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industry
needs
to catch
the wind



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How to catch a tailwind?

As Clarksons Research has recently revealed, the number of active shipyards has globally dropped by 62% from 934 at the beginning of 2009 to 358 as of start of July 2017, the lowest amount of active yards for many years.

The company explains, that the „active” status means the yard having at least one unit (1,000+ GT) on order. Furthermore, 30% of currently active yards are set to complete construction of ships on their orderbook by the end of this year!

Newbuilding orders fell to a 30-year low in 2016, but when looking at it in estimated investment value terms, the fall was slightly less sharp. This trend has continued, with contracting in 2017 so far up by significantly more in investment value terms than in numerical terms.

This has been driven - as Clarksons points out - by investment in high value vessel types such as cruise ships, which experienced record ordering levels last year and accounted for 43% of total investment. However, only some European shipyards are benefitting from those high value orders.

How do the yards in Poland manage?

According to data recently released by The Association of Polish Maritime Industries, total sales value in Poland's marine industry including newbuilding yards, repair and conversion yards as well as equipment manufacturers and suppliers in 2016 amounted to EUR 2,65 bn (PLN 10,6 bn).

In Poland in the last year 12 fully equipped vessels (turn-key delivery) were delivered, accounting for a total of 68 004 CGT (38 883 GT). In the same period Poland delivered at least 37 partly equipped hulls accounting for 78 248 GT in total, twice the amount of turn-key deliveries above-mentioned.

In 2016 Polish yards repaired, upgraded or converted approximately 560 ships. This number included some extensive, large conversion projects.

In terms of sales value shares, newbuildings account for 19 %, repairs and conversions – for 16 % and supplies of equipment and services (excluding ship repairs) amount for 65 %.

As of the end of 2016 the newbuilding orders portfolio of Polish yards contained 21 turn-key delivery vessels, with a total capacity of 140 214 CGT (81 739 GT). At the same time, at least 53 hulls or partly equipped ships (89 179 GT totally) were ordered in Poland.

As we can see, subcontracting to Poland is still popular among European yards. However, in the current situation, when some ordering parties due to newbuild contracting investment, which declined by 59% in 2016 are struggling to survive, the strategy which relies on such orders may be risky for Polish companies.

In this issue we have focused on presenting some chosen turn-key delivery projects executed in Poland. Anyway, shipyards in Europe, except some renowned manufacturers of cruise ships, have to find a way through to catch the wind...

Grzegorz Landowski
Editor-in-chief

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Poland at SEA

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On the front cover -
El-Mellab on sea trials.

Photo: Remontowa Shipbuilding



*Remontowa Shipbuilding
double-ended ferries pair in Estonia*

Tõll and... his wife

**The Tõll ferry departing
the port of Gdansk, Poland.**

Remontowa Shipbuilding has delivered *Tõll* and *Piret*, the two modern double-ended car passenger ferries for Estonian routes.

As announced early November 2014, The Port of Tallinn has signed contracts with Remontowa Shipbuilding in Poland and Sefine Shipyard in Turkey for the construction of four 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; with two units to be built by each shipbuilding facility. As of early months of 2017, all the ferries have been delivered and are in operation under the trading name of Praamid.

The contract for the two units, was won by Remontowa Shipbuilding in fierce competition from several renowned shipyards taking part in tendering process. The most decisive factor behind choosing the Polish yard was its vast experience in passenger ships construction and its renown among European and US owners. Remontowa

Shipbuilding has built some 50 car and passenger ferries of various sizes, propulsion types and fuels so far.

The first of the two ferries built for Estonian operation (newbuilding no. B 616/1) was launched in Gdansk on December 29, 2015. It was Gdynia, however, not Gdansk, where launching of the second ferry (newbuilding no. B 616/2) took place, on January 28, 2016. That second hull was built in Gdynia by a subcontractor - Irko Ltd. The assembly of the hull and its launching took place in the SD II, the larger of the two graving docks of the former Gdynia Shipyard.

Several days after its launching, the hull was towed to Gdansk, where the Polish yard, along with its subcontractors, carried out completion and outfitting of the both ferries.

On the 9th of January, the *Tõll* double ended ferry arrived in Tallinn.

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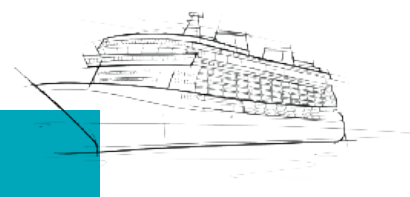


Photo: Piotr B. Stareńczak



Have a look at car deck and some interiors of the *Töll* ferry...

The vessel was officially delivered on the 5th of January, however, due to harsh weather conditions, she departed from Gdansk with 12 crew members on board three days later, on Sunday the 8th of January.

The ferry's first stop had been Virtsu Harbor on the country's West coast, after which she continued on to Tallinn. Upon arrival, the *Tõll* was further outfitted with moveable equipment for kitchen, onboard store, children's playroom, and had wi-fi and other amenities installed and infographics applied.

Training for the ferry's crew and service personnel had also been planned before it eventually entered service on the Virtsu-Kuivastu line connecting the Estonian mainland to Saaremaa, the country's largest island, via the smaller island of Muhu.

Similar pattern of owners' preparations, before putting the ship in service, later followed on the second ferry.

The *Tõll*'s first commercial trip (which meant putting the vessel into actual op-

eration) took place on January 22, 2017, with captain Hanno Naaber personally welcoming arriving car passengers on the first trip at the ship's ro-ro ramp. This followed the christening ceremony held a day before.

The ferry *Tõll* has received its name after the Saaremaa's hero Suur Tõll (the so-called Large Tõll). According to the legend, he was so large that when walking through a stormy sea the waves only hit him up to the waist.

Tõll lived in Tõlluste, Saaremaa. He loved his home very much and he took good care of the people of Saaremaa. And not only that, the Hiiu island and people had also been in his heart like his own island and people.

For example in case of stormy weather Tõll kept an eye on the sea and if some ship was in trouble there, the hero ran straight through the breakers to help the sailors. Thanks to Tõll everyone was always saved from drowning, he brought every last one back to shore under his arm.

He also had a great appetite. For dinner, his wife, Piret had always boiled an entire cauldron of cabbage soup and baked at least six loaves of rye bread. Tõll would then munch with his whole mouth so that the forest echoed. At the same time he would stare into Piret's eyes, as if sending gratitude and love in his thoughts.

Piret is also the name of the second ferry in the series built in Poland (newbuilding no. 616/2). On Saturday, the 1st of April 2017, the *Piret* set sail heading for Estonia. The ship was there by a crew of 12. Two days later, on the 3rd of April, the ferry arrived in the Port Of Tallinn joining the Turkish-built sister ferry *Tiiu* of the same design, which had called the port just the day before.

The *Piret* was about to take up line service on the Virtsu-Kuivastu route between the Estonian mainland and the islands of Muhu and Saaremaa. Christened on April 12, in Tallinn, the ferry started its operation on the designated route on April 14, 2017. And again, the

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Töll and Piret (B 616 yard's type designation) principal characteristics:

flag - Estonia
operator, ship manager - TS Laevad OU (trade name Praamid)
owner - Tallinn Port Authority
builder - Remontowa Shipbuilding SA, Gdansk, Poland
length over all - approx. 113,90 m
length between perpendiculars - 103.41 m
moulded breadth - 19.19 m
max breadth - 19.69 m
max draught - 4.013 m
depth - 6.00 m
max draft - 4.00 m
frame spacing - 0.6 m
gross tonnage - approx. 4985
net tonnage - approx. 1495
deadweight - 635 t
length of car deck - 107.0 m
car capacity (4.65 m × 1.85 m) - 150
trailer capacity (19.00 m × 2.85 m) - 12
passengers - 700 (640 seated); disabled chairs - 7; max number of people onboard - 718; crew cabins - 11
propulsion - 4 diesel oil engines based generating sets; connected to 2 electric motors of (2,000 kW) driving 2 Azimuth drive units
propulsion total power - MCR 9,184 kW (12,486 HP), CSR 7,804 kW (10,610 HP)
main engines - 2 × MTU 12V4000M, 4 stroke, single acting, Vee config., 12 cylinder., 165 × 190 mm, MCR 2,238 kW (3,043 HP) at 1,800 rpm + 2 × MTU 16V4000M, 4 stroke, single acting, Vee config., 16 cylinder., 165 x 190 mm, MCR 2,354 kW (3,200 HP) at 2,000 rpm
thrusters - 2 × directional thruster (azimuthing) for main propulsion and steering
service speed - 10 knots (12 or 13 knots according to other sources)
max speed - over 15 knots
classification - DNV GL
ice class - FS Ice Class 1A
class notation - DNV + 1A1 R3 ICE-1A CAR FERRY B E0.

captain of the ship, Andre Sisas Pireti here, waiting on a car deck, welcomed the first passengers embarking the ferry in cars.

The DNV classed ferries (+1A1, R3, Car Ferry B, E0, Ice-1A), designed by LMG Marin (LMG 150-DE design) can operate without assistance year round in the Tallinn area, featuring ice strengthened hulls, one car deck and two tween-decks as well as panorama lounges.

They are 114 metres long and can accommodate 150 cars or 12 full-size trucks. Both have seats for 500 passengers on two decks and carry rescue equipment for up to 700 passengers, however the normal capacity is for 600 persons. These diesel-electric driven vessels can be easily switched for LNG fuel as they are "LNG ready" - prepared for the future upgrade for LNG single or dual fuel propulsion.

The low operating costs will be undoubtedly advantage of these ferries. The optimized hull's shape will cause lower fuel consumption and NO_x and SO_x emission to the atmosphere. The high level of automation allows for minimum manning.

Photo: Piotr B. Stareńczak



**The Piret ferry departing
the port of Gdansk,
Poland.**

*Innovative vessels
from Crist yard for Finnish
and Icelandic waters*



Hybrid electric ferries

**Elektra departing
for sea trials.**

On May 18, 2017, the first Polish built hybrid, electric driven ferry *Elektra* was towed out the port of Gdynia, bound for Finland. She was delivered to Finnish state owned Suomen Lauttaliikenne Oy, operating under a trade name of FinFerries. On May 29, the ferry was officially christened in Turku.

But let us start the story from the beginning... Following the order placed at Crist yard late October 2015, the construction commenced, on 6th April, 2016, with cutting of the first steel plates.

Elektra for FinFerries

The ceremony of keel laying for the construction of an innovative double ended ferry, was held at Crist shipyard on 28th June 2016. The representatives of FinFerries and the Yard together laid the plaque and coins below the keel of the ferry.

February 17, 2017, saw the launching of the newbuilding no. P310 (TBN *Elektra*) in a dry dock at Crist SA. Launching the ship was one of the last stages of construction of the ferry, which is one of the few in Europe to have a hybrid diesel-electric propulsion.

The ship is equipped with a set of batteries with approximately seven years operational life. Charging the batteries will take place each time during loading and unloading, and the time needed to do this is just 7 minutes. However, due to the harsh winter conditions in Finland, the ferry will have the possibility

to utilize one or more of the three diesel engines to support the onboard batteries which will serve as an extra boost when breaking and traveling through ice. The ferry is then operated as a plug-in hybrid vehicle.

The ferry has been equipped with the Siemens electric propulsion system BlueDrive PlusC. It includes an energy storage system, variable speed drive technology for the propellers and an integrated alarm and monitoring system. The complete electro-technical solution includes the remote access monitoring system EcoMain. Siemens will also be



Photo: Crist SA

On May 9, 2017 a ceremony of first steel cutting for the hybrid, electric ferry destined for Iceland was held at Crist SA.

supplying a WiFi solution to connect with the shore-based charging stations controlled by the ferry's energy management system in order to secure automated fast charging.

StoGda Ship Design & Engineering Sp. z o. o. (StoGda), a Gdańsk-based ship design office established in 1997 was responsible for delivery of the complete design, including contractual design, basic design, model tank tests (including a large scale maneuverable

model lake test and ice tank tests), workshop documentation and as built drawings.

Among the suppliers of an equipment for the novel ferry is Remontowa Hydroster Systems Sp. z o.o. (RHS Ltd, previously known as Hydroster). The company, known for designing and manufacturing power hydraulics equipment for shipboard, offshore and land based applications, has accomplished delivery of ro-ro equipment

drives and watertight bulkhead doors for P310 newbuilding.

The drive supplied by RHS consists of twin pump set installed amidships. Ro-ro ramps, fabricated by Crist yard, installed fore and aft, are driven by hydraulic cylinders. With the ship underway, they are secured by locks, also driven by hydraulic cylinders - special locking cylinders. Control is effected from stations near ramps. Radio control is also possible from portable control panel. The monitoring of the

Computer rendering of the new ferry of Polarkonsult PK-259.1 design (yard no. NB70)



Fig.: Polarkonsult AS

ramps position is available at the bridge. The opening of ramps takes 10 seconds. The drive power is 2×40 kW with max working pressure being 250 bar. The drives installed on a ship are supervised by DNV-GL.

Another RHS supplied product for the P310 newbuilding are the six sets of watertight bulkhead doors. They are electro-hydraulically driven and comply with the newest SOLAS and DNV GL requirements for passenger vessels. They also have emergency drive, effected by manual pumps at the doors and from above the bulkhead deck.

Both sets of equipment have been supplied to Crist yard in September and October 2016. The delivery of the completed vessel is expected next year.

The hybrid ferry yard no. P310 (*Elektra*, IMO no. 9806328) is an environmentally friendly, passenger and car carrying, double-ended ferry. Handling the 1.6 kilometer-long route between Parainen and Nauvo in the Turku Archipelago, it is designed to transport 90 vehicles and up to 372 people. The crew of only three persons is allowed by a high level of automation.

Principal particulars of the P310 battery powered double ended ferry include length overall of 97.92 m, 93.30 m long car deck, moulded breadth of 15.20 m and extreme breadth of 16.55 m, design draught of 3.50 m, 3.55 m scantling draught, depth (to main deck) of 5.00 m. The ship features gross tonnage of 1251, and net tonnage amounting to 375, with 300 t deadweight capacity. The vessel will offer 450 m of ro-ro lane metres and

the ability to accommodate up to 375 persons on board.

The speed of 11 knots is to be achieved through two contra rotating propellers (CRP) 360° azimuth propulsion thrusters, supplied by Rolls Royce, 900 kW each at 1200 rpm.

The ferry will be provided with battery banks of 1040 kWh capacity to solely operate the vessel year-around. The battery banks will be charged from an external (land based) power source at every shore ramp visit (estimated about 5.6 minutes - 80% of the 7 minute shore time) and for longer times two times a day (one hour lunch break and a longer period during night time). The Battery lifetime is estimated at 7 years.

The ferry will be equipped with three main engines each driving an alternator on the common base frame, with the total output power 1260 kWe.

The vessel has been built according to the rules of DNV GL to get class notation: + 1A1 Car Ferry, B, Battery (Power) E0, Ice 1B, PET, R3 and will fly the Finnish flag.

Heading for Westman Islands

As *Elektra* was nearing completion of sea trials and receiving finishing touches from the yard, on May 9, 2017, a ceremony of first steel cutting for another hybrid, electric ferry was held at Crist SA.

The Icelandic Road Authorities, Vegagerðin, signed a contract with Polish yard Crist SA for the construction of a new ferry of Polarkonsult PK-259.1

design.

The ferry, newbuilding no. NB70, will be operated between Landeyjahöfn and Vestmannaeyjar (eng. Westman Islands), a town and archipelago situated off the south coast of Iceland. The journey will take only 20 minutes.

The weather conditions outside Landeyjahöfn are difficult with a mixture of long ocean waves and shorter coastal waves in combination with strong transversal current at the entry of the harbour. The water depth is only 4,5 m and the ferry will be operating in up to 3,5 m waves. These conditions requires excellent maneuverability and shallow water seakeeping characteristics.

The ferry will be 69,38 m overall length, 15,10 beam with a capacity of 540 passengers during the summer, or 390 passengers in the winter, 10 crew members and 330 lane meters for personal cars. The vessel will be powered by a diesel electric hybrid plant supported by a 800 kWh battery unit with harbour plug-in. Propulsion will be provided by rotating pulling thrusters.

Concept design of the ferry has been prepared by renowned Norwegian company Polarkonsult AS. The class and detail design will be performed by a Polish company StoGda Ship Design & Engineering Sp. z o.o., which has been cooperating with Crist for years.

The vessel to be delivered in June 2018, will replace MF *Herjólfur*, built in 1992.



Fig. Polarkonsult AS



Mark Willbourn with the cutting machine in the background.

Photo: Piotr Stanięczek

Production of the first hybrid battery ferries for London commenced

Innovation on the Thames

On April 20, 2017 at Remontowa Shipbuilding in Gdansk, the steel cutting for the new two hybrid car passenger ferries, on order from Transport for London (TfL), took place. Mark Willbourn, project manager at Briggs Marine pushed the button of a plasma cutting machine thus initiating the production process. At the end of June, the keel was laid.

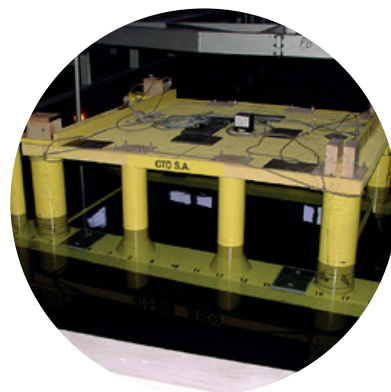
The event was attended by the representatives of the owner, classification society Lloyd's Register and the shipyard. It follows the contract, that Remontowa Shipbuilding signed on 30th September 2016. The contract was awarded following a public EU tender announced by Transport for London in 2015 in which Remontowa Shipbuilding finished ahead of reputable shipyards from (among others) Spain, Germany, Finland and the Netherlands.



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**Computer design renderings
of the hybrid double-ended
ferries for London**



The new vessels will be operating the Thames crossing in the district of Woolwich, carrying over a million vehicles and 2.6 million passengers a year. They will be built according to LMG 60-DEH design, developed by LMG Marin and will comply with rules and regulations of Lloyd's Register and the Maritime & Coastguard Agency. The ferries will be operated by Briggs Marine Contractors, that operate the Woolwich Ferry service under a long term contract with Transport for London.

The new ferries have been specifically designed to match the refurbished linkspans at Woolwich and will replace the current three vessels built in 1963. The new ferries will feature 210 lane metres of vehicle deck space with dedicated cyclist accommodation separated from foot passengers. The vessels will be licensed to carry 150 passengers.

The vessels' propulsion system has been designed around the principles of maximum efficiency, inbuilt redundancy, high reliability and low operating costs.

Each vessel will be equipped with four azimuth thrusters powered by vertically mounted permanent magnet motors. The Lithium-Ion battery pack

will allow for significant fuel savings. Two diesel generating sets will be installed and in normal operation only one will be running at a near constant load with the battery installation providing the peak power demand for the crossings. When the propulsion power demand is low the excess generated power will be used to recharge the batteries.

This novel hybrid system provides numerous advantages and in particular by reducing the number of engine running hours and also by ensuring that the diesel generator is constantly running at optimum load enabling emissions to be minimized.

This solution is said to allow fuel savings of more than 15% compared to a conventional modern propulsion

solution, and to CO₂ and NO_x emissions reduction. To further reduce emissions the generating sets will be fitted with an Exhaust After Treatment system comprising of both an SCR (Selective Catalytic Reduction) and DPF (Diesel Particulate Filter) making these vessels the most environmentally friendly vessel planned for operation on the River Thames.

This crossing being subject to side tide flow of more than 4 knots, a strong focus has been given on the high maneuverability capabilities of the LMG 60-DEH as well as high redundancy of all machinery.

Both ferries will be delivered to London in the Fourth Quarter of 2018. They will make the service more reliable and comfortable for customers.

These boats will function with an auto-mooring system that lets the boat attach itself to the berth and remain secure automatically. The shore terminals automatic mooring system allows the power to the thruster units to be reduced to zero when the vessel is berthed. TfL will install new berths in 2018 because the current berths at Woolwich and North Woolwich piers cannot accommodate this new technology. Once finished, the berths will give customers an even safer journey and ferry staff a more reliable way of mooring the boat.

The new boats meet London's Low Emission Zone standards because they use a diesel-electric hybrid propulsion system.

To support the Mayor's goals for cleaner air they will contribute to reducing emissions in London, require less fuel to moor and save money.

– I'm really pleased to see this underway. It's a mass improvement to the ferry services in London - said Mark Willbourn, project manager at Briggs Marine at the ceremony in Gdansk.

– We are very pleased to see this is an upgrade of the vessels on the River Thames. They will be the first diesel-electric battery hybrid ferries in London leading the way to low emissions. There is a policy in London to reduce emissions as much as possible and the ferries will lead the way on the river - he added.

– We are very satisfied, all the more so because it is a brand new electrical ferry under construction for TfL, the first all-electric battery-powered vessel to be built at our shipyard. A remarkably

important project - said Mateusz Filipp, CEO of Remontowa Shipbuilding.

– These are among the very first electric ferries under construction in Poland and the first ones at our yard. That way we confirm our market position as a proven shipbuilder of virtually every kind of ferries from those traditionally powered, through LNG fuelled ones, up to these driven by electricity, currently in demand - he emphasized.

A video report...

... of the first steel cutting for the construction of new hybrid ferries for London at Remontowa Shipbuilding is available at:

http://bit.ly/rem_london_ferry (YouTube)



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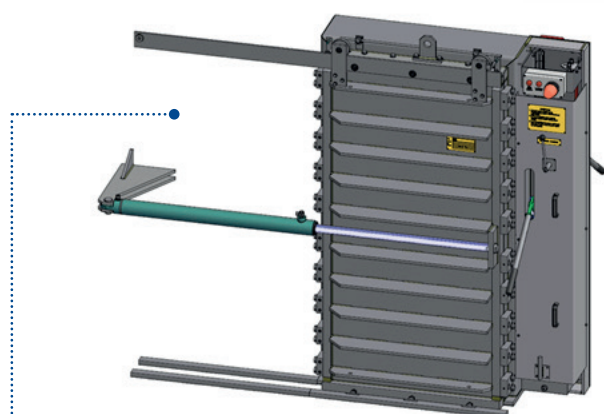
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Bulkhead Watertight Sliding Doors A0 and A60 class



Watertight sliding doors from REMONTOWA HYDROSTER 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 HYDROSTER SYSTEMS WT doors. And last but not least is compliance with SOLAS, NORSOK and with all major class rules.

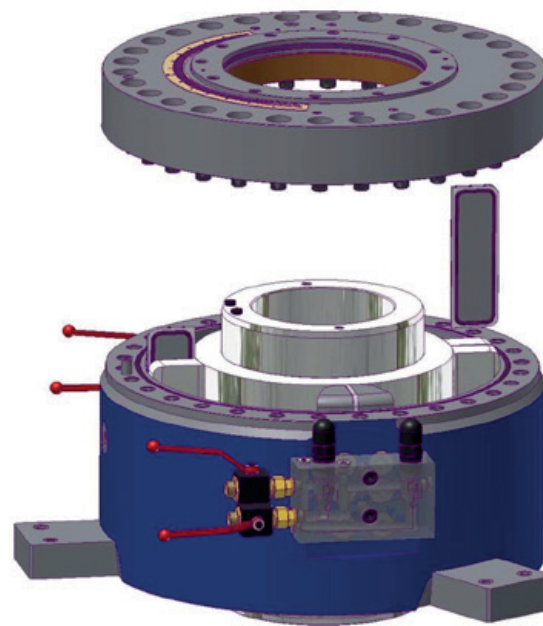
Bulkhead watertight sliding door with electro-hydraulic drive

New rotary vane steering gears

REMONTOWA HYDROSTER SYSTEMS, known well before as HYDROSTER brand, have been designing and manufacturing steering gears since 1954. In 2012 designed a new rotary vane steering gears with rudder deflection angles $\pm 35^\circ$, $\pm 45^\circ$ and $\pm 65^\circ$ for max. working torque from 16 to 1000 kNm. Working torques are obtained by working pressure 12 MPa while maximal (design) pressure is 15 MPa. New rotary vane steering gears meet requirements of SOLAS Convention and specified by client Classification Society.

Main advantage of new rotary vane steering gears is replacement of seals which does not require docking of vessel and taking off steering gear from rudder.

Replacement of seals can be performed for example during vessel stay in harbour which reduces vessel off-operation time and it is important cost-cutting factor (changing the seals without a ship docking).



HYDROSTER's new rotary vane steering gears
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Australia's first LNG fuelled offshore vessel from Remontowa Shipbuilding



Siem Thiima blazes the trail

Siem Thiima
on its way to Australia.

On November 28, 2016 r., following formal delivery on November 24, crew preparation and familiarization, the platform supply vessel *Siem Thiima* left Remontowa Shipbuilding SA yard and departed for a long trip to Port Dampier in Western Australia to attract interest and attention as the first LNG fuelled offshore vessel in the region.

To be more precise - for extra operational flexibility and safety from redundancy - the vessel is equipped with dual-fuel propulsion allowing it to operate either on LNG or on marine gas oil (MGO).

Siem Thiima (ex *Siem Harmony*) is the second PSV (following the *Siem Pride*), with natural gas fuelled propulsion, built at Remontowa Shipbuilding (newbuilding no. 856/2) for the Norwegian owners Siem Offshore (in this case - Siem Offshore Australia Pty Ltd subsidiary). Siem Offshore is one of the biggest Norwegian offshore fleet owners, recently active not only in the oil&gas sector, but in the offshore wind industry as well.

During Q1 2017 *Siem Thiima* commenced work offshore Australia, in a five year charter at Woodside Energy, the

country's largest independent oil and gas company with a global portfolio, known for capabilities as an explorer, a developer, a producer and supplier of energy. As the Australian company reveals, the ship is deployed in the area of Exmouth and Pilbara.

Siem Offshore, in its official information release, provided the following statement: *"This five years charter contract is a significant milestone for both parties in their commitment in Australia and the Far East, as well as a milestone in development of sustainable transport, owing to Woodside initiative, to use environmentally friendly LNG fuel as a main power source for ships"*.

- We are first to introduce one of such ships (*Siem Thiima*) on the Southern Hemisphere. Australia is on its way to

become the world's largest producer of LNG, therefore adding dual-fuel vessels to our fleet is highly sensible - said Mike Utsler, operations manager, Woodside. - Australia is on track to become the world's largest producer of LNG, so it makes perfect sense to build dual-fuel capabilities for our marine fleets here - he added. - Our LNG tankers use their cargo to power their engines, making them cleaner vessels that use less diesel. It's natural that we progress this capability through to our support vessels - Mike Utsler concluded.

According to Peter Coleman, the CEO and managing director at Woodside there is a huge potential in the LNG-fuelling market. He estimates, that this market alone can account for more than 200 million mt per year of demand.

After arrival from a long trip around the globe, the *Siem Thiima's* first Australian LNG fuel bunkering took place on January 23, 2017. As revealed by EVOL LNG, this was the first Australian commercial LNG bunkering as well. On that day, under an agreement with Woodside, EVOL LNG successfully re-fuelled the Remontowa Shipbuilding built platform supply vessel at King Bay Supply Base near Dampier.

EVOL LNG designed and fabricated a bunkering system for Woodside that is fully compliant with the comprehensive international LNG bunkering standard, ISO 18683:2015.

It's worth recalling that International Maritime Organisation (IMO) has introduced emission control areas in Europe and North America. In addition, China has also introduced emission control areas around its three major ports.

– Interest in LNG as a marine fuel is growing, especially since the IMO announced that it would introduce a global marine fuel sulphur limit of 0.5 per cent from 2020 - Nick Rea, EVOL LNG's Business Manager, emphasizes and adds, that as emission reduction efforts continue to become more important globally, including in Australia, the adoption of LNG as a low emission marine fuel is expected to increase accordingly.

– It's certainly an offering we'd like to expand, particularly as truck to ship LNG bunkering can be achieved relatively inexpensively with existing logistics assets - he stated.

LNG vaporises and leaves no residue in the event of a spill, minimising adverse impact on marine life or waterways. LNG is a cleaner alternative to marine diesel, emitting 25 per cent less carbon dioxide, less NO_x and almost zero SO_x.

Siem Thiima - principal particulars:

IMO no. - 9727235

flag - Norwegian

operator - Siem Offshore AS

builder - Remontowa Shipbuilding SA, Gdansk, Poland

length overall - 89.16 m

length between perpendiculars - 80.37 m

breadth moulded - 19.00 m

draught - 7.412 m

depth - 9.00 m

deadweight - 5500 t

gross tonnage - 4768

net tonnage - 1452

propulsion - 4 diesel oil engines based generating sets driving 2 generators, each 2,400 kW 690V a.c. and 2 generators, each 2,500 kW 690V a.c. connected to 2 electric motors of 2,200 kW driving 2 azimuth electric drive units

total propulsion power - MCR 7720 kW (10 496 HP)

main propulsion engines - 2 × Wartsila 6L34DF, 4 stroke, single acting, in-line (vertical), 6 cylinder, 340 × 400 mm, MCR 2510 kW (3413 HP) at 720 rpm + 2 × Wartsila 8L20DF, 4 stroke, single acting, in-line (vertical), 8 cylinder, 200 × 280 mm, MCR 1350 kW (1835 HP) at 1200 rpm

max. speed - 14.80 knots

service speed - 12.00 knots

tunnel thrusters (fore) - 2 × 1000 kW (1360 BHP)

directional thruster (fore) - 1 × retractable directional thruster 880 kW (1196 BHP)

classification - DNV GL

class 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.



According to data obtained from SEA Europe and DNV GL, as of the 1st quarter of 2016, there were 77 LNG-powered ships in operation worldwide. As many as 11 of them have been entirely built (as turn-key projects) at a Polish yard Remontowa Shipbuilding SA, ten car-passenger vessels and one PSV named *Siem Pride* delivered to Siem Offshore in 2015.

Since then, the Remontowa Shipbuilding yard has contributed to the development of the world LNG fleet delivering further four vessels so far - three car passenger ferries built for BC Ferries, the first LNG-fuelled ferries in Canada and the *Siem Thiima* mentioned above.

The LNG fuelled PSVs built at Remontowa Shipbuilding for Siem Offshore (both *Siem Thiima* and *Siem Pride*) have been entirely constructed in Gdańsk



Photo: EVOL LNG

The *Siem Thiima* PSV bunkering LNG at the King Bay Supply Base in Dampier, WA, January 23, 2017.

- starting with developing workshop documentation, going through building of the hull and ending up with complete outfitting and performing sea trials before turn-key delivery. The PSVs have been equipped with state-of-the-art navigation systems including an advanced dynamical positioning system DP2, fire-fighting system Fi-Fi 2 and facilities for containing of oil spills.

The 89 meter long, 19 m wide 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.

These DNV GL classed vessels are of Wärtsilä's VS 4411 DF design. This 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 have been built to meet the 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.

Their hull, machinery and equipment have been designed and constructed in accordance with the Rules and Regulations of Det Norske Veritas.

See a Video Interview...

... with the master of *Siem Thiima*, Theo van der Merwe, including his statement: "She's got some sexy lines!"

<http://www.polandatsea.com/master-of-siem-thiima-shes-got-some-sexy-lines/>



Safe yard delivered SD Tempest tug built for the Royal Navy



SD Tempest - departing the port of Gdansk for Portsmouth.

Aircraft carriers assistant

On February 15, 2017, the *SD Tempest* RotorTug, left the port of Gdansk, delivered from Safe yard. After a few days the tug reached its destination - a Royal Navy base in Southern England. Although contracted by Damen Shipyards, the vessel has been transferred from the Gdansk-based shipyard directly to the owners and area of operation.

UK-based Serco has contracted Damen Shipyards Group to build a powerful new tug to support the Royal Navy's two new aircraft carriers at Portsmouth Naval Base as part of its contract to provide Marine Services to the United Kingdom Ministry of Defence (UK MOD). The construction of the fully equipped, turn-key delivery tug was subcontracted to Safe Co. Ltd. Engineering Services. The vessel was launched on September 14. The tug has undergone sea trials on the Gdansk Bay, prior to its delivery, under supervision of Damen specialists, from Safe yard.

The vessel is the first of its type under the UK Flag. The Damen-built ART (Advanced Rotortug®) 80-32 tug offers the maneuverability, power (80 t of bollard pull) and towing flexibility needed to support the Queen Elizabeth Class aircraft carriers, the two largest ships ever commissioned for the Royal Navy.

HMS *Queen Elizabeth* and HMS *Prince of Wales* are currently under construction at Rosyth on the River Forth in Scotland. Serco currently provides a wide range of marine services to the UK MOD operating out of Portsmouth, Devonport and the Scottish west coast sites at Greenock, Faslane and Kyle of Lochalsh. This includes passenger ferry, towage and nuclear safety support for the Royal Navy and visiting foreign Naval submarines and ships; oil spill response; weapons range safety vessels; pilot transfer; fuel/water/sewage; diving training support craft, including therapeutic recompression capability; worldwide support to military training; and NATO Submarine Rescue System, training and deployment platform.

The company is the UK's largest operator of British flagged vessels and this new vessel will bring its total fleet to 115, of which 31 will be Damen-built, and many of them with partially outfitted hulls or even turn-key deliveries, in some cases, subcontracted to Polish yards.

The Damen-built ART features a patented Rotortug® propulsion system consisting of three azimuthing thrusters (two forward, one aft) which provide enhanced omni-directional maneuverability, and the benefits of a fully redundant and precise machinery configuration. Serco has also specified a number of modifications to the Robert Allan Ltd design to enable her to support the huge aircraft carriers. These include a double drum render / recovery aft winch for redundancy and a foldable mast for safe working under the flight deck overhang.

Furthermore, like the previously built tugs for naval use, Damen, through its subcontractor - Safe in Gdansk - has fitted the 32.9-metre long tug with grey fendering to match the livery of Royal Navy vessels, thus preventing marking of the hulls. On *SD Tempest* also controllable pitch propellers have been installed instead of the usual fixed pitch propellers found on other ART 80-32 vessels.

SD Tempest - Damen ART 80-32 principal particulars:

IMO no. - 9803637
flag - United Kingdom
manufacturing yard (hull and outfitting) - Safe Co Ltd Sp z o.o., Gdansk, Poland
main contractor - Scheepswerf Damen Hardinxveld B.V., Hardinxveld-Giessendam
keel laid - 19.05.2016
launching - 09.2016
delivery - 02.2017
group owner - Serco Ltd, Wielka Brytania
registered owner - SD Marine Services Ltd, Wielka Brytania
length over all - 32.90 m
moulded breadth - 12.60 m
depth - 4.80 m
gross tonnage - 495
net tonnage - 148
compensated tonnage - 2155 CGT
bollard pull - 80.00 T
propulsion - diesel-electric
main propulsion total power - 5295 kW (7200 HP) MCR / 4500 kW (6117 HP) CSR
main engines - 3 × Caterpillar 3512C-HD, four-stroke, V configuration, 12-cylinder, rated at 1765 kW (2400 HP) MCR at 1800 r.p.m.
maximum speed - 13.5 knots
service speed - 12.0 knots
classification - Lloyd's Register



Photo: Piotr B. Stareńczak

On the captain's bridge.

However, unlike the two ART 80-32 tugs built previously at Safe for Damen (with *RT Evolution*, also fully outfitted and delivered from Safe yard in Gdansk after sea trials, being one of the world's first purpose built hybrid propulsion tugs), *SD Tempest* features conventional, rather than hybrid, propulsion system.

The tug had a very special occasion to show off its capabilities in the presence of the member of the Royal Family and high Royal Navy officers shortly after its delivery from the shipyard in Poland.

On March 20 Her Royal Highness The Princess Royal (Princess Anne) officially named the jetty which will house the Royal Navy's giant new aircraft carriers

in Portsmouth. The event and the stroll of the Royal guest with accompanying VIPs along the new jetty was enhanced with *SD Tempest* displaying dynamic manoeuvres in close proximity to the jetty.

Polish yards have already previously delivered partly outfitted hulls and, less often, turn-key, fully equipped vessels contracted by Serco at Damen group. We have managed to count 21 such cases so far. These included partly outfitted hulls of 29 m tugs *SD Bountiful*, *SD Dependable*, *SD Reliable* and *SD Resourceful* delivered during 2009-2010 by Crist yard or smaller, 21 m, fully outfitted tugs *SD*

Christina, *SD Deborah*, *SD Eileen* and *SD Suzanne* from Damen Shipyards Gdynia.

Furthermore, turn-key deliveries of fully outfitted vessels and partially outfitted hulls of such kinds as tugs, oil products and sludge barges, water tanker barges and utility / workboats have been supplied by such builders in Poland as Magra, Northern Shipyard (presently Remontowa Shipbuilding, Damen Shipyards Koźle, Safe Co. Ltd., Stocznia Tczew and Crist.

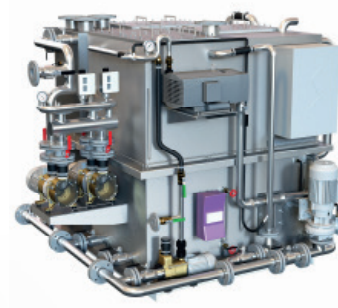
Photo: Royal Navy



**Royal visit with
SD Tempest showing
off its agility in the
background**



WHO WE ARE AND WHAT WE DO



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- Hyde Marine Inc, US manufacturer of ballast water treatment system, effective and reliable solution that combines efficient filtration and ultraviolet disinfection, simple design provides smallest footprint on the market. (www.hydemarine.com)
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For enquiries please check www.altromarine.eu




*The first tall ship
for the Algerian Navy built in Poland*

3000 square metres at sea



Photo: Remontowa Shipbuilding



On August 16, 2017 the *El-Mellah* training sailing ship set sail for the second series of sea trials with representatives of the end-user, marking the closely approaching delivery.

The *El-Mellah* ("Sailor" in Arabic) has been built at Remontowa Shipbuilding in Gdansk, a member of Remontowa Holding capital group for the Algerian Navy.

The fully-rigged ship will be used by naval academy cadets to improve their marine and navigation skills. The crew is composed of 222

El-Mellah at sea under sail.

officers and sailors including 120 cadets. Additionally, like the majority of sailing ships, it will play a representative role abroad also participating in competitions, regatta and international meetings.

It has been the first sailing ship built at Remontowa Shipbuilding and also the first one in the history of the Algerian Navy. The contract was won in fierce competition with Western European yards.

The length of the hull, including bowsprit, is 110 metres, while the tallest of its three masts is 54 metres above water line. One of the masts is also a funnel, thus fumes being discharged through side exhausts will no longer be a problem for the crew. The sail area is 3000 square metres allowing the ship to reach a top speed of 17 knots.

The contract with the Algeria, aside from the construction of the ship, also includes training future crew members and cadets carried out in collaboration with the Maritime Academy in Gdynia. As part of the training Algerians have sailed a few weeks on board the sister-ship *Dar Młodzieży* in the Baltic Sea under the supervision of Polish specialists. The ultimate goal of the training is an independent cruise sailing to their country.

The conceptual design and technical design project comes from famous Polish naval architect Zygmunt Choreń,

<i>El Mellah</i> - principal particulars:	
type - sail training ship	
IMO No. - 9775907	
flag - Algeria	
operator - Algeria Government / Defense Nationale	
shipbuilder - Remontowa Shipbuilding SA	
yard no. - B103/1	
length o. a. - 110.00 m	
length b. p. - 78.00 m	
breadth moulded - 14.50 m	
draught - 5.75 m	
depth - 8.60 m	
gross tonnage - 2000	
deadweight - 662 t	
propulsion - 1 oil engine reduction geared to screw shaft driving 1 propeller	
main engine - MTU Friedrichshafen GmbH - Friedrichshafen	
service speed - 18.00 kts	
classification - Bureau Veritas	

an engineer considered to be the most outstanding constructor of sailing ships in the world. He was present at the Remontowa Shipbuilding yard during part of the masts erection process. Also the employees of Choren Design

& Consulting were taking part on masts installation, caring especially for tackle and rigging set-up.

Since July 16 until 23, 2017 the *El-Mellah* underwent the first set of sea trials, during which the vessel's onboard equipment as well as its seaworthiness, maneuverability and performance were checked and verified. Rigging and hoisting the sails were also conducted.

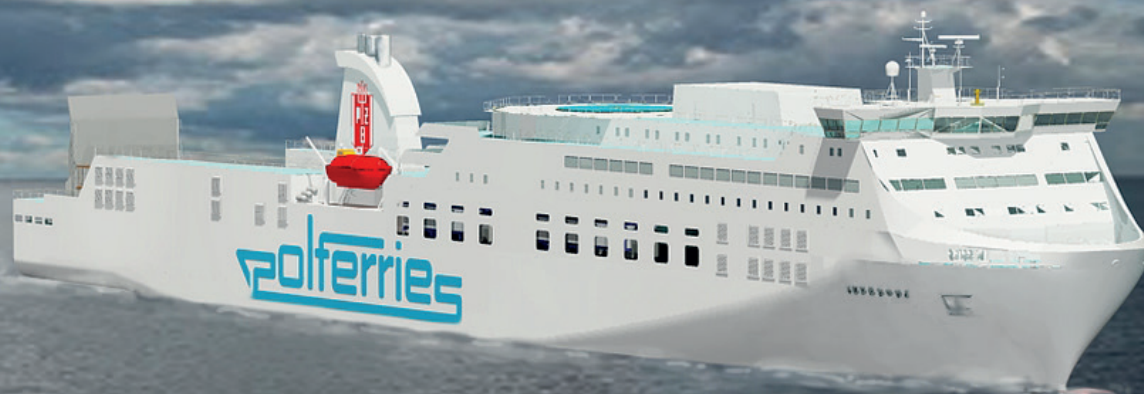
As we went to press - the second series of sea trials was expected to last to the end of September. The ship sailing in Polish territorial waters with representatives of the final customer - the Algerian Navy - was also expected to call the Port of Gdynia several times. The *El-Mellah's* crew members had an opportunity to familiarize with the vessel before its handover to the Algerian Navy and voyage home.



Photo: Piotr B. Stareńczak

***El-Mellah* while being towed for the first set of sea trials in July 2017.**

Keel laid for the construction of a new Polferries ferry, more to follow



A dream ship...

Early design rendering (from around time of keel laying ceremony late June).

On 23rd June 2017 the ceremony of keel laying for a ro-pax ferry B 145-I/01 was held at "Wulkan Nowy" slipway / building berth in Szczecin Industrial Park (former Szczecin Shipyard). MSR Gryfia Yard is responsible for the construction of the newbuilding for Polferries (Polish Baltic Shipping Co. or PŻB).

- Today we may officially start the project, which will launch the ship-building recovery program in Szczecin. Returning to the construction of such large units is a challenge for us, because for several years projects of such a large scale were not implemented in Szczecin. However, I am convinced that owing to the determination and experience of the Management Boards of Szczecin Industrial Park, MSR Gryfia Shipyard, and other MARS Group companies, the investment will be successfully accomplished - said Konrad Konefał, a member of the management board of MS TFI, which manages the MARS group.

The preliminary contract for the construction of the first ferry for Polferries

was signed by MSR Gryfia yard (of MARS S&O group, state owned) and Polska Zegluga Bałtycka (known under trade mark of Polferries, also state owned) on March 8, 2017. However the ferry is intended to be built not at Gryfia, but (at least its hull constructed) on the premises of former Szczecin Shipyard (presently - Szczecin Industrial Park, purchased by state-owned shipyard group MARS S&O in January).

Gryfia has no most recent newbuilding experience (it is basically a shiprepair yard) with no experience in building large ferries at all. It delivered small double-ended fjord ferries - for Torghatten in 2001 and another one in 1998 for the same owners as well as a few, even

smaller, road / town river double ended ferries for Swinoujscie town in Poland ("Bielik" type ferries).

As revealed by Polferries and MARS Group shipyards, the ferry will be 202.40 m long overall, 30.80 m wide and is expected to reach a speed of 18 knots. The new ferry will accommodate 70 crew and 399 passengers on board. She will use liquefied natural gas (LNG) as the main fuel and will be equipped with a diesel electric propulsion system with two main azimuthing podded drives. The ferry will be designed to be bunkered with use of the LNG terminal facilities in Świnoujście and at the Ystad port.

Technical particulars may be subject to minor changes - "works on optimization of the design are underway" - as we have been officially informed around the time of contract signing.

Initially, Westcon Design office has been responsible for design works with Piotr Żelazek and Marek Nowak being chief designers. Stanisław Domagała of Ned-Project is a main consultant in the project on the owners' side. At later



The first section (symbolic “keel”) for the new Polferries’ ro-pax to be built at former Szczecin Shipyard by Gryfia SA.

stages of the project implementation, a participation of a few prestigious Polish ship design offices has been foreseen.

Regardless of the matter of contract confidentiality we could not be supplied with any artist’s impression at the stage of contract signing, as it was not available yet, as the design process was at “too early stage”. The contract design was then said to be ready for “end of April”. Later (around the time of keel laying ceremony) some limited renderings appeared in publications.

As mentioned before, the contractual design has been prepared by Westcon in Szczecin, Poland - subsidiary of Norwegian Westcon Group. As we managed to learn - the design will be roughly (only partially) similar to an earlier design concept, that was supplied to the order (placed in 2014) of SR Nauta yard by Westcon (with Unity Line in mind as a final customer).

It would be after the contractual design is ready (as we were officially told in March), that the addendum and required attachments (such as contractual design/outline specification) would be

added to make the final form of the contract, although - as the head of PZB (Polferries) Piotr Redmerski insisted answering our inquiries at that time - what was signed on March 8 in Kołobrzeg was just a “firm document” or a “contract”.

Meanwhile, shortly after the keel laying ceremony (late June) it was announced by MARS officials that “tender for detailed engineering design was launched”. Since then, until when we went to press (late August / early September) there was no official announcement neither from the builders nor owners regarding the outcome of the mentioned tender. So far no official information has been released on the completion of the addendum and required attachments to contribute to the final newbuilding contract, either.

According to the officially revealed schedule of the project, the shipyard will begin works associated with the production of hull sections at the turn of 2017 and 2018. Thus, the surroundings of the first small section, laid as the symbolic “keel” on the slipway, remain calm and vacant, apart from small area in the lower part of the slipway / build-

ing berth used occasionally for docking small ships under repairs and some area in the upper part, occupied for assembly of a small ferry hull for Danish yard by smaller companies hiring facilities of the former Szczecin Shipyard. This situation is about to last until June 2018, when the shipyard is expected to commence works on the slipway, i.e. assembly of the hull. In 2019 the ferry will be ready to launch, and at the beginning of 2020 - for delivery to the owners.

Development of the shipbuilding industry in Poland within the “Batory” programme is one of the key elements of the “Responsible Development Plan” announced by the current Polish Government. Its direct goal is building a Polish passenger ferry at Polish shipyards and with the participation of foreign partners. The programme is aimed at moving Polish shipbuilding sector towards bigger and more specialised vessels, of higher value added, increasing the competitiveness of domestic ferry operators.

A preliminary contract signed on March 8 in Kołobrzeg concerns the design and construction of a (single) ro-pax ferry for operation on the Swinoujście-

Ystad route by Polferries. However, according to several statements from government officials the second ferry for the same, Kołobrzeg based ferry operator will follow. Polferries is determined to acquire new tonnage, as it needs to replace ageing ferries and keep pace with slowly, but steadily growing market on the Poland - Southern Sweden ferry routes. The new ships are also much needed by the largest Poland's ferry operator - Unity Line (subsidiary of Polish Steamship Company - Polska Żegluga Morska).

According to Polish Ministry of Maritime Economy and Inland Navigation, as many as 10 ro-pax ferries may be built in Polish yards in foreseeable future.

- We assume construction of approximately 10 ro-pax ferries. It would obviously be spread over time. We have initiated the preparations for the ordering of the first ferry. Construction of another ferry for PŻB (Polferries) will be commenced as the slipway / building berth is released by the launching of the first one, currently on order - minister

Polferries ro-pax newbuilding (yard no. B 145-I/01) - principal particulars:	
length over all - 202.40 m	
beam - 30.80 m, draft - 6.3 m	
speed - 18 knots (at 85% MCR)	
deadweight - 8600 t	
ro-ro lane length 3000 m	
passengers - 399 persons	
propulsion - diesel / LNG dual fuel	
classification - Polski Rejestr Statków	

Marek Gróbarczyk told TV Republika news channel.

- Part of this lot would be built for Polish Steamship Company, according to interest expressed by this company - the minister added.

- Ferry market is one of the best developing areas in transport, while Baltic Sea provides best prospects for investments in ferry sector. We intend, taking advantage of this market demand,

to engage and activate all of the Polish shipyards - said Gróbarczyk, adding that there is no reason, why Polish owners should order ships in China, instead of Poland. Yet, he insists, this has to be done in line with free market rules.

Taking into account this last statement, the question remains, how to make this dream come true?

• www.polandatsea.com

• Polish maritime industry online

*Remontowa Shipbuilding
to build new tugs for the Polish Navy*



Contract signed!

On June 19, 2017, representatives of Remontowa Shipbuilding SA, member of the Remontowa Holding SA and the Armaments Inspectorate of Poland signed a contract for the construction of six tugs for the Polish Navy, which are to be built and delivered by Remontowa Shipbuilding.

The contract was awarded as a result of the winning the tender: Technical Security and the conduct of rescue operations at the Sea, code name "Tug".

These units will perform the tasks of combat security and logistical support at sea and ports, implementation and support of rescue operations, transport of persons and supplies, pollution-neu-

Rendering of the tug to be built for the Polish Navy (the smaller ship). In the background ORP *Konradmiral Xawery Czernicki*, a multitask logistical support ship of the Polish Navy, previously built and delivered in 2001 at the Remontowa Shipbuilding yard (at that time known as the Northern Shipyard).



tralization, torpedoes recovery from the sea. The first of the tugs will be handed over to the contracting authority in 2019, next will follow in a monthly sequences ending the 2020 contract.

On November 16, 2016, the Armament Inspectorate of Polish Ministry of Defence, concluded the tender procedure and published information,

related to conclusion of a tender aiming at acquisition of six tugs to be built for the Polish Navy.

It was then revealed that the winning offer had come from Gdansk-based Remontowa Shipbuilding. It turned out Remontowa Shipbuilding, as the sole entity, fully complied with all of the requirements defined by the terms of

reference, and achieved 100 points by meeting the criteria with points distribution as follows: price - 70 points, guarantee period duration - 15 points and after sales service - 15 points.

The tender (No. IU/243/XI-81/ZO/NZO/DOS/Z/2014) was launched on December, 22, 2014. Reportedly, besides the winning party, Damen Shipyards Gdynia SA and Shiprepair Yard Nauta SA also submitted their offers which, within the tendering procedure, were subsequently rejected.

According to the tender requirements specification, publicized earlier, the tugs are to be utilized for pulling (towage) purposes, salvage, SAR operations, transporting the supplies and personnel, recovering the personnel from the water and transporting the torpedoes. The tugs, as specified in tender requirements, will also be capable of oil spills recovery.

The tugs will have endurance of five days and deck payload for up to 40 t of cargo, while the bollard pull will be 25 T, with pulling possible both stern and bow first. According to tender specification full displacement of each of the tugs will be up to 350 t and the vessels will be capable of developing speed up to 12 knots.

The tender was specified with delivery destination being formally the Command of the Gdynia Naval Port, however sources suggest the tugs would be deployed in naval bases both in Gdynia and Świnoujście.

Before contract signing, after Remontowa Shipbuilding had won the tender, it was twice protested by competitors, however the protest have been dismissed as the Remontowa Shipbuilding's offer proved to be perfectly proper and its winning position unquestionable, as Krajowa Izba Odwoławcza (National Appeals Chamber) found in its investigations.

Later the tender was revoked (cancelled) by the ordering party due to an "irremovable defect" in tender process, however, after controversy, the decision to cancel the tender was finally withdrawn.

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We would like to invite you to cooperate with our shipyard which offers: comprehensive renovation of small ships, pontoons, tugboats and fishing boats. Construction of ships and steel constructions. We shall do everything to meet your expectations. For each client we ensure a professional and comprehensive service by guaranteeing construction or repair of his/her ship. Depending on individual arrangements we also offer discounts for larger orders and long term cooperation. Our motto is tradition, quality and satisfaction of our clients.



OUR CAPABILITIES:

For our clients we perform construction and renovations of ships and fishing steel constructions with tonnage up to 220 ton and length up to 35 meters.

We may offer comprehensive repairs not only on dry dock (we have 120 meters wharf)

We perform the services in use on our cranes.

We follow all safety regulations.



WE PERFORM FOLLOWING SERVICES:

- Constructions of black steel, aluminium steel and stainless steel
- Welding services
- Machining
- Sandblasting and painting
- Renovation of main engines and generators
- Renovation of shaft and screw propellers
- Renovation of navigation systems
- All Electrical works
- All Electrical works

Szkuner shipyard owns production halls which makes it an excellent base for performing any works related to renovation and rebuilding of ships and building of new vessels such as tugboats, fishing boats and other small ships.

We have a large potential in the field of engineering and we are very competitively priced in the shipyard market.

The offer of the company is directed for everyone who have very high requirements regarding quality and reliability of any shipyard products.

It is also important that since the beginning of our activity we put emphasis not only on the high quality of offered products, but also on the feeling of safety of our Clients. That is why we employ an experienced staff of specialists and we only use highest class of tools and components (attested by certificates).



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*Turn-key delivery newbuilding
under construction at Nauta yard*

Fig.: Wärtsilä



Largest fishing vessel in Britain

Computer renderization
of the *Ocean Star* fishing
vessel under construction
at Nauta

Gdansk based Newbuilding Department of Nauta Shiprepair Yard (SR Nauta SA) began construction of a fully equipped / turn-key delivery fishing vessel with a steel cutting ceremony held on April 26th, 2016. The ceremony was attended by representatives of a shipowner, DNV and Wärtsilä Design.

The inauguration of the construction, mentioned above, was followed - on 16th June, 2016 - by a ceremony of keel laying for the fishing vessel, another important milestone in the process of building a new vessel (Nauta newbuilding no. B698), to be named *Ocean Star*.

Nauta has signed the contract with a Scottish shipowner Mewstead LLP in December 2015. *Ocean Star* is scheduled for delivery in the end of 2017.

This is particularly important order for the yard, as it concerns the construction of a turn-key delivery newbuilding with all the construction process - from the beginning to the end - being carried out at Nauta Newbuilding Division

located in the former Gdańsk Shipyard. Furthermore - as the shipyard stated in its news release - this project perfectly refers to the long tradition of Nauta Shipyard in the construction of fishing vessels.

Over the recent years Nauta has built mainly partly equipped fishing trawlers, so this contract for building an entirely equipped vessel is an important step towards the further development of the yard.

A new pelagic fishing trawler ordered by Scottish, Fraserburg-based owner Mewstead LLP will be built according to a Wärtsilä design and will feature a broad scope of Wärtsilä propulsion

machinery. When completed by Nauta shipyard, it will be among the largest and most efficient ship of its type in the world. And the largest one in the UK.

One of recent years' deliveries from Nauta was a partially outfitted hull of *Kings Cross*. When delivered, after further outfitting and completion by Karstensen Shipyard in Skagen, Denmark, to Scottish owners, it became Britain's largest fishing vessel. However *Ocean Star* will take over this title, after delivery from Nauta.

The decision to choose the Wärtsilä ship design was based on the high level of efficiency derived from the optimised hull lines. This optimisation, together with Wärtsilä's highly efficient integrated engine and propulsion solution, results in far lower fuel consumption than would otherwise be possible.

- This will be a very large and extremely modern fishing vessel and it is important that the design and the equipment driving the vessel also feature the very latest and best technologies. We are

Ocean Star - principal particulars:

IMO no. - 9811189
flag - United Kingdom
owner and operator - Mewstead LLP, UK
builder- Ship Repair Yard Nauta SA
newbuilding no. - B698
length overall - 86.80 m
moulded breadth - 17.60 m
depth - 8.20 m
deadweight - 4340 t
gross tonnage - 4622
compensated gross tonnage (CGT) - 9599
main engine - 1 × oil engine, Wärtsilä 12V32 (4 stroke, single acting, vee config., 12 cylinder, rated 6,000 kW (8,158 HP) at 750 rpm, reduction geared to screw shaft driving 1 FP propeller
main propulsion power - MCR 6,000 kW (8,158 HP), CSR 5,100 kW (6,934 HP)
auxiliary engines - Wärtsilä 20
thrusters - 2 × tunnel thruster
classification - DNV GL (Det Norske Veritas)

confident that the Wärtsilä design and equipment solutions fully meet our needs - said Michael Tait, the vessel's owner.

The *Ocean Star* will be approximately 87 m long and 18 m wide. The vessel will be equipped with the most modern fishing equipment such as fish finding, catching and storage system suitable for catching different type of school pelagic species. The complete propulsion plant, including main engine about 7 000 kW, together with two bow thrusters, will provide very good maneuverability during the catching operation and purse seining operation.

Nauta Shiprepair Yard launched another partially outfitted fishing trawler On March 31, 2017 - *Aine* destined for Karstensens Skibsværft AS. On 2 June, 2017 Nauta successfully launched another newly built fishing trawler *Rockall*, to be delivered as a partly outfitted hull for the same Danish shipyard.

. Further three vessels for other buyers are planned to be delivered to the owners (including one - *Ocean Star* - to final owner) in 2017, QI and QII 2018.



The hull of the trawler no. B-698 to be named *Ocean Star* was launched in Gdansk on 28 July, 2017.



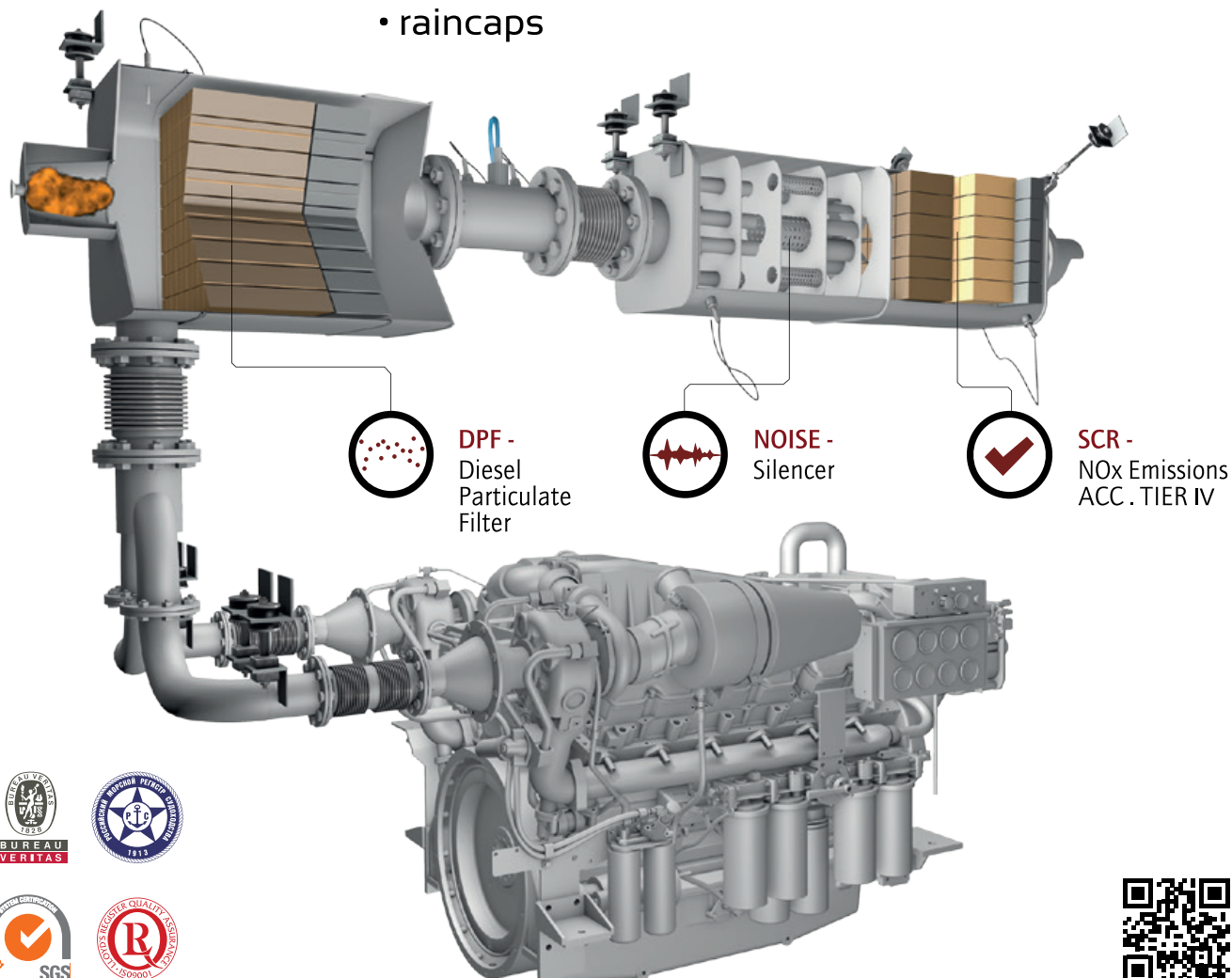
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AXCES consists of a group of companies that provide fully-integrated exhaust systems for combustion engines with exhaust silencers as its core-business. Anything installed after the outlet connection of a diesel or gas engine, AXCES delivers. Fully customized to individual ships, propulsion systems or industrial machines. Specializing in the whole process of design, engineering, manufacturing and supply AXCES offers total exhaust system supply solutions. Relatively basic solutions can be found in its wide range of standard products. AXCES is also the technical and acoustical partner that meets the most challenging noise requirements and specific silencer configurations against minimum back pressure results.

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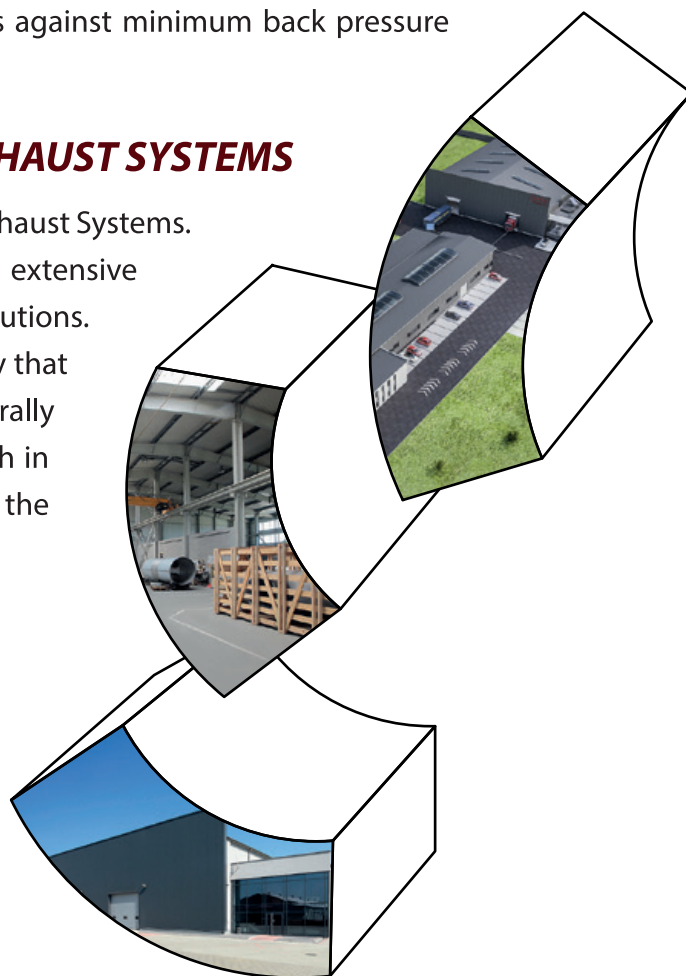
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Crist to deliver newbuilding to Artic Group again

Fig. - Seacon



Live fish carriers

Marine Harvest has signed a contract for its new well boats with Artic Group (a Norwegian shipping and trading company) / Artic Shipping AS last year. The Artic Group, in turn, has placed an order for the first of such vessel at Crist SA yard, in Gdynia, as announced in October 2016. The Polish yard has previously already delivered a ship to the same owner - Artic Group - the fish feed transport vessel *Artic Fjell* in 2014.

The new boats are designed by Seacon and are labelled with designation SC75. The contract revealed last year concerned a single vessel (newbuilding no. NB SC 75/1), but with options for as many as three. And the first option has already been transformed into a firm contract.

As revealed in March, 2017, Crist SA yard began work on the DNV classed newbuilding no. NB SC 75/2 with design supplied by the Owners, becoming the second order placed at Crist for the ship of the same design.

Delivery of the first ship from Crist yard is planned for the last quarter of

2017, while the second vessel is scheduled for delivery mid 2018.

The focus of the new SC75 well boat from Seacon is to make available a more affordable vessel without compromising the quality of design, comfort, safety and fish handling. According to SeaCon, the equipment and quality are in line with, or better than, what is available on similar vessels.

The Multipurpose Live Fish Carrier of SC 75 design, the highly automated ship to be manned by the crew of 10, is for a 75.70 m overall length well boat with a 15 metre beam, 8.2 m depth, the hull weight estimated at 980 ton and a 3000 cubic metre tank capacity for live transport of salmon. These tanks can also be used for debugging, using either solely using fresh water or with hydrogen peroxide.

The vessels will be used to transport fish from sea farms to the processing plant on land and will be operated in the areas of the North Atlantic and the Pacific.

The SC75 design, to be built at Crist under yard no. NB SC 75/1 and NB SC 75/2, was developed in collaboration with Artic Group Ships and Havyard MMC Fosnavåg, using 3D modelling. Model tests were also carried out to find the ideal hull shape.



Fig. - Seacon

Computer rendering of the SC 75 design live fish carrier, of which two units are under construction at Crist yard, Gdynia.

Nauta selected to build a SIGINT ship for Saab and the Swedish Navy

Special Purpose Ship

According to the statement published on 11 April 2017, Saab and the Swedish Defence Material Administration (FMV) had signed a contract for design, construction and delivery of a Special Purpose Ship. The order covers the period 2017-2020, with a total value of SEK730 million.

The Signal Intelligence (SIGINT) ship platform will be entirely constructed, launched and tested (including sea-trials) at the Polish Nauta Ship Repair Yard in Gdynia, a part of the Polish Armaments Group (Polska Grupa Zbrojeniowa - PGZ). The ship will then sail to a Saab's shipyard in Karlskrona, Sweden for fitting of the signal intelligence equipment and final Sea Acceptance Test (SAT).

The Saab's agreement with the Polish subcontractor was officially signed at Nauta's premises in Gdynia on April 26, 2017.

As the Saab's officials emphasized on the occasion of the contract signing in Gdynia, Nauta *"represents a good strategic and geographic fit for the Saab's business expansion in the naval domain"*. The contract is a result of a Memorandum of Understanding (MoU) signed in October 2016, between

Saab and PGZ, the Polish state-owned defence company.

– For the Nauta Shiprepair Yard participation in construction of this ship will represent an opportunity for further dynamic growth by increasing our shipbuilding portfolio, not only on the domestic arena. As Nauta we have access to a skilled workforce, needed infrastructure and have accumulated long term experience in maritime projects. We are a company which is experiencing dynamic growth, places emphasis on innovation, and has forged ahead with adoption of new technology - we are very well prepared to participate in a project like the production of a special purpose vessel - asserted Slawomir Latos, the chairman of the Nauta Shiprepair Yard.

– I am very pleased how we have turned the initial intentions in the MoU into a tangible business with PGZ. Special Purpose Ships of this kind require both high availability and reliability. In Nauta we have found a partner who can contribute in delivering a modern solution to our customer - said Gunnar Wieslander, head of Saab business area Kockums.

The new ship to be built at Nauta in Gdynia is intended to replace HMS *Orion*, currently in service of the Swedish Navy.

No details of the ship, neither artist's impression nor design computer renderization have been revealed so far. At a press conference following the contract signing at Nauta yard, late April, it was revealed that Polish counterparts will be taking active part in the process of the new Swedish Navy's SIGINT platform design and engineering.

HMS *Orion*, launched in 1984, will be replaced by a modern SIGINT vessel by 2020.



Photo: Swedish Defence Forces



Photo: Piotr B. Starek/czak

Monaco land expansion project's special purpose floating dock delivered from Crist yard



Tow out of the *Marco Polo* special purpose floating dock for submerging trials.

Voyage onboard *Sun Rise*

Fully outfitted, special purpose floating dock, left the Crist SA shipyard and was towed to Gdynia anchorage to be floated over and lifted up (docked) by semi-submersible heavy lift vessel *Sun Rise* early August. The “dock-ship” with Polish built floating dock as its deck cargo then commenced its voyage with port of Marseilles as destination.



Marco Polo special purpose dock towed out to the Anchorage of the port of Gdynia and positioned for loading aboard the *Sun Rise* heavy lift vessel.

The tow-out and loading on *Sun Rise* followed the last, few days long, yard stay after short submerging trials on Gdynia port anchorage.

The floating dock, unusual not only by its purpose, but also appearance (much shorter comparing to typical ship repair floating docks), is deployed in an ambitious and interesting project of dry-land territory expansion in Monaco.

The floating dock or "caissonnier" *Marco Polo*, aboard the ship *Sun Rise*, arrived in Marseille harbor on August 26 after two weeks of sea voyage from Poland. It was officially christened, with wide presence of media and official guests, on August 29.

The dock will enable Bouygues Travaux Publics to manufacture the 18 caissons that will constitute the protection belt of the new eco-district of Anse du Portier in Monaco. Bouygues Travaux Publics is a subsidiary of Bouygues Construction.

The floating structure has been installed (permanently moored) for expected period of two years at the 123 post in the port of Phocéén, at the breakwater pier.

As announced in August 2016, as part of the Principality of Monaco's Portier Cove land reclamation project, led by the Monegasque company, S.A.M. Anse du Portier, Bouygues Travaux Publics, a subsidiary of Bouygues Construction, launched works on the maritime infrastructure that will constitute the first phase of Monaco's six-hectare offshore extension.

The total value of the maritime infrastructure works is approximately €1 billion. The crucial part in the project will be played by a special floating dock serving as a building berth for concrete caissons to become the part of expanded land of Monaco.

The project will create six hectares of habitable space, meeting the highest ambitions with respect to sustainable development and environmental protection.

The project includes the construction of an eco-neighbourhood primarily consisting of housing (60,000 m²), public facilities, an extension to the Grimaldi Forum, a public car park, a marina with pedestrian wharves, a landscaped park, a seafront promenade and a shaded, planted walkway running the length of the Japanese Garden.

As part of the design and construction of the new Portier Cove eco-neighbourhood in Monaco, Bouygues Travaux Publics has been contracted to build the maritime infrastructure that will serve as a base for the offshore extension of the Principality. The construction technique to be used for the maritime infrastructure is a fill enclosed by a band



Photo: Piotr B. Stareńczak

of 18 trapezoid reinforced concrete caissons, 26 metres tall and weighing 10 000 tonnes each, equipped with absorption chambers. These caissons will be built in a floating dock named *Marco Polo* built at Gdynia based Crist SA yard.

According to the agreement, signed by the shipyard on September 2, 2016, the special purpose floating dock, yard no. NB56, was about to be delivered in 9 months time - in June 2017. The construction, outfitting and testing was delayed slightly, with actual delivery taking place early August, which may be regarded as an insignificant slippage given the "first of a kind" newbuilding for the yard, not typical characteristics of the floating structure, being rare kind on a global scale.

Newbuilding no. NB56 from Crist features overall length of 56.40 m, 49.30 m beam, depth of 25.50 m (27.00 m according to other sources), work deck area of 56.4×34.72 m and weight of over 3000 t.

With regard to marine engineering studies, d2m (Six-Fours-Les-Plages) was

partly responsible for the concept and basic design of the floating dock. The French engineering office also carried out studies and engineering designs for mooring the structure and its access pontoons as well as towage of the concrete caissons after removal from the floating dock.

Polish naval architecture and marine engineering consultancy StoGda was responsible partly for a workshop documentation, supervising during construction and as-built documentation, excluding electric and automation works only.

When it comes to actual caissons fabrication and the mode of operation of *Marco Polo* dock built at Crist yard - on "dry land", the first step is to make the raft for each caisson and the first ten meters of concrete slab using sliding formwork. Under the weight of the caisson under construction, the deck of the floating dock is progressively immersed, enabling the casting of the concrete slabs to be completed. The caisson is then floated and removed from the floating dock, ready to be towed into position

where the concrete pillars forming the Jarlan breakwater wall will be sunk. Before being towed to Monaco by sea, the caissons will be stored in the Léon Gouret basin in Marseilles-Fos.

Production of the 18 caissons is expected to start in September 2017 and will last until March 2019. It will require three shifts, working around the clock. In all, the project will generate more than 700 direct and indirect jobs, including more than 200 local hires throughout the period of the project and roughly twenty jobs on professional integration contracts.

The whole Monaco land expansion project pays the closest attention to protecting the environment, preserving biodiversity - with the proximity of the Larvotto Reserve and the Spélugues coral reef - and respecting neighboring areas, sites and landscapes. The eco-neighborhood will qualify for a number of recognised environmental certifications, including HQE Aménagement, BREEAM and the Clean Ports label.

Loading operation of *Marco Polo* special purpose floating dock built at Crist SA yard, Gdynia, aboard *Sun Rise* submersible heavy lift vessel.



Compact, highly capable fishing vessel Sara Karin delivered by Poltramp yard



Fot. Piotr B. Starejczak

Sara Karin at outfitting quay in Szczecin.

A small... "giant"

June 22, 2017, saw Poltramp Yard SA handing over Sara Karin fishing vessel to her Norwegian ship-owner - Sara Karin AS, at the yard's Swinoujscie quay. This is the fortieth vessel built and fully-equipped by Poltramp Yard.

The small ceremony in Świnoujście was attended by representatives of the city, the bank financing the project, insurance company, sub-suppliers, shipyard employees, crew and above all, the owner with family.

The newbuilding was contracted by Norwegian owner Sara Karin AS through Marin Design AS, who have been both suppliers of the ship design (MD1980FV) and providers of newbuilding project supervision on behalf of the owner, with the workshop drawings have been prepared by the yard, in-house.

The ship (newbuilding no. PY23) has been mostly constructed in Poltramp facilities located in the area of former Szczecin Shipyard and, mostly outfitted and launched there, as well. The ship has been fully outfitted in Szczecin, besides just the fish and shrimp processing plant installed in Hirtshals, Denmark, by

Intech International. The ship received finishing touches in Szczecin and in yard's Świnoujście based facility.

This is a highly capable vessel, dubbed "a 20 metre giant", as much functionality and capacity is compactly fitted into a relatively small sized vessel. The vessel with a total length of 19.80 metres and width of 9.00 m results with a length to width ratio of near 2:1. Dimensions and number of decks opens many possibilities both with regard to equipment and amenities for a crew of up to seven people.

The factory with plate freezers lies on the main deck, while cabins and miscellaneous facilities for the crew are placed in the aft part of the head / work deck. Skipper cabin and some other spaces are arranged on the overhead shelter deck. An impressive bridge of nearly 40 square metres was possible to be arranged.

Sara Karin trawler / seiner - principal characteristics:

length - 19.80 m
breadth - 9.00 m
depth - 6.96 m
draft - 4.80 m
gross tonnage - 268
lightship weight - 346 ton
steel hull (up to shelter deck), aluminum superstructure and wheelhouse
main engine: Mitsubishi, power: 940 kW @ 1600 rpm
adjustable 2500 mm diameter propeller in Kort nozzle
hydraulic powered systems: 6 fishing winches, anchor winch, capstan, two deck cranes and high pressure washer
storage cooled to - 40° C, ammonia cooling system
two fishing systems: trawling and "danish seiner", for catching cod, haddock and shrimp
the vessel is equipped with a processing facility with fast freeze system and a cargo hold of 13,000 kg capacity
the ship is equipped with modern navigation system and fishing sonar
number of crew members - 7 persons
the Havfiske II shipping area and the main work area will be sea to the north from the Tromso harbor to the Arctic frontier.

A Mitsubishi 940 hp main engine and Heimdal gear and propulsion system is supplemented by auxiliary propulsion (two generating sets) with a total power output of 820 kW as the factory installation requires significant production of electrical power.

The equipment includes eight modern hydraulically driven fishing winches, two hydraulically driven deck cranes, fish processing plant and deep freezing facility and storage for fish.

The contract for the construction of Sara Karin was signed in August 2015, the keel laying took place on March 30, 2016, launching - on May 10, 2017 and delivery - on June 22, 2017.

Currently, the Świnoujście based yard has another fishing vessel on order - the newbuilding no. PY-NB 40, to be named *Jens Kristian*, 40 m long, 9,5 m wide, with gross tonnage of 499 and RSW capacity of 435 mł, destined for delivery to Norwegian owner Alta Fiskeriselskap AS late 2018.

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- Scalable concept (for waterways Class II – Class V)

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REMONTOWA MARINE DESIGN & CONSULTING (RMDC)

20 YEARS OF PASSION FOR DESIGN

Remontowa Marine Design & Consulting – ship design office is celebrating its unofficial jubilee of 20 years. Design office was established in 1997 as independent department in Remontowa Shiprepair Yard, from 2009 active as a separate company, mainly dealing with large ship conversions designs and newbuild projects (ferries mostly).

Since then, basing on the documentation developed by RMDC more than 100 vessels of various types have been built – from double ended ferries and ro-pax ferries, through anchor handlers and tugs, to sophisticated gas carriers and cable laying vessels and more than 50 complicated conversions have been executed – including conversions of shuttle tankers to FPSO, drilling and accommodation rigs conversions, lengthening till total conversion of engine room (from MDO fuel to Dual-Fuel LNG/MDO).

During all those years – LNG fueled vessels started to be our crown jewel.

Today RMDC is offering complex services in Naval Architecture, Ship Engineering and Design – starting from conceptual stage including feasibility studies, through basic and class design, workshop documentation – landing with design supervision and as built.

This year (2017) last of the series from Salish Class ferries design from scratch by RMDC was delivered to its homeport in British Columbia, Canada.

First LNG fueled vessels for BC Ferries, with its innovative solution of bunkering gas fuel from inside (car decks) – is in operation and represents with pride Polish design and craftsmanship.

On the final stretch there are Qualifying Trials of new minehunter Kormoran II for Polish Navy. First newly designed and built naval vessel that will be delivered after the regime fall in Poland, which was designed from the basic & class design stage by Remontowa Marine Design.

Last works are also being done for Croatian ferry operator Jadrolinija, for which RMDC is delivering conceptual design package of their new ro-pax ferry. Ship will take 2000 passengers onboard and abt. 110 personal cars and 20 trucks.

LASER SCANNING, REVERSE ENGINEERING & RETROFITS

For past years growing demand for large and complicated conversions, dictated by new regulations from IMO and EU Committee – regarding environmental protection (Ballast water treatment systems and limits regarding NOx and SOx emission), increased utilization of 3D scanning technology – giving 3D model projection of existing structures with high precision. RMDC Team of Reverse Engineering in 2017 made more than 20 laser scanning operations, including scans of Canadian BC Ferries vessels – for which the engine room conversion from MDO to LNG is being designed, and Finnlines ferries which will be elongated in Remontowa Shiprepair Yard.



Photo: Bogdan Pięta

CONCEPTUAL WORKS

Despite of large amount of works in progress, RMDC is constantly working on new designs of vessels responding to the latest market trends. One of the

latest developments is BLUE FERRY – passenger / car ferry of ro-ro type. On 200 meters of length and 31,80 meter of breadth, we can take up to 800 passengers, and load cars and trucks on total 4 000 meters cargo lanes – designed to



Fig.: RMDC

minimize loading time thanks to drive through cargo holds. Taking into consideration that vessel is designed to utilize LNG as a primary fuel, above figures are quite impressive for vessel of this size. Innovative for this kind of vessel is also utilization of azipod propulsion together with diesel-electric powerplant – which gives tremendous maneuverability and flexibility, easy operation – and lifecycle operation (conservation and repairs).

Next of our proposals in regards of growing demand from the market are small patrol vessels. Ships of 32 meters in length, equipped with waterjet propulsion system gives shallow water operation, high speed and maneuverability – can be utilized in standard patrol operations of economic areas, pursuit and smuggling counteraction, and SAR operations. Ships can be fitted with 12,7 mm remote operated cannon with independent control and aiming system.

Those above and many more challenges are just a drop in sea of possibilities waiting for RMDC in the next few years.



Fig.: RMDC

Fig.: RMDC



Photo: Deltamarin



DeltaLinx



DeltaSAFER 21



DeltaBreaker

Deltamarin

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Deltamarin Group provides ship design, offshore engineering and construction support for the marine and offshore industries worldwide. Its services include the full range of consulting, design and engineering as well as procurement, support for construction and installation. The Group employs around 400 experts in its own and associated companies located in Europe and Asia. Deltamarin is a subsidiary of AVIC International Maritime Holdings Limited, which is part of the AVIC Group listed as a Fortune Global 500 corporation.

Deltamarin's Poland office was established in 2008 and is growing ever since. We employ around 55 engineers as of summer 2017, but can provide engineering teams even twice as large if the project requires so – this is thanks to an extensive network of sub-contractors and cooperating companies. Quality of our work is ensured by the ISO 9001 certificate and the use of state-of-the-art engineering tools.

During its history, Deltamarin has built a strong track record of pioneering concepts, complete engineering packages and effective project management in all major ship types and special offshore units. Our branch in Gdańsk is combining this experience with the shipbuilding knowledge of the northern Poland region and the potential of young university graduates. Our team has already participated in numerous significant projects, including the largest heavy-lift/decommissioning floating unit in the world - Pioneering Spirit (formerly known as the Pieter Schelte project). We also assisted in developing the most fuel-efficient bulk carrier design, the B.Delta family. In recent years, we have also pre-

pared two ferry concept designs, namely DeltaLinx – a compact LNG Ro-Pax ferry design as well as DeltaSAFER – a safe and affordable ferry for the Asian market. Recently we have developed a design of a multipurpose inland vessel that combines icebreaker with pusher/tug and tug.

DeltaBreaker – a breakthrough in modern inland navigation

Our vessel is designed for most of the European rivers, with emphasis on minimal environmental footprint. The dimensions of the vessel allow operations on waterways of international (CEMT) class IV and above. We look forward to meeting the demand for new vessels needed on new Polish waterways, once they reach this standard, however smaller versions of this design can also be developed.

The design features a propulsion system that utilizes liquid gas fuel – and thus reduces ship emissions. Because of a still underdeveloped LNG refuelling network, large, vertical LNG tank (70 m³) is provided for extended autonomy of the vessel.

The vessel dimension and hull shape will allow for safe operation in shallow waters. The emphasis was put on proper resistance and ability of breaking ice up to 0.6 m of ice thickness. Propulsion units and additional bow thruster provide proper manoeuvrability in narrow channels.

Climate change is a fact. Severe weather conditions like harsh winters in mild weather regions may occur. Vessel that operates in unpredictable weather conditions must be also economically

feasible. This leads to multipurpose of functionality.

One of the specific characteristics is the implementation of Articulated Tug-Barge (ATB) system connection. This allows further development of the product with efficient design of compatible barges that can be used for bulk cargo, containers, oil/products, as LNG transportation/bunkering facility or as accommodation modules.

The vessel can carry additional equipment for different functions. A special place for two 20ft containers has been reserved on the aft deck. Additional functions like firefighting, oil-spill cleaning or environmental measurements may be easily implemented to the design.

Ice breaking is one of the key functions of the vessel. Operation in icy conditions requires durability of the construction and equipment as well as simplicity. This allows for easy maintenance of the vessel.

DeltaBreaker Main particulars

Length	Lpp	35.85 m
	Loa	40.27 m
Breadth	B	9.50 m
Draft	T	2.00 m
Air draft		5,25 m (with wheelhouse lowered)
LNG capacity		70 m ³
Crew	no	6 persons
Service speed	V	18.5 km/h
Bollard pull		15 t
Total propulsion	P	1,400 kW
Class notation:		
PRS:	* sKM 1 ld/pch/hol [2] *sPRM	
BV:	I + HULL + MACH 5 IN(2) (-) Pusher Tug Dualfuel DGD DGL EUR *AUT-UMS Green Passport Ice-40+ Icebreaker 7	



The projects of Polish design studio recognized on the international market

The world's first fully electrical ferry, ships for laying the cables under the seabed or the platform in the form of a water lily. These are only a few examples opening the list of innovative projects completed by marine design studio Nelton – there have been hundreds of them throughout several years of the company's functioning. The Poles create innovative solutions and revolutionary ideas and they are not afraid to bring them into effect.

Marine design studio Nelton has been functioning since 1999 and it was established by graduates of Polish technical universities. The company's head office is located in Pruszcz Gdański, the second office is located in Szczecin. At the moment the company employs 65 engineers, who develop future solutions in maritime industry (and not only) using state-of-the art software.

A good example of a visionary idea of specialists from Nelton company is the project completed by them consisting of the platform in the form of a water lily. *Seerose*, hailed as architectural work of art, is presently docked on Lake Lucerne and functions as a place for meetings and the stage on which concerts or theatrical performances take place. The lily is 12.4 metres high, its diameter is 48 metres and it can house up to 700 people (max. 465 people in the audience). The construction and mobility of the platform (thanks to easily folded pontoon and petals) allow for its docking at various

landing sites in the world. Therefore we should not marvel at the decision of the Swiss people, who despite 1.6 million francs for the construction of *Seerose*, claim that this investment was absolutely worth this sum.

Design studio Nelton was also involved in designing *ZeroCat* ferry, that as the world's first electrically-powered ferry used for the transport of cars and people, not emitting pollutants dangerous to the environment and ensuring very quiet operation of the engine, became a groundbreaking solution in waterborne transport.

The ferry was built by Fjellstrand shipyard in Omastrand in cooperation with Siemens for the Norwegian company Norled. Designed as a catamaran, it is 80 metres long and 21 metres wide, it has 7 cabins and 140 seats, ensuring space for 120 cars and 360 passengers. It has LED lighting, solar panels with heating, ventilation and air-conditioning (HVAC) with off-heat recovery system. What is important, the catamaran's hulls are made of aluminium and not of steel, which significantly reduces its total weight.

It is also worth mentioning that *ZeroCat* has two electrical engines which are powered by lithium-ion batteries with total energy of 1000 kWh and the weight of 10 tonnes and which are re-charged within only 10 minutes. On the other hand, power transmission system of the catamaran allows to sail with the speed

of 10 knots. Thanks to these solutions the ship reduced the emission of 570 t of carbon dioxide and 15 t of nitrogen oxide as compared with conventional ferries sailing on the same route. The ferry was commissioned in 2015. It travels on the route between Lavik and Oppedal and it is to be used by Norled at least until year 2025.

Nelton takes part in many operations that give the company and its employees the opportunity for development. Another example of such an approach is the modernization of *Cable Storage Barge* that serves *Cable Protector* vessel, which is used for laying and burying cables with minimal disturbance to the seabed. The modernization involved designing cable towers, positioning piles towers, winches, loading arm and cable guide.

The engineers from Nelton studio actively take part in projects of offshore industry. They designed, among others, the vessels intended for supporting the maintenance of offshore wind farms (Windservers), drilling, multipurpose, supply vessels, but also ships used for complicated underwater operations.

Nelton company is known on Polish, Norwegian, Swiss and German markets and within its plans it has continued exploration of possibilities of its actions. The engineers hope that through their work, they will keep contributing to the development of maritime industry.

Remontowa SA will lengthen Finnlines' Ro-Ro type vessels



Breeze series goes green

Finntide is the first vessel from the „Breeze” series to arrive at the shipyard and to be lengthened at Remontowa SA.

Finnlines has entrusted Remontowa Shiprepair Yard SA to lengthen four of its “Breeze series” vessels, with an option of two additional ones. Execution of the contract happens extremely quickly at the yard.

As Finnlines explains in its statement, the close to 30% capacity increase will considerably reduce the energy consumption per transported unit compared to the original vessel. Thanks to the lengthening, that will increase capacity of each by around 1000 lane metres, the vessels will become more energy efficient and more environmentally friendly by cutting emissions.

The Ro-Ro vessels to be lengthened at Remontowa SA are: *Finntide*, *Finnwave*, *Finnsky* and *Finnsun* plus *Finnbreeze* and *Finnsea* in the option. Each one will be lengthened with approx. 30 m long inserts, weighing some 1500 tons each. The hull inserts are being fabricated prior to ships' arrival in Gdansk.

According to the contract signed with Remontowa SA, the actual work will commence mid September 2017. The

yard is committed to perform this work in less than two months for each vessel. The whole lengthening program will be completed in May 2018.

Inserts grow like weeds

The first of four Ro-Ro vessels to be lengthened at Remontowa SA is *Finntide*, scheduled to visit the shipyard in September. The *Finntide*, cruising on a fixed line “Travemünde (Germany) – Uusikaupunki (Finland)” was built in a Chinese shipyard, Jinling Shipyard (Nanjing), in 2012. It has a total length of 188.37 m, width of 26.51 m, deadweight of 11 029 tons, draught of 5.6 m, approximate speed of 16 knots, and a maximum speed of 23.4 knots. After the reconstruction in Remontowa Shiprepair Yard SA, the vessel's length will be 217.87 m.

The project, so important for both the shipyard and the Finnish fleet operator, is executed extremely fast. The shipyard puts special emphasis on regularity and complying to the works schedule.

The contract for lengthening the four ferries was signed on the 31st of March and on the 19th of May there was already the first ceremonial plate gas cutting, while on the 29th of June, onboard the semi-submersible barge *Rem Lift 24 000*, the first steel section for insert was laid. It was a base construction for the *Finntide*, weighing 55 tons.

Building such an insert is logistically complicated and so, particular sections are constructed in several places in the shipyard. The section was transported by a shipyard floating sheerleg and pulled onboard *Rem Lift 24000* barge. This marked the beginning of building up of the base section comprised of six steel elements. In the next days, the rest of the sections were laid down, thus creating the entire giant insert for *Finntide* ferry, a construction consisting of 26 “lego pieces”. The comparison is very accurate as all the sections must fit to the last millimetre.



The first steel section weighing 55 tons for the insert destined for *Finntide* was laid onboard the semi-submersible barge *Rem Lift 24000* on the 29th of June 2017.

In late August, when we passed this issue for printing, three inserts were under construction. Two of them were built onboard the semi-submersible barge *Rem Lift 24000*, and the other in a production shipyard Remontowa Shipbuilding, member of Remontowa Holding group.

Plate gas cutting for the fourth insert, also constructed in Remontowa Shiprepair Yard, is planned for September. Each one of them weighs 1500 tons, being 29.5 meters long, 26.5 meters wide and 23.5 meters high.

Insert no. 1, aimed to lengthen *Finntide* ferry in late August, was ready to have its hull works finalised. The next phase was maintenance and painting works. To avoid any conflicts that might appear when building two inserts onboard *Rem Lift 24000* barge, and for optimal use of shipyard infrastructure, the first insert was to be transported on the submersible sister-barge *Rem Lift 25000*, from which, after finishing maintenance and painting works, it was planned to be launched.

Other energy projects

Remontowa SA is also involved in several other energy efficiency projects

i.e. MS *Finneagle*. At the yard inline hybrid scrubbers and new improved propeller blades have been installed on the ship. Furthermore, passenger capacity has been increased to 800 by building new passenger areas.

Finnlines' customers will benefit from more environmentally friendly and sustainable services. Finnlines places great emphasis on environmental and safety matters and these investments are just another milestone in a long series of investing in sustainable growth.

Remontowa SA has been cooperating with Finnlines for years. The first common projects date back to the year 2006, when the three Finnlines Ro-Ro vessels (*Finnpartner*, *Finntrader* and *Finnclipper*) were converted at the Gdańsk based yard. Since then, a dozen or so vessels operated by Finnlines have been repaired, modified or converted at Remontowa SA, which resulted in a long-term mutually beneficial and well established cooperation between the companies.

The shipyard has vast experience in repair and conversion projects as well as special services such as Ballast Water Treatment and scrubber systems installation on-board Ro-Pax'es, Ro-Ro

ships and passenger ferries. Remontowa SA has made many such vessels more energy efficient and safe for the environment, optimizing hull shapes, replacing bulbous bows and even converting propulsion systems to green fuels.

Thanks to cooperation with other companies operating within the Remontowa Holding group, the shipyard can assist owners in the most demanding projects.

Remontowa LNG Systems as a producer and supplier of complete LNG power systems can support the yard in the implementation of such systems on-board ships. Remontowa Marine Design & Consulting has designed many advanced LNG driven and hybrid vessels most of which have been ferries. The majority have been built at Remontowa Shipbuilding, one of the biggest manufacturer of LNG powered vessels worldwide. Of 37 car passenger ferries built in the Remontowa Holding group so far, as many as 15 have been LNG fuelled.

One of the most sophisticated offshore projects in Europe is nearing completion

Tanker reborn as FSO

The former shuttle tanker *Hanne Knutsen* will get a new life as a Floating Storage and Offloading vessel after conversion at Remontowa SA. The changes make her prepared for operations on the Martin Linge field has entered the final phase.

The Martin Linge oil and gas field is located in the North Sea approximately 180 kilometres west of Bergen, Norway. The project partners are Total E&P Norge

(51% operator), Petoro (30%) and Statoil (19%).

Total E&P Norge is leasing the *Hanne Knutsen* from KNOT FSO 1 AS, a wholly

owned subsidiary of Knutsen NYK Offshore Tankers AS, for operations on the Martin Linge field. After delivery, the FSO unit will be chartered to Total E&P Norge for eight years plus up to four optional years.

Hanne Knutsen arrived at the Gdańsk-based yard in the end of 2015. Remontowa SA together with the Owner's team had commenced necessary preparations long before that date. Most of the prefabrication was done at that time.

In April 2015, the first steel cutting for the prefabricated structures took place, attended by numerous representatives of involved companies. Svein Berg of Total (FSO Construction Site Representative, Total E&P Norge AS) commenced the first steel cutting by starting up the plasma machine.

The tanker underwent a complete transition. As a result of this, the main deck has been dramatically changed. Cargo tanks have been rebuilt in order to make space available for the wash tank process, where oil is purified and separated from water.



Photo: courtesy of Remontowa SA

***Hanne Knutsen* converted into an FSO vessel at Remontowa SA.**

The weight of the vessel before conversion was just less than 30,000 tonnes. When the conversion to an FSO is completed, the ship weighs almost 37,000 tonnes.

Additional division arrangement of cargo tanks was made, as well as installation of new piping. Furthermore, new electrical and electronic systems and an aft offshore offloading system have been installed.

The existing helideck has been replaced with a new structure serving the same purpose, placed higher, and protruding over the edge of deck (beyond the ship's side). The hull structure has been modified to fit a submerged turret loading buoy system.

New safety systems and some 30 major equipment sets have also been installed. The accommodation block (superstructure) has been through a significant makeover and refurbishment, including installation of new piping and HVAC (heating, ventilation and air conditioning). In addition comes architectural upgrades and last, but not least

p new furniture. As a result, the living quarters includes rooms for 40 people, split on three decks.

The converted Martin Linge FSO will feature a remote-controlled system which allows the processing of oil and water to be controlled from a Central Control Room at Total's Onshore Operations Centre at the main office in Stavanger, Norway. The Martin Linge field, including the FSO, is supplied with electricity powered from shore through the world's longest high voltage AC subsea cable. This makes the Martin Linge FSO more environmentally friendly with regards to CO₂ emissions.

The transition to an FSO is very likely one of the most technically advanced conversion projects recently executed in Europe and now it has entered its final phase.

During the past summer months intensive installation works were carried out, including assembly of electrical systems as well as ventilation and air-conditioning devices.

In August commissioning procedures, start-ups and final acceptance tests commenced. More than 30 kilometres of piping systems have been installed and above 400 kilometres of cables have been laid during the ship's metamorphosis.

The Martin Linge FSO Project is a priority and a prestigious task for Remontowa SA. Every day hundreds of the shipyard's employees and subcontractors are involved in the conversion. There have been more than 2 million man-hours worked so far without any incident which is a significant achievement.

Training has been carried out in HSE in line with health and safety at work regulations and employees on site have focused HSE through Safety Stand Down meetings. Excellent cooperation between Remontowa SA, Knutsen and Total representatives have also contributed to the safe execution of the conversion.

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Poland based industry and R&D establishments at the forefront of the drone technology for ship surveys



DNV GL has carried out its first offshore drone survey on board the tender support vessel Safe Scandinavia.

Flying watchkeeper

As revealed early August, 2017, DNV GL surveyors have carried out the classification society's first offshore drone survey on the semisubmersible vessel *Safe Scandinavia* in the North Sea. This 25,383 GT tender support vessel (TSV) is owned and operated by Prosafe, supporting Statoil's drilling operations off the coast of Norway. Using camera-equipped drones, DNV GL's drone pilots checked the TSV's fairleads and their connection with the vessel's two columns as part of the intermediate survey.

- Innovation is one of Prosafe's core values. We are very pleased that we chose to try the drone survey, as it helped us optimize our survey requirements and allowed us to save significant amounts of time and money. Normally, this kind of operation would cause disruption to our client for several

days. The drone survey took only a few hours and was just as effective - says Ian Young, Chief Operating Officer at Prosafe.

Prosafe is a leading owner and operator of semi-submersible accommodation vessels. Prosafe owns/operates eight semi-submersible accommodation, safe-

ty and support vessels and one tender support vessel (TSV) that is providing drilling support services on the NCS - a fleet, that consists of a combination of dynamically positioned and anchored vessels.

- This was a great opportunity for us to demonstrate our drones' abilities to check the condition of remote external components in challenging offshore conditions. The inspection only required the semi-submersible to de-ballast, then we flew the drone approximately 25 metres below the main deck to check the condition of the fairleads and their connections to the columns that hold up the TSV. With wind speeds of approximately 15 knots, this went very well and the survey showed that the fairleads and their connections were in a good condition - explains Cezary Galinski, Project Manager Classification Poland at DNV GL.

The classification society has carried out multiple drone surveys on both ships and offshore units, inspecting many areas on board, ranging from tanks and cargo holds to external structures such as jack-up legs. The inspection of such spaces can be both costly and time consuming, and even in some instances potentially dangerous. Using drones to visually check

the condition of remote structural components can significantly reduce survey times and staging costs, while at the same time improving surveyor safety.

DNV GL has built a network of trained drone pilots based in Gdynia (Poland), as well as Piraeus and Singapore, Houston and Shanghai. This allows drone survey inspections to be offered from any of these hubs. At the same time, DNV GL is developing guidelines and updating our rule set to reflect the use of remote inspection techniques.

It is an interesting circumstance, that DNV GL's first attempts and early development of the technology, as far as drone inspections are concerned, took place in Gdansk, Poland.

In January 2016 DNV GL announced it had completed several tests using drones to support the hull survey of two vessels. Conducted by the classification team based in Gdansk, the tests took place at the Remontowa Shiprepair Yard - as revealed in DNV GL's news release.

Safe Scandinavia itself also happens to be the offshore mobile unit to be refurbished and upgraded at the same shipyard in Gdansk.

In 2014 the Prosafe operated accommodation and workshop unit (or tender support vessel) underwent repairs, maintenance and upgrade Remontowa SA. It was actually the fourth unit serviced by the yard for Prosafe, with the previous being: *Safe Caledonia*, *Safe Esbjerg* and *Safe Bristol*.

The focus and aims of the project were, amongst others, to increase her mooring capability (by replacing 12 mooring winches and anchor cables), replace the original deck cranes and refurbish the cabins. Berth cabin modules have been replaced with new ones, hulls and columns maintenance and painting have been performed with the unit lifted up on the shipyard's own heavy-lift barge *Rem Lift 25000*. As most of the extensive range of works, mentioned above, had been completed - the undocking of the unit went smoothly on a fine, sunny day of March 8, 2014.

The works were carried out by the shipyard through mechanical completion procedure till full commissioning. Remontowa SA delivered the converted rig as well as the full documentation (mechanical completion documents) reflecting the actual state of the floating unit after completion of the project.

In parallel to the activities of DNV GL, also a Polish classification society has put emphasis on the implementation of modern drone based inspection services development. As revealed in May 2017 Polish Register of Shipping (PRS), in cooperation with national partners, has begun the process of implementing the Remote Inspection Technique on its classified vessels. Under this program, the idea of using drones is implemented to carry out inspection of the hull structure in difficult to reach areas.

Owing to the use of these devices it became possible to carry out inspections in closed spaces: cargo ships, fuel tanks, ballast tanks. Properly adapted to these special purposes drones, convey the image of the difficult-to-access elements in real time to the indicated device in the hands of the inspector. The transmission can be recorded, which gives a very accurate assessment of the condition of the object under investigation.

Among the first vessels, that has had its cargo tanks inspected using this technology was *Icarus III* tanker classified by PRS during the ship's stay at the Remontowa Shiprepair Yard. This has been carried out with drone adapted for works in closed spaces and manufactured by Droneinspections.pl. The inspection has been carried out in cooperation with the company performing thickness measurement services Stefship, and the Shipowner.

The drone technology will be taken to an even higher level by PRS in its involvement with the AVAL (Autonomous Vessel with an Air Look) project. On August 17, 2017, representatives of PRS, UpLogic Sp. z o.o. and Sup4Nav Sp. z o.o. signed a declaration of cooperation.

UpLogic and Sup4Nav participate in the AVAL project aimed at developing technology for autonomous sea-going vessel cooperating with autonomous drone. Within the framework of the



DNV GL surveyor Fryderyk Hoga begins the drone survey on board *Safe Scandinavia*.



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AVAL technology in brief.

signed agreement PRS, UpLogic and Sup4Nav expressed their will to undertake coordinated efforts in Poland and internationally in the area of defining and setting up requirements and technical and operational standards for autonomous sea-going surface vessels and airborne drones, used, among others, in surveys (inspections) carried out onboard ships and offshore objects.

The agreement includes rendering technical services: drone testing, implementation of automation and monitoring of their flight path as well as consulting on reliability of drones intended for use

in inspections. The cooperation between the mentioned parties will also include developing procedures, advice and provisional rules, as well as certification of autonomous surface vessels, airborne drones and their operators.

The results of the project will be applied as a product based on AVAL technology, which will be deployed to the maritime market in 2021.

AVAL technology includes or is defined by:

- Unmanned Marine Vehicles (BSM) Technology; the heart of the BSM is the collision component and the

Unmanned Aerial Vehicle (BSP) communication system;

- BSP technology is a support for marine navigation in collision situations; BSP is equipped with a camera and sensors for recording and transmitting video and hydrometeorology data to BSP;
- Image Processing Technology (TPO); the key element of the TPO is an algorithm for detecting and recognizing objects at sea (eg salvage boats, icebergs, whales, etc.) in images recorded with a BSP camera.

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