SPECIAL ISSUE

Poland at SEA

maritime magazine

REVIEW OF POLISH MARITIME INDUSTRY

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Poland – worthy of your trust!

Polish marine industry has always enjoyed its strong position within the global maritime market due to its capability of building high quality ships of various kinds for renowned and high-demanding Owners. However, in the last two years, Polish shipyards have been among the European ones affected by the recent economic crisis in the shipping market, characterized by an almost complete lack of new orders, major problems in financing existing ones, overcapacity and, finally, the collapse and closures of two state – owned major production shipyards in Gdynia and Szczecin.

When the crisis is still all around, for many business entities it means the end of their business activity. For others the same crisis means a lot of opportunities, new chances to take advantage of, and new areas to explore. The latter usually relates to those companies which constantly seek new opportunities, regardless of the crisis. Sometimes, however, harsh economic circumstances may become an additional fuel for development of new innovative services. Both ship-owners and shipyards have to deal with this paradox, which also applies to the marine sector in Poland, where shipyards (and equipment manufacturers) are trying to adjust their capabilities to new market demands, doing that independently and following their own way.

On the one hand, there are renowned and well established shipyards with diversified activities. Remontowa SA, celebrating its 60th anniversary this year, is a good example. The company, which offers ship repairs and conversions, has recently been exceptionally active in converting offshore platforms of all types (semisub and jack-up, drilling rigs as well as accommodation floatels and workshop units) and turning tankers into shuttle tankers and FPSO (see details inside the issue).

Its newbuilding – arm Remontowa Shipbuilding SA, presently the only manufacturer of completely equipped ships in Poland, concentrates its efforts on offering high added value medium-sized, specialized vessels destined for the offshore industry (see a recently built one pictured on the front cover) as well as on building technologically advanced LNG – powered car-passenger ferries.

Gdansk Shipyard, along with a production of hulls and partly outfitted ships, intends to become a huge wind tower plant in Europe with annual production of 300 units. Also a small company Crist Shipyard has found its market niche – building specialized and highly profitable jack up units for installing offshore wind farms.

Managers of the companies mentioned above have understood very well that they can strike better deals with ship-owners operating in the traditionally profitable offshore oil and gas industry or seek their chances in new promising areas such as the offshore wind energy sector.

On the other hand, there are also other small private – owned companies which invariably offer building of partially outfitted hauls. They are still attractive to owners thanks to their skilled workforce generating relatively lower labour costs, which translates into acceptable prices. But there are also shipyards that belong to the State, still waiting to be privatised.

Anyway, the year 2011 and the beginning of 2012 showed signs of market recovery.

In this issue we have chosen to describe some examples of projects, products and services offered by shipyards in Poland, which – as we believe – are the most interesting and representative ones of the companies themselves and of the entire sector. We hope you will find the information helpful and see that shipyards and other marine companies in Poland are worthy of your trust!

Grzegorz Landowski

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List of advertisements:

First of versatile PSV vessels for Ezra Holdings delivered

Photo: Jakub Bogucki

Lewek Andes *returning from sea trials.*

Lewek Andes on the sea

On March 29, 2012 in Gdansk, REMONTOWA Shipbuilding SA, together with the Owners, hosted the christening ceremony of their newly built Platform Supply Vessel *Lewek Andes*.

The role of Godmother was performed by Ms. Cheryl Yap, one of the financial directors of the ship Operator. Traditional bottle of champagne was broken not against ship's side this time, but rather against the strengthened structure of towing and anchor handling winch housing, while the Owner's and Shipyard representatives and partners, suppliers, subcontractors, along with guests, media and Polish Navy Orchestra, were gathered on a spacious (measuring some 900 sq m) work and cargo deck of the PSV.

Leading-edge technology…

Lewek Andes is the first of a pair of modern, versatile Platform Supply Vessels (featuring also anchor handling capability) to be operated by Ezra (EMAS). According to a statement from the Owners, the two new PSVs have been built with "the latest leading edge technology".

Construction of two new exceptionally versatile platform supply vessels (combining their major supply duties with ocean towage and anchor handling capabilities) is based on Polish design by MMC. The MMC 887 CP design (yard no B852) vessels are being entirely constructed at REMONTOWA Shipbuilding SA (former Northern Shipyard) for Ezra company with delivery dates set for 2012 (with two further units in contract options). The first steel cutting was performed in September last year, while the keel laying for the two ships took place in December 2010. The first unit - PSV *Lewek Andes* - was launched on July 27, 2011 and delivered in April 2012, while the second one was at the outfitting quay at that time, being scheduled for delivery within 2012.

Design from Poland

These events follow Remontowa entering into a contract with Lewek Shipping Pte Ltd., a subsidiary of Ezra Holdings of Singapore, for the construction and delivery of two Multipurpose Platform Supply Vessels of the MMC 887 CP design (with design supplied by Poland

General arrangement

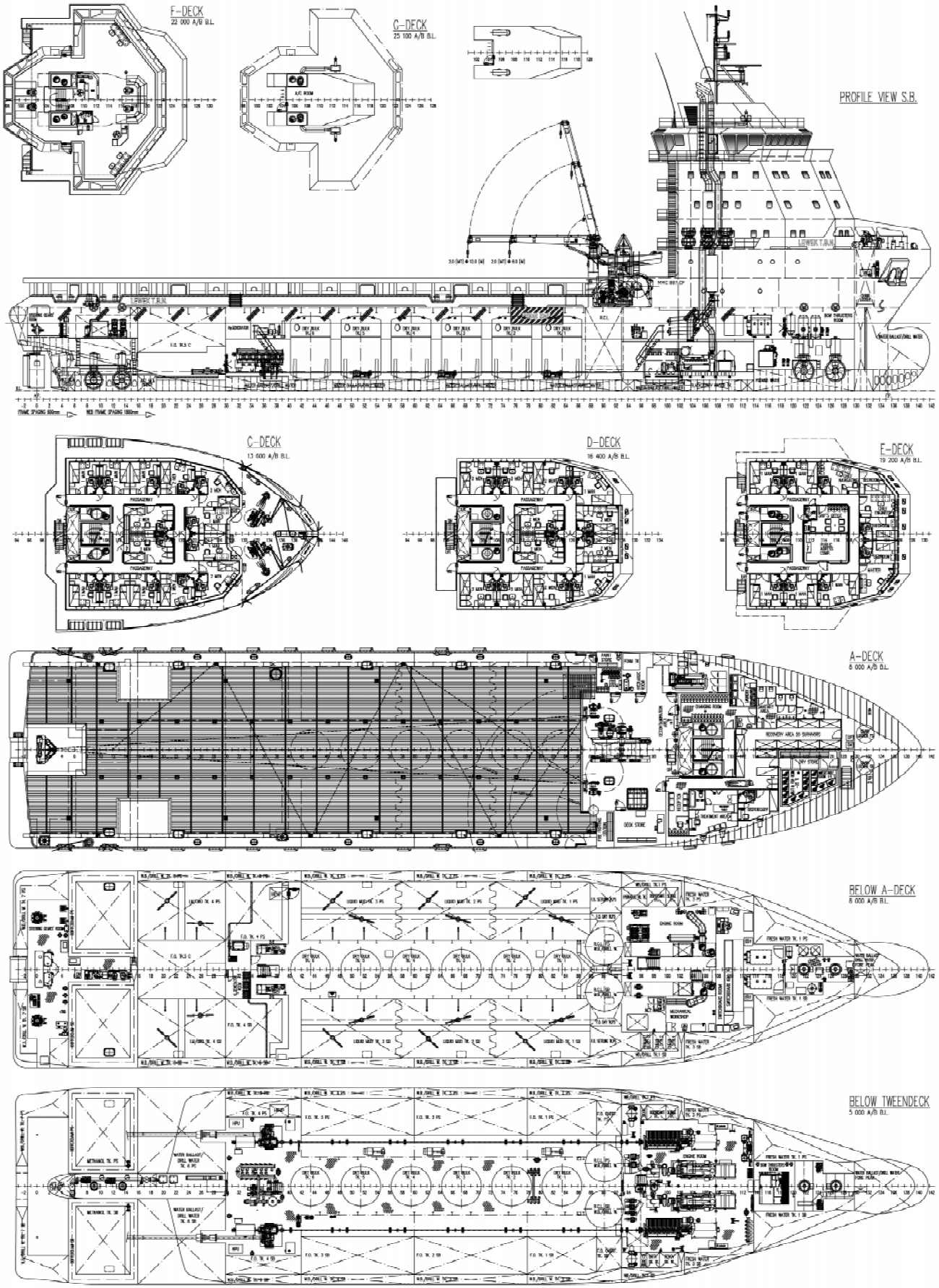

Fig. MMC

based MMC Ship Design & Marine Consulting Ltd).

The MMC 887 CP type vessels are designed and being built to meet the highest operation demands with the most cost efficient solutions, while conforming to most recent MARPOL environmental requirements and according to class requirements and under supervision of American Bureau of Shipping.

PSV with additional capabilities

The versatile ships will serve predominantly as supply vessels, however they also have anchor handling and ocean towage capabilities. The vessels will be able to fulfill general supply service needs of contemporary offshore industry (between shore base, drilling sites and other ships) such as carriage of dry bulks, general supplies and liquid mud, general cargo, pipes on the open deck as well as special products like methanol. Versatile equipment set and other facilities and features make the vessels very well suited to other specific tasks and charters, thus increasing its market value.

Measuring 87.90 metres in length, 18.80 metres wide and 8 m deep, the 5200 dwt vessels have a spacious deck area exceeding 900 sq m and an accommodation capacity for 60 persons.

In order to conduct oilfield support features, the vessels comply with Fi-Fi 1 and are equipped for oil recovery and safety standby assignments. Moreover, the vessels are equipped for safety standby rescue missions (up to 300 survivors) and oil recovery operation.

The vessels are designed so that they can carry out towage and anchor handling duties and are well suited for these tasks owing to features of the main deck (i.e. stern roller, towing winch), as well as due to hybrid propulsion drive provided.

The combination of electric drive used in supply mode and possibility of engagement of additional power from main engines directly via shaft lines to CP propellers gives the Owners necessary operational flexibility. In the supply mode, the vessels operate on electric drive. However, the main engines can provide additional directly via shaft lines to the CP propellers when extra power is required. DP2 (IMO Class 2 dynamic positioning system) gives adequate station keeping properties.

Environmentally friendly

The new MPSV are being built in accordance with the latest SPS code. Moreover emphasis has been given to observe regulation of ABS ENVIRO class notation, a clear, internationally recognized credential that can be used to demonstrate Owner's commitment to operating with minimum adverse impact on the environment.

The ships will be operated, under Singapore flag, by EMAS, which is a recognized leading global offshore contractor providing construction, marine, production and well intervention services. EMAS is the operating brand of Ezra Holdings Limited. The company operates globally with offices in 16 locations across five continents spanning Africa, the Americas, Asia Pacific and Europe.

PRINCIPAL CHARACTERISTICS	
Length over all	87.90 m
Breadth moulded	18.80 m
Depth to main deck	8.00 m
Design draught	5.90 m
Speed	15 kn
DWT at 6,50 m	5200 t
Bollard pull	100 T
Complement	60
Tanks capacity	
- ballast/drill water	2000 m^3
- fresh water	555.00 m^3
- potable Water	95 m^3
- fuel Oil	950 m^3
- liquid mud	1980 m^3
- dry bulk	310 m^3
- methanol	200 m^3
Propulsion	
Main Engine	2 × 2000 kW (2680 HP), medium speed,
Gearbox	2 × reduction gears with PTO
Shaft line with proppeler	2 × CPP, ø 3000, in nozzles
Auxiliary machinery	
Main generating set	2 × 2250 kWe, high speed 3 × 690[V], 60 [Hz]
Emergency/harbour generator	1 × 320 kWe, 400 kVA high speed
Shaft generators	2 × 2500 kVA, medium speed
Deck equipment	
Towing winch	1 × 225 t
Tugger winches	2 × 10 t
Shark jaws & towing pins	1 set of 150t SWL
Deck crane	1 electro-hydraulic knuckle arm 2 t/4 m
Pumps	
Fuel oil	1 × 100 m^3/ h - 9 bar el. dr.
Fresh water	1 × 100 m^3/ h - 8 bar el. dr.
Ballast/Drill Water	2 × 100 m^3/ h - 9 bar el. dr.
Liquid Mud	4 × 150 m^3/ h - 14 bar el. dr.
Methanol	2 × 75 m^3/ h - 9 bar el. dr.
Bulk Handling System	2 × bulk mud compressors each 1100 m^3/h at 5,6 bar
Class	
+A1(E) Offshore Support \vessel, +AMS, +Oil Recovery Class 2, +ACCU, +DPS-2, + FFV Class 1, ENVIRO, UWILD, GPTCM, +Safety Standby Service GR B-I300) Special Purpose Ship	

The first Ezra's newbuilding

As "Poland at Sea" learned from Mr. Lionel Lee, Ezra's Managing Director, the first Ezra's ship built at REMONTOWA Shipbuilding is a breakthrough for company's offshore support fleet as the most modern unit and first Ezra's newbuilding (as the Singapore based offshore operator has been relying on second hand vessels so far).

Lewek Andes departed from Gdansk based yard of REMONTOWA Group before mid-April to strengthen Ezra's Offshore Support division operations offshore Africa. That division provides offshore support vessels for charter to service customers in the offshore oil and gas industry throughout the oil field lifecycle, spanning exploration, construction, production and decommissioning stages. The Offshore Support division manages and operates a diversified range of vessels including medium and large-sized anchor handling, towing and supply (AHTS) vessels, anchor handling tugs (AHT) and fast crew utility vessels. The division also provides ship management services for both the Group's vessels and third party vessels.

Experienced in offshore

REMONTOWA Group has a vast experience in newbuildings, conversions and repairs for the offshore industry. In the years 2003-2010 REMONTOWA Shipbuilding delivered some 25 AHTS vessels for such renowned owners as Tidewater, Edison Chouest and others, as well as 10 advanced *offshore* evacuation units for the Caspian Sea.

PioSta, rel

The hull of the ship was launched on July 27, 2011 at Remontowa Shipbuilding SA in Gdansk, Poland.

Photo: Kazimierz Gliszczyński

LNG fuelled ferries - flagships in current Remontowa's newbuilding portfolio

Photo: Remontowa SA

***Spectacular sideways launching of* Landegode...**

A green leap forward

In March 2012 REMONTOWA Shipbuilding SA announced signing of new contracts. One of them concerns construction of two modern double ended car-passenger ferries for the shipping company in Norway.

To improve competitiveness the Owners have decided to upgrade and refresh their fleet. Thanks to recognition and good reputation enjoyed by the REMONTOWA Shipbuilding SA on the Scandinavian market, the Owner entrusted Gdansk - based yard with this task. Delivery of the both vessels is scheduled for the third quarter of 2013. This contract confirms the leading position of Remontowa Group in 50 to 130 m ferries construction.

Contracted ferries of latest generation will be world's first vessels powered only by LNG fuel. Such solution resolution is expected to significantly reduce NO_x and SO_x emissions to the atmosphere.

Ships will support public transport along the coast of Norway. It is worth to note that these ships will belong to the largest ones in their class to be operated in Norway. They will increase the Owners' weekly carrying capacity by 16 percent. An additional advantage will be low operational cost of newbuilds due to reduced number of the crew and consumption of green and cost competitive fuel.

The yard has not clearly revealed the name of the Norwegian operator involved in this deal, however market observers and some specialist maritime media suggest, that an alleged company would be Norled (formerly Tide Sjø), a fully owned subsidiary of Stavangerske Dampskibselskap.

Fig.: Norled

Renderization of a new LNG only fuelled double-ended fjord ferry to be built at REMONTOWA Shipbuilding.

With 80 vessels, the company covers much of the regular traffic along the Norwegian West coast. In 2009, then Tide Sjø, Norled started up high speed ferries and boats along the inner fjord of Oslo, including routes between Nesodden and Aker Brygge. From 2011 Norled also has activity in North Troms.

Meanwhile construction of another series of state-of-the-art LNG fuelled ferries continues at REMONTOWA Shipbuilding. In August 2010 Norwegian transport company Torghatten Nord won the contract from State Administration to operate ferry services lines in Vestfjorden region (Torghatten Nord AS was selected as the operator of the lines Bodø-Vørøy-Røst-Moskenes and Road 85 Lødingen-Bogne). The contract runs for ten years from 2013 with a total value of approx. NOK 1.4 billion. To fulfill its commitment, one of the leading Norwegian ferry operators turned to REMONTOWA Group to build a series of state-of-the-art "green" ferries. The four ships will operate with LNG fuelled main propulsion plants.

The new ferries will be employed in high traffic density Norwegian waters. They will each take 80 up to 120 personal cars onboard and 390 passengers. The service speeds in two variations of the design (with main engines of varied power installed) will be 12 up to 19 knots.

On November 2, 2011, the LNG-fuelled ferry *Landegode,* to operate on the Bodo - Lofoten Islands service, touched the water for the first time. Spectacular sideways launching of a 96 m long hull weighing almost 2000 tons, marked the start of a new era in Norwegian shipowner's history and ensures that the company will soon offer a radically cleaner travel for passengers going to and from Lofoten according to Bjørn Laksforsmo - CEO, Torghatten Nord AS. - *This is a technological leap forward for us and the region* - added Laksforsmo, interviewed on the occasion of launching of the first ship.

The ferry, after outfitting and finishing touches, is scheduled for delivery around mid 2012. All the four Vestfjord ferries will be operational in 2013. The series of four modern gas ferries for one of the biggest Norwegian Owner - Torghatten Nord AS - confirms Shipyard's position on the market of the highly advanced vessels conforming to stringent ecological standards.

The second ferry, to be named *Vaerøy* has also been already launched and undergoes outfitting along with the first unit.

PRINCIPAL CHARACTERISTICS	
Length over all	approx. 124 m
Length car deck	120.0 m
Breadth moulded	approx. 18 m
Breadth maximum	18.2 m
Draught	3.5 m
Hull depth to main deck	5.1 m
Bow ramp free vehicle width	approx. 10.0 m
Personal cars	165 or 12 trailers + 55 personal cars
Passenger capacity	550
Crew cabins	11
Service speed	16 knots

PRINCIPAL CHARACTERISTICS OF LNG FUELLED FERRIES FOR TORGHATTEN NORD AS	
length over all	93.00 m
beam	16.80 m
draught (approx.)	3.70 m
deadweight (approx.)	650 t
GT	4286
NT	1286
personal cars capacity	120 units
trailers / trucks	12 units
combination	12 trailers/trucks and 46 personal cars
lower car deck free height	2.50 m
upper car deck free height	4.50 m
bow ramp width	5.50 m
stern ramp width	11.50 m
internal ramp width	3.00 m

This is the impression of what the ferry will look like later in 2012, after completion.

Fig.: LMG Marin / REMONTOWA

It was launched on January 17, 2012. It is already the sixth vessel built in REMONTOWA Shipbuilding for the same Owners (Torghatten). This time, it is the second LNG (gas), eco-powered ferry limiting emission of NO_x and SO_x to the atmosphere. The vessel will be delivered to the Owner in third quarter of this year.

Norwegian team supervising the construction in Gdansk includes future chief engineer of the Remontowa built LNG fuelled ferry Steinar Lekanger and project leader / manager Jan Egil Sletteng. - *There has been an interesting time. And very nice. Poles are friendly and the country emerges not as a country with poor economy* - said Mr. Sletteng interviewed by Norwegian Radio.

Building of innovative gas powered ferries has become one of the main specialties of REMONTOWA Shipbuilding during the recent years. In 2010 the Shipyard finished realization of the contract for four innovatory gas powered ferries built for Norwegian Owner Fjord 1 MRF AS. The first from the series - ferry named *Moldefjord* won the Green Ship Technology Award from Informa Maritime Events, publisher one of the most important world's maritime periodicals - "Lloyd's List". The series built for Fjord 1 MRF AS has also won the Golden Anchor prize during the XVI International Maritime Exhibition BALTEXPO, which was held in September 2011 in Gdańsk.

PioSta, rel

Fjord Line's Stavangerfjord *launched in Gdansk*

Fig. Fjord Line

The pleasure of cruising...

Computer graphics presenting new cruise ferries built at Gdansk Shipyard for Norwegian Owners.

The first of Fjord Line's two new ferries, to be christened *Stavangerfjord*, was launched at the Stocznia Gdansk (Gdansk Shipyard) from the B1 slipway on April 12, 2012. A few days after launching the tow of the ship to Bergen Group Fosen for interior fitting and finishing, commenced.

In Shipowner's marketing nomenclature, aimed mainly at passengers, the ship is a cruise ferry, owing to superb interiors outfitting standard foreseen and wide range of amenities to be available onboard. From technical point of view - with significant ro-ro lane capacity and modest passenger number, the ship appears to be a ro-pax.

The traditional starting point for a new ship, known as laying the keel, has been celebrated for the first of Fjord Line's two new cruise ferries with a ceremony at the shipyard in Gdansk on Wednesday 23 March, 2011. At the same time, steel work has started on the other cruise ferry.

Partly outfitted hull

The launch marks the completion of partly outfitted hull by Gdansk Shipyard. However the Gdansk based yard's range of delivery is not limited to steelwork as it included installation of cable racks and piping, painting of many internal compartments, installation of main engines, auxiliary engines (gen sets), engine room equipment, steering gear, shaftlines, internal and external ro-ro ramps, stairs and accommodation ladders, doors, windows, manholes, etc. The ship launched around mid-April in Gdańsk has also a helideck arranged on the aft upper deck.

The launch was witnessed by around two thousand shipyard workers and others who have contributed to the creation of the ship's hull as well as residents of Gdansk. Before the ship glided out from the slip, the shipyard's director Andrzej Stokłosa gave a short speech, followed by Fjord Line's CEO Ingvald Fardal. Fardal thanked the shipyard's management and workers for their efforts.

- *For Fjord Line the launch of m.s.* Stavangerfjord *marks an important milestone in the achievement of our goal to offer travelers two modern and well-appointed cruise ferries with daily departures between Bergen, Stavanger and Hirtshals, and between Hirtshals and Langesund* - said Fardal.

Final touch in Norway

The launch of the almost 7000 tonne hull took less than a minute. After around a week it started the journey from Poland to Norway, along the coast to the shipyard in Rissa on the Fosen peninsula. There, workers representing a variety of disciplines (including experienced shipyard workers from Poland employed by Bergen Group in BMV Bergen yard, at Fosen yard and other facilities) will outfit and finish the modern ship. This will include furnishing the ship with restaurants for every taste, cafés and bars, a large tax-free shop and well-equipped facilities for courses and conferences. As the Owner assures - great entertainment - for young and old - will make the trip a very special experience. After delivery and commis-

sioning with Fjord Line's crew, *Stavangerfjord* can be put into regular service.

Bergensfjord, the next in line…

As *Stavangerfjord's* hull has taken shape at the shipyard in Gdansk, steel work has started on the second of the two new cruise ferries. This ship will be called *Bergensfjord*.

The new ships will be 170 meters long, perfectly designed in hull shape and length to handle North Sea waves and provide passengers with a smooth and stable voyage. The ships will each accommodate 1,500 passengers, offer 306 cabins (many of which will be suites) and have space for 600 cars or a smaller number in combination with larger trucks and cargo, at a deadweight of 3,900 tons.

The engine compartment in the new Fjord Line cruise ferries is designed to allow the ships to run on LNG (liquefied natural gas) in addition to conventional diesel fuel.

- Stavangerfjord *is a modern vessel, adapted for implementing a pro-ecological solutions. A midship is equipped with a special room dedicated for installation of LNG propulsion* - explains project manager Piotr Kaszubowski. - *Usage of such fuel is a substantial factor in reducing environmental pollution.*

PRINCIPAL CHARACTERISTICS	
Year of construction	2012
Place of construction	Stocznia Gdansk, Bergen Group Fosen
County of registry	Denmark
Home port	Hirtshals
Passenger capacity	1 500
Number of cabins	306
Berths	1 188
No. of Crew	70-100
Cargo capacity	3 900 tons
Vehicle capacity	600
Gross tonnage	25 000
Length	170.00 m
Width	27.50 m
Draught	6.35 m
Operating speed	21.5 knots
Restaurants / Cafès, bars	5/4
Conference rooms	6
Tax free shops	1
Playroom	2
Casino	1
Decks	10
Engines	4
Main propulsion combined power	30 000 HP
Class	Det Norske Veritas
Sailingtime Bergen - Hirtshals	17 hours
Sailingtime Stavanger - Hirtshals	10 hours
Sailingtime Langesund - Hirtshals	4,5 hours

Eco – friendly ferries

An LNG-powered ship of this size would be a ground-breaking achievement. This technology can be available soon after the ship is put in service but is dependent on LNG terminals being installed in the ports. Converting these ferries to LNG is now being considered as part of an EU project supporting the use of natural gas as fuel in ships. With liquefied natural gas, emissions of nitrogen dioxide could be reduced by up to 90 percent and CO_2 emissions could be reduced by 25 percent.

Even without LNG, Fjord Line's new cruise ferries will be equipped with fuel-efficient machinery in order to minimize emissions of harmful substances into the air and water. Through an agreement with Rolls-Royce Marine we have obtained access to an advanced propeller system that optimizes the ships' propulsion with low fuel consumption and no loss of maneuverability. We have contracted with the coating supplier Hempel to treat the bottom and keel of the ships with a product that is hard, offers low resistance and causes no negative environmental effects. Models of the new cruise ferries have been tested for the effect of wind and waves at MARINTEK with excellent results.

Bergen Group Ship Design and Bergen Group Fosen have designed the ships and Finn Falkum Hansen is the architect for the project. Hansen's previous design work has included two of the ships in the Hurtigruten fleet, *Trollfjord* and *Midnatsol*.

Photo: Jakub Bogucki

Partly equipped hull of* Stavangerfjord *launched at Gdansk.

PioSta, rel

Photo: Piotr B. Stareńczak

The first modern production line for the wind towers made in Gdansk, opened late 2010, was arranged in the part of the largest production hall in Middle-Eastern Europe (65 000 sq m under one roof) formerly utilized mainly for shipbuilding production.

Gdansk Shipyard intends to become a huge wind tower plant in Europe

Winds of change

Gdańsk Shipyard (Stocznia Gdańsk) is a large Polish, Gdansk - based shipyard, internationally famed as a birthplace of Solidarity (Solidarność) free trade unions and movement.

In its history the shipyard has built well over 1000 ocean-going units of various types. The company has recently been very active in the highly specialised ships, mainly for the offshore sector. Since the privatization of the yard (2008), almost twenty such units (partly outfitted hulls) have been built, including PSV's, DSV's, seismic research vessels and others. The company produces other kinds of vessels as well (gas carriers, passenger/car ferries) and steel structures, such as crane jibs and booms, tanks, chimneys and pipelines, and structural elements of large steel constructions, e.g. bridges, roads and stadiums.

Wind towers for renewable energy production set a new direction of the company's development. A new entity - GSG Towers - was established to strengthen and develop new market direction at Gdansk Shipyard. In November 2010, the most modern production line in Poland in this area was opened in Gdansk Shipyard, especially to meet the requirements of the wind towers production sector.

The first production line, mentioned above, may deliver 100 towers per year, both on and offshore type. The construction of the wind power station sections requires very precise workmanship and perfect coating protection, as the wind tower has to support overloads depending on the weather condition. Inside it has to fit all the installations and a staircase or lift system allowing service access to the turbine.

This production line is arranged in the largest production hall in Middle-Eastern Europe (65 000 sq m under one roof) - production and assembly can be carried out irrespective of weather conditions. Gdansk yard's steel processing capacity in the facility exceeds 150,000 tonnes per year. Within less than one business year in the sector of renewable energy sources (RES) GSG Towers managed to sign framework agreements with key manufacturers of turbines. Thanks to those contracts GSG Towers has a guaranteed order book for the coming years.

On 6th of October 2011, GSG Towers and Budimex have signed contract for the construction of the wind tower factory hall, which will be constructed on the grounds of the Gdańsk Shipyard. GSG Towers will be responsible for the production of masts. Both companies - Gdansk Shipyard and GSG Towers belong to one capital group - Gdansk Shipyard Group.

- *This will be not only the largest, but also unique factory for wind towers in Poland* - said Andrzej Stokłosa, the President of Gdansk Shipyard - *This contract and the factory are the consecutive points in our business plan - as the next stage of increasing the wind towers production capacity to about 300 units per year.*

The facility with an area of 20 thousand sq m, which is planned to start at the beginning of 2013 will be located opposite the existing prefabrication hall, where masts for wind turbines, as well as ships and steel structures are already being manufactured. It will be equipped with most modern ecological solutions, such as systems preventing penetration of harmful substances into the environment.

Wind energy market in Poland as well as other countries of Central - Eastern Europe has high growth in perspective thanks to the support of the EU Directive, according to which 15% of the energy produced in Poland by 2020 must come from renewable sources. Such strong growth is also expected in the offshore wind farms energy production. Therefore, the new factory will be adjusted to produce not only the land towers (onshore), but also the marine ones (offshore).

rel, PioSta

Polish companies contribute to building of modern ships by foreign entities

PartnerShip

Photo: Ulstein Verft AS

In Poland, built at Maritim Shipyard, the hull of the world's first ship featuring innovative, patented Ulstein's X-Bow was constructed and partly outfitted. AHTS* Bourbon Orca *has 3180 t deadweight and 86 m LOA.

When discussing Polish shipbuilding industry it is important to bear in mind, that a significant portion of production volumes and sales are generated by companies active in steel structures.

These companies deal with hull assembling as well as construction and delivery of partially outfitted hulls (ship sections and blocks) and various services offered to foreign yards. Among the Poland's biggest suppliers of partially outfitted hulls such companies should be mentioned as Gdansk Shipyard, Crist, Maritim Shipyard, Partner, Marine Projects and Navikon.

Significant part of hull sections and semi-outfitted hulls production in Poland are projects related to the offshore industry and concerning offshore vessels.

Gdansk Shipyard

Gdansk Shipyard has ambitions to market and deliver fully-outfitted ships and is also offering designs from in-house ship desing office. However, over the recent years the yard has been occupied mainly with construction of partly outfitted hulls, mainly for Norwegian yards, especially Bergen Group.

Vestland Insula is the name of the first PSV that was built at Gdansk Shipyard for Hellesøy Verft shipyard in Norway. The ship, launched in April 2011, is not only the first Gdansk Shipyard's PSV (however the yard had built a few stern blocks for similar units before.), but also one of the first PSV units to conform the newest most stringent classification and convention rules.

The shipbuilders have installed 200 tones of piping systems, pumps, numbers of various holders for fastening the carried loads, two tunnel thrusters and an azimuthing rudder. The vessel is 20 meters wide and 85 meters long, it's cargo deck area is 1000 m^2.

The second ship from the series, Hellesøy Verft Yard No. 149 - *Vestland Mistral* arrived from Gdansk to Norwegian yard on 31.12.2011 and was placed in the dry dock in Høylandsbygd on the first day of the year 2012. The vessel is due for delivery in June 2012.

Over the recent years the yard has built numerous seismic research vessels, diving and ROV support vessels, construction vessels and other offshore support units, mainly for Bergen Group.

Crist Shipyard

Crist Shipyard (Crist SA) has acquired the largest dry-dock in Poland, and large portion of other production assets of the former Gdynia Shipyard, but often hires the dock out for ship repair companies use. Many of the ship hulls built by Crist are relatively small units and they do not even require a large floating docks to launch them.

However, currently the yard has one Seismic Research Vessel (96,15 m in overall length, 21,5 m wide and 8,80 m deep with weight of 3100 t) and two Seismic Research Support Vessels. The latter units are subcontracted from Dutch yard Maaskant. Late November 2011, Maaskant Shipyards Stellendam, part of the Damen Shipyards Group, has received an order from Dutch shipping firm Groen B.V. in Scheveningen to build a pair of seismic research and support vessels (SRSVs) also described as chase vessels. The vessels will have a length of 40 m, beam of 9.30 m and 4.3 m depth and their all-weather chase and support tasks will focus on seismic activity research. The new SRSV's,

Photo: Gdansk Shipyard

Partially outfitted hull of PSV built at Gdansk Shipyard for Hellesøy Verft was launched in April 2011.

Photo: Simek

Operation of loading of hull blocks for Simek yard newbuilding no. 126 onto Simek II heavy-lift pontoon-barge at Maritim Shipyard in Gdansk.

Photo: Bergen Group

Fugro Synergy, *of which the partly outfitted hull was supplied by Gdansk Shipyard, was awarded, in 2010, the title of the "Ship of the Year" from "Offshore Support Journal".*

which are scheduled to be delivered in the first quarter of 2013, will be deployed worldwide and are expected to accommodate 14 people.

The hull construction to take place at Crist yard will not be typical. Considering the fact that these vessels have to operate for long periods in severe adverse weather conditions, a highly specific lines plan was developed for both comfort and efficiency. The operating speed, during seismic chase operations, is mainly about 4 to 5 knots which can result wave slamming and severe pitching of the vessel. Taking this into account the lines have been developed with V-shaped sections in the aft part creating diverting waves and U - shaped sections in the forward area aimed to reduce pitching.

Maritim Shipyard

Maritim Ltd. was founded in 1992 and is a privately owned shipyard specialising in partly outfitted hulls and ship's sections. The Gdansk - headquartered shipyard has been a long-time partner to shipyards, mainly in Norway, delivering ships to the offshore sector. Recently the company has been occupied with manufacturing blocks for a newbuilding no. 126 ordered by Simek yard, Norway. A PSV with deadweight 3280 t, LOA: 73,69 m, beam: 16 m and speed: 14,2 knots, is being built for Laduch C.V. Amsterdam. It will take a couple of months to finish the blocks and assemble them. In the next couple of months, the ship will be completely done, and tested in waters outside Flekkefjord with delivery scheduled for July 2012.

Over the years, complex projects have been undertaken at Maritim Shipyard. Hulls or blocks from Maritim Shipyard are part of some well known ships which were often industry's first. Highest flexibility and customer satisfaction was demonstrated when the hull for Kleven's OSV *Viking Energy* (famed for being the world's first gas fuelled offshore supply vessel) was built in 3 months. The same applies for the bow section (including bulbous bow) of Chantiers de l'Atlantique's *Queen Mary 2*. Maritim Shipyard has also built the partly outfitted hull of the world's first ship with revolutionary, innovative X-Bow design special reverse bow - *Bourbon Orca*.

Piotr B. Stareńczak

Photo: Piotr B. Stareńczak

Offshore wind farms installation vessels from Poland

Powerful lifters

Thor *in Gdynia.*

Hochtief Solutions has commissioned the construction of a further heavy-lift jack-up vessel from the Crist shipyard in Poland for the installation of offshore wind farms. The vessel, dubbed *Vidar*, is to start operating in 2013 to meet the huge demand for special-purpose equipment in this booming market.

The *Vidar* will be Hochtief's fourth heavy-duty craft, following its sister vessel - the *Innovation* (nearing completion at Crist yard, too), and the *Odin* and *Thor* jack-up platforms (the latter being built at Crist as well). It will be used for the company's own offshore construction contracts and will also be chartered out. Rainer Eichholz, a member of the Hochtief Solutions Executive Board, says: - *We are banking on the move to alternative energy sources and accommodating market players' huge demand with our special-purpose vessel.*

Vidar

Like Hochtief's other heavy-duty equipment, the new special-purpose jack-up vessel will also speed up installation and servicing times for the latest generation of offshore power plants. The *Vidar's* main features will be a 1,200-metric-ton crane, a loading capacity of up to 6,500 metric tons, a powerful engine allowing speeds of up to 12 knots, and the ability to work in water depths of up to 50 meters (with the vessel's 90-metre-long legs). These properties make the *Vidar* one of the most powerful lifting vessels in Northern Europe.

As brother of the God Thor, who rules over wind and weather, *Vidar* provides a safe platform even in stormy times. With significant load capacity and its large surface area the new jack-up vessel provides the best possible efficiency during operations. Hochtief hence provides the technical and economic prerequisites for exploiting new markets in the offshore sector.

The financing of the vessel is by means of an operate-lease structure with a subsidiary of Santander acting as the lessor, and with the involvement of KfW IPEX Bank, Norddeutsche Landesbank, the Spanish CaixaBank, and Bankhaus Lampe.

Like most of the other heavy-duty members of the fleet, the *Vidar* will be built at the Crist shipyard in Gdynia, Poland. Parallel to this order, Hochtief Solutions has commissioned the construction of three large work pontoons.

Work is currently underway at Crist on the fit-out of the Vidar's somewhat larger near sister vessel, the *Innovation*, which is to be operated and chartered out from mid-2012 by HGO InfraSea Solutions, a Hochtief joint venture with GeoSea, Belgium. The *Innovation's* first assignment will be at the Global Tech I wind farm, which Hochtief Solutions will be building in the German North Sea. Numerous project proposals for and inquiries about the *Vidar* have already been made.

With its high-performance equipment and innovative techniques, Hochtief has made a name for itself as a leading partner to the dynamic offshore wind market. The company offers the planning, development, construction, and operation of such plant, and is expecting work done in the triple-figure millions in this segment in the coming years. Hochtief will be well

positioned to meet this market demand with most of its specialist fleet built at Polish shipyard.

Looking forward to construction of yet another interesting offshore renewable energy sector construction vessel, namely *Vidar*, let us introduce units built at Crist yard for Hochtief so far. The first unit built in Poland for tough tasks in windy offshore areas was *Thor*.

VIDAR PRINCIPAL CHARACTERISTICS	
Classification:	
DNV + 1A1 Self Elevating Wind Turbine Installation Unit, Clean, Crane, Dynpos-Autr, HELDEK, E0, OPP-F, SPS	
Hull / deck dimensions:	
Length overall	136.50 m
Width	41.00 m
Hull depth	9.50 m
Free deck area	3,400 m2
Leg data:	
Length	90.00 m
Diameter	4.80 m
Feet diameter	12.00 m
Operating data:	
Draft	6.30 m
Operating depth up to	50.00 m
Load capacity up to	6,000 t (depending on the location-specific dimension/requirement)
Deck load	15.00 t/m^2
Lifting force	24,000 t
Lifting speed	up to 1 m/min
Propulsion and power generation:	
Drive:	Diesel, electric
Total power	20,000 kW
Emergency power	generator 700 kW
Transit speed:	10 knots
2 Moon Pools	Ø 0.90 m
Crane system:	
Offshore crane	CAL 45000 1200 Litronic
Capacity	1,200 t/27.50 m
Vessel complying with DP2 requirements	
Accommodation	90 persons

Fig.: Hochtief

***Computer graphics rendering of the new special-purpose jack-up vessel* Vidar.**

Thor

With its 82 meter long legs, the platform named after the Norse god of thunder can be used in waters up to 50 meters deep. This unit belongs to a new breed of larger and more powerful jack-up platforms, that are required in order to be able to work safely and efficiently, while fulfilling the high demands for the installation of offshore wind farms.

The company Overdick GmbH & Co.KG of Hamburg was commissioned by Hochtief with the task of planning and the design of the ship's hull which started in spring 2007. During this period, Germanischer Lloyd (GL) reviewed the basic design of *Thor*. Until 2008, a range of external partners was assigned with the design and the detailed engineering of the individual ship systems (insulation, sprinkler system, air conditioning and ventilation systems, power supply, electrical work, piping, fitting of the cabins and other rooms, etc). Due to optimization of design, the originally planned payload of 2,500 t was exceeded by almost one third.

The steel structural work for *Thor* was initiated in Greece, however the Hellenic Shipyards has not lived up to the task. In January 2009, the Polish Crist Shipyard was commissioned to build *Thor*. After delivery of the steel parts from Greece to Poland, which was a huge logistics challenge in itself, the actual ship-building process began in February 2009 in Gdansk.

The ship's hull was initially built by Crist Shipyards in the dry dock of the former Gdynia Shipyard (now closed), mostly with the workers from Gdynia Shipyard. After undocking *Thor's* pontoon in Gdynia in July 2009, the launched hull was towed to Crist Shipyard facilities at Gdansk Shipyard in neighbouring Gdansk, where the remainder of the assembly work on *Thor* was completed and outfitting commenced.

In January 2010, the partially pre-assembled heavy-duty crane was delivered onboard Polish ("Remontowa") built haevy-lift deck cargo vessel *Aura* and installed. The 500 t offshore crane (Liebherr BOS 14000), made up of three parts, was installed on *Thor* at the beginning of February 2010 as well as rigged and configured for its future applications.

In early March 2010, the almost fully completed *Thor* was towed from Gdansk to Gdynia to have the legs fitted. The

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four 82 m long and 550 t cylindrical steel columns with a diameter of 3.7 m were finally fitted in the Crist Shipyard. They were built by EEW in Rostock, while LMG in Lübeck undertook the interior work. Some higher quality steel was used to prepare *Thor* for the tough conditions xpected in offshore construction. For this reason, parts of *Thor*'s legs are made of S690 steel. The jack housings, which contain the hydraulic lifting cylinders, via which the platform is moved up and down on the legs, consist in part of S550 steel.

Building the platform in extreme weather conditions presented other difficulties as well. For example, during the winter of 2009/2010, work continued at temperatures as low as -22°C and during persistent snowfall.

One advantage of *Thor* is its size, as it was designed to operate in greater depths of water, and another is its maximum load bearing capacity, which, at 3,300 tons, is almost quadruple that of the Hochtief's first jack-up platform *Odin* (900 t). *Thor* is also unique in its rapid elevating speed of 1.2m per minute. Combined with its 500-ton crane, the new elevating platform is at present the only one of its kind on the market. *Thor* can rise up from depths of 50 m. Its over 80 m long legs are pushed into the sea bed, lifting the 70 by 40m pontoon out of the water. The permanently installed heavy-duty crane has a capacity of 500 tons. With a payload of 3,300 tons, 1,850 square meters of open deck space and a deck load capacity of 15 tons per square meter, the new jack-up platform enables maximum working efficiency.

Four moveable thrusters enable *Thor* to position itself independently on-site. The helicopter deck allows the crew to be transported faster and more easily. As an added comfort, the comprehensive cabin furnishings and recreation areas are exceptional for ships of this size.

Thor provides all requirements for port building, working on existing shipping routes, pile foundations of large-scale bridges and for the development of new offshore projects.

Approximately 6,400 tons of steel, 150 tons of piping and 118 kilometers of cable were used to build *Thor*. Over 320 planning documents were required for the detailed design of the jack-up with all specifications.

Following final test runs off the coast of Gdansk and in Gdynia port, the jack-up platform was transferred by tugboats across the Öresund, via Helsingborg and Skagen to Bremerhaven in April 2010, and performed its first job at the same time: It carried lifting decks for building the Kaiserschleuse lock in Bremerhaven.

Shortly after its birth at Polish yards, *Thor* became a celebrity. It was praised by international wind power industry specialists (from the conference venue) as it was being towed into the port of Hamburg during Hamburg Offshore Wind Conference and was also an element of landscape behind the windows of conference site at conference dinner.

Hochtief, however, has not restricted itself, as an offshore wind power scene player, to development and operation of *Thor*.

Innovation I

In 2010, Hochtief teamed up with Beluga Shipping to develop a stronger presence in the offshore wind industry. The move resulted in the ordering of a newbuild wind turbine installation vessel (WTIV). The ship has been ordered from the same yard that had built *Thor* - Crist. Meanwhile, the plans were disrupted though, when Beluga filed for bankruptcy in 2011, but Hochtief was committed to continue with this business. The situation has been resolved. The arrival of GeoSea to replace heavy lift shipping company Beluga in what was the Beluga Hochtief Offshore GmbH joint venture allowed plans for a newbuild wind turbine installation vessel (WTIV) to remain on track. After restructuring of the German heavy lift shipping company, its share in the venture has been taken over by GeoSea, member of the DEME Group from Belgium (with financial effect on 1 June 2011). The new company named HGO Infra Sea Solutions GmbH & Co KG is owned 50% by each of the two partners.

The new ship, WTIV ordered still by Beluga Hochtief joint venture, under construction in Gdynia (at Crist Shipyard, on the premises the part of assets of now defunct Gdynia Shipyard closed in 2009) was announced to be named *Innovation I* and is described by its prospective owners and operators "the most sophisticated heavy-duty jack-up lifting vessel on the offshore market, ideally suited for the installation of all types of offshore foundations" and said to be "the only one of its kind in the world".

Being a technical innovation, this vessel with a payload of 8,000 tons and a crane capable of 1,500 tons will operate in water depths of up to 50 meters. The vessel will feature 12 knots service speed. Operational flexibility will be ensured by wide range environmental conditions limits, with significant wave height for jacking and DP up to 2.00 m and wind speed for crane operation up to 18 m/s.

The unit is due for delivery in mid-2012, and is reportedly already been chartered long-term, including by AREVA, as well as already booked for construction of the 80 turbine, 400MW, Global Tech I wind farm in the German sector of the North Sea.

Recently (early August) it was announced that the second similar ship was covered by preliminary newbuilding order from Crist Shipyard.

PioSta, rel

(article based partly on Hochtief press material)

Fig.: Hochtief

Computer graphics rendering of the newbuild installation vessel under previous Beluga Hochtief markings.

Photo: Remontowa SA

Atlantic Rotterdam *self elevating platform at Remontowa SA in the night...*

Platforms warmly welcomed to Remontowa

One of the highlights of the year 2011 for Gdansk Shiprepair Yard Remontowa SA, one of the largest repair and conversion yards in Europe, was hosting and servicing four offshore rigs at a time, which made unique gathering of offshore platforms, not to be seen at any Baltic repair yard ever before.

As we went to press (mid April 2012) there was still another offshore platform expected to arrive at the turn of April and May 2012. The reason for the arrival of Prosafe operated *Safe Caledonia* in Gdansk - based yard was refurbishment that will not only enhance the vessel's facilities as an accommodation rig, but will also extend the structural life time of the vessel.

During the third quarter of 2011 year, an invitation to tender was sent to three European yards to bid for the work. After two rounds, Remontowa of Gdansk, Poland emerged victorious with a submission of technical and commercial quality.

Refurbishment of *Safe Caledonia*

As explained by Mike Duddy, Project Manager, in Prosafe's corporate magazine "Prosafe Now", the floatel comes to the Remontowa SA yard for a major refurbishment scheduled to take seven months, including sea trials.

As stated in the description of the project published in the corporate magazine mentioned above, the scope of work will be extensive. "We are happy to work again with Remontowa having a good relationship after admirable performances from them during the stays of *Safe Esbjerg* and *Safe Bristolia*" - added Mike Duddy.

The refurbishment of the *Safe Caledonia* will result in an "as good as new" rig, ready for 20 more years of operation on the UK Continental Shelf. With amongst others new diesel generators, boilers, cranes, helideck, lifeboats, heating and ventilation system, sewage plant and ballast water treatment system, the rig will not only be more cost-efficient and reliable, but also more environmentally friendly.

For Remontowa SA *Safe Caledonia* will be another significant offshore project executed for important, renowned Client. In 2011 there were four such offshore platforms related projects…

Four offshore platforms at a time

On February 20, 2011, large semi-submersible drilling rig *WilPhoenix* was towed from Gdansk Shiprepair Yard Remontowa SA own facilities in Gdansk to hired graving dock in nearby Gdynia for upgrade and maintenance finishing touches. The space at Gdansk "Remontowa's" facilities, made available by the transfer of *WilPhoenix* to Gdynia, was immediately filled with another mobile unit *Atlantic Rotterdam*, which arrived on Monday, February 21. This has brought the number of mobile offshore units being simultaneously serviced by Remontowa SA to four, which is the case for the first time not only at any Polish yard, but most likely, also in the whole Baltic Sea region. Later, at the final stage of servicing of the *WilPhoenix*, this semi-sub was transferred back to Remontowa SA in Gdansk allowing for the meeting of the all four rigs in the same place at least for a couple of weeks since late March 2011 - the unprecedented event for Baltic based yards.

Atlantic Rotterdam...

... is a 37 years old three legged self elevating offshore accommodation and service platform operated by Dubai headquartered Atlantic Oilfield Services (and until recently chartered by Maersk). She was brought to Remontowa SA mainly for maintenance and upgrade. There was also a wide range of steel works in ballast tanks to be performed. At the time of coming to Remontowa SA, *Atlantic Rotterdam* was one of some 6 mobile offshore units (drilling rigs, accommodation platforms and lift platforms) in fleet portfolio of Atlantic Oilfield Services.

The company also manages the *Safe Esbjerg* accommodation and workshop platform that was serviced at Remontowa SA some time ago.

Let us mention also the others of the four offshore platforms that have been recently serviced at Remontowa SA simultaneously.

Safe Bristolia

On October 12, 2010, the service and accommodation semi-submersible platform *Safe Bristolia* was moored at the quay of Remontowa SA to undergo maintenance and repair works. Arrival of this large hotel and workshop platform marks the return of Prosafe to Gdansk quite soon after the yard completed its previous job for the renowned, globally operating leader in offshore floating hotels sector.

Safe Bristolia was converted to a service/accommodation vessel at Yantai Raffles Shipyard in China in 2006. In 2007/2008 it underwent further refit and modification work to qualify her for work in the UK North Sea. The floatel has been also working for Samsun Sachalin LLC in Russia and for ConocoPhillips in British sector of the North Sea, as well as for Pemex in Mexico. Recently Prosafe have decided to perform another batch of maintenance and repairs, as well as upgrade works on this rig in Gdansk, Poland.

WilPhoenix and *WilHunter*

On 18th April 2010 dozens of people walking along the seashore of Gdansk Bay were able to gaze at very impressive offshore construction clearly seen on the

Photo: Remontowa SA

In late March four off-shore units dominated the shipyard's landscape. In the picture from left to right: **Safe Bristolia, WilHunter *(ex.* Arctic IV), Atlantic Rotterdam *(jack-up) and* WilPhoenix *(ex.* Arctic II).**

horizon. The drilling rig *Arctic II* (later to be renamed *WilPhoenix*; previous names of the rig were: *Vinland*, *Maersk Jutlander*, *Jutlander* and *GSF Arctic II*) was on it's way - towed to Gdansk - based Remontowa SA yard.

The drilling rig of the semisubmersible type built in 1982 at Gotaverken Arendal in Sweden entered the Remontowa SA for a wide ranging conversion and upgrade. The Owner of the unit is Awilco Arctic II Ltd, and the rig, operating on the North Sea is managed by Awilco Drilling Ltd, the company which was incorporated in December 2009 in connection with the acquisition of the two semisubmersible drilling rigs, *Arctic II* and *Arctic IV*. Both are so-called third-generation Friede & Goldman Enhanced Pacesetter design semisubmersible rigs capable of working in up to 1,200 - 1,500 ft water depths.

Arctic II, now *WilPhoenix*, was set to stay at the Remontowa SA yard for several months because of the wide scope of work. The upgrading of the rig was focused on performance enhancement including upgrading of the derrick and drilling system, renewal and increase of accommodation and variable deck load adding to installation of blisters, sponsons and new deck area; works in electrical systems, anchor winches, installation of new sewage plant, installation of new lifeboats, etc.; construction of new accommodation arrangement for 110 persons, after dismantling of old accommodation; some of mooring chains renewed; improvements in mud handling and working environment, special periodic survey (SPS) and maintenance.

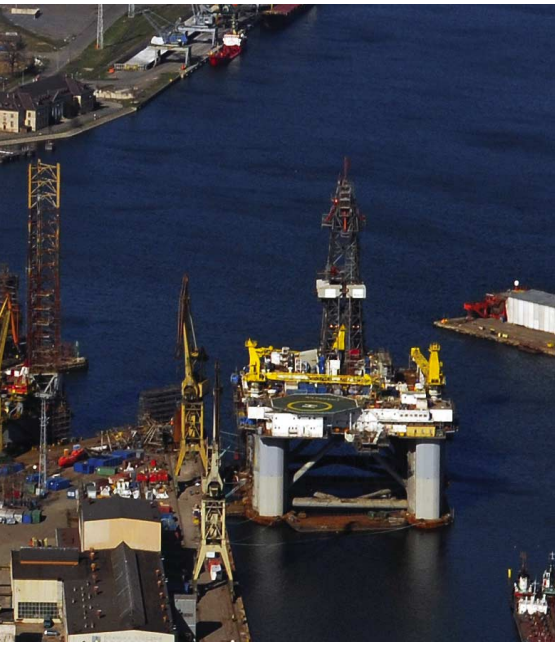
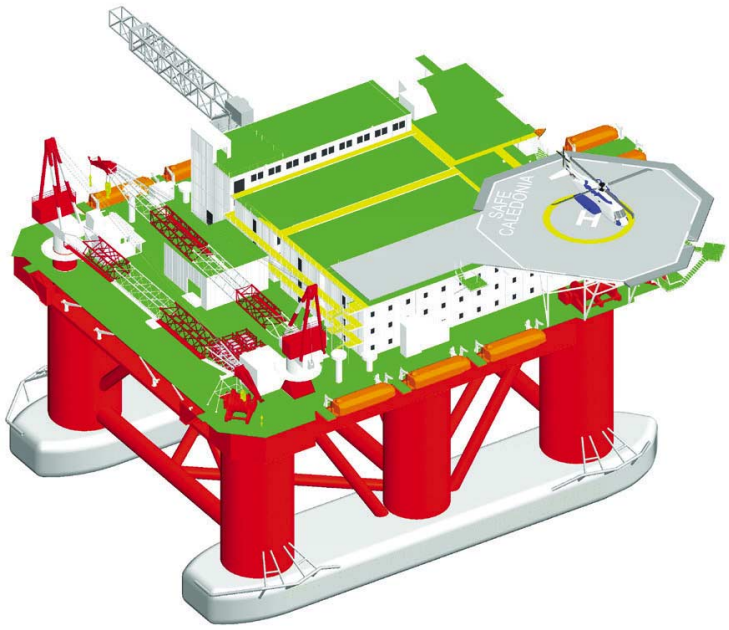


Fig.: Prosafe



***A 3D renderization of the refurbished* Safe Caledonia.**

It is worth mentioning that this recent stay has not been the first visit of *Arctic II* in Gdansk based yard since Awilco AS is amongst the most significant Clients of Remontowa SA with the two companies having a long-lasting mutually beneficial cooperation record. In October 2002, the same unit, at that time - under the name *Jutlander* came to Remontowa SA for cleaning and a protective painting program. The rig, operated at that time by GlobalSantaFe, was the second such unit that came to Gdansk from the North Sea. The first one, *Glomar Arctic IV* (at present *Arctic IV*,), owned by Global Marine Drilling Company, was also repaired and upgraded at Remontowa SA in 2000. In October 2003 Norwegian offshore semi-sub *Port Reval*, used as a floatel and technical base or service platform on an oilfield owned by Awilco ASA, was also converted at Remontowa SA. For the same Owner the shipyard has also turned two tankers into heavy lift vessels a couple of years ago. Recent conversion at Remontowa SA has been an important step in the reactivation program of the *Arctic II* (*WilPhoenix*) drilling rig.

The fourth offshore platform of the mentioned four recently serviced by Remontowa SA simultaneously, was *WilHunter* (ex *Arctic IV*). Late November 2010 hotel and service platform *Safe Bristolia* and semi-sub drilling rig *Arctic II* was joined at Remontowa SA in Gdansk by another semi-submersible drilling unit - *Arctic IV*. The unit, renamed *WilHunter,* undergoes 5-year class survey among other, mainly maintenance, works. It is worth mentioning that appearance of *Arctic IV* in Gdansk means a repeat visit for this rig as well. The first one - as mentioned before - under the name *Glomar Arctic IV* (then operated by Global Marine Drilling Company), was for repairs and upgrading during a few months period ending in August 2000.

Shipyard experienced in offshore

Within the last 10 years Remontowa SA serviced, repaired or upgraded dozens offshore platforms of various types (self-elevating units and semi-subs, accommodation and workshop, as well as drilling units). Remontowa SA is also active in other sectors of offshore market, performing such works as conversions of tankers into shuttle tankers with bow loading systems and to FPSO vessels (read on pages 25-27), conversions of offshore support vessels (to diving support and other types / purposes), conversions and upgrades of seismic vessels, repairs and maintenance of any kind of offshore ships, etc.

Remontowa Group opens service centre in West Africa

Remontowa Group commences operations in West Africa providing direct access to Remontowa's experience and know - how for owners and operators of offshore support vessels.

The new entity, Remontowa Marine Services Namibia, commences direct Remontowa's presence and after sales client support operations in Africa - growing offshore market. Major areas of operation to be covered will be offshore industry based in Angola, Nigeria, Tanzania, Gabon and Namibia and others countries in West Coast of Africa. Ship repairs, maintenance and servicing ships' equipment will thus be performed in-situ instead of bringing ships to distant European yards.

- *We have chosen Namibia, because, from our point of view, this is optimal location for establishing a service center* - Klaudiusz Stolarski, president of the new entity in Remontowa Group explains. - *The company's range of operations will cover mainly servicing ships either built at Remontowa Group yards or vessels sent to Gdansk for repairs, maintenance or conversions and upgrades by shipowners and operators co-operating with Gdansk Shiprepair Yard Remontowa SA for years, so far. We move closer to the Client. We want to be present with our services, where it is most needed - close to offshore oil and gas fields.*

West Africa appears to be the world's third busiest area of new offshore oil and gas developments. What is more, the new discoveries are being announced offshore Tanzania, Gabon and Namibia.

- *Offshore support fleet comprises high-earning vessels, so every single day of downtime is very expensive for the owner or operator, too. Therefore, short reaction time, mowing closer to the Client, being available on the spot is just what the market expects from us* - Klaudiusz Stolarski adds and continues: - *Initially the company will employ over 20 specialists, both Polish staff and local employees to be trained by us.*

Remontowa Marine Services Namibia operations, based in Walvis Bay, are scheduled to commence effective from May 1, 2012.

See our advert in page 2.

Offshore tankers

shuttling to Gdansk

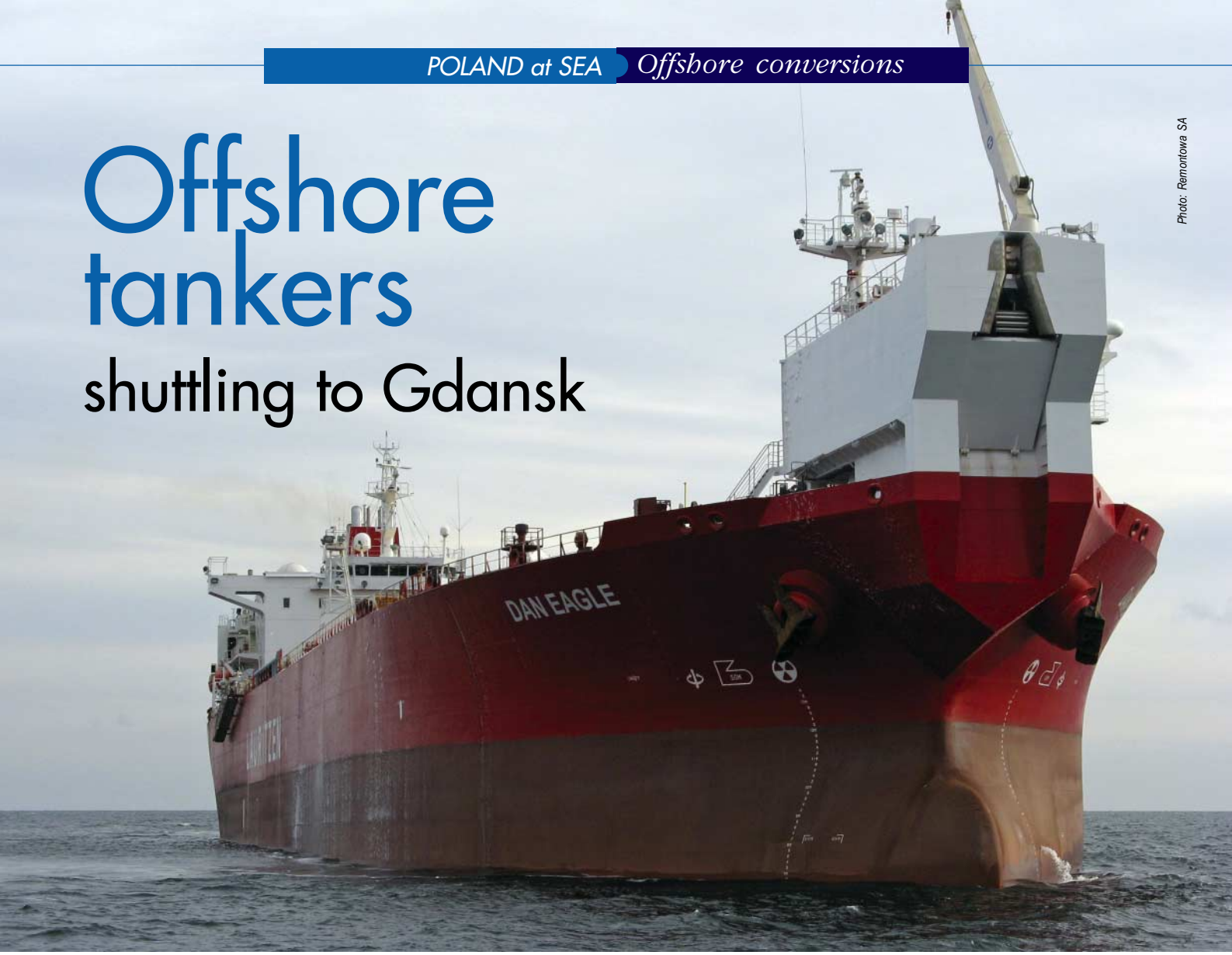


Photo: Remontowa SA

Dan Eagle *after conversion.*

Conversion of "regular" crude carriers into shuttle tankers has become one of the prime specialties of Gdansk Shiprepair Yard Remontowa SA. The yard has already converted several conventional crude tankers, both aframax and handy size into shuttle tankers.

One might say that tankers serving offshore market appear to be shuttling to Gdansk - based repair yard Remontowa SA. Indeed, shuttle tankers have been frequent visitors at the shipyard. During recent several years, many of them have been coming back more than once for subsequent periodical surveys / class renewal, planned maintenance, repairs and structural upgrades or retrofitting of VOC systems and for other reasons. In fact, quite a few tankers came to Remontowa as "ordinary" tankers, to leave Gdansk after conversion for a better-paying role of a shuttle tanker.

The shipyard is widely known for its activity in conversions of varied ships, especially operating in the offshore sector. Every year several conventional tankers are being changed into shuttle units for renowned Owners.

Reborn as a shuttle tanker

One of the most interesting projects was conducted in 2007. At that time Remontowa SA signed conversion contract with Danish shipowner J. Lauritzen. The main task was to convert tanker vessel named *Freja Pacific* to shuttle tanker. Vessel before conversion had DNV class with notation +1A1 Tanker for Oil, ESP, CSA-1, VCS-2, SPM, EO and featured the following main particulars: LOA = 183.24 m; B = 32.2 m and H = 18.2 m. Engineering for conversion basing on owner's specification and provided by owner input design from specialized contractors has been carried out by Remontowa SA.

New loading facilities onboard have been provided by Bow Loading System (BLS) consisting of loading equipment from APL. This equipment is connected to vessel's cargo manifold by new cargo pipeline DN400. BLS equipment has been located in newly installed forward deckhouse and in modified forward stores.

Conversion work included installation of new steel structures with weight of ca 500 tonnes and ca 100 km of cables and significant length of various diameter pipes. Additionally to conversion works extensive maintenance and drydock works have been carried out including ballast tank treatment.

Photo: Piotr B. Stareniczak

Gijon Knutsen *was staying at Remontowa SA when Norwegian and Polish Prime Ministers paid a visit to the shipyard.*

Photo: Remontowa SA

Anneleen Knutsen *with Bow Loading System installed at Remontowa SA.*

Photo: Remontowa SA

Teekay Petrojarl ASA operates FPSO* Petrojarl Cidade De Rio Das Ostras, *converted by "Remontowa" from a conventional tanker.

All work onboard has been performed as planned in summer 2008 and supervised and approved by DNV, classing the vessel according to notation: +1A1, TANKER for OIL, ESP, CSA-1, VCS-2, SPM, EO, NAUTICUS (Operation) T-MON, DYNPOS, AUTR, BLS Northsea.

The vessel had successfully performed sea trials and started operations under the new name *Dan Eagle*. This was the first shuttle tanker in the fleet of renowned Owners J. Lauritzen of Copenhagen.

Some recent examples

At the turn of 2010 and 2011, the Bow Loading System (BLS) was installed onboard 9 years old *Anneleen Knutsen* (183.25 m LOA, 27.4 m beam and 16.9 m depth).

Conversion of *Anneleen Knutsen*, operated by Knutsen Offshore Tankers ASA, involved new steel structures fabrication and equipment installation, totalling some 250 tons in weight, construction of new enclosed compartment for an additional generating set, almost 100 tons BLS structure, liquid cargo transfer system, HPR well and installation of position reference and dynamic positioning (DP2 class) systems. The ship was also equipped with new azimuthing thruster.

In April 2011, a regular tanker - *Windsor Knutsen* was redelivered to her operator - Knutsen OAS Shiping, after being converted at Remontowa SA from *suezmax* tanker to one of the world's largest shuttle tankers.

In June 2011, another shuttle - tanker *Gijon Knutsen* (converted at Remontowa SA into crude oil shuttle tanker in 2006), came to the shipyard for docking and maintenance works. The ship was staying at the yard when Norwegian and Polish Prime Ministers Jens Stoltenberg and Donald Tusk paid a visit to Remontowa SA. Recently, the ship entered Remontowa again for an emergency repair, without docking. Additionally, there was a Ballast Water Treatment unit installed on the ship.

Another offshore tanker serviced during recent times at Remontowa SA was *Timofey Guzhenko*, a modern arctic azipod propelled "double acting tanker" (going stern first while breaking thicker ice). The 2009 - built, arctic shuttle tanker, operated by Sovcomflot is one of the three ice-breaking tankers designed mainly to transport crude oil from the Varandey oil project to Murmansk (with

offshore buoy loading in ice conditions). Here, again, the hull was strengthened. In the bottom area 528 new bracket have been welded into the structure of the vessel. The servicing included some maintenance works on external hull, overhaul and maintenance of a tunnel thruster and replacement of sealings on main propulsion podded azimuthing drives.

As we went to press (mid April) at least three shuttle tankers were scheduled for visit at Remontowa for planned maintenance, repairs, etc. in May thru June, including two large shuttle tankers of one of the global leader in operation of this kind of ships.

FPSO

Besides turning tankers into shuttle tankers, it is worth mentioning, that the shipyard is also capable to undertake even the most technically and technologically advanced projects such as building of FPSO (Floating Production, Storage and Offloading) units.

A spectacular project completed at Remontowa SA in that field was the one covering construction of such unit in 2008. The shipyard delivered a FPSO ship to Norwegian company for use offshore Brazil. Teekay Petrojarl ASA operates FPSO *Petrojarl Cidade De Rio Das Ostras*, converted from a tanker by Remontowa, on the Siri Field in Brazil for Petróleo Brasileiro S.A. (Petrobras).

Photo: Remontowa SA

An arctic tanker* Timofey Guzhenko *lifted in a dock.

PioSta

Photo: Remontowa SA

Windsor Knutsen *was converted at Remontowa SA from suezmax tanker to one of the world's largest shuttle tankers.*

On the premises of former Gdynia Shipyard…

Photo: Aker Solutions

Module manufacturing plant

***EPG fabricated and installed a 232 tons A-Frame on the stern of advanced multi-function AHTS, ROV support and offshore construction vessel* Skandi Skansen.**

The beginning of the year 2012 was busy for Energomontaz-Polnoc Gdynia Ltd (EPG), Polish supplier of large steel multidisciplinary products for offshore and onshore energy, oil and gas industry.

When it comes to offshore and subsea structures and equipment, project for well known North Sea oil and gas field is worth mentioning among others. It called for fabrication of over 2100 tons of topsides deck sections and nodes for new wellhead platform on the North Sea field.

Another offshore sector project comprised fabrication of completely outfitted multidisciplinary modules, weighing over 1886 tons in total, for leading offshore engineering contractor and ultimate user - renowned oil company.

Among the projects completed this year, especially the fabrication of a module for *Sevan Voyaguer* FPSO is worth mentioning.

In April EPG commenced fabrication of multidisciplinary modules equipped with 18" rigid gas pipe line installation for wellhead platform of oilfield located offshore Gabon.

Module handling tower for *Skandi Aker*

EPG is also known for manufacturing specialist equipment and structures for offshore support and construction vessels, offshore drilling and production units, both mobile and fixed, as well as for subsea installations. EPG, among many others items of offshore equipment, manufactures also moonpool doors and drill flors, stinger pipelay booms / ramps, subsea hatches and covers, etc.

As an example, it is probably worth to recall the fabrication and assembly of the module handling tower for award winning *Skandi Aker*. This deepwater intervention vessel from Aker Solutions, has won the coveted international „Ship of the Year 2010" award. A unique feature about *Skandi Aker* is her multi-functionality. When she is not performing well intervention work she can perform subsea installation and construction work, handling 225-ton structures down to 3000 metres water depth, owing also to its EPG fabricated module handling tower.

A-Frame for *Skandi Skansen*

One of the most recent, interesting references is the fabrication and installation of an A-Frame on the stern of multi-function AHTS, ROV support and offshore construction vessel

Photo: Aker Solutions

Subsea construction and well intervention module handling tower, fabricated by EPG, onboard* Skandi Aker *(amidships).

Skandi Skansen. The EPG manufactured and National Oilwell Varco designed structure, with dimensions of 26,2 × 21,1 × 10,2 m and weighing 232 tons, was installed (with use of heavy-lift floating crane) within a couple of hours during a short stay of the sophisticated offshore support vessel in the port of Gdynia, at EPG's quay early March 2012.

Subsea 7 entered into a four-year charter of *Skandi Skansen*, a trenching support vessel, for 100 days per year plus options. To facilitate deploying (submerging) the sea bottom trenching plough, the 500 T capacity A-Frame had to be installed onboard the vessel chartered by Subsea 7 from DOF.

The Skandi Skansen is a new generation high powered anchor handling vessel, capable also of performing construction and ROV support roles, designed for field installation operations across a wide range of water depths and environmental conditions. The *Skandi Skansen* also features, as the world's first vessel, STX's new bow design, optimised for Ecodrive in all weather conditions.

Structures for energy sector

Energomontaz-Polnoc Gdynia is also active in renewable energy sector. Company fabricated many steel structures, such as substation topsides, protection cages with J-tubes, groutskirts and pedestals for offshore windfarms - Walney, London Array and Rødsand. Currently EPG Shipyard (part of Energomontaz-Polnoc Gdynia responsible for shiprepairs & conversions) performs installation of seafastening on four ships for transporation of large size elements for offshore wind farms.

Business - partner in ship repairs

EPG Shipyard, possessing 240 × 40 × 8 m dry dock and 350 m jetty, equipped with all necessary infrastructure, is active in shiprepair industry since 2010.

Just as an example of projects in this area let us mention the participation in conversion of double bottom into single bottom doors on the dredger *HAM 310* late 2011. The 138.5 m long and 23 m wide trailing suction hopper dredger, draughting 10.07 m was dry docked in EPG's graving dock. The project, contracted by Gdansk Shiprepair Yard "Remontowa" SA, included conversion of double bottom doors system (fabrication and installation), partial renewal of bottom steel and installation of door seals.

Other of the recent references include repairs of various type of ships (container vessels, tankers bulk carriers and cargo ships) and this activity will be continued the whole year 2012.

To meet the growing demands of the market, Company implemented dedicated development plan. The newest investment is the construction of new machining workshop at own facility in the port of Gdynia, to be equipped with the most modern CNC equipment for machining of large size elements up to 120 tons. Investments are carried out in order to enable the company to acquire orders concerning further, more complex projects for offshore & renewable energy sectors.

PioSta

Photo: Piotr B. Stareńczak

One of the AHTS vessels from highly succesful series of ships designed and built by REMONTOWA Group.

Top class ship designs

Polish newbuilding activity, especially in larger cargo ships sector (container vessels, ro-ro cargo ships and vehicle carriers or tankers) may have declined significantly over the recent years, but ship design is flourishing. More independent ship design consultants from Poland start to establish themselves with their own trade marks on the international market and acquiring orders from top clients.

Poland has always been a source of shipbuilding technology know-how and competence, but previously (apart from big yard's own ship design offices) Polish naval architects and marine engineers, employed in numerous privately owned ship design and consultancy companies, had been mainly subcontracting work from Western European ship design consultants, mostly covering in Poland only partial design, such as CAD drawing, detailed engineering and strength analysis of ship structures or workshop drawings based on initial, conceptual and technical designs received from foreign shipyards or ship design consultancies. A significant amount of highly skilled naval architects and marine engineers has encouraged some big names in ship design to establish subsidiaries in Poland to take advantage of availability of skillful naval architects and marine engineers in Poland. One such example is quite a large office of Vik Sandvik in Gdynia, that has operated for years (recently, after take over, under the name of Wartsila).

However, especially in recent years, both the entities that had been existing on the market for quite a time and new companies established during the final years of operation of Poland's big newbuilding yards in Gdynia and Szczecin (forced to close by European Commission order in 2009), have been increasingly active in offering and promoting their own "full featured" designs, right from the conceptual and initial design.

Highly successful series of AHTS vessels

The most significant success of Polish ship design know-how is probably the development of a series of similar AHTS vessels (NED 8167 and NED 8167 L designs) with bollard pull from 80 up to 160 T in varied mutations suiting detailed requirements of several renowned owners.

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Initially Gdansk Shiprepair Yard Remontowa S.A. has signed contract with Tidewater Marine LLC of New Orleans, Louisiana, USA for delivery of 4 vessels during year 2005 (plus 2 in option). The vessels have been built in co-operation with companies of REMONTOWA Group.

The Customer expected to have relatively modest vessels in size, but with comparatively large cargo capacities. In addition, there was also expectancy of limited water depth operation capabilities. "Cost cutter" was the nickname given by Tidewater to the vessels, as the guiding principle of projects. It meant not only simple construction and lower construction cost, but also considerably lower recurring, operating costs.

Locally sited Naval Engineering and Design's team, chosen by Remontowa as authors of new concept, examined number of different propulsion systems, sophisticated solutions of ship's body forms, as well as vessel's layout, what resulted in more than thirty well-developed project versions. Limited vessel's breadth and draft on one hand, with increased deadweight, bollard pull and speed on the other, seem to contradict strongly and form rather ambitious challenge. Therefore, local Ship Design and Research Centre (CTO) has been employed and extensive program of tank testing was performed, to prove assumed parameters and to ensure satisfactory sea-keeping characteristics as well.

Fig: RMDC

Continuing of successful Project 1674, Gdansk – based RMDC developed design of Anchor Handling Tug/Supply Vessel RMDC 8176 AHTS, the new cost-effective, powerful vessel with excellent capacities.

Additional cost cutting gain, important for shipbuilders, is simplicity of applied body shape, which spares labor cost of the hull's erection. Moreover, promising results for this type of ship, gave excellent hull form for shallow water platform supply vessel (PSV) or other OSV concept, where cargo capacity and vessel's speed may be further, significantly increased, comparing to AHTS results.

The success of the project resulted in further orders from Tidewater Inc., as well as other owners: Italian Marnavi Offshore S.r.l. and US based big names GulfMark Offshore Inc. and Edison Chouest Offshore LLC, specifying vessels with slightly different particulars and equipment and increasing bollard pull. Within five years until 2010, some 21 such ships were built of NED 8167 and NED 8167 L design with machinery and equipment variations with bollard pull up to 170 tons.

LNG powered PSV

Fig: RMDC

Platform Supply Vessel of the RMDC LNG DF 8286 design.

Due to high interest in LNG fuel for PSV the company has also designed a vessel powered by LNG, which at the same time has not missed its cargo ability using special design of LNG cargo tanks. PSV LNG DF 8286 project is the LNG – powered platform supply vessel features dual fuel engines. It can run on both LNG and marine diesel oil in any proportion. Using LNG results in a 90% reduction of NOx as well as a 30% reduction of CO2. LNG is stored in a vacuum insulated tank with a volume of 400m^2. With 5100 tonnes deadweight the vessel is ready to carry considerable amount of multiply cargoes in her tanks including fuel oil, liquid mud, fresh water, dry bulk, methanol and drill water.770 square meter working deck provides large space for 2000 tonnes of cargo and additional space for eight 20-foot containers.

Emergency Response & Rescue Vessel

After those successful designs, an interesting portfolio of various new offshore support vessels and emergency response vessels designs is available from REMONTOWA Marine Design and Consulting Ltd. This new design office has taken its heritage from both former Naval Engineering & Design "NED" Sp. z o.o and Remontowa design office, being presently the largest Polish marine design office, hiring more than 100 experienced staff designers.

An interesting example is an RMDC 4348 Emergency Response & Rescue vessel, designed according to Oil & Gas United Kingdom and Emergency Response & Rescue Vessel Association (ERRV) requirement for class B. She carries out rescue of survivors, monitoring of danger zone and other necessary operations. The ship is equipped with a diesel electric power plant comprising three main diesel generators totally giving 2250 kW of electrical capacity, one aft azimuth thruster and one fore retractable thruster as main prime movers. The thrusters are powered by electric motors and controlled by frequency convertors. This solution allows to achieve low cost monitoring operation, fast response at cruise speed, high flexibility of the power plant.

Fig: RMDC

RMDC 4348 Emergency Response & Rescue vessel.

Fig.: RMDC

RMDC 8386 PSV 4300-5400 dwt.

Platform Supply Vessel 4300-5400 dwt

Another design applies to PSV with deadweight range – 4300 – 5400 t. The RMDC 8386 PSV design was developed emphasizing enviromental friendly features without compromising its efficiency and serviceability. At design stage ABS class regulations were accounted for, although other class societies may be chosen. The tailor made design has been resulted to reduced hull resistance given by slender lines, less use of power and consequently a lower fuel consumption which, in turn, controls the amount of CO2/Nox emissions. There are three version of this vessel available, which are 4400 dwt, 5000 dwt and 5400 dwt satisfying the highest requirement of the Clients.

However, REMONTOWA Marine Design and Consulting Ltd.) is not the only Poland's ship design consultancy, that managed to win an order from global offshore support industry leader…

Fincantieri group's shipyard builds PSV designed in Poland

Offshore support vessel giant Tidewater is building the latest generation of platform supply vessels in USA and China, specifying ship design from Poland and diesel-electric power. Tidewater says the propulsion choice was specified as it offers greater operational flexibility and efficiency. The flexibility of diesel electric allows for a one or more of the engines to be shut down when full power is not required.

Fincantieri Marine Group (FMG) announced on March 21, 2011, that its Bay Shipbuilding Company will build two 92.4 metres Platform Supply Vessels (PSVs) of the MMC 887 LH PSV Design from MMC Ship Design of Poland for New Orleans, LA based Tidewater Marine LLC, a wholly-owned subsidiary of Tidewater Inc.

The Deepwater Platform Supply Vessels, to be built at FMG's shipyard Bay Shipbuilding Company, located in Sturgeon Bay, will be state-of-the-art vessels with diesel-electric Z-drive propulsion, dynamic positioning 2 (DP-2) system, polar class 7, fire-fighting class 2 (FFV 2) system, and ENVIRO notation.

The first MMC designed PSV from US shipyard is scheduled for delivery in the fourth quarter of 2012, while the second unit

Fig.: MMC

The MMC 887 design PSV.

- in the second quarter of 2013. Earlier, the same Owner had ordered ships of the similar design, also developed by Gdynia, Poland based MMC, in China.

Caspian catamaran

Fig.: GSM Design Group

Caspian catamaran designed by GSM Design Group.

An advanced and innovative design of a dynamically positioned twin hull diesel-electric driven drillship for well intervention on shallow waters (up to 10 m depth) is proposed by GSM Design Group from Pruszcz Gdański, near Gdańsk. The ship is suitable for operation in shallow waters, such as the Caspian Sea and Orinoco river estuary and safe and efficient exploration of offshore oil fields. The ship features four generating sets, each rated 1300 eKW at 1800 r.p.m. The design speed is 13 knots at 3.45 m draught.

Just to mention some of the other most important particulars - according to design the ship will have tanks with capacity of 1340 m^3 for fuel and 827 m^3 for brine. Work and cargo deck measuring 43 × 17 m provides 730 m^2 of working area and a moonpool measuring 2.5 × 2.5 m. The accommodation foreseen in the design offers 30 places for ship's crew.

Main dimensions are as follows: length over all 74.64 m, length between perpendiculars 69.06 m, moulded width 21.60 m, depth to main deck 6.20 m, maximum draught (at SWL) 3.45 m.

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