

GF Piping Systems

+GF+

# Building Technology

Dependable piping solutions for modern construction





# Dependable piping solutions for modern construction

## Corrosion and chemical resistant systems

### + GF Piping Systems

GF focuses on three core businesses: GF Piping Systems, GF Automotive and GF Machining Solutions. The industrial corporation founded in 1802 headquarters in Switzerland and operates approximately 130 companies with more than 14 000 employees across 30 countries.

GF Piping Systems is a leading supplier of plastic and metal piping systems with global market presence. For the treatment and distribution of water and chemicals, as well as the safe transport of liquids and gases in industry, we have the corresponding jointing technologies, fittings, valves, automation products and pipes in our portfolio.

### + Our market segments

Being a strong partner, GF Piping Systems supports its customers in every phase of the project, no matter which processes and applications are planned in the following market segments:

- Building Technology
- Chemical Process Industry
- Energy
- Food & Beverage / Cooling
- Microelectronics
- Marine
- Water & Gas Distribution
- Water Treatment

### + Global presence

Our global presence ensures customer proximity worldwide. Sales companies in over 30 countries and representatives in another 80 countries provide customer service around the clock. With 48 production sites in Europe, Asia and the USA we are close to our customers and comply with local standards. A modern logistics concept with local distribution centres ensures highest product availability and short delivery times. GF Piping Systems specialists are always close by.

### + Complete solutions provider

Our extensive product range represents a unique form of product and competence bundling. With over 60 000 products, allied with a broad range of services, we offer individual and comprehensive system solutions for a variety of industrial applications. Our automation offering perfectly fits into our complete system approach and is thus an integral part of our portfolio. Having the profitability of the project in focus, we optimize processes and applications that are integrated into the whole system.

Continually setting standards in the market, we directly provide our customers with technological advantages. Due to our worldwide network customers benefit directly from over 50 years of experience in plastics.

From start to finish, we support our customers as a competent, reliable and experienced partner, actively contributing the know-how of an industrial company that has been successful in the market for over 200 years.



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## Key (for product range pages 10-37)



### Space heating applications:

Products that are suitable for the higher temperature demands of space heating for; radiators, underfloor systems and other types of heat emitters.



### Domestic hot water applications:

Products suitable for use in heated mains water applications where the water is used for; baths, showers, basins and sinks



### Mains cold water applications:

Products suitable for distribution of mains cold water (including boosted cold water). The water may for a variety of purposes and not always drinking water, (see below).



### Drinking water applications:

Products suitable for distribution of mains cold water supply specifically intended for drinking water purposes.



### Chilled water applications:

Products suitable for lower temperatures supplying chilled water services



### Gas applications:

Products suitable distribution of gaseous mediums.



### Chemical waste applications:

Product suitable to discharge waste chemicals.



### Flame retardant

Products with flame retardant properties

# Benefits of Plastics

**Plastics are polymers created by the chemical conversion of natural products or synthesized from organic materials. The primary components are long chains of carbon (C) and hydrogen (H) elements, which make up the building blocks of plastics, known as monomers.**

The raw materials for the production of plastics are natural compounds such as cellulose, coal, oil and natural gas. In total the plastics industry consumes around 6 % of the petroleum products that come out of refineries.

Plastics fall into three main categories on the basis of their internal structure and the resulting mechanical characteristics: thermoplastics, thermosetting plastics and elastomers. The specific characteristics of thermoplastics make them the most suitable for creating systems of pipes and valves.

Thermoplastics in turn can be split into two categories on the basis of their molecular structure:

- Semi-crystalline thermoplastics, which have a partially ordered molecular structure: this category includes the polyolefins (polypropylene, polyethylene, polybutylene) and the fluoropolymers (PVDF, PTFE, FEP, etc.)
- Amorphous thermoplastics, which have a completely disordered molecular structure: this category includes the vinyl chlorides (PVC-U, PVC-C, etc.) and the styrenes (ABS, polystyrene, etc.)

Semi-crystalline materials are more suitable for hot welding, while amorphous thermoplastics are ideal for cementing or cold welding.

## + Advantages

Thermoplastics obviously present different characteristics from those of the metals traditionally used for piping. A brief summary:

Metal systems	Plastic systems
<b>High density</b> <ul style="list-style-type: none"><li>• Crane needed for transport</li><li>• Widely spaced fixings</li><li>• High anchoring forces, fixing required</li></ul>	<b>Low density</b> <ul style="list-style-type: none"><li>• Lighter lift weights compared to metal options</li><li>• Closely spaced fixings</li><li>• Limited anchoring forces, simple and economic</li></ul>
<b>Thermal conductivity</b> <ul style="list-style-type: none"><li>• Insulation always needed to limit heat loss</li><li>• Formation of condensates and resulting corrosion</li></ul>	<b>Low thermal conductivity</b> <ul style="list-style-type: none"><li>• Limited heat loss</li><li>• Low levels of condensation and resistance to corrosion</li></ul>
<b>Electrical conductivity</b> <ul style="list-style-type: none"><li>• Galvanic corrosion may occur</li></ul>	<b>Electrical insulator</b> <ul style="list-style-type: none"><li>• No corrosion</li></ul>
<b>Chemical resistance</b> <ul style="list-style-type: none"><li>• Low resistance to acids, requiring the use of costly alloys</li><li>• Damage from encrustation</li></ul>	<b>Chemical resistance</b> <ul style="list-style-type: none"><li>• In combination with correct jointing methods, at least 25 years of useful life can be warranted</li><li>• No encrustation</li></ul>

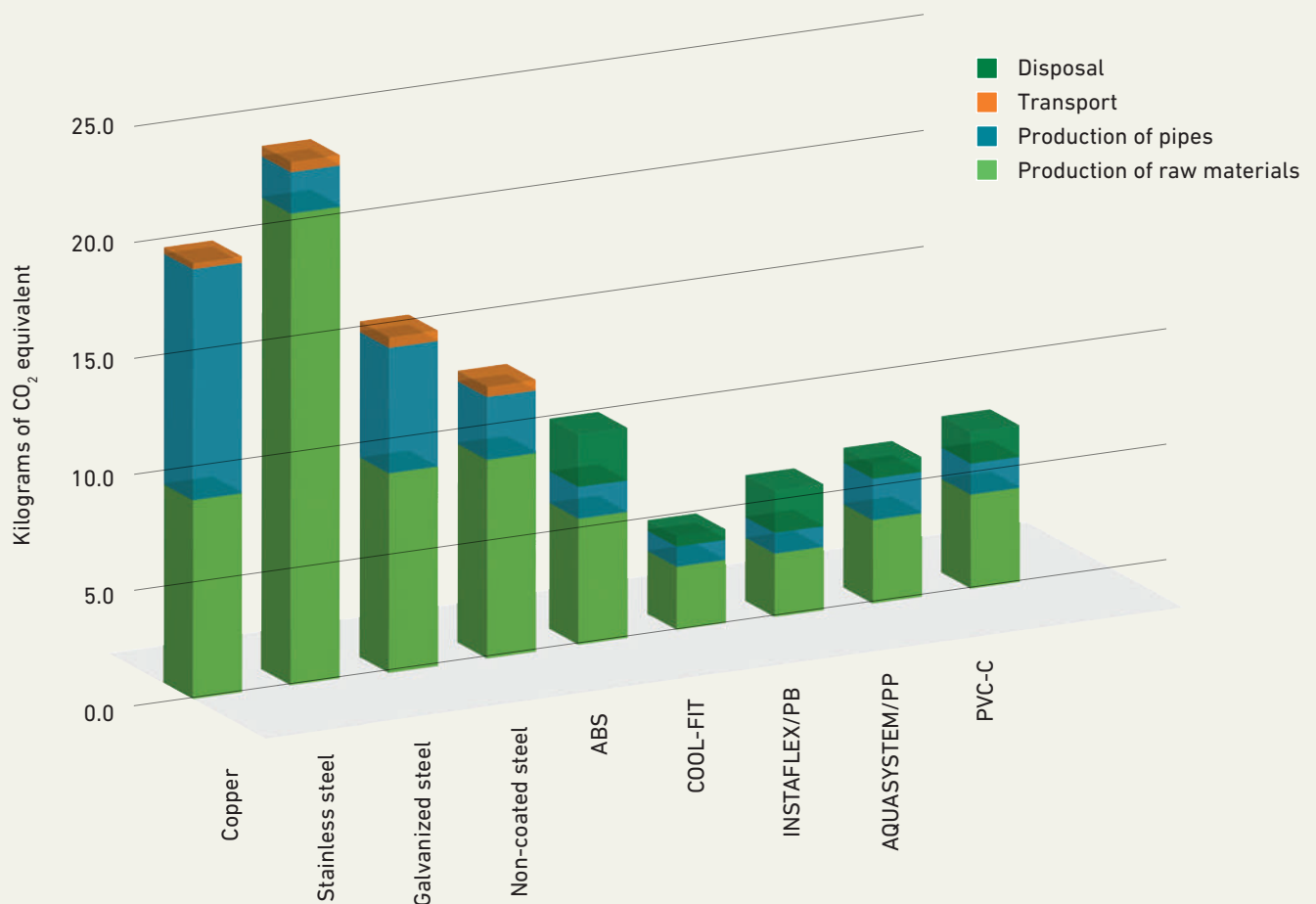


## + Lifecycle analysis

The carbon footprint is the total of all greenhouse gases emitted into the atmosphere throughout the lifetime of a product, from extraction to refining, plus production, transport, use and disposal.

The quality of the environmental performance of piping systems in thermoplastics has been shown by assessing the lifecycle of the pipes for applications in the building technology, industry and water and gas distribution sectors.

The analysis compares the environmental impact of a one metre pipe for each of the commonly used plastics with the main competitor materials (for DN25, 80, 150 and 400). The study was conducted by an independent Swiss company specialising in the analysis of environmental performance and is based on Ecoinvent, the world's leading life cycle inventory database. The graphic shows the results as follows.



The main conclusions of this study are that plastic piping systems offer better performance than metal systems, a result which has also been confirmed by various other studies in this area. Thermoplastics score particularly highly because of the reduced weight, which pays off in the transport and installation areas. Fully plastic solutions are lighter than other piping systems using conventional materials and this has a positive impact on the carbon footprint.

The conclusions reached by these studies and by other simulations available have been brought together in a tool ([www.gfps.com](http://www.gfps.com)—online tools) for calculating the savings in carbon dioxide emissions by using plastics rather than the more common metals.

## Customer service

# Prefabrication

At GF, we always aim to “add value”. One of the most powerful ways for us to deliver this is through our custom prefabrication services.

GF have invested in a dedicated workshop for assembly of custom offsite fabrications.

Our highly trained staff can assemble customised systems in any of our materials, using any of the available jointing methods.

This service offers many benefits;

- GF can significantly speed up the installation timescales of a project by prefabricating pipe-runs, spools, manifolds and headers to any required configuration.
- Pre-assembled circuits can be delivered to site to suit the program of works.
- These customised preassembled circuits can be installed quickly and easily, with peace-of-mind.
- GF offer you the highest level of Quality Assurance by directly controlling the assembly methods and transportation to site.
- All joints executed by our specialist engineers are recorded with a unique code, ensuring full traceability.

No more worrying about having joints executed correctly on-site just let our experts provide you with quality and peace-of-mind!







## Prefabrication process stages

- ① Project - drawings submitted
- ② Quote - take off facility
- ③ Order - working drawings submitted
- ④ Engineering services department - order processed
- ⑤ Customer approval stage
- ⑥ Fabrication department - made to your exact requirements
- ⑦ Delivery - delivered direct to your site



# Multi-Storey Residential Building

GF Piping Systems provide perfect building technology solutions for your residential projects. Plastics are lighter and more economical than traditional materials reducing energy usage, corrosion risks and reducing the total carbon footprint through efficient production and transportation methods.

1

## Polyethylene pipework solutions for utility services, boosted cold water and chilled water services.

### ecoFIT/ELGEF

Corrosion-resistant solutions for universal usage in highly diverse residential or commercial buildings.

Operating conditions: from -50 °C to + 60 °C / PN16

Range: d20–d1200

- Corrosion Free – extended service life and long term cost savings
- Low weight – allows easy handling and more cost effective to transport
- Excellent abrasion resistance – 4 times more abrasion resistant than steel pipes
- Smooth surface - ensures low pressure losses and no encrustation
- High elasticity - Resistant against impact and bending stresses
- WRAS approved - hygienically safe



2

## Riser and run-outs for space heating, domestic hot water, mains cold water, chilled water and air conditioning services

### INSTAFLEX

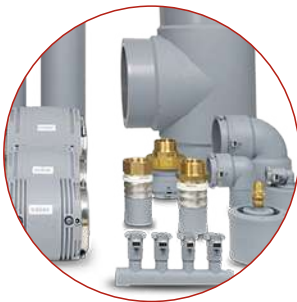
Innovative system in polybutene material to carry space heating, sanitary, chilled water and compressed air.

Operating conditions: from -10 °C to + 95 °C / PN16

Range: d16–d225

Joints: socket fusion, electrofusion, butt fusion

- Flexible piping system - highly suitable for curved installation runs
- Ease of installation - reduces installation times by approximately 30%
- Pre-fabrication possible - manifolds, spools and other custom parts can be pre-fabricated by GF in Coventry
- WRAS approved - hygienically safe



3

## Property services for space heating, domestic hot water and drinking water

### Sanipex MT

Multilayer system with PPSU quick fittings for sanitary and heating installations.

Operating conditions: from 0 °C to + 80 °C / PN10

Range: d16–d32

Joints: Axial press fittings

- Fast installation - innovative axial press system, only one tool required
- GF tool - gun-style tool system assists ease and speed of installation
- Fittings can be used for both insulated and non-insulated multilayer pipe
- WRAS approved - hygienically safe
- Full flow system - no restrictions in flow throughout an installation



3







#### 4 PP-R solutions for space heating, domestic hot water, mains cold water and chilled water services

##### AQUASYSTEM

AQUASYSTEM has been designed and produced as a piping system for space heating, sanitary, boosted and chilled water services.

Operating conditions: from 0 °C to + 90°C / PN16

Range: d20–d125



- Ease of installation - reduces installation times by approximately 30%
- Corrosion resistant - prolongs service life of the installation
- Lightweight parts - assist ease of installation compared to traditional materials
- Low expansion - our PP-R pipe has a fibre inner layer reducing expansion and contraction
- No theft value - metal systems are valuable and prone to site thefts

# Multi-Storey Commercial Building

GF Piping Systems provide perfect building technology solutions for your commercial projects. Plastics are lighter and more economical than traditional materials reducing energy usage, corrosion risks and reducing the total carbon footprint through efficient production and transportation methods.

1

## Polyethylene welded pipework solutions for commercial building applications

### ecoFIT/ELGEF

Corrosion-resistant solutions for universal usage in highly diverse residential or commercial buildings.

Operating conditions: from -50 °C to + 60 °C / PN16

Range: d20–d1200

- Corrosion Free – extended service life and long term cost savings
- Low weight and excellent flexibility – allows easy handling and more cost effective to transport
- Excellent abrasion resistance – 4 times more abrasion resistant than steel pipes
- Smooth surface - ensures low pressure losses and no encrustation
- High elasticity - Resistant against impact and bending stresses
- Full flow system - no restrictions in flow throughout an installation



2

## The Revolution for Efficient Cooling

### COOL-FIT

COOL-FIT is the corrosion and condensation-free solution for the transportation of chilled water inside residential and commercial buildings, data centers and for process cooling.

Operating conditions: from -50 °C to + 60 °C / PN16

Range sizes: d32–d450

- Fast installation - three installation steps in one, greatly reduces installation time
- Lightweight - 30% lighter than traditional metal
- Corrosion-free solution - extends installation life, peace of mind
- Complete range - pipe, valves, fittings - all pre-insulated
- 2D CAD library, BIM library and technical support available



3

## PP-R solutions for space heating, domestic hot water, mains cold water and chilled water services

### AQUASYSTEM

AQUASYSTEM has been designed and produced as a piping system for space heating, sanitary, boosted and chilled water services.

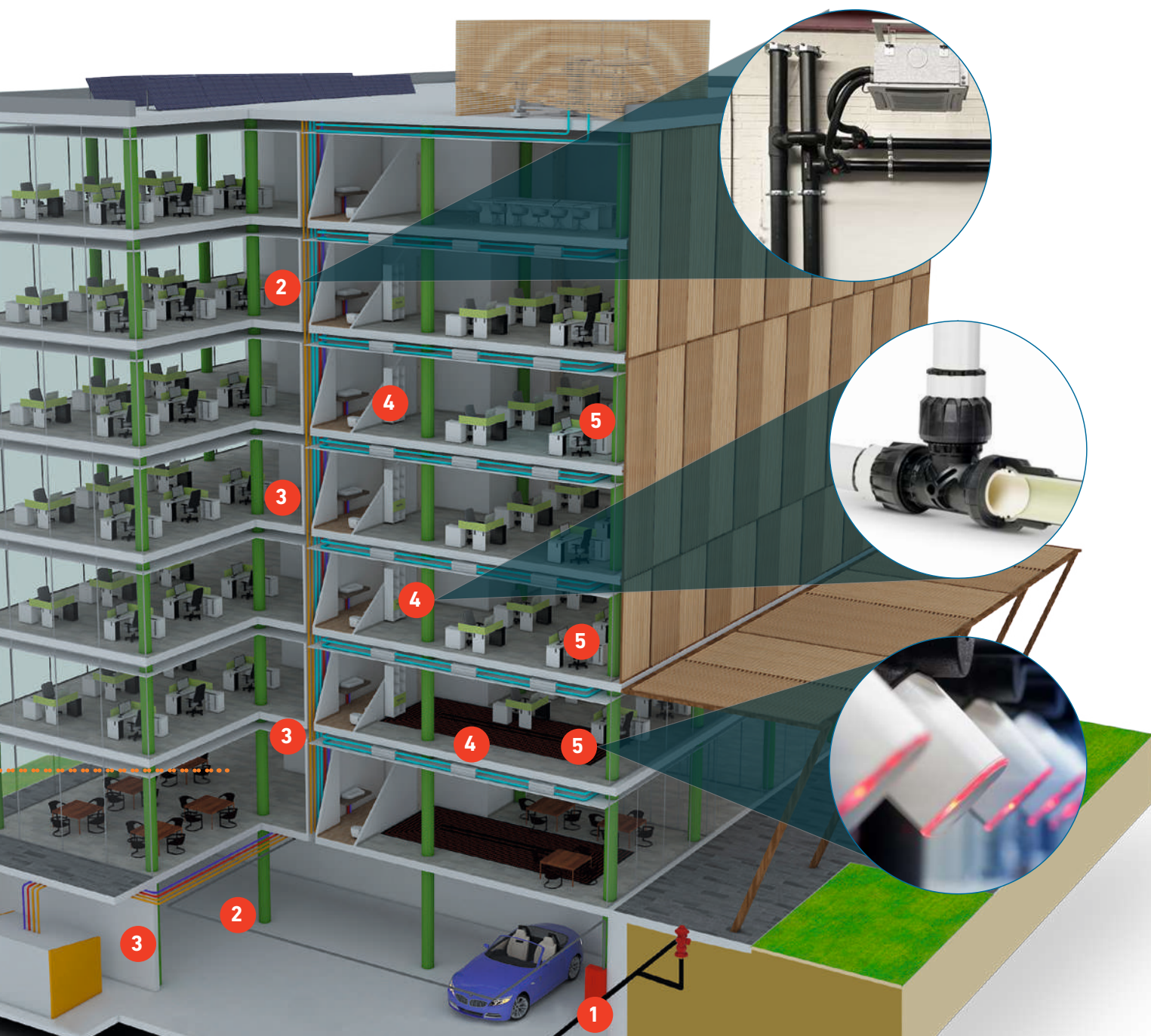
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#### 4 Services for space heating, domestic hot water and drinking water

##### Sanpiex MT

Multilayer system with PPSU quick fittings for sanitary and heating installations.

Operating conditions: from 0 °C to + 80 °C / PN10

Range: d16–d32

Joints: Axial press fittings

- Fast installation - innovative axial press system, only one tool required
- GF tool - gun-style tool system assists ease and speed of installation
- Fittings can be used for both insulated and non-insulated multilayer pipe
- WRAS approved - hygienically safe
- Full flow system - no restrictions in flow throughout an installation



#### 5 Revolutionising sanitary automation processes and securing the safe supply of potable water

##### Hycleen Automation System

Conducts your potable water installation safely and conveniently from one central control unit. With the automated circulation control system.

- Hydraulic balancing
- Automated flushing
- Massive maintenance labour savings
- Minimises legionella risk
- Fast start up
- Easy to use interface
- Remote start up
- Energy saving







# INSTAFLEX

## Polybutene

**INSTAFLEX represents the future of commercial and domestic pipework installations**

Greater London Authority (GLA)  
Building

### FEATURES

- > Flexible
- > Simple, low cost installation
- > Comprehensive range of fittings
- > Socket, electrofusion and butt jointing methods



# INSTAFLEX

INSTAFLEX is a state-of-the-art polybutene system for installations in the building technology and marine sector. Major fields of application are heating, sanitary water, cooling systems and compressed air. The high pressure rating of pipe and fittings also ensure suitability for use in boosted cold water applications.

INSTAFLEX provides complete solution packages for a wide variety of buildings, from single-family detached houses to apartment blocks through to public or commercial buildings.

Materials: Polybutene, Brass

Dimension range: d16 – d225

Joining technology: Electrofusion, socket fusion, butt fusion, compression joint

Operating pressure: Up to 25 bar

## Applications

The flexibility of the material makes it the ideal solution for curved buildings such as the Greater London Authority, (GLA), building.

- > Heating systems and hot/cold water services
- > Compressed air systems
- > Chilled water

Suitable applications:

- > Schools
- > Hospitals
- > Hotels
- > Accommodation blocks
- > Office blocks
- > Cruise liners and ship building

## Technical information

Size range: d16 - d225mm

Operating pressures:

PN25 (d16-d20mm) @ 20°C

PN16 (d25 - d110mm) @ 20°C

PN10 (d125 - d225mm) @ 20°C

Temperature range: -10°C to 95°C

Thermal Conductivity @ 20°C: 0.19W/m°C

Expansion/Contraction: 0.13mm/m°C

Approvals: WRAS, BSi Kitemark







# AQUASYSTEM

Polypropylene-random (PP-R)

**AQUASYSTEM - PP-R piping system for heating, hot water, cold and chilled water applications**

Corinthia Hotel  
London

## FEATURES

- > Hygienically safe
- > Simple, low cost installation
- > Corrosion resistant
- > Socket, electrofusion and butt jointing methods



# AQUASYSTEM

AQUASYSTEM is a polypropylene-random piping system which is lightweight, cost-effective and corrosion-free.

AQUASYSTEM is a perfect solution for commercial buildings, used for the riser and distribution runs for space heating, domestic hot water, mains cold water and chilled water services.

AQUASYSTEM pipe is always white in colour but contains a green middle layer of PP-R reinforced with fibreglass, which reduces material expansion in heated water applications.

Materials: Polypropylene-random pipe and fittings

Dimension range: d20 – d125

Joining technology: Electrofusion, socket fusion, butt fusion with transition options to traditional systems available

Operating pressure: Up to 20 bar

Operating temperature: 0°C to +90°C

## Applications

Unlike our INSTAFLEX range, AQUASYSTEM is a rigid piping solution, perfect for risers and run-outs in a range of applications.

- > Heating systems
- > Domestic hot water
- > Mains and boosted cold water services
- > Chilled water

Suitable applications:

- > School
- > Hospitals
- > Hotels
- > Accommodation blocks
- > Office blocks

## Technical information

Size range: d20 - d125mm

Pressure: PN20 @ 20°C

Temperature range: 0°C to 90°C

Thermal Conductivity @ 20°C: 0.24W/m°C

Expansion/ Contraction: 0.035mm/m°C

Approvals: WRAS



# COOL-FIT

## Pre-insulated Polyethylene

Your solution for cooling applications



Photograph reproduced with permission from  
+ Eric Parry Architects

The Cambridge Triangle  
Cambridge

### FEATURES

- > Up to 50% faster installation
- > Reduces on-site time
- > Up to 30% better energy efficiency
- > 100% corrosion free



# COOL-FIT

COOL-FIT is the first of its kind. A completely pre-insulated piping system including fully pre-insulated electrofusion fittings, valves, flexible hoses and accessories, designed to transport chilled water to a new level of efficiency within air conditioning, chilled and boosted cold water applications. COOL-FIT combines three products; carrier pipe, insulation and robust jacket, into one revolutionary, efficient pre-insulated piping system. The 3 in 1 concept ensures 'on-site time' is reduced to an absolute minimum.

Materials: Polyethylene SDR11 carrier pipe, GF HE hard foam, HDPE outer jacket

Dimension range: d32 – d450

Joining technology: Electrofusion

Operating pressure: 16 bar, SDR11

## Applications

- > Chilled water
- > Boosted cold water
- > Cooling systems

Suitable applications:

- > Data Centres
- > Hospitals
- > Hotels
- > Universities
- > Accommodation blocks
- > Office blocks
- > Airports

## Technical information

Size range: d32 - d450mm

Pressure: PN16 @ 20°C

Temperature range: -50°C to 60°C

Insulation Thermal Conductivity at 20°C:

COOL-FIT 2.0 ≤ 0.022 W/mK

COOL-FIT 4.0 ≤ 0.026 W/mK

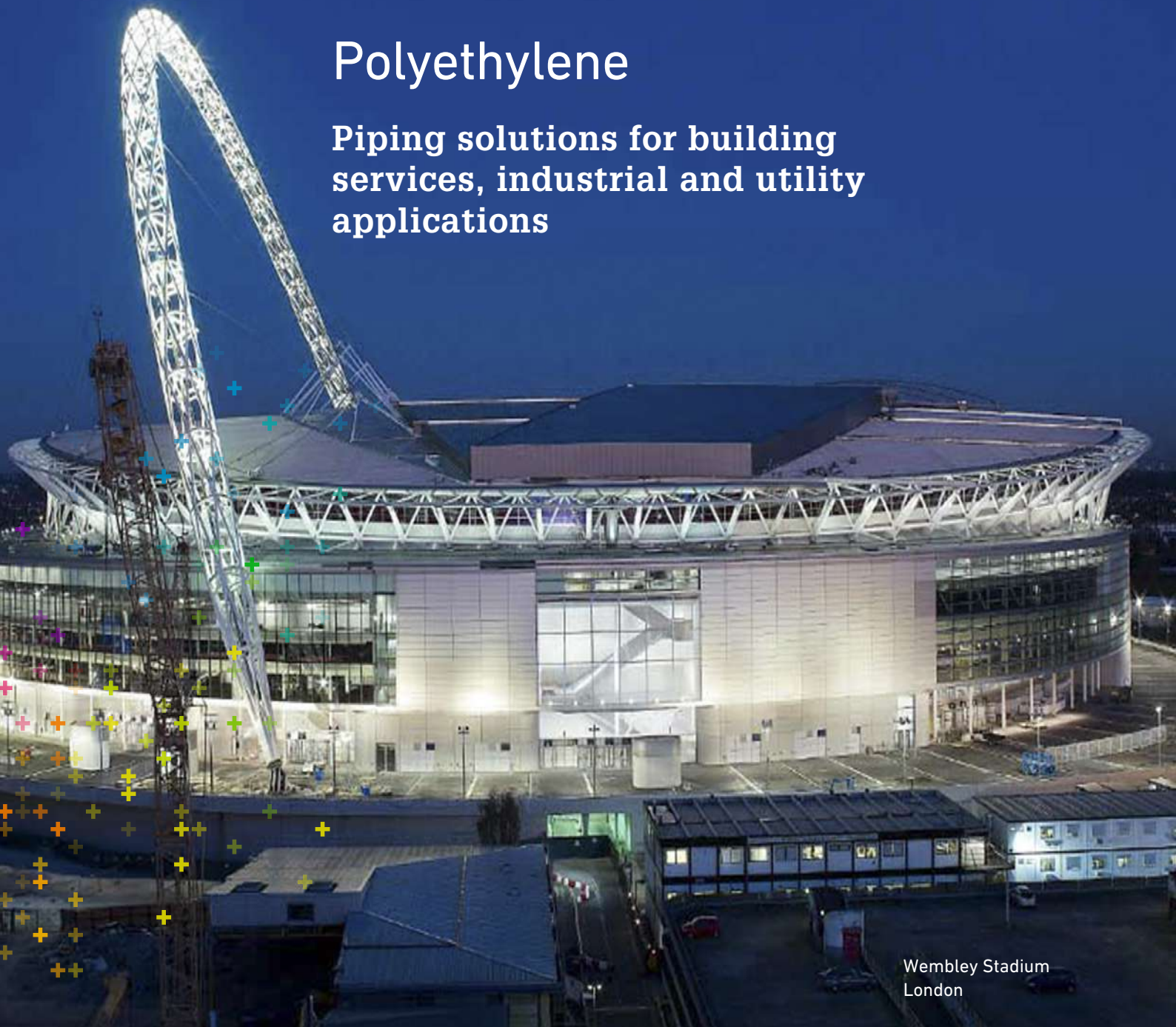
Approvals: WRAS, LEED, BREEAM



# ecoFIT/ELGEF

## Polyethylene

Piping solutions for building services, industrial and utility applications



Wembley Stadium  
London

### FEATURES

- > Corrosion free
- > UV and weather resistant
- > Comprehensive range of fittings
- > Socket, electrofusion, butt fusion jointing methods



# ecoFIT/ELGEF

ecoFIT/ELGEF - A complete polyethylene solution for building services and other applications that includes pipes, valves, automation and controls. ecoFIT/ELGEF provides a durable solution for mains cold water, waste water and gas supply services.

ecoFIT/ELGEF provides peace-of-mind through its long service life, corrosion resistance and extensive approval testing underwriting its safety benefits.

Materials: Polyethylene

Dimension range: d16 – d1200

Joining technology: Electrofusion, socket fusion, butt fusion

Operating pressure: Up to 16 bar

## Applications

Perfectly suited for boosted cold water and chilled water services due to its low temperature resistance and abrasion. Great range of sizes available to suit all applications

- > Boosted water services
- > Chilled water
- > Cooling applications
- > Compressed air

Suitable applications:

- > Apartments
- > Hospitals
- > Offices
- > Leisure facilities
- > Industrial processes

## Technical information

Size range: d16 - d1200mm

Pressures:

SDR 7.4 - PN20 (d16 - d25mm)

SDR 11 - PN16 (d16 - d500mm)

SDR 17 - PN10 (d16 - d500mm)

Temperature range: -50°C to 60°C

Thermal Conductivity @ 20°C: 0.38W/m°C

Expansion/Contraction: 0.20mm/m°C

Approvals: WRAS, BSi Kitemark



# Hyclean Automation System

Piping solutions for building services, industrial and utility applications

## FEATURES

- > Hydraulic balancing
- > Automated flushing
- > Massive maintenance labour savings
- > Minimises legionella risk



# Hycleen Automation System

Another excellent innovation from GF Piping Systems, introducing the Hycleen Automation System. Hycleen works by supporting the maintenance of drinking water hygiene in large buildings. With its intuitive central control unit, Hycleen ensures stable water temperatures thanks to hydraulic balancing, flushing of the pipes, management of the circulation valves and logging of all data.

Complex new and existing buildings, such as hotels, hospitals, schools, apartment blocks or industrial plants use the Hycleen Automation System for optimising drinking water hygiene.

The system is easy to install and commission, with energy consumption being optimised without increasing the risk of legionella. The valves include sensors and controllers, which are connected to the central control unit via just one cable for power supply and data transmission.

The Hycleen Automation System offers versatile, ready-to-use applications for a safe and hygienically optimised drinking water installation.

## Applications

- > Hydraulic balancing
- > Thermal disinfection and automatic maintenance
- > Automatic flushing
- > Actuator Automation
- > User-defined messages

## Applications

- > Hotels
- > Healthcare
- > Facilities Management
- > Schools
- > Apartment blocks
- > Industrial plants

Approvals: WRAS, DVGW



# Controls Legionella by use of high temperatures and circulation

Hycleen Automation System  
Municipality Moss, Norway



"We sought an integral solution, not just one for the water intake."

Moss municipality was recently able to put two new systems into operation that will reduce the risk of Legionella or other unwanted bacteria occurring within the hot water supply. This solution will ensure that the system will be regulated at all times and that its operation will be documented.

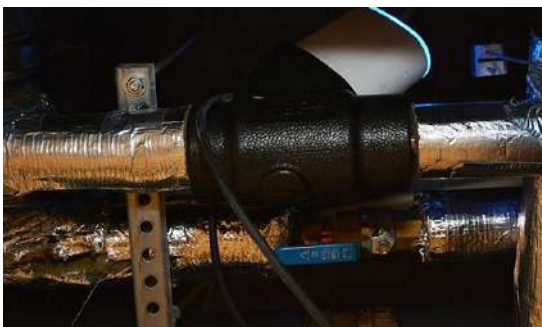


The municipality has installed a system that automatically ensures a consistently high temperature and regular water replacement throughout the hot water supply system at both the Peer Gynt Health Center and at Orkerød Nursing Home. Combined with the prior mapping of the pipe system and its usage, as well as regular water sampling, this minimizes the formation of biofilms, which are the breeding grounds for Legionella and other unwanted bacteria. In addition, the facility's operations will be documented for all subsections.

### Present everywhere

Legionella bacteria can be found everywhere, but they thrive in pipe systems with low water replacement and temperatures between 20 and 50 degrees Celsius. The bacterium is particularly known to spread via shower heads, and may cause serious illness and death when the elderly and those with impaired health are exposed to it. There have been several fatal outbreaks over the last few years, and it is suspected that unreported numbers in healthcare institutions are high.

We had systems in place for the prevention of Legionella through the use of chemical water treatments in both institutions. We were not entirely happy with the solutions, due to the size of the facilities and the number of side branches. We sought an integral solution, not just one for the water intake. "With this new solution we've gained control of the temperature and circulation throughout the entire system as well as in each subsection, full documentation through logging, and not least lower operating costs", says Daniel Mothes at Moss Kommunale Eiendomsselskap.



The sensors were installed on the existing plumbing, here shown in a picture of the ceiling.



Service manager Ole Adrian Pedersen of GK rør Moss and Daniel Mothes are pleased by both the partnership and the result.

### Hycleen Automation

System (HAS) by Georg Fischer, which is a modern water re-circulation system that automatically regulates/balances the water quantities in the system and the temperature, based on temperature measurements at several locations throughout the system itself.

The principle behind Hycleen is that valves are installed with integrated temperature sensors, which document the temperature of the hot water throughout the circulation pipe. The valves are placed out cross the building, or alternatively on a distributor in the technical room, which in that case is placed at the end of the circulation pipe.

### Sensors and valves

At the Peer Gynt Health Center, hot water circulation pipes were already in place to supply hot water to each department, and in this case Hycleen has been installed by fitting sensors/valves on the return end of each of the 12 circuits. There is additionally a sensor placed at the boiler output; this reads the output temperature in order to verify that the output temperature is what it should be, as well as providing a warning if the temperature is wrong

## Main advantages for the customer

- > Optimized Drinking Water Hygiene
- > Digital proof of the critical system parameters at the push of a button
- > Convenient: Warm water is immediately available
- > Better energy efficiency: minimized warm water preparation temperature, lower hot water requirements for thermal disinfection
- > Uncomplicated installation and intuitive user interface
- > Time savings during planning, installation, maintenance and operation



Pipe fitter and installer Roland Haubold from GK rør Moss, shows the app that controls the system, in this case at Peer Gynt Nursing Home.



# Sanipex MT

## Multilayer pipe system

### FEATURES

- > Market leading flow rates
- > Intelligent simple tooling
- > WRAS approved
- > Excellent range of fittings



# Sanipex MT

Having proved so successful over the last 20 years, Sanipex MT is GF Piping Systems' innovative solution for potable water and heating projects. The high-quality PE-RT multilayer composite pipes and the innovative dual layer PPSU fittings are jointed by an extremely secure grip union connection.

During jointing, the expansion of the pipe ensures excellent flow rates throughout the system. The joint is free of water pockets and offers market leading flow rates without any reduction within the internal cross-section. Sanipex MT connections are detachable and reusable, which brings enormous benefits when extending an installation.

The simple and easy-to-use tools help reduce assembly times. Sanipex MT is the ideal system for distribution lines, risers and connecting lines in private homes as well as in large buildings. Thanks to simple and handy tools, installation times are significantly reduced.

Materials: Innovative tool, PPSU fittings, brass fittings, multilayer pipes

Dimension range: d16 – d32mm

Jointing technology: Ultra-secure cone grip technology

Operating pressure: Up to 10 bar

## Applications

A complete, secure system for heating, domestic hot water and drinking water distribution

- > Space heating systems
- > Domestic hot water systems
- > Mains cold water services

Suitable applications:

- > Accommodation blocks
- > Domestic homes
- > Commercial buildings
- > Healthcare

## Technical information

Size range: d16 - d63mm

Pressure: PN10 bar @ 20°C

Pipe materials: PE-RT / AL / PE-RT

Temperature range: 0°C to 80°C

Lifespan: 50 years

Approvals: WRAS , DVGW



# Futuristic architecture – first-class technology for sanitary rooms

Sanipex MT at the  
Alcazar residence,  
Saint-Louis (F) Herrenberg



The high standard of installations contributes to the quality of life in the exquisite apartments.

The border triangle of France, Germany and Switzerland is bustling with construction activity. At the highest point of the small French town of Saint-Louis, a bold apartment building is being built with exclusive apartments and high-quality finishes. The JRG Sanipex MT and COOL-FIT piping systems ensure a first-class standard of building services.



## Hygiene standards and sustainability in focus

### Project background

The Résidence Alcazar has 14 floors and is considered the new landmark of Saint-Louis. The architecture is surprising, the panoramic view from the uppermost maisonettes over the pulsating economic area of Basel is beguiling. Large balconies and terraces create open spaces and ensure light-flooded apartments with premium amenities. A total of 64 apartments with two to six rooms and one commercial space will be ready for occupancy at the end of 2021.

### Selected technical solution

A residential building in the upscale segment requires high-quality building technology. The sanitary installer who won the tender therefore relied on the JRG Sanipex MT system from GF Piping Systems for the drinking water installations right from the start. For the air conditioning (cooling and heating) of the building, large pipe dimensions of the COOL-FIT system were installed in the riser zones. The lightweight plastic pipes are already pre-insulated and reduce installation time as well as energy loss. JRGUTHERM 2T was used as the hot water circulation controller. Gabriel Borg, Sales Manager at GF France, supported the sanitary company in the planning and contributed his experience.

### Accomplished improvements

The decisive factors for choosing JRG Sanipex MT were the very high hygiene standard of the system and the wide range of dimensions. The unique flare clamp connection technology of JRG Sanipex MT enables pipe connection without narrowing the cross-section and without dead spaces where bacteria and legionella could form. The Fraunhofer Institute has provided evidence that all joints in the system meet the criteria for sterility. The pressure loss is also minimal and there is only slight flow noise. These are ideal properties for installations in a high-rise building.

The plastic used for the pipes hardly accumulates lime and is particularly resistant to corrosion. Both JRG Sanipex MT and COOL-FIT are certified according to BREEAM, LEED and DGNB because of their special overall energy consideration.

### Main advantages for the customer

- > Meets highest hygiene standards thanks to full pipe cross-section without dead spaces
- > High corrosion resistance and low calcification of the material
- > Detachable and reusable flare clamp connection technology
- > Simple assembly, majority possible without electricity
- > Environmentally friendly, certified according to BREEAM, LEED and DGNB
- > Proven system for 20 years with numerous innovations



The drinking water installations for the high-quality apartments meet the highest hygiene standards. (Visualizations: AEA Architects).

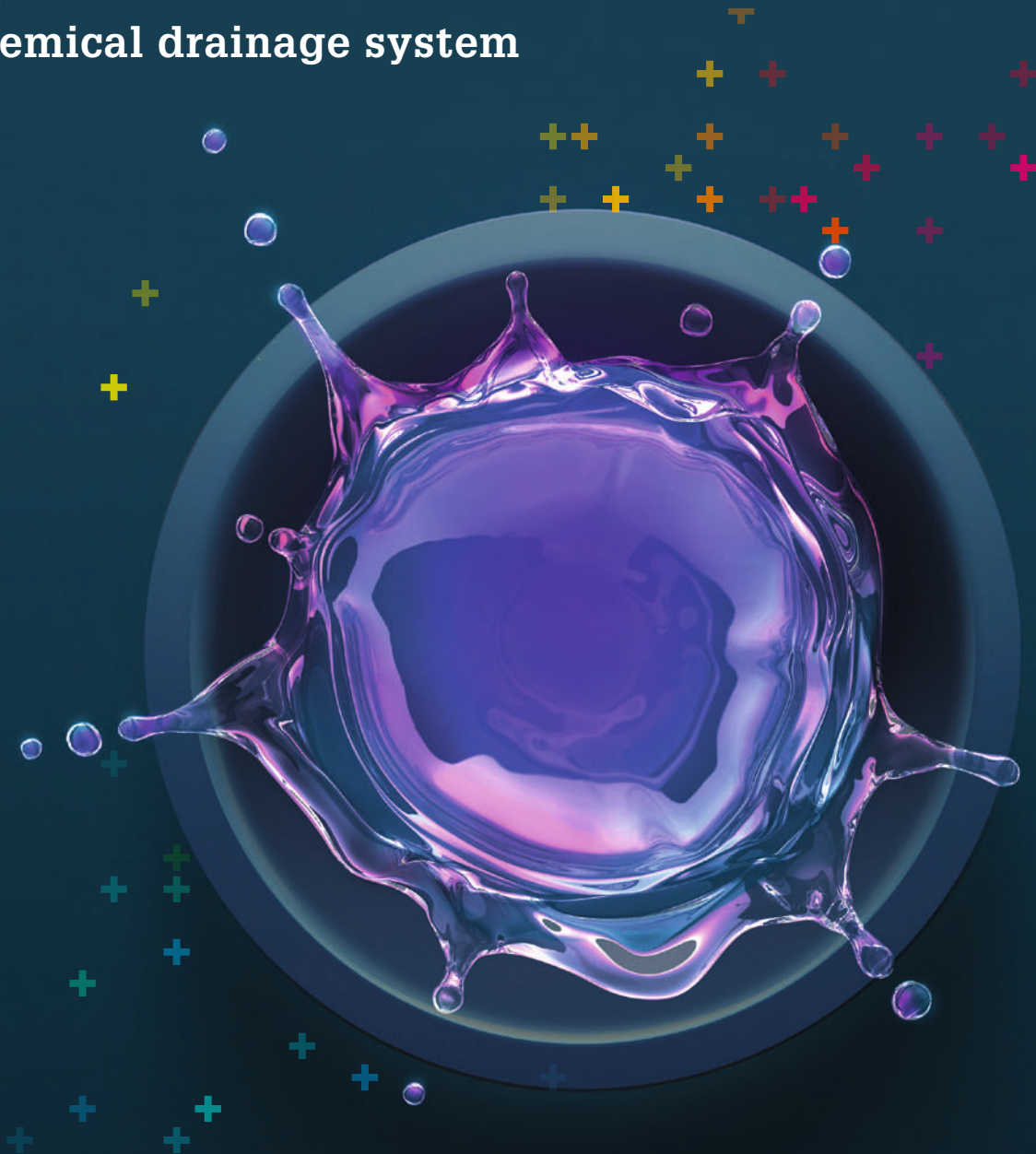


Pipe joints without narrowing of the cross-section and without dead spaces.

# FUSEAL<sup>®</sup>

## Flame Retardant Polypropylene

### Chemical drainage system



#### FEATURES

- > Flame retardant up to 152mm as standard
- > Patented Fast-Lock™ mechanical fixing technology for quick installation
- > Electrofusion also as standard
- > Single wall and dual containment options
- > High temperature, intermittent discharges up to 100°C, continuous up to 82°C
- > Full system solution



Fuseal® the only thermoplastic chemical waste drainage in the UK, which has flame retardant properties, This provides added security to the end user, the distinctive colour and markings also give a clear identification.

The Fast-Lock™ jointing mechanism is unique to Fuseal® and assists in a quick installation, with no grooving required. With electrofusion jointing technology also as standard, the lightweight data-storing welding machine makes installation hassle-free and easy to manage.

Fuseal® is a full-system solution from "sink to drain" with off-site fabrications ensuring a straightforward installation. The option of dual-containment provides added security when required.

With so many advantages, Fuseal® is a high-quality chemical drainage system which is difficult to ignore.

Operating temperature: 0°C to +82°C (100°C intermittently)

## Applications

- > Chemical drainage
- > Education
- > Healthcare
- > Waste Water Treatment
- > Power generation
- > Food & beverage
- > Chemical process

## Technical information

Size range: 38mm - 457mm

Dual-containment also available

Temperature range: 0°C to 100°C

Approvals: ASTM F1412, D4101 and D635

Flame retardant with UL-94 rating of V-2, and ASTM D635 rating of HB





# ABS

Acrylonitrile-butadiene-styrene

Pipe, fittings and valves for chilled water,  
cooling and drinking water

Queen Alexandra Hospital  
Portsmouth

## FEATURES

- > High impact strength
- > Low pressure losses
- > Corrosion free
- > WRAS approved



# ABS

The specific properties of ABS material enable its use in a wide range of applications. It has an excellent temperature range from -50°C to +60°C and exceptionally high impact strength values, even at low temperatures.

ABS is widely used in drinking water applications, industrial and refrigeration cooling systems, domestic and building services.

ABS is most commonly used for chilled water distribution, cooling and drinking water supplies due to its material properties and high impact strength.

GF ABS is approved by WRAS, ABS Type Approval Program and many other third parties providing peace-of-mind to customers using the products.

## Applications

ABS can be successfully applied in a wide variety of residential, commercial and even industrial applications. It is principally designed for;

- > Chilled water distribution
- > Cooling
- > Drinking water distribution

Suitable applications:

- > Apartments
- > Hospitals
- > Care homes
- > Schools
- > Leisure facilities
- > Offices

## Technical information

Size range: d20 - d315mm -  $\frac{3}{8}$  - 8" BS inch

Pressures:

PN6 @ 20°C (d250 - d315)

PN9 Class C 1 - 8" BS inch

PN10 @ 20°C (d20 - d225)

PN15 Class E  $\frac{3}{8}$  - 4" BS inch

PN12 Class D 6" BS inch

PN12 Class 7T  $\frac{1}{2}$  - 2" BS inch

Temperature Range: -50°C to 60°C

Thermal Conductivity @ 20°C: 0.17W/m°C

Expansion/Contraction: 0.15mm/m°C

Approvals: WRAS, ABS Type Approval Program





# PVC-C

## Polyvinyl Chloride-Chlorinated

Piping system for high  
temperature applications  
with long service life

Photograph reproduced with permission from  
Portakabin Limited [www.portakabin.co.uk](http://www.portakabin.co.uk)

North Middlesex Hospital

### FEATURES

- > High operating pressures
- > High operating temperatures
- > Long service life
- > Suitable for various fluid types



# PVC-C

Polyvinyl Chloride-chlorinated (PVC-C) has excellent high temperature resistance.

It is capable of handling hot, corrosive liquids at high temperatures up to 80°C, whilst offering ease of installation. The low thermal conductivity of the material reduces moisture condensation on water lines.

PVC-C has greater rigidity and lower thermal expansion, making it particularly suitable for above ground process pipework.

Materials: Polyvinyl Chloride-chlorinated

Dimension range: d16 – d225

Joining technology: Solvent cement jointing

Operating pressure: Up to 16 bar

Operating temperature: 0°C to +80°C

## Applications

PVC-C, due to its high chlorine content has excellent high temperature resistance. It offers a wide ranging chemical resistance against many aggressive media at high temperatures making it well suited for many application uses.

- > Heating and sanitary water services
- > Chilled water

Suitable applications:

- > Hospitals
- > Industrial processes
- > Factories
- > Laboratories

## Technical information

Size range: d16 - d225mm

PN16 (d16 - d160)

PN10 (d75 - d225)

Temperature range: 0°C to 80°C

Thermal Conductivity @ 20°C: 0.15W/m°C

Expansion/Contraction: 0.065mm/m°C

Approvals: WRAS





# MALLEABLE

## Malleable Iron

**Cast iron pipeline systems and fittings**

### FEATURES

- > Depth of product range
- > Simple installation techniques
- > Quality production standards
- > Black and galvanised finish options



# Malleable Iron

GF Piping Systems have a long history of product and development in malleable iron pipe and fittings. GF Piping systems were first established in 1802 giving us over 200 years of market experience.

Our pipe and fittings are produced to the highest quality standards and offer full compliance with British, European and International standards.

Materials: Malleable iron

Dimension range: 3/8" to 4"

Jointing technology: Taper and parallel threads

Operating pressure: Up to 25bar

Operating temperature: -20°C to +320°C

## Applications

Malleable iron pipes and fittings are ideal for use in:

- > Hot and cold water supplies
- > Not suitable for drinking water
- > Heating water and steam distribution
- > Fire safety systems and sprinklers (FM approved)
- > Fuel transfer
- > Manufacturing and production processes

Suitable applications:

- > Commercial buildings
- > Office blocks
- > Factories
- > Airlines

## Technical information

Size range: 3/8" to 4"

Pressures:

PN25 up to 120°C

PN20 up to 320°C

Temperature range: -20°C to 320°C

Thermal Conductivity @ 20°C: 50W/m°C

Expansion/Contraction: 0.121mm/m°C

Approvals: FM Approval



# Systems to meet every requirement

GF Piping Systems offers various joining technologies allowing connections between parts in the same material and some combinations of different materials. The joining method is definitively determined by the choice of product to be installed, but in some cases there are options to choose from.

Practice, along with experience on site, is a key factor in executing work to professional standards. This is why we do not just provide manuals and instructions for the correct use of our products and systems, but also offer our clients a modern, practice-oriented training environment. Our training rooms are provided with a wide range of high quality equipment and offer the chance of gaining experience and confidence in the use of our products in real on-site situations. During training sessions and workshops you will be accompanied and assisted by our experts.

## Electrofusion (INSTAFLEX, COOL-FIT, AQUASYSTEM & ecoFIT/ELGEF)



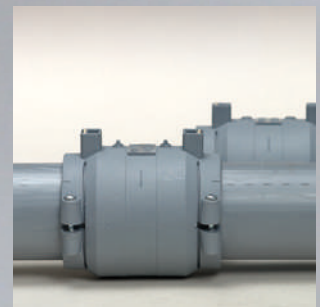
Clean pipe and fitting



Insert pipe into fitting and tighten screws



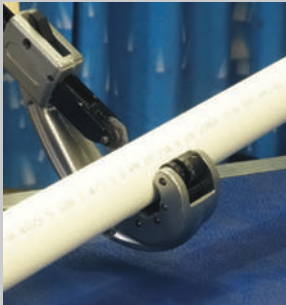
Weld



Check that the welding indicators are protruding



## Socket fusion (AQUASYSTEM, INSTAFLEX & ecoFIT/ELGEF)



Cut the pipe



Clean the fitting



Heat up pipe and fitting

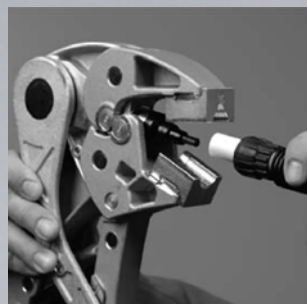


Bring the parts to be welded together

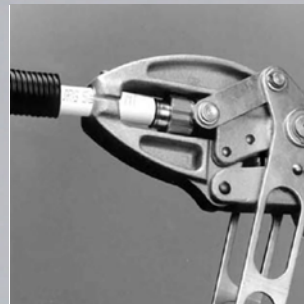
## Axial press gun system (Sanipex MT)



Cut the pipe



Tool press technology

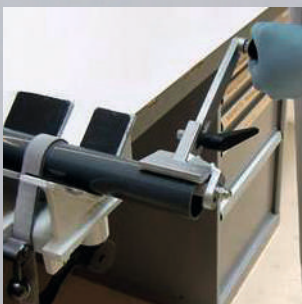


Engage pipe to the fitting inside the tool jaws. Press the tool trigger to simply complete the jointing process.

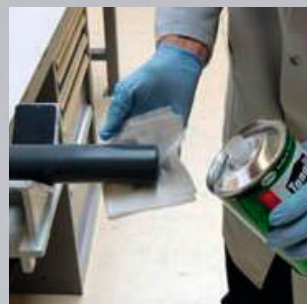


Viewing windows on fittings allow for good 360° jointing inspection

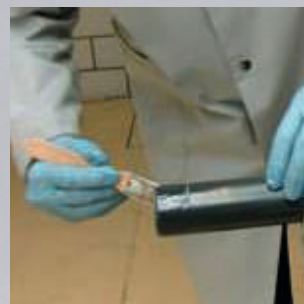
## Cementing (ABS, PVC-C)



Cut chamfer and deburr the pipe



Clean pipe and fitting



Apply the adhesive



Bring the parts together

# Client Resources and Services

## Professional services to meet your needs

In addition to our comprehensive ranges of products, Georg Fischer Piping Systems now offer a suite of “made to measure” client resources, services and tools, making it far easier to obtain expert guidance from us, the manufacturer.

Our detailed knowledge of applications and our skills in handling the products enable us to share our knowledge and work alongside you during the planning, design, installation and maintenance phases of projects.

Our many years of experience in developing and producing heating and sanitation systems, combined with our in-depth knowledge of the industry ensure GF are a highly qualified, professional partner for every situation.

## Online tools & apps

Our online suite of tools and apps make life easy.

Installation parameters can be assessed and relevant calculations carried out. For example, using our pressure/temperature charts it is easy to calculate the maximum pressure of fluids at different temperatures for both pipes and fittings. Likewise the app “Flow-Calc” is a practical online tool for calculating the required diameter of pipes where the velocity or flow rate is known for a project.

Our mobile app allows you to determine hydraulic data for individual systems by pipe and material. It also enables you to calculate installed values and provides data in relation to the temperature fluid and the assembly temperature. The calculated values can be mailed to your phone or tablet. The integrated QR Code scanner makes it quick and straightforward to obtain additional information on products and system, simply by scanning the available QR Codes on our product and data labels.

GF Pipe Engineering Tool is available today from the app store.



**+GF+ GF Piping Systems** Coronacon | Switzerland | English | Contact | SEARCH

**CO2 Calculator**  
Calculate the possible carbon dioxide savings of plastics compared to metal piping systems.

Carbon Calculator

Plastic:  Metal:

Please choose a plastic and a metal. Then enter pipe heights per diameter!

Pipe Diameter	Length: ft/m	Plastic CO2	Metal CO2
DN15 (1/2")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN20 (3/4")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN25 (1")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN32 (1 1/4")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN40 (1 1/2")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN50 (2")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN63 (2 1/2")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN80 (3")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN100 (4")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN125 (5")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN150 (6")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN200 (8")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN250 (10")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
DN300 (12")	<input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Unit:

This CO2 Calculator uses data from the report „Life Cycle Analysis Plastic“ conducted by the company EBC-services GmbH, Solothurn/Schweiz ([www.ebc-services.ch](http://www.ebc-services.ch)) on behalf of Georg Fischer Piping Systems in 2005.



## Resources and Services

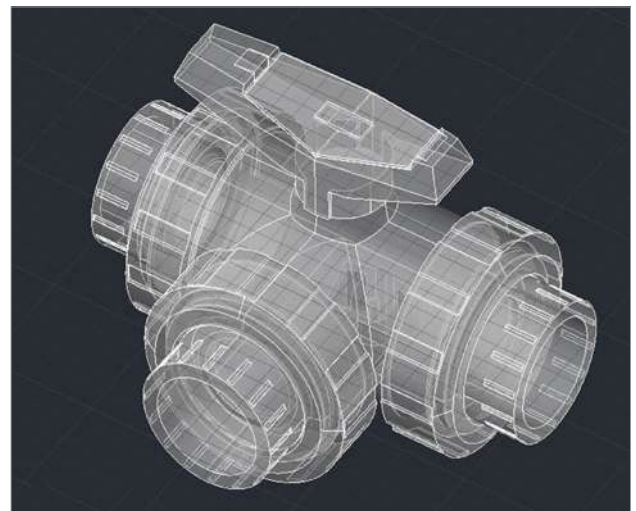
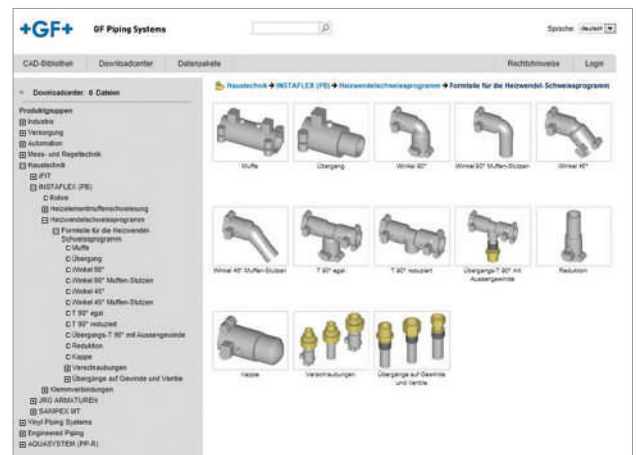
### CAD library

Our comprehensive CAD library is the most widely used client planning resource we offer today.

Simply access our database hosting over 25,000 drawings for pipes, fittings, measurement and control devices as well as manual and actuated valves by using our dedicated CAD website.

The drawings are available in 2D and 3D file formats and can be downloaded from our easy-to-use customer interface.

Our dedicated CAD library is available at <http://cad.georgfischer.com/>



## Customer service

# Training

We are able to offer free on-site and off-site training courses on our product ranges, their jointing methods and tools required to complete successful installations.

Courses can be booked in advance. On-site courses can coincide with the project installation plans and off-site courses are held at our head offices in Coventry, West Midlands.

GF courses are delivered by our dedicated training officer and certificates are issued to successful attendees.

Training courses are available in the following areas:

- Socket fusion – methods and machinery
- Electro fusion – methods and machinery
- Butt fusion – methods and machinery
- Solvent welding – jointing and equipment

For more information on training courses please email:

**[uk\\_training@georgfischer.com](mailto:uk_training@georgfischer.com)**







## Customer service

### BIM

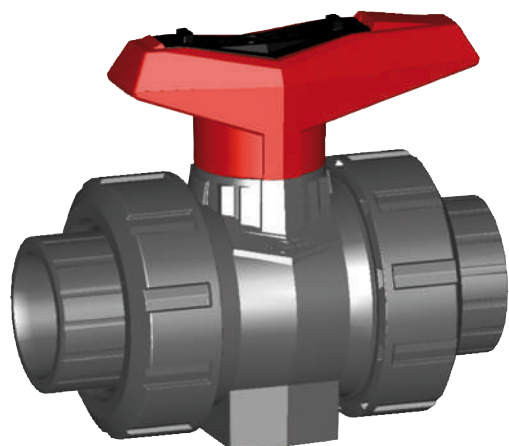
At GF, we recognise the importance of providing you with up-to-date tools and services to ensure your projects with us are smooth and successful.

BIM is an emerging design and construction modelling tool and its use within the industry will grow as it becomes increasingly adopted in favour of 2D CAD designs,

GF are already able to support you with a full range of BIM LOD 200 family models for our products.

For downloads and more information, please visit our BIM website:

[www.gfps.com/country\\_UK/en\\_GB/support\\_and\\_services/building-information-modelling--bim-.html](http://www.gfps.com/country_UK/en_GB/support_and_services/building-information-modelling--bim-.html)



A background image showing a close-up of technical drawings, including a large circular cross-section of a pipe, with a pen resting on a clipboard in the foreground.

## Customer service

# Technical support

GF Piping Systems can assist you at every step of your project, from planning to installation and maintenance.

Our dedicated technical advice service supports customers skilfully and professionally for any requirement relating to GF products, from the first draft of the specification to aftersales support service.

- Cost estimation services
- Quantity calculations
- Parts lists
- Drafting specifications
- Functional diagrams
- Chemical compatibility checks
- Site monitoring
- Technical consultancy

## Documentation

The detailed know-how within GF Piping Systems in the correct planning and installation of systems is documented in our vast library of catalogues and technical manuals. This detailed technical documentation is freely available in either digital or paper formats.

For you, we have produced:

- Product catalogues
- Technical manuals
- Planning documents
- Installation instructions
- Technical specifications
- Approval certificates
- CAD models
- BIM models

For more information please visit [www.gfps.com/uk](http://www.gfps.com/uk)





## Product Summary












In the building technology sector, complete solutions are needed. GF Piping Systems offers a broad range of innovative materials and products that will enable you to provide the best solution for every end user, installation and application. Our advisors are always available to help you choose the best system for your installation.

System	Operating Temperature															
	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100 110 120 130 140
INSTAFLEX																-10°C to 95°C
Aquasystem																0°C to 95°C
COOL-FIT																-50°C to 60°C
ecoFIT																-50°C to 60°C
ELGEF																-50°C to 60°C
Hyclean																TBC
Sanipex MT																0°C to 80°C
FUSEAL®																0°C to 100°C
ABS																-50°C to 60°C (d250 - d315 oper. temp +40°C)
PVC-C																0°C to 80°C
Malleable																-20°C to 320°C

\* for temperatures 47°C and above please contact our technical department for exact calculations

Name	Dimensions (mm)	Dimensions (inch)	Pressure Rating (PN) / diameter (mm)
INSTAFLEX	d16 - d225		PN25 (d16 - d20) / PN16 (d25 - d110) / PN10 (d125 - d225) @20°C
AQUASYSTEM	d20 - d125		PN25 @ 25°C
COOL-FIT	d32 - d450		PN16 d20 @ 20°C
ecoFIT/ELGEF	d20 - d1200		SDR 7.4 PN20 (d16 - d225) / SDR 11 PN16 (d16 - d500) / SDR 17 PN10 (d125 - d500) @20°C
Hyclean			PN10 @ 90°C
Sanipex MT	d16 - d32		PN10 @ 20°C
FUSEAL®	d38 - d457	1 1/2" to 18"	Elevated pressure drainage system of up to PN3.4 @20°C
ABS	d16 - d315	3/8" - 8"	PN10 @ 20°C (d20 - d225) / PN6 (d250 - d315) @20°C
PVC-C	d16 - d225		PN16 @ 20°C (d16 - d160) / PN10 (d75 - d225) @20°C
Malleable		3/8" - 4"	PN25 up to 120°C / PN20 up to 320°C

## Certification

	INSTAFLEX	AQUASYSTEM	COOL-FIT	ecoFIT/ELGEF	Hyclean	Sanipex MT	FUSEAL®	ABS	PVC-C	Malleable
	✓	✓		✓				✓	✓	
	✓					✓		✓	✓	
	✓	✓	✓	✓	✓	✓		✓	✓	
	✓			✓				✓	✓	
	✓	✓		✓				✓	✓	
	✓	✓						✓	✓	
	✓	✓		✓				✓	✓	
	✓	✓						✓	✓	
	✓	✓		✓						
	✓									
				✓						
							✓			✓

# Services & solutions in all project phases

## Planning

Specifications & tenders



### Efficiency & innovation from beginning

Our experts support you with practical solutions for your specific applications.

### Engineering services

- Technical presentations / evaluation
- Total plastic solution for material, product and size
- Material selection vs chemical analysis vs life expectancy
- Pipe class documentation support and detailing
- Specification design, review and adherence
- Bracketing support and layout calculations
- Metal to plastic drawing takeoffs
- Hydraulic calculations and modelling
- Dynamic mechanical stress analysis
- Static evidence calculations
- Seismic calculations
- Finite Element Analysis (FEM)
- Standard details
- CO<sub>2</sub> sustainability calculations
- Audited testing laboratories

### Technical drafting

- CAD drawings
- CAD Design libraries

### Software tools & Training

- Technical advice on thermoplastic systems

### Bid / offer

- 3<sup>rd</sup> Party products sourcing and implementation

### Specialized technical services

- Quality Control: "Fit for Service" NDT
- Custom Product Solutions
- Prefabrication
- Job site management (Track and Trace)

## Tendering

Project preparation



### Good preparation reduces the rework

Equipped with the right know-how you can reduce the risk of faulty design and construction work.

### Engineering services

- Technical presentations / evaluation
- Total plastic solution for material, product and size
- Material selection vs chemical analysis vs life expectancy
- Specification design, review and adherence
- Seismic calculations
- CO<sub>2</sub> sustainability calculations

### Software tools & Training

- Technical advice on thermoplastic systems

### Job site preparation

- Track and Trace service



When moving from metal to plastics and increasing the use of plastics in your applications, the benefits of plastic piping systems vs metal are clear; corrosion free, low material weight, chemical resistance, low total cost of installation and long life expectancy are just a few.

At GF, we have over 60 years of plastics know-how and can offer you full support to meet your needs in designing, installing and commissioning plastic systems.

## Preparation

Material, ordering and delivery



### From plan to implementation

We will check with you the feasibility of individual details and support you in all the planning phases.

### Engineering services

- Technical evaluation of documentation

### Stock management

- Global and local stock
- Rental pool of fusion welding machinery and tools
- Management of long lead products and forecasting
- Logistical support of products to site

### Job site preparation

- Track and Trace service

## Implementation

Execution of project



### Security and competence on site

We accompany you for a smooth and compliant installation.

### Training

- GF Certified training of installation team
- Site support

### Documentation

- Technical Documentation
- Inspection Certification

### Specialized technical services

- Custom Product Solutions
- Prefabrication

### Stock management

- Onsite & offsite stock
- Rental pool of fusion welding machinery and tools

### Job site management

- Track and Trace service

## Commissioning & Operation

Testing & assessment



### Security and competence on site

We will confirm the proper and professional execution with professional testing and analysis.

### Engineering services

- Site inspection of welding procedures
- Site support of pressure tests

### Specialised technical services

- Quality Control: "Fit for Service" NDT

### Maintenance & Repair

- Spare parts management for valves, sensors and machinery

### Job site management

- Track and Trace service

**For more information please contact: [services@georgfischer.com](mailto:services@georgfischer.com)**

# Sustainability

Discover today for a better tomorrow

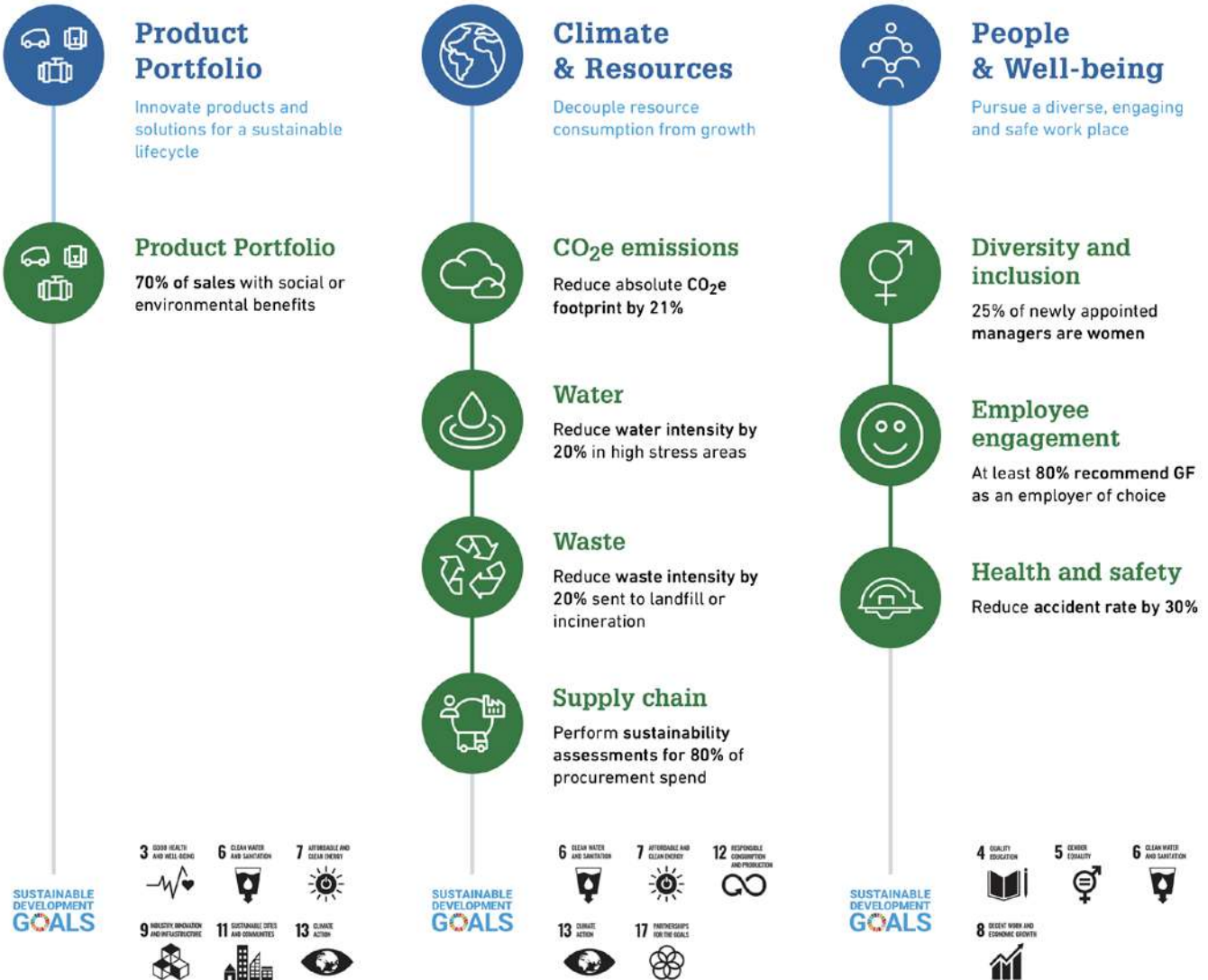


Our sustainability framework 2025 consists of focus areas with long-term ambitions and targets covering economic, environmental, and social aspects. They include a science-based target (SBT) for reducing CO<sub>2</sub>e emissions by 21% by 2025.



# Sustainability

GF Piping Systems is committed to enabling the safe and sustainable transport of water, gas and chemicals. Only by considering the needs of all key stakeholders can the company, the planet, and society at large thrive in the long term. Find out more about our contribution to sustainable development below.



## Product LCAs and EPDs

Life Cycle Assessments (LCAs) are a science-based tool used to evaluate a product's environmental performance over its complete life cycle. LCAs serve as basis for Environmental Product Declarations (EPDs). EPDs are third-party verified statements providing information about the environmental performance of a product or system

## Sustainability at GF

GF is a globally active and diversified industrial Corporation. It complies fully with all relevant laws and regulations in the jurisdictions of its operations and upholds all relevant international standards.



## Building Technology

Our sales teams provide National coverage for the UK and Ireland.

For further support or to arrange a visit from one of our sales experts please visit:

Call GF : 024 7653 5535



The technical data is not binding. It neither constitutes expressly warranted characteristics nor guaranteed properties nor a guaranteed durability. It is subject to modification. Our General Terms of Sale apply.

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

