

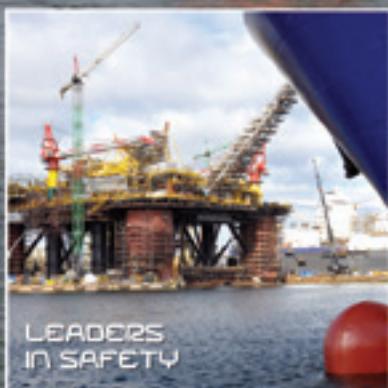
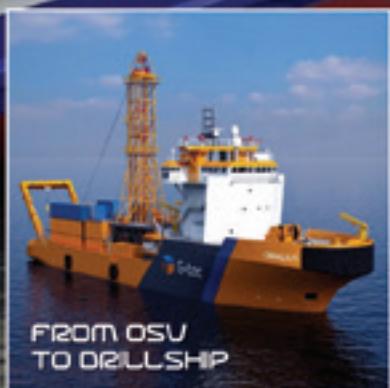
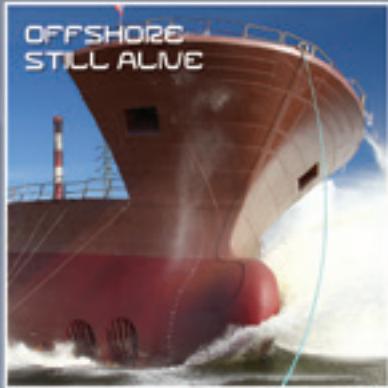
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Fuel dilemma

So, it's happened. New sulphur limits in emission control areas have finally come into force. However, the SECA shipowners and operators haven't hit rocky ground landing with a „cushion effect” rather mainly due to the substantial drop in the oil prices observed in the last few months (unlike offshore fleet owners having hard touchdown for the same reasons). After four months of new sulphur emission regime, there is no any clear evidence of market implications especially for short sea operations in SECA. Some experts emphasize that possibly shipowners and shipping lines switched to conventional low sulphur marine diesel oil as it is much cheaper now and as it is safe and established solution based on the existing and extensive supply network.

But, taking into account further emission Tiers in the years to come the fuel dilemma still exists. There are at least three strategies for shipowners in the current and future SECAs and each one has its pros and cons.

The first - switch to low sulphur fuel. MGO or MDO can be supplied with a sulphur content of below 0,10%. Little modifications and investment are needed but availability of low sulphur fuel is already limited. Moreover, rising demand is expected to increase this fuel's price uncertainty.

The second one - install an exhaust gas scrubber to remove sulphur using sea water and/or chemicals and use cheaper, high sulphur fuel. But there is an uncertainty about scaling up of installations for large diesel engines. It takes up space, increase investment cost and requires alterations on board (tanks, pipes, pumps), with a dedicated special waste facility and a wash water treatment system. Nevertheless, it's estimated, that by the end of 2015 the number of scrubbers installed on ships could reach up to 170!

And finally - switch to LNG. No additional abatement measures are required in order to meet the ECA SOx requirements. It also reduces CO₂ and SO₂. But... LNG - fuelled vessel requires purpose-built or modified engines. Fuel availability is uncertain, infrastructure currently limited, besides LNG isn't a good option for retrofitting unlike methanol, which is a good solution for existing vessels since conversion to dual fuel engines is significantly easier than for LNG.

The more solutions appear, the more headache you have... Shipowners choose various solutions. Shipbuilding, shiprepair and equipment industry in Poland meets their expectations in different ways, as you can read in this issue of Poland &SEA.

And last but not least... what about offshore?

According to one of a renowned company: "The significant decline in the oil price represents a new market environment for the whole offshore oil and gas industry, including the oil companies and the total oil service industry. The market is expected to be very challenging for a number of years".

Grzegorz Landowski

Poland at SEA

is a special publication destined for the OTC Houston, Norshipping Oslo and Offshore Europe Aberdeen trade fairs.

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*Pioneering propulsion conversion
successfully completed in Poland*

Stena Germanica runs on methanol!



Remontowa Shiprepair Yard SA, member of Remontowa Holding has converted the large ro-pax ferry's propulsion system to methanol fuel. Stena Line has been awarded as „Shipowner of the Year”.

Photo: Jerzy Uklejewski

One of the world's biggest ferry companies, Stena Line, has become the first operator in the world to run a large 1,500 passenger ferry on methanol, drastically reducing emissions compared to today's standard fuel.

In November 2014, the ferry operator revealed that it had decided to convert the 240-meter long ferry *Stena Germanica* (ex *Stena Hollandica*) sailing between Gothenburg and Kiel to methanol propulsion. The project was prepared in co-operation with the leading engine manufacturer Wärtsilä, the port of Gothenburg, the port of Kiel and the world's largest methanol producer and supplier Methanex Corporation. The conversion of *Stena Germanica* was entrusted to Remontowa SA in Gdańsk, Poland.

Methanol is a clear, colourless biodegradable fuel that can be produced from natural gas, coal, „biomass” or even CO₂.

It plays a key role in the energy sector as a clean and cost competitive alternative fuel and energy resource. By using methanol the emissions of sulphur (SOx) will be reduced about 99%, nitrogen (NOx) 60%, particles (PM) 95% and carbon dioxide (CO₂) 25% compared with today's widely used fuel (HFO).

Having a similar emissions profile to LNG, methanol has the potential to be an important fuel for the shipping industry in the future. Although more expensive to refine than LNG, methanol is liquid at ambient temperature, making it easier to handle and transport, and also allowing it to be stored for a greater length of time and requiring less infrastructure.

Since 2005 Stena Line has worked to reduce its environmental impact within its Energy Saving Programme, which has successfully reduced vessel energy consumption by on average 2,5% every year.

The *Stena Germanica* vessel has been converted to run on methanol, using an engine conversion kit and ship application supplied and developed by Wärtsilä in co-operation with Stena Teknik. The kit allows the vessel to operate in dual-fuel configuration using methanol supplied by Methanex, with MGO (Marine Gas Oil) as backup.

The project may be regarded as a pioneering one, given the size of the ship and propulsion plant in combination with innovative technology, previously used only in tests and in small scale. The



vessel has conformed to new stringent EU and IMO environmental regulations.

Stena Germanica entered Remontowa in January 2015, however already several weeks earlier all possible preparations had commenced at the yard, including prefabrication of structural, systems and machinery parts to be used in the conversion. It involved construction and outfitting of new compartment, i.e. methanol pump room, installation of high pressure, double walled, methanol fuel feed piping, etc.

As the aim of conversion is, generally, improvement of operational performance, including cutting the fuel costs, additional measures - besides modification of propulsion system itself - have been taken to optimize the fuel consumption. The hull has become more hydrodynamically effective, contributing to fuel costs cutting, owing to modification of the bulbous bow (replacement with a new shape bulb section).

Stena Germanica departed from Remontowa Shiprepair Yard on March 24, 2015. On 11-12 March 2015 Stena Line had been awarded the „Shipowner of the Year” accolade at this year's Green Ship Technology Conference (GST), held in Copenhagen. The ferry operator has been awarded for „innovative new technology presented since 1 January 2014 that represents an advance for the marine environment”. The jury selected the conversion of the *Stena Germanica* on the grounds that it was „a strong 3rd alternative that is developing to meet the specific challenge of sustainable sea transport within the ECA”. Green Ship Technology Award is a prize instituted by „Lloyd's List” (Informa) events to recognize efforts in maintaining the marine environment and mitigating the environmental effects of the shipping industry.

- Due to our size we have a broad perspective on handling the new sulphur regulations and it is likely we will use

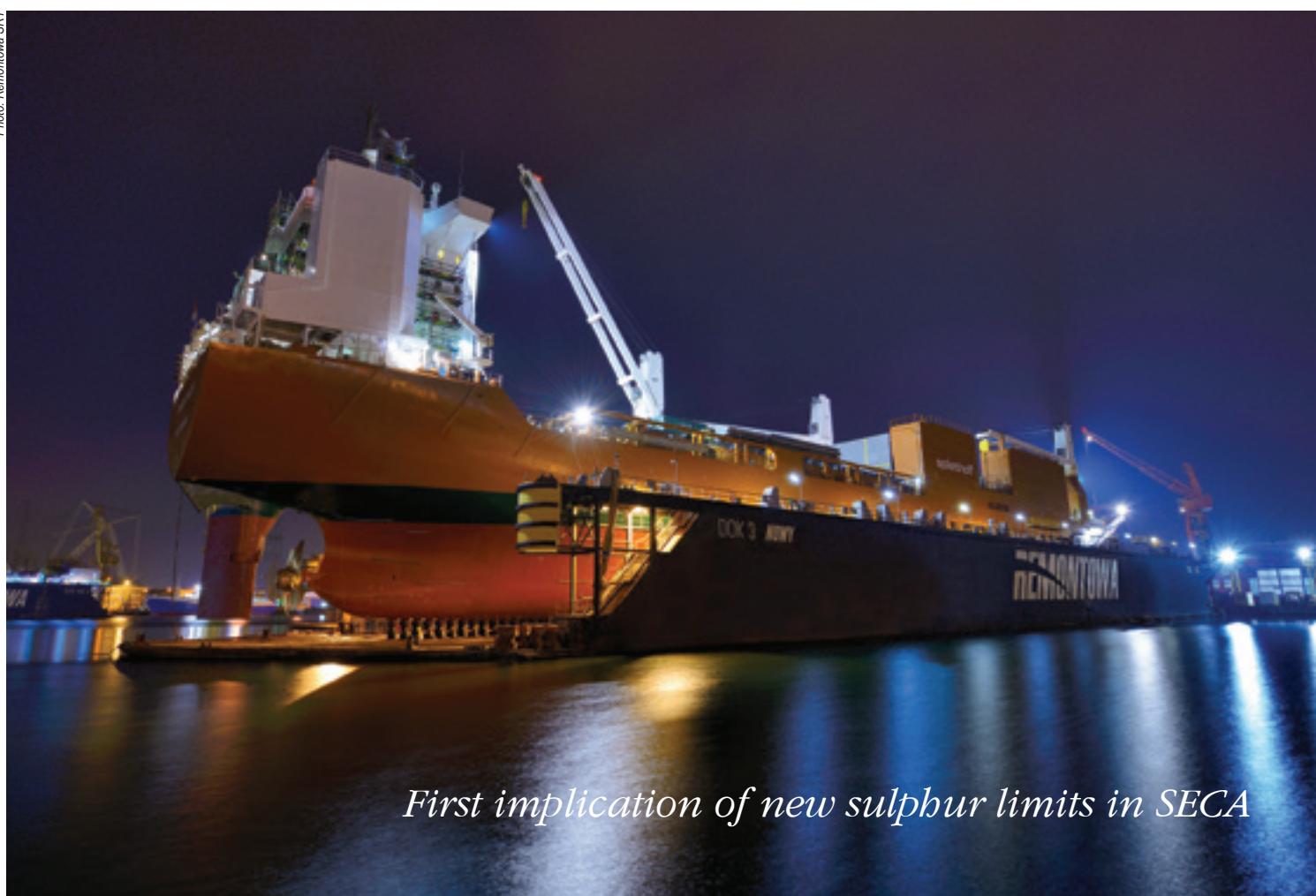
some different types of solutions in the coming years. However, based on the results of the methanol project we are intending to convert additional ferries - says Stena Line CEO Carl-Johan Hagman.

It is worth mentioning that it is already second instance of the Remontowa Holding member company to be involved in the project awarded with the Green Ship Technology Award. Remontowa Shiprepair Yard SA, as the main contractor, was awarded with Green Ship of the Year title for its *Moldefjord* double-ended LNG powered ferry built for Fjord1 MRF at Remontowa Shipbuilding (member of Remontowa Holding) in 2010.

Stena Germanica converted to run on methanol departing from Remontowa SA in March 2015.



Photo: Jerzy Uklejewski



First implication of new sulphur limits in SECA

The Spliethoff operated **Saimaaagacht** has been one from the most recent vessels retrofitted with scrubbers at Remontowa in 2015.

Scrubber hunters

Given the number of projects completed already and early market entry, with leading or even pioneering position, the installation of scrubber systems may be regarded as one of the specialties of Remontowa Shiprepair Yard, member of Remontowa Holding.

Since 1st of January 2015 new sulphur limits have come into force in SECA. As a result, shipowners operating in SECA go for scrubbers. This trend is confirmed especially by Baltic ro-ro and ferry operators, who have been installing scrubbers on their fleet, mainly DFDS, Finnlines, Scandlines, Transfennica. Many SECA shipowners and operators started to prepare their fleet to the change long before the current enforcement of sulphur

emission standards. European shipyards which have recognized the shipowners' efforts to make vessels they operate, especially in the Baltic Sea, to be compliant with the Sulphur ECA and have responded to these expectations in time are the winners. Remontowa Shiprepair Yard in Gdansk is a good example of a scrubber hunter...

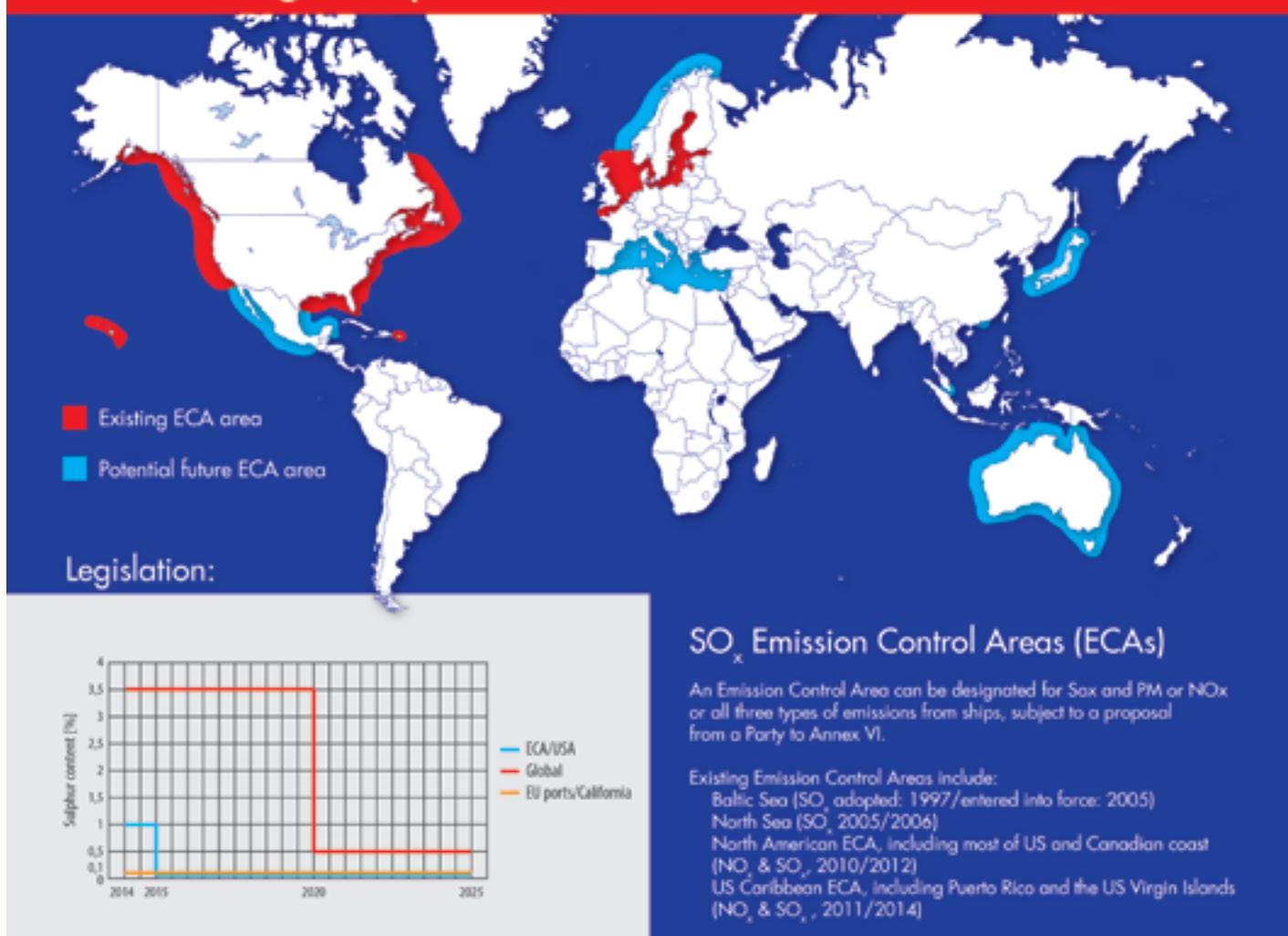
The yard has retrofitted numerous ships with scrubbers so far, not only

ferries/passenger vessels, but also cargo ro-ro's, an LPG tanker and multipurpose cargo vessels. Furthermore, as we have been informed by Remontowa SA, there have been as many as 40 scrubber systems contracted for installation in the course of the years 2014-2015.

DFDS ro-ro vessels were the first ones departing from Remontowa with scrubber systems installed. In the course of the summer of 2013, scrubbers were installed on three freight ro-ro ships: *Petunia Seaways*, *Magnolia Seaways* and *Selandia Seaways*. While the sister vessels *Petunia* and *Magnolia* have single MAN propulsion units and involved one scrubber installation each, *Selandia* features two Sulzer four-stroke engines, so two scrubbers installations - one for each diesel engine - had to be carried out in this case.

Since March until August of 2014 seven further ships of the same owner have been fitted with scrubbers at Remontowa - *Victoria Seaways*, *Optima Seaways*, *Britannia Seaways*, *Suecia*

Existing and possible new Emission Control Areas



Seaways, Primula Seaways, Freesia Seaways and Begonia Seaways. All these vessels mentioned above have received Alfa Laval PureSOx scrubbers (hybrid type) during scheduled drydockings.

In September 2014 Remontowa SA also installed scrubbers on-board the Solvang-owned liquefied petroleum gas (LPG) tanker *Clipper Harald*. However, unlike the DFDS' ro - ro vessels, the *Clipper Harald* gas tanker was fitted with the so-called Wärtsilä Open Loop Scrubber System. The system operates in an open loop utilising seawater to remove SO_x from the exhaust. Exhaust gas enters the scrubber and is sprayed with seawater in three different stages. The sulphur oxide in the exhaust reacts with water and forms sulphuric acid.

Chemicals are not required since the natural alkalinity of seawater neutralises the acid. Wash water from the scrubber

is treated and monitored at the inlet and outlet to ensure that it conforms with the MEPC 184(59) discharge criteria. It can then be discharged into the sea with no risk of harm to the environment.

Another owner who entrusted Remontowa with this task has been Scandlines. Its first vessels which received scrubbers were double-ended sister - ferries: *Schleswig-Holstein* and *Deutschland*. These ferries along with two other, similar ones (*Prinsesse Benedikte* and *Prins Richard*) serve the busy Puttgarden-Rødby service. Each accommodates more than 360 cars and over 1000 passengers. For unrivalled environmentally friendly performance, these ferries combine hybrid technology (featuring large scale batteries) with diesel-electric propulsion with exhaust fumes cleaned with scrubber technology.

The scrubber systems were installed on *Schleswig-Holstein* in November 2013 and on *Deutschland* in the same month of 2014 respectively. The key parts of *Deutschland*'s scrubber system have been installed in funnel stack starboard side and adjacent deckhouse fabricated at Remontowa during the vessel's visit to Gdansk, late fall 2014. To facilitate shortening of shipyard stay period for the ferry (similarly to earlier case of scrubber system installation on *Schleswig-Holstein*), prefabrication and preassembly of a new funnel and part of engine casing to house new exhaust gas cleaning system had begun prior to the *Deutschland*'s arrival to the yard.

Both vessels mentioned above as well as other Scandlines' ferries serviced at Remontowa have been retrofitted with AEC Maritime open loop scrubbers.

In 2014 Remontowa also won a 14-ship contract from Holland's Spliethoff Bevrachtingskantoor BV, Amsterdam. The vessels in question are a series of S-Type 21,000 dwt (11 vessels) and S2L-Type 23,000 dwt (three units) general cargo vessels, all with side-loading capabilities. Each vessel will be fitted with an Alfa Laval PureSOx System (open loop type). The single scrubber system will cater for SOx reductions from both main and auxiliary engines.

As of April 15, 2015, the following four vessels from the series have received scrubbers: *Schippersgracht* (December 2014), *Suomigracht* (January 2015), *Saimaagracht* (February 2015) and *Spiegelgracht* (April 2015). The remaining vessels were expected to be serviced at Remontowa in the course of 2015.

Along with DFDS, Scandlines or Spliethoff, also other owners and operators have chosen Remontowa Shiprepair Yard SA to adapt their vessels in order to meet new stringent environmental regulations currently in force within the SECA.

As of April 15, 2015 scrubbers have been retrofitted on *SuperSpeed 1* (Color Line), *Prins Richard* (Scandlines), *Athena Seaways*, *Regina Seaways* (DFDS), *Finnstar*, *Finnlady*, *Nordlink*, *Finnmaid* (Finnlines), *Yeoman Bontrup* (Western Bridge Shipping) and *Prinsesse Benedikte* (Scandlines) during their stay at Remontowa. The Finnlines-operated ro-pax vessels have been fitted with EcoSpray open loop scrubbers.

Finnstar, similarly to some other ferries coming to Remontowa has had Rolls-Royce Promas Lite system retrofitted, an integrated propeller and rudder system that increases efficiency and is designed specifically for retrofitting to existing ships.

Ark Dania and *Ark Germania* have been among DFDS-operated ro-ro vessels retrofitted in March and April 2015 with ME Production hybrid type scrubbers.

In summary - 29 vessels in total have been fitted with scrubbers at Remontowa since Summer 2013 until April 2015 with 19 ferries and ro-ro vessels among

them. At least 14 further vessels were confirmed and expected to enter the shipyard for scrubber installation while a dozen or so were negotiated.

In the area of scrubber systems Remontowa cooperates with the leading marine products developers. Each vessel requires an individual approach in order to select the optimal system in terms of performance, size, electricity demand and costs. The shipyard has the necessary expertise on most types of systems that can be used on the ships. Based on that this Polish yard can offer best solution for each individual vessel. And Remontowa has been doing so with a great success...

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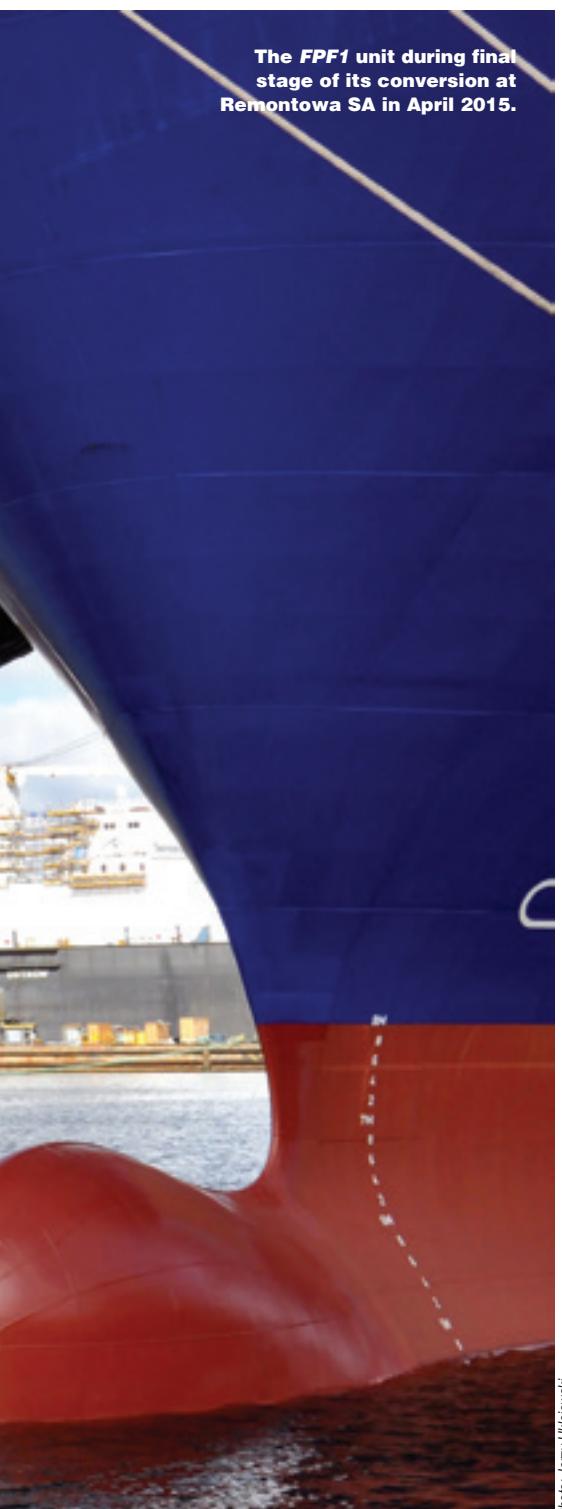




*Petrofac and Remontowa among
finalists of prestigious industry awards*

Leaders in safety

Petrofac and Remontowa working together on the FPF1 project have been nominated to the UK Oil and Gas Industry Safety Awards. The conversion has reached its final stage.



Remontowa SA is progressively continuing large conversion and upgrade project of the floating production semi-submersible platform *FPF-1*, operated by Petrofac - the 12th offshore platform being converted at the large shiprepair arm of the Remontowa Holding capital group.

The 82 m long, 75 m wide and some 30 m high platform, with a displacement of 26 639 tons and lightweight of some 14 000 tons, is a significant task for Re-

montowa SA, which has been entrusted by the Owner with the modification and modernization of the unit.

This production facility, serving as a plant for initial processing and preparing of oil extracted from the offshore field for transport, was built practically from the scratch (receiving all new topsides) at Remontowa SA during 2012-2015.

The semi-submersible platform, that had arrived to Remontowa has been stripped of existing equipment, modified and upgraded. Of the "old" structure only the floaters, transverse pontoons, bracings, columns, main deck, steel structures of accommodation (superstructure) block and flare have left, however, some of them, significantly modified by Gdansk based yard. Transverse pontoons have had sponsons attached for increased displacement. Columns and pontoons have also been modified by adding buoyancy structures improving stability. Main deck and superstructure / living quarters block have been modified and strengthened with requirements of the new "refinery" (processing modules) and new accommodation needs on mind.

All equipment of the platform besides pump rooms in floaters, especially the produced oil processing plant, have been installed or built from the scratch.

"Refinery" part (processing modules) separate gas and water from crude oil. Gas and processed (cleaned) oil are transported to the shore either by pipelines or via shuttle tankers. Gas may also feed the generating sets of the floating production facility. Water, cleaned and separated from crude or oil products, is dumped to the sea.

The platform has the brand new mooring system installed with four winches, a dozen of chain stoppers and twelve anchor chains with pile anchors.

Entirely new is the outfitting of the superstructure / living quarters block providing accommodation for 74 persons and technical compartments as well. New equipment, facilities and systems installed also include power distribution system, full set of electrical, radio-navigation, communications, remote control, monitoring and safety (electronic automation) systems.

All installations and outfitting on a semi-sub are new. This also relates to lifeboats, safety systems, helideck with appropriate installations and two offshore deck cranes.



Principal Sponsor
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Petrofac and Remontowa were among finalists of the UK Oil and Gas Industry Safety Awards.

The platform has a minimum of 15 years of projected life on field and will be moored on the North Sea, serving Stella, Harrier and Hurricane oilfields.

The *FPF1* project has entered its final phase. As we went to press, as of April 15, 2015 the construction and assembly phase of the project was about to end followed by delivery - acceptance tests, electrical connections, pipelines start-up etc.

Building the floating production unit *FPF-1*, basing on an upgraded semi-submersible platform, the Remontowa's employees and subcontractors have already been working without accident for over 800 days, which translates into more than four million manhours without an incident.

These efforts for maintaining a high level of health, safety and culture of work have been recognized and appreciated within the industry. Petrofac and Remontowa have been nominated to the UK Oil and Gas Industry Safety Awards, jointly organised by Oil & Gas UK and Step Change in Safety, with Maersk Oil as principal sponsor.

There were over 100 nominations to this prestigious industry award. Selection of the finalists in six categories (Safety Leadership, Safety Representative of the Year, Innovation in Safe, Workforce Engagement, Occupational Health & Hygiene, Sharing and Learning) was undertaken by previous winners, elected safety representatives and senior leaders from across industry.

Petrofac and Remontowa have been pre-selected in the Workforce Engagement category. The winners were expected to be announced at the award ceremony on 29th of April 2015 at the Aberdeen Exhibition and Conference Centre.



Established in 2001, Protea Sp. z.o.o has developed an industry leading reputation for the supply of high quality handling equipment to the offshore and onshore energy industry. Protea's initial success was based on developing successful relationships with companies from Western Europe (especially Scandinavia) with a need for sophisticated equipment of the highest quality, with lower production costs. Steady and continuous growth has resulted in Protea becoming one of Forbes 'Diamonds' in Pomorskie County, an award for companies generating income between PLN 50 and 250 million.

"We are supplying complex and varied offshore equipment, mainly for oil and gas applications" says Tomasz Paszkiewicz, Protea's CEO. "These are usually tailor-made material handling systems predominantly for vessels, drilling rigs and oil producing installations. Awards like the Forbes Diamond are independent verification of the quality of our products and services."

Due to the rising number of orders, Protea merged with a partner engineering company, NTD Olesno, in 2004. This merger further extended the company's engineering capabili-





ties, particularly in relation to the design of complex structures. By developing successful business relationships with its customers from Norway, European Union and Asia, the company expanded rapidly with significant growth in its sales and profit.

"The strength of our company derives largely from our designers, being around a third of our 180 employees" underlines Tomasz Paszkiewicz. "We employ high quality specialists to drive forward innovation and technical development. In solving complex engineering challenges we also work with scientists from technical universities in Poland."

Recently Protea completed a project: "Establishment and implementation of innovative equipment for ICP (Intelligently Connected Pipe) connections". The project was co-financed by the European Union from the European Regional Development Fund within Regional Operational Programme of the Opolskie Voivodship for 2007-2013. The financing covered 54.99% of all qualified costs. (Number and date of agreement: RPOP.01.03.02-16-030/14-00 dated 30.06.2014).

"With this European innovation we developed a completely new range of tooling to allow the mechanical, non

welded, connection of pipelines. At the same time this project allowed us to diversify Protea's portfolio and further strengthened our production processes by purchasing new machines and tools" says Slawomir Przewozniak, Marketing Specialist. "We are sure these actions will have a positive impact on the company in the long run."

Protea manufactures mainly offshore equipment, but recently the company has been awarded a contract for delivery of two Gantry Cranes for the Yamal LNG terminal, operated by Technip. The terminal will be located in North Russia

in the Arctic region at the Yamal Peninsula. The cranes are single girder gantry type with a lifting capacity of 7mT. Due to the very harsh environmental conditions in the Arctic, Protea will develop the new solutions needed for very low temperature operations to ensure long term reliability. An additional challenge is that the equipment needs to be certified for use in a hazardous, Zone 1, area.

This year Protea has also been awarded the delivery of 3 cranes for Westcon in Norway, including both RAM Luffing and Knuckle Boom Cranes, with capacity from 5 to 15mT. The cranes will be installed on board an FSO vessel, modified for operations on the Martin Linge oil field in Norway.

"We are constantly thinking about the future and adapting to market trends" concludes Slawomir. "At the moment we are in discussion with potential clients for our Proteus Heavy Lift Crane, designed for offshore wind farm installation. The innovative crane will use the strongest steel grade S 960 MPa to significantly reduce its weight and constructed from relatively small modules, the crane can rapidly be assembled and disassembled. Again by clever design and using our state of the art production facility in Southern Poland, we can save our clients time and money."

Protea operates a sales office in Vestnes, Norway and representative offices in The Netherlands, Germany, Venezuela, USA, Singapore, Korea and China.



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Remontowa SA upgraded a PSV for ROV support and subsea construction work

Photo: Piotr B. Stareczak/Sailmedia



***Up Coral* after completion of its conversion at Remontowa in 2015.**

Conversion of *Up Coral*

One of interesting conversions recently completed at Remontowa Shiprepair Yard SA was that related to the upgrade of the *Up Coral* Platform Supply Vessel, which has been adapted for ROV support and subsea construction work.

The vessel 87.07 m in overall length and 18.80 m wide arrived with special deck cargo at Remontowa Shiprepair Yard SA, member of Remontowa Holding early March to undergo upgrade through installation of new specialist equipment in order to expand the vessel's capabilities and operational functionality. Its stay lasted for over a month.

Remontowa SA has installed ROV service and launching equipment as well as a knuckle boom crane from Dutch manufacturer Concordia TMS. The crane, with 25 tonne SWL and maximum out-

reach of 35 m is capable of operation on the waters up to 3000 m deep. With own diesel power pack of 862 kW and active heave compensation system, the vessel is able to operate in waves up to 2.5 m high and in wind speed up to 20 m/s.

Interestingly, the Brazilian, UP Offshore Ltd. owned and operated *Up Coral* brought the crane destined to be installed at Remontowa SA as its own deck cargo right from the manufacturer's quay. The crane was loaded onto the PSV at Concordia Group's quay in Werkendam, the Netherlands. The

main particulars of the specialist offshore crane installed (TMS Offshore Knuckle Boom Active Heave Crane) are as follows: max. load - 25 tons WLL, max. reach - 35 meters, max. AHC conditions - Hs 2,5 m / 25 t / 15 m, max. working depth - 3000 m, runner winch - 5 tonnes WLL, max. reach runner - 37 m, man riding - 1 tonne WLL, class - Lloyds' Register of Shipping, installed power - 862 kW.

Besides the ROV equipment and 164 tonne offshore knuckle boom crane installation, Remontowa SA has also performed 3.5 m high mezzanine deck installation (the new deck, weighing 67 tonnes in total and installed in three sections, is spread over half of the PSV's work deck area) and some other works. Under this new deck, containers with equipment will be stored among other items. All in all some 107 tonnes of steel has been installed, covering also crane foundations, modifications in tanks, some minor piping works, etc.

With new equipment on place, the ship was expected to commence Petrobras charter off Brazilian shores.

*Conversion of an OSV into
a non-typical drill ship*



***Normand Draupne* berthed at Remontowa in March 2015.**

Omalius for subsea operations

Recently Remontowa Shiprepair Yard SA has been occupied with an interesting conversion and upgrade of an OSV vessel. When the conversion is finished, the vessel will be ready for a wide range of subsea operations.

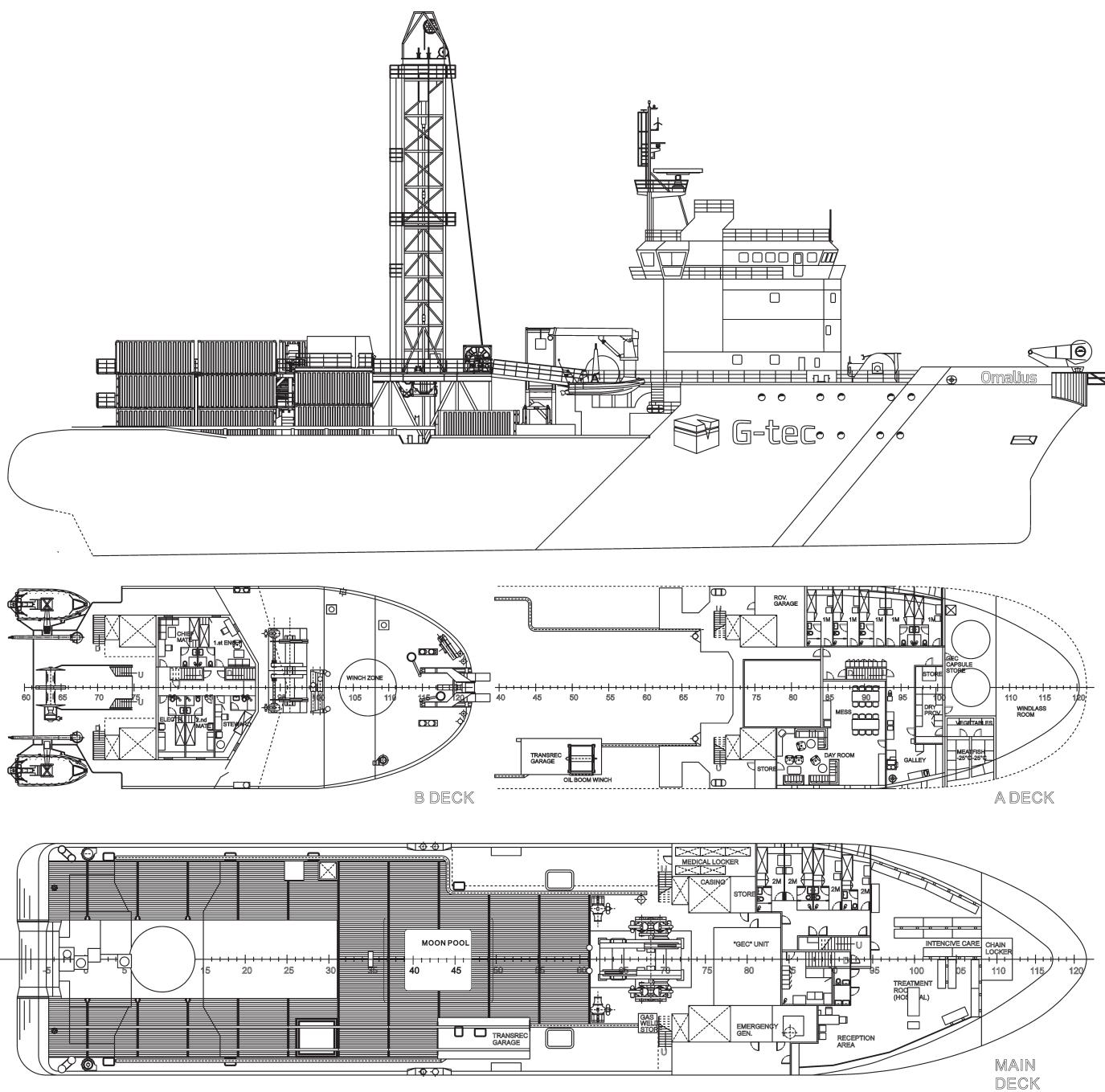
The 83 m long, multipurpose offshore support vessel (OSV) / AHTS *Normand Draupne*, has arrived at Remontowa still in its old livery of one of the leading Norwegian offshore support fleet operators - Solstad Offshore. The vessel had plied the Norwegian flag, until quite recently, with picturesque Skudeneshavn as its homeport (at the

same time - the Owners' headquarters location).

Now the OSV is owned and operated by Belgian Owners G-tec SA, which specializes in providing geotechnical engineering services, as well as marine geophysical surveys and marine environmental surveys. In particular, the company's services are targeted to customers

active in dredging, offshore renewable energy, ports & coastal development, infrastructure & civil engineering, pipelines & cables, and mining & quarries.

Normand Draupne arrived at Gdańsk based yard on March 5, 2015. It represents the Ulstein's UT 718 design. The OSV built in 1985 in Ulstein Hatlo yard, Ulsteinvik has been well main-



Drill - ship **Omalias**

tained to perform even most difficult tasks for many years to come.

Extensive range of works has been ordered at Remontowa. These include repair job and conversion resulting in upgrading and widening the vessel's capabilities. The upgrade mainly meant installation of new crucial equipment on deck.

After completion of its conversion at Remontowa, she is to become a drill

ship. Not a typical oil and gas exploration drill ship though, but a geological survey and coring / sampling one.

Current Belgian owners expect employing the ship mainly in the offshore wind sector. As such, the vessel was first presented during EWEA Offshore event held in Copenhagen in March 2015. Among the tasks entrusted to the ship will be the surveying and preparing the seabed for installations of offshore wind farms.

After the conversion and upgrade the Multi-Purpose Drilling Vessel is capable of performing the following tasks and works:

- offshore geotechnical site investigation works
- offshore drilling works
- ROV inspection works
- UXO (unexploded ordnance) clearance works
- offshore support

- anchor handling and towage
- grouting supply

At Remontowa, the G-tec Offshore's drill rig GT 30, specially designed to work safely in challenging environmental offshore conditions in high tidal waters (up to 13m tide), has been installed. The rig is built on a mezzanine deck, allowing storage of both SBF and SB CPT below the drill floor. A dedicated launching mechanism offers a quick, smooth and safe switch between drilling mode and seabed CPT mode through the large moonpool.

The GT 30 rig is fitted with a complete sampling and testing package.

The principal characteristics of the drilling and sampling equipment are as follows:

- drilling Equipment - GT 30
- 30 t derrick
- full heave compensation - 4m stroke
- deck integrated rod storage and handling system
- up to SQ size drilling and coring capabilities using 6 5/8" API or GeoborS drill strings

- SQ triple tube core barrels, 100 mm sample diameter, core length 1.5 to 3m
- PQ piggy back high quality coring
- coring, sampling and testing equipment
- 25 tn seabed CPT
- down the hole CPT (1.5 to 3m stroke) 10kN thrust
- down the hole piston sampler (85mm sample diameter)
- down the hole push sampler (85mm sample diameter)
- down the hole HPD pocket corer
- heavy duty percussion sampler
- containerized air-conditioned sample storage
- PS logging
- PQ piggy back drilling and coring capabilities
- containerized mud mixing and injection system
- on-line drilling parameter logging

Ex *Normand Draupne*, now *Omalius*, during its stay at Remontowa, received, besides the mentioned mezzanine deck and a drilling derrick, also the

moonpool (prefabricated on shore and installed in one piece into a "well" cut off from the hull). One of the two large AHTS winches has been dismantled.

The employees of Remontowa SA, supported by teams of FAMOS (member of Remontowa Holding) and PBUCh have refurbished and upgraded accommodation spaces onboard *Omalius* (refurbishing and outfitting of cabins on main deck, modernization of the HVAC system). In Gdansk, the G-tec's drilling vessel received also new sanitary and sewage water system, electrical system and had its main engine repaired (including overhaul of shaft lines, propellers, fore and aft thrusters, maintenance of tanks and chain lockers), as well as the hull maintenance performed in addition to some steelwork (such as repairing indents on bulwark, replacement of over 100 sacrificial anodes, repairs to the deck crane, etc.). Bio-block has been also installed.



This is how the vessel will look like in its new role...

Techwind MarineLifts celebrating 20 years of innovations in the marine market



Polish shipbuilding industry has made a quantum leap in production technology within recent two years. Focusing on the more complex, technically advanced structures will be the new production trend for the next decade. Techwind MarineLifts is among those companies able to fulfil contracts for the construction of passenger and cargo lifts and platforms in the most demanding projects.

In over 20 years of the Company's activity, Techwind MarineLifts has achieved the position of Poland's top manufacturer of specialised hoisting equipment for vessels and other floating units.

Offshore structures

Exceptional environment conditions and challenges related to offshore platforms operation call for finding the appropriate solutions already at the design stage. Close cooperation with Clients and quick adjustment to ever changing current requirements are the key factors behind the swift execution of installation works. Mechanical reliability of devices depends on the highest quality of components. Our cooperation with renowned, trusted and proven track record suppliers guarantees long lasting, failure-free operation and resistance to environmental factors.

The Crist shipyard built offshore windfarm service heavy-lift jack-up vessel *Vidar* has been equipped with a set of Techwind personal lifts and separate freight hoists. The *Safe Caledonia* accommodation platform (shown on the photo) during its upgrade at the Remontowa Shiprepair Yard received

Techwind lifts in electric and hydraulic drives versions.

Ferry boats and passenger vessels

Lifts supplied for use onboard ferries and cruise vessels have to conform to expected passenger traffic flows. Maximizing of the lifts' capacity and effectiveness of use is achieved by means of proper adjustment of speed and size as well as the mode of operation of the lifts. Providing the best possible comfort of travelling for disabled persons is also taken into careful consideration.

Cargo vessels

Reliability of the lifts is the top priority goal. Ensuring resistance to marine environment conditions allows to eliminate the most common problems related to lift operation. Lack of downtime, related to breakdowns, significantly improves the overall effectiveness of operation.

Cooperation with Classification Societies

Techwind MarineLifts co-operates with leading classification societies (eg.

DNV GL, RMRS, ABS). Experience and wide knowledge of standards and regulations issued by a particular classification society guarantees introduction of a product complying all the technical and legal requirements. Therefore Techwind MarineLifts products can be found on board ships operating both in European waters, around Russia and on the other side of the Atlantic Ocean.

Service and maintenance

Technology know-how and vast experience allow Techwind MarineLifts to service and maintain not only own production equipment but also lifts of other makes. Scheduled overhauls (confirmed with appropriate certificates issued) constitute an important portion of the Company's activities.

Techwind also modernizes and upgrades lifting equipment to meet current requirements.

Both wide range and high quality of services rendered allow for optimistic forecasts regarding the number of new orders in the years to come. Current order-book covers new projects for Polish and foreign shipyards, to be completed in the period of 2015-2017.

OSV has become a cable layer

Siddis Mariner in a new role

Another interesting offshore project accomplished at Remontowa Shiprepair Yard, member of Remontowa Holding in 2014 was that related to a conversion of an OSV to a cable layer.

Siem Offshore Contractors sent the OSV *Siddis Mariner* to Remontowa within the scope of preparations of the offshore execution of the Amrumbank West offshore wind farm project. The wind farm located in German part of the North Sea, some 35 km or 22 miles north of German island Helgoland involves the installation of 86 submarine cables providing the inner-array grid connecting the individual wind turbine generator foundation and the offshore substation.

In May 2014 Remontowa SA, completed the conversion of *Siddis Mariner*.

The vessel built in 2011 featuring dead-weight of 4800 t, 88.1 m LOA, 19.6 m beam, 6.1 m draught and service speed of 15.5 knots is equipped with DP2 class dynamic positioning system.

Within the scope of work the vessel has received the new decks with cable-laying equipment. A few cranes have been installed as well as cable cradles and hydraulic piping connections. The vessel's structure has been strengthened in several places, tensioners, roller ways, slid frames, protection frames and winches have been also installed. On



OSV Siddis Mariner upon its arrival at Remontowa SA.

the main deck the 40-ton container for cable has been installed, after fabrication at the yard. Building foundations, connecting of cables and hydraulic piping was connected with installation of cable container. Submarine cable guide jib was added as well. In total some 160 tons of steel structures have been installed onboard.

Photo: Jerzy Uklejewski

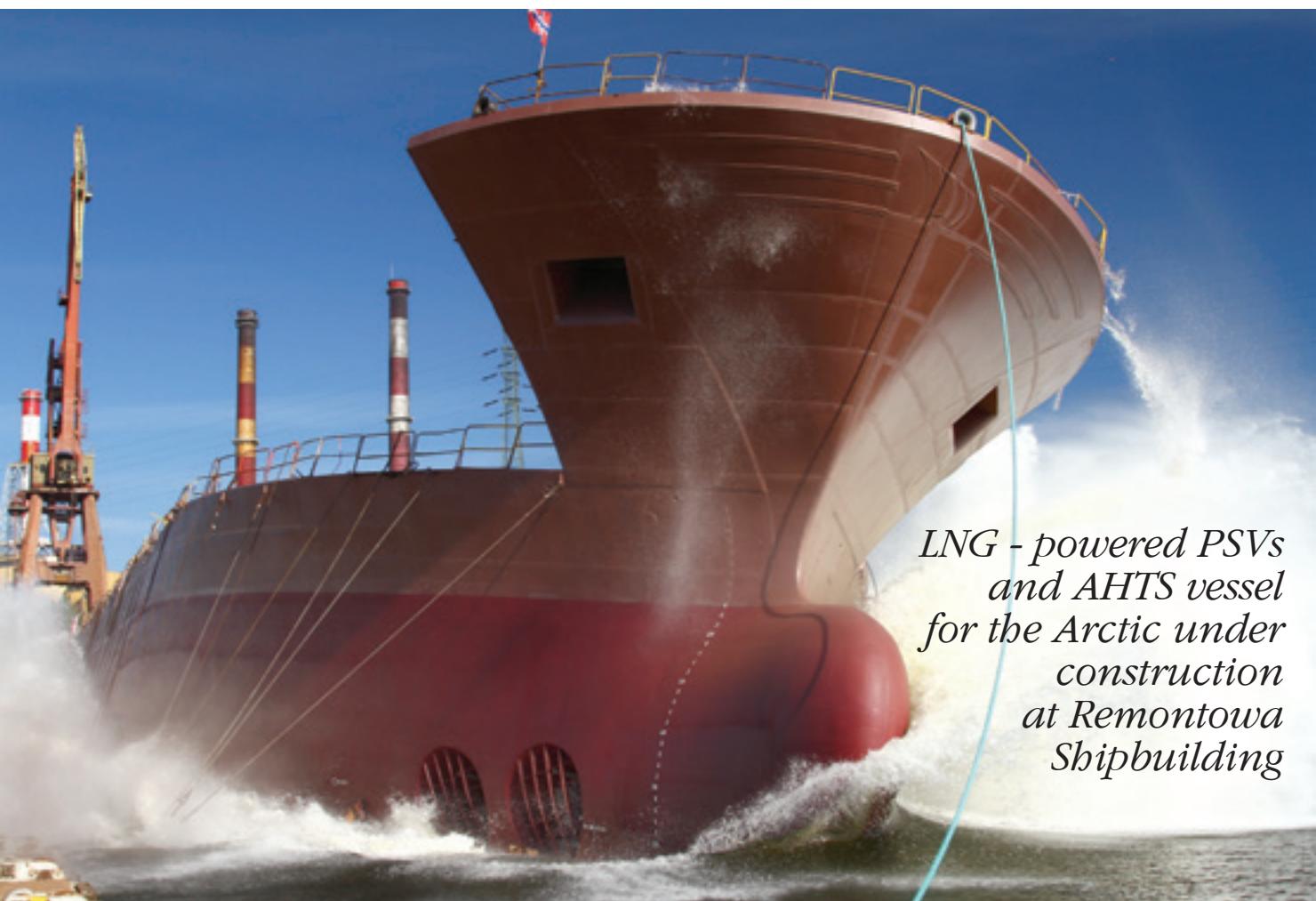


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ESCALATORS





*LNG - powered PSVs
and AHTS vessel
for the Arctic under
construction
at Remontowa
Shipbuilding*

Launching of the hull of a new PSV built for Siem Offshore on September 16, 2014.

Offshore still alive...

The largest Polish producer of fully equipped vessels despite the significant decline in the oil price has been continuing the construction of offshore vessels. The current newbuildings are destined for Norwegian and Canadian markets.

Remontowa Shipbuilding SA, member of Remontowa Holding has already been a well-recognized supplier of offshore support vessels having in its track record as many as 13 fully equipped platform supply vessels built for customers from the USA, Singapore and

Scotland in the years 2012 - 2014, not to mention a long series of 23 AHTS vessels delivered since 2001 until 2010 to renowned American, Italian and the Dutch clients.

The last vessel from the previous PSV orderbook was handed over to

renowned US Owners, Edison Chouest Offshore in Summer 2014 as the eight unit of the series in that order batch.

However, the construction of further PSVs and an AHTS vessel is underway, this time for renowned Norwegian and Canadian Owners.

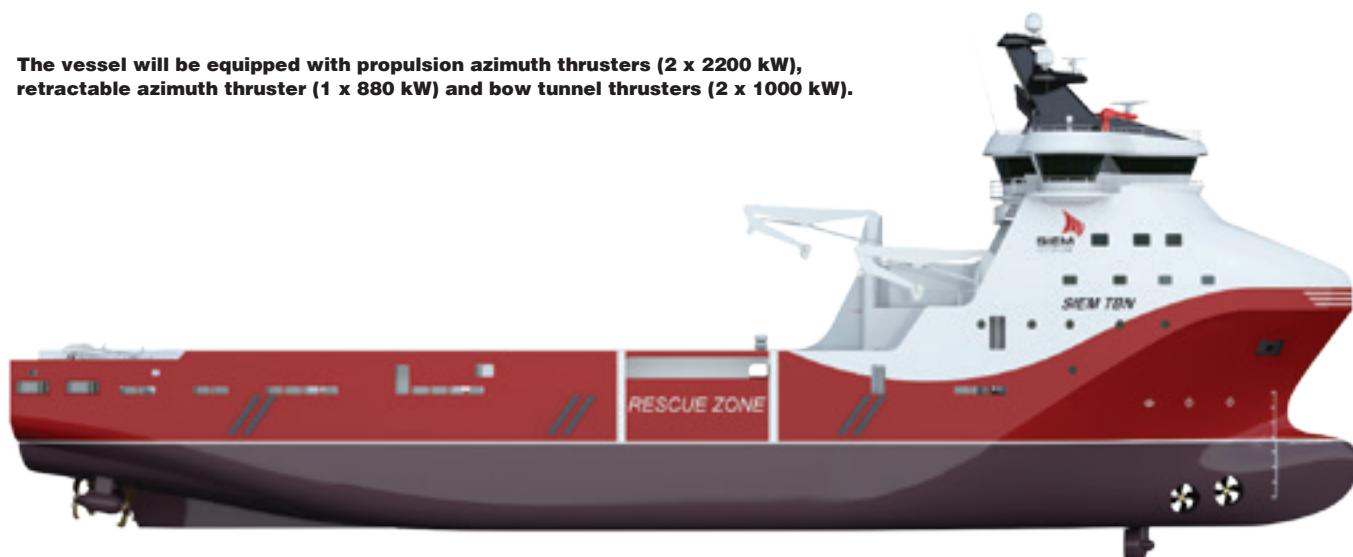
Dual fuel LNG powered PSV

In 2014 the shipyard commenced the construction of the first unit from a series of four LNG - driven platform supply vessels ordered in 2013 by Siem Offshore, one of the biggest Norwegian offshore fleet operators.

September 16th, 2014 saw launching of the first vessel (on the picture) which has been outfitted with its superstructure installed. Its delivery has been expected in July 2015. It has already been contracted for support of Norske Shell oilfield in the North Sea.

In April 2015 the hull of the second PSV had been almost entirely assembled and as we went to press, its launching

The vessel will be equipped with propulsion azimuth thrusters (2 x 2200 kW), retractable azimuth thruster (1 x 880 kW) and bow tunnel thrusters (2 x 1000 kW).



was expected at the beginning of May. The vessel is scheduled for delivery in 2016. Further two vessels were during pre-fabrication and assembly of ship hull structures at that time.

The vessels are being fully constructed in Gdańsk - starting from developing workshop documentation, going through building of the hull and

ending up with complete outfitting and performing sea trials. The PSVs will be equipped with state-of-the-art navigation systems including an advanced dynamical positioning system DP2, gas-electric propulsion, fire-fighting system Fi-Fi 2 and facilities for containing of oil spills. The 89 meter long vessels with a cargo deck area of 980 sq m will be capable

of carrying up to 5400 tons and served by a 25 person crew.

The vessels are of VS 4411 DF design. This new series represents the latest technology within dual-fuelled systems and hull design, to the benefit of lower fuel consumption, lower fuel cost, lower emissions and a better environment. The vessels are being built to meet the

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The Rolls-Royce Wave Piercing hull will cut through the waves, minimizing the green water intake and ensure a safer and more comfortable journey.

highest requirements for operations on the Norwegian Continental Shelf and are also suited for operations in other geographical areas meeting the highest standards of environmental protection and safety of navigation and receive „CLEAN DESIGN” class notation. Its hull, machinery and equipment are being constructed in accordance with the Rules and Regulations of Det Norske Veritas for notation: +1A1, Offshore Service Vessel+, Supply, SF, DYNPOS-AUTR, E0, GAS FUELLED, BIS, CLEAN DESIGN, COAT PSPC (B), COMF-V(3) & C(3), LFL*, NAUT OSV(A), DK (10t/m²) and HL (2.8), Oilrec, Stand-by Vessel (S), Fire Fighter II. Furthermore, the vessels will fly the most reputable Norwegian flag.

An AHTS for the Arctic

There is also another offshore vessel under construction at Remontowa Shipbuilding partly related to Siem Offshore. A new contract for the construction of AHTS destined for operation in harsh environment conditions was signed on 8th of May 2014. The vessel is being built for Canadian-Norwegian joint venture Secunda Canada, than she will be chartered to one of the largest oil companies in the world - ExxonMobil.

Secunda Canada, which is 50% owned by Siem Offshore has entered into an agreement with Hibernia Management and Development Company Ltd and ExxonMobil Canada Properties

for the charter of an AHTS vessel, for a five years firm contract, with a total of 15 years options, to support the Hibernia and Hebron fields offshore Newfoundland and Labrador.

The AHTS vessel is destined for satisfying the general demands of the offshore industry as well as ice management including monitoring of freezing level and - if necessary - correcting course of moving icebergs to protect offshore installations. In order to do this she will be equipped with a water monitor, which will break the pack ice around the platform and prevent from formation of ice cover. Among additional tasks are: passenger transport and evacuation, oil recovery and fire-fighting protection.

The Rolls-Royce Wave Piercing hull will cut through the waves, minimizing the green water intake and ensure a safer and more comfortable journey. The robust hybrid propulsion system will increase the vessel operational flexibility and reduce fuel consumption. The AHTS will be built according to Rolls-Royce Marine design featuring a Rolls-Royce integrated power and propulsion system. The overall length of the vessel will be 87.3 meters with a beam of 20 meters and a dead weight of approximately 4000 tons.

The hull of the AHTS vessel has been constructed in co-operation with Gdansk Shipyard. As we went to press late April, the hull was expected to be transported to Remontowa Shipbuilding for further assembly and outfitting. Its launching was planned in June 2015 while the vessel is due for delivery in December 2015.

Workers onboard an AHTS prepare to “tow” an iceberg, lassoing it with enough force to move it out of the path of an oil platform.



State-of-the art cable layer destined for the offshore wind market from Remontowa Shipbuilding

Valuable asset



This is how the CLV will look like after completion of its construction

As the offshore oil and gas sector continues to struggle while oil and gas companies reduce their CAPEX, offshore shipowners and contractors such as Siem Offshore are expanding their business models into the offshore wind sector, an area that continues to see significant investment. And a hi-tech cable lay vessel which is nearing completion in Gdansk, Poland can help the Norwegian company to reach its aims.

Two of Siem Offshore Contractors' newest vessels, the advanced cable lay vessel *Siem Aimery*, currently nearing completion at Gdansk based Remontowa Shipbuilding SA, member of Remontowa Holding with the *Siem Moxie* delivered in 2014 from other yard will be utilized next year to install 97 kilometers of subsea power cable con-

necting 67 offshore wind generators at Veja Mate in the German sector of the North Sea.

The operator of *Siem Aimery*, Siem Offshore Contractors GmbH (SOC), a wholly owned subsidiary of Siem Offshore Inc., have been recently awarded the contract for the turnkey supply and installation package of the inner ar-

ray grid cable system for the 400 MW Veja Mate Offshore Wind Farm (OWF). The contract, estimated at a value in excess of Euro 100 Million, highlights the continued growth in the Offshore Renewable Energy Market for the Siem Offshore group, possible owing to valuable asset - the modern cable lay vessel under construction at the Polish leading shipbuilding yard.

Siem Aimery is a modern, advanced Cable Lay Vessel (CLV), 95.30 m long overall, 21.50 m wide, drawing 7.1 m, featuring 4,250 t cable payload and providing accommodation for 60 persons and usable cargo deck area of 350 m².

The CLV ordered in 2013 has been designed in close cooperation with VARD Design by Remontowa Marine Design (RMDC 2886), member of the Remontowa Holding capital group. The keel was laid on December 16, 2013, while in June 2014, the two 2500 tonnes

capacity cable carousels were installed. July saw tests of the swing-out azimuthing thruster.

The operation of rolling the hull from the assembly berth onto a floating dock was performed on September 30, 2014. The next day, the dock was submerged with the hull inside, which was towed out afterwards.

The end of December 2014, saw the hull almost entirely completed with the ships' superstructure installed. Intensive outfitting works inside the hull including installation of deck parts over the cable carousels have been also performed.

The vessel has been entirely constructed in Gdańsk - starting from workshop documentation, through the construction of the hull with innovative shape to the outfitting with modern navigation and ship control and handling systems including DP 2, state-of the-art diesel electric propulsion and cable laying system.

It is designed to meet the challenging requirements of the installation, repair and maintenance of medium and high

voltage submarine cable systems within the offshore renewable energy and offshore oil and gas markets. She has been equipped with a state-of-the-art diesel-electric propulsion system consisting of four main generators providing power to two azimuth propulsion thrusters, two tunnel thrusters and one retractable (swing-out type) thruster, ensuring excellent station-keeping capability as well as environmentally-friendly and fuel efficient marine operations.

The Veja Mate OWF is located 115km off the German coast, within the German Bight sector of the North Sea. The 67x 6 MW Siemens supplied Wind Turbine Generators (WTG's) shall be interconnected by an inner array grid (IAG) of 33 kV medium voltage alternating current (MVAC) submarine composite cables with a total length of up to 97 km. This OWF will be eventually hooked up to the 800 MW Borwin Beta power transformer platform which was installed in April 2014.

The offshore works for the inner array grid cable system are due to begin

in 2016, whereby the project is scheduled to be brought online before the end of 2017.

According to Siem Offshore, wave-related operability issues have historically been a major factor in forcing delays of cable lay operations. They believe the answer to this issue is the *Siem Aimery* cable layer which has a hull design that permits operations in wave heights up to 3 meters plus two cable carousels capable of carrying 4,250 tons of cable, 2 stern launched work-class ROVs and a starboard side deployed trenching ROV.

Execution of this contract is very important not only for Remontowa Shipbuilding SA, and for the whole shipbuilding sector in Poland as well. It is the most technically advanced vessel to be built by Polish shipyard so far. The vessel constructed, under the supervision of classification society Det Norske Veritas, was scheduled for delivery in Spring 2015.

Illustration: Siem Offshore



The ISV *Siem Moxie*, along with the CLV *Siem Aimery* will be also utilized as the installation support vessel during the project.

New investments
at Gdańsk Shipyard
for production of wind
turbine towers



The ceremony of the roll bending machine start-up at Gdańsk Shipyard on March 3, 2015.

Super roll bending machine

On March 3, 2015, Stocznia Gdańsk SA (Gdansk Shipyard) saw the ceremony of start-up of the modern machine for rolling thick (up to 120 mm) steel plates, worth over EUR 1 million and being one of the largest such devices in Poland, as well as one of the largest ones in Europe.

The unit has been purchased to enable production of large sections of wind turbines towers.

The roll bending machine of the MCB 3090WT type is the first component of

the new production line. At present, GSG Towers – a member of the Gdańsk Shipyard Group – can manufacture 14 towers per month. When the entire production process is placed in operation,

this number will rise to 28 per month. It is also the single largest investment since 2010 on the premises of Gdańsk Shipyard.

Rolled sections to be manufactured with use of the new machine will have up to 50 m in length and 6,5 m diameter. In the second half of 2015 manufacturing of 8 m diameter sections was expected to commence. The four roller, numerically controlled machine weighs 156 tonnes. It can roll steel plates up to 3 m wide in coils of 990 up to 8500 mm, both in cylinder and cone shapes.

The assembly of the machine the was completed on 29 January 2015. The plate-rolling machine is the second unit of this type in the shipyard, the first being a smaller model – MCB 3070WT.

Innovative ferries under construction for Canadian and Estonian operations



A new ferry under construction for BC Ferries.

New markets open

Remontowa Shipbuilding, member of Remontowa Holding in Gdansk is involved in the production of new ferries for British Columbia Ferries (BCF) and the Port of Tallinn in Estonia. The shipyard has also recently delivered a LNG - driven ferry for Samso Commune in Denmark.

Remontowa Shipbuilding, the largest Polish and one of the biggest in Europe producer of entirely equipped ships is proven builder of innovative car passenger ferries with LNG fuelled ones. In its track record there have been more than

30 ferries of various sizes, propulsion types and fuels. Recently the shipyard has acquired some additional orders from renowned Canadian and Estonian owners and has delivered a brand new ferry to Denmark.

LNG-driven ferries for BCF in Canada

In July 2014 after months of negotiations BCF - the largest ferry operator in

North America and the second largest in the world - entrusted Remontowa Shipbuilding with the construction of three intermediate class 145 AEQ double ended ferries. The shipyard won the contract in tight competition with renown Norwegian, German, Turkish and Canadian companies. The two first vessels are to sail between Comox and Power River on Tsawwassen - Southern Gulf Islands route while the third will sail during season on the Southern Gulf Island route or will replace other vessels operated by BC Ferries during their repair. The ferries will also be the first in BCF fleet to run on Liquid Natural Gas (LNG).

The vessels to be entirely build in Poland are designed by Remontowa Marine Design (RMDC), the Remontowa Holding's own large marine design office which has extensive experience in designing double ended ferries (more than a dozen proven designs).

Each of the vessels will be capable of taking 150 personal cars and 600 passengers on board. The ferries will



Photo: Grzegorz Landowski

BCF President and CEO - Mike Corrigan presenting The Canadian Silver Dollar coin during the lucky coin ceremony at Remontowa Shipbuilding on 5th of March 2015.

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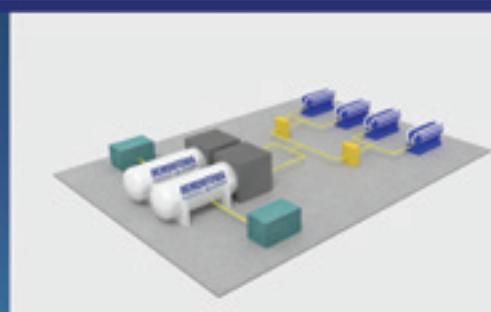
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- Connection lines

INNOVATIVE SOLUTIONS FOR LNG TANKS:

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Double-ended LNG fuelled ferry *Samsø* enters the port of *Sctvig*.

comply with rules and regulations of both the classification society i.e. Lloyd's Register, who will supervise the building process, and the government agenda i.e. Transport Canada.

Use of Liquid Natural Gas (LNG) as the main fuel for propulsion and power generation will substantially lower environmental emissions. MDO will be used for auxiliary purpose only. Diesel electric propulsion will in turn contribute to lower fuel consumption and higher elasticity during maneuvers (**to know further details of this project - please refer to page 41**).

First steel cutting for the construction of the first ferry was held at Remontowa Shipbuilding on 16th of January 2015, while the keel laying and lucky coin ceremony took place on March 5th, 2015. The steel cutting ceremony for the second vessel was held on 10th of April, 2015. The contract includes not only design, construction, outfitting and carrying out of complete trial program but also delivery of the vessels to the home

port as well. The first vessel is to be completed in the third quarter of 2016.

Ferries for the Port of Tallin

Remontowa Shipbuilding has also been executing a contract signed in 2014 with the Port of Tallinn for the construction of two new car-passenger ferry boats for operation by its subsidiary TS Laevad OÜ, to be used on the lines between the mainland and major Estonian islands.

The contract was won in fierce competition with several renowned shipyards taking part in tendering process. Two other ferries of the same kind will be build by Sefine shipyard in Turkey. Andrzej Wojtkiewicz, CEO of Remontowa Shipbuilding said, that the shipyard had to give up contracting the remaining two ferries newbuildings, that Port of Tallinn was shopping for, due to the shipyard's orderbook fully booked until 2016 (18 vessels under construction).

However this order has opened a new market in the northern part of the Baltic Sea. The shipyard expects this deal will result in the future with further orders for the construction of modern vessels from operators in Estonia and Finland.

The ferries to be constructed in Gdańsk will be 114 meters in length and will accommodate 150 cars or ten road trains. The ferries will have 600 passenger seats equipped with life-saving devices. The new ferry boats will be designed by the Norwegian company LMG Marin. All the four diesel engine ferries have been designed so that the main engines of the ships can in the future be replaced for engines running on liquefied natural gas (LNG) provided that the necessary infrastructure is in place.

On 20th of February, 2015 the first cutting of steel plates for the construction of the first ferry took place at Remontowa Shipbuilding. Minister of Economic Affairs and Infrastructure of the Republic of Estonia Ms. Urve Palo started the plasma cutting machine.

The first LNG fuelled ferry operated on a domestic route within EU

The beginning of the year was marked by another important event related to the ferry European market. On February 11, 2015, in the evening, a new ferry was greeted by representatives of the local community in the port of Sčlivg and its approaches, near Danish island Samsø. A day before, before noon, the *Samsø* departed from Remontowa Shipbuilding, where the new ferry, named after the island itself, was built.

Samsø has been the first LNG double ended ferry with dual fuel engines to be build at Remontowa Shipbuilding SA. She will operate between main land (Jutland) Hou and island Samsø with service speed of 14 knots. The vessel has four propulsion azimuthing thrusters and specially design bottom hull form at ends for better manoeuvrability in the shallow water.

Owner of the vessel, Samsø Kommune, has chosen Remontowa Shipbuilding because of its rich experience with design and construction of the LNG fuelled vessels.

The vessel is able to carry 160 personal cars, or 16 lorries and 600 passengers. Cars are stowed on main deck and two hoistable decks above. On the ends of the main deck there are hazardous zone areas arranged. Ventilation for the hold is provided by natural air flow through 10 percent side openings. Embarkation to the vessel is arrange through bow and aft visor doors and embarkation door directly to staircase. At that time vessel will be connected to shore ramp. To reduce time of operation in the harbours the ship is equipped with automatic mooring system. Time of operation in the harbour is to be below 15 min. Ample CCTV cameras system around the vessel and two central bridges allow for excellent visibility and safe manoeuvrability for the captain.

The vessel is built to meet the highest European standards and to minimize its environment impact for waters around Denmark. Main propulsion system using LNG fuel with pilot amount of diesel ensure the lowest harmful emission and high fuel efficiency. The main gas engines in normal operation are able to deliver power for all thrusters and give

required electric auxiliary power for the hotel with maximum speed just below 16 knots.

Use LNG as main fuel reflects the ideas of Samsø Kommune promoting the tourist attractiveness of the Samsø Island.

It's estimated, that companies operating in the Remontowa Holding group have contributed to the project some 60% of total workload. The detailed design and workshop drawings of the vessel are prepared by the Holding's in-house design office RMDC, while complete ro-ro handling system is supplied by Remontowa Hydraulic Systems. The ferry is equipped with luminaires manufactured and installed by Remontowa Lighting Systems, and FAMOS has fitted all interior spaces with furniture. What is more, the "heart" of the ship's propulsion LNG system with a special cryogenic tank and cold box, entirely designed in Poland has been produced and delivered by Remontowa LNG Systems. This is the first cryogenic LNG tank destined for the sea ever built in Poland.

Fig.: LMG Marin



This is how the ferries for the Port of Tallinn will look like after completion of its construction.



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- All of our welders have proper permits app. in accordance to EN 287-1.
- Our products were NDT tested UT, RT, MT, PT and certificated by such Certification Companies as:
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- Lloyd's Register (LR),
- Bureau Veritas (BV),
- American Bureau of Shipping (ABS),
- Russian Maritime Register of Shipping (RMRS),
- Det Norske Veritas (DNV)

We are proud to introduce our company, as a supplier of pipelines and platform gratings.



Modern pilot boat delivered from NSS in Szczecin

Jasmund in service

In October 2014 NSS Ltd based in Szczecin delivered aluminium pilot boat *Jasmund* of the Baltic Pilot 1700 design for German owner Lotsbetrieb GmbH Mecklenburg-Vorpommern, which acts as a provider of transport services and manager of the fleet of pilot boats for pilot associations in several German ports.

Aluminum construction assure small weight, durability, better manoeuvring and smaller fuel consumption. The boat was turn-key delivered and almost fully equipped, ready to travel to its homeport on its own power.

The vessel is powered with two Volvo-Penta engines, each providing the power of 368 kW @ 1800 rpm, allowing for cruising speed of 26 knots. Engines and clutches have electronic steering. They are also cooled with hybrid cool-

ing system. The ship is equipped with Kappis Nautik electro-hydraulic steering system.

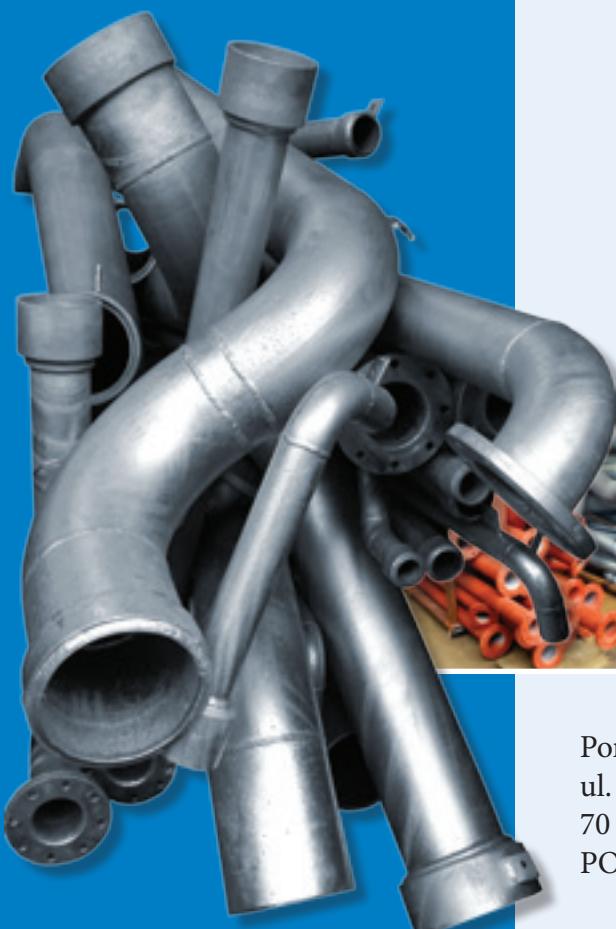
On the ship there is rescue hydraulic ramp installed H+B Technics LD 800 of max lift of 800 kg. Control of the ship is possible from the wheelhouse as well as from the aft deck. On the engines are also installed pumps which power fire system and the bilge system. The heating system for the social area and the wheelhouse was built based on the



Jasmund at NSS Ltd. in Szczecin before its delivery.

Kabola system, also the main deck and rails are heated. Kabola system powers also defroster system. Hot sanitary water installation is using the heat energy from the engine cooling system. When the ship is moored the heat is generated from the electric boiler. The vessel is equipped with modern Furuno navigation devices, autopilot, radar, as well as GPS and AIS devices, Baltic Pilot also have echosounder. On the ship, there is a Mastervolt electronic monitoring system, which allows to control all systems on the ship, for example: lights, navigation lights, tanks levels, etc.

PREFABRICATION OF PIPELINES



PORTA MARINE SERVICE

By experience for excellence



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Your water - our passion, innovative water treatment for ships.

The first, very important step of producing a water tank - welding.

A family business from Gdynia started to make unique water treatment equipment for ships. Durable Ocean Equipment (DOE) produces equipment that is installed and used worldwide on a new buildings.

The beginnings

Poland have a long lasting experience in shipbuilding and equipment which is specially made for marine purposes. The access to the Baltic sea enables the region to develop shipping industry very rapidly - Gdańsk was building ships since 1805. This heritage give DOE a powerful advantage in the market of marine equipment.

Starting as a joint venture company in Gdynia in 1992, with Norwegian partners, being called ITS Group, Stomme and EMS Ship Supply (Poland) they learned how to make and sell ship's equipment worldwide. They have got a good base either in production or in promoting their equipment. After a long experience in export of ship's spares for ships that were build in Poland, DOE started to make their own equipment in 2010.

Today, DOE is a fully polish capital, family business which makes marine equipment locally and is exporting to the every corner of the world.

Membrane technology

Membrane technology from Poland. DOE managed to develop the cross-flow filtration methods based on the membrane technologies for ships of which the most popular is Reverse Osmosis (RO), used for desalination of fresh water. This technology is used on ships for 30 years now. The heart of the system is the RO membrane, which is very effective, but on the other hand is very fragile and vulnerable for high temperature (over 55 C) or some chemicals like chlorine.

In order to desalinate sea water you have to press the water through the membrane with 60 bars, but 10 bars is enough to process fresh water. The power consumption is very small comparing to evaporation technology. While using diesel generator 4kW (Cummins Quiet Diesel 4kW) with consumption 1,7l/h of diesel oil, DOE Pelican M16 RO

water maker can produce up to 600 l/h of drinking water. Practically, the ship can transform 2 tons of diesel into 600 tons of drinking water or while sailing on your yacht, you can process 17 liters of oil into 6000 liters of water. If we focus on the costs of one Ton of drinking water - it will be below 4 Euro. RO is used to make technical, ultra clean water for many ship's applications. Every unit is equipped with own made salinity sensor and indicator which are controlling the process of desalination continuously.

The second most common membrane technologies which is used on ships, are ultrafiltration (UF) and microfiltration (MF). We call them pre filtration since we used them before the RO filtration. The membrane pores reach 0,1 microns for MF and up to 0,02 microns for UF. The perfect filter is the one that requires very little human involvement, is durable, easy to maintain and has low costs of operation. DOE has filed a patent for design, that has all the above features . HUZAR is an automatic, self-cleaning filtering system, based on a sintered metal net with density from half of micron up to 1 millimetre.

Pressure tanks and calorifiers.

DOE is experienced in pressure tanks and clarifiers production. The number of completed projects makes DOE one of the most leading marine tanks producer in Poland. Customer can choose the tank design form a few liters up to 3 tons and 15 bars operating pressure. Every tank can come with chosen marine certification like: DNV, ABS, LLOYD, RMRS, RRR, RINA, NKK and more... Most projects are destined to installed on new buildings but some are made for retrofitting. The tank can be installed on a skid with high quality, european pressure pumps. The units are delivered to Europe or exported to numerous destinations like Dubai, China, India or Thailand as the products branded "Turtle", made by DOE in Poland.

DOE makes the calorifiers by insulating the tank and installing electric heaters or heating coils with valves. All units are delivered hydraulically and electrically tested, ready to install on board.

Remontowa Shipbuilding is one of the companies that is installing such equipment on ships they build. Other interesting installation is the one that the Royal Arctic Line has purchased - a ready made skids for water supply and hot water for sanitary purposes. These units are equipped with frequency converters and water pumps can be controlled from the engine room.

Flow heaters are very important - no need for a big tank is a big advantage. DOE is producing very unique flow heaters for oil with very low heat load - below 1W/cm² - the design is announced to be patented.

The future

"We are excited about deploying membrane technologies on board of the ships to make drinking water. We believe that water is the catalyst for growth and prosperity worldwide and should be easily and cheaply accessible for everyone and everywhere. We are very optimistic about the future of membrane filtration. We will work very hard to ensure the customer's satisfaction by delivering the highest quality products and services possible" - said Kasprzak Leonard, CEO of DOE.

doe®
Est. 1992

What we do:

- production of tanks & hydrophones
- production of electric & stream heaters
- production of equipment for water filtration (RO, UF, NF, UV-C)
- spare parts for polish ships
- european spare parts

DOE Sp. z o.o.
Sibeliusa 3
81-015 Gdynia, Poland
T: +48 58 6643210, E: doe@doe.pl, W: www.doe.pl

A0 and A60 class watertight sliding doors delivered to Asian shipyards

Fire resistance A0 and A60 class bulkhead watertight sliding door is a product needed in every shipyard dealing with offshore constructions. Increasing demand for that kind of appliances is observed especially on Asian market, where the majority of rigs production take place.

Watertight sliding doors from REMONTOWA HYDRAULIC SYSTEMS, known well before as HYDROSTER brand, have a long tradition. The first bulkhead watertight sliding door was designed and manufactured in 1964.

Production for offshore industry started in 2004 (AHTS and PSV vessels). The company developed several offshore rigs standards of WT doors in 2012. And then first deliveries were realized. Nowadays certified A0 and A60 state of the art products are positively perceived by design engineers as well as shipyards' professionals.

Customized design at individual yard request, simple and resistant construction, safe operation, fire resistance A0 and A60, as well as max load up to 50 meters water column are main advantages of REMONTOWA HYDRAULIC SYSTEMS WT doors. And last but not least is compliance with SOLAS, NORSOX and with all major class rules.

It is worth stressing that the Company implemented the ISO 9001 Quality Management System in 1995. Certificating institutions were PRS and GL (actually PRS and DNV-GL with ISO 9001:2008).



- This Certificate was gained not for us, but for our Customers - mentions Mr Miroslaw Michalowski - CEO of REMONTOWA HYDRAULIC SYSTEMS. - Possession of this Certificate and every year's audit gives us the chance to improve the system and the quality management in order to fully satisfy our Customers' needs.

Pas/HP

REMONTOWA
HYDRAULIC SYSTEMS

MEMBER OF
REMONTOWA
HOLDING S.A.

OFFSHORE & MARINE



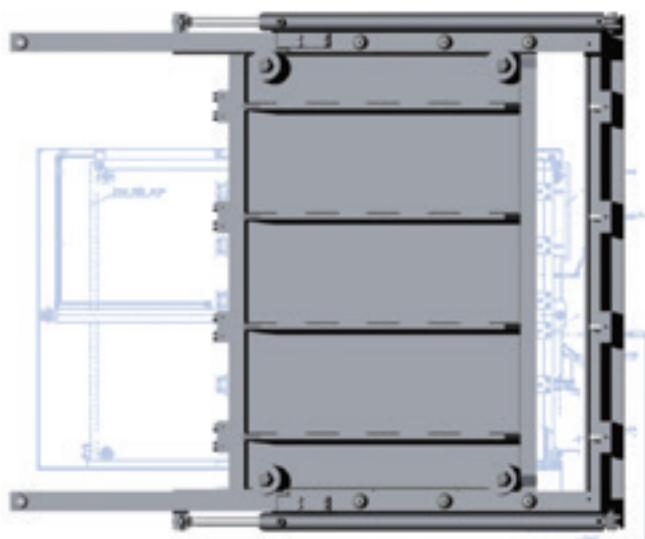
design – production – delivery – start-up

ro-ro systems, hoistable decks, hoistable ramps
bulkhead watertight doors
piston and rotary steering gears
hydraulic cylinders for special use
hydraulic drive units
screw pumps (low - and medium pressure)

ISO 9001:2008 (by DNV-GL; PRS)

www.rhs.rh.pl

Profiting from the experience



Bulkhead watertight sliding door with electro-hydraulic drive

*Unique Jack-up Barge
for French road traffic project*



Heavy lifts on La Réunion Island

Renderization of the new coastal highway.

Gdynia based Crist shipyard is currently occupied mainly with production of various steel structures including partly outfitted hulls, ship sections and blocks as well as offshore modules. However, the company is also involved in the production of a fully outfitted vessel, too.

On 2nd of February 2015 the steel plates cutting commenced for the Heavy Lift Jack Up Barge project (newbuilding no NB 105) intended for Bouygues Travaux Publics SA at Crist shipyard, Gdynia, Poland. The initial steel cutting was followed by the keel laying ceremony on March 25, 2015, while signing of the newbuilding contract took place on November 26th, 2014.

The barge was ordered by the French consortium carrying out the construction of the new coastal highway (flyover) on La Réunion Island. The unit, with expected construction time of 14 months, when completed, will work for a consortium of four French companies specializing in civil engineering and construction, made up of Bouygues Construction

subsidiary Bouygues Travaux Publics and VINCI Construction subsidiaries VINCI Construction Grands Projets (lead company), Dodin Campenon Bernard, and Demathieu Bard.

The Heavy Lift Jack-up Barge (HLJB) is designed and will be built for the purpose of construction of a section of the road running along the cliffy part of the coast of La Réunion Island, situated in the Indian Ocean, not far from Madagascar.

The 5,400 metre offshore viaduct, France's longest, will connect Saint Denis (the administrative capital of La Réunion) with La Grande Chaloupe. This is a major part of the offshore coastal highway, two lanes of which will be dedicated to public and "soft" modes of transport (bus, pedestrian/

bicycle). This road will replace the existing coastal road between Saint Denis and La Possession, which is exposed to falling rocks and flooding by swells and tropical storms.

The investment is very important from the point of view of the contracting party as falling rocks more and more often endanger the lives of people on the existing, shore based road just between the cliff and the coastline. The newly build section of the road will be at a distance from the shore, which will improve the safety of the inhabitants and tourists visiting this picturesque island situated near Madagascar.

The barge, to be built at Crist, will be bringing viaduct elements and pylons to the construction site and install these

**Side view
of the jack-up
construction barge.**

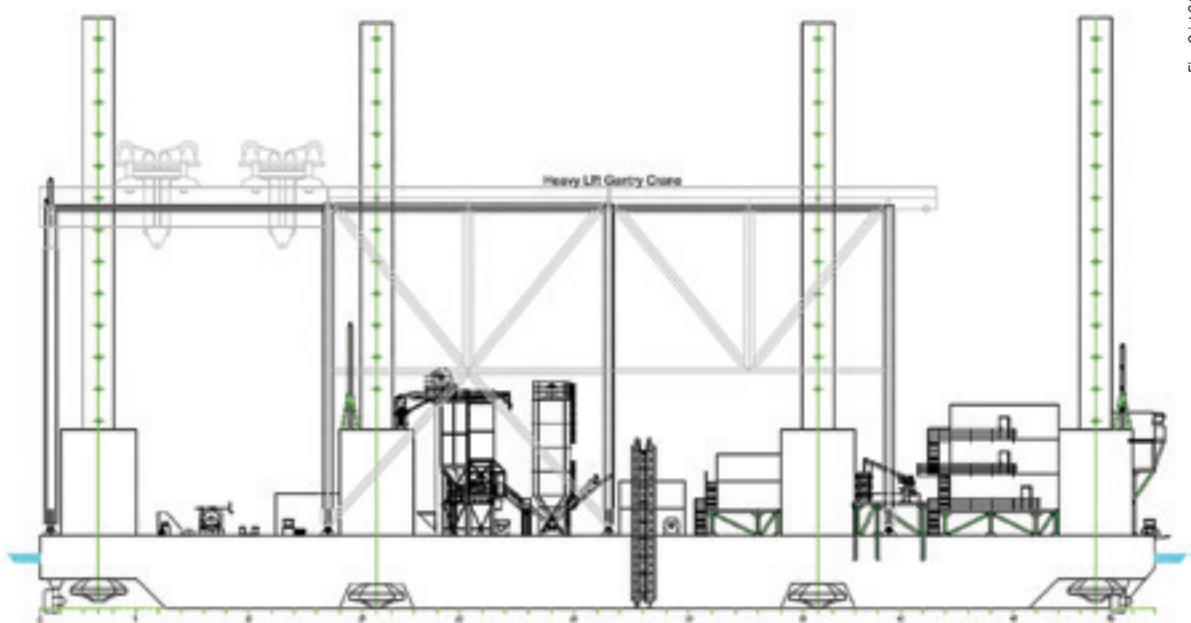


Fig.: Crist SA

heavy units. Until now, Crist shipyard, have been building a few jack-up units with four legs each. This time, there will be as many as eight jack-up legs and jacking systems.

The total cost of the barge will be approx. EUR 80 m, while the works to

be accomplished at Gdynia based yard will amount to some EUR 36 million.

Principal characteristics of the barge are as follows: length: 106.5 m, breadth: 49 m; equipment: four (4) main engines (diesel electric propulsion), four (4) propellers (azimuthing thrusters), winches

with the automatic tensioning, working in DP1; jack-up system (8 legs); two (2) gantry cranes (with lifting capacity of 2500 t each); combined mass of the hull: about 5000 tons.



StoGda

Ship Design & Engineering Sp. z o.o.

Take a safe course!

StoGda is an engineering and consulting company established in 1997 with following fields of activity:

- **Shipbuilding** – product & chemical carriers, tankers, containers, car carriers, passenger vessels, yachts, ferries, etc.,
- **Offshore** – drilling platforms, pontoons, barges, supply vessels, etc.,
- **Jack-up vessels** – wind turbine installation vessels, heavy lift jack-up barges, etc.,
- **Shore installation and structures** – gas compression stations, chemical installations, etc.,
- **EU R&D programs** – OceanSaver, Adoxpol, BioFoulControl, EcoSeaSafe, Blueship
- **Tailor made projects** – e.g. underwater hotel, wave energy station, tidal turbines, bridges, etc.



We offer technical assistance and development of technical documentation from an early stage of a project, such as conceptual design, basic and detail design, workshop engineering through to support and assistance during ship assembly and commissioning.

**THOR****INNOVATION****VIDAR**

StoGda

– successful designer of jack-up vessels

StoGda Ship Design & Engineering Sp. z o. o. is an engineering and consulting company established in March 1997. We offer technical assistance and development of technical documentation from an early stage of a project, such as conceptual design, basic and detail design, workshop engineering through to support and assistance during ship assembly and commissioning.

We have been recently busy with designing jack-up vessels.

We started our adventure with jack-up vessels in 2008. **THOR** Jack-Up Platform was our first accomplished project. Originally, we concluded a contract with Hellenic Shipyard from Greece, a member of ThyssenKrupp Group, for engineering documentation of hull structure and hull steel outfitting. The platform construction was finally transferred to CRIST, a Polish shipyard, which we signed a contract with for detail engineering. The project was completed in 2010.

Our second project – **INNOVATION** Heavy Lift Jack-Up Vessel was started in 2010. The design contract was concluded with CRIST Shipyard. We were involved much more deeply in that project than in the previous one. We upgraded the basic design prepared by another design office, engineered workshop documentation in a wider range (hull structure, hull steel outfitting and machinery & piping outfitting) and prepared as built documentation including naval calculations. The project was completed in 2012.

Those two projects gave us a huge portion of experience and our next project – **VIDAR** Wind Turbine Installation Vessel that was started in 2011 and was built by CRIST Shipyard according to our complete design, from conceptual project, through basic design and detail engineering to as built documentation. Also model tests, full range of strength and fatigue calculations, design of legs and jacking-up system were in scope of delivery. Workshop documentation was engineered in following scope: hull structure, hull steel outfitting, deck outfitting, hull and machinery piping outfitting. A complete set of as built documentation was also in our scope of work. The project was completed in 2013.

StoGda won the following awards for the **VIDAR** project:

- the Award in category “**INNOVATIVE PROJECT IN 2014**” funded by Association of Polish Maritime Industries “FORUM OKRĘTOWE”
- the Award in category „**THE BEST OF 2014 JACK-UP VESSEL DESIGNER**” funded by Work Boat World

In the meantime, we were a part of a design team during the conversion of **TROLL SOLUTION** Jack-Up Offshore Service Vessel into an accommodation platform in 2012.

Presently, we are busy with the next jack-up project: a **Heavy Lift Jack-Up Barge**. It is a very unique project, because the barge will be built as a tool for load-out, transport and laying viaduct foundations for a 5.4 km long road bridge running along the offshore coast of La Réunion Island located in the Indian Ocean. It is our first project of a jack-up with eight legs (so far all our projects have been fitted with three or four legs only). The scope of our design work includes a complete set of basic design (excluding the design of legs and jacking-up system), workshop documentation (hull structure, hull steel outfitting and machinery & piping outfitting) and as built documentation. The barge will be built by CRIST Shipyard and delivered to the Owner by the end of this year.

StoGda's team

See also our advert on page 36.

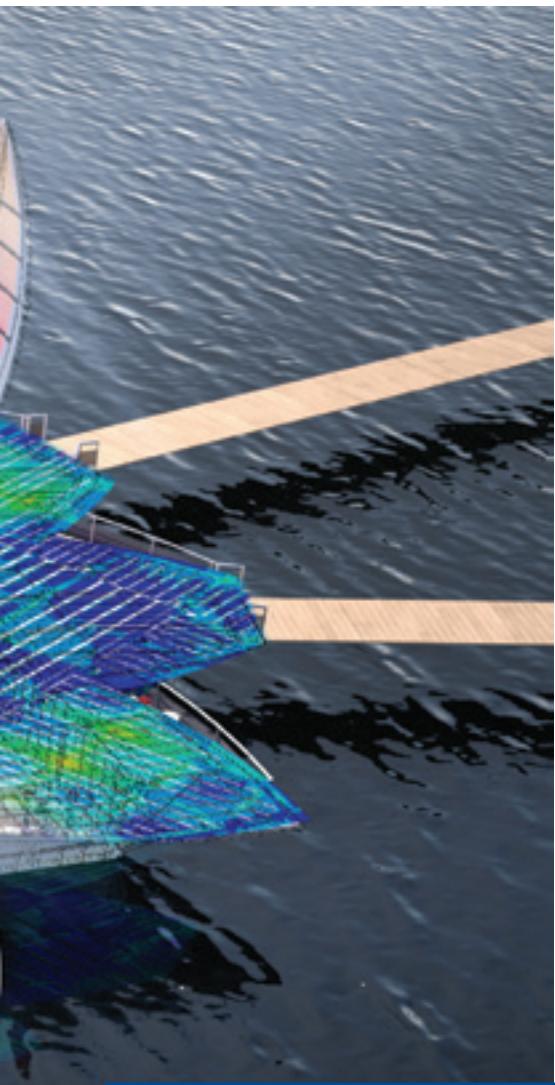


Nelton – the seeker of challenges

Today's world seems to teem with challenges. Companies which accept given opportunities and move with the times must often face high expectations, but simultaneously have a chance to develop and gain priceless knowledge. Nelton is the example of a firm that takes part in many unusual undertakings, and therefore, gives itself a possibility to expand and grow.

Advanced floating objects are commonly associated with countries that have direct access to the sea. However, Seerose project proves that even Switzerland – the country surrounded by mountains – is interested in such professional tasks.

Seerose is a floating platform in the form of water lily that will act as a stage for events of all sizes as well as a

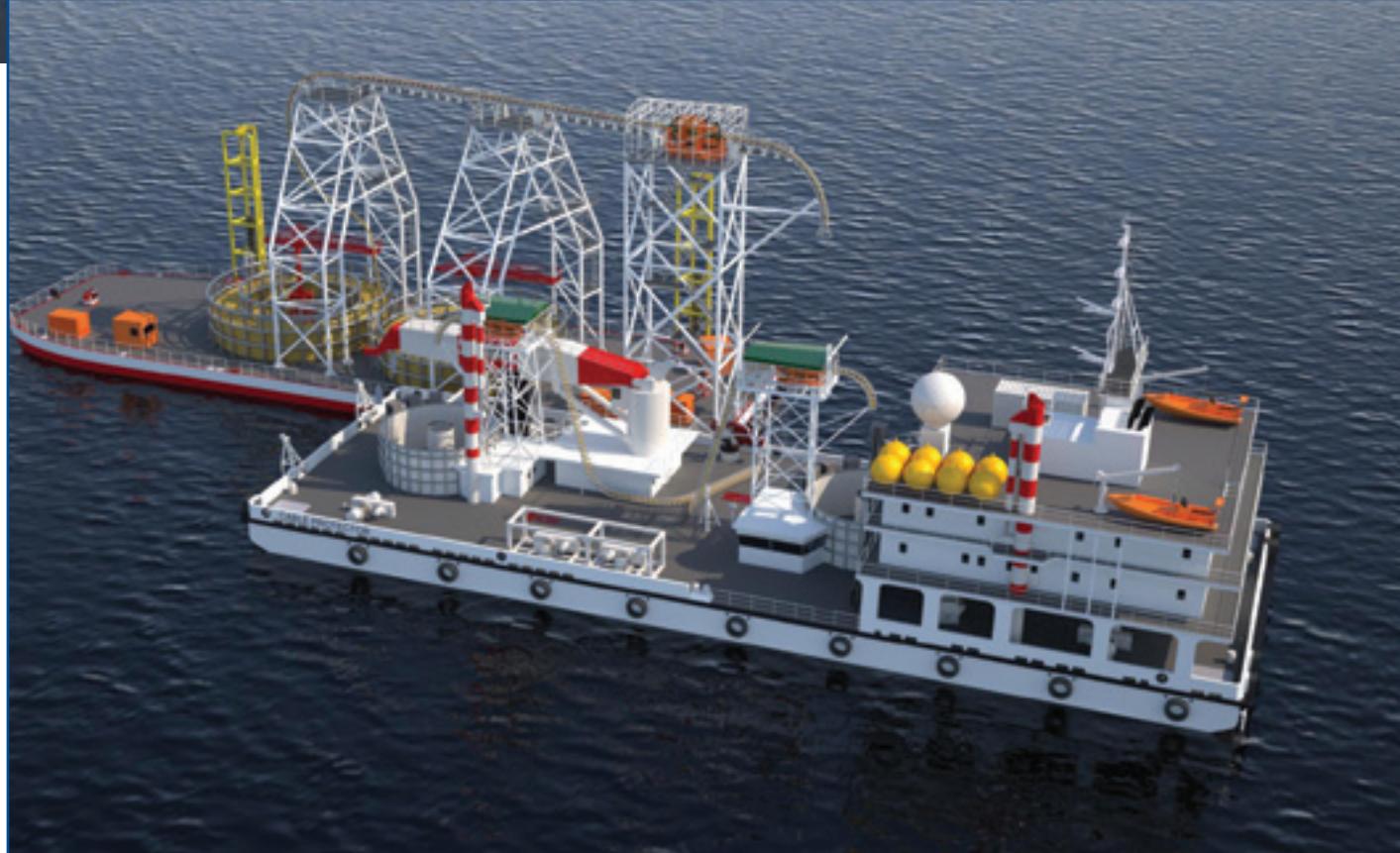


meeting place for guests, artists or hosts during 2015 "Gästival" – the celebration of 200 years of tourism in Central Switzerland. The multi-purpose structure (able to accommodate up to 700 people) will be docked at various landing sites of inland waters in Switzerland, namely in Lucerne, Uri, Schwyz, Obwalden and Nidwalden. With its diameter equal to 48 metres, Seerose is equipped with petals that are designed to fold in order to ensure protection against various weather conditions. However, the outer petals serve as a platform for guests visiting the region. Due to great dimensions, technological limits and the purpose of use, this architectural work of art posed a big challenge for Nelton's engineers, and therefore brought a lot of satisfaction once having been finished.

Next unusual project that is worth-mentioning is the construction of 150kV underwater power cable interconnection network, for which Cable Protector and Storage Barge were responsible. Two above-mentioned vessels might be used to carry out complex marine installations, for example construction of power cable interconnection networks. Hence, the Protector gives the possibility to ascertain the depth of penetration into the seabed thanks to

built-in Injector; to trench the rocks using Rocksaw setup; to load and transfer the cables; or to carry out cable laying operation. Therefore, most importantly, it is able to lay and at the same time bury the cable with lowest possible impact and minimal disturbance to the seabed. Moreover, the injection setting technique used in installation might help to liquefy the sediments in order to assist with the burial at the desired depth. In the project Nelton engineers were responsible for modernization of existing barge into Cable Storage Barge. Specifically, they designed Cable Towers, SPUD Towers, Winches, Injector and Loader Arm. The unwonted requirements and professional technology applied contributed to the fact that the project was really demanding. However, this is why its completion brought Nelton's engineers a sense of fulfilment.

Above mentioned projects are just two examples of many innovative undertakings that Nelton Company takes part in. Although they cost a lot of effort and a great deal of time, at the same time they are also a great opportunity to gain experience, increase knowledge and simply get satisfaction from everyday job.



RMDC after successful 2014 facing new challenges in 2015



REMONTOWA MARINE DESIGN & CONSULTING

INTRODUCTION

Remontowa Marine Design & Consulting (RMDC) is a large and experienced Polish marine & offshore design office employing more than 150 engineers and dozens of consultants. RMDC is focusing on supporting Remontowa Shipbuilding S.A. (RSB) in as far as possible complete designs of vessels up to 120m in length and Remontowa Shiprepair Yard S.A. (RSY) in detail engineering of offshore rigs and vessels. Parallel RMDC continues cooperation with companies outside Remontowa Holding.

RMDC intends to promote strongly its own concept designs looking for clients all over the world.

COMPLETED AND ONGOING PROJECTS

Drilling Ship Espadon 200 EAS.

The largest offshore project in the history of RMDC.

In April 2012 the Norwegian Office LMG Marin signed a license Agreement with Brazilian shipyard Estaleiro Atlantico Sul (EAS), Suape for the preparation and delivery of complete design of drilling vessel according to its concept design ESPADON 200 EAS. As LMG Marin did not have enough

capacity to offer complete design it agreed even before this event to join forces with RMDC. In consequence LMG Marin ordered from RMDC complete detail design of marine systems as well as basic design including complete electrical diagrams, HVAC, part of deck equipment and some ER piping systems. Furthermore the scope of RMDC works was increased including procurement assistance, integration of drilling systems design, detail design of utility systems and for a part of drilling systems. In total it can be estimated that RMDC is responsible for more than 70% of man hours needed to design the vessel. RMDC has already delivered full scope of basic and detail design. First of 7 units being under construction is advanced in 50 %. Megablocks are constructed in Brazil, Japan and China. The assembly of complete units take place in Suape, Brazil.

Participation in such a large offshore project is an extremely valuable experience for RMDC and gives it a track record be-

Length, o.a.	202.20 m
Breadth, mld	40.00 m
Draught, max	12.00 m
Main generating sets	6 x 7584 kW
Azimuth thrusters	6 x 4500 kW
Drilling equipment	National Oilwell Varco
Class:	ABS +A1 DRILLSHIP, + AMS, +ACCU, +DPS-3, +CDS, CRC, HELIDK, UWILD, OHCM

ing spring-board for even larger offshore projects like FPSOs, FSOs or offshore rigs. It also further opens the door to large lucrative offshore market.

LNG Double Ended Ferry 145 AEQ for BC Ferries

In July 2014 RSB and BC Ferries, Canada, signed the contract for delivery of **three double ended car passenger ferries based on RMDC concept design**. Many years of experience with LNG-powered vessels, enabled RMDC to prepare innovative solution, balancing Owner's function requirements together with strict emission controls, imposed by a new Canadian regulations. First vessel is expected to be delivered to the Owner in the middle of 2016. The electric energy for the main propulsion will be provided by 3 gen sets with all dual fuel engines, working on LNG or MDO. All documentation, including basic, technical and detail design in full scope, is done exclusively by RMDC.

The track record of LNG-powered vessels designed by RMDC, solely or with cooperation with other design offices beginning from the year 2007, indicates RMDC as a unquestionable leader in this field, now successfully entering North American market.

For BC Ferries, these three vessels will be first in its fleet to be powered by liquefied natural gas (LNG). RMDC concept design was selected by the BC Ferries due to the extensive experience with this type of powering.

Length, o.a.	107.20 m
Breadth, mld	23.50 m
Passengers	600
Personal cars	145
Alternative capacity	4 trailers + 10 commercial vehicles + 100 cars (AEQ)
Service Speed	15.5 kts
Class:	LR +100A1 Passenger and Vehicle Ferry, "Strait of Georgia Service" +LMC, GF, CCS, Environmental Protection: ECO (A, GW, NOx2, P, R, DIST, Sox), Descriptive note: IHM/Green Passport, PCAC (33)

LNG Double Ended ferry SAMSO



Illustr. RMDC

Length, o.a.	99.91 m
Breadth, mld	18.50 m
Passengers summer/winter	600/405
Personal cars	160
Trailers	16
Service Speed	14 kts
Class:	DNV + 1A1 Passenger/Car ferry B, restricted area R2 (DNK), E0, Gas Fuelled, Ice Class C, BIS Administration: DMA, Notice "D", Sea area "C", wave height below 1.5 m

In March 2013 RSB received a contract from Samso Comune, Denmark for one LNG Double Ended Ferry Samso. The basic and detail design was entrusted to RMDC. The ferry was successfully delivered to Samso Comune at the beginning of 2015. It is the first LNG driven vessel navigating the Danish domestic waters. The idea reflects the "green profile" of the tourist attractive Samso island. Propulsion is ensured by four electrically driven azimuth rudder propellers. The main power station consists of four gen sets with dual fuel LNG/MGO engines. This order reflects the extensive experience of RSB and RMDC in building and designing double ended ferries for Scandinavian owners and confirms top position on the market of LNG fuelled ships. Four types of such vessels already built by RSB were partly or completely designed by RMDC.



Illustr. RMDC

Cable Lay Vessel for SIEM Offshore

Illustr. RMDC



Length, o.a.	95.3 m
Breadth, mld	21.5 m
Cable capacity (2 cable carousels)	4250 t
Deadweight	4700 t
Main propulsion el. motors	2 x 2200 ekW, 690V
Service Speed	14 kts
Class:	DNV +1A1, E0, Clean Design, Cable Laying Vessel, Naut AW, DYNPOS-AUTR, Comf-V(3)-C(3), BIS, SPS

In April 2013 RSB signed a contract with SIEM Offshore AS for the delivery of complete cable lay vessel according to concept and class design prepared by Vard Design AS. This was the first time in history that a Polish yard won in tight competition with Norwegian yards a contract for a complete offshore vessel of this size and complexity. As RMDC backed RSB during negotiations it was awarded with contract for a part of basic design including complete HVAC, electrical systems and part of deck equipment. RMDC received order for complete detail design as well. The vessel is scheduled for delivery this year.

Container vessels for Royal Arctic Line A/S Greenland

Illustr. RMDC

**ACV 606 TEU**

Length, o.a.	114.37 m
Breadth, mld	22.70 m
Depth	15.15 m
Draught	7.00 m
Capacity	606 TEU
Service Speed	15.3 kts
Class:	DNV +1A1 General Cargo Carrier / Container PC6 TMON E0 NAUT-AW DG-P BIS CLEAN BWM-T DAT (-35°C) Hull PC5

In October 2013 RSB and Royal Arctic Line A/C, Greenland, sealed the contract for delivery of five ice-class container ships in three various sizes and designs: one vessel with container capacity of 590 TEU, two vessels 118 TEU and two 33 TEU. The concept design brought by the Shipowner was further developed into technical documentation by RMDC on all vessels. RMDC prepared detail documentation for all three designs as well. All container vessels will be icebreakers, operating in a very harsh climate, including temperature falling to minus 35 degrees C. Vessels are expected to be delivered this year.

**ACV 108 TEU**

Length, o.a.	74.20 m
Breadth, mld	15.20 m
Depth	8.40 m
Draught	4.00 m
Capacity	108 TEU
Service Speed	12.5 kts
Class:	DNV +1A1 General Cargo Carrier / Container PC6 TMON E0 NAUT-AW DG-P BIS CLEAN BWM-T DAT (-35 °C) Hull PC5

**ACV 36 TEU**

Length, o.a.	45.35 m
Breadth, mld	12.80 m
Depth	6.10 m
Draught	3.50 m
Capacity	33 TEU
Service Speed	10.0 kts
Class:	DNV +1A1 General Cargo Carrier / Container PC6 TMON E0 NAUT-AW DG-P BIS CLEAN DAT (-35 °C) Hull PC5

Wind Farm Maintenance Vessel

The Wind Farm Maintenance Vessel design RMDC 2799 is one of several similar designs developed by RMDC for German

owners. Currently operated wind farm fields are situated close to the shore and thus the maintenance of wind turbines can still be easily performed using small aluminum craft. Nevertheless major wind farm operators have already ensured themselves rights to build wind farms as far as 200 NM from shore. RMDC believes that when building these farms would start new types of sea going vessels will urgently be needed. The described design was conceived in order to fulfill the following conditions:

- Safe active heave compensated gangway allowing transfer of maintenance personnel from vessel to wind turbine and back,
- Comfortable accommodation for large number of specialists, elastic power plant providing low fuel consumption during transit between wind turbines,
- Good maneuverability allowing safe of crew handling system,
- Auxiliary crane operations.



Illustr. RMDC



Length, o.a.	abt. 57.00 m
Breadth, mld	12.50 m
Deadweight	1480 t
Trial speed	13.7 kts
Bollard pull	50 t
Work deck area	300 m ²
HFO cargo	abt. 880 m ³
MDO own use	abt. 440 m ³
Cargo fresh water	abt. 125 m ²
Complement	8 + 36
Class: ABS +1A1, E, OFFSHORE SUPPORT VESSEL, + AMS, +ACCU	

Length, o.a.	abt. 86.30 m
Breadth, mld	18.50 m
Working deck area	600 m ²
Crew	15
Special crew	45
Main generators	4 x 1300 kW
Azimuth thrusters	2 x 1300 kW
Forward tunnel thrusters	2 x 800 kW
Deck crane	1 x 10 t/25 m
Speed	12.5 kts
Class: DNV +1A1, SF, E0, DYNPOS-AUTR CLEAN DESIGN, SPS Code	

Seismic Support Vessel

Large seismic vessels are very expensive in operation and thus usually remain at sea as long as possible. Therefore their crews are often changed at sea. Same refers to supply of fuel, oil, provisions and water. In the past this service was ensured by old type of PSVs which obviously were inefficient as their speed, size and shape could not match properly the seismic vessel. Not all old vessels revealed proper maneuverability and propulsion redundancy needed in operation in heavy seas when the seismic vessel is advancing. Therefore a special ship design labeled RMDC 8657 with double skin, two mechanically powered c.p. propellers, one bow thruster and relatively high crew capacity was prepared and agreed with well-known Scandinavian owner.

Anchor Handling/Towing Vessel



Illustr. RMDC

Length, o.a.	abt. 91.20 m
Breadth, mld	23.50 m
Deck area	600 m ²
Bollard pull	360 t
Triple drum AHT winch: - one AH drum	500 t
- two towing drums	130 t
Deadweight	6850 t
Class: DNV +1A1, TUG, SF, E0, DYNPOS-AUTR, FIRE FIGHTER 1, ICE-1C, SPS Code	

The AHT 360 T BP design bearing RMDC 2881 project number is a continuation of the previous extremely successful own but much smaller design of which 23 units have been

built by RSB and delivered to Tidewater and several other world known shipowners. The present new design was developed for German owners. The new vessel is much more powerful because its bollard pull is to be as much as 360 T. With double skin in the way of fuel tanks the vessel is also eco-friendly. Additional features include external firefighting and oil spill response capacity.

Platform Supply Vessel with LNG propulsion

Length, o.a.	abt. 91.20 m
Breadth, mld	19.00 m
Deadweight	5 500 t
Working deck surface	1000 m ²
Main generating sets	2 x 2500 kW 2 x 1350 kW with dual fuel diesel engines
Electric / propulsion engines	2 x 2200 kW
Trial speed	13.5 kts
LNG tank capacity	220 m ³
Ship fuel oil	400 m ³
Cargo fuel oil	1300 m ³
Liquid mud	1450 m ³
Dry bulk(4 tanks)	300 m ³
Fresh water	900 m ³
Potable water	100 m ³
Methanol	200 m ³
Class:	DNV GL +1A1, OFFSHORE SERVICE VESSEL, SUPPLY, OILREC, GAS FUELLED, E0, DYNPOS AUTR, BIS, COMF-V(3) & C(3), LFL*, NAUT OSV(A), FIRE FIGHTER II, STAND-BY VESSEL (S), CLEAN DESIGN, DK(10t/m ²), HL (2,8), COMF-V(3) & C(3), NAUT OSV(A), COAT PSPC (B)

RMDC developed a new RMDC 3007 design of Platform Supply Vessel with LNG propulsion for Norwegian owners. Special care has been taken to obtain a modern eco-friendly design with gas propulsion, elastic power generation and double skin hull.

CONVERSIONS

RMDC is not only working on newbuilding projects. During last years the company gained a lot of experience participating in most of large offshore projects carried out by GSR. One can mention here parts of classification and detail design for several conversions of semisubmersible and jack up rigs for a dozen of conversions of tankers into shuttle tankers as well as for conversion of tanker into small FPSO. Usually the scope included complete new living quarters, hull changes, dynamic positioning, additional power station, conversion of electrical systems etc. The most recent large project of this type prepared for GSR was the basic and detail design related to conversion of Petrofac owned FPF-1 semisubmersible into FPSO rig. The RMDC scope of work included design of blisters, sponsons, deck foundations, living quarters with piping systems, complete electrical systems. Engineering experience gained by RMDC gives Remontowa Holding a chance to go in the future from conversions to construction of complete rigs and large sophisticated vessels.

**For further information
please visit our web site
www.rmdc.rh.pl**

Illustr. RMDC



*Let's build a bull
in Poland and...*

**Two companies from Poland
have contributed to the construction
of this ferry - Aluship Technology and Nelton.**

Ships of the year 2014



Illustr. Norled AS

The all-electric car ferry "ZeroCat 120" owned by Norled AS was presented Skipsrevyen's prestigious Ship Of The Year 2014 award. Of the three nominated vessels - two (including the winner) have been built with hulls or hull sections from Poland and with participation of Polish naval architects and marine engineers.

The year 2014 award was presented by Norwegian State Secretary Dilek Ayhan at SMM in Hamburg on the 10th September, 2014. Managing Director Mr Ivan Fossan and Technical Director Sigvald Breivik represented the Owners, Managing Director Ivar Gaute Kollveit represented Fjellstrand and Mr Edmund Tolo represented Fjellstrand Design.

The electrically powered ferry was developed for submission to a competition organized by Norway's Ministry of Transport. As a reward for winning the competition, the shipping company Norled has been granted the license to operate the route until 2025. Norled will operate the world's first battery driven ferry on the Lavik-Oppedal route. The new ferry will operate the actual route with 34 crossings a day, 365 days a year.

The ferry is of catamaran type built in aluminium with slender hulls and low weight. The ferry's electric power train was designed by Fjellstrand with battery technology from Siemens.

The "ZeroCat 120" does not discharge greenhouse gases, CO₂, methane

or nitrogen oxides to the environment. In addition to the environmental benefits, the ferry's operational and maintenance costs will be lower compared to a conventional ferry. According to Siemens, ZeroCat could eliminate nearly 3,000 tons of CO₂ emissions.

The hull of this "all electric" ship (YN 1696 at Fjellstrand) was launched at Gdansk based Aluship Technology shipyard, which built it. Detailed engineering design was provided by Polish company Nelton Sp. z o.o. of Pruszcz Gdanski (formerly GSM Design Group - **read also on pages 38-39**).

Also one of the other nominated vessels contained Polish input.

The biggest size and price tag is not always the best recipe for a Ship of the Year nomination, and PSV *Juanita* built at Kleven Verft (YN 361), is a great example of this. This platform supply vessel was delivered to the owner Ugland Offshore on April 16, and immediately started operations for the charterer Statoil. The nomination is reflected in the new propulsion system developed by Scana Propulsion, Inpower and Salt Ship Design, as well as the cargo tank solution delivered by Framo.

At least part of sections for this ship have been built in Poland. For example superstructure section, along with forecastle whaleback cover has been built at Euro-Industry Stocznia Ustka (former Ustka Shipyard). The ship was designed by Norwegian-Polish company Salt Ship Design.



**Superstructure of this vessel
has been partly built at Polish
company Euro-Industry.**

Photo: Kleven

The ZINKPOWER Szczecin manufactured piping has been installed onboard the Queen Mary 2...



ZINKPOWER Szczecin

have been supplying prefabricated piping for newbuildings for 15 years now



Initially, most of the shipyards, especially in Poland, welcomed the possibility of having the installation ready piping supplied right to the building berth with

disbelief. "It's not possible" they said, "it will not fit" they said.

Nowadays, the ZINKPOWER shipbuilding piping manufactured in Szczecin travel to shipyards at a distance of several thousand kilometers. The company has specialized itself in fast deliveries of piping systems built to

measure, to workshop drawings and design documentation, assembly ready and protected against corrosion.

Owing to DNV-GL certified quality of production processes, covering welding black steels, stainless steels and

Cu alloy (cunifer) pipelines, as well as certified quality and safety management systems, the company assures to supply a quality product.

Having a good machine park at its disposal, ZINKPOWER is able to cold-bend systems with wall up to 219.1 mm thick and cut parts up to 1100 mm thick.

This significantly improves quality, shortens the prefabrication time and provides better guarantee of quality, and above all, reduces production costs and the price for the complete system of piping.

Due to large quantity of application cases it is hard to list all the ships, onboard which the piping manufactured by ZINKPOWER ply the seas, but to name just a few - the ZINKPOWER piping equipped fleet includes cruise vessels, such as *Queen Mary II* or *Mein Schiff 3*, chemical tankers, also the ones built for a renowned owner at Aker Floro, PSV, AHTS, OCV and other offshore support vessels, various kinds of ferries, fishing vessels, as well as yachts and special vessels.

The company is experienced in co-operation with surveyors of DNV-GL, BV, ABS, RINA, RS and PRS.

Knowledge of requirements and practices of particular shipyards, shipowners and classification societies constitutes a significant competitive edge for ZINKPOWER on the market.

Recently, the manufacturer has also specialised itself in production of exhaust gas systems, having the possibility of prefabrication of sections up to 2000 mm in diameter, thus becoming an effective supplier to the shipyards retrofitting the scrubbers.

The company offers supplies of the installation ready systems even as soon as within four weeks after receiving documentation.

Prefabrication of piping by ZINKPOWER Szczecin in Poland is a well proven solution eagerly applied by Norwegian, German, French, Finnish, Dutch and last, but not least Polish yards.

The Szczecin based company, continuously developing and perfecting itself, provides quality and timely deliveries in line with ever more demanding market and shrinking ship building cycles.



... and *Mein Schiff 3* cruise liners among others.



ZINKPOWER SZCZECIN

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Ship hulls and sections made in Poland

Contributors to quality

Quality manufacturing and competitive prices for steelwork offered by Polish companies contribute significantly to competitiveness and keeping many Western European and Nordic yards alive on the surface of the global market.

Many of European built cruise vessels for example, contain ship sections and blocks supplied from Poland. And many of these hull components reach buyers - Western European and Nordic yards even with some equipment, such as tunnel thrusters, pre-installed in Poland.

Let us review some of the most interesting projects of this kind.

Hulls from:

Partner Ltd.

One of the most interesting vessels, the hull of which has been erected in Poland is *Acta Orion*. The partially outfitted hull is to be delivered from Polish builders in Szczecin (Western part of Polish coast) soon. Acta Marine contracted CIG Shipbuilding for the design and construction of a large wind farm

support vessel (WFSV). Szczecin - based Partner Ltd. is co-operating in this project with CIG Shipbuilding.

The DP2 fitted vessel measures 108 by 16 meters and offers comfortable accommodation and workspace for 75 persons onboard. The vessel will be equipped with two dedicated boat landings for crew transfer vessels (CTV) as well as a motion-compensated gangway, which allows a safe and efficient transfer of technicians and equipment between the vessel and wind turbines.

The vessel is scheduled for delivery in September 2015. The final outfitting and delivery will take place in the north of the Netherlands. Delivery of partially outfitted hull from Poland was expected by the end of April or early May. The scope of outfitting works in Polish yard includes, but is not limited to, painting, piping, some of the cabling work,

floor panelling etc. Also some of the machinery has been installed in Poland, including retractable azimuthing thrusters supplied by Veth Propulsion.

Picture no. 1

Nauta Shiprepair Yard

Another windfarm service vessel's hull is under construction at Gdansk facilities of Gdynia headquartered, Nauta Shiprepair Yard (member of the state-owned MARS Shipyards & Offshore group) which signed a contract with Havyard Ship Technology AS for the construction of partly outfitted offshore wind turbines service vessel. She will operate on Dudgeon wind farm, outside the coast of Norfolk in Great Britain.

According to the contract, the vessel is scheduled for delivery to the customer in September 2016. The vessel, which

ship has been developed by Havyard Design & Solutions will be over 83 meters long and 17 wide.

Its main job will be to provide accommodation for and carry personnel and equipment for the performance of service and maintenance on offshore windmills. Danish company ESVAGT will be the vessel's operator. ESVAGT operates in the fields of emergency response and anchor-handling vessels, safety training, oil spill response and personnel transport and service for offshore accommodation modules and wind farms.

Picture no. 2

However Nauta has been recently occupied with construction of fishing vessels mainly. On 15th January, 2015,

a ceremony of keel laying was held at the premises of Nauta Shiprepair Yard for another fishing vessel's hull. This will be the *Don Ole*, being built for Fitjar Mekaniske Verksted AS. It will be over 60 meters in length and over 12 meters wide. The vessel is designed as a single propeller driven vessel, outfitted for purse seining with loading catch at midships starboard side. The catch is to be pumped onboard by fish pump to water/fish separator on deck and stored refrigerated in 9 RSW tanks. The unit shall be propelled by one engine connected to the propeller via shafting and two-speed reduction gearbox. Engine output approx. 3000 kW at 750 rpm.

Picture no. 3

Stal-Rem

Fishing vessels have been the main theme of production of another ship hulls construction specialist - Stal-Rem, based in Gdansk. Stal-Rem SA, member of the private-owned Remontowa Holding capital group, launched, with use of two floating cranes *Maja* and *Rem-220*, the hull of the fishing vessel, in advanced stage of outfitting, for the Danish Customer, on 10th September 2014.

The hull, painted and equipped with main engines, shaft line with propeller, engine room equipment and tunnel thrusters, was destined for Vestvørftet shipyard of Hvide Sande in Denmark, where it was towed to some two weeks after the launching.

2
Picture



3
Picture



The ship TBN *Ballstadøy* (yard's no. NB 303) is the seiner / flyshooter, 34.85 m long and 9.5 m wide, equipped with vacuum fish handling system and six RSW tanks, will be delivered to Norwegian owners Rederi Ballstadøy A/S of Ballstad.

Picture no. 4

Finomar

Finomar which operates on the premises of the former Szczecin Shipyard, launched its another partially outfitted hull on July 25, 2014. The hull of fish-farming service vessel *Froÿ Server* was built for Norwegian Sletta Verft of Mjøsundet. The ultimate Owners of the ship, when completed, is to be Gåsø family owned Frøÿ Akvaservice.

It is optimized for secure service operations right up to the fish-farming cages and in exposed areas in bad weather. The vessel of the Macho 25 design, developed by Møre Maritime AS, will be operated on charter to renowned seafood producer Leroy Seafood AS at its facilities in central Norway through a contractual period of five years. It is 25.00 m long, 10.60 m wide, has accommodation for six persons and features 750 kW main engine power. Weight of the hull as delivered by Finomar was approx. 210 t.

Picture no. 5

Hullkon

In December 2014 the Hullkon yard in Szczecin launched and delivered the

1000 tonnes weighing partially outfitted hull to become the first German LNG fuelled ferry when delivered after outfitting by German shipyard Fassmer. The hull has been built in Szczecin and equipped to a modest extend, however the cryogenic LNG fuel tank, supplied by Wärtsilä (60 tonnes, 12 m long, 4.5 m dia) has also been installed in the Polish yard.

It will be the first German passenger ferry with a dual-fuel propulsion system, breaking through in the new clean and emissions free LNG-propulsion technology. It was designed and will be outfitted and delivered to owners by Fassmer shipyard. The vessel of 83 m in length and with a capacity of more than 1000 passengers will cover the Helgoland service for Cassen-Eils, start-



4
Picture



5
Picture

6

Picture



Picture

ing the service after planned delivered in summer 2015.

Picture no. 6

Crist

In 2014 Gdynia - based Polish company Crist had built and delivered to the Lloyd Werft yard in Bremerhaven the hull of hugh, multi-functional, ocean-going pipe-layer. The vessel after completion of the outfitting in the German yard sailed to Huisman yard in Schiedam (The Netherlands) for installation of a 570 t pipelay tower and 400 t cranes. Then she was delivered to London-based shipping company Ceona and entered into operations early 2015.

The *Ceona Amazon* is a versatile deepwater field development asset able to offer one-stop-shop offshore trips for clients' projects. Thanks to her huge product carrying capacity (5000 t of flexible or 8500 t of rigid pipe) stored on and below her 4,600 m² deck, her twin 400 t AHC Masthead cranes working in tandem lifting mode, her innovative on-vessel pipeline fabrication (welding, NDT and FJC) and superior operability (drill ship hull), she is a breakthrough in offshore pipelay, heavy construction and floaters installation services.

Picture no. 7

In October 2014 Crist delivered its another product. After several days of towage, the 112.60 m long and 25.8 m

wide *Polar Empress* (newbuilding no NB 369) partly outfitted hull of seismic vessel reached Myklebust Verft AS. The ultimate owner of the ship, featuring gross tonnage of 10 138 and bollard pull of 275 T, will be GC Rieber Shipping of Norway, while the operator will be Dolphin Geophysical, chartering the ship for five years.

Picture no. 8

Ship sections from:

Wisła Shipyard, Crist, Montex, and many others...

January 2015 saw just another of numerous shipments of ship sections from Polish to Western European or Nordic

shipyard. This time, onboard heavy-lift module carrier *Papenburg*, two large ring sections or blocks built at Gdańsk based Wisla Shipyard were shipped to Meyer Werft. These were blocks 9+75 and 10 for the construction of the Meyer Werft newbuilding no. 693, which is to become cruise vessel *Norwegian Escape*, when delivered to Norwegian Cruise Line late 2015. One of the two mentioned blocks has been supplied from Polish yard with three tunnel thrusters installed.

Meyer Werft newbuilding 693 is the first of "Breakaway Plus" class vessels, featuring gross tonnage of 163 000 and berths for 4200 passengers.

Blocks for this ship are being built in Gdańsk, Poland, not only at Wisla

Shipyard alone. Two sections - large ring section and a fore section with bulbous bow, built at Marine Projects, are to be delivered in February 2015.

Picture no. 9

Late October 2014 a heavy-lift pontoon-barge was towed out the Port of Gdańsk by tug *Fenja*, heading for Ulsteinvik in Norway. The deck cargo of the heavy-lift barge was several big ship sections destined for the construction of advanced, arctic conditions PSV *Rem Arctic* at Kleven yard. The owner of the ship, after delivery from Norwegian yard, became Rem Offshore AS. The ship's sections, sent from Gdańsk, have been supplied by Crist shipyard, Montex shipyard and Wisla Shipyard.

It is the first vessel in a new series. Norway's Kleven has signed a contract with Rem Offshore for the building of a Wärtsila Ship Design 87,22 m long PSV specially designed to operate in challenging arctic conditions. The new 5000 t deadweight VS 485 MK III ARCTIC design includes a number of features for ice prevention and de-icing, and hull and propulsion systems will have ICE-1B class.

Kleven Verft in Ulsteinvik, Norway is a regular customer for ship sections and partially outfitted hulls built at several Polish yards, similarly to Ulstein and other renowned yards throughout Europe.

Picture no. 10



8

Picture



Picture 9

10

Picture

11

Picture

Among the most recent ship sections deliveries from Poland is that of April, relating the largest newbuilding contract ever placed by Østensjø Rederi. Norwegian owner, back in 2013, placed an order for a large offshore construction vessel at Kleven yard with delivery in March 2016. The vessel will be chartered to the offshore contractor DeepOcean on a five and a half year contract. In addition, the charterer has four annual options for extension of the contract. Total value of the construction contract is NOK 1,400 million.

The new vessel has been designed by Salt Ship Design (which has a significantly sized division in Poland) in close cooperation with Østensjø Rederi and DeepOcean. With a length of 149.8 metres, a width of 27 metres and 2300

square metres of total deck space the vessel will be a powerful tool in the offshore construction market. The vessel is specially designed to suit the Greater North Sea market and is equipped with a 150 tons dual tensioner vertical lay system (VLS) located in the moon pool, a 3000 tons carousel below deck and a 400 tons active heave compensated (AHC) knuckle boom main crane that can lift 600 tons in double fall mode. The ship will be delivered with a new diesel electric hybrid propulsion system. Total accommodation capacity of the vessel is 140 persons.

The vessel, to be named *Edda Freya*, has been under construction both in Poland and in Ålesund. It consists of 10 building blocks all together, nine of which have been built in Poland in

four different shipyards. The last block containing the machine rooms is being built at Kleven shipyard in Ulsteinvik. In April 2015, four of the building blocks were transferred to Ulsteinvik for assembly (towed on a heavy-lift pontoon-barge). The rest of the hull sections will be sent from Polish yards in May and June. Launching is expected in August.

Picture no. 11

Luxury craft from:

Damen Shipyards Gdynia

The company has been manufacturing partly outfitted hulls of luxury megayachts. Mid September 2014 saw the launching of the biggest hull of a megayacht to be delivered from the com-

pany so far. The partially outfitted hull, towed by the tug *Ares*, left the Gdynia based yard on September 28, heading for the Dutch outfitting and main contractor yard. Another similarly sized hull was under construction at that time.

The hull delivered in September, built within a year, measuring 74 m in length, as delivered from Gdynia Damen Shipyards was outfitted to the high extend, including complete engine room installations and all piping outside engine room. The main contractor and the outfitting yard for this yacht is AMELS of Damen group (yard no. AMELS 7401, material: steel hull and aluminium superstructure, length over all: 74.00 m, beam: 11.94 m, depth 6.45 m, draught 3.8 m).

Damen Shipyards Gdynia has been building the partially outfitted luxury superyacht hulls since 1997 and has de-

livered 32 until Autumn 2014. Another four were in various stages of construction as of the turn of September and October 2014.

Picture no. 12

Aluship Technology

This renowned hulls and ship sections manufacturer has also been recently involved in the construction of aluminium offshore platform topside modules and superstructures of megayachts as well.

Aluship Technology, in its Gdansk based production facilities, has built an aluminium living quarters module of Gina Krog platform for offshore fabricators Apply of Norway.

The Gina Krog oil & gas field is located in the North Sea, Norway, some 30

km away from the Sleipner platform in approximately 110 m water depth. The field is currently in development and first production is scheduled for early 2017. Gina Krog will be developed via a new, standalone, 20 well, 70 bed jacket platform, for which some topsides modules are being built in Poland.

The yard has also supplied an aluminium superstructure for the 110 metre long megayacht, newbuilding no Y714. The yacht, under construction and outfitting at Dutch shipyard Oceano, was launched on March 19, 2015, with its Aluship Technology built superstructure already in place.

The next megayacht superstructure for Ocenaco yard no Y715 will be delivered to Alblasserdam based shipyard in May.

Picture no. 13



13
Picture



12
Picture



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