REMONTOWA SHIP REPAIR NEWS

MEMBER OF REMONTOWA HOLDING S.A.

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Green power

in magazine

BWT systems - don't stand idle!

It is estimated, that more than 75 percent of the world's commercial goods are transported by vessels. 90 percent of goods made in the EU and destined for export is carried on to other countries by ships as well as 40 percent of trade within the EU countries.

On these ships between 3 and 12 billion tonnes of ballast water is relocated, used to stabilize ships when they return without cargo. Marine traffic, crucial to carrying goods between countries and continents, brings with it ballast water from one port to the next. Ballast water contains micro organisms, animals and plants that may harm the environment and ecosystems where they are discharged.

The objective of the IMO's Ballast Water Management Convention is to prevent harmful marine organisms from spreading. New, stricter environmental regulations are forcing the shipping industry to take action.

However, as for ballast water management, the IMO is granting shipowners a transitional period before they must comply entirely. Meanwhile the industry is working full speed on implementing the BWM Convention which took effect in 2017. This necessitates investments in the order of billions. In a study of the global ballast water management market between now and the year 2026, the US market research company Stratistics MRC forecasts a growth rate of nearly 40 percent – per year.

Understanding which types of BWM system are suitable for a specific ship type, and which of these systems meet both the IMO rules and the stricter requirements of the US Coast Guard is quite a challenging task, particularly for shipyards.

We did our homework at an early stage. Its first Ballast Water Treatment system Remontowa Shiprepair Yard SA in Gdansk installed on a ship in 2007. Since then, the number of such systems of various types and manufacturers installed on many different vessels at Remontowa SA has been constantly increasing.

As of October 29, 2018, there were as many as 11 manufacturers of Ballast Water Management systems, who have won the US Coast Guard type approval certificates: Hyundai Heavy Industries, Wärtsilä Water Systems , BIO-UV Group, Samsung Heavy Industries, Techcross, Optimarin, Alfa Laval, TeamTec Ocean Saver, Sunrui, Ecochlor and Erma First. Plenty to choose from... Many of them Remontowa SA cooperates with.

Grzegorz Landowski
Editor-in-Chief

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Remontowa Holding showed its potential during the SMM trade fair in Hamburg

We greeted our... competitors!

The world's largest maritime trade fair took place in Hamburg between 4 and 7 September 2018.

Piotr Soyka (second from left) the owner of Remontowa Holding with Kommer Damen, the owner of the Damen Shipyards Group (second from right). They were accompanied by René Berkvens, the CEO of the Damen Shipyards Group (first from right) and Michał Habina, the CEO of Remontowa Shiprepair Yard SA, the largest company in the Remontowa Holding capital group. **Photo: Grzegorz Landowski**

Over 2200 exhibitors from 66 countries as well as 50 000 guests from over 120 countries visited the fair. The world's largest shipyards, together with producers and suppliers of shipping equipment presented their stands. The most discussed topics were solutions in the scope of effective management of ballast waters and limiting sulphur content in marine fuels and also new drives fuelled by, among others, LNG and electricity from batteries.

Provisions limiting sulphur content to 0.5% for marine fuels will enter into force on 1 January 2020. In the case of ballast waters, there is a transition period after which shipowners will need to comply with the new rules.

On the global market, Remontowa Shiprepair Yard SA is perceived as an unquestionable leader in installation of scrubbers, Ballast Water Treatment systems, and converting ship propulsions to be fed by LNG. The stand of Remontowa Holding was one of the largest and most recognized ones at the fair, including Remontowa Shiprepair Yard SA, Remontowa Shipbuilding SA, Remontowa LNG Systems, Remontowa Hydroster Systems as well as Remontowa Electrical Solutions. Ship models were also exhibited at the stand, including the model of Martin Linge FSO, converted from a shuttle tanker in our shipyard.

The owner and chairman of Remontowa Holding, Piotr Soyka, participated in the fair and over the course of several days, he hosted owners and representatives of the world's largest shipyard groups and shipping companies.

The *Spirit of British Columbia* converted to LNG returned to her route in Canada

Green power

The *Spirit of British Columbia* ferry, converted at Remontowa Shiprepair Yard SA returned to her route on June 6, 2018 on, i.e. Metro Vancouver (Tsawwassen) - Victoria (Swartz Bay), following the completion of a mid-life upgrade. Fuelled by LNG she has brought green power to Canadian waters.

The ferry had undergone modernization, upgrade and machinery conversion completed in March 2018 at Remontowa SA. Then the ship crossed the Atlantic, the Panama Canal and a passage along the west coast of North America Atlantic to Richmond, where it arrived on May 6.

According to the contract signed in 2016 to perform the mid-life upgrade of the "Spirit" class – *Spirit of British Columbia* and *Spirit of Vancouver Island* ferries, Remontowa SA converted propulsion system of the first ship from traditional diesel based to environmentally friendly, powered by liquefied natural gas.

The shipyard equipped the *Spirit of British Columbia* with four new dual-fuel Wärtsilä 8L34DF main engines with an output of 4000 kW each and a cryogenic tank with a capacity of 165 cubic metres.

Currently, the ship's engine room is dual fuel, adapted to be fed both with low-sulfur diesel oil and natural gas (stored as LNG) as the main fuel. After the conversion, the

The converted *Spirit of British Columbia* ferry departing from Remontowa SA, heading Canada.
Photo: Sławomir Lewandowski

The ship's bridge with upgraded navigation equipment.
Photo: Sławomir Lewandowski

"Spirit" class vessels will reduce CO2 emissions by 12 500 tons per year, which corresponds to the removal of around 2500 vehicles per year.

BC Ferries is a leader in North America when it comes to clean and innovative technology that lowers emissions. The *Spirit of British Columbia* is reported to be the first passenger vessel in the world to refuel liquefied natural gas via delivery on a fully enclosed vehicle deck.

The three "Salish Class" car-passenger ferries built at Remontowa Shipbuilding, a newbuilding arm of the Remontowa Holding group in Poland and introduced last year were the first passenger vessels in the world to fuel liquefied natural gas on an open vehicle deck via delivery truck. The bunkering stations installed onboard allow this operation to be performed both from the outside of the ship and directly from a road tanker on a ro-ro deck.

The design of the ferry conversion has been prepared by the Remontowa Marine Design & Consulting ship design office. The natural gas is provided by FortisBC and can be reliably delivered in B.C., which supports the local economy. According to BC Ferries, these innovations saved their customers more than $100 million in infrastructure costs that would have otherwise been required and have proven significant environmental benefits.

- Natural gas is the world's cleanest burning fossil fuel and using LNG in deep-sea ships provides an opportunity to significantly lower greenhouse gas emissions and air quality on a global scale - said Roger DalPAntonia, president and CEO of FortisBC. The company has been performing approximately a dozen or so onboard marine bunkering per week since December 2016 having more then 500 such operations performed in its track record.

The last refuelling of the ferry in Poland before the Atlantic trip took place at Remontowa SA in Gdansk, 28 March 2018. It was carried out by the companies belonging to PGNiG and LOTOS Group using the "truck to ship" method, i.e. directly from cryogenic tankers at the jetty quay to the ferry tank. The volume of transferred fuel was 55 tons. The second refuelling was on the Canary Islands.

- The *Spirit of British Columbia* returns to service with clean technology that reduces both our environmental footprint and cost of operations - said Mark Collins, BC Ferries' President & CEO. - The two "Spirit Class" vessels consume approximately 16 per cent of our fuel annually. The conversion of our two largest ships in the fleet, along with the introduction of our three new natural gas-fuelled "Salish Class" vessels last year, goes a long way to improving the sustainability of our operations and affordability for ferry users - he emphasized.

Other upgrades include the renewal of navigation equipment, propulsion equipment components including gearboxes, rudders, steering system, bow thrusters, propeller blades, LED lighting, more efficient air conditioning equipment to reduce energy consumption and four marine evacuation systems.

The vessel's passenger areas have also been upgraded with new carpeting, furniture upholstery, new table tops, refurbishment of all public washrooms, as well as an additional washroom on Deck 5. A new Arbutus Coffee Bar on Deck 6 has been

Mobile charging stations.
Photo: Sławomir Lewandowski

Dining area.
Photo: Sławomir Lewandowski

added and doubled the size of Passages onboard retail store.

Passenger amenities on board the *Spirit of British Columbia* also include: The Pacific Buffet, Coastal Cafe, work stations, mobile charging stations, Kids Play Areas, a number of passenger lounge areas and an enclosed Pet Area on Deck 4.

The ship complies with accessibility requirements for persons with disabilities when travelling by ferry, including an Induction loop hearing system installed in the Deck 5 forward passenger lounge and at key customer interaction points.

The shipyard also carried out a full range of maintenance and painting works – from the keel to the funnel stack.

The second, twin ferry - *Spirit of Vancouver* - entered Remontowa SA on October 15, 2018. She is undergoing a mid-life upgrade scheduled from fall 2018 to spring 2019. It will return to its route next year in the summer season, when the volume of passenger traffic is the highest.

The "Spirit" class ships, 167 m long, accommodating 358 passenger cars and 2100 passengers, capable of transporting them at speeds of up to 19.5 knots, were built in 1993 and 1994 in Victoria and Vancouver, British Columbia, Canada, at Integrated Ferry Constructors yards and have a service life of 50 years (extended to this dimension thanks to reconstruction and modernization performed in Gdańsk). Both ships service the Metro Vancouver — Victoria (Tsawwassen — Swartz Bay) run, which is the busiest route in the fleet. ●

Passenger lounge with new carpeting and furniture upholstery.
Photo: Sławomir Lewandowski

Lengthening of Finnlines' six vessels is nearing its end

Final straight

The five of six Finnlines operated Ro-Ro vessels being lengthened at Remontowa SA have already been 30 metres longer. The "Breeze" series ships extension programme timely executed at the Polish yard is in the home straight.

The Finnlines' EUR 70 million Energy Efficiency and Emission Reduction Investment Programme started in 2017 with the lengthening of its four Breeze series vessels: *Finntide*, *Finnwave*, *Finnsky* and *Finnsun* with an option for two additional ones. In March 2018 Finnlines decided to exercise the option for the lengthening of *Finnbreeze* and *Finnsea*.

Thanks to the lenghtening, the vessels are becoming more energy efficient and environmentally friendly by cutting emissions.

The 30 metres longer *Finnsun* left the Remontowa SA yard in May 2018.
Photo: Marcin Koszałka

The ship's hull cut and divided into two parts...
Photo: Marcin Koszałka

Due to an efficient process at the shipyard, the project is running smoothly and on schedule. The first five vessels were successfully converted between November 2017 and October 2018. The lengthening of *Finnsea* was expected to be completed in December 2018.

According to Finnlines, the first two vessels, *Finntide* and *Finnwave*, have already been operating in their extended length.

Niclas Seligson, Master of *Finntide*, says that after the extension the ship has more waterline and its behaviour is more stable in rough seas. Cargo safety has also improved as the vessel rolls less in heavy weather.

- Harbour manoeuvres are now a bit slower but not significantly. The maximum draught continues to be 7.05 metres - says Niclas Seligson cited in a Finnlines press release.

Stretching a ro-ro vessel is a smart move in terms of improving energy efficiency, but comes with several technical and logistical challenges.

Upon its arrival at the yard, the ship's hull is cut and divided into two parts. The ship is then lengthened with an insert, which is fabricated prior to the ship's arrival at the yard.

Building such an insert is like building a very large Lego model, but with extra logistical complications. Different sections

In the final phase of the project all ship systems previously discontinued must be reassembled and fit to the last millimetre, with surgical precision.
Photo: Maciej Bielesz

Finnsun with the steel insert welded and integrated into the ship's hull.
Photo: Marcin Koszałka

are constructed in several places in the shipyard. Each section is transported by a floating sheerleg and transferred to a semi-submersible barge.

The first six steel elements form the base section. The remaining 20 are then fitted like Lego pieces, creating the complete giant insert for the vessel.

Each insert weights 1500 tonnes and is 29.5 metres long, 26.5 metres wide and 23.5 metres high. Before it is welded and integrated into the ship's hull, it undergoes maintenance, painting and launching.

The most important and technically challenging part of the process is to adjust the new insert to the existing hull. When the ship is delivered to the owner in the final phase of the project, the rules and standards it must meet are similar to those applied to new ships, as virtually all ship systems are discontinued due to cutting the hull. All sections must fit to the last millimetre, with surgical precision.

After modification, each of Finnlines' vessels is 217.7 metres long and has a capacity of around 4200 lane metres. Thanks to the lengthening, the ships will be more energy efficient and contribute to cutting the fleet's overall emissions.

Hanne Knutsen FSO converted from a shuttle tanker sailed to Norway

Martin Linge FSO

On May 14, 2018, the *Hanne Knutsen* tanker, converted at Remontowa Shiprepair Yard SA in Gdansk left the yard and sailed to the open sea, where the last trials were performed, before redelivery of the ship to the owner. On May 20, the vessel sailed to Haugesund in Norway for clarification and testing.

The Martin Linge project, i.e. the conversion of the shuttle tanker *Hanne Knutsen* to FSO (Floating, Storage and Offloading) is one of the most technically complex projects in this market segment in Europe, which Remontowa SA carried out for Knutsen. It was also the second largest project, in terms of the scale and level of technical complexity, in the history of Remontowa SA (the largest project of this type so far has been the conversion of the FPF-1 production platform executed at the yard earlier).

The conversion of *Hanne Knutsen* included, among others: division of cargo tanks, assembly of pipeline systems (over 30 km), installation of new electrical and electronic systems (including laying of over 400 km of cables), assembly of the stern offloading system, extension of the deck on the stern and extension of the superstructure. While executing this project, about 5000 tons of steel have been processed.

The helideck has been replaced with a new structure to allow new installations and the hull structure has been modified to fit a submerged turret loading buoy system. After rebuilding, the FSO weighs approximately 37 000 tons.

As we can learn from the KNUT'N company magazine, no. 2/2017: *"The scope of the rebuilding of Hanne Knutsen into a storage vessel became much more extensive than originally anticipated. Amongst others, the amount of cables and tubing increased substantially during the engineering phase. Moreover, the design was more complex than first assumed (...)"*.

The "new" *Hanne Knutsen* can be considered as a representative of the new generation of "an advanced FSO". She is intended for receiving the oil extracted from the production platform and performing pre-treatment in the Martin Linge oil field before transferring oil to shuttle tankers. After the conversion, the vessel also features a remote-controlled system allowing for the processing of oil and water to be controlled from the nearby production platform and onshore at Stavanger, as well.

The Martin Linge field, abundant in rich oil and gas resources, located in the Norwegian part of the North Sea, is operated

The FSO in the waters of the Bay of Gdansk, shortly before her redelivery to the owner.
Photo: Sławomir Lewandowski

by the consortium of Equinor Energy AS (70%) and Petoro AS (30%). Located 180 km off the coast of Norway near the border of the UK sector of the North Sea, it is estimated to contain recoverable resource of more than 300 million barrels oil equivalent (Mboe).

The Martin Linge field has a highly complex high-pressure and high-temperature reservoir containing both oil and gas. The infrastructure will include a standalone fully-integrated production platform with living quarters and a permanently anchored Martin Linge FSO vessel. The FSO is chartered for a period of eight years, extendable up to four optional years.

The cargo tanks of the vessel have been restructured at Remontowa SA to make room for the two parallel washing systems where oil will be separated from water. Each washing system comprises two 8500 sqm tanks. The Martin Linge field mainly delivers gas, but also some oil which has high salinity and must be processed before it can be transported from the field. Consequently, the oil and water are to be separated from the gas on the platform and piped to the Martin Linge FSO unit located about 3.5 kilometres from the platform.

The new separation technology has been installed on the FSO. When the oil and water arrive, it is routed into two parallel washing systems that are completely the same. Each system has two large tanks that the oil will pass through.

As Stig Helland, Senior Project Engineer for the FSO package on Martin Linge says, this technology is in place on the Norwegian shelf for the first time. The oil washing equipment will function well even in high waves in the North Sea.

The oil is separated from the saltwater in a process similar to a reverse sprinkler system. The oil and water are projected through a number of small holes in pipes near the bottom of the tank. This causes the oil to raise slowly towards the surface through a layer of water at the bottom of the tank. On its way up, the oil droplets coalesce, causing the oil to form a layer on top of the water. Simultaneously, the water droplets that accompany the oil will also coalesce and sink towards the bottom of the tank.

Helland explains that when the oil is routed to the next tank, the process is repeated, but this time freshwater is added and mixed with the oil. This freshwater dilutes the remaining saltwater and the water is again separated from the oil in the wash tank. Thus, the salt content is reduced, and the result is high-quality oil.

A glance at the ship's deck. More than 30 km of tubing and over 400 km of cables were laid on the FSO at Remontowa SA.
Photo: Sławomir Lewandowski

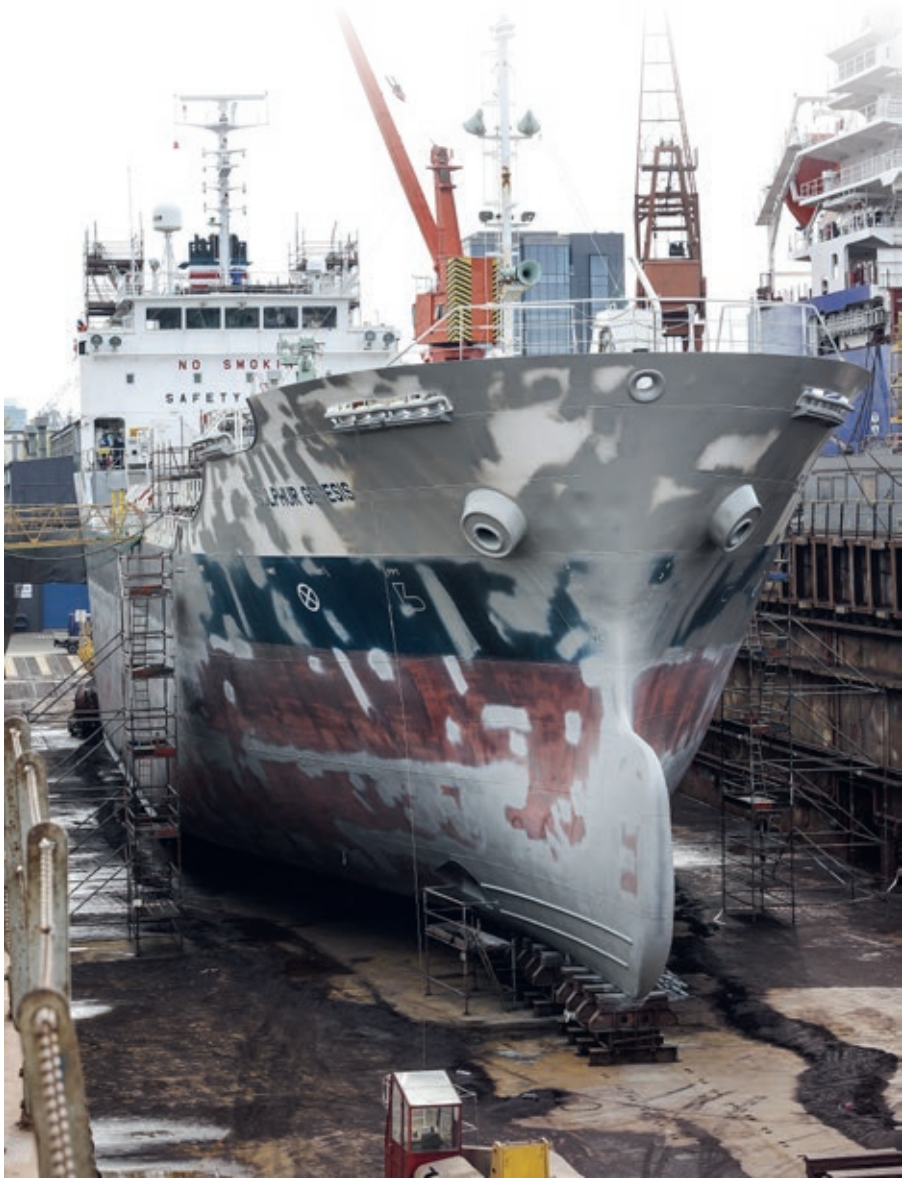
This novel Total patented technology allows for two advantages. Firstly, the weight and amount of equipment on the Martin Linge platform are reduced, as the oil is cleaned on the FSO, not on the platform itself. Secondly, it has no negative impact on the environment, since the processed water that is almost clean and remains after the oil has passed through the wash tanks, is returned to the reservoir near the oil recovery site.

First oil from the field was previously scheduled for 2017, but due to delays on the construction of the Martin Linge platform, particularly related to the floor modules (topsides) being built at Samsung Heavy Industries in South Korea, the field is now scheduled to commence production in 2019.

We install more and more Ballast Water Treatment systems on ships

New client from Japan

***Sulphur Genesis*, a tanker intended for transporting liquid sulphur and owned by Daiichi Tankers, was equipped in Remontowa Shiprepair Yard SA with a Ballast Water Treatment system (BWTS).**



This was the first time Daiichi Tankers used the services provided by the largest Polish shiprepair yard. *Sulphur Genesis* entered the shipyard in April for a five year class survey extended with BWTS installation. Before signing the contract, representatives of Daiichi Tankers conducted a short audit which confirmed that the shipyard is both experienced in running projects of this type and has relevant technical capacities.

It is worth recalling, that the shipyard installed BWTS for the first time in 2007. The SR *American Progress* tanker was equipped with a Balpure (Severn Trend/ De Nora) system at that time. In 2011, at Remontowa SA a Norwegian tanker *Gijon Knutsen* got a KBAL system designed and patented by Knutsen OAS Shipping.

The KBAL system neither uses any kind of chemicals nor any filters. The main component is the compact pressure vacuum reactor working in combination with the vertical ballast water drop line which ensures a sudden pressure reduction from the required 2 bar at the inlet of the P/V reactor, down to a pressure marginally above a perfect vacuum. This sudden pressure reduction pulverizes the majority of organisms. Any remaining algae or bacteria are effectively eliminated by the UV chamber mounted downstream on the P/V reactor.

In 2012, the shipyard installed a prototype Cathelco system on the *Eddystone* vessel. In subsequent years, Remontowa SA equipped more ships with systems from many other producers, including Bal-

Sulphur Genesis painted in the dock.
Photo: Sławomir Lewandowski

pure, Optimarin, Techcross and Alfa Laval, the last three of which are listed as suppliers of systems certified by the US Coast Guard Marine Safety Center.

In the case of *Sulphur Genesis*, the owner decided to install a system produced by a Japanese company, Miura. In this solution microorganisms and living organisms transferred in ballast waters are neutralized by UV. Next, dead organisms are retained in a filter station thanks to which ballast waters are purified.

The installation of the system on *Sulphur Genesis* required introducing many alterations and modifications to the previous configuration of the tanker space in order to adjust it to the installation of new devices, which were also connected to the power grid already existing on the ship. This required proper planning of works and logistic preparations, as well as prior prefabrication of elements.

The main challenge for the entire project, consisting on the one hand of running a five year class survey and on the other - installing a BWTS, was the short time available for completing all the works.

Due to the ships purpose and the nature of carried loads, its repair was subject to additional requirements. All the works in the cargo tanks, being particularly hazardous, had to be specifically prepared and supervised by fire brigade units. Exchange of some sections of pipes required additional cleaning of surfaces and non-sparking welding. The repairs covered various elements of the propulsion system (i.a. the main engine, auxiliary engines, the rudder) as well as mooring winches and anchor winches. Maintenance and painting works were also carried out.

The world fleet of tankers designed for transporting liquid sulphur, due to the specific type of cargo it carries and the requirements to transport it at a high tem-

Ark Futura departing from Remontowa SA with an Alfa Laval BWT system installed.
Photo: Sławomir Lewandowski

The Japanese sulphur tanker at the shipyard's quay after completion of works.
Photo: Sławomir Lewandowski

perature of about 140 C, consists of only 20 to 25 vessels. The market on which these types of specialized vessels are employed is considered to be niche, on a global scale. The majority of transport of liquid sulphur has, for years, been taking place mainly between Japan and other harbors of the Far East and Southeast Asia.

Apart from new shipowners commissioning installation of BWTSs, Remontowa Shiprepair Yard provides services of this type to regular clients. *Ark Futura* is one of the many ferries owned by Danish company DFDS repaired in the shipyard, the previous visit of which took place in 2016.

This time, the ferry came to the shipyard to install a BWTS. The solution installed on this ship is produced by Alfa Laval. The company prepared detailed documentation of the installed system and blueprints of the rooms developed on the basis of 3D scans were especially helpful, thanks to which it was easier to plan a collision free course of pipelines.

In the first place, the shipyard had to make place for the "heart" of the entire system (the so-called 'unit'). This required adjusting part of the engine room, including cutting out elements of the already existing constructions. BWTS on *Ark Futura* also includes two new feed pumps and a system of pipelines with over 30 valves.

During the ship's stay in the dock, maintenance and painting works were also carried out as well as installation of a Marine Growth Prevention System (MGPS). The vehicle decks were renewed and covered with new surface layers.

Ark Futura is a ro-ro cargo vessel with 2300 m of traffic lane for wheeled vehicles (cars, semi-trailers) travelling on ferry connections in Northern Europe. Under the agreement concluded between DFDS and The Royal Danish Navy, the vessel is entered in the register of NATO naval support forces, and in its lifetime, has carried, for example, chemical weapons intended for destruction from Syria to Italy, under the escort of, among others, Norwegian and Danish military vessels. ●

Another visit by a gas carrier owned by Anthony Veder Rederijzaken BV

Coral Methane

acquired a unique function

As a result of modernization carried out at Remontowa Shiprepair Yard SA, gas carrier *Coral Methane* became one of the few LNG bunker tankers in the world.

Coral Anthelia and *Coral Methane* moored bow to stern at the shipyard's quay.
Photo: Ireneusz Gradkowski

In 2017, Shell and a renowned Dutch gas shipowner, Anthony Veder, signed an agreement under which *Coral Methane* was supposed to undergo reconstruction to perform a new function consisting in delivering LNG fuel to other vessels. For that purpose, it was necessary to fit it with an installation and integration of specialized devices.

This unique project was implemented following two separate contracts. After the winning of the tender contest by Remontowa SA, the vessel entered the shipyard in April this year to complete the first stage of works.

The repair was extensive, the main part being the installation of an additional gas cooler which required preparing a special space. A 20 ton separate compartment was prefabricated prior to the ship's arrival at Remontowa SA, also Void room no 1 was adapted on the vessel, in which electrical equipment was installed to control new devices. A new pump and plate cooler were installed in the PSA room and new communication routes were also fitted. The vessel docked twice during that time and underwent many surveys, repairs, maintenance, and painting works.

During that time, hull maintenance was carried out, box coolers and propellers, including azimuth thrusters, were dismantled. A radar system for measuring gas volume in the cargo tanks provided by Kongsberg was also installed in the shipyard.

After completing the first stage of works, *Coral Methane* left Gdańsk and... came back in November 2018 as, once again, the offer of Remontowa Shiprepair Yard SA for carrying out the second stage of modernization proved to be the best one. This time the task consisted of preparing a transportation route and installing a subcooler in an external casing that had been built during the previous visit.

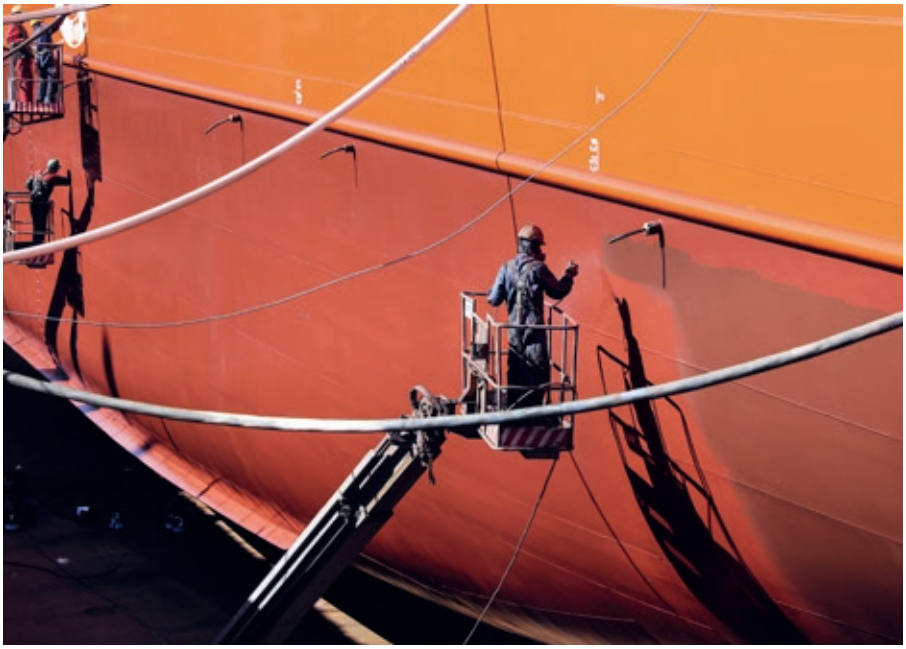
After completing the modernization, the gas carrier became one of the few LNG bunker tankers in the world. She is expected to supply LNG fuel mainly in the southern part of the North Sea and on the Mediterranean Sea. Before modernization in Remontowa SA, the ship, with a load capacity of 7500 cubic metres, 117.8 m long and 18.6 m wide, was used by the charterer - Shell - as a multipurpose gas carrier. However, she was mainly employed on the so-called small scale LNG market as a feeder and for regional LNG distribution in Northern Europe.

According to the shipowner - Anthony Veder Rederijzaken BV, which owns a fleet of over 20 gas tankers - adapting *Coral Methane* to an LNG bunker tank meets the growing demand for LNG fuel on the shipping market.

It is worth adding that *Coral Methane* was built in 2009 at the Remontowa Shipbuilding SA shipyard, owned by Remontowa Holding group. At that time, she was one of the first vessels in the world built for transport of three types of cargo: LNG, LPG and ethylene, and the first such vessel constructed in a European shipyard. Thanks to its diesel and electric drive and partial use of LNG as fuel, it was also one of the most modern and most ecological ships sailing the European waterways.

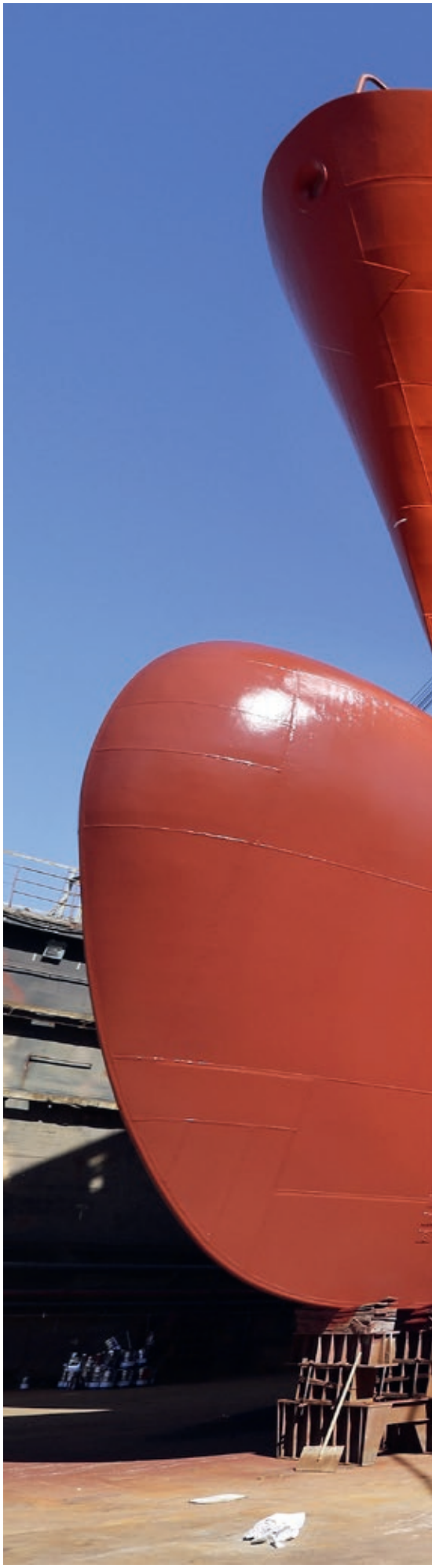
Coral Methane was not the only vessel of this client repaired at Remontowa SA in 2018.

Another gas tanker, *Coral Anthelia*, which sails the warm Caribbean waters,



Coral Methane was docked twice undergoing many surveys, repairs, maintenance and painting works.
Photo: Sławomir Lewandowski

Newly painted *Coral Methane* docked at Remontowa SA.
Photo: Sławomir Lewandowski



came here for her first five - year class survey. Apart from hull maintenance, which due to its specific microclimate of warm seas, was heavily overgrown with microelements, the main task on the dock consisted of replacing seals on the shaft line, since the vessel had changed marine oils from traditional to environmentally friendly.

In March 2018, *Coral Pavona* of the same owner also came to the shipyard for extensive maintenance and mechanical works, for the fourth time in her history. Other gas carriers from the Anthony Veder's fleet - *Coral Parensis*, *Coral Lophelia* and *Coral Ivory* - have also visited Remontowa SA in 2018.


CORAL METHANE

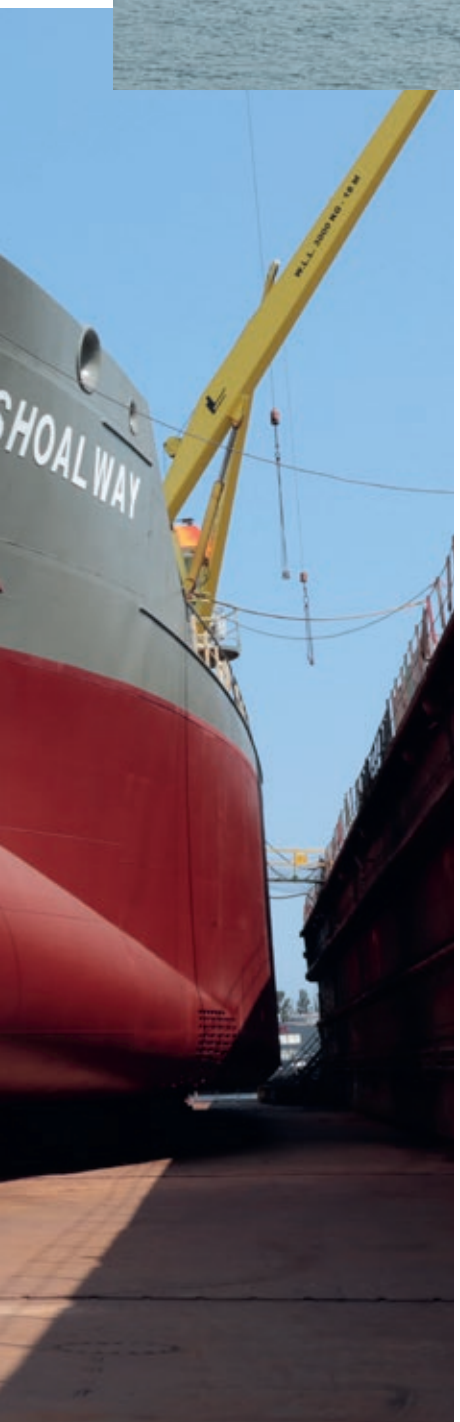
Shoalway, *Reynaert* and other dredgers in our docks

Heavy jobs

Each year Remontowa SA repairs several dredgers owned by leading global shipowners. These vessels work in exceptionally difficult conditions, therefore, restoring them to full operation in our shipyard requires not only a lot of work but also extra care.

A traditional "family" picture in front of the docked Shoalway dredger at Remontowa SA.
Photo: Maciej Bielesz

Shoalway departing from Remontowa SA.
Photo: Maciej Bielesz



The *Shoalway* dredger, constructed in 2010 and owned by Royal Boskalis, was entering Remontowa Shiprepair Yard SA for the third time. Previous visits took place in 2013 and 2015.

Shoalway can operate on its own, without hopper barges which carry dredged material. Material dredged from the seabed is placed in the hold (hopper) and removed through the bottom doors, or through a system of pipelines to a place at some distance from the vessel (this is done, for instance, during reclamation of beaches).

Due to the specificity of dredgers, the majority of shipyard works carried out on vessels of this type need to be performed on a dock. Part of the repaired devices and elements are to be placed in the bottom part of the ship, including the hold (hopper), which is usually flooded with water. It is a common side-effect of dredging, the reason for which is usually dredged stones or a damaged bottom door gasket, which needs to be repaired.

Apart from repairing the bottom door and pipeline systems, the shipyard workers also fitted *Shoalway* with some parts of devices, pipes, and wires for a future flue gas cleaning systems (Selective Catalytic Reduction and Fuel Water Emulsion).

Damaged hull elements were repaired, hull and hopper maintenance was carried out by coating them with a special paint resistant to being hit by even large dredged stones. Numerous inspections and repairs of other devices were also carried out.

The owner also commissioned dismantling of the anti-piracy safeguards. The dredger carried out one of its last works off the coast of Nigeria and, fearing a pirate attack, the crew had secured the sides and the bridge with grating and barbed wire fences.

The *Shoalway* dredger was constructed in a Dutch shipyard, Intervak Scheepswefe Constructie (Harlingen). Instead of main engines, shafts, and traditional rudders, *Shoalway* is equipped with an azimuth thruster, which allows the propeller to set thrust in any direction, ensuring better maneuverability than with traditional propellers.

Repairing the *Waterway* dredger, owned by the same shipowner was, in turn, a very extensive project. Before entering Remontowa SA, since 2016 the dredger had been moored in Rotterdam and not involved in any operation, which was not helpful to its condition. In the shipyard the dredger underwent class survey together with replacement of several tons of steel, including the underwater part of the hull.

Initial works already carried out at the quay, required deck maintenance, including deck devices and installations. During her dock time, apart from inspections and repairs of elements of the propeller system, including shaft lines, the thruster, and the propeller, the biggest challenge was to repair the pipeline system. Pipe sections dismantled in the shipyard weighed on average 5 t. Dredging system pipes were replaced and the 900 mm diameter suction pipe was comprehensively repaired. The dredger left the shipyard repaired, repainted, and restored to full technical working order.

Remontowa SA was also visited for repair by the *Reynaert* dredger, owned by a Belgian shipowner DEME. The shipyard's task consisted of, among others, preparing the vessel for heavy works on the construction of the Nord Stream 2 gas pipeline. After the repair at Remontowa SA, the dredger sailed in the direction of the Gulf of Finland, where she was supposed to be engaged in the preparation of a trench in the sea bottom for the gas pipeline, through which, in a couple of years, gas will be transported from Russia to Europe.

This is not the first vessel of this client to visit the Remontowa Shiprepair Yard. In 2011, the *Tideway Rollingstone* fall pipe vessel had its class renovation done here.

The *Waterway* left the shipyard repaired, repainted, and restored to full technical working order.
Photo: Sławomir Lewandowski

This time, the main reason for the visit of *Reynaert* was extensive steel works as well as replacement and repair of pipelines, including significant modification of the dredging piping system. Works in the superstructure were also carried out, as well as hull maintenance. The propeller was repaired, and the entire hydraulic system supporting on-board devices and dredging systems was emptied and filled with biodegradable oil.

Remontowa Hydroster Systems, a company operating within the Remontowa Holding group, cooperated on this project, which also provided spare parts for the systems. ●

The *Reynaert* dredger in one of the Remontowa's docks.
Photo: Sławomir Lewandowski

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