CLIMAREM (PBUCH)- AUTUMN 2020

Newsletter from the fourth quarter of 2020 January 2021

Rebranding

We have a new logo and a new corporate identity collected in the form of the Brand Book. Soon we will present our offer in the form of new catalogs.

News

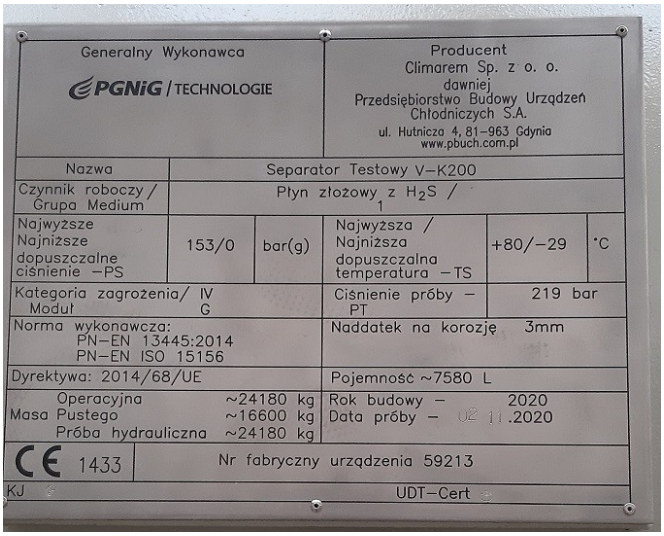
In this issue of the Newsletter, we continue our "struggle" over projects for the difficult oil & gas industry - pressure units and heat - exchangers for gas reception installations, drying installations, units for separation gas, hydrocarbons and water. Morover special welding technology for high pressure equipment. Also products for the chemical industry and waste treatment systems, and finally the traditional overview of retrofits and repair works on board of ships from all over the world.

We hope you will enjoy the content.

Emilia Węglewska, Manager of the Trade and Marketing Department

In this issue:

M/V NANCY SPIRIT after overhaul



Generalny Wykonawca PGNiG / TECHNOLOGIE			Producent Climarem Sp. z o. o. dawniej Przedsiębiorstwo Budowy Urządzeń Chłodniczych S.A. ul. Hutnicza 4, 81-963 Gdynia www.pbuch.com.pl		
Nazwa	Separator Testowy V-K200				
Czynnik roboczy / Grupa Medium	Płyn złożowy z H_2S / 1				
Najwyższe Najniższe dopuszczalne ciśnienie -PS	153/0	bar(g)	Najwyższa / Najniższa dopuszczalna temperatura -TS	+80/-29	°C
Kategoria zagrożenia/ Moduł	IV G		Ciśnienie próby - PT	219 bar	
Norma wykonawcza: PN-EN 13445:2014 PN-EN ISO 15156			Naddatek na korozję	3mm	
Dyrektywa: 2014/68/UE			Pojemność ~7580 L		
Masa Operacyjna ~24180 kg Pustego ~16600 kg Próba hydrauliczna ~24180 kg			Rok budowy - 2020 Data próby - 02.11.2020		
CE 1433	Nr fabryczny urządzenia 59213				
KJ	UDT-Cert				

Test separator

V-K200

Purpose and description of construction

The test separator is used to separate gas, hydrocarbons and water from the reservoir fluid.
The design of that heat exchanger is thought out in such a way as to separate substances through the deflector and partitions (stabilizing and overflow). The water flows to the lower part of the separator, ended with a settling tank. The nozzle for discharging hydrocarbons is led from the shell side. In the upper part of the shell there is a gas discharge, which, just before leaving the separator, goes through a stainless steel demister to separate liquid particles from the exhaust gas stream.
The tank is also equipped with connectors for:

- local and remote level measurement,
- safety valve,
- remote and local pressure measurement
- temperature measurement.

The tank is also equipped with an inspection manhole.

Test separator V-K200

Technical parameters

Maximum allowable pressure, P_s: 153.0 bar

Strength (acceptance) test pressure, P_t: 219.0 bar

Strength (operational) test pressure, P_{eksp}: 192.0 bar

Min. / Max. temperatures, T_{smin} / T_{smax}: -29 / + 80°C

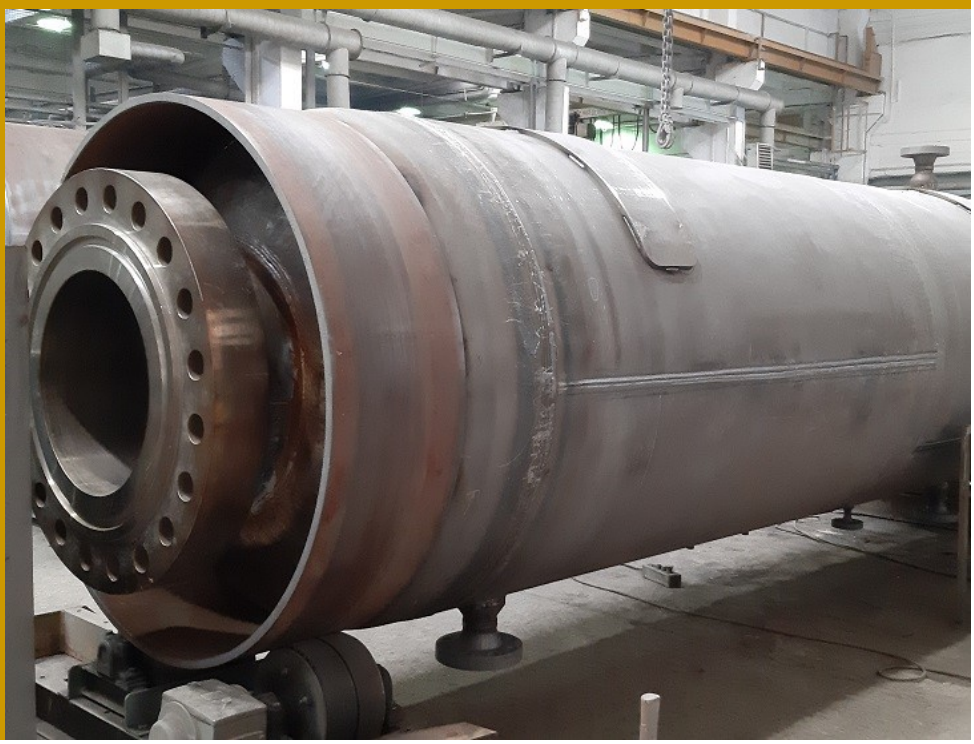
Medium: reservoir fluid with H_2S

Volume: 7 580 l

The presented test separator is intended for the installation of crude oil and natural gas extraction from the Kamień Mały deposit, located near the Warta Mouth. Construction works began in spring 2020 to adapt three wells for this purpose.

Shell wall thickness 60mm

After heat treatment



R-301 TEG Regenerator

R-301 TEG Regenerator

Description

The R-301 system consists of the following components: evaporator, a TEG coil, a fuel gas coil, a combustion chamber and a reflux coil.

Technical parameters:

Maximum pressure, P_s: 16 bar (TEG heating coil and reflux coil) Other elements: 0.5 bar

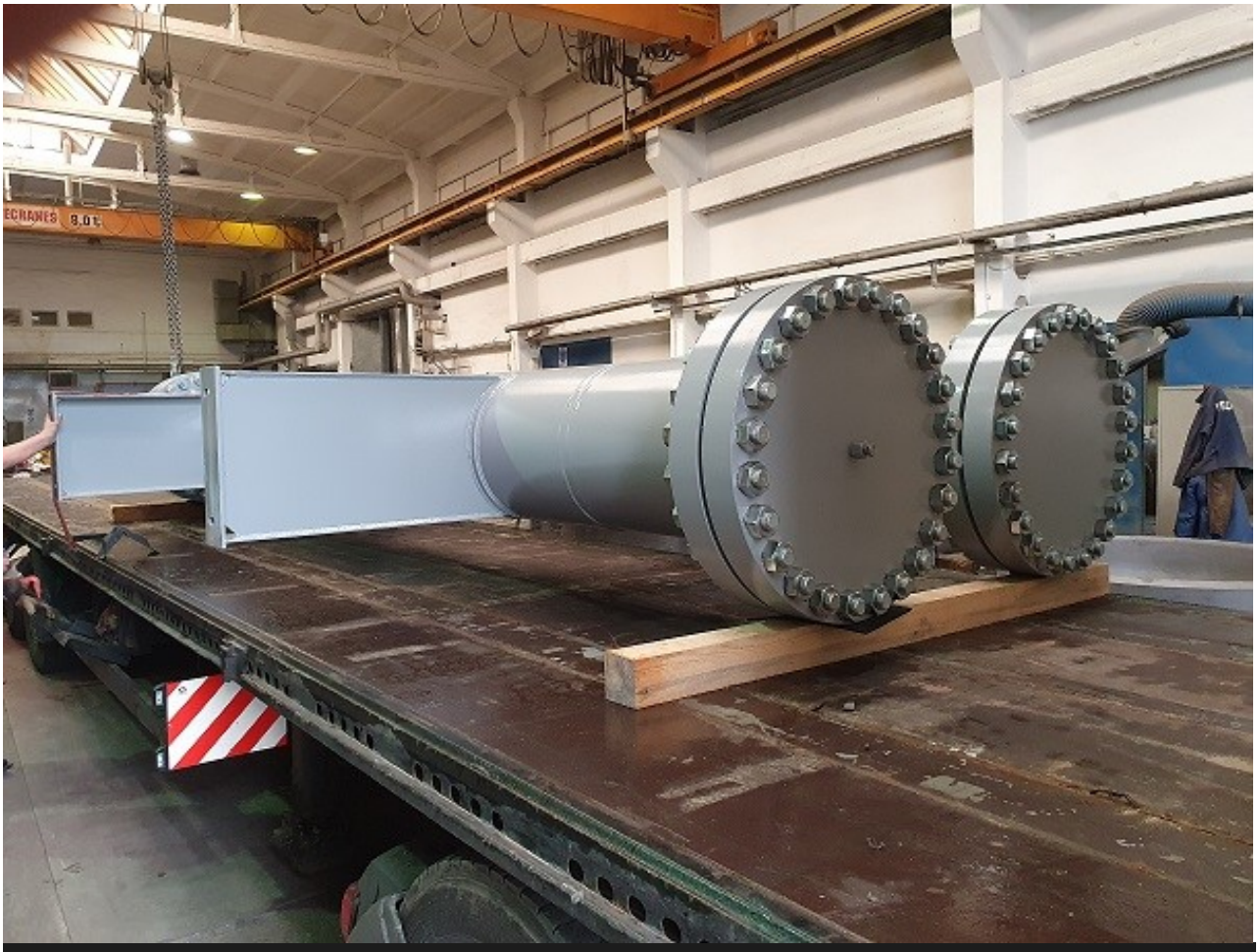
Pressure test : 23 bar (TEG heating coil and reflux coil) other elements: 0.8 bar

Min / max temperature, T_{smin} / T_{smax}: -29 / + 200 ^{o}C

Medium: TEG / natural gas

Volume: ~ 2726 l

Weight when empty: 1960 kg



LTS-E 200 Separator

LTS-E 200 Separator

LTS separator was provided for the installation "Bystrowice well development" ordered by the General Contractor of that project.

It is a shell and tube heat exchanger for the natural gas with the following parameters:

Technical data:

Capacity: 120 kW

Heat exchange surface: 183 m^2

Pressure test: 118 bar

Design temperatures: -29 ^{o}C / + 110^{o}C

Shell diameter: ø 508 x 14

2x 673 pcs of tubes with diameter: 12.7mm

Length: 5260mm

Approval: 2014/68/UE pressure directive

CW column residue cooler

CW column residue cooler

The presented residue cooler is a shell and tube heat exchanger used for cooling of VCM (vinyl chloride) / EDC dichloroethane, with the water in shell.

The heat exchanger was subjected to a pneumatic, helium tightness test in order to check connection of tubes in the tube plates.

Vinyl chloride, chloroethene (CH2 = CHCl)

Vinyl chloride (VCM) is gaseous under normal conditions of pressure and temperature. It easily liquefies under pressure, and in this form polymerizes at 40-70 ° C, forming polyvinyl chloride (PVC) as a result of an exothermic reaction.

About 98% of all chloroethene production is used for the production of polyvinyl chloride (PVC) and copolymers. The remainder of the production is used for the synthesis of methyl chloroform.

Processing of vinyl chloride takes place in many industries, including the plastics, rubber footwear and pharmaceutical industries.

In Poland, chloroethene is produced at ANWIL S.A. plants. The purpose is the production of polyvinyl chloride.

Technical parameters of the residue cooler:

Heat exchange surface: 82.5 m2

Design pressure of the water in the shell : 8.8 bar

Process fluid design pressure in tubes: 11 bar

Design temperatures: -29°C / + 190°C (tubes), -29°C / + 110°C (shell)

Shell diameter: 610 x 10mm

Total length of the exchanger: 6480mm

Weight when empty: 3900 kg

Chloroethene belongs to the family of halogen ethylene derivatives. Under normal pressure and temperature conditions, chloroethene is a gas 2.5 times heavier than air, with a faint, sweetish odor and extremely flammable. Easily liquefies under pressure. Therefore, it is stored as a liquid under pressure.

Physicochemical properties of vinyl chloride:

Form: colorless gas

Smell: sweetish

Odor threshold: in the air: 7800 mg / m3 / 3000 ppm

Melting point: -153.8 °C

Boiling point: -13.4°C

Density: 8g / l (15°C)

Flash point: -78°C

Autoignition temperature: 472°C

Liquid Polyurethane Coatings

The drainage tank is covered with a PUR 32-55R type coating typically used on underground or submerged pipes for oil, gas, water and sludge tanks, valves and fittings, both on the outside and inside of the structure. It is also used in new construction and renovation projects, for use in industrial plants as well as in transmission pipelines.

Advantages:

Good corrosion protection

Abrasion resistant

Impact resistant

High chemical resistance

Features:

High mechanical and chemical resistance

Resistance to contact with petroleum products

Compliance with the requirements of European standards

High resistance to microbiological degradation and high temperatures

Approval for contact with drinking water

Drain tank V-302

Drain tank V-302

Technical parameters:

Design pressure: 0.5 bar

Min. / Max. temperature, T_{min} / T_{max}: +5 / + 200°C

Medium: triethylene glycol

Capacity: 2 620 l

Weight when empty: ~ 1,300 kg

TEG storage tank

TEG storage tanks

Technical parameters:

Design pressure: 0.5 bar

Min / Max temperature T_{smin} / T_{smax}: -29 / + 49°C

Medium: triethylene glycol

Capacity: 5,000 l

Weight when empty: ~ 1,900 kg

Condensate tanks

Pressure equipment for Kędzierzyn Koźle plant

In the scope of deliveries to the ammonia compression installation at Zakłady Azotowe, the following pressure units were manufactured and approved: condensate tanks, separators and heat exchanger.

Heat exchanger E-001

with a power of 1030kW and a heat exchange surface: 96.5 m2

Technical specification:

Shell:

Maximum allowable pressure, P_s: 7 bar

Min. / Max. temperature, T_{min} / T_{max}: -40 / + 100oC

Medium: water

Capacity: 400L

Tubes (477 pcs):

Maximum allowable pressure, P_s: 16 bar

Min. / Max. temperature, T_{min} / T_{max}: -40 / + 100^{o}C

Medium: gas ammonia

Capacity: 740L

Hull B615/4

Works on the Ferry for „British Columbia Ferry Services”

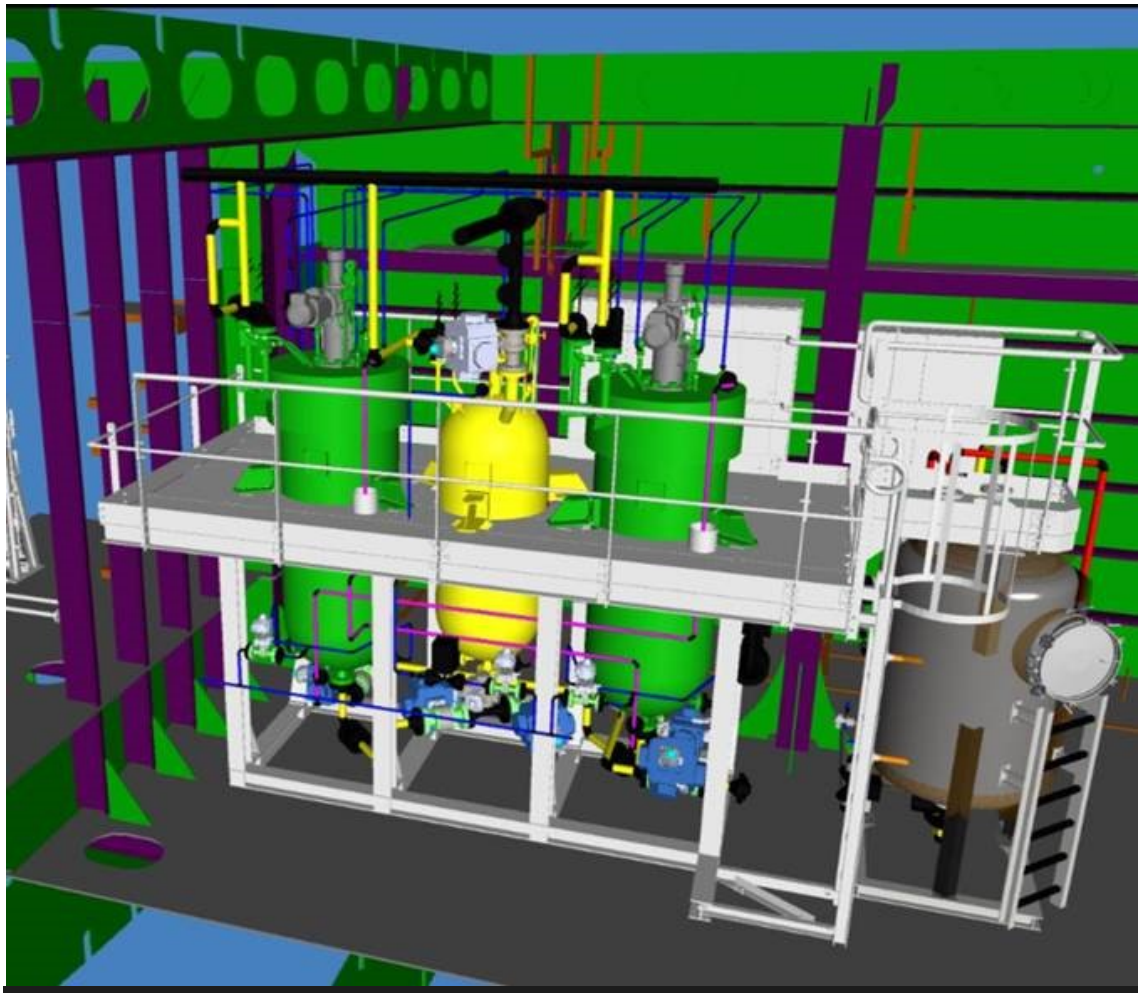
This is the fourth BC Ferry Services Ferry on which we perform work in the field of general ship ventilation, ventilation of the bow and stern engine rooms, air conditioning and cooling installations. On the current unit, the scope of work has been extended to include fire-fighting systems, sanitary installations and compressed air pipelines. Earlier we equipped the "Salish Orca", "Salish Eagle" and "Salish Raven". The new unit will be powered by LNG fuel. The two-way vessel will be 107 meters long and will accommodate 600 passengers and 138 passenger vehicles.

The scope of works performed by CLIMAREM

CLIMAREM awarded a comprehensive contract for the supply of equipment and assembly work for the following systems:

- General ship ventilation
- Gym ventilation
- Air conditioning
- Refrigeration system of the provision cooling plants
- Cooling and sea water pipelines
- Compressed air and compressed air lines outside the engine room.
- Water mist installation, powder extinguishing installation for LPG bunkering station, kitchen extinguishing installation,
- Sanitary installation

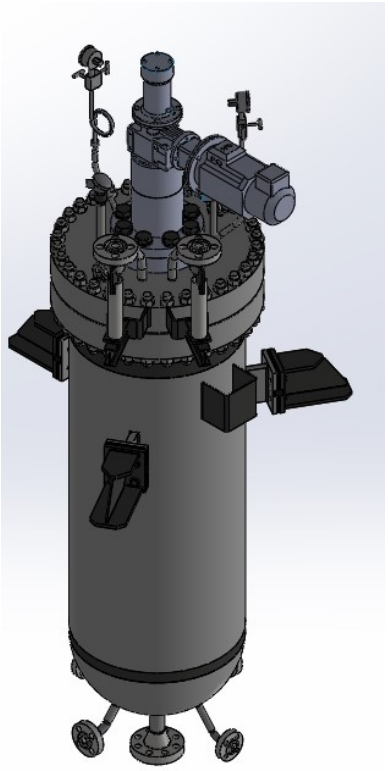
In the scope of deliveries of equipment commissioned by Remontowa Shipbuilding Shipyard are:
Air-handling units
Chiller unit
Refrigeration units for cooling plants
Hydrophore tank
Ventilation and air-conditioning system equipment, prefabrication of ducts and delivery of ventilation network elements.



HTO technology for sludge system

Ship waste disposal systems - HTO

The HTO installation (hydrothermal oxidation) is a technology developed to degrade organic matter present in liquid waste (sludge, sewage, food waste, cardboard packaging). This solution, patented by L&L, is an alternative to combustion, especially on cruise ships.



The process involves the treatment of diluted sewage - in a tank heated to 250 °C. The injection of air under pressure into the interior of the reactor causes the degradation of the organic material.

The liquid phase of the by-product is sterile and the residual organic matter is captured in the sewage treatment plant. Gaseous emissions are pollution-free.

The degree of dry matter reduction achieved in this solution is up to 90%, which is an exceptional achievement.

The other advantages of the solution are:

- No NOx, no SOx, no dioxine, no furane, no fine particles, etc.
- No need for fumes treatment units.
- Non leachable residual dry wastes can be valuated.
- Liquid residues are sterile and biodegradable and can be easily post-treated or directly disposed of.
- Possibility to use it when at dock.

Reactors

In cooperation with the developers of the technology, we have produced a number of components for the HTO system. Below we present the heart of the system - Reactor.

Technical parameters:

Maximum allowable pressure: 170 bar

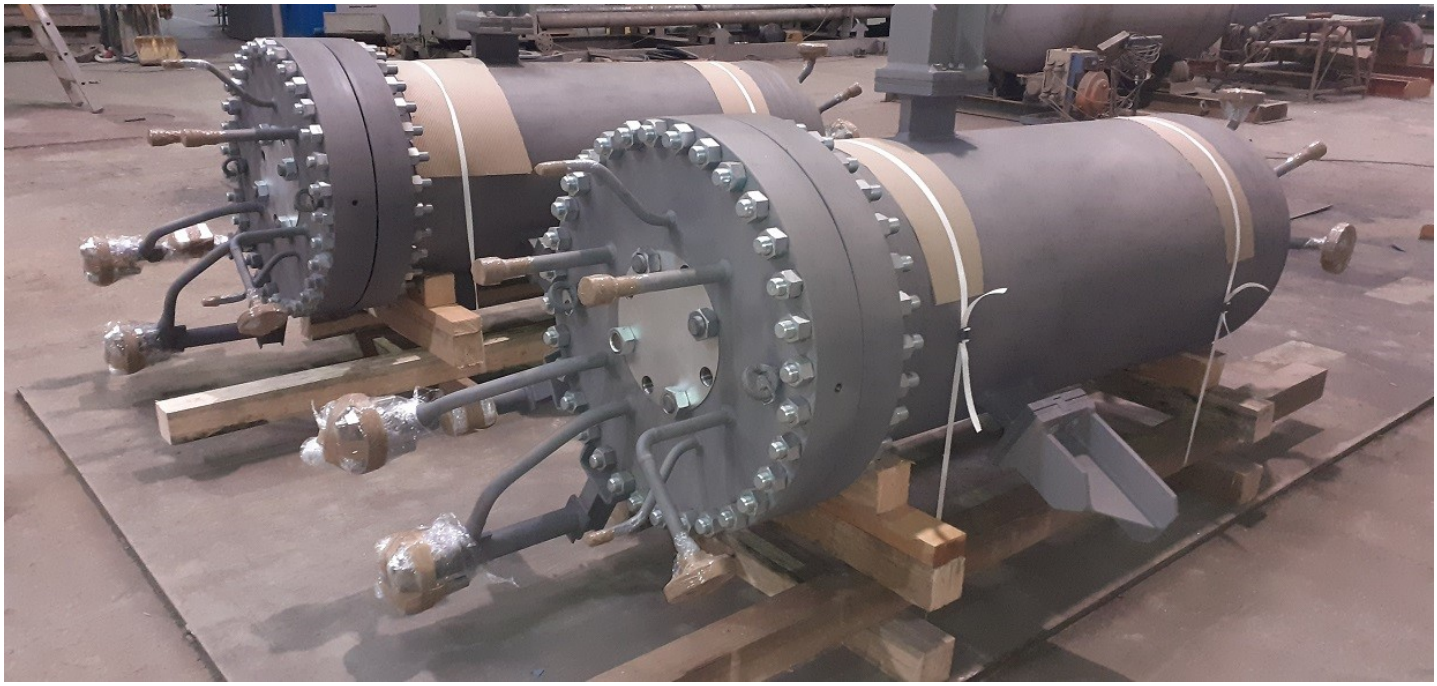
Test pressure: 255 bar

Min. / Max. temperature, T_{min} / T_{max}: +20 / + 300^{o}C

Medium: water + steam

Weight: 3059 kg

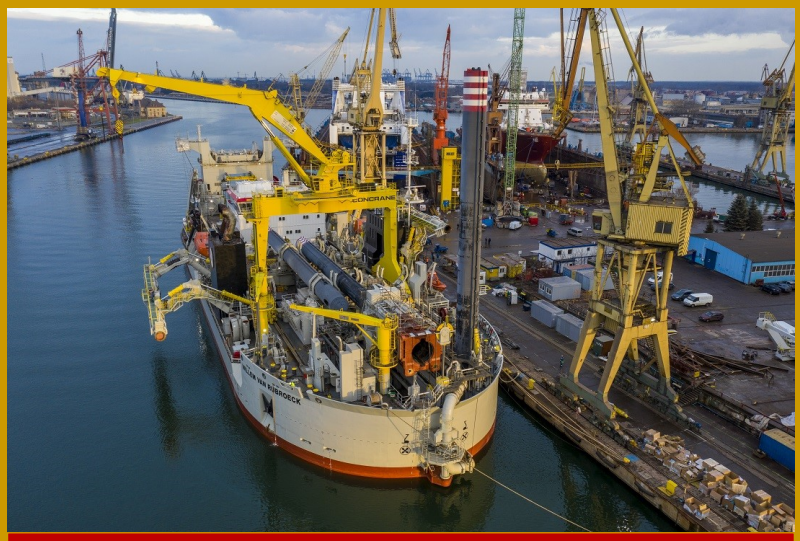
Approval: DNV



Overview of overhauled vessels

By the end of Q4 2020, we have performed retrofits and modernization works on the following vessels:

SEVEN PHOENIX (Cable Lay Vessel) — SUBSEA 7 OFFSHORE RESOURCES UK - WESTHILL, (UK) — Retrofit for a new refrigerant



M/V WILLEM VAN RUBROECK

TAVROPOS (Crude Oil Tanker) — PLEIADES SHIPPING - ATHENS, GREECE — Pipeline modifications of the BWTS system

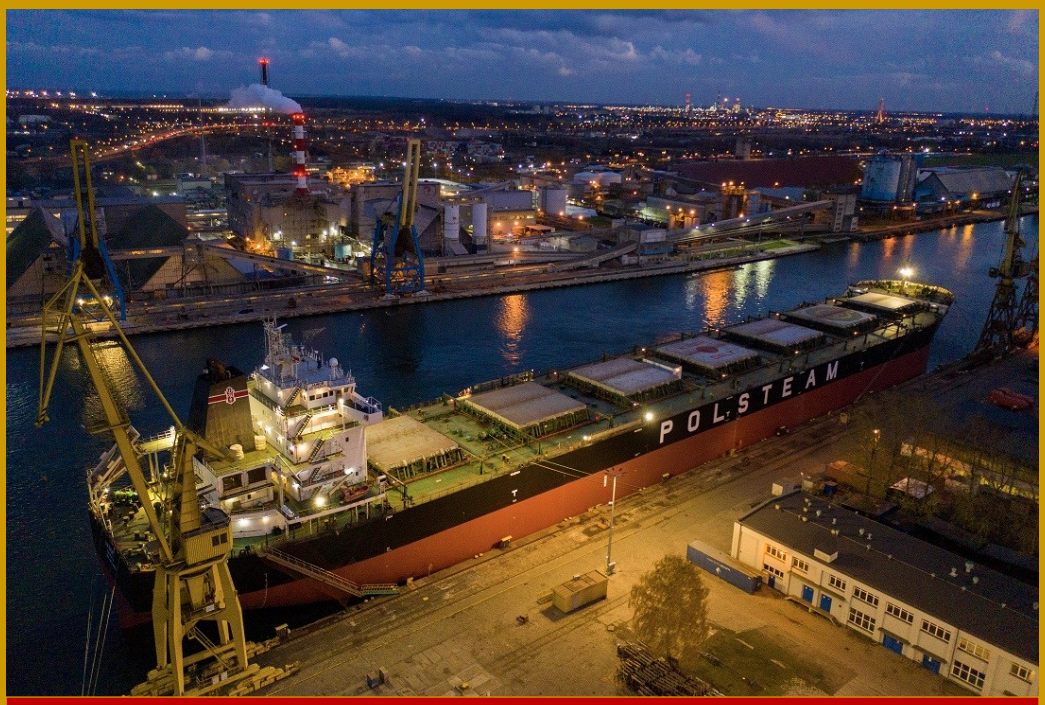
EVROTAS (Crude Oil Tanker) — PLEIADES SHIPPING - ATHENS, GREECE — Modifications of the BWTS pipelines, work on the main air-conditioning units

WILLEM VAN RUBROECK (Dredger) — JAN DE NUL GROUP, BELGIUM— Work on the refrigeration installations, including a provision cooling plant. Ventilation of the engine room and superstructure. Prefabrication and assembly of copper pipelines

FRANCES WONSILD (Oil/Chemical Tanker) — NAUTICA MOSTRA MERCATO - PARMA, ITALY — Naprawa instalacji klimatyzacyjnejRepair of the air conditioning installation

OCEANIA (Research Ship) - POLISH ACADEMY OF SCIENCES — Air handling unit replacement

JAWOR (Bulk Carrier)— POLSTEAM - SZCZECIN, POLAND — Works on the air-conditioning system of the wheelhouse and modernization of the cooling system



M/V JAWOR

M/V BASTOGNE

BASTOGNE (LPG Tanker) — EXMAR - ANTWERP, BELGIUM — Renewal of demister and work on tank defecation attempts

MARIT (General Cargo) — MS MARIT SCH EEPVAART-BEDRIFT BV — Work on the reconstruction of the CMK air-conditioning system and cooling system

NANSEN SPIRIT (Shuttle tanker) — TEEKAY SHIPPING NORWAY - STAVANGER, NORWAY — Work on gas pipelines

MAJ RICHARD WINTERS (General Cargo) — SEALIFT INC. NEW YORK — Work on the modernisation of the CMK air conditioning system

M/V MAY RICHARD WINTERS

M/V THERMSTERN

X-PRESS AGILITY (Container ship) — X-PRESS FEEDERS — Air-conditioning installation

THEMSESTERN (Chemical/Oil tanker) — TB MARINE SHIPMANAGEMENT - HAMBURG, GERMANY — Work on pipelines of domestic water installations

Technology of welding steel plates with a thickness of 60mm

In order to meet the requirements of our customers, it was necessary to expand the range of thicknesses of welded materials. For our client from the oil & gas sector, we have completed an order, which was a separator with a shell thickness of 60 mm.

In order to confirm the appropriate quality of welded joints, we made test joints and conducted the tests required by the standard. In this way, we obtained a qualified welding technology issued by UDT, allowing for welding joints up to a thickness of 120 mm.

We welded using the submerged arc method. A very important aspect when welding thick plates is to maintain an appropriate temperature regime regarding the preheating temperature, interpass temperature and post-welding heating of the joint. All these tratments to reduce the tendency to cold cracks. All our technological assumptions turned out to be correct, which was confirmed by the positive results of laboratory tests.

Paweł Bielecki, International Welding Engineer

Plans for 2021

Outside the window, the middle of a picturesque winter and in our offices hot preparations for the next projects, with which we will share with you soon.

We hope that this year 2021 will bring the expected hope and new challenges which we all need, and that we wish for ourselves and for You.

Whole team of CLIMAREM

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