



Shipyard full of ferries

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eco twins

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of "Spirit Class" ferries conversion

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Grimaldi Group
vessels with scrubbers

We installed flue gas desulfurization
systems on *Grande Lagos* and *Grande Dakar*

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Prestigious award for our Client

It was with great joy that we received the news that the conversion of Spirit of British Columbia had been recognized with a Shippax award.

Remontowa Shiprepair Yard SA has converted the ferry for BC Ferries in the program of mid-life upgrade of the two "Spirit Class" vessels. The Shippax Retrofit Award has been given for completing the conversion of the large passenger ferry from diesel to liquefied natural gas (LNG).

The award, received in March 2019 at the Shippax Ferry Conference, recognizes the innovative work performed on the Spirit of British Columbia, which is among the largest passenger ferries ever to be converted to natural gas propulsion. It is also the first passenger ferry in the world to refuel LNG via delivery on a fully-enclosed vehicle deck.

The Spirit of British Columbia was the first of the two Spirit class vessels to switch to greener technology. The conversion to natural gas required replacement of four main engines with new dual-fuel engines, installation of a large LNG tank beneath the main deck, and development of an innovative fuel bunkering system.

By using natural gas to fuel the two Spirit Class vessels, BC Ferries expects to reduce CO2 emissions by 12,500 tonnes annually,

which is the equivalent of taking approximately 2,500 vehicles off the road every year.

BC Ferries is an industry leader when it comes to adopting new technology that lowers emissions. The Salish Class vessels, earlier designed by Remontowa Marine Design, built at Remontowa Shipbuilding SA and introduced in 2017, were the first passenger vessels in the world to refuel LNG on an open vehicle deck using proprietary tanker truck technology. BC Ferries and its partners developed both of these innovative solutions.

The Spirit of British Columbia's conversion to LNG took place during its scheduled mid-life upgrade between the fall of 2017 and early 2018. The ferry's sister ship, the Spirit of Vancouver Island, completed its upgrades and natural gas conversion in February 2019 and returned to service between Victoria (Swartz Bay) and Vancouver (Tsawwassen) in April, on the Earth Day.

BC Ferries now has five ships that operate on cleaner natural gas – two "Spirit Class" and three "Salish Class" ferries. Looking ahead, BC Ferries has announced to introduce hybrid-electric ferries to serve inter-island routes next year.

Grzegorz Landowski
Editor-in-Chief



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REMONTOWA
HOLDING

REMONTOWA: GDANSK Y POLONIA EN EL MAPA MUNDIAL DE LA INDUSTRIA NAVAL

La ciudad polaca de Gdansk con sus astilleros y el sindicato Solidaridad fueron los ingredientes que detonaron las huelgas que acabaron con el comunismo en Polonia allanando el camino hacia la caída del Muro de Berlín en 1989.

Gdansk es la sexta mayor ciudad de Polonia y la mayor ciudad portuaria de este país. Entre 1975 y 1998 fue capital del desaparecido voivodato de Gdansk y, desde 1998, es la capital del voivodato de Pomerania. En esta ciudad se encuentra el famoso astillero Lenin donde se fundó el sindicato Solidaridad y que hoy está en transformación dado el interés del gobierno y su importancia histórica como símbolo de la nueva Polonia. Gdansk, junto con las ciudades vecinas de Gdynia y Sopot, constituyen un área metropolitana llamada en polaco Trójmiasto (triple ciudad).

El holding Remontowa es el mejor ejemplo de reconversión industrial en la zona, se transformó de empresa estatal a ser una empresa líder en el mundo en el sec-

tor naval en: reparación, construcción, diseño, conversión, equipamiento para barcos y embarcaciones navales, plataformas petrolíferas y otras grandes construcciones marinas para armadores de todo el mundo.

Hoy Remontowa Holding que celebra sesenta y siete años en 2019, es el segundo mayor astillero de Europa y emplea a 4.000 trabajadores fijos, más otros 4.000 subcontratados en los momentos de máxima demanda lo que lo convierte en el mayor empleador del puerto de Polonia.

El grupo está formado por 25 empresas que incluyen dos grandes astilleros, una empresa de diseño y numerosas empresas subsidiarias productoras de equipamiento marítimo.

Piotr Soyka, cofundador, presidente y socio mayoritario del Holding Remontowa define su empresa como: "una de las mayores empresas de Europa de planificación y diseño de barcos (Remontowa Marine Design & Consulting) y tenemos una variedad de empresas de renombre nacional y mundial en la fabricación de maquinaria y equipo, servicios y también en la industria del mueble (incluido Remontowa Hyduster Systems Remontowa LNG Systems, Remontowa Coating & Equipment y Farnes)".



04. PIOTR SOYKA, PRESIDENTE DEL HOLDING REMONTOWA



The Spanish daily *El-Mundo* on one of the largest shipbuilding groups in Europe

Remontowa on the global map of the maritime industry

***El-Mundo*, the second largest daily newspaper in Spain, published a special edition titled "Polonia" on 31 January 2019. It devoted a lot of attention to the Remontowa Holding shipbuilding group.**

The Madrid journal regularly publishes special reports dedicated to a selected country. Over the last months, there have been several special issues presenting to Spanish readers countries such as Kuwait, United Arab Emirates, Panama or Jordan. The journalists talk with politicians as well as representatives of important institutions and of the most significant companies operating in the given region of the presented country.

In Gdańsk, *El-Mundo* reporters met with the leaders of entrepreneurship. As they wrote: *"The strikes of Gdańsk Shipyard workers ended communism in Poland, paving the way for the fall of the Berlin Wall in 1989. (...) Gdańsk is the sixth largest city in Poland and the largest port in the country. In 1975-1998, it was the capital of Gdańsk voivodeship, and since 1998, it is the capital of Pomeranian voivodeship"*.

In the city is located the former Gdańsk Lenin Shipyard, known as the cradle of Solidarity, which the Polish government is trying to revitalize today. However - as *El-Mundo* writes in the article: "Remontowa: Gdansk y Polonia en el map mundial de la industria naval" (Remontowa: Gdańsk and Poland on the global map of the maritime industry), it is the Remontowa Holding, consisting of two shipyards and over 20 companies, which "today is the best example of a successful industrial transformation in the region, becoming the world's leading company that specializes in design, construction, repair, conversion and equipment manufacturing for ships, offshore platforms and other large marine structures for shipowners around the world".

As they write: "Remontowa Holding is today the second largest group of shipyards in Europe, employing 4,000 permanent employees, as well as another 4 thousand subcontractors in periods of peak demand, which makes it the largest employer in the northern Poland". They also point out that one of the group's shipyard is currently building several vessels, including ferries and naval ships.

The newspaper talked to Piotr Soyka, the founder, co-owner and chairman of the Remontowa Holding group. As he says, quoted by *El-Mundo*: "The success of Remontowa lies in our range of products and services, offering comprehensive solutions for shipowners, taking full advantage

of the potential and opportunities created by operating in a stable capital group".

And further: "Thanks to many years of determination, constant transformation of the company and, above all, setting new and ever more ambitious goals, we have created a new quality in European industry: the largest shipbuilding group in Poland, which is also an industry leader in Europe. We have built a brand that is synonymous with success".

The newspaper also emphasizes the words of Piotr Soyka concerning the geographical location of the shipyard, which is "one of our best assets: close to Germany (the country of shipowners) and near the Scandinavian countries".

REMONTOWA: GDANSK Y POLONIA EN EL MAPA MUNDIAL DE LA INDUSTRIA NAVAL

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equipo para buques y embarcaciones navales, plataformas petrolíferas y otras grandes construcciones marítimas para armadores de todo el mundo.

Hoy Remontowa Holding, que celebra sesenta y siete años en 2019, es el segundo mayor astillero de Europa y emplea a 4.000 trabajadores fijos, más otros 4.000 subcontratados en los momentos de máxima demanda lo que lo convierte en el mayor empleador del norte de Polonia.

El grupo está formado por 25 empresas que incluyen dos grandes astilleros, una empresa de diseño y numerosas empresas subsidiarias productoras de equipamiento marítimo.

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DR. PIOTR SOYKA, PRESIDENTE DEL HOLDING REMONTOWA



El holding Remontowa produce anualmente entre 12 y 14 nuevas naves y es una de las empresas de diseño y consultoría más grandes de Europa. 33

El éxito de Remontowa, afirma el Presidente, se debe "en nuestra gama de productos y servicios especializados que ofrece soluciones integrales para toda la industria de la construcción naval, aprovechando al máximo el potencial y las oportunidades únicas al operar en un grupo de capital sólido. Gracias a los años de determinación, a la constante transformación de la empresa y, sobre todo, a fijarnos nuevos objetivos cada vez más ambiciosos, hemos creado una nueva calidad en la industria polaca y europea, el mayor grupo de construcción naval en Polonia y uno de los líderes de la industria en Europa. A través de nuestros esfuerzos conjuntos, hemos construido una marca que es sinónimo de éxito".

Se describe Piotr Soyka afirmando que: "Remontowa es nuestra vida: diseñamos, construimos, convertimos,

reparamos y equipamos buques, embarcaciones navales, plataformas petrolíferas y otras grandes construcciones marítimas para armadores de todo el mundo. Nuestra situación geográfica es una de nuestros mayores activos, al lado de Alemania y cerca de los países escandinavos".

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► Escarte comercial. Suplemento elaborado por MAKING NEWS S.L. para su distribución con EL MUNDO

One of the pages dedicated to Remontowa Holding in the *EL-Mundo* newspaper.

A record number of ferries noted at Remontowa SA in the winter season 2018/2019.

Shipyard full of ferries

Since November of 2018 until the mid of March 2019, more than 20 car-passenger or cargo ferries were hosted at Remontowa Shiprepair Yard. Further vessels of this type were expected to visit the yard in the months to come.

Along with typical repairs and class surveys, also other interesting projects have been executed on the ferries.

The BC Ferries' *Spirit of Vancouver Island* has been undergoing the adaptation of her propulsion system to be fed by liquefied natural gas as the main fuel, together with the modernization of passen-

ger spaces. She followed her sister vessel (*Spirit of British Columbia*), which had undergone a similar conversion at Remontowa in 2018.

Finnbreeze and *Finsea* operated by Finnlines were the last two of the series of six ro-ro vessels lengthened at the yard by 30 metres to improve their cargo capacity. This extension, according to Finnlines,

Tom Sawyer owned by TT-Line, our new client.
Photo: Sławomir Lewandowski



has also increased their energy efficiency, contributing to reducing emissions of compounds harmful for the environment.

Every year, Remontowa hosts the ferries which operate in the Baltic Sea as well as in the North Sea, the Irish Sea and the English Channel. Some of them pay a visit at the yard for the first time while the others are quite frequent visitors.

Remontowa SA cooperates with leading and renowned ship owners and ferry operators worldwide such as: British Columbia Ferries, Finnlines, Stena Line, Eckerö Line, TT-Line, Tallink Silja, DFDS, Brittany Ferries, MOBY Spl., P&O Ferries, etc.

The first ferries, which began the autumn 2018/winter 2019 ferry repair season at the yard were i.a.: *Armorique*, *Scottish Viking*, *Finnbreeze*, *Finnsea*, *Skania* and *Ark Futura*. In January 2019, at the quays and in the docks of Remontowa SA there were such vessels as: *Spirit of Vancouver Island*, *Finnmaid*, *Sassnitz*, *Finlandia*, *Tom Sawyer*, *Normandie*, *Baltic Queen*, *King Seaways* and *Princess Anastasia*.

In the following two months Remontowa enjoyed a further peak of ferries called at the yard with *Pride of Burgun-*

dy, *Optima Seaways*, *Urd*, *Norbay*, *Baie de Seine* among them. In the midst of March, as many as 6 ferries were simultaneously serviced here.

The *Finlandia* ferry operated by Eckerö Line visited Remontowa SA for the first time, unlike *Nor-mandie* of Brittany Ferries, the owner who has been cooperating with the yard for fifteen years.

Let's take a look at some chosen interesting repair projects.

The most important task on *Baltic Queen* (Tallink) was replacement of the two reduction gears. Overhaul of side valves, tunnel thrusters and the Becker flap rudder were also carried out. Stern tube seals have been replaced with new ones, maintenance works have been performed on the car deck as well as some steel replacement in plating in the bow area. An additional fender has been mounted near MES. A sister ferry *Baltic Princess* was also underwent a similar repair one year ago in Remontowa SA.

The *Finlandia* ferry operated by Eckerö Line - a new client in Remontowa - called at the shipyard for the first time. The vessel underwent a five year class survey while docked. The Marine Evacuation Sys-

Sassnitz (in the foreground) and *Finlandia* in the floating docks at Remontowa.
Photo: Marcin Koszałka





Finlandia called at Remontowa for the very first time.
Photo: Sławomir Lewandowski



Journalist invited by Eckerö Line on-board Finlandia at Remontowa SA.
Photo: Sławomir Lewandowski

tem (MES) was entirely replaced, as the deck water spray system, the ship's hull was also maintained and newly painted. During stay in the dock, the ship's tunnel thruster was repaired, the stabilizers and seawater piping system were overhauled. Furthermore, repairs of electrical generators and main reduction gears were also carried out.

Two car decks have been sandblasted and painted, one fixed ramp was also dismantled and scrapped. The passenger cabins and a restaurant have been refurbished, part of furniture and equipment have been replaced and new upholstery was put.

On the shipowner's invitation a group of journalists from Finland visited the fer-

ry during her stay in Remontowa having a rare opportunity to see the works on board the ship.

- It's nothing unusual - Taru Keronen, managing director at Eckerö Line Ab Oy says. - We have three big ferry operators in Finland and Eckerö Line is amongst them. Many Finns travel on ferries, the most popular destinations are Stockholm and Tallinn. News coverage allow our potential passengers to become more familiar with the ferry and her operator - he emphasizes.

In turn, the most important task on *Galaxy* was the repair of the reduction gears of four main engines. There were also other time consuming works such as i.a. repairs on two rudder blades, an overhaul of tunnel thrusters and stabilizers, replacement of a side shall plating and repair of a fender.

Totally about 10 tonnes of steel have been processed. Electrical engines propelling hydraulic pumps of steering gears have also been overhauled as the air fans located on the funnel's top. Underwater

part of the hull has been maintained with application of the Glassflake coating system since the ship is of ice class 1A.

The Stena Line operated *Sassnitz* entered the yard for the class renewal survey. It hasn't been her first visit at Remontowa since 2014, when the ferry had called at the yard for the same reason while in 2017 the ship underwent another repair.

The ferry is 30 years old, so the scope of works was quite big. In total 20 tonnes of steel have been replaced in the ballast tanks and on decks. The lifeboat and

Galaxy in the largest dock of Remontowa.
Photo: Sławomir Lewandowski



rescue boat davits were overhauled. The main shaft line and steering gears were dismantled and overhauled in the shipyard's land facilities, the bearings in generators have been replaced.

The hull, including its underwater part and superstructure have been cleaned and painted. Maintenance of air ducts was carried out as the replacement of dozen or so doors on decks. Outer fittings were overhauled and some piping was replaced on the ship.

The *Tom Sawyer* ferry owned by TT-Line, a new client of Remontowa SA paid the



Galaxy. Some details had to be carefully painted...
Photo: Sławomir Lewandowski





Baltic Queen shortly after undocking.
Photo: Marcin Koszałka

first visit to the yard for a 5 year class renewal survey. The two shaft lines on the ship were overhauled and a new type of bearings was mounted, a stern tube venting system has been modified. The ship's propulsion equipment was also thoroughly overhauled including bosses, controllable pitch propeller, steering gear and rudder blades, which had been previously dismantled.

The entire hull was maintained including underwater part, the superstructure's front, funnels and the bow and stern air ducts. Three anchor windlass - mooring winches have also been thoroughly repaired.

Approx. 150 tonnes of steel were replaced on the rail deck and some other decks. On the owner's request a movable ramp was dismantled in the bow section. Some maintenance and painting works have also been done in the stern ballast

tanks and anti-heeling tanks. The centre tank, ballast tanks and a forepaek were sandblasted and newly painted.

Some minor works have also been carried out in the passenger cabins. Side and bottom fittings were overhauled including replacement of a few valves and some parts of sea water pipes.

A shaft generator was dismantled and overhauled. A thorough repair of the anti-heeling air compressor system as well as fresh water and thermal oil heaters were also carried out by the specialists of the Remontowa's Marine Power Plant Department.



Victoria Seaways.
Photo: Marcin Koszałka

BC Ferries congratulates Piotr Soyka
on the results of the "Spirit" class ferries
mid-life upgrade program

Eco twins

***Spirit of Vancouver Island* owned by BC Ferries, has been converted at Remontowa Shiprepair Yard SA. On February 27, 2019 the ferry departed from the yard following the completion of a mid-life upgrade (MLU).**

The converted *Spirit of Vancouver Island*
departing from Remontowa SA, heading Canada.
Photo: Marcin Koszałka

The ferry has undergone modernization, upgrade and machinery conversion completed in February 2019. Then the ship began her voyage across the Atlantic, the Panama Canal and a passage along the west coast of North America to Richmond in Canada.

She is a sister ship to *Spirit of British Columbia* and the second of a "Spirit"

class ferries which has her propulsion system converted at the Polish yard from traditional diesel based to environmentally friendly, powered by liquefied natural gas.

The shipyard equipped each of the "Spirit" class ferries with four new dual-fuel Wärtsilä 8L34DF main engines and a cryogenic tank. Currently, the ship's





Dining area.

Photo: Sławomir Lewandowski

► 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 “Spirit” class vessels will reduce CO2 emissions by 12 500 tonnes per year, which corresponds

to the removal of around 2500 vehicles per year.

The *Spirit of Vancouver Island* entered Remontowa SA on October 15, 2018. Now she returns to her route in the summer season, when the volume of passenger traffic is the highest.

According to Mark Collins, BC Ferries’ President & CEO, both ferries return to service with clean technology that reduces both their environmental footprint and cost of operations.

- The two “Spirit Class” vessels consume approximately 16 per cent of our fuel an-



nually. The conversion of our two largest ships in the fleet goes a long way to improving the sustainability of our operations and affordability for ferry users - Mark Collins 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.

BC Ferries has congratulated Piotr Soyka, the co-owner and chairman of Remontowa Holding for an on-schedule delivery of the *Spirit of Vancouver Island* in a special letter signed by Mark Collins, President and CEO and Mark Wilson, VP Strategy & Community Engagement at BC Ferries.

They have expressed their gratitude for "the end result of this two-ship conversion project" and for "stepping up to the challenges and making the necessary adjustments to make the *Spirit of British Columbia* and *Spirit of Vancouver Island* a successful MLU program".



The new cryogenic tank on-board the ferry.
Photo: Sławomir Lewandowski

In the letter they emphasize, that the both ferries mid life upgrades „were major undertakings on our two most important ships”. They also appreciate, that „a significant amount of pre-fabrication work and procurement took place long before the vessel even arrived and a comprehensive project plan was executed with excellent project management (...). Finally the attention to detail and quality in the finishing of passenger areas met or exceed our expectations in

all respects” – Collins and Wilson pointed out.

They also expressed BC Ferries' interest "in a long term relationship with Remontowa Holding".

The conversion of *Spirit of British Columbia* has also been recognized with Shippax award. The Shippax Awards recognize and celebrate new concepts, creativity and innovation within the ferry, cruise, and shipping industry.

BC Ferries has won the Shippax Retrofit Award for completing the conversion of a large passenger ferry from diesel to liquefied natural gas (LNG). The award, received in March 2019 at the Shippax Ferry Conference, recognizes the innovative work performed at Remontowa SA on the *Spirit of British Columbia*, which is among the largest passenger ferries ever to be converted to natural gas propulsion. It is also the first passenger ferry in the world to refuel LNG via delivery on a fully-enclosed vehicle deck.

It's worth mentioning, that according to the "SHIPPAX MARKET 2018" review, among the 32 most significant ro-pax refits and conversion projects in the years 2017-2019, as many as eight vessels have undergone or have been ordered to undergo the above-mentioned modifications at Remontowa SA.



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

We install flue gas desulfurization systems on Grimaldi Group vessels

Grande Lagos and *Grande Dakar* already with scrubbers

Grande Dakar at
Remontowa SA.
Photo: Karol
Przybyła

Before *Grande Lagos* arrived in October 2018 at the quay of Remontowa SA, it had stayed for nearly a week on the roadstead of the Gdansk port awaiting better weather conditions. Strong wind and high wave prevented the planned entry of this 236 metre ship to the shipyard.





Grande Dakar at Remontowa SA.
Photo: Marcin Koszałka

The presence of such a giant on the anchorage was commented on online forums. Her dimensions, such as the aforementioned length, and above all the height of the sides, made the unit visible from the distant districts of Gdańsk, which for several days aroused the interest of more than just shiplovers. Finally, with the help of several tugboats, this container/ro-ro carrier arrived at the shipyard.

In addition to the class survey, the main task was to modify the vessel's exhaust system and scrubber installation. For this purpose, most of the large-size elements needed to assemble the system, including scrubber, venturi, electrical switchboards, exhaust three-way valve, pipes and other elements, were transported using the quay cranes to the vessel while she was still at the quays.

Works related to the scrubber installation itself were already completed during the vessel's stay in the dock. The class survey included also painting the hull with silicone paint, a review of several dozens of electric motors and the aft ramp, as well as steel works on the hull plating in several ballast tanks.

After four weeks, the carrier owned by Grimaldi Group left Remontowa Shiprepair Yard in Gdańsk on 26 October 2018.

Both ships have been equipped with Wartsila U-type scrubbers.

The system operates in an open loop utilising seawater to remove SOx from the exhaust. Exhaust gas enters the scrubber and is sprayed with seawater in three different stages. The sulphur oxide in the exhaust reacts with water and forms sulphuric acid. Chemicals are not required since the natural alkalinity of seawater neutralises the acid.

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

The purity of exhaust gases leaving the scrubber is checked using a flue gas analyzer (CEMS) located on top of the scrubber. Thanks to the three-way valve in the exhaust gas system, it is possible to return them to the scrubber, or directly to the atmosphere, when they meet the required emissions standards.

The second vessel of the Grimaldi Group which entered Remontowa SA for the scrubber installation in January 2019 was *Grande Dakar*. Just like *Grande Lagos*, the vessel was originally built so that in the future it would be possible to mount a scrubber, with free space left for such an option.

The working documentation of the scrubber system and associated systems included in the scrubber installation was

prepared by Remontowa Marine Design & Consulting (RMDC), the Remontowa Holding's in-house design office.

The RMDC's engineers supervised the work on the reconstructed unit, solving the problems resulting, among others, from the emerging differences between sister ships.

Like the first ship of the series, the *Grande Dakar* was also directed to the shipyard's largest dock, where it underwent next renovation stage.

The ship's hull was then serviced and the adjustable oil pump (OD box) was replaced. Due to the replacement of the controllable pitch propeller hub, disassembly and reassembly and inspection of the rudder flaps were carried out. The works on scrubber continued, including among others the assembly of SMO outboard outlets. The shipyard workers also made many steel repairs on the ship.

Grande Dakar left the shipyard in February this year. It was the fortieth of vessels on which Remontowa SA in Gdańsk has installed so far a total of over 100 flue gas desulphurisation systems of various types and from different manufacturers.

Four further vessels of this shipowner will have gone through the scrubber installation by the end of this year.

Seahorse, Rollingsstone Tideway and Rockpiper

Marine engineering ships

Remontowa Shiprepair Yard in Gdańsk continues the implementation of projects related to the repair of specialized marine engineering vessels.

In 2019 *Rockpiper* paid a visit at Remontowa for the first time ever.
Photo: Sławomir Lewandowski

Dredgers, cable layers, dump barges, units that replace underwater cables and pipelines – all these specialized ships have been regularly visiting Remontowa SA for many years. Although the world's fleet of vessels of the last type is not large, in the first quarter of this year Remontowa SA has hosted three such units for repairs.

The scope of works on these ships is always very wide, which comes directly from their operation. Fall pipe vessels or rock dumping vessels are used, among others, in the construction of foundations for offshore wind farms, also for preparing the ground for the construction of underwater installations.





Seahorse is a frequent visitor to the yard.
Photo: Ireneusz Gradkowski



These ships drop crushed stone, a kind of natural aggregate broken from the rock onto subsea pipelines or cables laid at the bottom of the sea to provide protection against anchors, fishing nets or high traffic of units that can damage these underwater installations.

The *Seahorse* fall pipe vessel belongs to DEEPROCK, a consortium of DEME and BOSKALIS, well-known operators dealing in dredging and marine engineering. In the DEME's fleet, there are two other such vessels: *Flinstone* and *Tideway Rollingstone*. The latter also came to the Remontowa shipyard.

Originally, *Seahorse* was built for a Japanese shipowner as a ship for transport of heavy cargoes. After a few years, the shipowner sold the ship to Tideway & Boskalis. The new owner converted her into a fall pipe vessel.

She is equipped, among others, with a system of four azimuth thrusters, a remotely operated underwater vehicle (ROV), a DP2 system and a moonpool in the middle of the hull. The equipment also

includes a tower with a working platform and pipelines composed of several metres long sections, used for feeding stones to the bottom of the sea.

Seahorse has been repaired many times in Remontowa shipyard, most recently in 2017. This time, she arrived in December 2018 for a very large scope of works.

An overhaul and maintenance of the moonpool area was carried out, the aft plating was replaced, cracks in the engine room and ballast tanks were repaired, and the housings were made in the two exhaust gas boilers. The scope of works included also replacement of pipes of the fire protection system and ballast tanks venting pipes, as well as cleaning of transformers. Linings and doors in the superstructure have also been replaced.

The funnels for pouring stones were modified; the actuators, rollers, boat davits, rolls of moonpool covers were replaced; RSDU hoses (side pipe for throwing stones overboard) were replaced, the superstructure and funnel were maintained.



Tideway Rollingstone
at Remontowa SA in 2019.
Photo: Sławomir Lewandowski

The works also included cleaning of fuel tanks, modification of transport beam in the area of moonpool, an overhaul of the auxiliary boiler, a repair and overhaul of venting heads, and maintenance of conveyor belts. After the ship was docked, she underwent an overhaul of outboard valves, replacement of bottom-outboard valves, an overhaul of bottom door actuators and hull maintenance.

Previously mentioned *Tideway Rollingstone* underwent similar works. Her previous stay at Remontowa SA took place in mid-2017.

This time, the unit came for a class survey extended with steel replacement in the area of cargo holds and ballast tanks – a total of approx. 50 tonnes. In addition, an overhaul of the shaft on the starboard side was conducted, as well as disassembly of two bolts of azimuth thrusters and two bow thrusters, together with the replacement of seals. The standard dock survey included valve replacement and hull maintenance. New excavator at the stern and a chute pipe were also replaced in the shipyard.

The third and largest ship of this type in the first quarter of this year was *Rock-*

piper owned by Boskalis. The ship called at Remontowa for the very first time.

The main task of the shipyard workers on this unit was replacement of hydraulic hoses and pipes in power hydraulics. These systems power key ship equipment, such as two excavators for the fore and aft holds, an OHTC crane for lowering pipes, winches and hydraulic pumps, as well as deck cranes which also underwent maintenance.

In addition, an overhaul and replacement of the actuator seal of one of the deck cranes was carried out, and wear bars in both holds, damaged as a result of work of the excavator shovel, were replaced - a total of about 1000 running metres.

In addition to hull work, the shipyard's workers replaced the lining in the superstructure and refurbished the floors. The elements of piping systems of hot water in the residential part of the ship, sea water (Dust Pump system) as well as of the fire-fighting water spray extinguishing system in the ship's hold have been modified or replaced.

Major repair of special-purpose devices
for conducting subsea operations

Cable laying vessels

A specialist ship for laying submarine cables called at Remontowa Shiprepair Yard SA at the end of January 2019. The ship is owned by the French group of Louis Dreyfus Armateurs and operated by Alda Marine SAS with the home port in Marseille.

Ile de Batz works in the offshore wind industry (mainly in the operation of offshore wind farm energy networks) and offshore oil and gas. The payload of the cable amounts to over 6,000 tons, the crew rooms accommodate 70 people, most of which handle complex operations of laying, connecting or repairing submarine cables.

The main and most important position of the shipyard works was prefabrication,

transport and assembly of specialized equipment to support cable laying operations and transport outside the vessel of remotely controlled vehicles for bottom observation. A new stern lifting gear (A-Frame) and a winch cooperating with it with active wave compensation as well as two liner cable engines (LCE) for submitting a cable under the water were installed on the ship in Remontowa SA.

Prior to the implementation of these works, prefabrication of foundations for

Lodbrog (ex *Bolero*) and *Ile de Re* (ex *Prerow*) were converted from Ro-Ro vessels into cable laying ships at Remontowa Shiprepair Yard SA in the years 2001-2002.
Photo: Remontowa SA



Ile de Batz at Remontowa in 2019.
Photo: Sławomir Lewandowski

the aforementioned devices was carried out. In the case of the new hydraulically controlled A-Frame, the foundation frame was attached using brackets to reinforced foundation slabs in the deck after previous drilling and threading of the holes at the assembly site. This stage of work was connected with the necessity to make modifications to the construction of the ship's decks and hangar as well as ship systems, including water fire protection system and

hydraulics for controlling davits of lifeboats.

An important stage of works was also related to the rearrangement of containers on the deck. These containers serve as storage for cables, others have economic functions, and still others have control centres for specialized devices.

The repair of the foundations of the LCE engine placed in the unit's hangar was also a big challenge. Prior to this task, the ship-



yard technology office developed a repair technology because the work was carried out on site, without disassembling the engine and its electrical disconnection. Therefore, it was necessary to properly protect it for the time of repair, because it was very important for the shipowner to keep the basic measurements of the distance between the frame of the device and the deck as well as the adhesion of the device to the new foundation.

During the ship's stay in the dock, maintenance and painting works were carried

out, and an increased scope of works on the shafting was carried out, which were dismantled on the dock for this purpose.

Four shaft bearings liners have been replaced. Before, after measurements by shipyard technologists, they were subjected to mechanical treatment, among others using mobile boring machines. After the final measurements, the assembly of shafts and shields took place. In addition, in the shipyard, steering gear seals and two tunnel thrusters were replaced.

The shipowner required compliance with very high organizational, quality and safety standards, because the ship is operated in the oil fields. For all major production and technological operations, risk assessments and lifting plans were developed, and communication schemes between the shipyard and shipowner were created.

The implementation of this complex project involved the majority of the shipyard's production departments and cooperating companies from the Remontowa Holding capital group as well as external ones.

It is worth mentioning, that it hasn't been the first time the Remontowa Holding companies deal with such type of ships.

In 2002 Remontowa Shiprepair Yard converted two Ro-Ro vessels into submarine cable maintenance ships (*Lodbrog* and *Ile de Re*) for the same owner - Louis Dreyfus Armateurs. Both still operate in his fleet along with the above-mentioned *Ile de Batz* cable laying vessel.

In turn in 2016 Remontowa Shipbuilding, a newbuilding yard of Remontowa Holding built (turn-key delivery) for a Norwegian owner an entirely equipped cable lay vessel *Siem Aimery*, one of the most innovative and technically advanced vessels of this kind in Europe, designed for the installation and repair of medium and high voltage submarine cables. *Siem Aimery* attracted international attention being even called "a star on a dynamically developing offshore wind power market".



Specialized ship for divers from a new German client

Rare specimen

The visit of *RS Sentinel* in our shipyard lasted almost a month. This unit, built in 1971 in Glasgow, has undergone a complex and versatile renovation.

The *RS Sentinel* is a unique research and Diving Support Vessel in 2009 converted and equipped for multi-purpose tasks such as surveys, light constructions, ROV inspections and work, diving operations and maintenance services.

The vessel is equipped with a Kongsberg DP2 system and the diesel-electric propulsion system designed for low fuel consumption which leads to lower emissions and less environmental impact.

Her age and unusual solutions, which no longer apply to modern units, required from the employees of Remontowa SA both knowledge and skills. The vessels of

this type and with such a metric are a rare sight in European shipyards.

The key element in the work schedule was to repair the tunnel thrusters, which consist of two aft thrusters and two bow thrusters of which one is located amidships ("Gill Jet Azimuth") of rather unusual and rarely seen nowadays structure. Our shipyard workers also carried out repair work on the Kort nozzle, in which the main electrically driven fixed propeller is situated. For this purpose the nozzle was dismantled during the ship's stay in the dock and subjected to maintenance and treatment.

There were also many pipeline installation works resulting from the installa-

tion in the engine room of new Oil Sludge Tank designed by the Remontowa Marine Design & Consulting office (RMDC). Due to the age of the vessel, there were also many steel repairs.

In addition, the shipyard carried out standard maintenance and painting work along with painting a new logotype on the side of the ship, and placing Borkum coat of arms on the bow.

RS Sentinel is part of RS DIVING CONTRACTOR GmbH (RS DIVING) – an international company based on Borkum and having a sale office in Neumuest (Germany). The shipowner is a new client of Remontowa Shiprepair Yard SA.

RS Sentinel at Remontowa SA.
Photo: Sławomir Lewandowski



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