The marine sense of technology
Company Profile

Intra Mare is an international marine sales and naval architect organization promoting leading marine equipment makers, worldwide known for the advanced technology and the quality of their products.

The head office is based in London maintaining a branch sales office in Piraeus, Greece and Limassol, Cyprus. The company established in 1996 and since its establishment has been successfully involved into a vast and diverse range of new building and retrofitting activities arising from Greek Market interests, claiming one of the leading ranks within the Maritime Community.
Group Main Activities

- Representatives of marine equipment manufacturers
- New Buildings & Conversions
- Design and specification of new constructions
- Service and Technical Support
- Purchasing, Contracting & Marine Trading
- Spare parts trading & After Sales

Company Vision

We are investing on new technologies and inspired by long marine traditions.
This is our driving power for planning the future and our commitment for reliable services.

Company Statement

We shape the future committed on our clients' demands for safe, green competitive and effective shipping.
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Marine Cranes

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Scanjet Macron
Tank level Gauging, Engine Room Instruments & UPS

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Helidecks & Offshore Aluminum Structures

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Marine Galley & Laundry Equipment
**Norsafe**

Norsafe is the global market leader in marine life-saving systems for merchant and offshore markets. Norsafe has grown rapidly over the past 30 years from a small Norwegian company into a multinational group with worldwide presence and factories in Norway, China, Brazil and also in Greece. These production opportunities allow control of overall costs, while still maintaining top quality.

Product range includes:
- Conventional lifeboats up to 140 persons
- Free fall lifeboats up to 90 persons
- Fast rescue boats up to 12 meters
- Military & Professional boats up to 12 m.

Norsafe policy has always been to strengthen the service network to support delivered equipment throughout life span. Norsafe operate their own service hubs in most key ports and have established a truly global service network with a large network of service partners. Special focus is given on training by offering special courses in Norsafe training academies established in various places including also Greece.

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**Glamox-Aqua Signal Group** is the leading supplier of lighting solutions to the marine and offshore markets. Consists of five brands; Aqua signal, Glamox, Høvik Lys, Luxo and Norselight, each to fulfill lighting requirements of high quality and energy efficient systems for standard up to extreme applications. Glamox-Aqua Signal laboratories are some of the best equipped environmental test centers for lighting fixtures in Europe, recognized by Federal Maritime and Hydrographic Agency (constant light measuring and control). An experienced staff of engineers & designer can professionally advise on any lighting application for marine or offshore installation.

**Technical lighting**

From interior fittings to outdoor watertight fittings, maker offers a complete marine approved range of lighting equipment having a large selection of optics with excellent light output, easy to install, maintenance friendly and with a high light distribution for safe and Ex-zones.

**Floodlight for Safe Areas and for EX-zones**

Floodlights are made according to worldwide standards for most difficult environments and Ex-zones based on our experience with the rough conditions at sea. We deliver the whole range in HS/ HI, Halogen or High Energy saving LED floodlights.

**Searchlights**

Direct and bridge operated (manually), Remote operated, Halogen, Xenon and Metal Halide lamps, all designed to withstand the harsh conditions from tropics to the arctic sea. Range covers searchlights for small fishing boats, tug boats up to largest vessels, cruise ships, etc. and are even used as anti piracy measure.

**Navigation lights**

Full range of Navigation & Signaling lights (also for Ex zones) with LED or incandescent lamps: Main and spare system in one housing, best materials suitable for marine equipment.
Dongnam Marine Cranes (DMC) is a specialized Korean manufacturer for high quality Offshore and Marine Machinery Equipment that strives for world best human resource development, technology and quality. Since its foundation in 1988 as 'Dongnam Industry', it has changed the corporate name to DMC Co., Ltd. in 2004 to focus on the technology development of marine & offshore segment. Facilities in Korea are at Busan, Gimhae, Mokpo and Ulsan and technical support is ensured by a global network covering all major harbors at over 40 points in 22 nations.

Main products include:
- Marine Cranes (Hose Handling Crane, Provision Crane, Monorail Crane, Engine Room Crane, Life boat davits).
- Deck Cranes on board containers and bulk ships for loading/unloading without need of harbor cranes.
- Offshore Cranes (Knuckle Boom Crane, Lattice Boom type Crane, Telescopic Crane, Floating Crane)

Fläkt Woods provides HVAC system for cabins as well as public and service spaces. Product range comprises air handling units, air terminal devices, ducts, fans and regoterm, all developed and manufactured especially for Marine applications.

References of installation include most kinds of vessels from cruise ships and ferries to cargo and navy ships. Fläkt Woods supplies spare parts, utilizing. Manufacturing process is certified under ISO 9001, ISO 14001 and EMAS (environmental management).

Fläkt Woods Group have vast experience for all kind of applications from Cargo ships to the Offshore Industry, regardless if it comes to extreme environmental demands, like climate zones, explosion proof, or other classification as well as regulation related demands.
Aluminium Offshore, part of Apply Group, is one of the world’s largest, specialist design-and-build companies, they offer turnkey ‘design, supply, assemble’ packages for upgrading traditional steel and concrete structures to aluminium, both offshore and onshore.

WESCO Navy, founded in 1991 in Hamburg, is worldwide active in supply of Marine Galley & Laundry equipment to ship owners, shipyards and ship suppliers. Product range includes:

- Galley (Cooking, Baking, Frying, Dough and Kneading, Dish Washing, Cool/Freeze, Stainless Steel Furniture)
- Laundry (Washing, Drying, Spin Drying, Ironing and Other)
- Hotwater calorifier (Stainless steel tank, Copper tank)
- Hydrophore tank (Stainless steel tank, Galvanized steel).

All units are specialized for marine environment and are considered to be of highest quality and reliability, thus offering owners and operators peace of mind.

Scanjet Macron is a joint-venture company established in 2006 with Scanjet Marine AB, Sweden. Extensive sales & service network is maintained for New Building & Retrofit projects through Scanjet offices & production facilities in Sweden, Netherlands, Singapore and Korea. Products available for wet & dry cargo vessels, passenger ships and off shore sector include:

**Ballast Tank Level Gauging & Draft Measuring System**

Tank Level Gauging (TLG) is based on the electro-pneumatic principle of measuring the fluid counter pressure by blowing air through measuring pipes into the tanks. It is applied in water ballast, fuel, fresh water, lube oil and other tanks, as well as drafts.

The robust sensors have good long term stability, high repeatability and low hysteresis whilst they are not affected by low temperature.

The system is designed either for standard analogue signal (DC 4-20mA), or for the more advanced and flexible digital communication and can be integrated to ship automation or loading computer.

**Uninterrupted Power Supply (UPS)**

Scanjet UPS are designed for marine & offshore applications including general service, navigation system, computer system and emergency lighting. Their key features are; Double conversion On-line UPS, Customized design, Intuitive HMI and touch screen display, Front access for easy maintenance, Support vented/ sealed lead-acid and Ni-Cd batteries.

**Engine Room Instruments**

Scanjet can deliver the package of Engine Room instrumentation (switches, gauges & transmitters) for pressure, temperature, level and flow measuring applications.
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Krohne Marine from Norway provides OPTIWAVE 8300 C, a reliable and highly accurate FMCW level radar for cargo monitoring of ullage/level, volume, inert gas pressure and tank temperature. With its heavy duty stainless steel housing, it is designed to withstand the roughest conditions on deck. Well protected by a stainless steel cover, it carries a backup display for redundant indication. Loading may continue with a man on deck, if level information is lost on the main monitoring station. With the OPTIWAVE, you may completely change the radar head (which includes transmitting/receiving antenna electronics) without opening the tank. No vapor or gas is released during the interchange. With one ball valve integrated with the instrument, you can clean the antenna cone without opening the tank. The Cargomaster workstation system is based on Microsoft Windows with software running on standard, type approved PC with no special hardware demands making it easy to use.

Westad was established in 1895 by Daniel Westad and started to manufacture valves for local pulp and paper industry. Around 1950, business developed to include the Marine industry. Today, Westad, located at Geithus, outside Oslo, designs and manufacture high performance double and triple offset butterfly valves in preferred materials for LNG, LPG, chemicals and other critical marine & oil & gas applications.

Especially for Chemical-Product tankers & Crude carriers, available valve types are:
- Scorpio - Double and Triple Offset High Performance Butterfly Valve for Chemicals, Oil products.
- Oilseal - Double Offset Butterfly Valve Pressure for Cargo systems of crude oil and product tankers.
- Seagull - Concentric Rubber lined Butterfly Valve for Ballast and other seawater systems.

Scana Skarpenord is a daughter company of Scana Industries ASA, a Nordic industrial group with more than 1,900 employees in Scandinavia, Asia and the USA. Scana Skarpenord has been in the market since 1970 and is one of the world’s leading suppliers of valve remote control systems for shipping and offshore industries. The company produces in Norway hydraulic actuators and complete VRC systems. Scana has subsidiary companies in South Korea, China, Singapore, Brazil & USA which can provide efficient pre-sales and after-sales technical support.

The basic system component is the well-known turn, Scotch Yoke type hydraulic actuator. The actuators can be delivered as single acting type (fail safe function, ESD systems) and double acting types.

The actuators can be mounted on nearly all types of ball and butterfly valves.

Valve Remote Control System

Cargo Radar Level Gauging

Cargo Butterfly Valves
Scanjet is the world’s leading producer of tank cleaning equipment with head office and production plant situated in Sweden. Specialized products have been developed to meet any application:

- Crude oil carriers require our larger machines with high capacities for sediment control to meet Marpol regulations.
- For chemical and products carriers the Scanjet installation is of utmost importance for safe and economical performance.
- For bulk carriers Scanjet provides different solutions for the cleaning of holds.
- River tankers and barges are using Scanjet following an increased demand for environment-friendly and safe tank-cleaning operations with closed hatches.
- FPSO, Offshore supply and platform vessels use Scanjet products which meet all operational requirements.

Scanjet provides tank venting equipment for FPSO, chemical carriers, oil tankers, product tankers, supply vessels and offshore. The product line is the most efficient in terms of capacity, vent line diameter and low voc emission. Scanjet is the only manufacturer operating its own test facility including corrosion testing, flash-back, endurance burning, flow and non-oscillating verification.

The Mark IV SuperGreen high velocity valve is the result of dedicated research into creating the ideal compromise between loss of tank vapour and non-oscillating behaviour, all in a simple package that appeals to low maintenance. The vent features two nozzles: a small weight loaded one for thermal variations during voyage and full flow valve for use during loading and special occasions.

Scanjet can meet customer’s exact specification for venting and offer any relevant equipment such as VOCON mast riser system, In-line P/V valves, Flame screens/arresters, Gas Freeing covers & Test rigs.

Scanjet offers cost-effective package solutions for cargo control & safety ensuring reliable engineering and trouble-free operations.

Oil Discharge Monitoring Equipment (ODME) involves automatic operation of the overboard and the slop tank valves, storing all details about the discharge. Among its key features are:

- Exd type electric built in sample pump,
- No permanent fresh water connection needed,
- Less installation needed & no demand for on-board calibration,
- Certified according to MEPC.108(49), Bio-Fuel Blend Regulations MEPC.1/Circ.761/Rev1 and MEPC.240(65)

ODME, HLOA, VEC Systems

Independent High Level and Overfill Alarm System (HLOA) is based on magnetic floats moving upward with rising fluid level. The system complies with the latest IMO, USCG and classification requirements.

Vapour Emission Control System (VECS) is developed to monitor the vapour pressure and oxygen contents in the vapour main collection lines during discharging oil from tank vessels. The system consists of a detector cabinet mounted on deck nearby the vapour manifolds with EEx ia approved oxygen and pressure sensors, flow fall switch, 5 way manifold selector and calibration facility.

Pressure Vacuum Valves
Portable Tank Cleaning Machines & Gas Freeing Fans

**Scanjet portable tank cleaning equipment** is operated usually on a flexible hose or in downpipe. Various models are available in bronze or stainless steel version. All products are made in Sweden and are considered as top quality and highly reliable for long term demanding operations. Accessory range includes hoses, hose saddles, hose connectors or adapters, y-pieces and valves to meet all possible requirements.

**Dolphinflex** is recognized since 1993 as top leader in composite hose technology for the petroleum, chemical industry and ship to shore & marine applications. Dolphinflex composite hoses are light, strong, durable, highly flexible, anti-static and have the tensioned internal and external steel wire spirals. The complete range of composite hoses and fittings are developed, manufactured and tested under IMO / IBC regulations and BS EN 13765 and US coast guard regulations. Dolphinflex has been acquired ISO 9001 / KSA 9001Quality management system certification and type approvals certificates from classifications such as ABS, BV, DNV, NK, KR and LR.

Dolphinflex composite hoses are applied in a variety of fluid transportation for both marine and industrial applications including oil, chemical tank terminals, vapor recovery, LPG, LNG, etc. Their strong, durable, lightweight construction and flexibility make operators easy to handle in every respect. Various end fittings are available to meet any required application like flange type, camlock, self-sealing type, or other special type (Dry break, emergency breakaway, safety release, swivel joints, etc).

**Scanjet portable Gas Freeing Fan**, water or air-driven, is suitable for use on all size and type of vessels. The fan design was developed as a high performance, deep penetration with “sealed for life” lubrication, able to operate also in reversible mode. Constructed from stainless steel and aluminium, the fan is top-ranked for its lightweight which permits easy handling around the deck.

**Composite Hoses**
Gas Carriers Technologies

Westad
Cryogenic Butterfly Valves

Scana Skarpenord
Valve Remote Control System

SNRI
Cryogenic Globe, Gate & Check Valves

Henri Systems Holland
Instrumentation for Gas Carriers

Scanjet Macron
LNG / LPG Instrumentation

Dolphinflex
Composite Hoses for LNG/LPG
**Westad** main marine products for Gas Carriers are the Cryoseal valve, serving the LNG carriers and the Scorpio which apply for the LPG and LEG Tanker market.

**Cryoseal High Performance Butterfly Valves** for On/off and throttling service in LNG systems are delivered as Double or Triple Offset and are flanged and butt welded type in Stainless Steel. They are available at size range DN 150 to 1200 (6 to 48 inches) with other dimensions on request. Pressure ratings are ANSI Class 150 / 300 / 600, for temperature ranges from +200°C to -196°C (392°F to -320°F).

**Scorpio High Performance Butterfly Valves** for On/off and throttling service in LPG/LEG systems are delivered as Double or Triple Offset and types are wafer, flanged and lug. Materials can be Stainless Steel, Duplex, Super Duplex, Cast Steel, Titanium and Ni-Al-Bronze. They are available at size range DN 80 to 1200 (3 to 48 inches) with other dimensions on request. Pressure ratings are ANSI Class 150 / 300 / 600, for temperature ranges from +450°C to -110°C (842°F to -166°F).

**Scana Skarpenord** has supplied Valve Remote Control Systems for a significant number of gas carrier ships: LNG, LPG, LEG and FSO’s. Their references include all major shipyards worldwide where gas carriers are built and they cooperate with all EPCS companies who design and deliver marine gas handling and storage systems.

Scana Skarpenord’s hydraulic actuators are based on the “scotch-yoke” principle. The “scotch yoke” design allows a sturdy construction that ensures maximum performance under all conditions. Compared to other actuator designs, the risk of malfunction due to contaminated oil is greatly reduced allowing improved reliability at less maintenance. The design also allows the actuator’s plunger to be mechanically locked in both end positions. Consequently, the valve disc is mechanically locked in both open and closed position and cannot be turned by the forces normally created by excessive pressure or flow in the pipelines. A hydralock or any temperature compensating components are avoided because the actuator’s mechanical locking function, and the “scotch yoke” actuator ensures a reliable performance even with heavily contaminated hydraulic oil.
SNRI is located in Ruffec, south west of France, close to Cognac and Bordeaux areas and produces a complete range of 150 and 300 lbs valves intended to be installed on board of LNG or LPG carriers:
- Globe valves from ND 1/2" to 16" (ND 25 to 400)
- Gate valves from ND 2" to 16" (ND 50 to 400)
- Lift or swing check valves from ND 1/2" to 20" (ND 15 to 500)
- Specific hydraulic and pneumatic actuators hardened for marine application (designed by SNRI) can be fitted on any type of valves (throttling or On/Off).

SNRI can propose high pressure valves (globe, gate and check) for re-gasification and re-liquefaction skids through its sister company Malbranque SAS, which designs, produces and sells a complete range of industrial valves.
SNRI's cryogenic valves are LRS, Class NK, BV, DNV, ABS and KR type approved.
SNRI has more than 30 years of experience in LNG shipping business. More than 200 ships have been equipped with SNRI products.
Beside marine sector, SNRI products are applied worldwide in Cryogenic and LNG industries, Energy plants, Gas and chemical industry, Food industry, Security and others.

Henri Systems Holland is specialized in marine instrumentation aboard gas carriers with references from start of 1980’s.
Main product is the float type level gauge FTLG807, one of the most successful level gauges for LPG carriers. The FTLG807 makes it possible to “see” what is going on inside the cargo tanks. The ease of operation and maintenance, have been the key elements in the design philosophy with over 400 gas carriers equipped with HSH level gauges from small pressurized gas tankers to large LNG carriers.

Main features are:
- Competitive & reliable level gauge
- Small size design for float, guide pipe and isolation valve
- Approvals by major Class Societies
- Gas tight separation between cargo and drive compartment via magnetic coupling

Other products include:
- AMTG Series Remote Level Indicator for centralized display of the level gauge
- HLA 907 developed for high level and overfill alarm applications with infrared, failsafe and self checking optical level sensors.

Interlocking with SNRI isolation valve: The interlocking with SNRI isolation valve reduces the cutting of the wire at closing of the valve. It works with a lockable system which requires the hand crank of the gauge level to unlock the valve (magnetic device).
Scanjet Macron can deliver instrumentation package for LNG / LPG vessels offering from well-esteemed makers below equipment:

- Vortex, Coriolis, Conditioning Orifice Flow meters
- Trim / List indicating system (2 axes servo-inclinometer, submersible, ATEX)
- Pressure transmitters (differential, in line gauge, absolute measuring, atmospheric, etc.)
- Pressure & differential pressure switches
- Temperature sensors (Tank inside/bulkhead/Spray/dome vapour/Fuel Gas, Atmospheric/Room Temp, E/R tanks Temp/Shaft BRG Temp. etc.)

All instruments are selected after detailed engineering and are delivered fully documented as per each specification so that every measuring application is executed with maximum accuracy and reliability.

Dolphinflex (Sangbong) offers marine composite hoses fully certified for Gas Carriers operations including LPG and LNG Cargo transfers and Ship to Ship. They are designed according to IGC code, BS EN 3766: 2003 and BS EN 1474-2:2008.

- Dolphinflex LPG hoses are used for transfer of Ammonia, Acetaldehyde, Butane, Butadiene, propane, Butylene, Dimethylamine, Ethylamine, Ethyl Chloride, Methyl Acetylene, Methyl Bromide, propane, Propylene, Propadiene, Vinyl Chloride, Refrigerant Gases. Liquid Ethane at -88°C, Ethylene at -105°C.

- Dolphinflex LNG & LNG STS hoses (for Ship to ship application) are used for liquid Nitrogen and LNG liquefied natural gases at extremely low temperature to -196°C. Dolphinflex can offer a full package of LNG STS hose, hose Saddle, Y-piece, Emergency Release System and other hose accessories like storage rack, supporter, etc.
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Desmi with more than 180 years of experience DESMI is among the leading suppliers of high quality pumps for various applications within marine, industry, fuel handling and utility.

For the marine segment, Desmi pumps cover various applications:

- Engine room pumps, centrifugal pumps for: cooling, ballast, ballast stripping/ejectors, tank cleaning, fire, inert gas cooling/scrubber, bilge, potable/drinking water, sewage and general service pumps.
- ROTAN® Internal gear pumps for pumping high-viscous liquids as e.g. lubrication and fuel oil, sludge/dirty oils, etc.
- Gear type models are available to cover efficiently specific needs for operations on Low sulphur fuels, as designated by MARPOL Annex VI Regulations.

DESMI marine pump range is applicable on any type of vessels and is available in all material executions. Reference list comprises leading shipyards and owners. It also covers a wide selection of the merchant and naval fleets from small vessels like trawlers and support vessels to the biggest vessels in the world like container ships, VLCC tankers, cruise liners, frigates and aircraft carriers.

For urgent cases, Desmi keeps in stock a selection of in-line pumps for short time delivery from European and Asian distribution centers.

Leistritz Pumpen GmbH is ranked today among the world’s largest and leading manufacturers of screw pumps. The pumps are exclusively designed and produced in Nuremberg, Germany. The self-priming, rotary-displacement pumps, engaging two, three or five spindles are distinguished by maximum efficiency, low noise levels and long service life.

Leistritz Screw Pumps are the first choice among manufacturers and operators of cruise liners, containerships, bulk carriers, tankers, frigates and corvettes. Applications include:

- Main Engine Lube Oil Pump.
- Feeder and Booster Pump for Fuel Oil Modules & Transfer Pump for Fuel and Diesel Oil.
- Hydraulic Pump for Steering Gears and Pitch Propellers
- Hydraulic Pump for Winches
- Customized Screw pumps solutions
- Main Cargo Pumps

Also, Leistritz is very successfully promoting pumps to work with Low Sulphur Fuel content according to EU Directive 2005/33/EC for engine and boiler applications. Also, pumps can be selected to operate on both LSFO and HSFO with an excellent performance within a wide range of temperatures and pressure conditions.
**Clorius Controls** was established in 1902 in Denmark and they specialize in the development and production of equipment for monitoring, controlling and regulating of heating, cooling and ventilation. Since 1993, Clorius Controls A/S have been ISO 9001:2008 certified for development, manufacturing, sales and servicing of controls for marine & industrial applications. Result is accurate control and the minimum leakage rates in the market for maximum efficiency of ship operations. Product range includes:

- Self-acting temperature and pressure controls (Temperature controls – thermostat and duostats, Pressure Reducing Valves)
- Electronic and electric controls consisting of electronic PI/PID controllers, sensors, etc.
- Pneumatic Controls
- Control Valves: 2-way or 3-way valves are simple and reliable for regulation of temperature and pressure differences in media: fresh and sea water, steam, hot oils, other liquids.

**Sondex** was founded in 1984 and is a Danish company specialized in high-efficient plate heat exchangers for a wide pressure and temperature area.

**Plate heat exchangers**
Sondex delivers standard, copper brazed, semi-welded and all-welded plate heat exchangers as well as customized heat transfer solutions for any task. The inlet channels allow for maximum strength in the inlet area, whilst maintaining minimum of contact points, reducing blockage at the flow distribution zone. The gasket is placed in a dedicated retaining gasket groove. This secures the elasticity of the gasket even after a long time of compression. All types are available with Class certificates.

**Freshwater Distillers**
The Sondex freshwater distillers utilize the heat from the diesel engine jacket cooling water to produce pure drinkable water by means of evaporated sea water under high vacuum. All Sondex freshwater distillers are based on two Sondex titanium plate heat exchangers acting as evaporators and condensers.
**LK Valves** started its activities in Norway in the mid 1980’s. Since then the company has grown in the Scandinavian and international market. LK Valves delivers valves, strainers and actuators to customers all around the globe. In-house production offers flexibility and possibilities to tailor-make valves, strainers and actuators to meet your specific needs. Modern testing equipment documents the performance before the product leaves LK Valves.

**Product range includes:**
- Butterfly valves
- Ball valves
- Globe valves
- Gate valves
- Fire valves
- Quick closing valve systems
- Self closing valves
- Diaphragm valves
- Strainers & Mud boxes
- Check valves
- Storm valves
- Plug valves
- Sounding cocks
- Safety valves
- Pressure reducing valves
- Vacuum valves
- Sight glasses
- Pressure gauge valves
- Needle valves
- Float valves
- Tank vent check valves
- Blind flange valves
- Actuators

**Hoyer Motors** is Danish company founded in 1974 and has become a leading supplier of electric motors for various applications. Hoyer Marine Electric Motors, which are widely known within the marine industry for the quality, performance and reliability, can be used as main and auxiliary drives below deck on ships and in the offshore industry. They are manufactured according to international standards under IEC and can be delivered with certificates from the major international classifications societies. Typical applications include: Fans (air conditioning, refrigeration plants, oil coolers), Hydraulic power packs, Pumps (for fire-extinguishing water, fuels, oils), Winches (anchor winches, warping winches, lifting gear), Compressors, Bow thruster drives and Cranes.

Motors, rated with IE 1 or IE 2 efficiencies, are available with output power from 60 Watt up to 630 kW. They can be delivered on all commonly used voltages with 2,4,6 or 8 poles and frequency of 50 or 60 Hz, Hoyer Marine Electric Motors are designed for 45 degrees ambient temperature, have tropical insulation and are provided with metal cable glands for main supply.
Green Shipping & Energy Efficiency

Krohne Marine
Mass Flow Meters

Desmi Optisave
Energy Saving VSD Systems for Pumps/Fans Automation

Desmi Ocean Guard
Ballast Water Treatment Systems

BMT-Smart
Power Shaft Torque Meters
Fleet/Vessel Performance Monitoring Systems

Yara Marine Technologies
SOx & NOx Reduction Systems

Chart
LNG Tanks & Fuelling Systems
Krohne Marine is the Marine Centre within the KROHNE Group. KROHNE has unique expertise when it comes to flow measurement, producing in 1952 the first industrial electromagnetic flow meter. Later on, they developed the first single tube mass flow meter (1987) followed by the first straight tube Coriolis meter (1994). Coriolis mass flow meters have significant advantages over other flow measurement methods as they directly measure mass flow, liquid density and process temperature with highest accuracy and minimum need for maintenance.

OPTIMASS flow meters are applied for:

**Fuel consumption monitoring**
Accurate measurement and monitoring of engine fuel consumption is crucial in order to enforce ship performance systems to optimize use of energy and cut down emissions.

**Bunkering verification**
Fuel oil costs represent the biggest share of a vessel’s total operating cost. To verify the amount of fuel oil delivered during a bunkering operation, it needs accurate and reliable measurements. Coriolis mass flow meters offer continuous monitoring of mass flow rate, density and temperature throughout the entire bunkering operation.

**EcoMATE®** is Krohne’s central workstation onboard a ship to provide easy to understand monitoring of fuel consumption or/and bunker receipt verification. At any time, the operator may view trends, log or print data in pre-defined or custom made reports, which can be exported to on shore offices.

OptiSave engages variable speed drives that automatically saves energy for pumps driving sea water, fresh water cooling systems and powering engine room ventilation. It is available either in New Builds or as Retrofit configuration, each case, is fully integrated into the overall control system with very simple functionality. OptiSave monitors a variety of parameters, including sea water inlet/outlet temperature, pressure drop across coolers, electric motor heat levels, etc. in order to adjust the pump with the load requirement, within a safe envelope of operation.

**The many benefits of DESMI OptiSave:**
- Energy saving up to 80%
- Short return on investment, usually in range of 10 – 18 months
- Prolonged lifetime of pumps due to less wear and tear
- Minimum changes in existing electrical installations
- Proven technology & savings
- Reduced OPEX & worldwide service support

**The systems that are directly applicable with DESMI OptiSave include:**
- Seawater cooling systems
- Fresh-water cooling systems
- Engine room ventilation or any combinations of the above.

Energy Saving VSD Systems for Pump/Fans Automation
BMT Smart is part of British Maritime Technologies (BM) Group, a leading international design, engineering, science and risk management consultancy with a reputation for engineering excellence. BMT offers a highly accurate Torque Meter made in UK that completes the entire signal processing on shaft and transmits serial (digital) data directly from the shaft rotor to the shaft stator.

Key elements of the system:
- Dual channel shaft mounted strain sensor
- Modular rotor assembly that receives and conditions power from the stator to power the on-shaft electronics
- Stator power head with shaft speed sensor and signal receiver unit

The system can be extended to provide additional channels of information and dynamic data from the shaft, such as:

- **Shaft Thrust** – with some shaft arrangements it is possible to monitor the thrust developed by the propulsion system from the shaft stresses.
- **Shaft Bending** – Accessing the alignment of the shaft both in static index positions and while rotating in a range of test modes.
- **Shaft Dynamic Torque** – superimposed on the average shaft torque additional data is available relating to the propeller condition and cavitation, the status of other gearing on the shaft and on major transient events seen by the shaft.

BMT has over 30 years' expertise in the specialist area of fleet and vessel performance management. BMT SMART is dedicated to deliver solutions for cost-effective fleet performance management.

Vessel performance data are automatically collected on-board as our advanced BMT SMART solution interfaces with systems and sensors installed in Engine Room and Bridge. The system makes usage of five performance coefficients (Power, Hull condition, Propeller Condition, Fuel and Specific Fuel Oil Consumption). These coefficients are computed from vessel in-service parameters, such as shaft power, shaft rotational speed, draught and log speed.

The benefit analysis filter removes observations recorded during time periods when the ship is operated in conditions of adverse weather (primarily wind speed and wave height, as well as swell), areas of shallow water and at transient conditions, for example, while maneuvering or when the ship’s speed changes.

More and more owners, operators and charterers are “digitizing” their shipping operations and BMT can ensure that all your ships are SMART ships.
Yara, founded in Norway in 1905, has local presence in over 50 countries with more than 12,000 employees and sales in more than 150 countries worldwide. They deliver solutions for sustainable agriculture and environment in manner to reduce emissions, improve air quality and support safe and efficient operations.

Yara Marine Technologies (former Green Tech Marine) is located in Norway and in Sweden and have developed exhaust gas cleaning and energy saving solutions that not only benefit the planet but create significant financial rewards for clients. By using YMT scrubbers ship owners can continue to operate on heavy fuel oil instead of more costly marine gas oil while staying below the strict IMO requirements regarding sulphur emissions. The YMT scrubbers make it simple to meet new environmental regulations by replacing your ship’s exhaust silencer – no structural modifications required.

YMT scrubbers are able to operate in Dry mode, Open loop and Closed loop as per customer requirements. Thanks to our scrubber’s small footprint and low weight, they are suitable for any kind of vessel, whether it is a new build or a retrofit and can be custom-made for any engine size, both 2-stroke and 4-stroke engines. When operating in closed loop, the YMT scrubber applies Magnesium Oxide as alkali, which is harmless & a highly efficient catalyst. That ensures safety and economy and can be a key-benefit of YMT system versus other system technologies who involve hazardous Caustic Soda.

In 2014, Yara acquired German maker H+H Umwelt- und Industrietechnik under new name Yara Marine Technologies to offer Selective Catalyst Reaction (SCR) technologies to reduce NOx (Nitrogen Oxides) emissions by up to 99%. From 2016, new IMO Tier III requirements will require new builds to comply with NOx emission requirements in territorial waters. Yara’s NOxCare Marine is the total solution for ship owners and operators seeking to meet these new and emerging regulatory requirements.

NOxCare Marine is a complete portfolio of reagents, SCR technology and services. SCR Technology is proven, compact and commonly used in hundreds of vessels, both on propulsion and auxiliary engines. Yara has delivered more than 1300 systems on board more than 350 vessels and is by far the market leader to the maritime industry. Our NOxCare Marine SCR systems are designed to be cost-efficient, robust, compact and easy to operate. Whether planning a new build or retrofitting an existing ship, our experts can help you ensure your vessel complies with maritime environmental regulations for removal of NOx by offering;

• NOxCare Marine SCR: Engineering assistance and supply of SCR systems. Design of SCR technology solutions during vessel design/retrofit, based on extensive maritime experience. Supply and installation of complete SCR systems including actor, all necessary auxiliaries and storage solution.

• NOxCare 40: Reliable Supply of NOxCare 40, Yara’s high-purity urea solution delivered according to AUS40 ISO 18611 for maritime use during the operation of a vessel

• Supply of SCR aftermarket service and spares during vessel operation
DESMI BWM system RayClean is based on mechanical filtration and UV radiation. The mechanical filtration is done with automatic back flushing filter developed especially for ballast water by Boll & Kirch. The UV treatment takes place in a specially designed and optimized UV reactor that has a Treatment Rated Capacity (TRC) of 300 m³/h. Larger system flow rates are obtained by installing more UV reactors in parallel, and can reach a flow rate of 3000 m³/h. The RayClean system uses highly effective low pressure UV lamps that reduces the system energy consumption with 30-50% compared to competing systems using medium pressure UV lamps. At the same time, RayClean low pressure UV lamps ensure highest lifetime of approx. 12,000 hours minimizing all operational costs. The operation of the RayClean system is fully automated. The RayClean system automatically adapts the treatment to the quality of the water. In very clear water the UV lamps are dimmed in order to reduce the energy consumption and in very dirty and unclear water the flow rate is reduced. This results in a system that can cope with more challenging water conditions than any other system - and with the lowest energy consumption in class!

Systems can be delivered in one of the following ways; loose components, skid or semi-skid mounted, complete or containerized system.

Chart is a recognized global brand for the design and manufacture of highly engineered cryogenic equipment used from the beginning to the end in the liquid gas supply chain. They have domestic operations located in eight US states and international engineering and manufacturing in Australia, China, Germany, United Kingdom and Czech Republic.

Chart Ferox, with a heritage for more than 70 years, is located in the city of Decin, Czech Republic. They supply equipment for the cryogenic storage and distribution of liquefied gases, including air gases, CO2, LNG and other hydrocarbons. Especially for maritime sector, their portfolio extends beyond the standard and includes custom engineered cryogenic solutions for:

- LNG-fuelled ships: Fixed tanks & cold-boxes, Mobile / temporary gas systems (ISO containers / Semi-trailers)
- Small LNG carriers / Bunker vessels: Tanks and piping
- Bunkering infrastructure: On land bunkering stations, Floating terminals, Semi-trailers and ISO containers
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