Marine System Solutions

Expertise for maximum performance, profitability and environmental protection
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GEA MARINE SYSTEM SOLUTIONS

REFRIGERANT RETROFIT
BOG RECOVERY SYSTEM PROCESS GAS
FLASH GAS CLEAR WATERS
BILGEWATER TREATMENT ICE MACHINES
SLUDGE CONTAINING OIL AND WATER
CAT FINE REMOVAL REFRIGERATION & COOLING SOLUTIONS

VENT GAS RECOVERY SYSTEM BALLAST WATER TREATMENT
FUEL CONDITIONING REPAIRS & MAINTENANCE
HOT SEPARATION FUEL GAS BOOSTER
CHILLERS NITROGEN SEA WATER DESALINATION
GAS INJECTION 24/7 SERVICE
FUEL PROCESSING AND CONDITIONING
The shipping industry is rapidly changing to meet the increasingly complex demands of global supply chains and there is a growing trend towards energy efficiency, risk management, automation and smart maintenance. As a long-term, reliable partner to the marine sector, GEA is supporting customers in achieving these goals through a strong, global network of service, spare parts and know-how.

The shipbuilding industry is becoming increasingly important across the globe. The reasons for this are obvious: accounting for more than 95 percent of global transport tonnage, the ship is by far the most efficient and economical means of transport and thus a central "module" within the global supply chain. At the same time, shipping companies, shipyards and suppliers are under considerable pressure to innovate: the constant growth of competition for production capacity and ever-stricter environmental protection laws call for new solutions that focus on maximum economic efficiency and sustainability with a view to improving the way resources are handled. So new technical solutions have to meet a large number of requirements. Sustainability in the economic and ecological sense is a self-evident necessity. Based in more than 50 countries, GEA is able to fulfill these challenging requirements.
Air-conditioning
GEA compressors are ideal for air-conditioning on large vessels such as cruise ships, cargo ships, fishing and supply vessels, reefers, tankers, navy and drill ships.

Cooling & refrigeration
GEA specializes in refrigeration processes and technologies, in particular the temperature control of cargo and provisions cooling. Both for merchant and leisure operations and for the fishing industry.

Fresh water generation
Storing large quantities of fresh water on board ship is costly and takes up valuable space. GEA offers an alternative solution, in the form of a process and technology for sea water desalination, which can be used to generate up to 30 tons of fresh water a day.

Oil treatment and sludge reduction
GEA centrifugal separators specialize in the purification of fuel and lube oil as well as sludge treatment and effective cat fines removal. With their high g-force, the separators reliably guarantee high performance and economic operation of ship engines, and boost their service life even under extreme conditions.

Protecting seas & oceans
With a wide-ranging portfolio of cutting-edge technology, GEA continues to demonstrate its long-term commitment both to safeguarding the investments of our clients and partners, and protecting the marine ecosystem. We work closely together with ship owners and operators to deliver customized solutions for the treatment of bilgewater, ballast water, scrubber water and grey and black water.
Marine System Solutions

GEA brings more efficiency and sustainability on board

Whether fuel, lube oil, bilgewater or ballast water treatment, fuel oil conditioning, engine cooling, sea water desalination or cooling and refrigeration is required, GEA offers marine system solutions that make it possible to achieve strategic improvements in efficiency and cut costs while optimising product and process quality.

GEA offers its customers in the shipping sector system solutions that are comprehensively and systematically designed for the special requirements on board. In an energy-efficient manner they ensure a high performance from the drive units while securing maximum availability of the systems. At the same time they support the aim of shipping companies to protect both crews and the environment as well as possible. All the rules laid down by the International Maritime Organization (IMO) to protect sensitive maritime ecosystems are more than complied with. The compact design of the systems and components fulfill the requirements of modern shipbuilding by virtue of their low weight and the extremely small space needed to accommodate them. All GEA products are designed for extreme conditions and operate reliably even in rough seas. The consistently applied plug-and-play principle simplifies installation, thereby contributing to shortening building times. In addition to this, the systems are low-maintenance and support the demand for an intelligent, supervision-free engine room.

This means that costs are reduced, efficiency increased and return on investment optimised. At the same time working conditions are significantly improved and operational safety further enhanced. As a result, the economic, social and ecological sustainability of investments in shipping is further reinforced.

Protecting investments with life-cycle benefit

GEA marine system solutions are designed for the maximum benefit over the entire lifetime of the units. This life-cycle benefit is not only ensured by first-class product quality. A further bonus takes the form of customized service solutions that can be perfectly adapted to customers’ needs. Here partners benefit not only from conventional services such as inspection, maintenance, original spare parts and repairs, but also from proactive risk-avoiding solutions, such as the on-line or off-line monitoring of systems.

By modernising units during operation, performing retrofit activities and upgrading in line with the latest state of the art, performance can also be continuously improved. Overall, this means maximum process efficiency and plant availability combined with absolute budget control. There is no better way to secure your investments and your processes.

The benefits of GEA marine system solutions at a glance

- First-class product quality
- Safe in extreme conditions
- Compact design – low weight and small space requirements
- Reduction of interfaces
- Simple installation thanks to plug and play
- Maximum process efficiency and availability
- Sparing use of natural resources
- IMO-compliant
- Reliable protection of people and the environment
- Proactive service
- Optimal investment protection
TAILORED SOLUTIONS FOR MAXIMUM PERFORMANCE

GEA’s equipment and cooling technology are precisely tailored to the requirements of a wide variety of vessels, including container ships, tankers, fishing trawlers, cruise ships, orange juice carriers and tug boats.
Application Range

Successful shipping companies make use of GEA expertise in the engine room

Supertankers, cruise ships, trawlers, freighters, cargo ships and mega-yachts: all types of ships with systems, units and components from GEA are ideally equipped for the challenges of today and tomorrow.
Refrigeration & cooling systems

Compressors for refrigeration and air-conditioning

Sea water desalination

Clarification and purification of fuel and lube oil

Bilgewater treatment

Ballast water treatment

Sludge treatment

GEA SERVICE – FOR YOUR CONTINUED SUCCESS

We build, maintain and improve our customers’ equipment throughout the full life cycle so they could focus on their business and market challenges.
The use of modern air-conditioning systems is a must on the high seas to keep the climate pleasant, to provide an optimum working temperature for the crew, and to keep provisions in excellent condition on cruise ships.

In order to stay concentrated during their stay on the high seas, ship captains and their crew need to have a pleasant climate in their working environment. A lot of ships are underway on their journeys in very hot tropical realms: Container ships for example transport thousands of tons of goods between continents under extreme climatic conditions. To make the crews’ lives on board nevertheless bearable, air-conditioning systems are essential in all kinds of maritime applications.

Keeping cool heads on the high seas
GEA Compressors are ideal for crew cabin air-conditioning on all ship types. GEA ensures a comfortable air-conditioning even under the extreme conditions of equatorial regions. What counts is the greatest possible benefit under cost-efficient conditions, with a maximum of environmental and climate protection.
APPROVED FOR MARINE APPLICATIONS
With their uncompromising quality and resistant construction, GEA HG and F compressors are predestined for maritime applications at sea.

GEA HG44e
semi-hermetic compressor

GEA F16
open type compressor
At GEA we love to work on revolutionary refrigeration and cooling solutions every day. Our projects vary from industrial refrigeration plants to provision cooling on board of cruise vessels.

**GEA specializes in marine cooling processes and technology**

No task is too big for us. Whether we have to assure that thousands of cruise ship passengers can enjoy a fresh meal or that cargo needs to arrive in excellent condition, GEA is always ready to demonstrate its expertise. The aim of our mission is threefold.

- Analyze and improve the energy consumption of each refrigeration solution by looking at the current process.
- Guarantee the product quality of any content (fish, food, beverage, livestock)
- Challenge the customers carbon footprint by working on sustainable solutions

GEA provides high tech provisions cooling solutions for the marine industry. Our technology is easy to control and completely in line with the Safe Return to Port philosophy for cruise ships. Our main focus is on the following marine segments:

- Fishing vessels
- Reefers
- Cruise ships
- Orange juice carriers
- Livestock carriers
- Conversion and retrofit projects

GEA refrigeration units and cooling systems are widely used on board of large fish factory trawlers and small fishing ships. Compact, advanced and energy-efficient systems are the key to freezing fish. GEA provides refrigeration systems for pre-cooling of fish by RSW-plants and storing frozen fish in fish holds just after freezing.

Small fishing trawlers and cutters need cooling beds of ice for their fresh catches, so that they can land fish with the same high quality as large trawlers. With the rise of the cruise ship industry, the demand for high quality food and cooling of provision is growing rapidly. We are specialized in engineering, contracting and deliver tailor-made solutions for new and existing vessels – from planning to implementation.

**Products at a glance**

- Engineering & contracting placed on the supply of refrigeration
- Piston and screw compressors: covering all normally encountered requirements regarding refrigeration
- Tailor-made solutions
- Control systems: For individual units or complete systems to assure maximum benefits
- Valves and fittings: Particular applications with regard to maximum permissible pressures
- Freezers: For fish that has been unprocessed, headed & gutted and filleted
- Ice machines: More than 40 models delivering various ice qualities, including slurry ice and flake ice

**Cooling & Refrigeration**

Energy efficient freshness on board
Fresh Water Generation

Sea water desalination by evaporation

Storing large quantities of fresh water on board ship is costly and takes up valuable space. GEA offers an alternative solution, in the form of a process and technology for sea water desalination, which can be used to generate up to 30 tons of fresh water a day.

The principle of sea water desalination by evaporation
Desalination is based on the principle of evaporation: sea water that has been filtered through a coarse mesh is evaporated in a heat exchanger plate stack that is made of titanium to precipitate out salt and impurities. A further plate stack then condenses the steam into drinking water. A salt measuring cell checks for residual salt content, which should be below four parts per million (ppm). If a value below four ppm can be reliably maintained, then the desalinated water can be passed to a storage tank before further treatment by UV sterilization.
An output of 5 – 30 tons a day

A re-hardening filter finally returns enough hardness to the fully demineralized water to make it suitable for human use. Whether for the shower room, for the galley or for scrubbing – our systems enable output of between five tons and 30 tons a day, which should easily cover the everyday requirements of container ships, LNG tankers, bulk carriers or freighters.
Oil Treatment and Sludge Reduction

Concepts and high performance equipment for the engine room

GEA supplies separation systems specifically designed for continuous operation under the roughest conditions.

Plant concepts for efficient operation
GEA centrifugal separators specialize in the purification of fuel and lube oil as well as sludge treatment and effective cat fines removal. With their high g-force, the separators reliably guarantee high performance and economic operation of ship engines, and boost their service life even under extreme conditions.

Product range overview
- Fuel and lube oil treatment
- Fuel conditioning
- Sludge treatment
- Effective cat fines removal
SYSTEM CONCEPTS FOR THE FUTURE

Modern lube and fuel oil treatment systems from GEA provide easy handling and optimum separating efficiency in difficult situations.

GEA CatFineMaster

GEA ViscoBoosterUnit

GEA SludgeMaster

GEA manual and self-cleaning separators
Protecting Seas & Oceans

Economically and ecologically sound solutions

Water covers some 70 percent of the surface of the earth, and all life on our planet needs water to survive. Today, over 90 percent of world trade is carried out using international shipping lanes, and some 50,000 vessels traverse these routes. Whilst they may be vital for trade and transportation, the earth’s seas, oceans and other waterways are also highly sensitive ecosystems that need protection.

Clear waters to the horizon and beyond

With a wide-ranging portfolio of cutting-edge technology, GEA continues to demonstrate its long-term commitment both to safeguarding the investments of our clients and partners, and protecting the marine ecosystem. We work closely together with ship owners and operators to deliver customized solutions for the treatment of bilgewater, ballast water and scrubber water.

The combination of GEA’s innovative technologies, such as the BallastMaster and BilgeMaster systems, together with its extensive service network, are geared towards providing efficient, future-proof systems, in line with IMO standards.

Product range overview

- Ballast water treatment
- Scrubber water treatment
- Bilgewater treatment
- Energy recovery
Cutting-edge, future-proof solutions that protect the aquatic ecosystem and your investment.
Seven Seas – One Single Point of Contact

Wherever your vessel needs parts, service or support for the GEA equipment and solutions on board, our global marine service network will keep you on course. You have one contact in your region, communicating in your language, acting as your partner always one step ahead.
We work alongside our customers in close partnership, supporting them throughout the full lifecycle of their equipment and solutions ensuring lasting business success.

Getting you started
We start as we mean to go on, a supportive and committed partner for life. We plan and build around individual needs, sharing process knowledge, training staff and supporting operators to get our customers up and running, and ensure a smooth, seamless on-going service.

Keeping it running
To ensure our customers benefit from continuous production processes with minimal unexpected downtime, we provide fast, efficient maintenance and best quality spare part support, whenever and wherever it’s needed.

Constantly improving
We safeguard our customers’ investment by constantly looking ahead, modernizing and upgrading processes and equipment to meet changing needs and new market demands. Always working to increase production efficiency and ensure peak performance.

Together with you
Commitment to our customers and their business means investing in their objectives, their risks and their future success. We work in ever closer collaboration, providing on-going systems audits and on-site support, guiding ever better performance through innovative new service models.

GEA MARINE SERVICE NETWORK
We live our values.
Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.