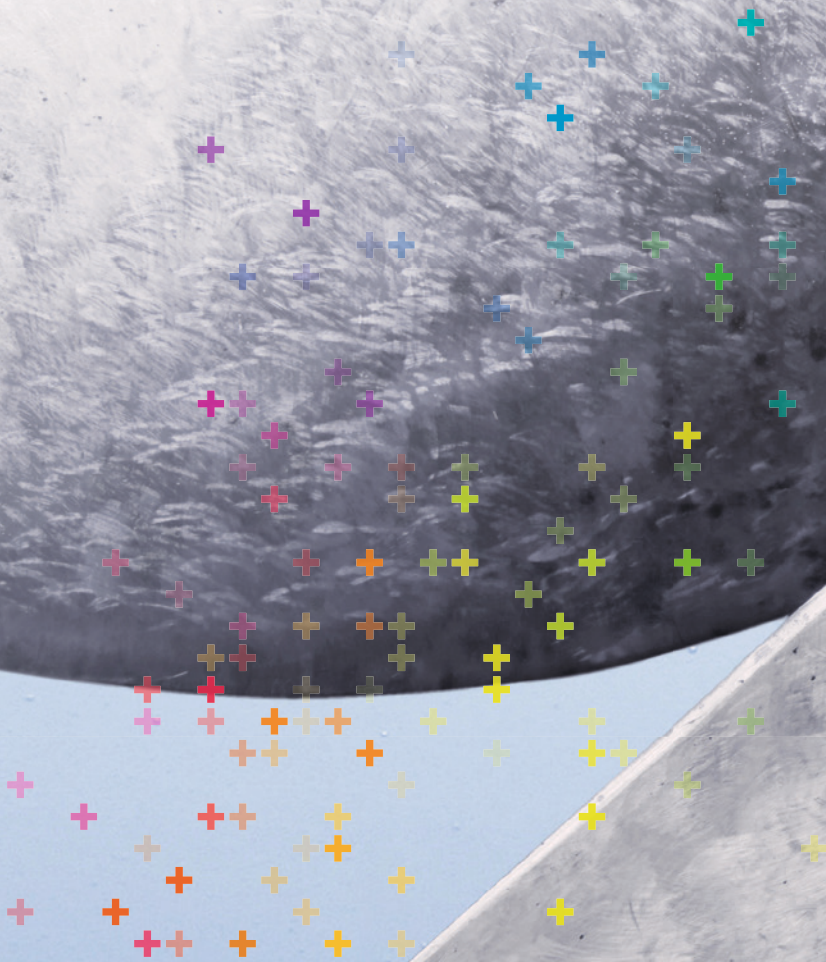


Marine

# Safety and efficiency on board

Non-corrosive solutions for the marine industry



Reliable and long-lasting  
plastic systems for non-essential  
applications on board.



Marine

# Always a perfect fit for the marine industry

The maintenance-free, easy complete solutions of GF Piping Systems for water and cooling applications on board help you to increase the safety and comfort of your passengers and the efficiency of your ship. At the same time, they contribute to lowering the maintenance and overall costs and reducing down times as much as possible. Our products warrant the safe conveyance of pressure and drainage lines and other process fluids on board – without altering their quality in the least.



Ships are not only floating cities, but are also essential for the world's economy. Using the oceans as traffic and commercial routes, applications aboard have to deal with extreme conditions. With regard to longevity and efficiency, preventing corrosion and installing lightweight solutions is more important here than anywhere else. Increasing ship sizes and construction heights are raising the demand for lightly constructed yet perfectly safe systems in the ship. In addition, increasing environmental requirements are directing attention towards emission control and ballast water treatment. At the same time, the focus is always on the desire for passengers for security and comfort.

With GF Piping Systems, corrosion is no longer an issue: The plastic piping systems by GF Piping Systems are noncorrosive and do not have to be replaced throughout the entire service life of the system. Therefore they contribute to the increased reliability of the piping system, while lowering

maintenance costs. They are excellently suited for applications involving drinking and sewage water, coolants, acids, leaches and other chemicals, as well as abrasive compounds. Weighing up to 60 percent less than metal systems, they have lower static requirements and are easier to transport. Innovative jointing technologies such as rapid cementing or integrated electrofusion allow them to be installed up to 50 percent faster.

The energy efficiency and recyclability are important elements in lowering their environmental impact. To prove the quality, safety and reliability of our products, all relevant certificates and approvals are available for our systems worldwide, including those from LR, DNVGL, ABS, RINA, and BV. Compared to competitive materials, plastic solutions cause less CO<sub>2</sub> emissions and show a lower ecological footprint, lately forming the basis for sustainable performance.

## Areas of use

- Cruise ships and ferries
- Merchant ships
- Offshore and OSV
- Mega yachts
- Navy ships
- Reefer ships and fishery

# No maintenance and lower costs with plastic systems on board

GF Piping Systems has been the partner of the global marine industry for more than 20 years and supplies non-corrosive and light plastic piping systems for water treatment and distribution, grey and black water disposal and cooling. They reduce the tare weight and risks to hygiene while increasing the safety of your passengers and crew as well as the efficiency on board.

## + Non-corrosive system solutions

Our plastic systems cover all fluid applications on board and remain non-corrosive for the entire service life of the ship (at least 25 years). You don't have to worry about leaks and serious accidents due to corrosion damage anymore and can concentrate on your daily business.

## + More efficiency on board

Plastic systems are up to 60 percent lighter than metallic solutions. This weight reduction makes it possible to reduce fuel consumption and increase load capacity. New areas and sales opportunities become accessible. Better, durable insulation helps increase the efficiency by reducing cooling and heating losses.

## + Safety and hygiene

Our drinking water solutions reduce the risk of bacterial pathogens in the cabins, while the cooling solutions increase passenger comfort and preserve food items in the warehouses, kitchens, and restaurants on board. They protect the health of your passengers and reputation of the company.

## + Persistently efficient

Our systems remain free of rust, incrustations and deposits throughout the entire service life of the ship. They resist chemical stresses, such as chlorine disinfection of the drinking water system, easily and permanently.





## Approvals

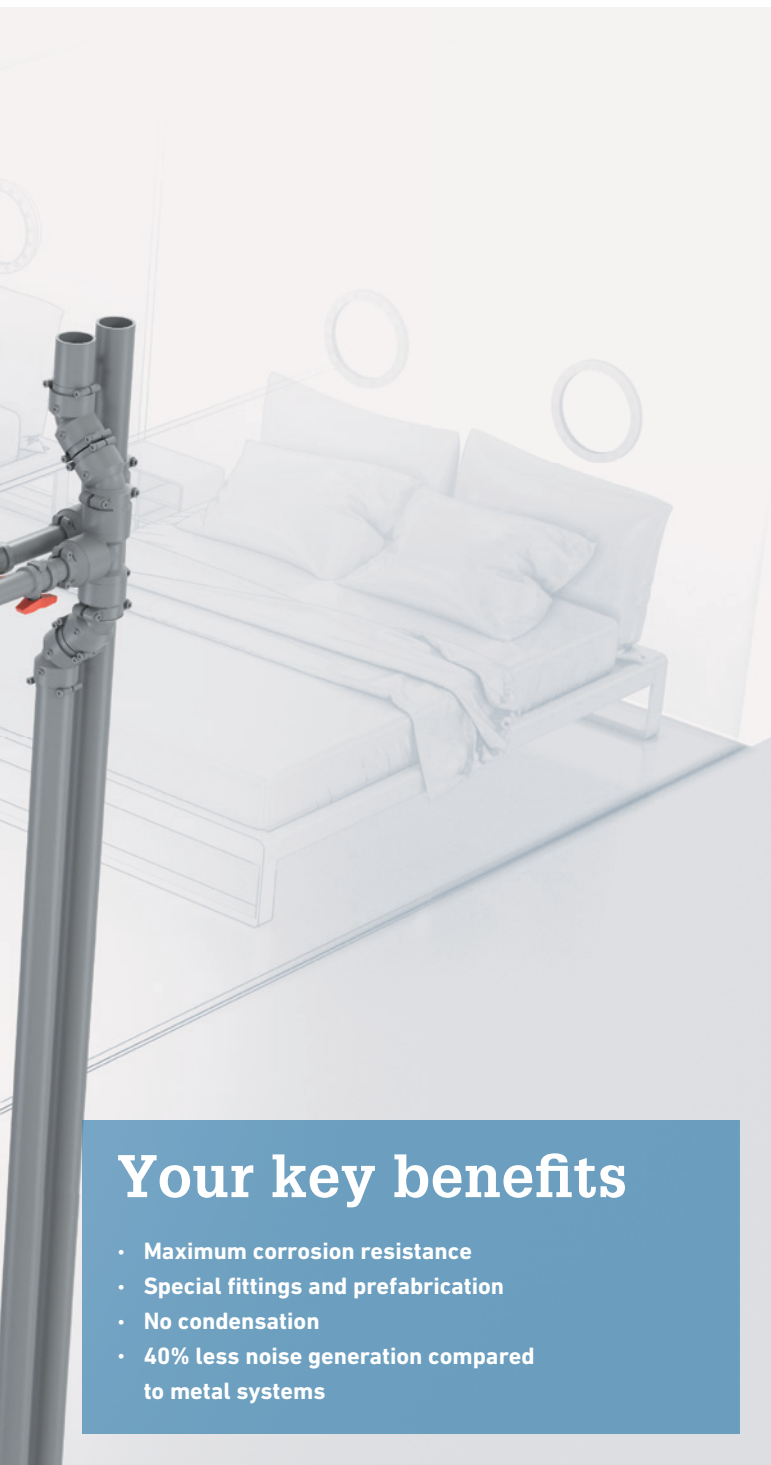


## Application

# Hot and cold water, fresh water

Effective water supply thanks to simple installation technology. Our systems are ideally suited for drinking water distribution on all types of ships. Cabins, kitchens, restaurants and bars are optimally supplied with fresh water. The high flexibility of the material and the easy installation technology cut time and costs to a minimum. The installers have the option to install individual or continuous lines, ring mains, T-piece branches and continuous lines with circulation possible at every deck and in the risers of the vessel.

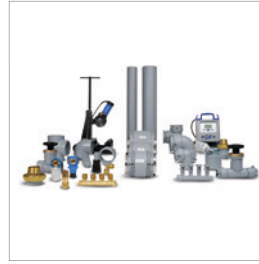




## Your key benefits

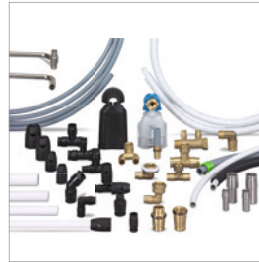
- Maximum corrosion resistance
- Special fittings and prefabrication
- No condensation
- 40% less noise generation compared to metal systems

## Highlight products



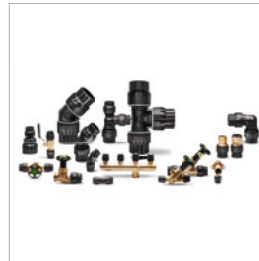
### INSTAFLEX

INSTAFLEX is a modern all-plastic pipeline system made of polybutene for applications in building technology. It has outstanding flexibility in installation and operation and consists of a broad range of fittings and pipes.



### IFIT

iFIT is an innovative pipeline system for bathroom, WC and heating installations. The innovative joining technology and modular system make iFIT fast, simple and cost-effective. Ideal for building sites.



### JRG Sanipex MT

The tested system for hygienically perfect drinking water is free of dead spots and reduces pressure loss to a minimum. The fittings are detachable and can be re-opened, which facilitates the installations.



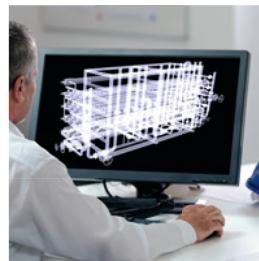
### CPVC Marine Grade / SeaCor

Both systems fully comply with IMO MSC.399/FTP requirement. Offering excellent chemical resistance and mechanical properties at high temperatures. Fast and safe connections by cementing, with low investment for equipment.



### Machine and tools

A wide range of welding machines, providing highest reliability, process control and simplicity in operation. Electro and butt fusion machines from manual up to high-tech traceability machines.



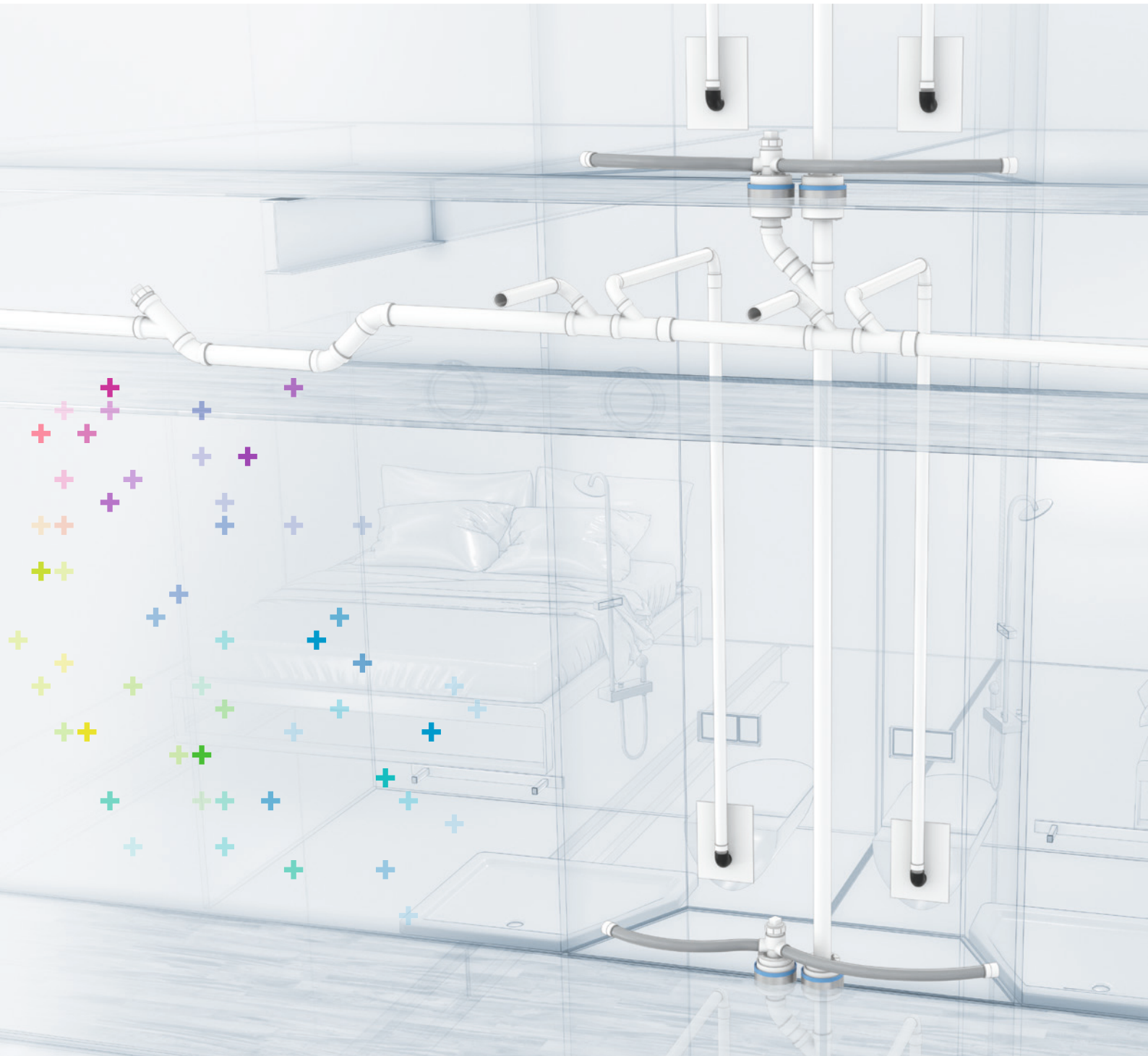
### Engineering

We check the design of your piping system, support you with the choice of materials and components as well as with the correct installation. Our 60 years of experience with plastic systems help you to reduce your own risks.

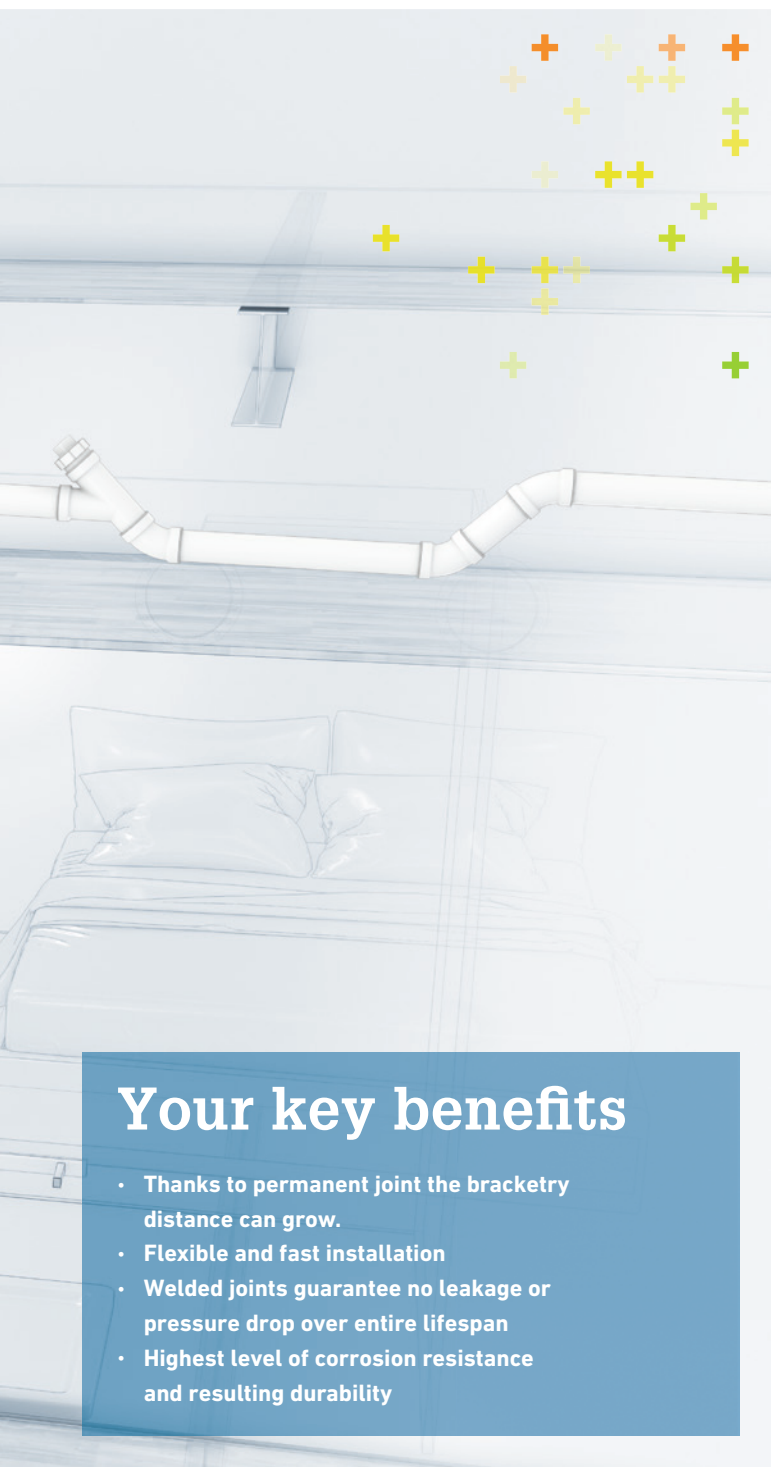
## Application

# Sewage, black and grey water

Wastewater from sinks and showers as well as from toilets and medical facilities creates grey and black water that has to be conveyed safely to the wastewater treatment system on board. With the solutions from GF Piping Systems a safe transport is guaranteed. Our modern electrofusion, adhesive or mechanical jointing technology is conducive to fast installation and the highly diversified product mix provides installers with the flexibility they require. All our plastic systems do not corrode and provide a long service life.







## Highlight products



### SeaDrain White

The drainage system with thermoplastic and non-corrosive scupper (deck drainage) in UV-stable white. With a mechanical and weldable connection and a pressure range of up to 2.4 bar regardless of pipe mounting.



### Drain scupper

A full plastic drain pot completes the SeaDrain White range, ensuring the entire pipeline remains maintenance-free. The non-corrosive GF solution tackles a typical weak point by eliminating corrosion on deck.



### PVC-U system

Ensuring highest possible chemical resistance, PVC-U systems stand up to the most demanding conditions, particularly where media such as acids, alkalis, bases and salts are transported.



### PVC-C Marine Grade / SeaCor

System with good chemical resistance and excellent mechanical properties at high temperatures. Typical for the system are the fast and safe connections by cementing, with low investment for tools and equipment.



### Off-site pre-assemblies

Shorten the time period from planning to commissioning with factory pre-insulated components and project-specific pre-assemblies. This means that projects can be executed cost-effectively and according to schedule.

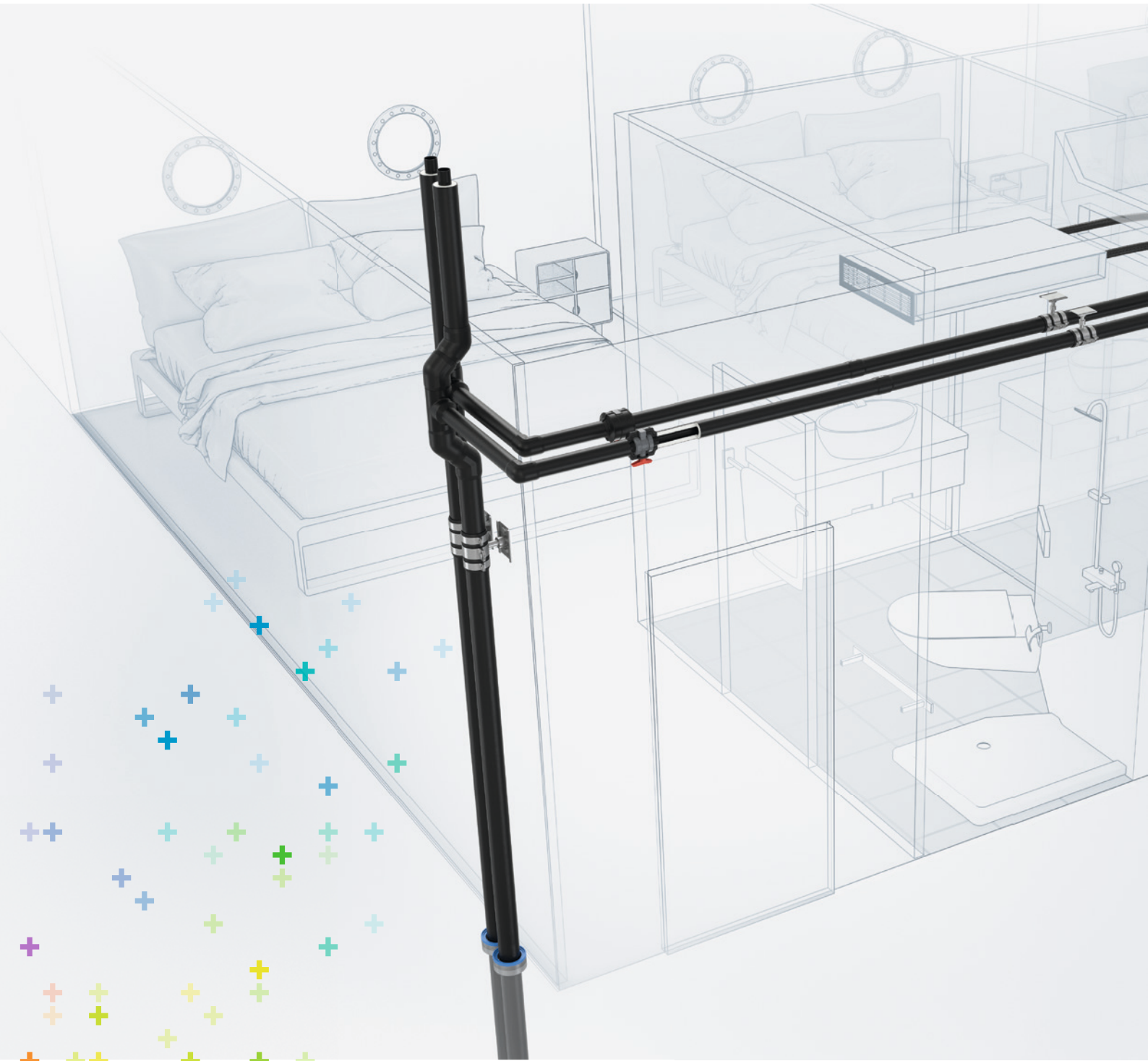
## Your key benefits

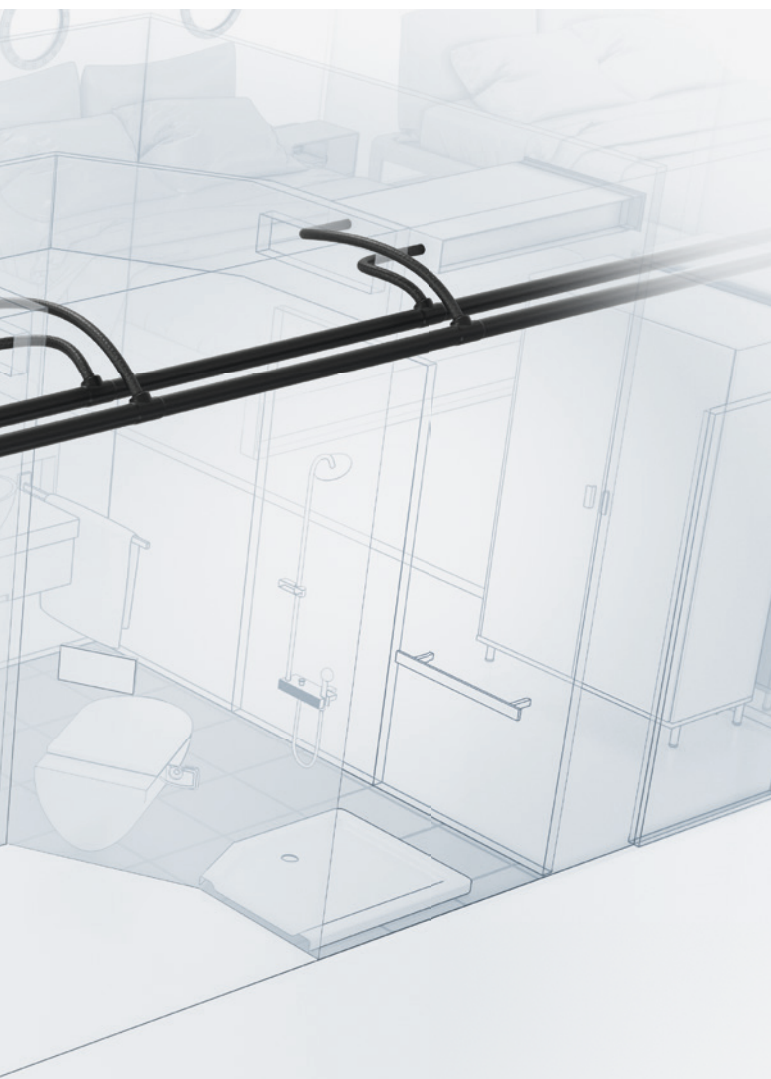
- Thanks to permanent joint the bracketry distance can grow.
- Flexible and fast installation
- Welded joints guarantee no leakage or pressure drop over entire lifespan
- Highest level of corrosion resistance and resulting durability

## Application

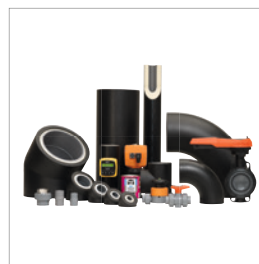
# Air conditioning

Air conditioning plays an important role for onboard accommodation as it helps to have a healthy and pleasant atmosphere with respect to temperature and humidity. Thermal comfort can be provided with a direct expansion system for small capacities, for big ships chilled water systems are commonly used. Thanks to the robust external jacket and the highly efficient insulation the system by GF Piping Systems is the right solution for a long service life on board.





## Highlight products



### COOL-FIT Pre-Insulated

Pre-insulated pipe using top quality HE insulation (including pipe and fittings) prevent condensation, reduce on-site installation time to a minimum and increase the efficiency of the heat-transfer secondary pipe system.



### Ball Valve Type 546

The ideal valve for use in applications from simple water applications to highly exacting chemical processes. Its modular design and material diversity guarantees easy operation, flexibility and maximum process reliability.



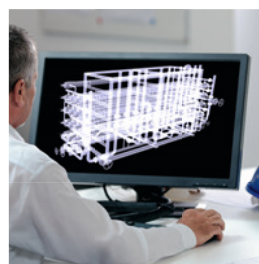
### COOL FIT Fix point

The fixed point solutions from GF Piping Systems can be welded easily onto the outer jacket. They ensure a professional, tension-free installation of COOL-FIT, even under difficult fitting conditions.



### Preinsulated flexible hoses

The narrow bending hose with its impact resistant jacket is the ideal solution to connect the piping system to fancoils. A pre-insulated design prevents condensation and facilitate the installation.



### Engineering

We check the design of your piping system, support you with the choice of materials and components as well as with the correct installation. Our 60 years of experience with plastic systems help you to reduce your own risks.

## Your key benefits

- Reduced or zero condensation
- Robust insulation jacket and high efficient insulation
- No heat-bridge with outside jacket clamping
- Low heat transmission reduces CO<sub>2</sub> output

## Application

# Exhaust gas scrubber

The International Maritime Organization has stipulated a reduction in the maximum sulfur limit in marine fuels from 3.5% to 0.5%. All ships across the globe will mandatorily have to use low-sulfur fuels or gas instead of the high-sulfur fuel oil that currently dominates the market. Ship-owners will have to choose whether they want to use low level sulfur fuel or scrubbing technology or other alternatives in order to comply with stringent requirement.



## Highlight products



### ecoFIT (PE) System

The durable piping system with excellent impact resistance under all climatic conditions. Good chemical and abrasion resistance even at high process temperatures, cost-efficient with comprehensive delivery program.



### Butterfly valve type 567/578

The double eccentric operating principle of the butterfly valve type 567/578 guarantees good friction behavior and therefore less wear and tear compared to conventional centric butterfly valves.



### 3-way ball valve type 543

The perfect valve for all mixing and distribution processes. There are horizontal versions with an L or T port as well as vertical versions with an L port or 3-way ball. They allow the configuration of any number of application options.



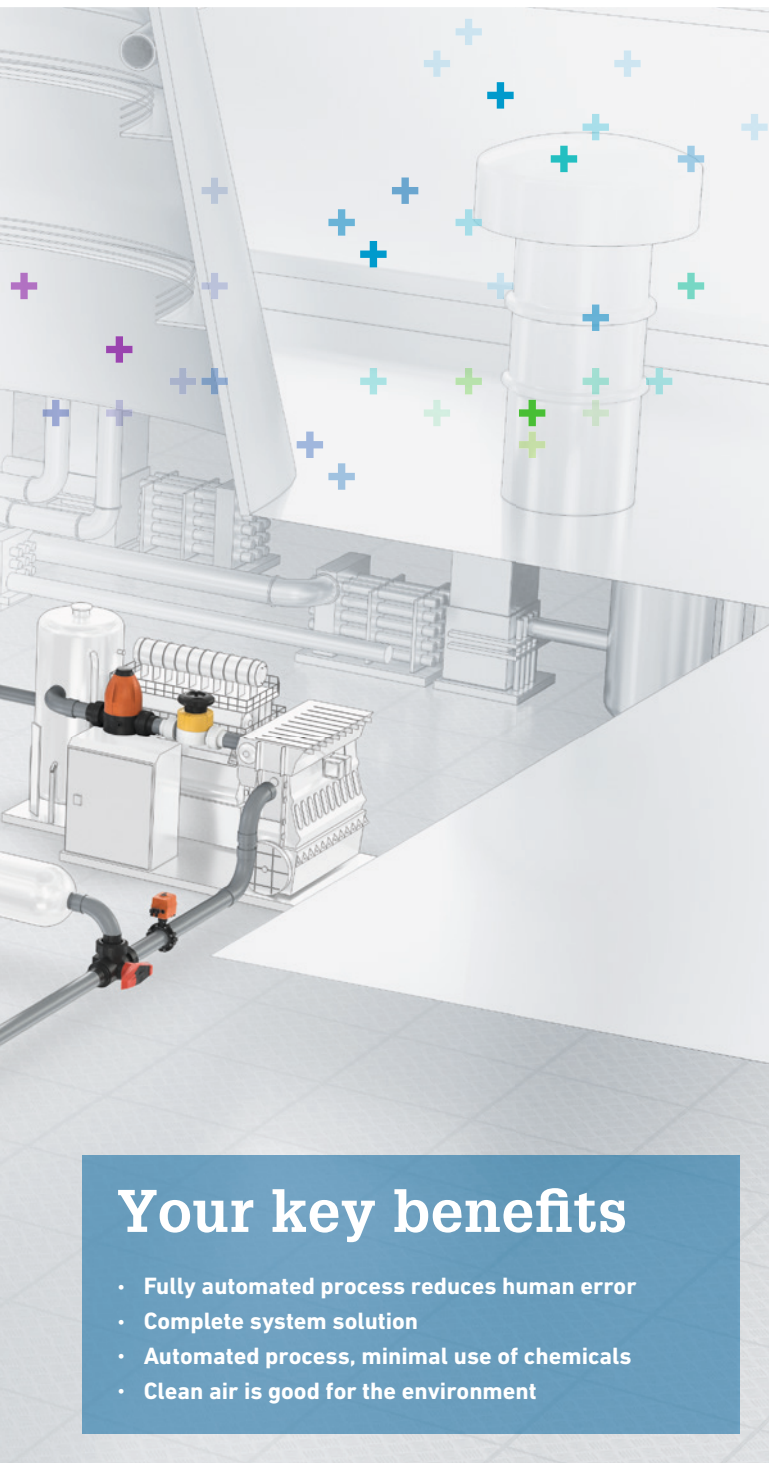
### Automation

Accurate measurement is the basis for reliable process control. Plug-and-play measurement products are self-explanatory, easy to maintain and offered with suitable installation fittings.



### Off-site pre-assemblies

Shorten the time period from planning to commissioning with factory pre-insulated components and project-specific pre-assemblies. This means that projects can be executed cost-effectively and according to schedule.

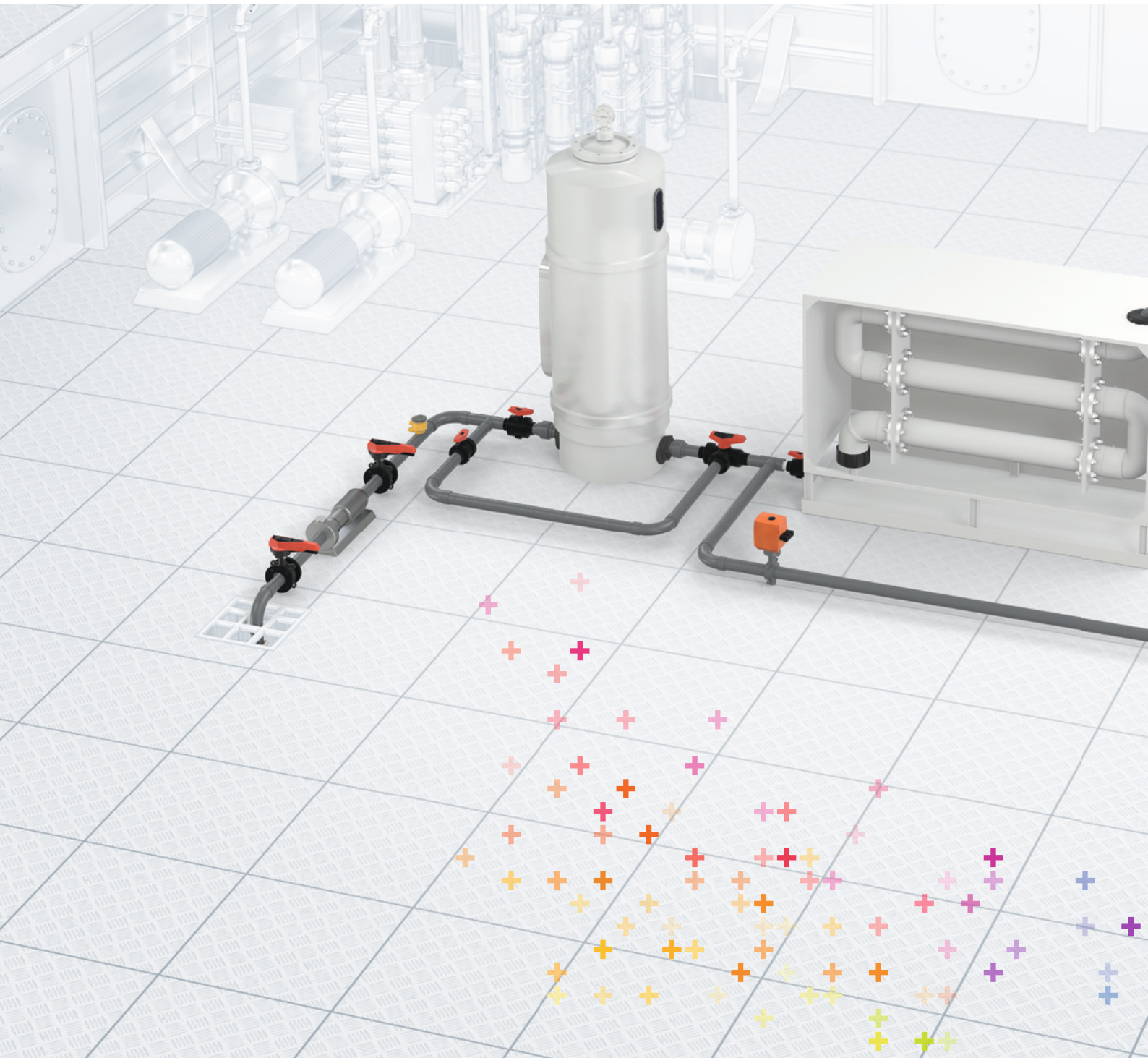


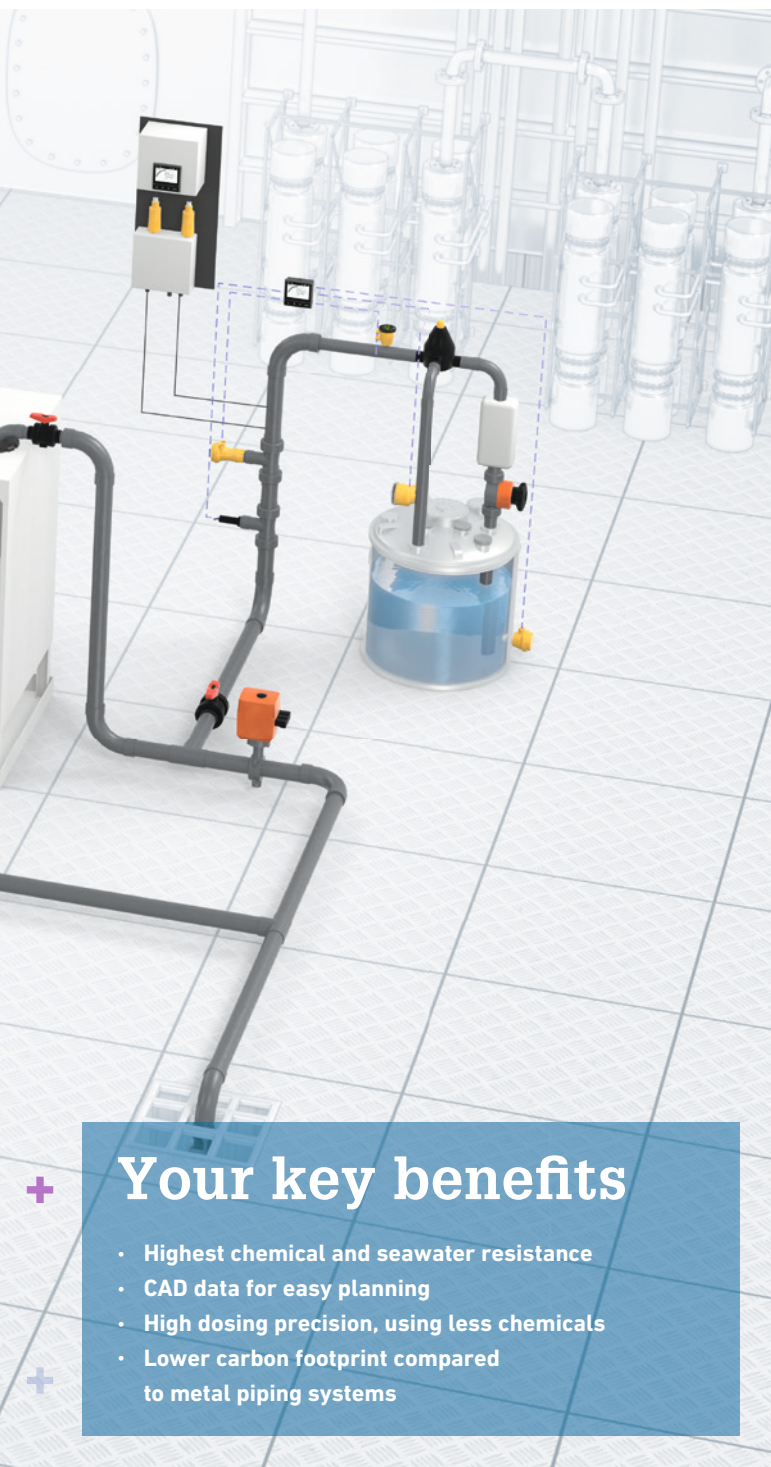
## Your key benefits

- Fully automated process reduces human error
- Complete system solution
- Automated process, minimal use of chemicals
- Clean air is good for the environment

# Ballast water treatment

Stabilizing systems with ballast water tanks are essential for safe and efficient shipping operations. However due to the multitude of marine organisms, ballast water treatment on ships is required to prevent serious ecological risks. With its wealth of experience in water treatment, media filtration, dosing and chemical conveyance, GF Piping Systems offers various innovative solutions for ballast water treatment unit on ships.





## Highlight products



### PVC-U system

Ensuring the highest possible thermal stability and chemical resistance, PVC-U systems stand up to the most demanding conditions, particularly where media such as acids, alkalis, bases and salts are transported.



### PVC-C Marine Grade / SeaCor

System with good chemical resistance and excellent mechanical properties at high temperatures. Typical for the system are the fast and safe connections by cementing, with low investment for tools and equipment.



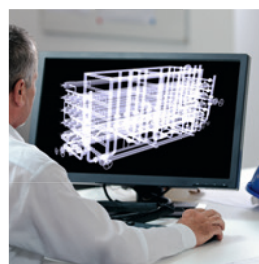
### PROGEF (PP) system

Heavy duty piping system with good impact strength in non-freezing indoor conditions. Very good chemical and abrasion resistance up to high process temperatures. Very cost-effective system with a wide product range.



### Automation

Thanks to virtually maintenance-free valves with pneumatic or electric drive it is possible to automate the installation. This allows for more effective deployment of staff and lower costs.



### Engineering

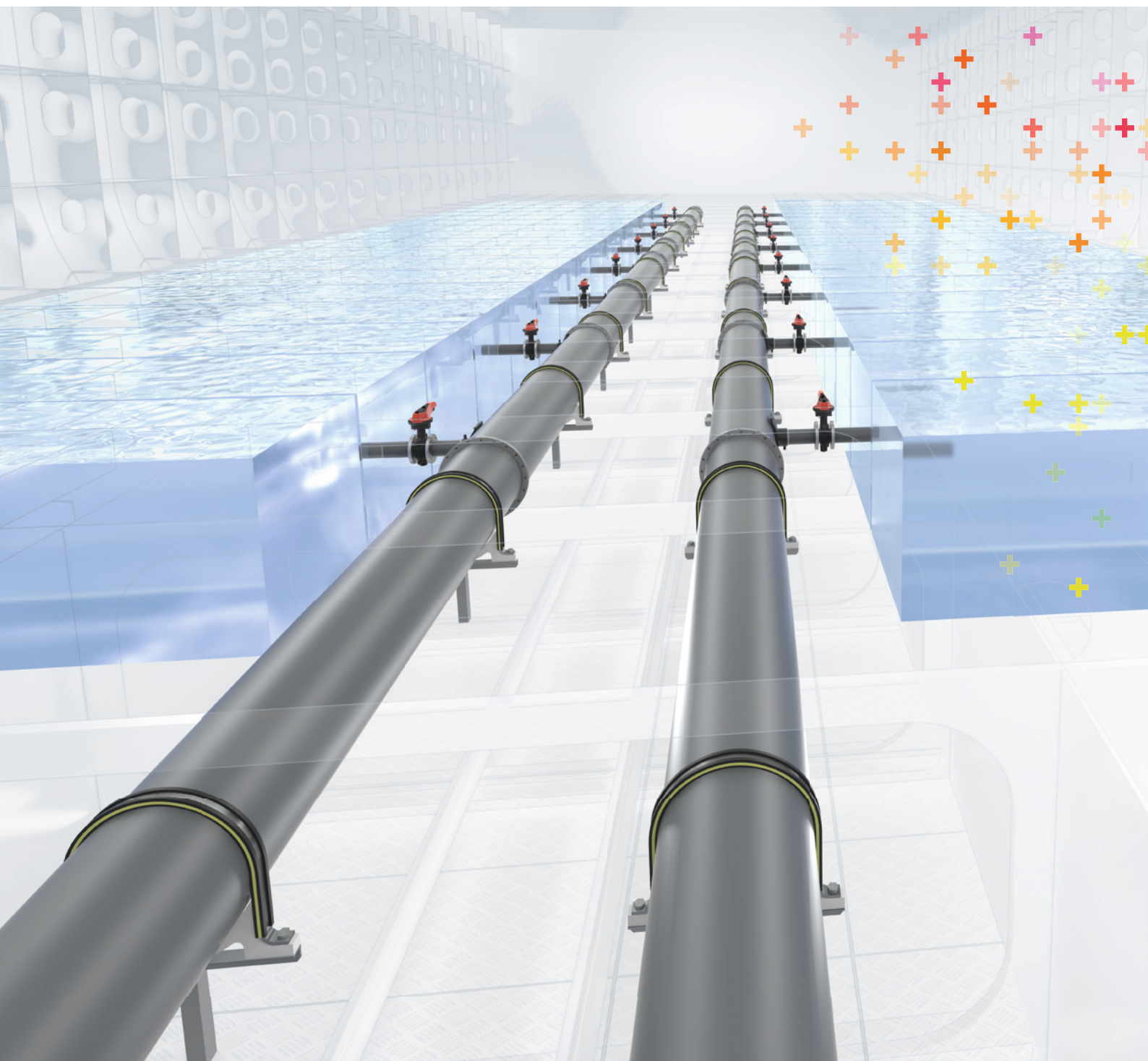
We check the design of your piping system, support you with the choice of materials and components as well as with the correct installation. Our 60 years of experience with plastic systems help you to reduce your own risks.

## Your key benefits

- Highest chemical and seawater resistance
- CAD data for easy planning
- High dosing precision, using less chemicals
- Lower carbon footprint compared to metal piping systems

# Ballast system

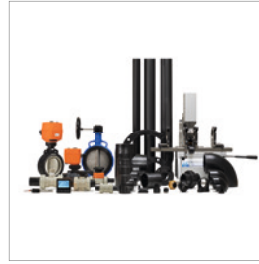
To guarantee safe operation conditions throughout a voyage, certain parameters regarding the vessel's transverse stability, trim, list, maneuverability and hull girder stresses have to be defined and reliably maintained. Therefore, ballast water systems are used for the purpose of providing weight at strategic locations within a vessel. To ensure optimal ballasting operations afloat and during cargo loading and discharging processes in harbors, ballast piping and ballast tank systems are installed on board.





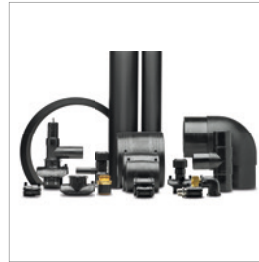


## Highlight products



### ecoFIT (PE) system

The durable piping system with excellent impact resistance under all climatic conditions. Good chemical and abrasion resistance even at high process temperatures, cost-effective with comprehensive delivery program.



### ELGEF Plus system

ELGEF Plus is the electrofusion system for pressurised piping systems. Thanks to its pioneering modular concept. Many different end combinations can be devised using just a few products.



### Butterfly valve type 567/578

The double eccentric operating principle of the butterfly valve type 567/578 guarantees good friction behavior and therefore less wear and tear compared to conventional centric butterfly valves.



### PP-V backing flange

The fiberglass-reinforced polypropylene flange can be used wherever aggressive media needs to be conveyed. Thanks to its innovative design, the all plastic flange weighs a third of comparable metal flanges.



### Machine and tools

The MSA family greatly enhance the daily operations. These units encompass numerous features which support safety, speed and reliability. The machines work hand in hand with the operator on the construction side.



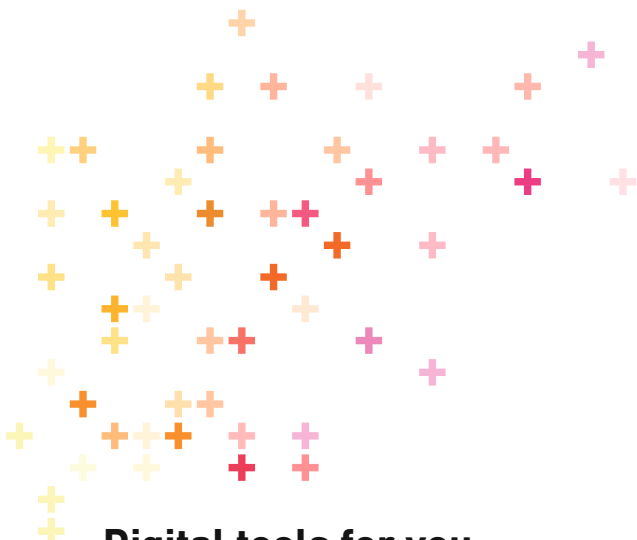
### Off-site pre-assemblies

Shorten the time period from planning to commissioning with factory pre-insulated components and project-specific pre-assemblies. This means that projects can be executed cost-efficient and according to schedule.

## Your key benefits

- Products with a lifespan of 25 years
- Easy jointing on site with electro-fusion welding technology
- Energy savings thanks to smooth surface without incrustation
- Lower carbon and water footprint compared to metal piping





## Digital tools for you

### Product catalog

You can use your own criteria to search more than 60 000 GF Piping Systems products in the product catalog and download the corresponding technical data sheets and operating instructions.

### Download center

The digital brochures, catalogs, and specifications for our systems and products can be found in the Download center. You can use your own keywords to browse, read online, or download the files.

### Online calculator

Our online calculator assists you with product and material selection, design, and dimensioning. The calculator is often used for determining chemical resistance and optimal flow.

### Digital product libraries

The digital product libraries allow planning with real-life dimensions and automatically generated parts lists, facilitating digital cooperation. They reduce planning errors and shorten your project times.

### Practical manuals

The "Plan, build, operate" practical manuals contain all relevant information for the entire life cycle of an installation. They are available separately for the building technology, industrial, and utility sectors.

## Next steps

In this brochure you have received the most important information and technical details. But nothing replaces a personal conversation with an expert from GF Piping Systems. It is all about your needs and how we can support you in your daily business challenges. If you have not already done so, make an appointment today.

On the GF Piping Systems website you will find specialized contact persons in your area. There you will also find further information on the product, including technical data sheets and operating instructions as well as relevant certificates and approvals.

- Appointment with an expert from GF Piping Systems
- Advice on the benefits of the solution for you
- Information on reference applications
- Help with selection and calculations
- Support in all project phases

## More information

[www.gfps.com/marine](http://www.gfps.com/marine)



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Our sales companies and representatives ensure local customer support in more than 100 countries.

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