnov features a relatively moderate beam, allowing her to sail at 14 knots. The smooth faring of the hull results in minimal

resistance during transit. Once on location, the ballast tanks in the sides are filled and the sponsons on port and starboard side submerge. With an increased beam of 47 m and a draught of 13.5 meters, the vessel's stability during crane operations is significantly increased. Seaway Heavy Lifting and GustoMSC have applied for a patent for this dual-draught double-beam solution.

Positioning of the vessel

The Oleg Strashnov features a diesel-electric propulsion installation. Position keeping is done with 6 thrusters. A Kongsberg DP-3 system is installed for position keeping. As alternative to the DP-3 system, and particularly useful in shallow waters, the Oleg Strashnov is equipped with an eight point wire anchoring system.