

GF Piping Systems

+GF+

Ultimate fire protection

HEAT-FIT™ Fire Retardant System



HEAT-FIT Fire Retardant System

Ultimate fire protection

GF Piping Systems developed the fire retardant system HEAT-FIT to bring lightweight, corrosion-free thermoplastic piping systems onboard vessels and offshore for essential applications.

The demand for thermoplastic piping systems has grown considerably over the last few years. The lightweight, corrosion-free and long-lasting alternative to traditional metal piping systems is the ideal solution to increase the efficiency of your vessel. Thanks to the newly developed fire retardant system HEAT-FIT, thermoplastic piping systems can finally be used for essential applications onboard.

The unique system copes with the strict fire resistance regulations of the International Maritime Organization (IMO) and makes thermoplastic piping systems resistant to flame temperatures of 1.000°C for at least 30 minutes under pressure. Made of durable and flexible materials, the system consisting of co-extruded pipes and fitting jackets can sustain highly demanding marine industry conditions.

The safety of your crew, passengers, and cargo is of the utmost importance. HEAT-FIT allows you to use thermoplastic piping systems without compromising on safety. The cutting-edge solution is ideal to lower the overall weight of your ship, to increase its efficiency and to reduce maintenance work. HEAT-FIT can be installed in essential (L3) applications on board:



Cruise and ferry



Merchant fleet



Offshore platforms and floating wind



*All parts of the HEAT-FIT Jacket Systems are approved, for HEAT-FIT PE the approvals are in process



Unrivaled reassurance for your crew and vessel in marine applications

Ships are not only floating cities but are also essential for the world's economy. When using the oceans as traffic and commercial routes, applications onboard have to deal with extreme conditions. Concerning longevity and efficiency, preventing corrosion and installing lightweight solutions are more important here than anywhere else.

As ship sizes increase, construction requirements continue to raise the demand for lightly constructed yet perfectly safe ship systems. As demand rises for more sustainable shipbuilding and operations, more attention is directed towards emission control and ballast water treatment while maintaining passenger security and comfort.

With GF Piping Systems, corrosion is no longer an issue for shipbuilders. The plastic piping systems are

non-corrosive and designed to last throughout the ship's entire service life. Therefore, they contribute to the piping system's increased reliability while significantly lowering maintenance costs compared to metal. They are excellently suited for applications involving drinking and sewage water, coolants, acids, leaches, and other chemicals, as well as abrasive compounds.

Energy efficiency and recyclability are important elements in lowering the environmental impact of a piping system. Relevant certificates and approvals worldwide accredit our system's quality, safety, and reliability, including LR (Lloyd's Register) and DNV. Compared to competitive materials, plastic solutions continue to cause less CO2 emissions and offer a lower ecological footprint, forming the basis for sustainable performance.

Benefits

We've got you covered

Based on intumescent technology, HEAT-FIT is designed to cope with the harshest marine environmental condition and brings the benefits of lightweight thermoplastic piping systems to essential applications.



Safety

The system fulfills the stringent requirements by IMO and protects thermoplastic piping systems from fire with a temperature of 1000°C for 30 minutes under pressure of 3 bar.



Tested & approved

The system was tested in accredited laboratories and multiple in-house tests and is approved by ABS, BV, DNV, LR, and RINA (for approvals per product, see product ranges).



30% less weight

In combination with the ecoFIT piping system (PE100), HEAT-FIT is the ultra-light alternative to standard metal piping systems, increasing your vessel's efficiency.



Fast & easy installation

The HEAT-FIT system, in combination with the ecoFIT system, is installed within minutes for years of operations. The system is designed for new build and retrofitting and is easy-to-handle and no hot work is necessary.

HEAT-FIT system portfolio

With HEAT-FIT, GF Piping Systems offers a unique, top-notch piping system solution for the ultimate fire protection on board, including pipes, fittings, and tools. The system is available in a jacket version and a co-extruded version.

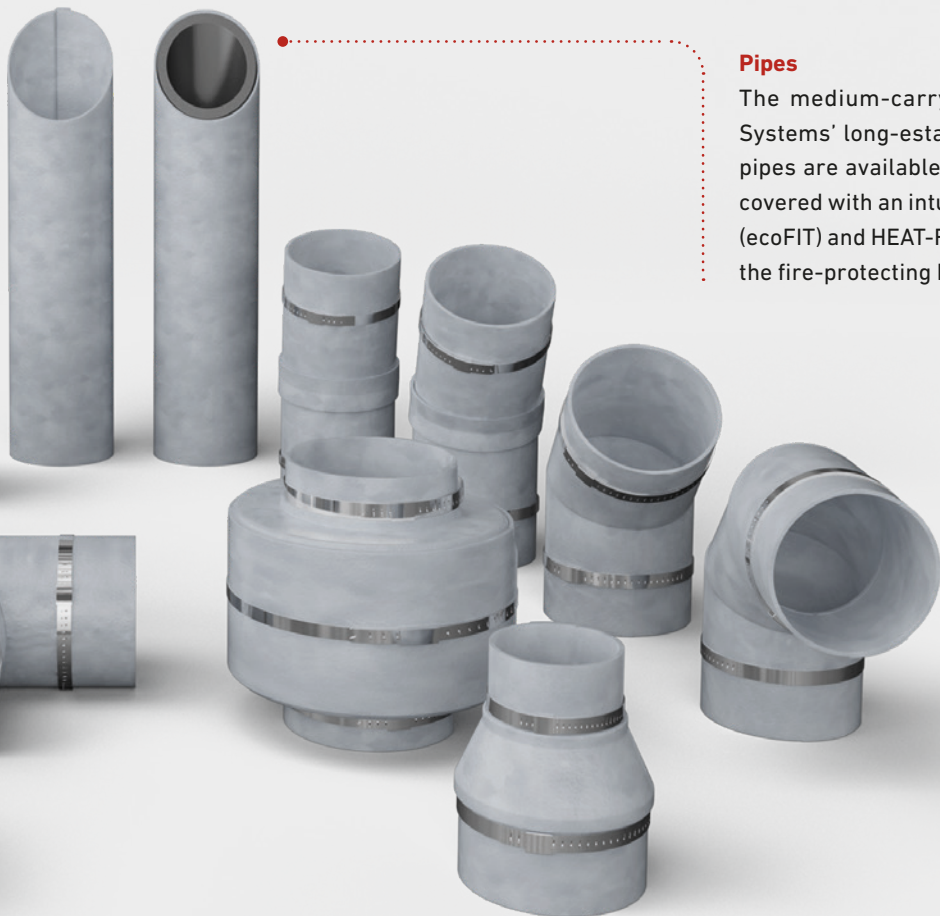


Fittings

The medium-carrying fittings are made of PE100. HEAT-FIT is the ideal solution to make the thermoplastic fittings fire-proof. The HEAT-FIT jackets protect the PE100 fittings from fire thanks to its unique intumescent behaviour. The jacket is installed after the initial welding of the inner pipe and fitting.

System properties

		HEAT-FIT PE pipe	HEAT-FIT Jackets & ecoFIT fittings
Description		Co-Extruded Flame-Retardant pipe	Standard ecoFIT components combined with a fire-retardant fabric
Materials	Medium pipe	PE100	PE100
	Outer Layer	Flame Retardant Co-Extrusion	Flame Retardant Fabric Sleeve/Jacket
Environment	Flame Retardant Layer	Halogen-Free Compound	Halogen-Free Fabric
Dimensions		d110mm / d160mm / d225mm / d315mm	d110mm / d160mm / d225mm / d315mm
Connection technology	Pipe to pipe connections	Butt fusion	Butt fusion or electrofusion
	Pipe to fitting connections	Butt fusion	Butt fusion
	Machines with special half-shells	Required!	No!
Nominal pressure		PN16 / SDR11	PN16 / SDR11
Weight (without medium)	Pipe d110mm	~5.3 kg/m	~4.6 kg/m
	Pipe d315mm	~32.2 kg/m	~30.2 kg/m
Temperature	Medium	0°C to +60°C	0°C to +60°C
Tests & Standards	IMO Res. A753 fire endurance L3 code	Passed	Passed
	ASTM D635-22 rate of burning	Passed	Passed
	Waterproof testing for 24h in seawater	Passed	Passed
	ISO 3127/15493 & ISO 3127/1716 impact test	Passed	Passed
Type approvals	DNV	Q4/2023	YES
	Bureau Veritas	Applied for in Q1/2024	YES
	Lloyd's Register	Applied for in Q1/2024	YES
	ABS	Applied for in Q1/2024	YES
	RINA	Applied for in Q1/2024	YES

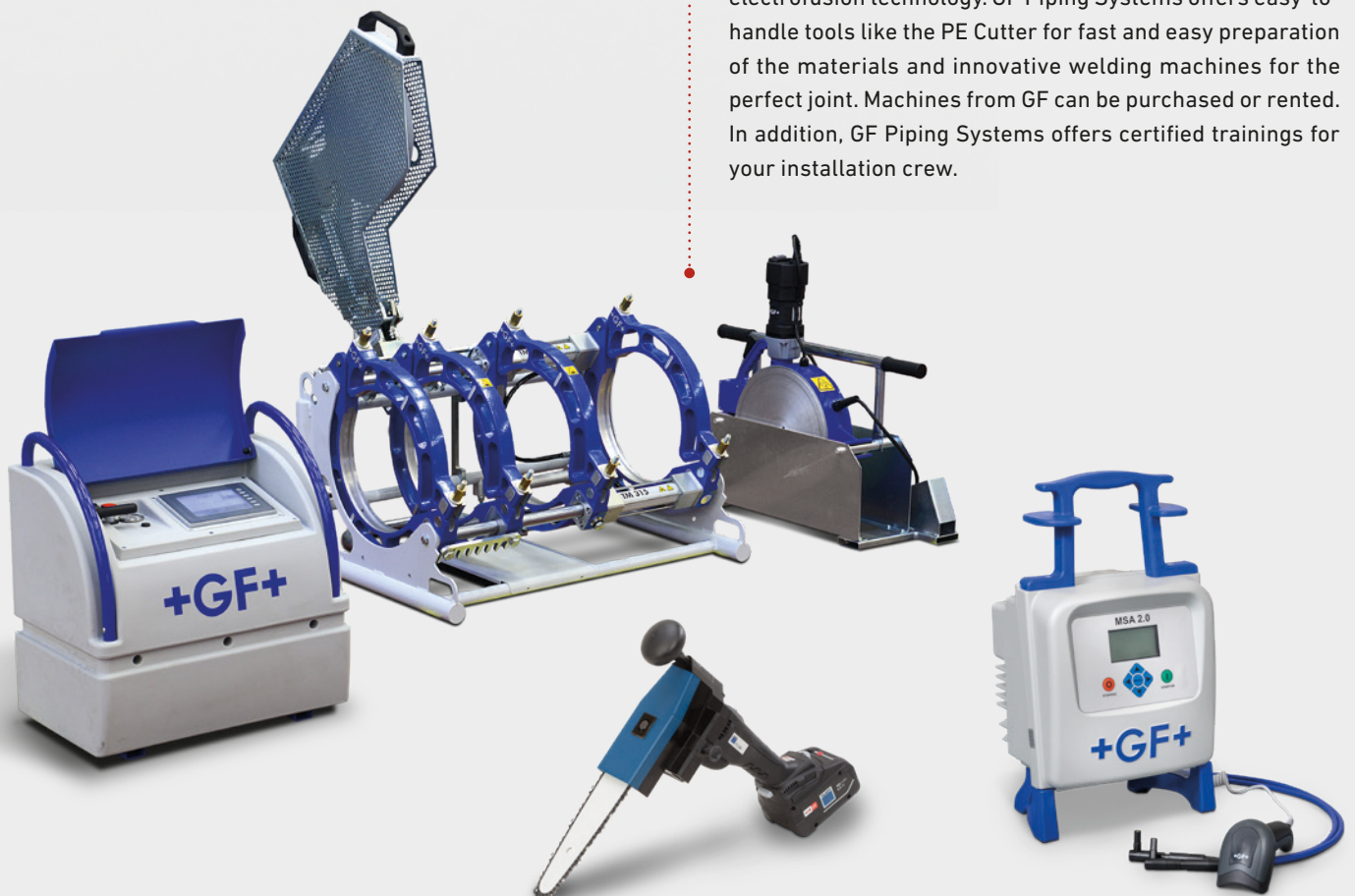


Pipes

The medium-carrying inner pipe is made of GF Piping Systems' long-established polyethylene system. HEAT-FIT pipes are available as a coextruded version (HEAT-FIT PE), covered with an intumescent coating, or as a set of a PE pipe (ecoFIT) and HEAT-FIT pipe jackets for manual installation of the fire-protecting barrier.

Machines & Tools

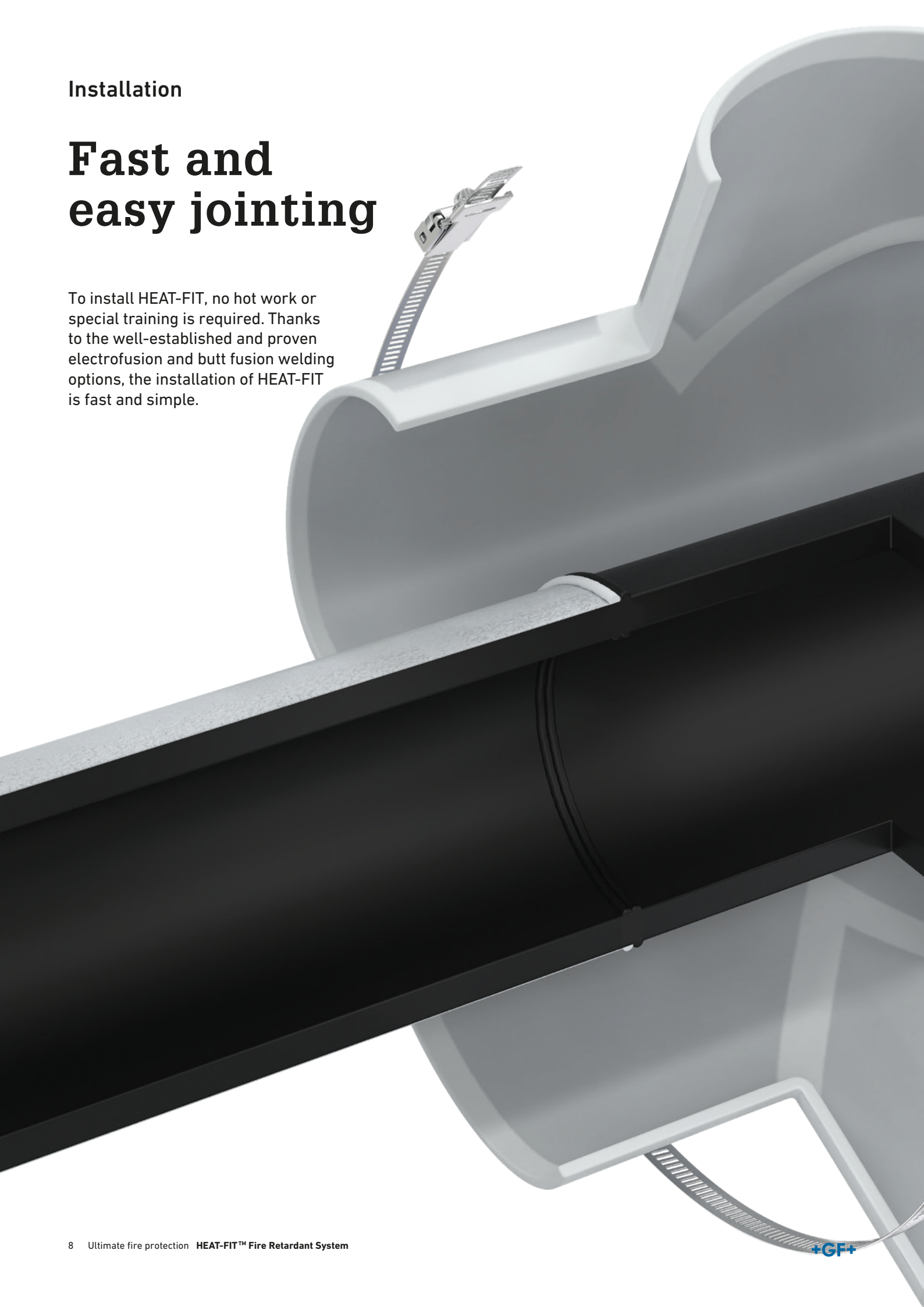
The HEAT-FIT components are jointed with butt fusion or electrofusion technology. GF Piping Systems offers easy-to-handle tools like the PE Cutter for fast and easy preparation of the materials and innovative welding machines for the perfect joint. Machines from GF can be purchased or rented. In addition, GF Piping Systems offers certified trainings for your installation crew.

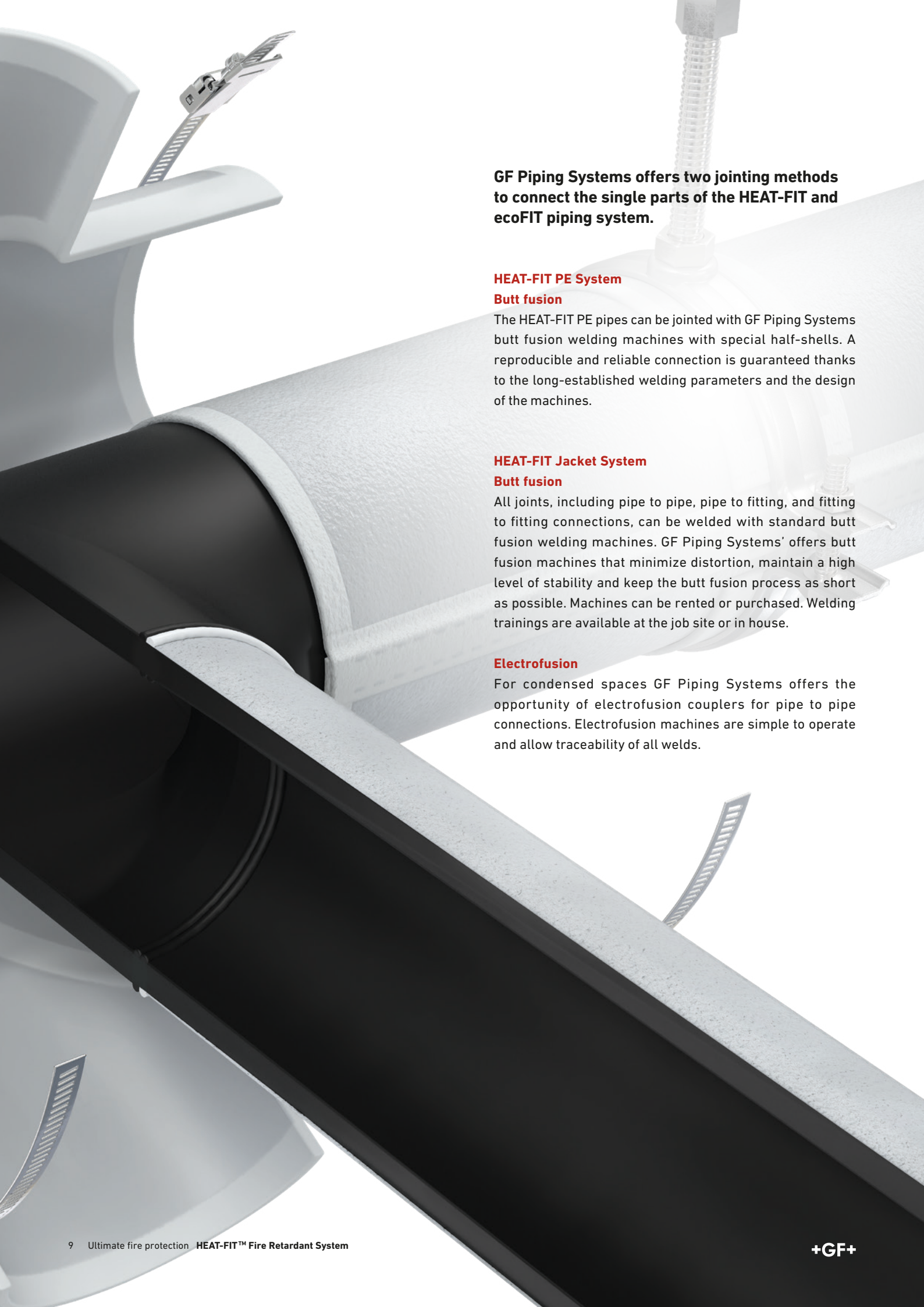


Installation

Fast and easy jointing

To install HEAT-FIT, no hot work or special training is required. Thanks to the well-established and proven electrofusion and butt fusion welding options, the installation of HEAT-FIT is fast and simple.





GF Piping Systems offers two jointing methods to connect the single parts of the HEAT-FIT and ecoFIT piping system.

HEAT-FIT PE System

Butt fusion

The HEAT-FIT PE pipes can be jointed with GF Piping Systems butt fusion welding machines with special half-shells. A reproducible and reliable connection is guaranteed thanks to the long-established welding parameters and the design of the machines.

HEAT-FIT Jacket System

Butt fusion

All joints, including pipe to pipe, pipe to fitting, and fitting to fitting connections, can be welded with standard butt fusion welding machines. GF Piping Systems' offers butt fusion machines that minimize distortion, maintain a high level of stability and keep the butt fusion process as short as possible. Machines can be rented or purchased. Welding trainings are available at the job site or in house.

Electrofusion

For condensed spaces GF Piping Systems offers the opportunity of electrofusion couplers for pipe to pipe connections. Electrofusion machines are simple to operate and allow traceability of all welds.

Beyond requirements

Ultimate testing

HEAT-FIT's high-temperature solution is highly insulating and robust. With an intumescent coating and a marine-proof scratch and stain-resistant finish, the material provides the highest level of safety. All materials have been tested in accredited laboratories and multiple in-house tests.



Fire resistance

The HEAT-FIT jackets, HEAT-FIT PE pipes, and accessories underwent a fire resistance test according to IMO Res. A753 fire endurance L3 Code.



Surface Flammability, Smoke, and Toxicity

The HEAT-FIT jackets and accessories have been tested in an official laboratory according to IMO Res. A653 2010 FTP Code Part 5 and Part 2.



ASTM D635-22 Standard test

All HEAT-FIT PE products underwent the ASTM D635-22 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.



Waterproof testing for 24h

All HEAT-FIT parts were successfully tested in seawater, diesel-fuel-contaminated water, and salt-water spray for 24 hours.



Vibration test

Harsh operating conditions on board were successfully simulated with a frequency of 5Hz over 2.000.000 cycles.



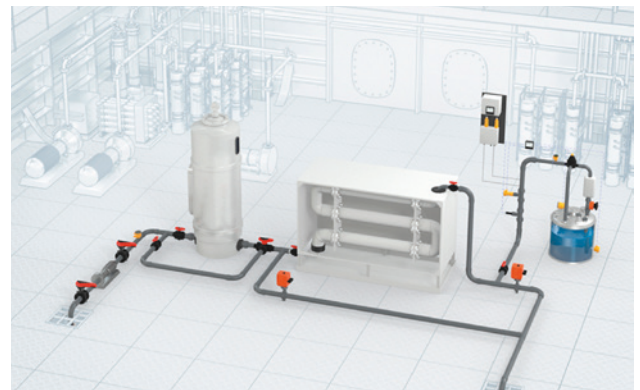
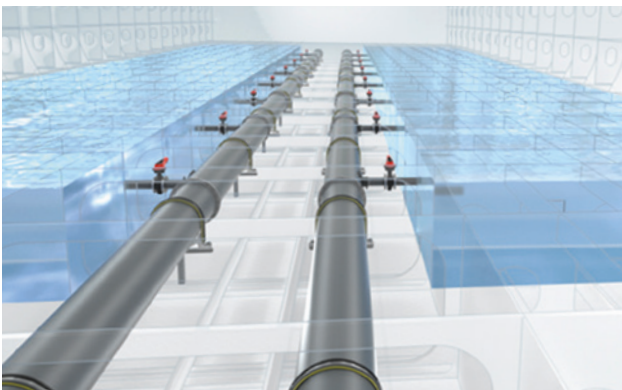
Impact test

Under the witness of a class surveyor, GF Piping Systems simulated possible impacts during installation and operating conditions to test the robustness of the HEAT-FIT system. The test setup was according to ISO 3127/15493 and ISO 31727/1716.

Applications

Designed specifically for marine applications

The HEAT-FIT Fire Retardant System enables the use of thermoplastic piping systems in essential applications (L3) on cruise ships, merchant vessels, or offshore platforms. These applications require an increased safety standard, according to IMO Fire Endurance Matrix

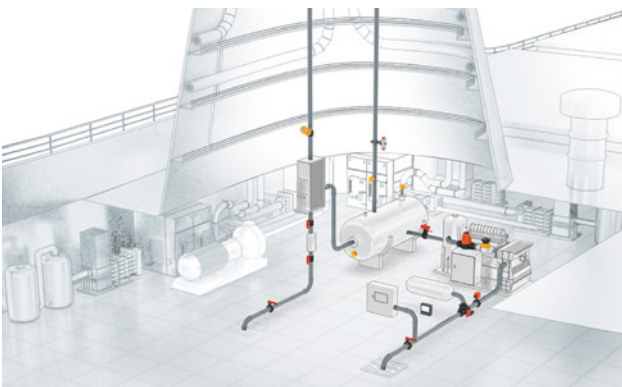


Ballast systems

Ballast water systems provide 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 onboard.

Ballast water treatment

Stabilizing systems with ballast water tanks are essential for safe and efficient shipping operations. However, due to the high level of marine organism ballast, water treatment on ships is required to prevent any risk to people's health or the environment.



Exhaust gas scrubber

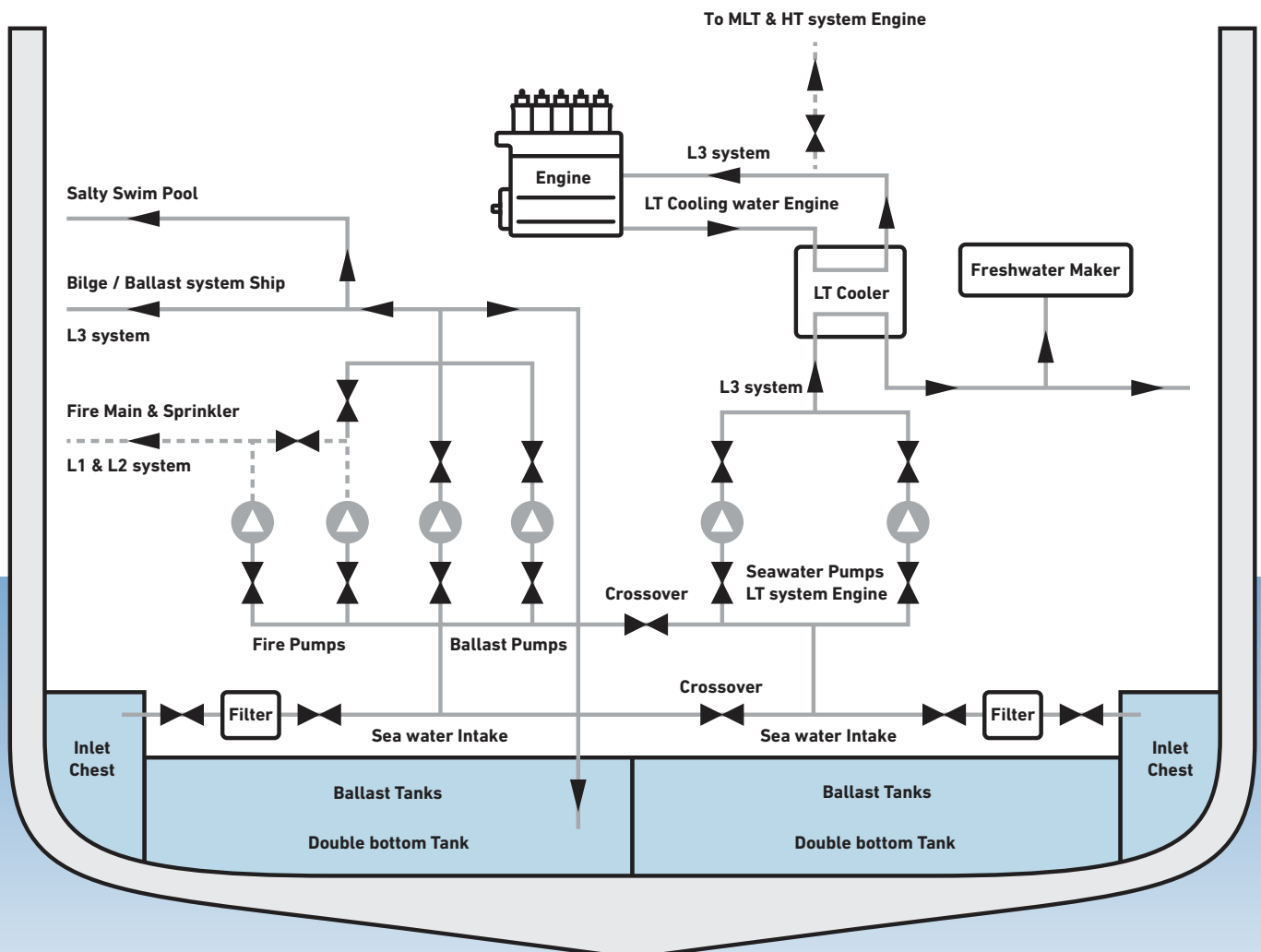
Ensure clean emission respecting sulfur cap limitation. The International Maritime Organization has stipulated a reduction in the maximum sulfur limit in marine fuels from 3.5% to 0.5%.

Freshwater and seawater cooling system

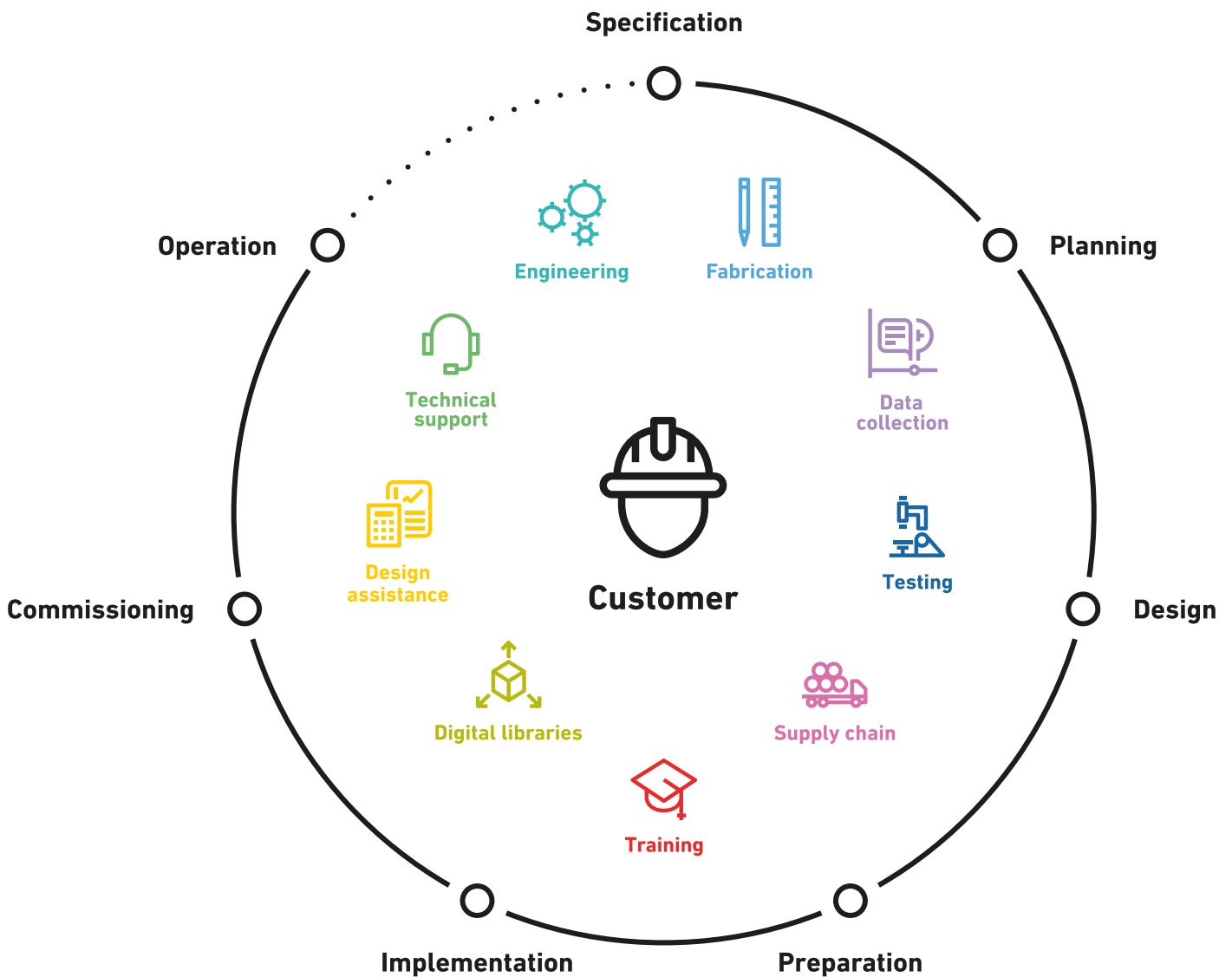
The cooling of engines is achieved by circulating a cooling liquid around internal passages within the engine. The cooling liquid is heated up and is then cooled by seawater. Without adequate cooling, certain parts of the engine which are exposed to very high temperatures would soon fail.

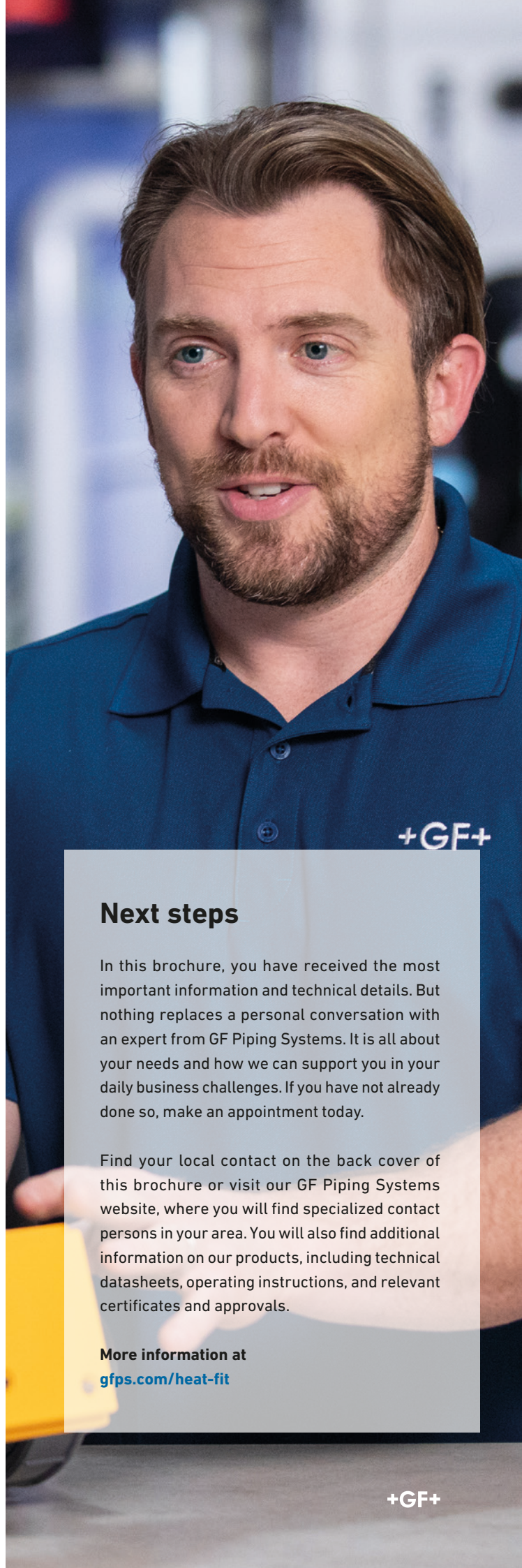
Fire endurance matrix

Piping System	Location					
	A Machinery spaces of category A	B Other machinery spaces and pump rooms	C Cargo pump rooms	D RO/RO cargo holds	J Accommodation service and control spaces	K Open decks
Sea Water						
Sprinkler System	L1	L1	L3	X	L3	L3
Ballast Sea Water (incl. BWT lines)	L3	L3	L3	L3	L2	L2
Cooling Water, essential services	L3	L3	n/a	n/a	n/a	L2
Tank cleaning services fixed machines	n/a	n/a	L3	n/a	n/a	L3
Fresh Water						
Cooling Water, essential Services	L3	L3	n/a	n/a	L3	L3
Condensate return	L3	L3	L3	0	0	0
Exhaust Gas Cleaning effluent line	L3	L3	n/a	n/a	L3	0



One partner from planning to commissioning





Ready when you are

With Specialized Solutions, the global leader GF Piping Systems provides project support every step of the way to achieve construction excellence. Allowing owners and planners to concentrate on their daily business without interruption.

Engineering

Increase the efficiency of your project with tailor-made analysis packages from GF Piping Systems. We can help to minimize project risks by diminishing incorrect calculations or the wrong material selection. You can rely on GF's experience in fast project implementation and chose our durable, safe, and reliable piping systems delivery. Established knowledge, guiding you through.

Prefabrication

Focusing on your individual needs and application, GF Piping System's customizing teams forge tailored solutions, developing custom-made parts to complete systems or special solutions produced in small series, individual consulting, and off-site prefabrication. Through our global network, we offer a wide range of comprehensive solutions. Tailored innovation, inspired by you.

Training

GF Piping Systems instructional courses help you teach your customers and installers essential knowledge for the welding of pipes, piping components, and fire retardant sleeves, as well as an in-depth understanding of cemented, butt, and electrofusion connections. With Specialized Education, we help prevent damage before it occurs, with well-trained and qualified installers.

More information at
gfps.com/specialized-solutions

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.

Find your local contact on the back cover of this brochure or visit our GF Piping Systems website, where you will find specialized contact persons in your area. You will also find additional information on our products, including technical datasheets, operating instructions, and relevant certificates and approvals.

More information at
gfps.com/heat-fit

Local support around the world

Visit our webpage to get in touch with your local specialist:

www.gfps.com/our-locations



The information and technical data (altogether "Data") herein are not binding, unless explicitly confirmed in writing.
The Data neither constitutes any expressed, implied or warranted characteristics, nor guaranteed properties or a guaranteed durability. All Data is subject to modification. The General Terms and Conditions of Sale of Georg Fischer Piping Systems apply.