



SHIPBUILDING EQUIPMENT & SPECIAL PRODUCTS GUIDE

COMPANY PROFILE

Since 2006 **BPCO LTD Ship Brokers** has provided a wide range of services to the shipping industry, focused on shiprepairs, shipbuilding equipment, spare parts, underwater services, fuel additives and other special products for the marine industry.

When Arsenios T. Papatheodorou founded **BPCO LTD**, his vision was to create a company, which would serve, at the best of the maritime capability as a one stop shop, by providing high levels of diversified services to the shipping industry.

Presently, **BPCO LTD** represents on exclusive basis the biggest brands on their fields such as Messrs Panasia Systems (leading manufacturer for Water Ballast treatment units and Scrubber Sox/De Nox systems), Power Research (a leading supplier for marine fuel additives based in USA), HLB (leading manufacturer of complete GRE/GRP pipes, lifeboats, Sox scrubber line), T&T Salvage (for afloat and underwater services in USA), Underwater Shipcare (one of the best & oldest underwater companies in Singapore).

With its aspiring motto **«We are big enough to meet the challenge and small enough to care»**, BPCO LTD 's vision is to continue to deliver fast, innovative, efficient and integrated international maritime services to shipping companies around the world.

BPCO LTD has been approved with ISO 9001-2015 Quality System Certification under Bureau Veritas class.

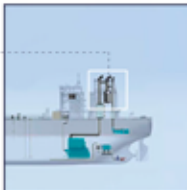




PANASIA

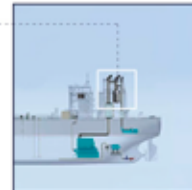
De-SOx System

This system removes and reduces sulfur oxides, fine dust, and other pollutants that are emitted from the vessel's engine, by using seawater and NaOH.



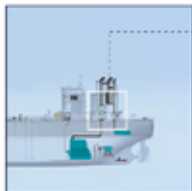
Ballast Water Treatment System (BWTS)

Adopting a 100% physical treatment technology, this system effectively disinfects harmful aquatic organism and pathogen in ballast water, and this is the safest method of treating ballast water because it does not produce any toxic substances. In addition, there is no corrosion risk inside of the pipes and tanks, therefore no further pollution.



De-NOx System

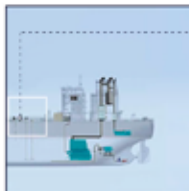
PANASIA's SCR flue gas De-NOx system, PaNOx™ Marine, adopted the Selective Catalytic Reduction (SCR) method. It is an environmentally friendly equipment that decomposes NOx present in flue gas into harmless H₂O and N₂, by chemically reacting the NOx with a reducing agent along a catalyst layer then discharging safely into the atmosphere.



Measurement and Control System

This system ensures that the vessel can sail safely by measuring and controlling the quantity, temperature and gauge of fuel oil and ballast water tank.

This system has monitoring and alarm functions as well.



Panasia Training Center

Three fully functional Training Centers which address all aspects of BWTS systems and operate in:

- Busan – Korea
- Oinoi – Grece, Operated by BPCO LTD
- Manila – Philippines, Operated by BPCO LTD



PANASIA

AFTER SALES:

Spare Parts, Training, Troubleshooting , Service

BALLAST WATER TREATMENT SYSTEM “GLOEN PATROL”

With expertise in shipbuilding industries **Panasia** came up and provided the easiest, safest and simplest solution for ballast water treatment system, based on effective filtration and UV irradiation since 2010.

Panasia’s ballast water treatment system, GloEn-Patrol™, has two steps to treat ballast water.

The first step is in a filter unit that not only eliminates organisms larger than 50µm but it also helps to minimize sediment formation in the ballast tanks, which is beneficial to ship’s operators as it reduces the cost of maintenance and cleaning the ballast tanks.

The second step, is a UV Unit that sterilizes, via UV irradiation, any organisms smaller than 50µm.

Approved system by USCG Coast Guard December 2018

40% REDUCTION OF POWER CONSUMPTION

Model	Treatment Capacity	Power Consumption			Reduced by
		GloEn-Patrol™ I	GloEn-Patrol™ III Min.	GloEn-Patrol™ III Max.	
P1000	1,000m³/hr	120kW	56kW	77kW	36%
P1200	1,200m³/hr	160kW	65kW	90kW	44%
P1500	1,500m³/hr	174kW	80kW	110kW	37%
P2000	2,000m³/hr	240kW	113kW	155kW	35%
P2500	2,500m³/hr	320kW	131kW	180kW	44%
P3000	3,000m³/hr	360kW	164kW	225kW	38%



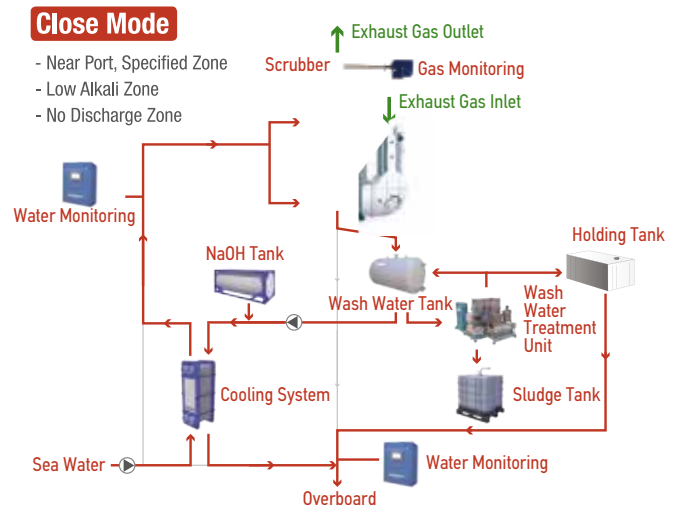
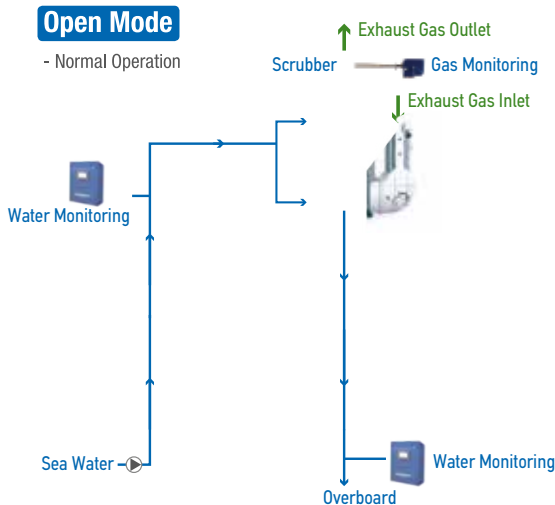
Power Consumption
40%

SCRUBBER SYSTEMS DE-SOX /DE-NOX

Panasia PaSOx™ Exhaust Gas Cleaning System which removes sulfur oxides for the marine environment is mainly classified into Open Mode, Close Mode, and Hybrid Mode.

In Open Mode, sea water is used as wash water, in Close Mode, alkali solution is used as wash water and Hybrid Mode, can switch between Open Mode and Close Mode.

Panasia's SCR flue gas De-NOx system PaNOx™ Marine adopted the Selective Catalytic Reduction (SCR) method and therefore it is an eco friendly solution which is achieved by making the NOx chemically react with a reducing agent at a catalyst layer and then discharging them to the air.



Features

- Lower/remove pollutants (SOx, PM) from ship's emission
- Method of dissolving in liquid form by contacting SOx with seawater
- Designed to operate in hybrid (Open/Close) mode
- Low maintenance cost/pressure loss
- Use corrosion proof materials

MEASUREMENT AND CONTROL SYSTEMS

Panasia's level measurement system is designed to monitor the level, volume and temperature of the liquid storage tank (liquid cargo, fuel, ballast water and etc.) as well as the draft of the ship at all times and send a signal to the control room.

It is an important device as it prevents marine pollution and ensure the safety of crew members through alarm functions in case of emergency.

- Cargo monitoring system
- High & overfill alarm system
- Tank level & draft gauging system
- Vapour Monitoring system
- Fixed gas detection system
- Water ingress alarm system
- Pressure/temperature monitoring system
- Bilge high level alarm system
- Local level gauge/switch
- Pressure switch/temperature sensor/pressure transmitter

TRAINING CENTERS AND AFTER SALES SERVICES

A. TRAINING CENTER LOCATION

Three fully functional Training Centers which address all aspects of BWTS systems operate in:

- 1. Busan at Panasia Headquarters**
- 2. Piraeus by BPCO LTD**
- 3. Manila by BPCO LTD**

B. AFTER SALES SERVICES

Panasia Service engineers stationed at the below main ports:

- Greece by BPCO LTD in charge for all European Ports
- USA, Argentina, Brazil, Ecuador, Panama, Venezuela, Chile
- Korea, Japan, Malaysia, Singapore, Vietnam, Indonesia, India, Thailand
- Fujairah

C. SUPPLY OF GENUINE SPARE PARTS

BPCO maintains a warehouse in Greece, which can provide important genuine parts for urgent matters.



HYUNDAI PRODUCTS AMP SYSTEMS COLD IRONING

ADVANTAGES FOR AMP SYSTEMS

On 1 January 2020, the new International Maritime Organization (IMO) regulations intended to cut the shipping industry's sulphur oxide emissions, which are known to be dangerous to human health, will enter into force.

Ferries and ocean liners in particular, both of which are energy intensive and polluting, particularly when docked. Port facilities could contribute to this green revolution by employing a shoreside electrical power system known as 'cold ironing' (AMP SYSTEMS).

Under that system, ships are able to connect to onshore power sources instead of being forced to keep their engines running.

This would create a clean port system, as some Northern European cities (Gothenburg and Lübeck) and North American west-coast ports (in Vancouver, California and Alaska) have already done.

As per new International Maritime Organization (IMO) regulation BPCO LTD Ship Brokers are glad to announce an exclusive collaboration for AMP systems based in Incheon - Korea.

Having extensive experience in the Marine Sector since 1991, provides all kind of reels such as standard type and customized products from Design, Development and manufacture of standard & customized industrial reels.

All products are certified with ISO-90001-90002-140001.

Advantages of AMP systems

- **Emergency network:** 24-hour emergency operation system
- **Ability to respond to customer's needs:** Possible to self-design (possible to 3D design and structural analysis -Owned SolidWorks and UG)
- Patents on AMP system and portable AMP System and on way to get the patent for remote
- Control system
- **Characteristics:** Possible to self-design and self-manufactured
- **Design:** Possible to 3D design and structural analysis
- **Manufacture:** Self-manufacture
- **Provide the information:** It is possible to respond to request for specifications and directions before ordering
- **AS ability:**
 - Domestic:** Take action within 3hrs headquarter, 2nd factory and sales office
 - Overseas:** Owned APEC card and possible to take an action fastest way
- **Cost competitive:** Have a competitive price
- **Experience:** Experienced a lot of project for AMP
- **Patents:** Owned domestic patents
- **Development:** Completed cable reel and slip ring
Developing fiber optic slip ring and connector
- **ONE-STOP SVC:** Possible



HYUNDAI PRODUCTS
GRE / GRP PIPES
LIFEBOAT & DAVIT

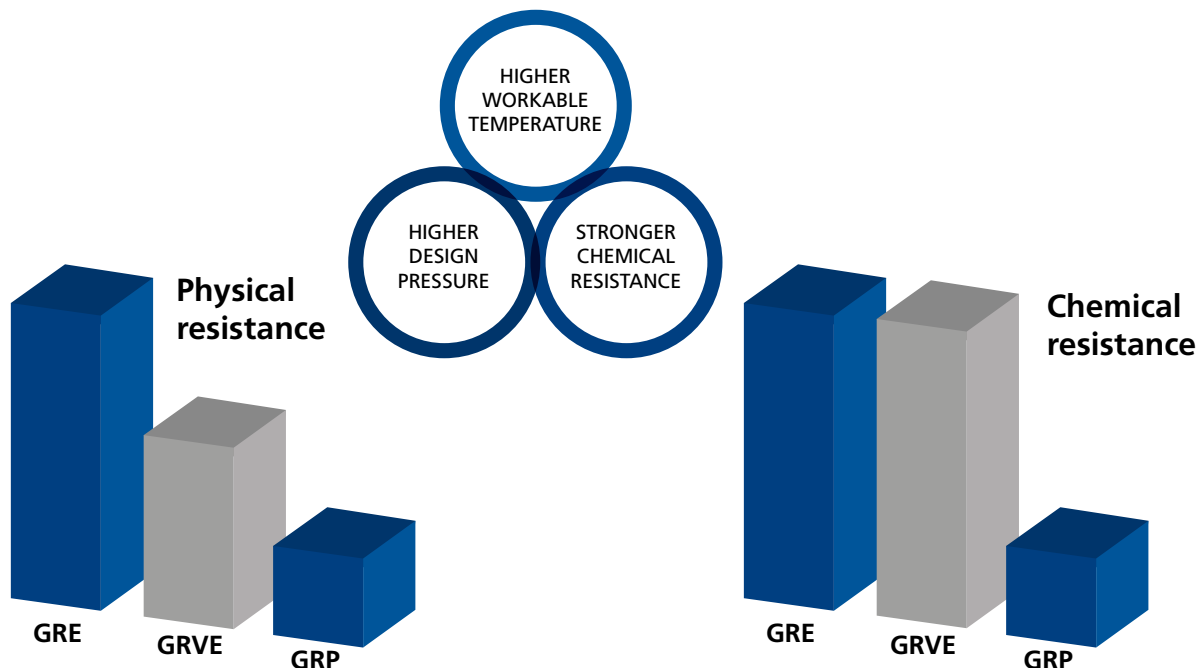
THE COMPLETE GRE / GRP PIPING SYSTEM

HLB, represented exclusively in Greece and Cyprus by BPCO LTD since 2018, is a top marine manufacturer of GRE/GRP PIPES and a leading worldwide supplier for:

- **GRE/GRP pipes**
- **Lifeboat & Davit, Lifeboat Engineering Training, Part Supplies, Inspection & Repair**
- **SOx Scrubber Dampers**

Established in 1975, in Korea, HLB started as a specialist in manufacturing Lifeboats, Fiberglass Reinforced Plastic Pipes and Material Handling Equipment on ships. HLB has been collaborating successfully with marine and offshore customers around the world.

Since it began its operation, it has expanded and diversified its business and continues to supply high quality products to companies around the world.





FUEL TREATMENT & ADDITIVE TECHNOLOGIES

**The World's most effective Fuel Treatment & Additive Technologies.
The choice of more than 200 of the world's biggest shipping companies.**

PRI-SOLV, PRI ECO, PRI STX: PRI-27, All improve the stability of VLSFO / HFO, while also improving pure quality on OFF – SPEC FUELS.

Power Research has provided high quality fuel treatments since 1983. With a mission to provide a line of high quality chemical products, which help solve fuel related problems.

PRI products are effective, and at the same time, environmentally friendly. This allows clients to solve their fuel related issues, benefit economically and protect the environment.

PRI is the choice of more than 200 of the world's biggest shipping companies for a variety of products:

Very Low Sulphur Fuel Oil (VLSFO / HFO Scrubber Vessels)

- PRI-STX
- PRI-27
- PRI-SOLV
- PRI-FLOW
- PRI-ECO

Marine Gas Oil (MGO)

- PRI-XL
- PRI-XL8
- PRI-D FUEL TREATMENT FOR ULSD-MGO



TOOGRAM E-CBM VESSEL ENGINE FAILURE PREDICTION SYSTEM

Toogram since 2013 activates in Busan - South Korea providing extensive experience in smart ship-related technologies.

e-CBM provides advanced failure prediction and accident prevention functions for engine defects by analyzing and processing large data generated during ship operation based on big data analysis technology. Toogram Systems Inc. has accreditations for ISO-90001.

TOOGRAMSystems is a software company that provides smart ship-related technologies. Ship Engine Failure Prediction Service (eCBM) collects ship-engine data(AMS), navigation information(VDR) and PASSAGEPLAN data in real time, providing real-time navigation information, optimal route recommendations and failure prediction of ship engines as the main services. After years of testing, we successfully diagnosed ship engine failure in 2019. We currently provide services to Global Ship Management company

Ship engine Failure Prediction service has the effect of reducing costs by preventing accidents and monitoring operations in ship owners.

Overview

A system that predicts engine failure through big data analysis of the operating ship's faults and provides optimization operations of key equipment and maintenance guides as a result.

Automatic notification

It detects defects in each sensor data based on the library obtained through the calculation of the failure prediction range, and provides the defect information quickly and accurately according to the user's alarm settings.



Defect data management

It provides prediction date, resolution date, sensor data information, etc. for the occurrence of a defect. Defect data list Excel file download function is provided for convenient data management and analysis.

The screenshot shows the 'Defect Data Management' table. It has a top navigation bar with tabs for 'Dashboard', 'Data Management', 'Alarm Settings', 'Report', and 'Help'. The table is organized into columns: 'Prediction Date', 'Resolution Date', 'Sensor Data', 'Defect Type', 'Defect Location', 'Defect Status', 'Defect Severity', 'Defect Cause', 'Defect Effect', 'Defect Solution', and 'Defect Prevention'. The table contains multiple rows of data, each representing a specific defect event. A 'Download' button is visible at the bottom right of the table.

Fault prediction range calculation

The failure prediction range is calculated based on the values set by the user and the collected sensor data, and the results are stored in the library to be used for real-time failure prediction.



Major organization information monitoring

It supports efficient ship operation management by monitoring the temperature, pressure, and valve on/off status of the ship's main engine and generator pipe in real time.





Profitability

Reduces operating/fixed costs.
Reduce the incidence of accident
handling costs that prevent flight
delays



Efficiency

Ship-land simultaneous monitoring.
Fast response always-on engine
inspection effect.



Profitability

Increased emergency response ca-
pacity and enhanced ship safety by
reducing operating/fixed costs



- 01 Real-time Failure Prediction
- 02 Failure Pattern Prediction
- 03 Ship Operation Location Analysis
- 04 Real-Time Monitoring
- 05 Failure Statistics
- 06 Auto/Cross Correction



Pilgrim International Ltd Messrs, is one of the leading companies in the field of Tensioning Systems in United Kingdom.

Having large experience in ships' services, Pilgrim International Ltd can provide quality services using high integrity bolting & tensioning solutions ensuring that clients can couple and decouple consistently and safely.

The main activities are Bolting & Positioning systems, Tensions Systems & Drive -up systems as also Service & Pumps.

Pilgrim International Ltd are certified from DNV GL - accreditations for ISO-90001-2015 / ISO-14001-2015 / OHSAS -18001-2007.

The focus of Pilgrim's technology development is to help our customers increase their Return on Investment by reducing unnecessary issues of an asset during its life cycle.

What we do

- Bolting and Positioning systems
- Tension systems
- Drive-up systems
- Service
- Pumps

Pilgrim has vast technical experience of high integrity bolting and tensioning, high pressure hydraulic systems and exotic material machining with documented traceability. We provide a comprehensive range of standard and tailored products.

Why you benefit

Based on many years of experience and innovation, our products and services remove uncertainty, save time and improve safety, performance and total cost of ownership for clients. We understand clients' needs and create innovative designs for them. Our high integrity bolting and tensioning solutions ensure clients can couple and decouple accurately, consistently and safely.

How we do it

Our company has over 60 years of specialist experience and a highly knowledgeable and committed team. We provide trusted, innovative high-quality engineering products and services around the world. We support clients across a wide range of sectors directly and through a network of regional agents who are guided by our company values and business drivers.





Since October 2018, **BPCO LTD** represents exclusively **HSD ENGINE (Ex-Doosan)**, through **MTS GLOBAL CO LTD** which operates as the **authorised Sales Agent of Genuine HSD (Ex-DOOSAN Engines) for Marine Equipment.**

Services Offered Include:

1. Supply of genuine Spare Parts For
HSD ENGINE (Ex-DOOSAN)
2. Authorised Service Station For
 - HSD (DOOSAN Engines)
 - HHI (HYUNDAI Heavy Industries)
 - STX
 - MAN B & W

After sales & repair shop for Main Engines:

- HSD (DOOSAN ENGINES)
- HHI (HYUNDAI HEAVY INDUSTRIES)
- STX
- MAN B & W

Turbocharger service & Spare parts sale:

- MAN
- ABB
- MHI
- KBB
- IHI

Spare Parts sale:

- Technical Service
- Repair & Retrofit Service
- Engine modification & Turbocharger

GENERAL SPARE PARTS

BPCO LTD is a major supplier of **new & second hand spare parts** with guarantees. Second hand spare parts, in particular, are **secured with International Classification Societies Certificates & relevant documentation.**

MAIN ENGINES:

MITSUBISHI, AKASAKA, MAN B& W,
DOOSAN, STX, HUDONG, YICHANG,
WARTSILA SULZER, HYUNDAI, HITACHI,
DAIHATSU, NIIGATA, MITSUI, HANSHIN,
CUMMINS, DEUTZ, KOBE DIESEL

PUMPS:

TEIKOKU, HEISHIN, TAIKO KIKAI, SHINKO,
EUREKA, SHINKOKINZOKU, IMO,
NANIWA, IHI, ISHII, ALLWEILER,
HAMWORTHY, MIURA, SHIN-SHIN,
BOMBAS AZCUE, GRUNDFOS, IRON,
DESMI, KRAL

AIRCONDITIONING/REFRIGERATING:

DAIKIN, NAMIREI, CARRIER, SABROE,
MITSUBISHI, TOYO, BITZER, HI-AIR, USHIO
REINETSU, DANFOSS, YORK

BOILER/INCINERATORS:

VOLCANO, OSAKA, SAACKE, SUNROD,
SUNFLAME, SASAKURA, ALFA LAVAL,
KANGRIM, MIURA, TEAMTEC-KVAERNER,
HANSUN

AUXILIARY ENGINES:

YANMAR, DAHATSU, ANQING, SXD, MAN,
HUDONG, B & W, NIGATA, HIMSEN, HHI,
DOOSAN, HANSHIN, STX, MITSUBISHI,
WARTSILA-SULZER, AKASAKA, DAEWOO,
YICHANG, SHAANXI, HENAN, NANTONG,
CUMMINS

COMPRESSORS:

TANABE, YANMAR, MATSUBARA, TEIKOKU,
SPERRE, HAMWORTHY, SAUER & SOHN,
DAIKIN, CEGIELSKI, HATLARA, ALUP, BECKER


PURIFIERS:


ALFA LAVAL, WESTFALIA, MITSUBISHI


FILTERS/SEPARATORS:

ALFA LAVAL (MOATTI), BOLL & KIRCH, IMO,
BLOHM & VOSS, JOWA, CUMMINS,
HATLAPA, TAMPOTOR, SAUER & SHON,
AURA MARINE, MITSUBISHI, KANAGAWA
KIKI KOGYO, ALLWEILER, FILTREX



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