

Offshore

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IHC Hydrohammer

CHALLENGING THE DEEP

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SIGNIFICANT OPPORTUNITIES

Denmark

TARGETING RENEWABLE ENERGY

Oleg Strashnov

FUTURE PROOF HEAVY LIFTER



Oleg Strashnov

Dual Draft Heavy Lifter



OLEG STRASHNOV

BUILDER	IHC Merwede, Krimpen Shipyard
OWNER	Seaway Heavy Lifting
DESIGNER	GustoMSC
YARD NUMBER	7716



Seaway Heavy Lifting will expand its fleet with the heavy lift (5,000 mt) crane vessel Oleg Strashnov. The vessel's key feature is the unique patented dual draught hull design, combining a high transit speed with exceptional lifting characteristics for a monohull design.

At the end of 2004 Seaway Heavy Lifting approached GustoMSC with their plans for fleet expansion. The company wanted an additional heavy lift vessel to complement their fleet, which currently exists of heavy lift vessel Stanislav Yudin and anchor handling tug/offshore supply vessel Neftegaz-66. The key requirements for the new build vessel were a lifting capacity of 5,000 mt, a transit speed of 14 knots and the possibility to add pipe laying capabilities in the future, without impacting the heavy lift capability of the vessel. Close cooperation between Seaway Heavy Lifting and GustoMSC eventually led to the design of the Oleg Strashnov. The vessel is currently under construction at IHC Merwede – Krimpen Shipyard in The Netherlands. Delivery is foreseen for the first quarter of 2010.

Design Challenge

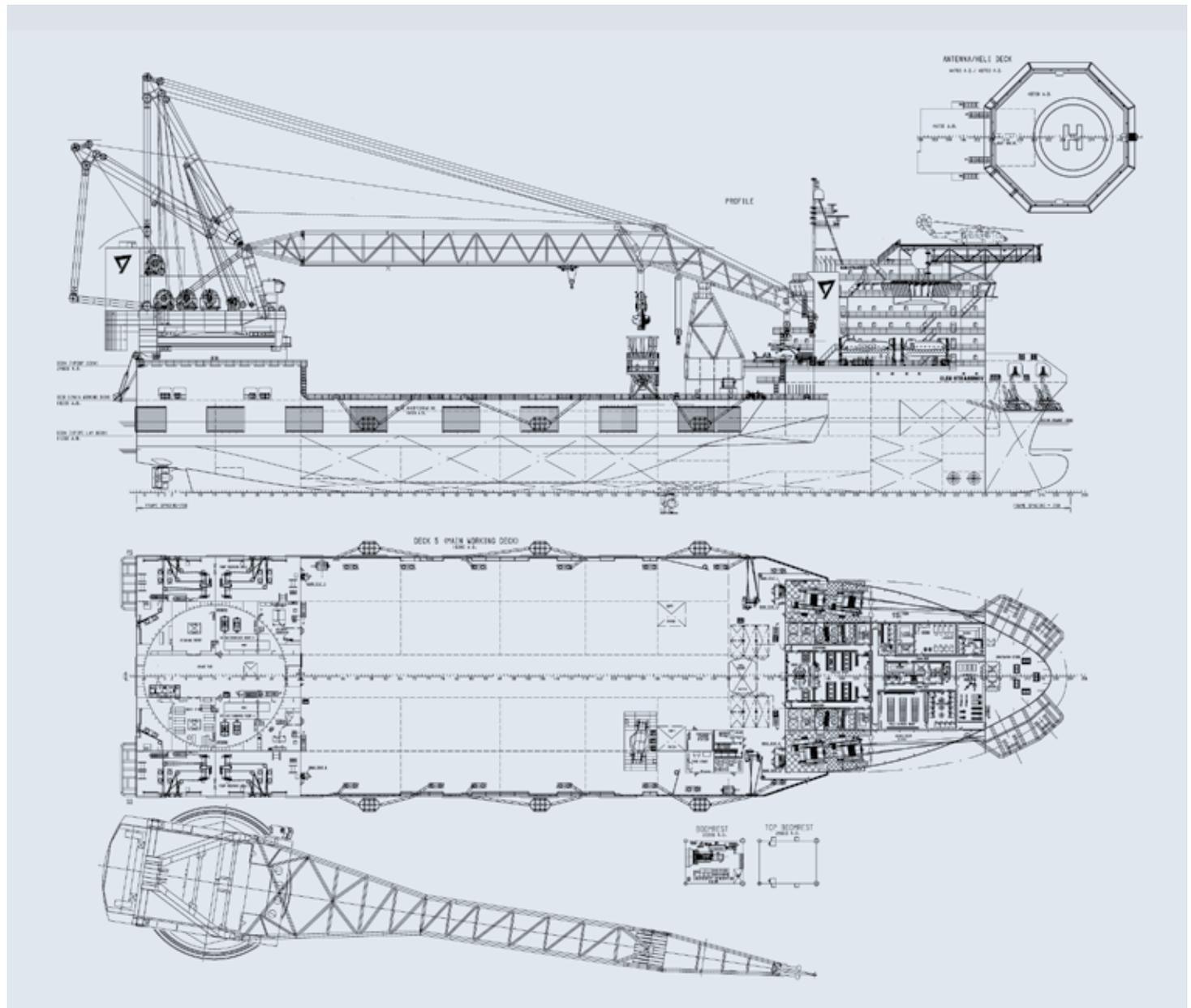
The main challenge in the design was the combination of heavy lifting capability, future

Seaway Heavy Lifting

Seaway Heavy Lifting, established in 1992, is provider of marine transportation and construction services to the oil and gas industry. The company is known and respected throughout the industry for the successful execution of offshore projects. During the summer months, it is SHL's preference to engage in work throughout the North Sea. During the winter, the heavy lift vessel Stanislav Yudin usually moves to the Mediterranean, India and the Middle East. While platform installation is the company's core business, Seaway Heavy Lifting also performs platform removals, subsea installations and special projects.

pipelay capability and high transit speed in one single hull. The solution was found in a dual draught single hull design. The hull design features a small waterline breadth when in transit or during





Facts & Figures

Oleg Strashnov

Principal Particulars

Length overall	183.00 m
Length between perpendiculars	171.60 m
Breadth moulded	37.80 / 47.00 m
Depth at side	18.20 m
Transit draught	8.50 m
Operational draught (crane lifting mode)	13.85 m
Displacement at lifting draught	79,000 t
Displacement at scantling draught	84,000 t
Service Speed	14 knots

Machinery

Main diesel generator sets	6 x 4,500 kW
Emergency diesel generator set	1 x 1,200 kW

Propulsion and DP

Main propulsion azimuth thrusters	2 x 5,000 kW
Retractable azimuth thrusters	2 x 3,500 kW
Tunnel thrusters	2 x 1,145 kW

Fully revolving offshore crane

Mainhoist (slewing)	5,000 mt at 32 m
Auxiliary hoist 1	800 mt at 72 m
Auxiliary hoist 1	200 mt at 90 m
Whiphoist	110 mt at 118 m
Trolley hoist	30 mt

Mooring system winches

Eight single drum winches suitable for 2,200 m wire of 76 mm diameter, brake holding power 3,800 kN.

Anchors

Eight 15 mt high holding power anchors

Accommodation & Helicopter deck

Accommodation unit	220 cabins / 394 persons
Helicopter deck	Sikorsky S61N / S92

Classification

✠ 1A1 CRANE VESSEL CLEAN DK(+) HELDK-SH DYNPOS AUTRO E0 BIS



operations that don't require a large stability. Besides a high transit speed of 14 knots, the smaller waterline during transit has a positive effect on the fuel consumption. During heavy lift operations a large stability is required and this is achieved by increasing the draught and subsequently increasing the waterline breadth. By adding sponsons to the hull, the large waterline at the lifting draught is obtained. As a result of placing the sponsons as far aft as possible, the longitudinal centre of buoyancy (LCB) is moved aft when at lifting draught. When lifting a heavy load, the longitudinal centre of gravity is also located aft. Additional buoyancy in the aft ship favours for both the ballast capacity and the longitudinal strength due to the fact that less trim needs to be compensated. The hull is designed in such a way that when in transit draught, there is sufficient distance between the waterline and the sponsons to reduce wave-sponson interaction while maintaining sufficient propeller immersion. When in lifting draught the sponsons are sufficiently immersed while still providing sufficient freeboard.

Versatile Heavy Lifter

One of the key specifications of the owner was a lifting capacity of 5,000 mt with a clear lifting height of minimum 100 m below the main hook. The crane on the Oleg Strashnov is capable of performing lifts of up to 5,000 mt at an outreach of 32 m in fully revolving mode. The full lifting capacity is available while allowing for side leads of

IHC Merwede

IHC Krimpen Shipyard is part of IHC Merwede Group – Offshore and Marine Division. In October 2006 IHC Merwede decided to re-open the former van der Giessen de Noord facilities in Krimpen aan den IJssel. This was the response from IHC Merwede to the increased demand for slipway capacity in the markets served by the company: offshore, dredging, ferries and other specialised shipbuilding. With the reopening of Europe's largest covered slipway IHC Merwede has four covered shipbuilding slipways in the Netherlands, namely in Kinderdijk, Hardinxveld-Giessendam, Slidrecht and Krimpen. The building hall in Krimpen aan den IJssel can accommodate vessels with a length of 240 m and a beam of 38 m. Due to a travelling crane capacity of 240 mt, block section fabrication can be applied very efficiently, which has a positive effect on the slipway period.

up to 2 degrees. When allowing for side leads of up to 3 degrees the lifting capacity is reduced to 4,500 mt. The combination of clearances and allowable side leads make the crane very suitable for large and odd-sized loads. In addition to the main hoist, the crane has two auxiliary hoists of 800 mt and 200 mt, and a whip hoist of 110 mt. The



GustoMSC

GustoMSC offers design, engineering, procurement, project management and consultancy services primarily to the offshore oil and gas, and civil construction sectors, both new build, conversion and upgrade projects. GustoMSC is the specialist of all types of mobile offshore units; jack-ups, semi-submersibles, ship and barges, heavy lifting cranes and a range of deck-mounted and associated equipment. The experience profile covers a wide spectrum of capabilities, all in depth. It ranges from concept work, the creation of an original idea, consultancy, feasibility studies, basic design and detailed engineering to the provision of project management, procurement, verification and quality control services.

800 mt auxiliary hoist is designed specifically to work in combination with the main hoist for the purpose of erecting jackets. The crane is also equipped with a 30 mt trolley hoist. This hoist travels underneath the boom from the base to beyond the main hoist. The application of this special feature is very versatile, from sling handling to man-riding. Another benefit is that the trolley hoist can reach most parts of the maindeck without the need to use the boom hoist.

Future Proof

In order to obtain full flexibility, the owner required the vessel to be designed for future pipe laying operations without compromising the heavy lift capacity. This has been achieved by including the firing line in a tunnel below maindeck and by using a removable stinger and stinger handling system. The system features a 400 mt tensioning and abandonment and recovery system, combined with a 90 m long deepwater stinger capable of radii between 73 and 365 m. The vessel can accommodate a number of welding stations (for single joints) and/or a double jointing installation. The vessel is designed for future pipe lay operations up to maximum water depths of 2,500 m.

Propulsion & DP System

The propulsion and dynamic positioning (DP class 3) is established by means of two 5,000 kW azimuth thrusters aft, two retractable 3,500 kW azimuth thrusters midships and two bow tunnel thrusters with a capacity of 1,145 kW each. The Oleg Strashnov's power system provides 6.6 kV 50 Hz medium voltage for the general system, propulsion and the offshore crane and 690 V 50 Hz low voltage for position mooring winches and ballast pumps. The vessel's power is provided by six Wärtsilä 9L32 generator sets of each 4,500 kW.

- i. www.gustomsc.com**
- i. www.ihcmerwede.com**
- i. www.seawayheavylifting.nl**

Literature:
'Next Generation Crane Vessel', paper by Alain Wassink, GustoMSC