

# SAL HEAVY LIFT



RENEWABLES



# SAL – A WIND ENERGY SPECIALIST



SPACIOUS DECK OF UP TO 3000m<sup>2</sup>  
AND LARGE CARGO HOLDS



VERSATILE CRANES WITH  
UP TO 2000t LIFT CAPACITY



COST-EFFICIENT  
TRANSPORT SOLUTIONS



FAST VESSELS FOR  
TIME-SENSITIVE PROJECTS



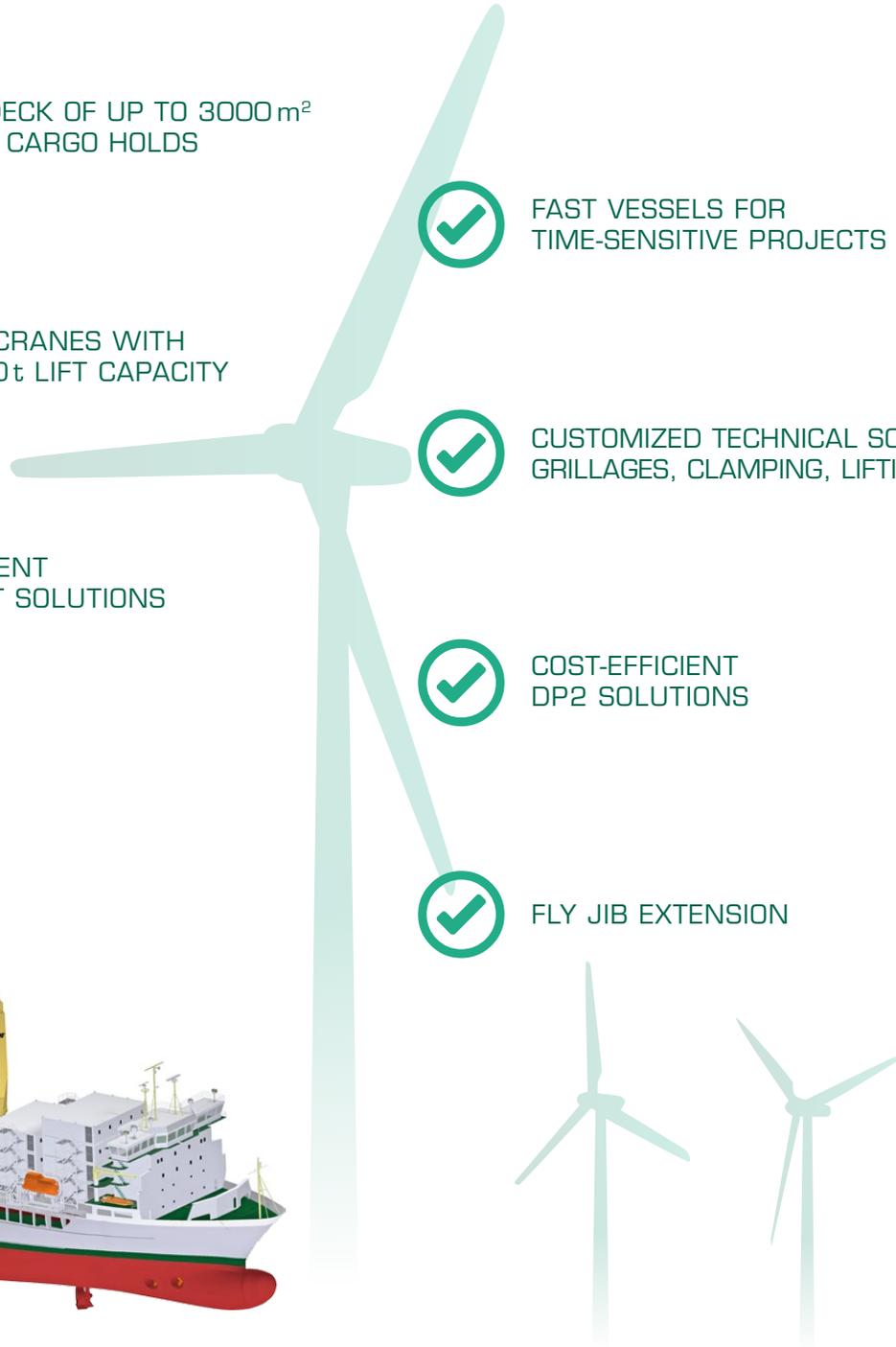
CUSTOMIZED TECHNICAL SOLUTIONS:  
GRILLAGES, CLAMPING, LIFTING TOOLS



COST-EFFICIENT  
DP2 SOLUTIONS



FLY JIB EXTENSION





OUR SOLUTIONS

## »RENEWABLES

We support the diversification of world-wide power supplies – no matter if on-shore or offshore. Our spacious vessels make the perfect solution for the transportation of monopiles, transition pieces, blades or any other wind farm equipment. We are experts in finding tailor-made, cost-effective solutions for your transportation needs. And with a 20 knots sailing speed, we are the perfect partner to match your tight project schedule.

# THE TALLEST & THE HEAVIEST

Transition Pieces, Monopiles,  
tower sections and blades





*“The cooperation between VanOord and SAL has been excellent – in particular because we needed SAL to comply with our extremely tight construction program. And SAL has proven that they can do the job.”*

Floren Verweij, Project Manager,  
Van Oord Offshore Wind Projects BV

What began in 2010 with the delivery of foundations for the first Walney Offshore Wind Farm concession was successfully continued in 2017: MV Svenja played a fundamental role in the third extension of the Walney Offshore Wind Farm, located in the North West of the UK. The vessel transported a total of 87 Monopiles (MPs) from Rostock to Belfast. In addition, 87 Transition Pieces (TPs) were carried from Tees and Aalborg to the project harbor. With a height of up to 30 metres, a diameter of more than seven metres and a single weight of up to 561 tons, the TPs are amongst the largest ever built – a job that kept MV Svenja busy for almost a year.

This long-term project was characterized by several challenges: Two different types of cargo, each requiring its own mobilization setting on board, which had to be shipped alternately, a tight schedule from customer side demanding flawless workflows for a pinpointed delivery from three different loading ports, and a special sea-fastening system which had to be designed to cope with the cargo variety and to ensure quick handling, even during the harsh North Sea winter weather conditions.

## ■ TRANSITION PIECES & MONOPILES

<b>Vessel</b>	MV Svenja, Type 183
<b>Cargo</b>	87 Transition Pieces (TPs), 87 Monopiles (MPs)
<b>Weight</b>	Up to 561 t (TPs) Up to 1 019 t (MPs)
<b>Dimensions</b>	Up to 33 m long, Ø 7.44 m (TPs) Up to 72.56 m long, Ø 8.4 m (MPs)
<b>Total volume</b>	239 366.46 m <sup>3</sup> – 44 935.80 t (TPs) 310 660.70 m <sup>3</sup> – 62 018.32 t (MPs)
<b>POL</b>	Rostock, Germany / Teesport, UK / Aalborg, DK
<b>POD</b>	Belfast, UK
<b>Specials</b>	<ul style="list-style-type: none"> <li>• Tallest and heaviest TPs currently in the market</li> <li>• Two different cargoes alternating in one voyage, vessel mobilized twice</li> <li>• Long-term employment with several consecutive voyages over about ten months</li> </ul>

# WALNEY EXTENSION PROJECT

## ■ TOWER SECTIONS & BLADES

<b>Vessel</b>	MV Annegret, Type 161A
<b>Cargo</b>	40 Tower Mid Sections (TMS), 40 Tower Top Sections (TTS), 24 Blades (B)
<b>Weight</b>	125 t (TMS) 119 t (TTS) 55 t (B)
<b>Dimensions</b>	30.7 × 7.5 × 7.2 m (TMS) 33.7 × 6.6 × 6.2 m (TTS) 82.5 × 6.7 × 6.0 m (B)
<b>POL</b>	Aabenraa & Esbjerg, Denmark (towers) Nakskov, Denmark (blades)
<b>POD</b>	Belfast, UK
<b>Specials</b>	<ul style="list-style-type: none"><li>• Consecutive shipment</li><li>• Blade length of over 80 metres</li><li>• Tight storage of blades</li></ul>

MV Annegret was assigned to transport tower sections and blades from Nakskov, Aabenraa, and Esbjerg in Denmark. In a total of eleven voyages, MV Annegret transported 40 tower mid sections, 40 tower top sections and 24 blades. A single voyage contained either ten tower sections or eight blades. Due to their length of over 80 metres, the blades became quite a challenging cargo that demanded every centimeter of space on board the vessel. Stowed in the lower hold and in two layers, the blades had an all-in-all distance of only 500 millimetres to the sides of the hold. A challenge that has successfully been met by our experts.





174 monopiles and 68 transition pieces  
for North Sea wind park

BUILDING ON A  
GOOD FOUNDATION





With the transport of 174 monopiles and 68 transition pieces for the Hornsea Project One offshore wind farm, one of the largest (greenfield) offshore wind farm development in the world, SAL continues the strong track record as technical heavy lift transport supplier to complex offshore wind projects.

SAL's MV Svenja transports the foundations from fabrication yards in Rostock (Germany) as well as Aalborg (Denmark) to the feeder port in Tees (United Kingdom). Part of the scope is also direct transshipments to GeoSeas installation vessels MV Innovation and MV Sea Installation which adds another technical element to the project execution.

Due to the extraordinary high weight of the MPs, the SAL Engineering team developed a modified seafastening and implemented special lifting equipment from former projects. This highlights the flexibility and sustainable planning of our services to cope with the future requirements in the offshore wind market.

The MPs are resting in special designed saddles while being transported horizontally. A challenge to overcome is the flow of shipments between TPs and MPs, which will change along with the installation sequence of the foundations. This means that MV Svenja will have to rapidly change transport setup between vertical and horizontal shipments of units. Time is essential, but SAL has already shown its capabilities for meeting such a project scope.

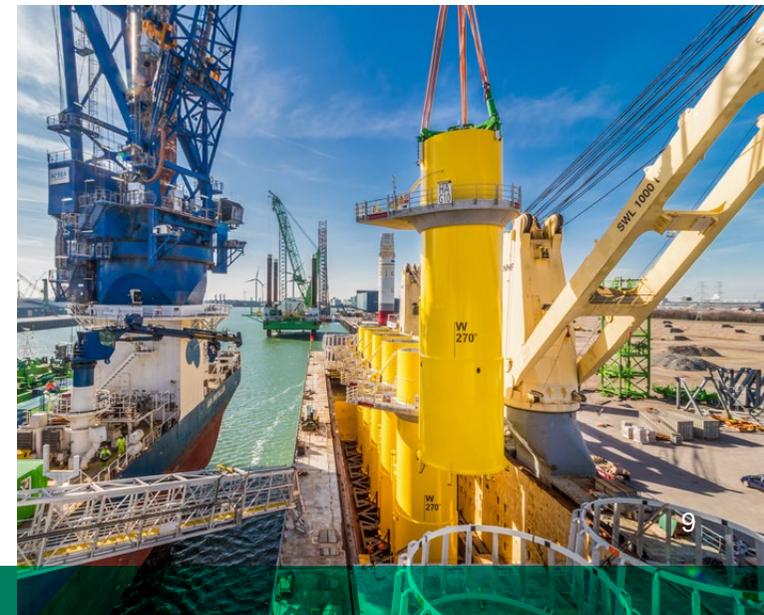
## ■ MONOPILES AND TRANSITION PIECES

<b>Vessel</b>	MV Svenja, Type 183
<b>Cargo</b>	174 Monopiles (MPs), 68 Transition Pieces (TPs), 68 Anode Cages (ACs)
<b>Weight</b>	MPs: 158243 mtons in total 716867 m³ Heaviest unit: 1039 mtons TPs: 371 mtons / unit 25228 mtons in total 65060.72 m³
<b>Dimensions</b>	MPs: Diameter: 8.1 m Average length: 63 m TPs: Diameter: 6.21 m Height: 24.81 m
<b>POL</b>	Rostock, Germany / Aalborg, Denmark
<b>POD</b>	Able Seaton, Tees, UK

*“By mobilizing the vessel with a special seafastening system for the transport of MPs as well as TPs, we can rapidly convert the vessel.”*

Sebastian Wenzel – Project Engineer, SAL

*Switching from horizontal to vertical transport: TPs, upright*



# SHUTTLE SERVICE WITH A 176 CONVERTIBLE

Twelve consecutive voyages  
for Veja Mate Offshore Wind Farm





*“The commitment of SAL Heavy Lift to HSE, quality, workmanship, and eagerness to complete the project correctly and within the allotted schedule is greatly appreciated.”*

Pieter Poelsma, Manager Transport & Logistics, OWF



## ■ VEJA MATE OFFSHORE WIND FARM

<b>Vessel</b>	MV Trina, Type 176
<b>Cargo</b>	<ul style="list-style-type: none"> <li>• 67 Transition Pieces</li> <li>• Anode Cages</li> <li>• Additional cargo</li> </ul>
<b>Weight</b>	365.5 t (TP)
<b>Total volume</b>	108,674 cbm
<b>POL</b>	Aalborg, Denmark
<b>POD</b>	Eemshaven, Netherlands
<b>Period</b>	May – September 2016
<b>Specials</b>	Special designed lifting tool

For the Veja Mate Offshore Wind Farm Project, MV Trina was engaged to transport Transition Pieces (TP) from the construction site in Aalborg, Denmark, to Eemshaven, the Netherlands. The wind farm is located in the German North Sea. It consists of 67 wind turbines, each with a capacity of six megawatts and a rotor diameter of 154 metres.

In twelve consecutive voyages, MV Trina transported 67 Transition Pieces together with corresponding platforms and anode cages. For this long-term contract, the Type 176 vessel was mobilized in Stralsund, Germany. All hatch covers and tween decks were discharged for the 22-metre-high cargo. Special grillages were welded onto the bottom of the hold to ensure a stable and safe positioning of the TP's. For the loading, SAL developed a special lifting tool, which was able to grab each Piece safely within the customer's requirements.

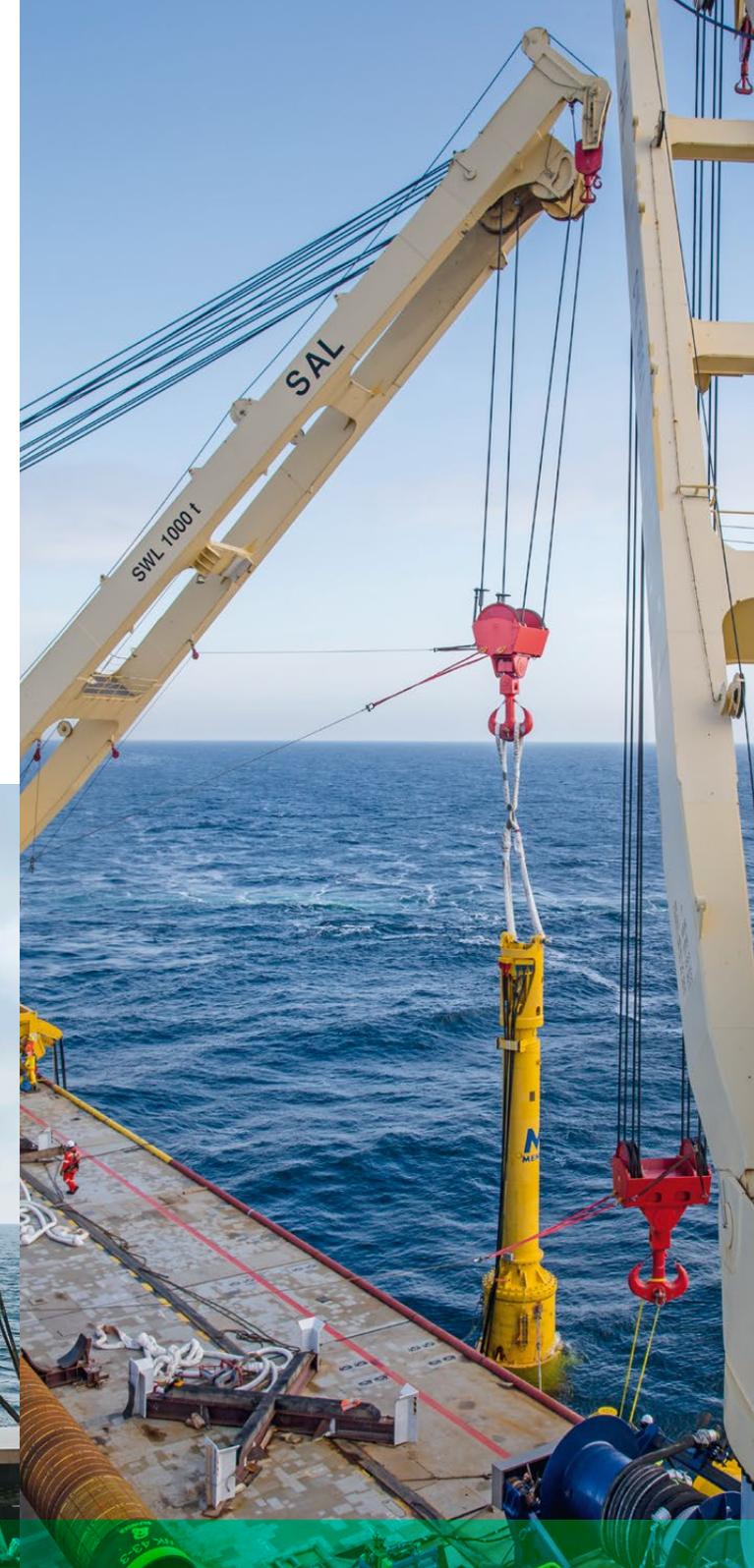
A particular challenge in this transport was the lifting height: The items had to be lifted vertically from pier into the cargo hold with the ship's cranes. Sufficient planning and calculation ensured that the tight space between lower edge and deck's surface did not cause trouble for the team involved.

# OUR SOLUTIONS



## DP2 OFFSHORE INSTALLATION

<b>Vessel</b>	MV Lone, Type 183
<b>Location</b>	German sector of the Baltic Sea, north-east of the island of Rügen
<b>Client-provided items</b>	Nine piles, largest: 36 m long, diameter abt. 1.4 m, weight up to 47 t
<b>Max. lift weight</b>	165 t (piling frame and hydro-hammer)
<b>Vessel modifications</b>	<ul style="list-style-type: none"><li>• Piling frame ("Triplex Template")</li><li>• Piling hammer and follower</li><li>• Testing beam</li><li>• WROV</li><li>• Tugger winches</li><li>• Temporary accommodation units</li></ul>
<b>Scope of work</b>	<ul style="list-style-type: none"><li>• Phase I: Installation of nine test piles at three locations at water depths of up to 40 m</li><li>• Phase II: Restrike and pull out tests</li></ul>





## OUR SOLUTIONS



### ■ BLADES, NACELLES, HUBS ETC.

<b>Vessels</b>	MV Paula, Type 161A MV Annemieke, Type 161
<b>Weight</b>	Up to 73 t
<b>Dimensions</b>	Up to 49.62 × 3.27 × 3.26 m (blades)
<b>POL</b>	Shanghai & Taicang, China Esbjerg, Denmark
<b>POD</b>	Akita, Japan
<b>Specials</b>	Transportation of several nacelles, hubs, blades and transformer units, as well as cooling towers, elephant foot, rotor yoke and containers

# ABOUT SAL

**SAL Heavy Lift is a world leading carrier specialized in sea transport of heavy lift and project cargo.**

We operate a global network of own offices and representatives. This enables us to quickly provide excellent solutions to our clients. Thanks to our longtime experience, integrated best practices in HSSEQ and highly trained crews, we provide safe, innovative, reliable transport solutions, with respect for the environment.

Our in-house engineering department develops customised solutions for all transport needs and thoroughly supervises all projects from the planning stages to successful completion while working hand in hand with our crew onboard.

SAL Heavy Lift upholds the highest standards in respect of HSSEQ: all vessels are certified to ISO 14001 and OHSAS 18001. Type 183, 176 and 116 have Environmental Passports confirming this compliance.

**It is our ambition and mission to provide safe and reliable heavy marine transport services.**

**WE INNOVATE SOLUTIONS**



OWN SPECIALIZED CREW  
FOR ALL VESSELS



OWN FLEET OF  
HEAVY LIFT VESSELS



OFFICES IN 9 COUNTRIES  
AGENTS IN OVER 20 COUNTRIES



UNRIVALLED SPEED  
UP TO 20 KNOTS



IN-HOUSE ENGINEERING TEAM  
SAL ENGINEERING GMBH



CRANE CAPACITY  
UP TO 2 000 t SWL



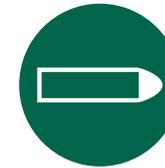
HIGHEST HSEQ STANDARDS



HOLD SIZE  
UP TO 107.1 x 17 x 13.5 m



RO-RO / FLO-FLO  
DOCK VESSELS & DECK CARRIERS



DECK SPACE  
UP TO 128.5 x 27.5 m



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All details are given in good faith but without guarantee of accuracy or completeness.

Photos: Martin Haag, Michael Krone, Jan Oelker/ Repower, David Styles, SAL Heavy Lift staff, crew & friends

Graphic Design: Claudia Badouin

# SAL HEAVY LIFT WORLDWIDE



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GENOA · ITALY  
AARHUS · DENMARK

HELSINKI · FINLAND  
ISTANBUL · TURKEY  
SINGAPORE · SINGAPORE  
MANILA · PHILIPPINES  
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TOKYO · JAPAN

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