REMONTOWA
SHIP REPAIR NEWS

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Ferries in focus

in magazine

Another ferry season

Cover photo: Maciej Bielesz

At Remontowa Shiprepair Yard, the end of each year heralds the beginning of a ferry season. This is the window of opportunity when the largest shipowners and operators in this market segment entrust us with many renewal projects for their ferry fleet.

Last year alone, out of 201 vessels of various types modernised at Remontowa, there were as many as 41 ferries, including passenger, Ro-Pax and Ro-Ro.

Already in November 2022, the ferries *Barfleur* and *Bretagne,* owned by Brittany Ferries, were the first vessels of this type to arrive. A month later, they were joined by *Mont St Michel*, which underwent a comprehensive refurbishment here - one of the largest in her history - giving the ferry a 'second youth'.

As many as six simultaneously serviced ferries were at the quays and docks for some days in the third decade of January 2023. These included another from Brittany Ferries - *Pont Aven* - as well as *Marco Polo* (TT-Line), *Stena Scandinavica* and *Stena Nordica* (Stena Line), *Regina Seaways* (DFDS) and *Kronprins Frederik* (Scandlines).

During the current ferry season, Remontowa also experienced a real rally of vessels owned by Stena Line. Arriving here were, among others: *Stena Ebba*, *Stena Scandinavica*, *Stena Scandica*, *Stena Baltica*, *Stena Livia*, *Stena Flavia*, and *Stena Nordica*.

The latter ferry underwent a thorough conversion in Q1. As a result, the passengers will enjoy more leisure space with food and beverage offerings and numerous amenities to enhance their journey.

Worth mentioning is also the completed conversion of *Polarlys* as part of Hurtigruten's environmentally friendly programme to achieve the goal of a zero-emission ship. This is the third passenger ferry, after *Nordnorge* and *Nordkapp*, which will emit almost no greenhouse gases following structural changes and being fitted with specialised systems at Remontowa.

We have also started construction of the second Ro-Pax ferry for Polish shipowners, while Intensive production of hull blocks for the first ferry is underway and is already starting to take shape. Work is continuing in accordance with the contract.

Obviously, the ferry season does not mean a lack of other ships and projects at Remontowa. Quite the contrary. There were many in Q1 2023, and we present a few selected ones on the following pages of Remontowa News.

Grzegorz Landowski
Communications Director
REMONTOWA HOLDING

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email: g.landowski@remontowaholding.pl

REMONTOWA HOLDING

The repair of *Bulk Japan* took just a weekend
Photo: Ireneusz Gradkowski

When the ship requires urgent action...

Express emergency repairs

In addition to standard fleet repair and modernisation projects, Remontowa Shiprepair Yard also performs rapid repairs to ships that suffer various misfortunes during operation. Regardless of the causes and types of damage, we quickly bring unlucky ships back to good shape.

Bulk Japan

The bulk carrier *Bulk Japan* is owned by C TRANSPORT MARITIME, which used Remontowa's services for the first time.

An emergency repair of this vessel took just a weekend. The bulk carrier entered Remontowa late on Friday evening and left on Sunday once all the work commissioned by the Client had been completed.

Our task was to make a steel insert in the tank below the waterline in a damaged but temporarily secured part of the hull. Even before the vessel entered our shipyard, we developed a repair schedule, making the necessary calculations and considering the possibility of using the cofferdam to be installed by divers for this job.

Once the vessel was moored to the quay and we assessed the damage, it became clear that the cofferdam was unnecessary. We arranged a suitable berth at the quay for emergency repair on the bulk carrier measuring 228.9m in length, which was a challenge due to the large number of other ships undergoing repairs at the time.

Wilson Pori and *Gerda*

Another example was the visit of the general cargo vessel *Wilson Pori*, then newly acquired by Norwegian shipowner Wilson Ship Management AS. She came to Remontowa for a speed log replacement. Taking the opportunity, we also carried out minor steelwork in the holds and inspected the ventilation of the galley in the superstructure.

The docking operation of another vessel, the *Gerda*, was planned to the last detail despite her relatively small dimension (82m in length and 12m in breadth). She is owned by Norwegian shipowner Larvik Shipping AS and used to carry liquefied CO2.

A few weeks before calling at Remontowa, *Gerda* ran aground in the inland waters of Latvia, damaging the bottom plating. Fortunately, the hull was not unsealed despite that incident, allowing the classification society to approve the vessel's voyage to the repair yard.

A challenging task was already the dry-docking of the ship itself, which had to be

Wilson Pori came to Remontowa for a speed log replacement
Photo: Sławomir Lewandowski

Gerda in the dock - it was a technically difficult repair
Photo: Sławomir Lewandowski

carried out in emergency mode due to damage to the plating in the area of the fuel, oil and ballast tanks.

The Remontowa's project team even included firemen, who set up a barrier around the dock to protect the body of water in case of a spill. Special safety procedures also included seating the vessel in the dock.

Supporting the damaged hull on the centreline keel blocks required precision and constant monitoring of the seated vessel. After all, the slightest error could have resulted in further cracks in the hull plating.

The repair followed strictly delineated stages, which was necessary due to the nature of the damage, found in critical areas of the hull structure. Moreover, the vessel's internal structure was also affected due to the collision with the sea bottom, which was an additional complication.

It was a logistically difficult repair, but thanks to detailed planning of each stage of the work, Remontowa quickly restored the ship to full buoyancy. Several tonnes of steel were replaced. The tanks and the newly repaired plating underwent maintenance, too.

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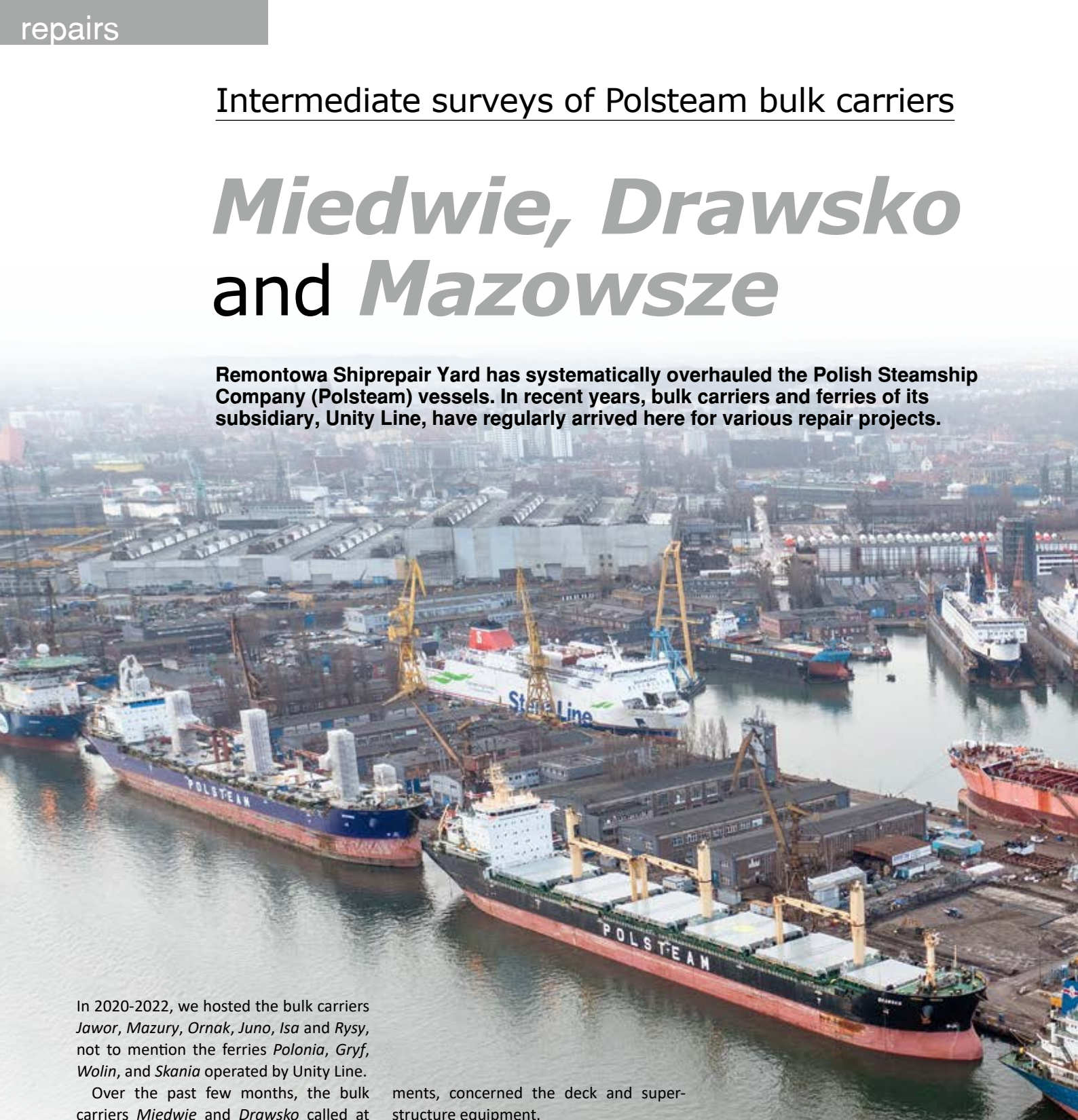
Intermediate surveys of Polsteam bulk carriers

Miedwie, Drawsko and *Mazowsze*

Remontowa Shiprepair Yard has systematically overhauled the Polish Steamship Company (Polsteam) vessels. In recent years, bulk carriers and ferries of its subsidiary, Unity Line, have regularly arrived here for various repair projects.



In 2020-2022, we hosted the bulk carriers *Jawor*, *Mazury*, *Ornak*, *Juno*, *Isa* and *Rysy*, not to mention the ferries *Polonia*, *Gryf*, *Wolin*, and *Skania* operated by Unity Line.

Over the past few months, the bulk carriers *Miedwie* and *Drawsko* called at Remontowa in Q1 for intermediate surveys while *Mazowsze* for repairs. The first of those appeared at the beginning of December last year. The ship is dual-classed by Det Norske Veritas (DNV) and the Polish Register of Shipping (PRS).

Remontowa's main task was to overhaul the steering gear. The work was done both at the quay and at the shipyard workshop. Once the rudder blade had been technologically protected (stowed), this operation was safely performed inside the ship.

A large scope of work, carried out by specialists from various shipyard departments, concerned the deck and superstructure equipment.

Over a dozen windows, exposed to almost permanent contact with seawater, required full maintenance, including removing the frames. On board, maintenance included the cargo cranes, the bow and stern masts, the ballast tank access manholes and the above-water section of the ship, which changed colour from black to dark blue.

We overhauled the anchor windlass-mooring winches and renewed the pipelines of various systems in the engine room and on deck, including modifying and replacing pipe sections.

Many overhauls included electrical motors, AVR automatic voltage regulators, and the hydraulic systems that control the hatch covers. The other work included replacing cap seats of the tank-sounding pipes and cleaning the fuel tanks, aimed at steelwork and verification by classification society inspectors.

Our outfitting teams replaced some of the furniture in both the public areas and

crew cabins. Electricians replaced the wiring, cable trays and floodlights on the deck crane jibs and columns (pedestals). The hull specialists, on the other hand, worked in the ballast tanks and voids.

While the repair project on the *Miedwie* was still underway, further bulk carriers joined in; the *Mazowsze* followed the *Drawsko*.

Miedwie and *Drawsko* belong to the Polsteam's so-called 'Lakers' class. These vessels bear the names of Polish lakes. They are adapted to get through the narrow locks and canals of the Great American Lakes, on which they also sail, regardless of ocean navigation.

The scope of work on *Drawsko* was almost identical to that on *Miedwie*. Here, too, the priority task was to overhaul the steering gear. On the bulk carrier *Mazowsze*, the main work was prefabrication and replacement of the left wing of the bridge.

Polsteam owns 54 vessels with a total DWT of 2.1 million tonnes. These are bulk carriers of the following types: Handysize (from 30,000 dwt to 39,000 dwt) and Kamsarmax (from 80,000 dwt to 82,000 dwt). In addition to bulk carriers, the Polsteam Group operates the *Polonia*, *Gryf*, *Wolin* and *Skania* ferries through its Unity Line subsidiary.

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From left in the foreground – the Polsteam's *Miedwie*, *Drawsko* and *Mazowsze* bulk carriers moored at the quay in the landscape of Remontowa
Photo: Maciej Bielesz

One of the largest self-discharging bulk carriers in the world

A robust dose of steel for *Yeoman Bontrup*

***Yeoman Bontrup*, reborn at Remontowa Shiprepair Yard thirteen years ago, has recently visited us again. This time we reinforced her with a lot of steel. Not surprisingly, the ship left our yard in great shape, ready for further work.**

Yeoman Bontrup is one of the world's largest self-unloading bulk carriers. It is distinguished by its red hull and white superstructure, in front of which, in the ship's axis, a several-metre-long hydraulic boom with a belt conveyor is placed for loading operations - mainly aggregates.

This ship, measuring almost 250 metres in length, is well known to Remontowa employees. We remember her staying in 2010 when we rebuilt this special bulk carrier in just eight months after an extensive fire almost ended her life.

The *Yeoman Bontrup* was truly born anew in our shipyard at that time, which we still recall with emotion and pride, as it was then one of the biggest production events for us. Once we had rebuilt the ship and fitted her with modern equipment, we breathed a second life into her, thus

Yeoman Bontrup is well known to the employees of Remontowa and... a frequent visitor to the shipyard
Photo: Sławomir Lewandowski

Yeoman Bontrup during repairs in the largstest of Remontowa's floating docks
Photo: Sławomir Lewandowski

extending her operational life for another 20 years.

In 2015, Remontowa retrofitted the ship with an exhaust gas desulphurisation system making her more environmentally friendly.

This year's repair of the bulk carrier was dominated by fitting her with a solid portion of steel. Once the ship arrived here and precise measurements were taken, the shipowner increased the volume of work compared to the original scope.

Replacing dozens of tonnes of steel mainly affected the chain lockers and one of the cargo holds. The Teflon coatings and parts of the longitudinal bulkhead plating on the port and starboard sides were also removed. We applied new steel to the ballast tanks.

An extensive and time-consuming job was the replacement of ballast and stripping lines and scrubber system pipes in the funnel. However, the real challenge was replacing 1400 tubes in the boiler, covering several thousand running metres in total!

We took care of the propulsion components and systems in the engine room. Mechanical works included the main engine and an overhaul of the coolers of both this engine and the auxiliary engines. We replaced the seals on the steering gear cylinders. We checked the shaft alignment. Measurements were also taken on the rudder stock.

Our electricians overhauled the bow thruster drive, having it first dismantled. They also replaced over 200 running metres of cable powering this propulsion component.

We also ensured the smooth operation of the bulk carrier's cargo system by machining the boom conveyor's drive roller and overhauling the gearbox of this roller, which in both cases required prior disassembling of these parts.

Mooring equipment also underwent overhauls, including the spring lines bow winch with the replacement of the frame bearings and the mooring winch at the stern. Precision was also required in machining blocks, grabs, and safety stoppers of cargo hatch covers. The repair project was supplemented by outfitting the cabins in the *Yeoman Bontrup*'s superstructure.

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Drydocking with a wide scope of work

Marco Polo is back!

The *Marco Polo* ferry, converted in Remontowa a few years ago, has recently returned here for dockside repairs.

Since Remontowa Shiprepair Yard began cooperating with German shipowner TT-Line in 2018, its ferries have regularly called here for repairs. *Tom Sawyer* was the first, arriving for a 30-year special survey. The shipowner's satisfaction with that project triggered his decision to entrust two more vessels to our yard: *Huckleberry Finn* and *Barbara Krahulik*.

The second of those ships, then newly purchased by TT-Line, first entered Remontowa three years ago. At that time, we converted her, adding an extra accommodation block amidships and another at the bow, giving the ferry 52 new cabins and additional space for passengers.

During the recent *Marco Polo* drydocking in 2022/2023, we performed a large scope of work, bringing her full operational efficiency.

We completely revitalised the entire steering system, which components underwent a comprehensive mechanical treatment after being dismantled and transported to the shipyard workshop. That included the rudder gear, the rudder stock and two rudder blades, as well as the starboard shaft, the propeller hub and blades, and the stabilisers on the port and starboard sides.

We also took care of the propulsion system, overhauling, among other things, the main engine and one of the auxiliary engines. Repairs didn't also bypass the engine room equipment, such as shaft generators, electric fan motors and pumps – the scrubber and ballast ones.

We also ensured the smooth operation of the Ro-Ro system. Intensive maintenance and repair work was done on the three car decks, where we replaced around 110 tonnes of steel. The tween deck and stern ramps also underwent maintenance, with a standard overhaul of the trays.

The repairs, combined with a steel replacement, also included the ferry's bulbous bow, the void spaces on the port side, and the plating in the freshwater tank area, which received steel inserts.

The bilge, seawater, cooling, fire and sprinkler systems have comprehensively been overhauled, including partially replacing the relevant piping in the engine room.

We also enhanced the ferry's numerous deck equipment operation by repairing the mooring and anchor winches. The latter needed dismantling, as did the anchor chains, which underwent measuring and marking. All this was completed with minor maintenance and painting jobs on the masts.

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During the most recent drydocking of *Marco Polo*, Remontowa performed a large scope of work, bringing her full operational efficiency
Photo: Sławomir Lewandowski

On the *Stena Baltica,* along with other repair jobs, Remontowa shortened the stern ramp
Photo: Sławomir Lewandowski

More Stena Line ferries call for various repair projects

Efficiency and ecology

During the current ferry season, Remontowa Shiprepair Yard has enjoyed a real rally of Stena Line vessels.

Over several months, arrivals included: *Stena Estelle* and *Stena Ebba*, *Stena Scandinavica*, *Stena Scandica*, *Stena Baltica*, *Stena Nordica*, *Stena Livia* and *Stena Flavia*. Other ferries were expected to follow.

Already last year, we adapted two new E-Flexer ferries, *Stena Estelle* and *Stena Ebba*, to the requirements of the Baltic Sea route Gdynia-Karlskrona. Both received signage for the communication and information system for passengers and crew, complying with Stena Line standards. The ferries were also fitted with an additional ventilation system for the main engines and shaft covers. We modified the ventilation in several rooms and carried out maintenance and painting.

On the ferries *Stena Scandica* and *Stena Baltica*, in addition to dockside and maintenance work, Remontowa shortened the stern ramp and replaced its drive from wire to hydraulic. The first ferry has also been fitted with an additional fire-fighting system on one of the decks to transport electric cars.

In December 2022, *Stena Livia* came to us. In that case, along with a major repair scope, our main job was maintenance and painting the ferry with a silicone coating.

Stena Livia was followed by her sister vessel - *Stena Flavia*. The latter arrived at

our shipyard in the first days of February 2023 and moored opposite another Swedish ferry – *Stena Nordica*, which conversion was then underway.

On the drydocked ferry, we replaced the seals after pulling out the two shaft lines and taking measurements. We also cared for the rest of the propulsion components, such as stabilisers, bow thruster and propeller blades. Once they were dismantled and transported to the shipyard workshop, we carried out their comprehensive overhauls.

We also overhauled the overboard valves and replaced the outlets. Much steelwork was done in the funnel area, where we replaced supports and fixing points.

A separate major topic was replacing the coating on the underwater section of the hull. We removed the existing system using the UHP (Ultra High-Pressure Water Blasting) method. Then we applied several layers of a new silicone paint, which is becoming increasingly popular in the shipping industry.

On the *Stena Livia* ferry, the main job was maintenance and painting her with a silicone coating
Photo: Sławomir Lewandowski

According to a study by Swedish scientists published last December by Marine Pollution Bulletin, this novel type of silicone anti-fouling paint, which does not contain biocides in its formula, protects vessels better than traditional coatings based on copper.

The latter prevents hull overgrowth by living organisms, which increases the ship's hydrodynamic resistance by continuously leaching copper or other toxic substances into the sea, adversely affecting marine ecosystems.

In contrast, silicone paint is based on compounds produced from silicon oxide that can be found in the sand. The resulting smoothness of the hull surface coated by silicone makes it difficult for contaminants to adhere. Moreover, silicone paints are self-cleaning since contaminants are removed on the fly as the hull moves through the water.

In addition to the jobs mentioned above, we also carried out mechanical works and pipeline modifications on the *Stena Flavia* ferry.

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Stena Flavia underwent refurbishment at Remontowa
Photo: Sławomir Lewandowski

The car carrier managed by Wilhelmsen Ship Management AS

The ramp ready for operation

Large car carriers of leading shipowners in this market segment regularly call at Remontowa Shiprepair Yard. The *Resolve* Pure Car Truck Carrier has recently joined the fleet that visits us.

In recent years, vessels of this type managed by American Roll-on Roll-off Carrier (ARC) have also been increasingly arriving here for overhaul. In 2021, those were *Patriot* and *Honor*, while in 2022, we welcomed *Endurance*, *Freedom*, *ARC Independence* and *Resolve*. The latter was moored at the shipyard's quay in December, like the previous ones, in ARC livery. However, Wilhelmsen Ship Management AS technically manages this Pure Car Truck Carrier (PCTC).

One of the major tasks entrusted to us by this Norwegian Client was refurbishing the stern ramp of the *Resolve*. The scope of work included steel replacement, machining, and prefabrication of the rollers' foundation. We replaced the hydraulic motor of the winch operating the ramp with a new one and renewed the hydraulic system pipes.

Our hull specialists fixed cracks in the fuel tank, on deck and in the funnel, mounting over 150 steel inserts. This fatigue and crack growth is typical for ships with significant lengths and side heights. During operation, the wave-working hull of the loaded car carrier is exposed to very high tensions and forces that affect the ship's structure.

We ensured the propulsion components' smooth operation and various engine room systems. Repairs included - the main engine, electric motors, pumps and fans, heater boilers, Bio-Block, air coolers and gensets. In addition, we installed a new bilge water separator. We also replaced sections of piping on various systems. A large scope of work concerned vents and ballast pipe heads.

While the ship was drydocked, the seals - of the propeller shaft and those under the bow thruster propeller blades - were replaced. We also renewed the car decks, which underwent maintenance and outfitting works.

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The newly painted *Resolve* car carrier in the dock of Remontowa
Photo: Sławomir Lewandowski

The first DFDS vessel that arrived at Remontowa in Q1 was *Regina Seaways*
Photo: Sławomir Lewandowski

The steering-propulsion equipment, BWT System and more

DFDS Ro-Ro and Ro-Pax fleet

In recent years, Remontowa Shiprepair Yard has dealt with over a dozen ferries from Danish shipowner DFDS. In 2022, *Britannia Seaways* was the last to leave us. In the first quarter of this year, we carried out modernisation projects on *Regina Seaways*, *Princess Seaways* and *Sirena Seaways*.

The ferries of the Danish shipowner, with whom our yard enjoys the privilege of continuous cooperation, sail in the Baltic Sea, the North Sea and the English Channel, linking continental Europe with the UK. In the first quarter of this year, we performed various repair and retrofit projects on three DFDS vessels.

The first ship to arrive was the Ro-Ro *Regina Seaways*, which most recently visited us in January 2020. At that time, we retrofitted her with a Ballast Water Treatment

System, arranged on board by our engineers from Remontowa Marine Design & Consulting.

This time one of the most important tasks was a comprehensive overhaul of the steering system. The work included shaft lines, rudders, rudder stocks, propellers, hubs and a bow thruster. Once these components were dismantled, we sent them to the shipyard workshop for a thorough overhaul and mechanical treatment.

We also paid a lot of attention to the car decks. On the internal ramp connecting the two car decks, we mounted a new steel element measuring several metres from the shipowner's supply after cutting out a previous one. That job required preparing temporary access to the installation area through hydraulic, electrical, piping and insulation systems.

One of the ferry's decks underwent maintenance in the roofed and open area. In addition, we replaced the steel in several places and performed a standard valve overhaul. The underwater part of the hull was coated with silicone.

The other representative of the DFDS fleet refitted during that period was the

The Ro-Pax ship *Princess Seaways* (in the foreground) underwent an intermediate survey at Remontowa
Photo: Sławomir Lewandowski

Sirena Seaways in Remontowa Shiprepair Yard
Photo: Sławomir Lewandowski

Ro-Pax ship *Princess Seaways*, which underwent a class renewal at Remontowa two years ago.

This time, the aim was an intermediate survey. We did maintenance and inspections on many items of equipment. Among other things, we replaced the steel in the bow area, the stern ramp flap and the exhaust system. When the ship was dry-docked, we applied silicone paint to the underwater part of the hull.

Another Ro-Pax vessel of the Danish shipowner was *Sirena Seaways*, which we retrofitted with the BWT system. We installed the most important equipment in the forward part of the ferry in a special compartment, the so-called scrubber room, intended for this purpose by the shipowner.

As that site and the engine room are significantly remote, connecting them by pipelines was a kind of challenge.

Sirena Seaways' stay at the dock was an opportunity to overhaul two propeller hubs and stabilisers and protect the hull's underwater part with silicone paint.

Repairing cracks in the ferry's aluminium superstructure as well as fixing rollers and hinges on the ramps - stern and internal are also worth mentioning. We also overhauled overboard valves, inspected many electric motors and replaced ropes on the lifeboat davits.

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We significantly revitalised *Mont St Michel* and enhanced the ferry's performance
Photo: Sławomir Lewandowski

Our mutually beneficial relationship with Brittany Ferries tightens up

The ferries got in shape!

In the recent autumn/winter season, some of the first ferries to come to us were those bearing the Brittany Ferries logo on the side. Remontowa is proud to continue an 18-year relationship with this French shipowner, who operates the routes between France, England, Ireland and Spain.

As a reminder, those were *Barfleur* and *Bretagne* in November 2022. The former, by the way, marked the beginning of Remontowa's cooperation with BAI in 2004. In contrast, the first Brittany Ferries vessel we hosted last year was *Normandie*, refurbished here for the seventh time.

To ensure manoeuvrability and navigational safety, *Barfleur* and *Bretagne* have undergone major repairs of the propulsion systems, including an overhaul of main engines and shaft lines and a general overhaul of bow thrusters and stabilisers.

Passenger decks were refreshed, and lighting was replaced (over half a thousand luminaires on each ferry). We have also fitted *Barfleur* with a Ballast Water Treatment System, eliminating dangerous pathogens travelling in the ballast water between different ports.

Just as work on those ferries was approaching the end at Remontowa, another ferry - the *Mont St Michel* - joined them in December 2022. She underwent a comprehensive drydocking here, one of the largest over the last 20 years, which significantly revitalised her and enhanced the ferry's performance.

The main and auxiliary engines were almost completely dismantled (including heads, pistons, liners, connecting rods, bearings, silencers, and clutches - parts and sub-assemblies subjected to meticulous inspection, measurement and cleaning), which, after a thorough overhaul in the shipyard workshop, including mechanical treatment of all engine blocks, regained full power and efficiency.

All equipment in the engine room, including pumps, compressors and coolers, were also overhauled. Much work was focused on electrical systems, including motors and fans. Pipelines were comprehensively inspected, with some sections replaced. We also laid new IT wiring.

The vessel has undergone a full scope of drydocking work. Propulsion system components were overhauled, including shaft lines, rudder gears, propellers and bow thrusters. The machining of the dismantled stabilisers as part of their reconditioning greatly enhanced their operation. Steel in the tanks was replaced, and the hull, car decks and ramps underwent maintenance.

Pont Aven was the next French ferry to call at Remontowa. One of the priority tasks was retrofitting her with a Ballast Water Treatment System. We also fitted this vessel with new telecommunications systems, including laying fibre optic cables and modifying IT equipment.

The *Pont Aven*'s main engines and auxiliary gensets were also overhauled. It is worth mentioning that we replaced one of the main engines on this ferry three years ago with a new one. This year we also took care of the ferry's steering system.

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Pont Aven drydocked in Remontowa
Photo: Sławomir Lewandowski

We removed all the hatch covers from the Canadian bulk carrier *Blair McKeil* for maintenance
Photo: Sławomir Lewandowski

BWTS installations combined with other services that enhance the ship's operation

Complex job

More and more shipowners bring to us vessels for drydocking, class renewal, and other repair projects combined with Ballast Water Treatment System retrofits within a single stay.

In Q1 2023, we hosted, among others, bulk carriers, general cargo vessels and cement carriers from Germany and Canada, which received BWT Systems at Remontowa while carrying out other repair scopes.

The German bulk carrier *Louise Auerbach* called at our yard for the first time in 15 years of service for a special survey. We enhanced the steering system operation, replacing the seals on the propeller shaft and overhauling the bow thruster. We also dismantled the rudder blade and stock, which we reinstalled after repairs.

We looked after the anti-corrosion system, too. The work involved installing new

ICCP (Impressed Current Cathodic Protection) anodes on the hull and replacing piping parts, including the so-called CuNiFer ones.

Cu, Ni, Fe, and R (Copper, Nickel, Ferry, and Rest of alloy elements) have found wide application in the production of ship pipeline components in excessive contact with seawater, such as, for example, the main engine cooling system. They are extremely resistant to both crevice and pitting corrosion. Moreover, they're "unfriendly" to marine organisms, preventing them from easily adhering to the pipe surface. As a result, the need for periodic cleaning to remove the build-up of biological growth is minimised.

Steel replacements included the ballast and fuel tanks as well as the plating in the bow. In addition, we carried out steel and maintenance work in the bulkhead area of the grain tanks.

Our teams tackled the deck equipment. We overhauled the cargo cranes, finishing with load tests. The cylinders for the hydraulically controlled hatch covers were inspected, and the mooring winch at the bow underwent mechanical treatment. We also replaced the anchor chains.

We checked gangways subjecting them to load tests, and installed new grating floors in the engine room, previously prefabricated in our shipyard. The overboard valves were also overhauled.

The vessel's electrical equipment was also reconditioned. Repairs and inspections included the shaft generator, air coolers, circuit breakers in the main switchboard, and the fans in the cargo hold. Our electricians also carried out the Megger test, using an insulation tester resistance meter to verify the condition of the vessel's electrical insulation and wiring system.

We retrofitted *Louise Auerbach* with the BWT System from Alfa Laval. Once installed, our lab, equipped with the latest generation of measuring tools, tested the treated ballast water samples, confirming the system's smooth operation.

Another German ship serviced by Remontowa in Q1 of this year was the gen-

The *Cemsky* cement carrier underwent a comprehensive retrofit in Remontowa
Photo: Sławomir Lewandowski

eral cargo vessel *Mila*, owned by Briese Schiffahrts, the shipowner with whom we have the honour of continuous cooperation. In the last two years, we have hosted *BBC Bangkok*, *BBC Belem*, *BBC Balboa*, *BBC Brisbane*, *BBC Bergen*, *BBC Bahrain* and *BBC Maine*, among others, from its fleet. We retrofitted the series with BWT Systems, which installation and arrangement onboard were developed by Remontowa Marine Design & Consulting, part of Remontowa Holding.

The major task for *Mila* was to install the BWT System, too. The job also included prefabricating steel foundations, installing pipelines and electrical equipment, and performing access work to several locations to facilitate the installation.

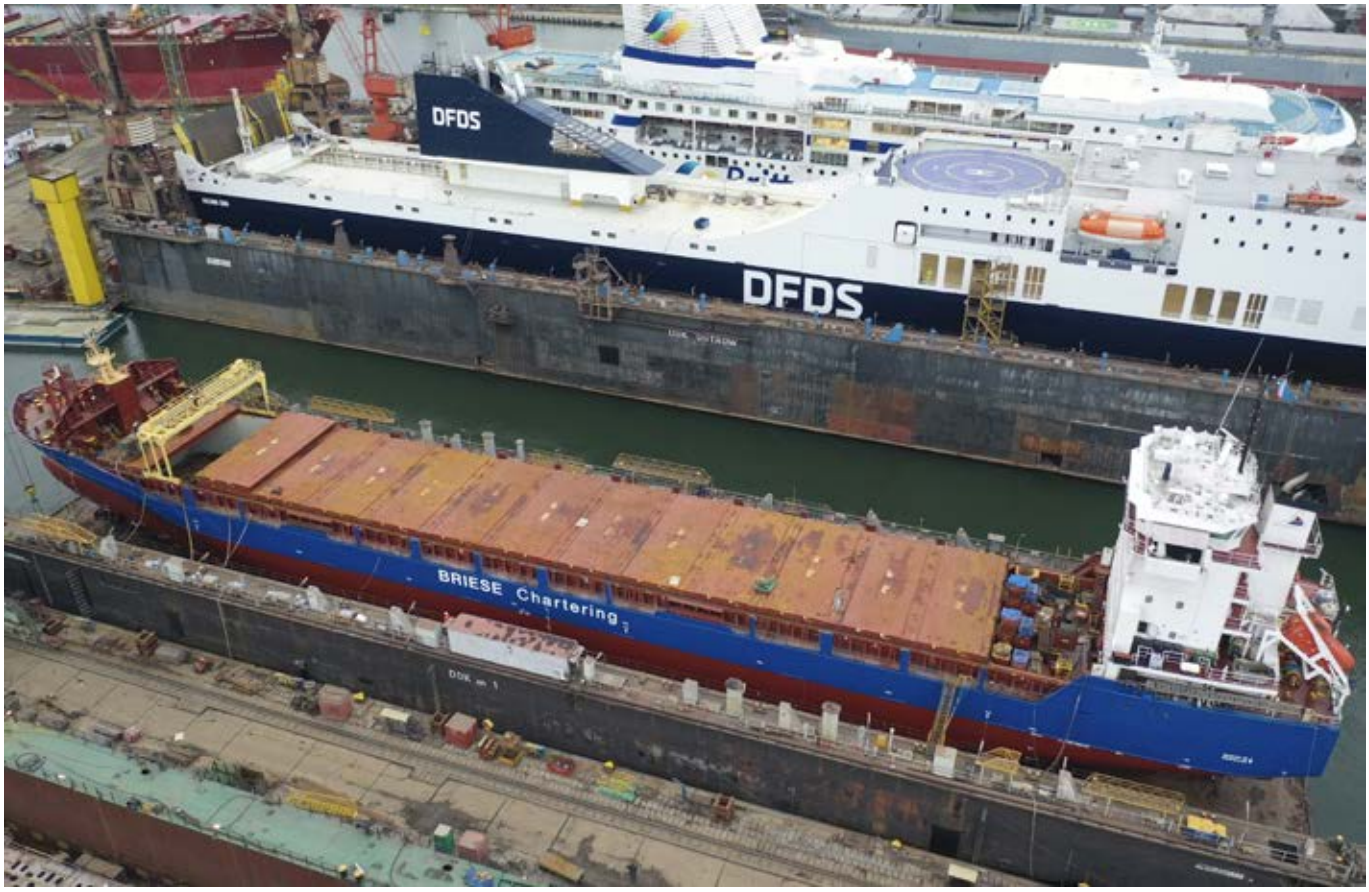
While the ship was drydocked, we replaced the seals on the propeller shaft, under the propeller blades and on the horizontal rotor blade shaft of the bow thruster.

To mitigate corrosion, we replaced the ICCP anodes on the hull. In the sea chests, we replaced the seals and installed new MGPS (Marine Growth Prevention System) anodes.

The thin piping of the cooler unit is constantly exposed to seawater. Marine growth can quickly reproduce and grow due to the box cooler's heat, causing quick covering of the box cooler and the inner surface of the sea chest with algae, mussels, barnacles, etc., which may lead to increased fuel consumption, lower engine performance or even malfunction. MGPS anodes produce small quantities of copper ions that create an environment in which microorganisms can't adhere to the box cooler's piping and surfaces of the sea chest.

The entire project was completed with minor steel replacements, primarily in the hold and an overhaul of the outboard valves.

We retrofitted *Louise Auerbach* with the BWT System from Alfa Laval
Photo: Sławomir Lewandowski



The general cargo vessel *Mila* (in the middle of the picture) was another vessel entrusted to us by Briese Schiffahrts to be retrofitted with a BWT System
Photo: Sławomir Lewandowski

We have also enjoyed cooperation with another German shipowner, Brise from Hamburg. The series of its cement carriers – *Cembay*, *Cemsol*, *Cemstar*, *Cemvale* and *Cemisle* – has left Remontowa in recent years, being retrofitted here with BWT Systems. The most recent one that joined the "club" has been *Cemsky*.

We have retrofitted the vessel with Alfa Laval's BWT system, which required a lot of preparation and the installation of piping and electrical systems, among other things.

We relied on the installation design provided by the shipowner. However, the project was technically challenging, as with previous vessels of this type. The limited space in the engine room required the main system components to be arranged and deployed to use the available place effectively.

In addition to the BWT System installation, many vessel areas were touched by steel replacements, repairs and maintenance work, including overhauling the mooring winch-anchor windlass.

While the vessel was in the dock, in addition to carrying out the standard measurements and shaft line alignment checks, we also inspected the rudder blade, the propeller and the bow thruster.

The Canadian bulk carrier *Blair McKeil* is another vessel we have fitted with the BWT System.

A year ago, Remontowa had already prefabricated and supplied special components ordered by the shipowner to install this system at a favourable time and a selected shipyard. Ultimately, the shipowner decided to entrust this task to Remontowa.

During this project, at the shipowner's request, we removed all the hatch covers from the ship, performed maintenance, replaced the rubber seals, and carried out leak tests in the final stage. One of the mooring winch-anchor windlasses was overhauled, not to mention maintenance and painting scope among the other jobs.

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The converted *Ile d'Yeu* can lay and repair submarine fibre optic cables

We expand the global fleet of cable vessels

Remontowa Shiprepair Yard completed in February 2023 the conversion of *Ile d'Yeu*, a former pipe laying vessel, into a cable ship to lay and repair submarine fibre optic links.

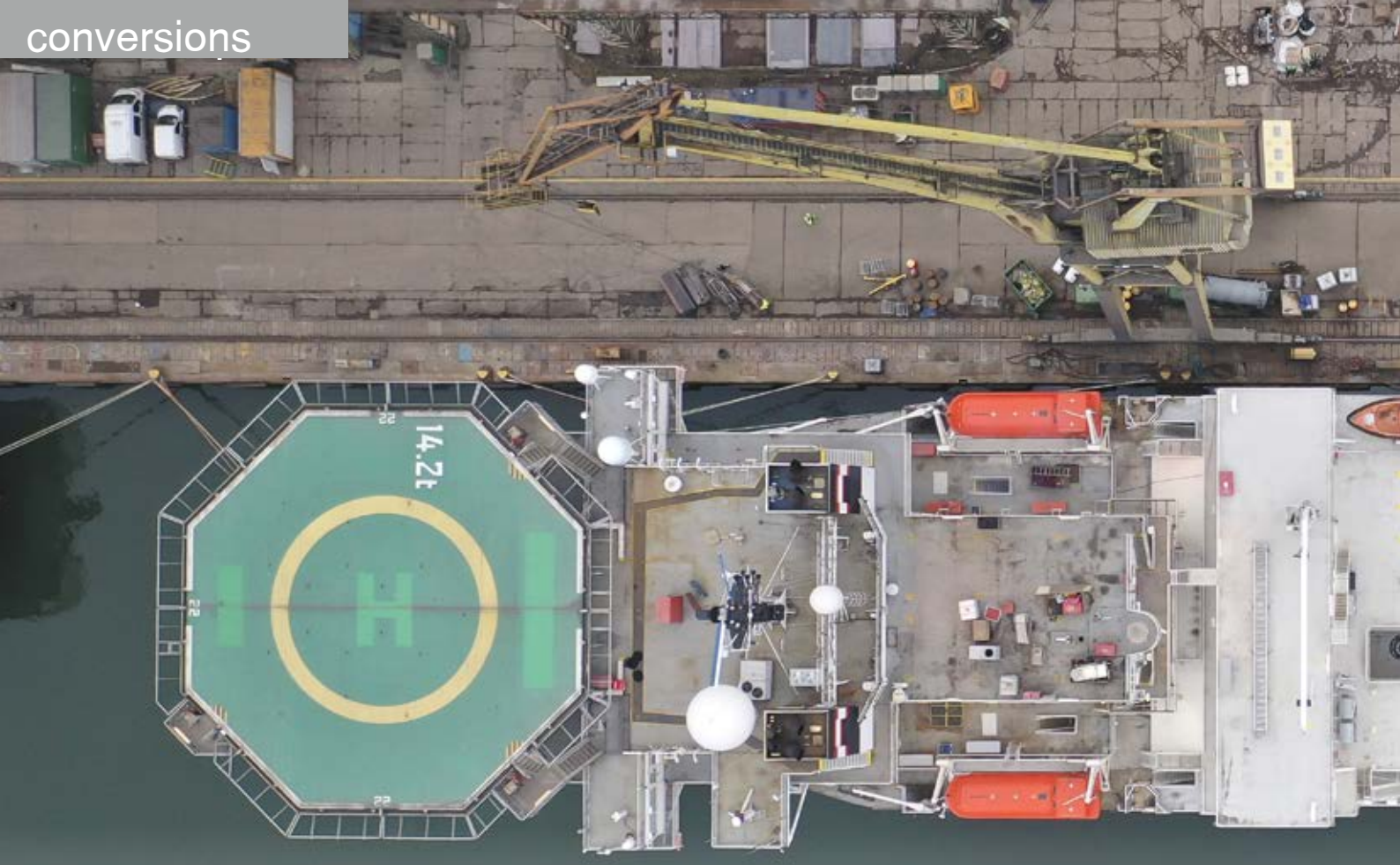
Under the contract signed with the shipowner ALCATEL SUBMARINE NETWORKS MARINE S.A.S. C/O LOUIS DREYFUS ARMATEURS S.A.S. (LDA), Remontowa converted and equipped the *Ile d'Yeu* with the latest generation of equipment, allowing Alcatel Submarine Networks (ASN), part of Nokia, to now offer the highest level of efficiency in the market for the construction and maintenance of submarine transmission networks. The French company's customers include the world's largest telecom operators and GAFAM.

Ile d'Yeu, converted by Remontowa, spotted in the Gdansk Bay, leaving the shipyard and ready for laying subsea fibre optic cables
Photo: Maciej Bielesz

Before starting the essential conversion, Remontowa dismantled and removed all equipment, including heavy structures, associated with the ship's previous function, preparing her for a large-scale project that saw the *Ile d'Yeu* undergo a complete metamorphosis.

On the vessel, we installed a huge steel structure previously prefabricated at Remontowa, the so-called Hangar, accommodating specialised equipment for all operations related to the handling of submarine fibre optic cables. The Hangar has a new deck and technical rooms spread over several floors.

Among the new equipment are stern sheaves for lowering or raising the cable from the seabed, operated by cable engines. Due to their shape, weight and dimensions, modifications were made to the transom, beyond which the sheaves protrude, lengthening the vessel by sever-



Thanks to the conversion, the ship's deck has completely changed, gaining a spacious Hangar housing a wealth of specialist cable-handling equipment
Photo: Sławomir Lewandowski

al metres. Cable tanks were also constructed on the ship, and deck cranes and other specialised equipment were installed.

The conversion affected practically every area of the ship. The project's highly complex technical scope involving almost all departments of the shipyard and its subcontractors generated major logistical and organisational challenges.

The most serious ones included modifications to the cable tanks, including constructing cable cones and bight slots, modifying the transom, and installing cable sheaves and Cable Line Devices. The A-Frame has also been refurbished and extended.

Remontowa Marine Design & Consulting, part of Remontowa Holding, significantly contributed to the job, making the Basic Design of architecture, ship systems, electrical equipment, and installations.

Our engineers also prepared the Detail and Workshop Design, developing the documentation for construction: the Hangar for the cable laying equipment fully fitted with lighting and pipes, the Flume Tank and the stern with cable laying facility (whisker).

Within the scope of the documentation were also new technical rooms, the conversion of the cable storage tanks, the installation of spare cable storage tanks, the lightship weight calculations and the inclining test report.

Equipment for the onboard cable laying system, including foundations and reinforcements for the tow winch, umbilical winch, stairs, platforms and other components, were also deployed in accordance with the workshop design.

As LDA reported, once the *Ile d'Yeu* joined the LDA fleet, she was expected to be assigned to install a transoceanic telecommunication system.

It is worth recalling that the *Ile d'Yeu* followed other vessels recently converted at Remontowa into cable lay ships. In 2022, projects of similar scope for LDA were done on *Ile de Molene* and *Cable Vigilance*, which entered our shipyard as Platform Supply Vessels.

In June 2021, ASN announced the acquisition of two vessels: *Ile de Molene* and *Ile d'Yeu*. That purchase was part of a strategy to modernise and expand installation capacities in the submarine telecommunications market growth context. The Malaysian Optic Marine Services (OMS) acquired another vessel, the *Cable Vigilance*.

Remontowa converted *Ile de Molene* and *Cable Vigilance* into cable-lay ships operated by LDA under the French flag. Both went through a heavy engineering and upgrade program here to meet the expectations of ASN's customers and the missions that they will be carrying out.

Thanks to those and previous ship conversions in this segment of the global fleet, Remontowa has, on the one hand, strengthened its credentials in the cable fleet market and, on the other hand, gained experience that paid off with the *Ile d'Yeu* conversion.

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Ile d'Yeu underwent in Remontowa a complete metamorphosis, becoming a cable-lay vessel
Photo: Sławomir Lewandowski

Polarlys has been the third ferry of the Hurtigruten Norwegian Coastal Express fleet, converted by Remontowa within the shipowner's environmental programme
Photo: Sławomir Lewandowski

The *Nordnorge*, *Nordkapp*, and *Polarlys* ferries have been upgraded, safer, more comfortable and environmentally friendly than ever!

Towards a zero-emission ship

Over a year ago, Hurtigruten Norway launched one of Europe's biggest environmental upgrade programmes for its vessels. Part of it has been successfully completed by Remontowa Shiprepair Yard.

According to this Norwegian shipowner, with the upgrades to be completed in 2023, "guests can look forward to greener sailings on all of Hurtigruten Norway's seven Norwegian Coastal Express ships".

"This is the largest environmental upgrade in Hurtigruten's history and one of the largest in Europe. This will make a real impact in reducing emissions in Norwegian waters. Moreover, the fact that such an investment also leads to ripple effects in the local communities along the coast is something we are very proud of," - Hedda Felin, the CEO of Hurtigruten Norway, then emphasised.

Within the programme, three of seven vessels were planned to be converted to hybrid propulsions fitted with new main engines and battery packs.

Three other vessels were intended to undergo conversions and have SCR facilities on board. The aim is to make greenhouse gas emissions of all Hurtigruten Norway's seven Costal Express ships compliant with Tier III, the strictest international standard for NOx emissions.

"Our goal is zero emissions! But the technology is not mature yet, and we must do what we can to cut emissions with the best technology available today and extend the service life of the iconic ships we have in our fleet," Hedda Felin pointed out.

Since 1893, Hurtigruten Norwegian Coastal Express has carried local passengers, goods, and tourists between 34

The converted MS *Nordkapp* left Remontowa in November 2022
Photo: Maciej Bielesz

ports in what is known as the world's most beautiful sea voyage.

"We are excited to announce our most ambitious sustainability initiative to date, creating solutions for zero-emission passenger ships, using the Norwegian coast as the ideal case. We aim to sail an emission-free Hurtigruten Norwegian Coastal Express ship by 2030," added Hurtigruten Group CEO Daniel Skjeldam.

Hurtigruten Norway also declared to use certified biofuels "on a large scale" to cut carbon emissions.

Hurtigruten Group entrusted Remontowa Shiprepair Yard with upgrading the three car passenger ferries – MS *Nordnorge*, MS *Nordkapp* and MS *Polarlys*. Once converted, the first vessel left our shipyard in May 2022, the second – in November 2022, and the last – in March 2023.

A key challenge for the entire project was completing it on time, as the converted ships had to return to their routes on the scheduled dates. This required the shipyard to organise the production and logistics process efficiently. Remontowa had already met this condition when converting the first ship - *MS Nordnorge* - which the shipowner appreciated. In addition, large scope of the ferry's class renewal job was carried out during the conversion project.

The vessels have undergone similar scope of upgrades. First, we have retrofitted them with a Selective Catalytic Reduction (SCR) system to reduce the nitrogen oxides in the exhaust gases. As a result, carbon dioxide emissions have been reduced by 25 per cent and nitrogen oxide by 80 per cent. New exhaust gas boil-

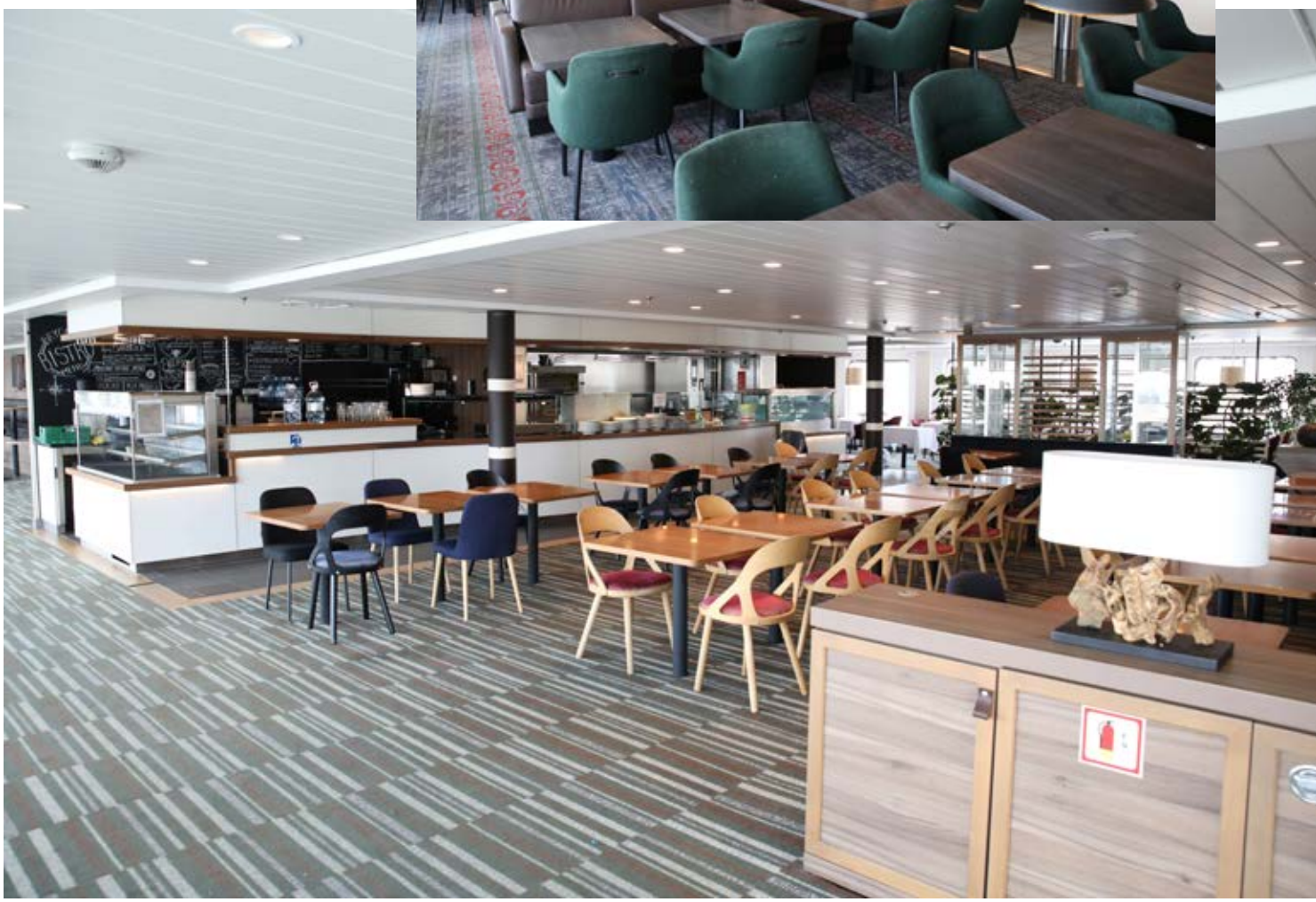
ers were installed to utilise exhaust gases more efficiently.

In addition, each vessel has been fitted with a new waste treatment plant with collecting/holding tanks. We have also mounted a new bulbous bow section into the hulls to reduce fuel consumption.

Implementing these solutions allows the three Norwegian Coastal Express to continue operating in polar regions and achieving the environmental goals of Hurtigruten Group.

Remontowa has also upgraded and refreshed the passenger spaces. After the conversion, the comfort and functionality of nearly 100 cabins on three decks of each ship have been enhanced, with furniture, wallpaper, lighting, flooring, and carpeting replaced.

Along with installing equipment to reduce GHG emissions, Remontowa also upgraded the passenger spaces and enhanced the comfort and functionality of the ferry's nearly 100 cabins
Photo: Sławomir Lewandowski



REMONTOWA HOLDING

REMONTOWA SHIPREPAIR YARD | MEMBER OF REMONTOWA HOLDING S.A.

80-958 Gdansk
ul. Na Ostrowiu 1
Poland

biuro@remontowaholding.pl

www.remontowaholding.pl

Board

Chief Executive Officer
Michał Habina

Chief Commercial Officer
Marcin Seroka

Chief Commercial Officer
Marek Sokołowski

Chief Production Officer
Sławomir Ostrowski

Commercial Offices

SCANDINAVIA, SINGAPORE
Denmark, Finland,
Norway, Sweden,
Singapore
Director: Marcin Mądrala
phone: (+48 58) 307 23 01
fax: (+48 58) 307 19 10
mobile: (+48) 515 178 047
e-mail:
Marcin.Madrala@remontowa.com.pl

SHIP CONVERSIONS
Director: Krzysztof Mądrala
phone: (48 58) 307 25 46
mobile: (+48) 502 160 176
e-mail:
Krzysztof.Madrala@remontowa.com.pl

UNITED KINGDOM,
IRISH REPUBLIC, FAR EAST
Director: Dawid Piaskowski
phone: (+48 58) 307 24 32
fax: (+48 58) 301 12 81
mobile: (+48) 515 087 260
e-mail:
Dawid.Piaskowski@remontowa.com.pl

GERMANY, NORTH & SOUTH AMERICA
Manager: Karol Buczkowski
phone: (+48 58) 307 23 66
mobile: (+48) 503 681 887
e-mail:
Karol.Buczkowski@remontowa.com.pl

WESTERN EUROPE
France, the Netherlands,
Belgium, Luxemburg
Director: Piotr Kubicz
phone: (+48 58) 307 19 64
fax: (+48 58) 307 19 10
mobile: (+48) 603 069 802
e-mail:
Piotr.Kubicz@remontowa.com.pl

ITALY, CROATIA,
MONACO, SWITZERLAND
Manager: Kamil Tamborowski
phone: (+48 58) 307 17 69
mobile: (+48) 511 859 197
e-mail:
Kamil.Tamborowski@remontowa.com.pl

GREECE, CYPRUS, TURKEY
Greece, Cyprus, Turkey,
Portugal, Spain, Algeria, Marocco
Manager: Aleksander Walewski
phone: (+48 58) 307 26 85
fax: (+48 58) 301 12 81
mobile: (+48) 508 394 732
e-mail:
Aleksander.Walewski@remontowa.com.pl

POLAND,
CZECH REPUBLIC,
SLOVAKIA
Manager: Piotr Radtke
phone: (+48 58) 307 16 23
fax: (+48 58) 307 19 10
mobile: (+48) 515 170 837
e-mail:
Piotr.Radtke@remontowa.com.pl

EASTERN EUROPE
Ukraine, Lithuania,
Latvia, Estonia
Manager: Jacek Połom
phone: (48 58) 307 12 53
mobile: (+48) 502 160 175
e-mail:
Jacek.Polom@remontowa.com.pl

NAVY UNITS,
STEEL STRUCTURES
Manager: Arkadiusz Kieda
phone: (48 58) 307 14 26
fax: (48 58) 307 11 39
mobile: (+48) 509 905 429
e-mail:
Arkadiusz.Kieda@remontowa.com.pl