# POLAND @ SEA

### MARITIME MAGAZINE

## Electromobility in the spotlight

NORLEDE



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Deliveries and orders in 2017

# Ships from Poland

The Association of Polish Maritime Industries (Forum Okrętowe) released information on the production and orderbook of Polish shipyards in 2017, worked out in cooperation with PortalMorski.pl, the largest maritime portal on the Internet in Poland.

In 2017, Polish shipyards delivered 12 entirely equipped vessels (turnkey deliveries with a gross tonnage of over 100) with a total gross tonnage (GT) of 69,553 units and compensated gross tonnage - 94,212 CGT. Let us recall the same number of ships or other floating units (12) were delivered from Polish shipyards in 2016, but their total gross tonnage (38,883) was smaller (by about 44%) then, and total compensated gross tonnage (68,004) was also lower (by almost 28%).

At the end of 2017, Polish yards had a newbuilding portfolio for fully outfitted vessels containing 18 vessels (with gross tonnage of 100 or above) with a total gross tonnage (GT) of 75,778 units and compensated gross tonnage of 105,660 CGT.

Thus, compared to the end of the previous year, the order book decreased by three vessels. The total gross tonnage of fully equipped ships ordered in Polish shipyards as at the end of 2017 was also slightly lower (by approx. 7%) than a year before (81,739), so was compensated gross tonnage - lower (by almost 33 %) from the amount recorded in 2016 (140,214 units).

A list of the ships delivered (see photos) and ordered in Poland in 2017 is available in the tables on the following pages.

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POLAND @ SEA

### Poland at SEA

is a special publication destined for maritime trade fairs in 2018.

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🔨 Salish Orca, Remontowa Shipbuilding SA



▲ Salish Raven, Remontowa Shipbuilding SA



▲ El-Mellah, Remontowa Shipbuilding SA



17 Tõll, Remontowa Shipbuilding SA



▲ Salish Eagle, Remontowa Shipbuilding SA



1 Elektra, Crist



▲ Malik Arctica, Remontowa Shipbuilding SA



▲ Piret, Remontowa Shipbuilding SA







🔨 Oceanograf, Nauta



Fully outfitted vessels delivered in 2017 (with gross tonnage over 100)					
Ship types	No. of ships	GT	CGT		
Pontoon barges and dock	s 3	18 952	18 038		
Container vessels	1	10 537	10 332		
Ferries	6	36 384	56 474		
Non-cargo ships	2	3 680	9 278		
TOTAL	12	69 553	94 122		

Ships delivered in 2017					
Ship type	No. of ships	Name	Builder		
Container vessels	1	Malik Arctica	Remontowa Shipbuilding		
Tall ships	1	El-Mellah	Remontowa Shipbuilding		
Ferries	6	Salish Orca, Salish Eagle, Salish Raven, Toll, Piret, Elektra	Remontowa Shipbuilding Crist		
Floating docks	1	Marco Polo	Crist		
Research vessels	1	Oceanograf	Nauta		
Pontoon barges	2	Hannelore, Jannik	Partner		

Orderbook for fully outfitted vessels (with gross tonnage above 100) as of end of 2017					
Ship type	No. of ships	GT	CGT		
Ferries	4	60 400	58 445		
Passenger ships	2	2388	10 637		
Fishing vessels	7	11 490	29 252		
Non-cargo ships	5	1500	7326		
TOTAL	18	75 778	105 660		

*Remontowa Shipbuilding at the forefront of a battery revolution* 

SHIP SNAM

A computer rendering of the hybrid double-ended ferries for Norled.

NORLED

Fig.: LMG Marin

# Electromobility in the spotlight

Remontowa Shipbuilding, a member of the Remontowa Holding capital group, has recently signed two contracts for the construction of four double ended diesel electric hybrid ferries for Norled. The first contract was signed on 11th July 2018 and the second one a few weeks later on 1st August 2018.

The new ferries will mark yet another step on Norled's path towards the green future. They will be equipped with an innovative and highly efficient Diesel Electric Hybrid system. In normal operation the entire required power will be taken from two battery packs installed on board. The batteries will be recharged from the land grid during the vessels stay at quay which will typically be abt. 11 minutes. A fast charging solution of pantograph or plug-in type will therefore be used in order to ensure that the required state of charge of the batteries is maintained. The shore charging system will be integrated with an automatic mooring system (of vacuum or magnetic type) holding the ferries when at quay and giving the "green light" for the charging process to start. The intention is to use the generating sets that the vessels will be equipped with (running on 100% Biodiesel), only in case of emergency. The electric system will be, however, prepared to operate them alongside batteries, e.g. in peak shaving mode.

- Norway ia at the forefront of the countries that invest in battery-powered ships - says Dariusz Jaguszewski - both a member of the executive board of Remontowa Shipbuilding and one of based on maximum efficiency criteria. Europe.

ordered by Norwegian owners are based efficiency even at very low loads. They on hybrid propulsions. These vessels in will comply with the rules and regulanormal mode use only batteries which tions of DNV GL, Norwegian Maritime are being recharged when the ship is at Administration and will be delivered in a standstill.

- There are literally hundreds of ferry routes in Norway and government con- will be near sister vessels to yard nos. tracts to operate them are concluded for B619/1-2 but they will operate on the no more than 10 years, thus our presence Mannheller-Fodnes connection and, in this market is essential from the per- as compared to the ones intended for spective of providing jobs for our shipyard the Festøya-Solavågen connection, will in the years to come. But we are more feature two modifications. Since the than just present. In the recent two de- Mannheller-Fodnes route is shorter, cades we have delivered totally as many the capacity of the battery pack will be as 24 ferries for Norwegian operators, so reduced by approx. 20%. we've been recognized as a solid brand worth their trust - he emphasizes.

2) will service the Festøya-Solavågen con- Therefore, the number of lifesaving apnection. They will be 114,4m long, 17,7m pliances will be increased in accordance wide and capable of taking on board up with the regulatory requirements and an to 120 personal cars and 296 passengers. additional Marine Evacuation Station will The equipment on board will be selected be added. Yard nos. B619/3-4 will be

the most experienced naval architects in A good example are the thrusters which will be pulling type units with integrated - All ferries which operate in fjords Permanent Magnet motors ensuring high the fourth quarter of 2019.

The two vessels of the latest contract

At the same time, the vessels will be certified to carry more passengers The two ferries contracted first (B619/1- with the maximum being 395 persons.

delivered in the first and second quarter of 2020 respectively.

The ferries will be built according to LMG 120-DEH design developed by LMG Marin.

Norled is one of the leading Norwegian ferry operators. The company's fleet consists of abt. 80 ferries of which six have been built at Remontowa Shipbuilding. Among these are Ryfylke and Hardanger, both delivered in 2013, which are the first two vessels in the world not carrying Diesel at all - the main fuel is LNG while CNG (stored in bottles on the open deck) is used in case of emergency.

Remontowa Shipbuilding has also been constructing another pair of hybrid battery ferries on order from Transport for London (TfL). The new vessels will be operating the Thames crossing in the district of Woolwich, carrying over a million vehicles and 2.6 million passengers a year. They will be built according to LMG 60-DEH design, developed by LMG Marin and will comply with rules and regulations of Lloyd's Register and



the Maritime & Coastguard Agency. The ferries will be operated by Briggs Marine Contractors, that operate the Woolwich Ferry service under a long term contract with TfL.

Each of the ferries, with a 210-metre ro-ro cargo lane, will be able to take 150 passengers and 45 passenger cars on board. Cyclists will receive their separate area on the cargo deck, separated from the walking paths of pedestrians.

Each ferry will be equipped with four azimuth thrusters powered by vertically mounted permanent magnet motors. The Lithium-Ion battery pack will allow for significant fuel savings. Two diesel generating sets will be installed and in normal operation only one will be running at a near constant load with the battery installation providing the peak power demand for the crossings. When the propulsion power demand is low the excess generated power will be used to recharge the batteries. This novel hybrid system provides numerous advantages and in particular by reducing the number of engine running hours and also by ensuring that the diesel generator is constantly running at optimum load enabling emissions to be minimized.

This solution is said to allow fuel savings of more than 15% compared to a conventional modern propulsion solution, and to  $CO_2$  and  $NO_x$  emissions reduction. To further reduce emissions the generating sets will be fitted with an Exhaust After Treatment system comprising of both an SCR (Selective Catalytic Reduction) and DPF (Diesel Particulate Filter) making these vessels the most environmentally friendly vessel planned for operation on the River Thames.

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

The steel cutting ceremony took place on April 20, 2017 at Remontowa Shipbuilding in Gdansk. The launching was executed on May 15, 2018. For the first time in the shipyard's history two ships were launched from a single floating dock at a time.

The first stage of the operation was to skid both units from the assembly site on land onto a floating dock. Then the dock was towed to a proper depth water, where it was submerged, and after checking the tightness of both hulls and their sea chest armature - the units were finally floated and docked out.

After launching, the shipyard started the preparation stage for commissioning of the previously installed equipment and systems.

Both ferries will be delivered to London in the fourth quarter of 2018.



The ferries for Transport for London afloat under outfitting at Remontowa Shipbuilding.

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# Guardians of safety at sea

**RESCUE ZONE** 

On March 5, 2018, at headquarters of Szczecin Maritime Authority, a contract was signed for construction and delivery of two multipurpose vessels for Maritime Authorities in Szczecin and Gdynia.

Illustr.

A computer rendering of the new ice-breaking buoy tender vessel for Poland's Maritime Authorities.



The contracted vessels will be built at Remontowa Shipbuilding SA, according to design developed by Remontowa Marine Design & Consulting (RMDC) – both based in Gdańsk and being members of Remontowa Holding capital group.

The contract is resulted from the earlier technical dialogue and conclusion of a tender. On December 22, 2017, the choice of the best offer was announced by Szczecin Maritime Authority, within the procurement procedure PO-II-370/

ZZP-3/36/17 concerning granting the public order for: "The construction of two multipurpose vessels". The best offer chosen was the one from the Remontowa Shipbuilding SA yard of Gdansk. The offer was reported to fulfill all the tender requirements, obtaining 100 points according to defined criteria.

The vessels in question will be newbuildings no. B618/1 (IMO 9851866) and B618/2 (IMO 9851878).

Multipurpose vessels in every-day operations will be performing the key statute tasks of the Maritime Authorities in Gdynia and Szczecin, mainly the maintenance and renewal / updating of waterways signage (buoys, etc.), i.e. the transport, replacement (hauling and launching), replacement and inspection of buoys. The vessels will be also outfitted for hydrographic tasks (including depth measurement, data processing, map amendment), etc.

In case of emergency at sea they will be capable of emergency response, sea towage, oil spill recovery, firefighting and other rescue (SAR) and salvage tasks.

During winter they may be used for iced waterways clearance / icebreaking. Ice strengthening and features of sea-going icebreaker will enhance their year-round buoy tender capabilities.

Each of the new vessels will be approx. 60 m long overall, 12.8 m wide and have a draught of some 3.5 up to 4.0 m. The vessels will feature deadweight capacity of 350 t and gross tonnage of 1273. The top speed achieved will be 15 knots and the bollard pull will be 40 T.

The vessels will be operated by Poland's Maritime Authorities according to the rules and under the supervision of the Polish Register of Shipping.

Designing such a versatile vessel is always quite a challenge, as it requires careful balancing of priorities comparing to single-purpose, specialized vessels, requiring less compromises.

With superstructure located fore, midship section and stern will offer a spacious working deck for buoy handling and storage, served by a crane with 10 t SWL and 25 m outreach. The towage capability will be effected by a 400 kN SWL towing hook.

The vessel, in general arrangement, resembles an OSV, however it requires application of a hull form effective in iced waters and a variety of functionalities, besides key role as a buoy tender. Flexible diesel-electric propulsion system, with two stern azimuthing thrusters and a tunnel thruster fore will provide excellent maneuverability, further enhanced by a DP system.

For fire-fighting tasks the vessel will be outfitted with two water-foam monitors, installed on superstructure, with a maximum water capacity of 1200 m<sup>3</sup> per hour at 80 m range and the vessel itself will be protected by sprinkler (water curtain) system.

Rescue tasks will be supported by rescue device for retrieving persons from water (in form of Dacon Rescue Frame or Jason's Cradle) and MOB / rescue / workboats, to be used also for hydrographic works.

The crew will be accommodated in five single berth and eight two person cabins. The vessel will also have room for short term accommodating of up to 80 rescued survivors.

The construction and delivery of the two ships was entrusted to Remontowa Holding capital group member companies.

The ship design comes from consulting naval architects and marine engineers Remontowa Marine Design & Consulting (RMDC). The company has a vast experience in designing OSV's for global leaders in this sector, such as Tidewater, having – among others – a successful design of a series of 23 AHTS vssels on their reference list, as well as the vessels with high ice class and Polar Code compliant vessels for Danish owners.

Remontowa Shipbuilding in turn is known for delivery of many complex, advanced ships of various kinds, including multipurpose buoy tenders and hydrographic vessels for demanding UK owners Northern Lighthouse Board (NLB) as well as Trinity House.

The whole project cost is estimated at up to PLN 240 m (55,8 m EUR) of which UE funds support may amount to 85 percent. The remaining 15 percent will be covered by the State's Treasury. The EU support for this project comes from Cohesion Fund, within The Operational Programme Infrastructure and Environment (OPI&E) 2014-2020, for which The Center for EU Transport Projects (CEUTP) as an intermediate body.

The delivery of the two vessels is expected until June 2020.

FRITI OSENN

*A pelagic fishing superstar ready to catch*  Fot.: Piotr B. Stare

# Ocean Star

On November 13, 2015, a contract was signed between the Fraserburgh-based Scottish fishing company Mewstead LLP and Nauta Shiprepair Yard to build a fully outfitted pelagic fishing vessel for delivery in October 2017 (from "summer 2017" or "mid-2017" up to December 2017 according to various sources).

Gdańsk based Newbuilding Department of Nauta (established in Autumn 2013) commenced the construction of the Ocean Star with the first steel cutting ceremony held on April 26th. On 16th June, 2016, the keel laying ceremony for the ship was held at the premises of Nauta in Gdańsk. The vessel, newbuilding no. B698, was launched on July 28, 2017 and outfitting works continued in Gdańsk.

For the final docking (in a floating dock hired from PGZ Stocznia Wojenna) and finishing touches, the vessel was taken to Gdynia, where Nauta is headquartered. It was also in Gdynia, where the name giving ceremony took place on August 17, 2018 with Chloe Tait and Rebecca West shipowners' daughters, doing the honors of Godmothers. The actual departure of the vessel from Gdynia for Scotland was expected within several days after the ceremony, as we went to press.

On the occasion of the design and construction contracts announcements, the vessel was reported to become the largest and most efficient ship of its type in the world, when delivered. It specifically means - the largest pelagic trawler with RSW tanks (i.e. the catcher only, without fish processing plant).

Ocean Star is indeed a large, nearly 87 m long, pelagic trawler with a significant fish storage capacity in refrigerated sea water tanks. The vessel has been developed in close collaboration between owner, yard and several business lines within Wärtsilä with a high emphasis on efficiency, safety (including working conditions, safety and comfort for the crew) and economy.

The result is a vessel with outstanding performance in catch (fish) handling and storage capacity, extremely low fuel consumption and environmental impact. The results from the model tank test reportedly proves that the hull lines are 15-25 % more efficient than competition at high speed.

Wärtsilä's scope of delivery for Ocean Star included initial, basic and detail

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More information: www.cto.gda.pl tel. 58 307 46 37, e-mail: marketing@cto.gda.pl

#### Ocean Star - principal particulars

length overall - 86.80 m length between perpendiculars - 78.00 m breath moulded - 17.60 m depth do 1st deck - 10.40 m depth to 2nd deck 7.40 m deadweight - 4340 t gross tonnage - 4622 compensated gross tonnage (CGT) - 9599 maximum speed - 17 kn main propulsion engine - 1 × 6960 kW @ 750 rpm (Wärtsilä 12V32E) main gearbox -  $1 \times$  single-in/single-out gearbox with two step propeller speed (Wärtsilä) propeller - 1 × controllable pitch propeller, 4400 mm diameter, in HP nozzle (Wärtsilä) power take off (PTO) - 1 × 4375 kWa @ 1200 rpm shaft generator -  $1 \times 2500$  kW auxiliary generating sets - 2 × 1360 kW @ 1800 rpm (Wärtsilä 8L20) emergency / harbour generator -  $1 \times 143$  kW bow transverse thruster -  $1 \times 1200$  kW, CP, electrically driven

aft transverse thruster - 1  $\times$  1200 kW, CP, electrically driven

#### deck cranes:

- 1 × net stacker, 5 t @ 3.5-14 m
- 1 × folding net stacker, 2.5 t @ 1-12.5 m
- 1 × knuckle boom fish pump crane 4 t @ 2.7-13 m
- 1 × crane (gooseneck) 5 t @ 2.8-18 m

#### capacities:

RSW hold -  $3200 \text{ m}^3$ ; fuel oil -  $599 \text{ m}^3$ ; water ballast -  $170 \text{ m}^3$ ; fresh water -  $130 \text{ m}^3$ ; bilge water -  $60 \text{ m}^3$ ; drain tank, fuel oil -  $26 \text{ m}^3$ ; hydraulic oil storage -  $26 \text{ m}^3$ ; lube oil storage -  $10 \text{ m}^3$ ; waste oil / sludge  $25 \text{ m}^3$ ; sewage tanks -  $15 \text{ m}^3$ ; sludge -  $25 \text{ m}^3$ ; day tanks  $2 \times 22 \text{ m}^3$ . **fishing equipment:** 

 $2 \times$  trawl winches;  $3 \times$  net drums;  $1 \times$  midline winch;  $2 \times$  net soundings winches;  $1 \times$  top line winch;  $2 \times$  tail end winches;  $2 \times$  net stackers;  $2 \times$  fish pumps;  $2 \times$  hose reels

accommodation - 16 persons (single cabins) frame spacing - 0.6 m classification - DNV GL

class notation: +11A1, Fishing Vessel (s)







ship design, a 12-cylinder Wärtsilä 32 main engine, two 8-cylinder Wärtsilä 20 auxiliary genset engines, a 2-speed main gearbox, a 4400 mm diameter controllable pitch propeller (CPP) running in a Wärtsilä HP nozzle, a 4375 kWa PTO, a complete stern tube including Wärtsilä Sternguard seals and Wärtsilä Sternsafe bearings. Wärtsilä also supplied its Protouch propulsion control system.

The vessel also features significant bollard pull capability and improved working conditions for the crew, such as the reduced noise levels made possible by 2-speed gearbox.

At an early stage of construction of the vessel, the captain and owner Michael Tait of Mewstead was reported to say: "We're very satisfied with the design process. The hull model test results show a remarkable performance and we've selected state of the art equipment with high reliability. The construction at the vard has been closely supervised and the quality of the work is superior. We're looking forward to test our new ship at the fishing grounds."



Messroom lounge with glass wall artwork.

Ocean Star is intended to operate in the North Sea in the fishing grounds around the coast of Scotland. The vessel is equipped with the most modern fishing equipment suitable for catching varied type of school pelagic species.

The new Fraserburgh homeported vessel features an extensive package of customised deck machinery manufactured and supplied by Karmøy Winch AS. This includes two 96 t winches, three 110 t net drums,



- Cavitation,
- Aerodynamics,
- Numerical simulation,
- Sea trials and other on-board tests.
- Designing,
- Environmental tests,
- Products certification.

13



Fish pump.



top line winch (80 t), midline winch (80 t), two tail-end winches (55 t), four mooring winches (11 t), two back-strop winches (3.6 t), two net sounder winches, (4 t), an anchor winch and two fish pumps, fish hose and hydraulic pipe reels.

Two of the net drums are arranged towards the vessel's centreline, forward of the purse net bin, with the third on the port side, in line with twin trawl openings across the transom. Although primarily intended for use as a midwater trawler, the new Fraserburgh pelagic vessel is also semi-rigged for purseseining, with a net bin located on the starboard quarter.

The vessel has capability of pumping pelagic fish aboard both at the stern and amidships on the starboard side.

To facilitate delivering maximum levels of catch quality, mackerel and herring will be stored in 13 RSW tanks with a combined capacity of 3,200 m<sup>3</sup> in optimum conditions provided by three high-performance refrigeration plants. Pelagic fish are to be discharged using a C-Flow vacuum plant consisting of 2 × 4,200-litre tanks served by 4 × 66 kW compressors.

The forward mooring and anchor winches are placed on the boat deck under the bow cap (whaleback), which incorporates hydraulicallyoperated opening doors which the mooring ropes will be passed through when berthing in the harbour or unberthing. Four deck cranes with an operational radius of up to 18 m (5 t) have also been fitted.

The extensive accommodation area includes 16 single-berth en-suite cabins.

Galley.

Bridge.

Aqua Tromøy seen in Crist in August 2018.

*Live fish carrier nearing delivery* 

# Aqua Tromøy

An innovative live fish carrier to be named Aqua Tromøy (yard no. NB SC 75/1 or Crist B75) being built for the Norwegian owners Artic Shipping AS (Artic Group) was nearing delivery as we went to press around mid-August 2018.

æ

The Crist SA yard launched and floated out *Aqua Tromøy* on January 21, 2018. Following outfitting the ship was undergoing its first sea trials at the end of second decade of August and might be ready for delivery in August or September.

The modern, highly automated and multipurpose vessel, with diesel-electric propulsion, will be most probably used in the North Sea and/or in the northern parts of Atlantic and Pacific Oceans.

The contract won by Crist for fully outfitted multipurpose live fish carrier of the SC 75 design was announced in October 2016. At that time the delivery was said to be scheduled for Q4 2017.

An order for the second vessel of the same design - SC 75 (newbuilding no. NB SC 75/2 or Crist B75/2), was acquired in March 2017. The second unit, to be named *Aqua Kvaløy* was about to be

delivered (according to initially released information) in mid-2018. More recent known reports were saying of August 2018.

Meanwhile, the two ships on order have been transferred to the prospective fleet of newly established DESS Aquaculture Shipping, which is to become an operator of the two sister vessels. DESS, is a joint venture of JV firm Marine Harvest and Deep Sea Supply. According to some sources, the technical and crew management responsibilities for *Aqua Tromøy* was about to be assumed by Stan Shipping Agency Ltd. of Gdańsk, Poland.

The design comes from Seacon AS, a Norwegian consulting naval architects / ship designers specializing in fishing and fish farming industry vessels, but has been developed in cooperation with Artic Group and Havyard MMC of Fosnavåg. The NB SC 75/1 newbuilding is designed and built according to the rules and under supervision of DNV GL.

The SC 75 series has been designed to offer a less expensive wellboat (live fish carrier) without compromising the quality of design, comfort, environment and fish processing. Simpler concept, different thinking and other ways to put together the boat and the fishing package makes the boat cheaper overall. The equipment and the quality in general are on par with or better one, similar boats - the designers assure.

Each of the vessels will be equipped with two tanks for live salmon delivery with a total capacity of 3000 m<sup>3</sup>, which may also be used for de-icing either with freshwater or with hydrogen peroxide.

*The largest luxury yacht built so far in Poland* 

The Conrad shipyard launched, at almost 100 % technical readiness stage, the 40-metre Conrad C133 Viatoris luxury motor yacht. This is both the largest motor yacht built so far in this shipyard, as well as the largest yacht of this type ever built in Poland, intended for handing over to the shipowner as fully equipped ("turnkey delivery").

aloris

Launching took place on May 9, 2018, with use of a floating dock hired from Baltic Engineering Sp. z o.o. Sp. k. operating in the area of the former Gdańsk Shipyard.

*Viatoris* (Latin for *Wanderer*) was designed and built to the special order of a "returning" customer, who since 2010 has become the owner of a smaller yacht from the Conrad shipyard. The new boat was designed as a displacement yacht with a steel hull and aluminum superstructure by world-class designers - the British studio Reymond Langton Design and the Dutch naval architects Diana Yacht Design, while the interior design was developed by Conrad's own architectural design office in cooperation with the client. After carrying out the required sea trials, *Viatoris* was transferred to a private shipowner at the beginning of June 2018. Then she left for its maiden voyage to explore the fjords of Norway after which she will come back to the shipyard for regular maintenance and check-ups. Finally, she will slowly make her way to the Mediterranean, on the way looking to explore Northern EuViatoris at sea.

All photos: Conrad Shipyarc

rope to stop in cities like Hamburg and London, to eventually arrive at her final destination in Croatia. In September, the yacht will be premiered at the Monaco Yacht Show 2018.

Let us remind you that up to now large luxury motor yachts have been built in Polish shipyards, even up to 75-80 m long, but only as partially outfitted units - subcontracted from foreign shipyards, mainly Dutch, but also German.

In the case of fully outfitted luxury yachts built at Polish yards on their own account (not subcontracted), *Lunar* (C115, IMO no. 1012165) was the largest so far - a single-hulled yacht with a length of 35.30 m and GT 230 from 2013 as well as *Che* catamaran (114C1, IMO no. 9602277), 34.65 m long and with gross tonnage of 199, delivered in 2010 by the Sunreef Yachts shipyard.

#### Conrad C133 Viatoris - principal characteristics

total length 40 m, waterline length 35.5 m, width 8.3 m, draft 2.5 m, weight 385 t, gross tonnage 388, travel / maximum speed - 12/13 knots, range - 4000 MM at a speed of 10.5 in.



Bridge deck.



Bridge.



Garage.



Main deck.



Galley.



Main Salon.



ORP Kormoran minebunter already in service

# Pride of the Navy

On November 17, 2017, the first new MCMV (mine countermeasure vessel or minehunter) to be delivered (of planned three) departed Remontowa Shipbuilding yard and the port of Gdansk for its permanent base in Gdynia, marking delivery to the Polish Navy, namely to 8 the 8th Coastal Defence Fleet.

Let us recall that the ceremony of cutting the first sheets of steel for the ship took place in April 2014 while on September 23, the same year on the anniversary of signing the contract, the keel-laying ceremony was held. The hull of the ship (created out of non-magnetic steel) left the assembly hall on May 3, 2015 and was prepared for launching.

On September 4, 2015 - the ceremony of christening and launching of the one of the most technologically advanced naval ships in Europe, was held. The godmother of the ship was Mrs Maria Jolanta Karweta, wife of admiral Andrzej Karweta, the former commander of the Polish Navy. On November 28, 2017, the ship was commissioned, under the name ORP *Kormoran*, and had its flag hoisted for the first time. The ceremony, held in Gdynia, with ORP *Kormoran* assisted by other navy ships, was attended by the Polish government officials. The first commander of ORP *Kormoran* is commodore Michał Dziugan. It is worth emphasizing that the new minehunter is created in line with a completely Polish design, in a Polish, private facility, financed by 100% of the Polish capital. The ship, designed at Remontowa Marine Design & Consulting (RMDC) was built by a consortium, led by Remontowa Shipbuilding, member of the Remontowa Holding capital group and Research and Development Facility of the Centre for Maritime Technology Gdynia (OBR CTM SA).



The CTM designed and supplied Integrated Combat System, including command support sub-system, passive defense system, underwater monitoring/ surveilance system with hydrolocation stations, as well as charges for destroying mines.

This is the first newly, purpose built combat vessel for the Polish Navy for 20 years, that was constructed entirely by the Polish industry. However, Remontowa Shipbuilding, formerly known as Northern Shipyard, enjoys rich track record in the military production, since the company, in its history, has built over 400 military ships with majority delivered for the Polish Navy.

The "Kormoran II" type ship is designed to search and countermeasure mines in the waters of the Polish exclusive economic zone (EEZ) and while taking part in tactical task forces in the Baltic Sea and the North Sea and other auxiliary tasks defined by Polish Ministry of Defence. Polish Navy min hunter ORP *Kormoran*, built at Remontowa Shipbuilding, seen passing by *USS Oak Hill*. U.S. Marines assigned to the 26th Marine Expeditionary Unit (MEU) and Sailors assigned to Amphibious Ready Group 4, salute aboard the Harpers Ferry class dock landing ship *USS Oak Hill* (LSD 51) during pass in review as part of the celebration of the Polish Navy's 100th birthday, June 24, 2018.

The vessel is designed with great care to achieve low signature and high maneuverability, owing to use of the Voith-Schneider cycloidal propellers driven by diesel engines and silent electrical propulsion. The minehunter is equipped with the Voith-Schneider cycloidal propellers and silent electrical propulsion. The ship with a length of 58 metres should be manned by a 45-person crew.

The ship's highly specialized equipment includes ROV's. Its mine countermeasure tasks are supported by the Morświn multi-mission ROV, developed by PG CMTM (eng. Centre for Marine Military Technology at the Gdańsk University of Technology, in short - GUT). The Morświn is capable of performing missions including mine disposal, underwater survey, identification and detection of underwater objects. The main task for the ORP Kormoran is to detect and act against naval mines, lead vessels through the mine-infested areas, carry out reconnaissance within the sea routes and remotely controlling a variety of anti-mine warfare. The vessel has also been tailored to act as a mine-layer.

The standard operational scenario involves the initial detection, which is executed with the use of an autonomous underwater vehicle, such as Hugin 1000, which is lowered from the stern section of the vessel. Mine-like objects, which are detected by a side-looking sonar of the AUV, are later classified for by the keel sonar or by a remotely controlled vehicle.

After the classification stage is completed, the object is being identified, e.g. with a remotely controlled disposable "single shot" mine hunting system Głuptak also delivered by PG CMTM or multiple-use vehicles. After the identification is successfully carried out, mine destruction process starts, however, the method which is to be used here is to be selected by the ship's commander.

The "Kormoran II" class minehunter is also equipped with HUGIN 1000 MR autonomous underwater vehicle (AUV) delivered by Kongsberg Maritime and SAAB Double Eagle mk. III, self-propelled sonar (SPVDS).

According to an agreement, worth over PLN 2 billion, signed in Warsaw in the headquarters of Ministry of Defence on December 27, 2017, further two modern minehunters of the same type with three logistics support packages were ordered.

The mine countermeasure vessels of the "Kormoran II" type will be build by a consortium with Remontowa Shipbuilding SA as a leader. The remaining members of the consortium are OBR CTM SA and Stocznia Wojenna PGZ Sp. z o.o. (Naval Shipyard). The value of the contract is over PLN 1,1 billion.

The two new minehunters will enter the Polish Navy during 2020-2021.

Remontowa Shipbuilding, established in 1945, is the prime supplier of naval vessels for Polish Navy. The return to close cooperation with Ministry of Defence is significant achievement for the Yard, especially in light that this project if forerunning project for Polish Naval Fleet Renewal Program.

#### "Kormoran II" class minehunter - principal particulars

length overall 58.50 m, length b.p. 55.58 m, breadth max. 10.30 m, breath at waterline 9.75 m, depth (at forecastle) 6.40 m, depth (aft main deck) 4.70 m, design draught 2.7 m; displacement: up to 850 t; complement 45 persons, additional persons accommodated 7 persons; maximum speed 15 knots, sailing range > 2500 Nm; propulsion and machinery: diesel engines 2 × MTU 8V369TE74L with power of 1000 kW (1360 KM), cycloidal propulsors 2 × Voith-Schneider, generating sets 3 × MTU 6R1600M20S with electrical power of 380 kVA, bow thruster 100 kW.



# Versatile ships

Remontowa Shipbuilding SA, a member of Remontowa Holding in Gdansk has been building a series of six tugs for the Polish Navy on order from Ministry of Defence.

The groundbreaking project for the Polish Navy has come from the contract, signed in June 2017 between the Armament Inspectorate of MoD and Remontowa Shipbuilding, the shipyard that had earlier won the tender titled: "Technical support and execution of rescue operations at sea, codename: Tugboat". Specialized technical supervision in the field of classification, construction and testing of units was entrusted to the Polish Register of Shipping (Polski Rejestr Statków SA).

The conceptual and detailed engineering design was created in the design and consulting office NED Project Sp. z o.o. based in Gdańsk in cooperation with the design office Remontowa Marine Design & Consulting Sp. z o.o.

A computer rendering of the B860 tug.

(RMDC), which is responsible for all workshop documentation and construction supervision.

The multi-role tugs will be used for military and logistics operations support at sea and in ports, technical evacuation operations, search and rescue operations support as well as oil spills recovery. The ice class will enable operation of the tugs in tough winter conditions.

The vessels will feature bollard pull up to 35 T and excellent maneuverability due to outfitting with twin azimuthing stern drives. The open deck will enable carrying of cargoes up to 4 t.

Since 2017 until August 2018 the first two ships from the series of six have been under production. The formal steel cutting for the first tug (B 860/1) took place on November 16 2017, while the keel was laid on January 23, 2017. On March 16, 2018, at the Remontowa Shipbuilding yard, the first steel was cut for the second tug (B 860/2) while May 16, 2018 saw the technical and formal keel laying for the ship.



The construction process of the entirely equipped and outfitted ships at the Remontowa Shipbuilding yard will be crowned with Sea Acceptance Tests. The first tug is to be delivered in 2019, further units - to 2020, in several-month intervals, alternately to two flotillas, based in Eastern and Western parts of the Polish coastline.

#### B860 type tugs - basic characteristics

length over all - 29.2 m, length b.p. - 25.12 m, moulded breadth - 10.47 m, depth - 4.95 m, draft - 4.20 m, displacement - approx. 332 t, gross tonnage - 368; main drive - 2 × diesel engines rated at 1193 kW - each, 2 × azimuth thrusters, speed - at least 12 knots; bollard pull - not less than 35 T; generating sets - × 2, crew - 10 people, classification - Polish Register of Shipping.

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# Lifts and Escalators

for demanding professions

Last few years was a real step foreward for Polish shipbuilding industry. Exploring of the market niches will be the new production trend for the next decade. Techwind Marinelifts is among those companies offering passenger, cargo lifts, platforms and escalators for the most demanding projects.

In over 25 years of the Company's activity, Techwind has achieved the position of Poland's top manufacturer of specialised hoisting equipment and solutions for ship and offshore industry.

#### Offshore constructions

Close cooperation with Clients and quick adjustment to the new requirements are the key factors behind the swift execution of installation works. Our cooperation with renowned, trusted and proven track record suppliers guarantees long lasting, failure-free operation and resistance to environmental factors.

#### Ferry boats and commercial vessel

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

#### Freighters

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

### Cooperation with Classification Societies

Techwind Marinelifts co-operates with leading classification societies

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

#### Service and maintenance

Technological know-how and vast experience allow Techwind MarineLifts to service and maintain not only own products but also lifts produced by other companies. Scheduled overhauls (confirmed with appropriate certificates issued) constitute an important portion of the Company's activities. Techwind also modernizes and upgrades lifting equipment to meet specific Client requirements.

Both wide range and high quality of services renders optimistic number of new orders in the years to come. Current order-book covers new projects for Polish and foreign shipyards, to be completed in the period of 2018-2020. Submarine rescue and salvage vessel for the Polish Navy

# Salvor



The "Ratownik" class submarine rescue and salvage vessel - initial conceptual design visualisation.

The construction of a submarine rescue vessel (code name: "Ratownik" - eng. "Salvor"), with an option for another unit, is the scope of the agreement signed on December 27, 2017, at the Polish Ministry of Defence.

The "Ratownik" class vessels will be built and delivered by a consortium of companies within Polish Armament Group (Polska Grupa Zbrojeniowa), including NAUTA Shiprepair Yard, PGZ Stocznia Wojenna and OBR CTM SA.

The ship of the "Ratownik" class, designed as an auxiliary navy vessel, is destined for rescue operations, support at sea and along the coastline, for securing the operations of the Polish Navy, providing aid to the crews of the submarines in distress and as a salvage platform.

It may be used to recover the sunk military equipment, extinguish fires and carry out decontamination tasks in scenarios, in which weapons of mass destruction could potentially be utilized.

The vessels are to be outfitted with the hardware required to carry out satu-

ration diving, including decompression chamber for the rescued crews, UUVs, fire extinguishing systems, decontamination systems and medical section. The ship will also be outfitted with a helipad arranged forward.

"Ratownik" class vessels are poised to replace two old rescue vessels. The builders are expected to deliver the first vessel in 2022.

The initial design comes from privately owned MMC Ship Design & Marine Consulting Ltd., however it is understood, PGZ group related design offices will be involved in the design process, too.



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# **REMONTOWA**

GREEN MEANS How the design and engineering market is evolving

From the past decades we can see the extensive efforts of many international organizations and agencies working under United Nations and United Europe supervision, to limit the human impact on the environment.

Changes to existing MARPOL convention introducing new requirements in fields of NOx emission limits, SOx emission limits and Ballast Water Treatment Systems, were known at least decade ago –now facing the effective date for above mentioned conventions – shipping industry have to adapt existing and newbuild fleet.

Remontowa Marine Design & Consulting, as one of the European leaders in engineering services for both fields (conversion and new vessels design) – have been developing tailor made solutions for Fleet Owners, enabling best solution to fulfill the requirements of Marpol convention.

### Conversions for greener shipping

Most of the existing fleets operating internationally is being affected by Sulphur cap 2020 and BWT convention, thus why shipowners are considering or deciding to do Ballast Water Treatment Systems implementation (to be in line with BWT convention) and Scrubbers System Installation to cut the SOx emission.

To implement the systems on existing vessel, our design office is utilizing 3D laser scanning and digitalization technology, to get information on structures onboard. Thanks to this precise tool, we can initially check if and how new equipment fits and further develop the best solution for system implementation and vessel conversion (either BWTS, Scrubbers or other conversions).

Using 3D laser scanning gives unprecedent advantage when it comes to decision making which vendor or what type of system fits best our ship, also workshop



#### POLAND at SEA Advertisement



documentation is more precise and gives the yard head start for new structures and piping prefabrication.

Our design office have now completed more than 20 Retrofit designs based on 3D laser scanning – says Piotr Kuczkowski, head of green technology retrofit engineering department. We are providing laser scanning using our own scanner, also we are handling the 3D point clouds, and provide complete scope of engineering works – including electrical systems integration either for Scrubbers and BWTS systems.

Our biggest challenge was conversion of two Ferry from regular MDO fuel to LNG for BC Ferries – says Mr Kuczkowski – when we had to scan more than 40% of the vessel, and then redesign it completely to install LNG fueled engines. Based on our 3D model, yard have prefabricated most of the systems and developed an effective plan for conversion.



### New vessels – new technology

### Changes of the rules imposed also a change in new vessels design.

When it comes to Sulphur cap and NOx limits under Tier 3 regulations – LNG have gained leading role for newbuilt vessels as primary marine fuel – reducing the emissions of SOx 90% in reference to conventional fuel, NOx by 80% and CO2 emission about 20%. Also the price of the LNG is lower, but there are still problems with distribution and availability of fuel.

RMDC has been dealing with LNG fueled vessels for more than a decade – designing mostly LNG fueled ferries – reaching a mark of more than 23 vessels designed which were built by Remontowa Shipbuilding Shipyard (which is abt. 10% of worlds LNG powered fleet – as for the end of 2017).

Watching the trends, more and more owners are deciding for hybrid solutions (LNG with batteries for peak shaving) and 100% battery solutions. Our design office have developed few new projects of e.g. Double ended ferries operating on short routes with 100% electric propulsion and many concepts based on LNG – Battery Hybrid propulsions. We see the battery revolution is starting right now – with the exponential development of new high tech batteries – we can say that future of shipping will be based on 100% electric propulsion – says Radosław Cackowski – RMDC Board Member. Our development department is focusing on the new types of ships with LNG-Battery and Battery powered propulsion – to meet the rising demand of the shipowners for such designs.



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



# The shipyard powered by innovation

The Spirit of British Columbia ferry, converted at Remontowa Shiprepair Yard SA in Gdansk, Poland, returned to her route on June 6, 2018 on, i.e. Metro Vancouver (Tsawwassen) - Victoria (Swartz Bay) route following the completion of a mid-life upgrade.

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 meters.

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 "Spirit" class vessels will reduce CO2 emissions by 12,500 tons per year, which corresponds to the removal of around 2,500 vehicles per year.



Messroom lounge.

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 capital 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 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 LNG 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.

Passenger lounge with new carpeting and furniture upholstery.





The ship's bridge with upgraded navigation equipment.

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 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* - will undergo a mid-life upgrade 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 2,100 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.



The bunkering stations installed on board allow to refuel the ferry directly from a road tanker on a ro-ro deck.

#### POLAND at SEA Advertisement

### REMONTOWA HYDROSTER SYSTEMS – quality & customized solutions

#### Bulkhead Watertight Sliding Doors A0 and A60 class



#### New rotary vane steering gears

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

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

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

> HYDROSTER's new rotary vane steering gears To replace seals only upper cover of steering gear need to be taken off, without necessity of docking and taking off rotor from rudder

Watertight sliding doors from REMONTOWA HYDROSTER SYSTEMS, known well before as HYDROSTER brand, have a long tradition. The first bulkhead watertight sliding door was designed and manufactured in 1964. Production for offshore industry started in 2004 (AHTS and PSV vessels). The company developed several offshore rigs standards of WT doors in 2012. And then first deliveries were realized. Nowadays certified A0 and A60 state of the art products are positively perceived by design engineers as well as shipyards' professionals.

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

Bulkhead watertight sliding door with electro-hydraulic drive





### **OFFSHORE & MARINE**



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Profiting from the experience



The 30 metres longer Finnsun left the Remontowa SA yard in May 2018.



Finnlines has entrusted Remontowa Shiprepair Yard SA in Gdansk, with the task of lengthening its two ro-ro vessels *Finnbreeze* and *Finnsea*, as a continuation of the entire extension programme executed at the Polish yard. The lengthening operation requires surgical precision. 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 will become more energy efficient and environmentally friendly by cutting emissions.

Due to an efficient process at the shipyard, the project is running smoothly and on schedule. The contract was signed on 31 March 2017, the cutting ceremony took place on 19 May and the first steel section for an insert was laid on 29 June. The first four vessels were successfully converted between



The ship's hull cut and divided into two parts...

November 2017 and May 2018. The lengthening of *Finnbreeze* and *Finnsea* will be carried out between September and December 2018.

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

- These two lengthened vessels in addition to the previous four, will help us meet increased demand and enable us to serve our customers more efficiently - says Tom Pippingsköld, CFO of Finnlines.

- One of our strategic decisions is to focus on improving our operational

performance. This decision to lengthen another two vessels will help us to increase competitiveness and improve efficiency of capital employed on our fleet. This investment is also in line with sustainable development: by increasing our energy efficiency further we will contribute to reducing emissions per transported tonne - he emphasizes and adds that the results have been as planned and as positive as expected.

- This investment programme is in line with our sustainable development. Some years ago, we launched an investment programme of EUR 100 million to fit vessels with exhaust gas scrubbers. Now we continue with this EUR 70-million investment programme aimed at energy efficiency and emission reduction - Tom Pippingsköld points out.

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 - Niclas Seligson says.

As Michal Habina, the CEO of Remontowa SA explaines, the lengthening



of the Finnlines' ro-ro vessels is of primary importance for the shipyard. Remontowa has vast experience and a long track record in lengthening or shortening projects as well as in virtually any kind of ships' conversions.

- Good cooperation between Remontowa and Finnlines has continued for years - Habina emphasizes. - We have already converted such vessels as *Finnpartner*, *Finntrader* and *Finnclipper*. Many other Finnlines-operated ships have also been serviced and modernized in our docks. We are very happy, to help the renowned Finnish owner to make his ro-ro fleet both more efficient and more friendly for the environment - he adds.

Stretching a ro-ro vessel is a smart move in terms of improving energy efficiency, but comes with several technical and logistical challenges. The basic process goes like this. 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 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 1,500 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 4,200 lane metres. Thanks to the lengthening, the ships will be more energy efficient and contribute to cutting the fleet's overall emissions.

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









LNG (Liquefied Natural Gas) is natural gas cooled to ca. -160°C. In liquid form it has approximately 630 times lower capacity than in normal (natural) state, what increases its "energy density". Additionally the process of liquefying natural gas requires its thorough purification of carbon dioxide, moisture, sulfur compounds and liquid hydrocarbons, what causes that it consists of almost fully pure methane (about 95%). The use of methane reduces emissions of solids and sulfur oxides by almost 100%, of nitrogen oxides by 85% and carbon dioxide by approx. 25%.

In an era of rapidly shrinking crude oil reserves and increasingly polluted atmosphere, LNG is no longer an alternative and is slowly becoming one of the main fuels in the world. Apart from the ecological aspect in favor of LNG also speaks the economic aspect and the fact that it enables diversification of supplies and thus ensures energy security.

Remontowa LNG Systems Sp. o.o. is part of the REMONTOWA holding. The company was founded in 1945, and since 2013 it specializes in the production of LNG power systems. Remontowa LNG Systems is one of the few companies in the world that manufactures LNG fuel systems for shipbuilding. The company has manufactured and delivered a complete LNG power supply system among others for the SAMSO ferry - the first LNGpowered ferry in the European Union.

We care about the future by investing in clean technologies

Thanks to the expansion of production by LNG systems and tanks and by implementing research and development projects, we became a company that is consciously and responsibly trying to influence the improvement of the quality of natural environment. We are aware of the importance of limiting emission of harmful substances to the atmosphere and that is why we care so much about developing and promoting solutions that significantly reduce these emissions.

2 R&D /pilot projects:

- Optimisation of power supply systems for marine, road or rail transport that use natural gas in liquid form
- · Construction of a pilot docking station, as part of an LNG distribution system based on cryogenic tank containers



#### REMONTOWA LNG SYSTEMS SP. Z O.O.

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#### POLAND at SEA Shipping

Polish shipping company has revealed bold investment plans for new vessels

# Ambitious goal

NG ELECTRIC

Polsteam is going to power its fleet with a new series of hybrid LNG - electric powered vessels with innovative ferries among them.

State owned Polish Steamship Company (Polsteam, PŻM – Polska Żegluga Morska), located in Szczecin, Poland's largest shipping company and the owner of Unity Line ferry operator, has, together with their partner NED Project (Gdańsk based consulting naval architects), released a video revealing the group's investment plans.

As we can learn from the video released in May 2018, four modern,

"super-ecological" ferries for Unity Line are foreseen. The vessels are to be LNG – electric powered, with addition of batteries (which makes it "hybrid" propulsion).

Polsteam also intends to invest in a LNG bunkering tanker which would be built on a partly outfitted hull of a platform supply vessel already completed and readily available at one of Polish yards. That would make a logical solution, if plans to build four LNG fuelled ferries materialize.

UNITY LINE

With regard to the above-mentioned plans it's worth mentioning, that there are some solid initiatives and co-operation agreements signed (eg. between Gdansk based oil & gas upstream, refinery and downstream company Lotos, rendering also fuel supply services in



A computer rendering of a new ferry for the fleet of Unity Line.



Polish ports and Polish energy group, dealing mainly with natural gas, so far solely importing liquefied natural gas through the LNG terminal in Świnoujście) on providing LNG bunkering services in Poland.

There are also plans (currently at pre-tender technical dialogue stage) to build a second berth at the LNG terminal in Świnoujście, to serve small scale LNG and LNG bunkering tankers, these regard shore to ship (road tankers) supplies but none of the companies operating on the Polish marine fuels market (even the ones operating bunker tanker fleets) have announced plans to invest in the LNG bunkering tanker so far.

The new ferry planned for Unity Line is to feature highly environmentally friendly solutions and technologies applied. They include an innovative and effective propulsion system. As computer renderings and animations on the released video show – the installation of four vertical rotors of wind generators (not Flettner rotors) is to be foreseen, able to generate up to 1279 kW at 20 m/s strong winds and said not to affect the ship's speed.

#### POLAND at SEA Shipping

The ferries would have LNG propulsion (dual fuel, to be more precise, with LNG as a primary fuel) with electric transmission from four DF generators to electric motors powering two conventional propellers (not azipods seeming to be choice). When it comes to "hybrid component" of the propulsion system - batteries would be loaded from wind generators while the ship is berthed. Obviously, the wind generators would also be used during the ship's transit.

The new Unity Line ferry concept is a 204.00 m long, 31.80 m wide, 9.30 m deep (to main deck) Ystad-max with 9000 deadweight capacity, with design in-built capability to be easily lengthened (lengthening-ready) to the final length of 225 m.

In their basic configuration (before lengthening) the vessels would each offer 3600 m ro-ro lane length and would accommodate up to 521 passengers (in 155 two-berth, 47 three-berth cabins and three two-berth cabins fitted for disabled as well as two "owner's staterooms" and 48 recliners) with 72 persons strong crew.

It seems the concept is relatively well advanced in development, with Wartsila propulsion system chosen, based on four dual fuel ecological and economical Warstila W6L50DF engines, rated at 5850 kW each.

The decision on building of the four planned ferries and on expenditures involved was expected to be taken in June or July, according to the declaration made by Pawel Brzezicki, general director of PŻM, included in the video clip revealing the newest investment plans of the Szczecin based company.

Brzezicki also revealed, in the video material released on May 17, that there is a possibility (for Unity Line - as understood) to open a ro-ro connection linking Świnoujście, Poland with one of the southern UK ports, in the coming years.

The video presentation, with the innovative ferries being the main subject, also shortly covers, in the chapter titled "Investments", an interesting concept of the LNG bunkering tanker based on a PSV from Remontowa Shipbuilding. It appears, drawing from the same video presentation, Polish Steamship Company intends to order as many as 15 innovative, LNG fuelled ocean going lakers (geared bulk carriers designed for operation on Great Lakes and St. Lawrence Seaway) with a deadweight capacity of 36 500 t each. It is understood they would be put into operation during 2020-2025.



New Polferries' ferry ready for delivery in 2020?

# Travel through time...

The construction of new ferries based on the "Batory" development program is a key element of the renewal of the fleet inscribed in the strategy of the owner and operator of a ferry fleet - Polish Baltic Shipping Co. (PŻB) also known as Polferries. However the beginning of the production process of the first vessel has been delayed.

Within a scope of the program, the construction of as many as 10 ferries for both Polish operators - Unity Line and Polferries have been intended. However, the first unit from the planned series is being born in pain, for now.

According to early declarations, the initial works related to the construction of the ship sections were about to start at the turn of 2017 and 2018, then in June 2018 the assembly on the building berth / slipway was to commence, while in 2019 the unit would be ready for launching with expected delivery to owners at the beginning of 2020. This is how the communication for the media was stating as published on June 6, 2017.

The keel section, laid in June 2017 at the building slipway in Szczecin is said to be one of the bottom sections of the vessel, while the fabrication of the remaining ones was said to commence only after six months.

In October 2017, in turn, it was announced that the owners have received contractual (draft) design of the new ferry, to be built at the state-owned MSR Gryfia. It was also announced at that occasion that the first steel cutting, which marks the beginning of the actual ship

construction, would take place at the end of Q1 or at the beginng of Q2, 2018.

According to our talk to Piotr Redmerski, a CEO of PŻB SA, held at the end of May this year, the technical (detailed) design of the ship was "virtually ready". It was possible to conclude that the work documentation (workshop drawings) development was not even commenced yet, or at least - that it was definitely not completed. So the steel plates cutting could not have started, neither could section prefabrication, let alone assemby on the slipway (that is adding additional sections to the "keel" standing there since the ceremony in June 2017).

At the beginning of April 2018, the minister of maritime economy and inland navigation Marek Gróbarczyk, in a statement for Radio Szczecin assured: "When we get a work design documentation, we will start solid work on the slipway. The designers confirm that material purchase will start in the middle of the year, this is in line with plan and assumptions we have taken, while financial consortium that is supposed to participate in the project on the part of the ministry was formed, therefore I confirm that the funds are secured."

On another occasion Radio Szczecin quoted the minister: "The first materials for the construction of the unit are to be bought in May". As we learned unofficially at the end of May this year, from a well-informed source - work on the technical project was still in progress, though.

The ship design consultancy, based in Szczecin, which was initially entrusted with the work on the design of the ferry, does not participate in it anymore. The technical (detailed) design is to be developed by a consortium of three ship design and consulting offices, with the leading role of NED-Project Sp. z o.o. and the participation of StoGda Ship Design & Engineering Sp. z o. o. and Mars Design & Solutions.

As Piotr Redmerski argued in an interview with the "Poland at Sea" magazine at the end of May, the progress of works depended on the shipyard and the relationship between the shipyard and the ministry. "The owner's advance payment is paid," said the CEO of Polferries, adding: "We look forward to starting work on the construction of the ferry".



Side view of a new ro-pax ferry for Polsteam.

#### POLAND at SEA Shipping

According to the latest information, released on July 11 this year at a special press conference in Szczecin with the participation of the design consortium, the builders and the minister Marek Gróbarczyk - cutting of steel plates for the construction of the PŻB ferry is to start at the turn of January and February 2019 and the unit is to be ready at the turn of 2020 and 2021 r.

- We had to extend the length of the ferry, since our direct competitors on the market do the same - told the journalists Piotr Redmerski.

- The market is set to grow continuously, and you cannot buy several additional ferries, you rather need to build bigger units. The fuel of the future, that this ferry will be powered by, is LNG, not only because it is an environmentally friendly fuel, but also because it is economically justified.

On the other hand, Jerzy Pietrzak, a CEO of NED Project, leading the consortium responsible for the ferry design, added that the vessel would be about 218 metres long, 31.4 metres wide, 9.5 deep to the main deck, would feature 6.4 metres draught and about 10 600 dwt capacity.



An impression of the new Polsteam ferry calling the port of Ystad.

The height from the keel to the top of the funnel stack would be about 45 m, and the ro-ro lane length would be almost 4 kilometres. Onboard the ferry, the owner will be able to accommodate approx. 200 trucks, 674 people and 73 crew members. Asked about the date of completion of the ferry, head of the NED Project ship design office said: - Despite some project delays, the final deadline expected at the turn of 2020 and 2021 will be kept. I am convinced about that. We have time to complete the technical-classification design by the end of January 2019. The workshop documentation development will commence within about two months. Planned start of the steel cutting is the turn of January and February 2019.







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