GF Piping Systems

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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Contents

Key (for product range pages 10-27)

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

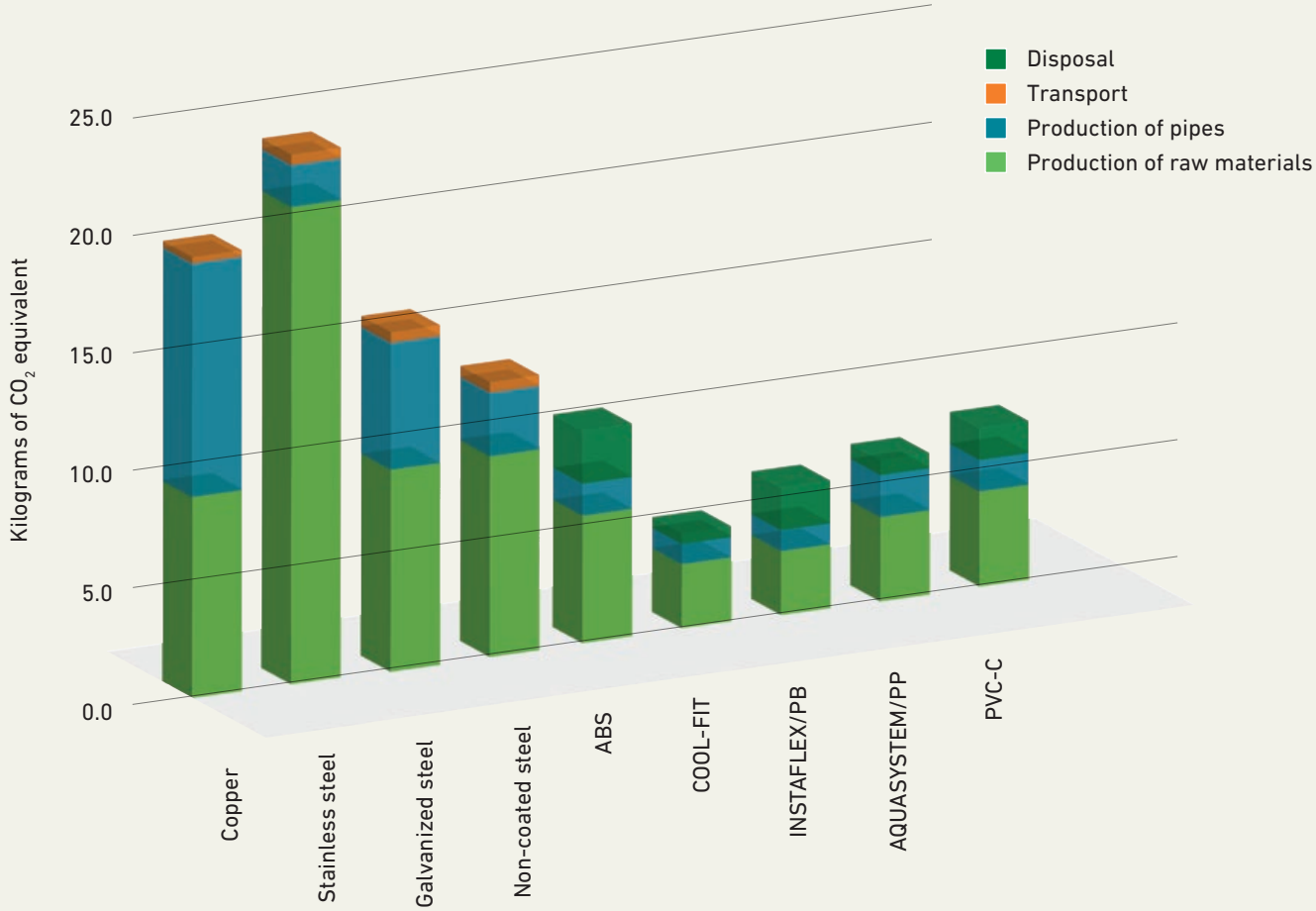
Thermoplastics obviously present different characteristics from those of the metals traditionally used for piping.
A brief summary:

Metal systems	Plastic systems
High density • Crane needed for transport • Widely spaced fixings • High anchoring forces, fixing required	**Low density** • Lighter lift weights compared to metal options • Closely spaced fixings • Limited anchoring forces, simple and economic
Thermal conductivity • Insulation always needed to limit heat loss • Formation of condensates and resulting corrosion	**Low thermal conductivity** • Limited heat loss • Low levels of condensation and resistance to corrosion
Electrical conductivity • Galvanic corrosion may occur	**Electrical insulator** • No corrosion
Chemical resistance • Low resistance to acids, requiring the use of costly alloys • Damage from encrustation	**Chemical resistance** • In combination with correct jointing methods, at least 25 years of useful life can be warranted • No encrustation

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–online tools) for calculating the savings in carbon dioxide emissions by using plastics rather than the more common metals.

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.

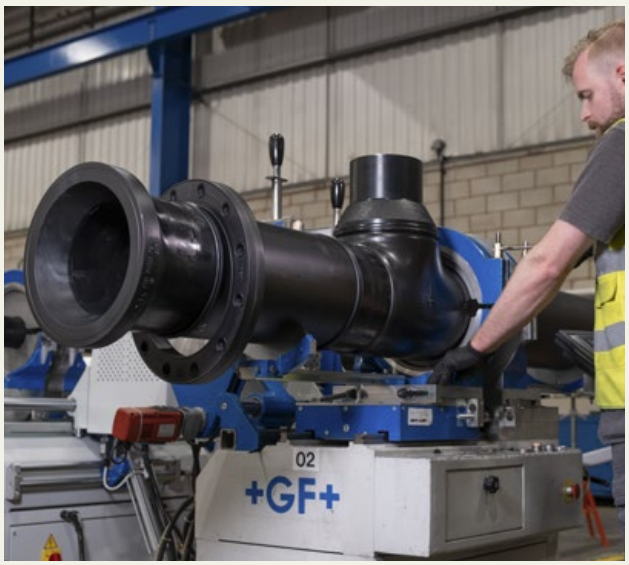
GF have invested in a dedicated workshop for assembly of custom offsite fabrications.

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

Applications

Multi-Storey Residential Building

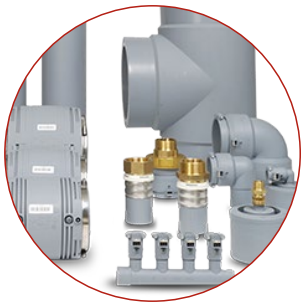
GF Piping Systems provide perfect building technology solutions for your residential projects.
Plastics are lighter and more economical than traditional materials reducing energy usage, corrosion risks and reducing the total carbon footprint through efficient production and transportation methods.

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 Tenant heating and domestic hot water comfort solutions

HIUs

Heat Interface Units, (HIUs), are the modern construction solution for end-user space heating and domestic hot water services.
HIU's also provide metering and billing services for the landlord/building owner or directly to tenants.

- Customisation - GF HIUs are customisable, ensuring clients obtain a tailored solution for their project
- BSRIA tested (BTS-2-2105) - independently verified product performance data, giving confidence and assisting with specifications
- A complete range of product options - from hot water only stations to indirect heating and domestic hot water options with underfloor heating capabilities
- Metering & billing - GF offer a wide range of energy metering and billing services

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

iLITE

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

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

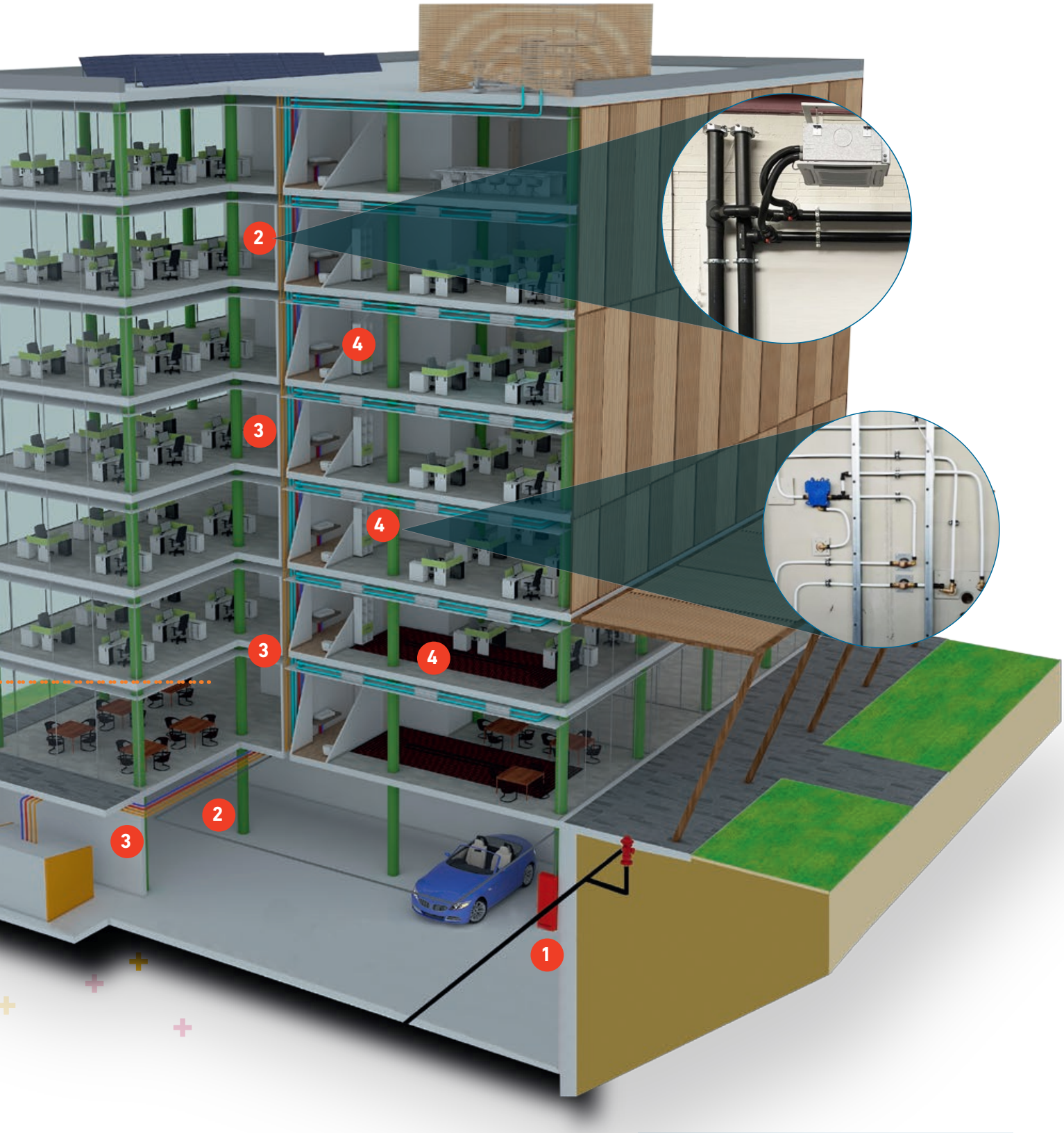
- Fast installation - three installation steps in one, greatly reduces installation time
- Lightweight - 30% lighter that traditional metal
- Corrosion-free solution - extends installation life, peace of mind
- Complete range - pipe, valves, fittings - all pre-insulated
- 2D CAD library, BIM library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



4

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

iLITE

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

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- 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

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 is 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

Jointing 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

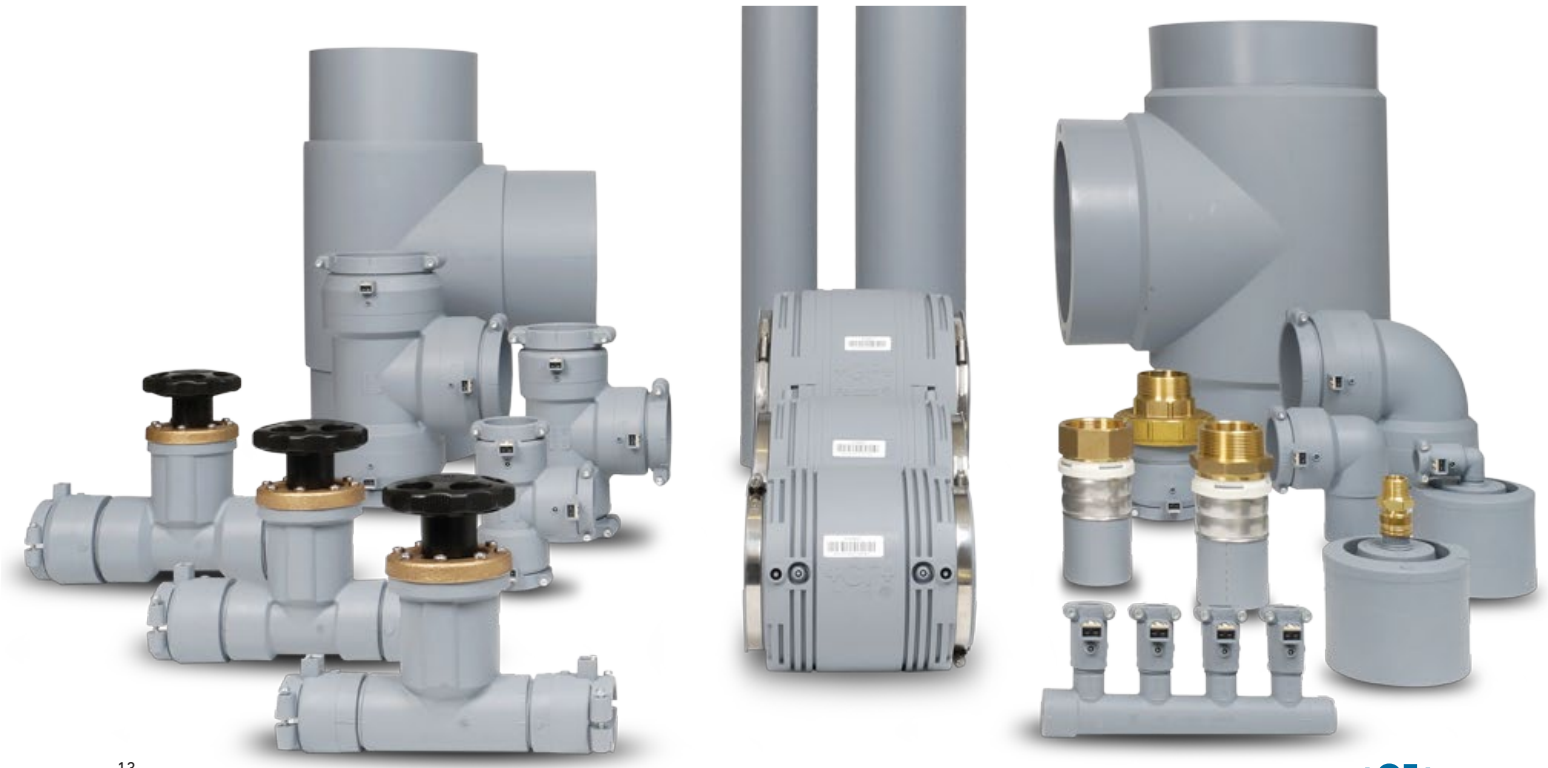
Operating pressures:
PN25 (d16-d20mm) @ 20°C
PN16 (d25 - d110mm) @ 20°C
PN10 (d125 - d225mm) @ 20°C

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

Jointing 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

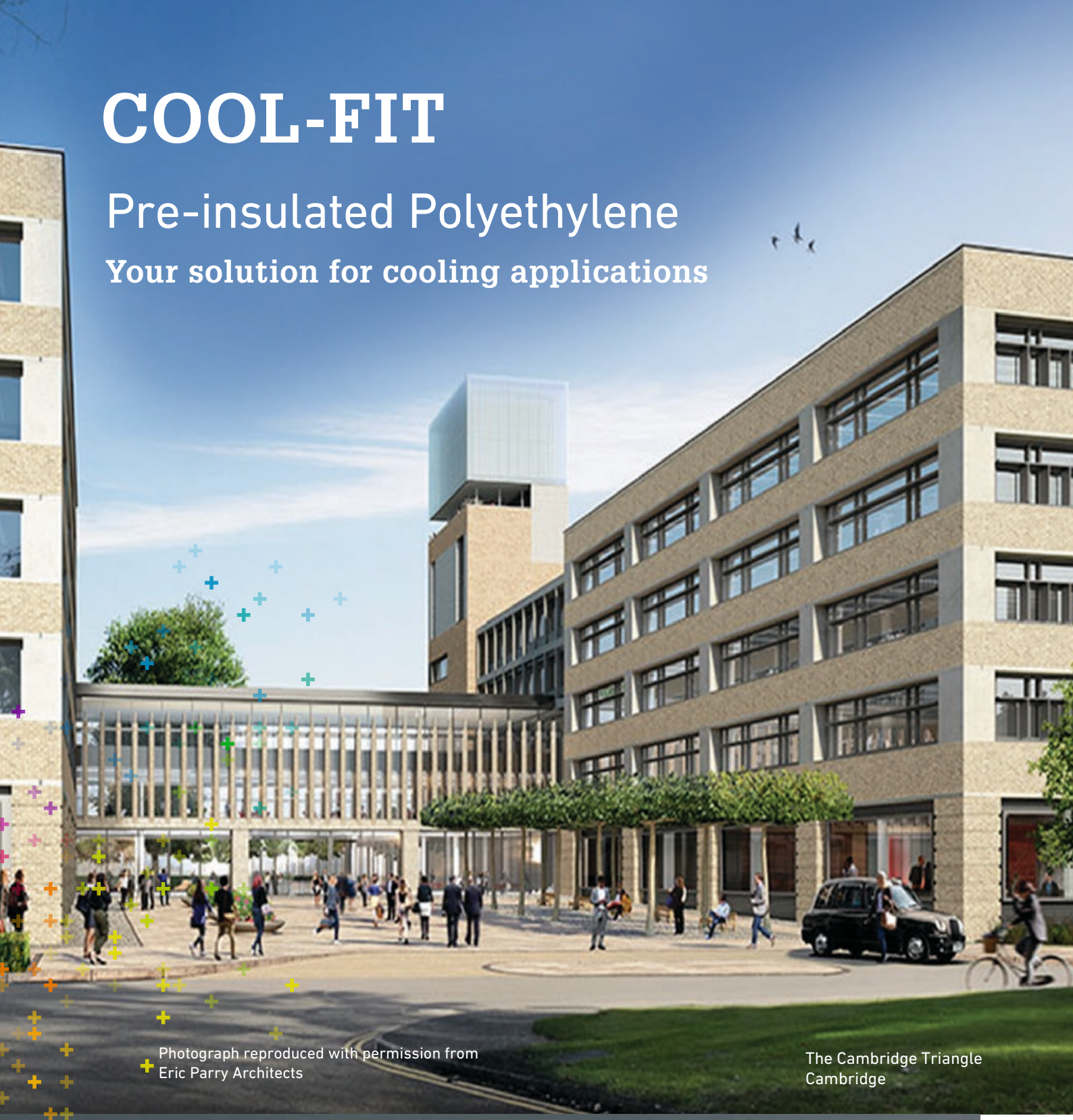
Expansion/ Contraction: 0.035mm/m°C

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

Jointing 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

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 though its long service life, corrosion resistance and extensive approval testing underwriting its safety benefits.

Materials: Polyethylene

Dimension range: d16 – d1200

Jointing 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

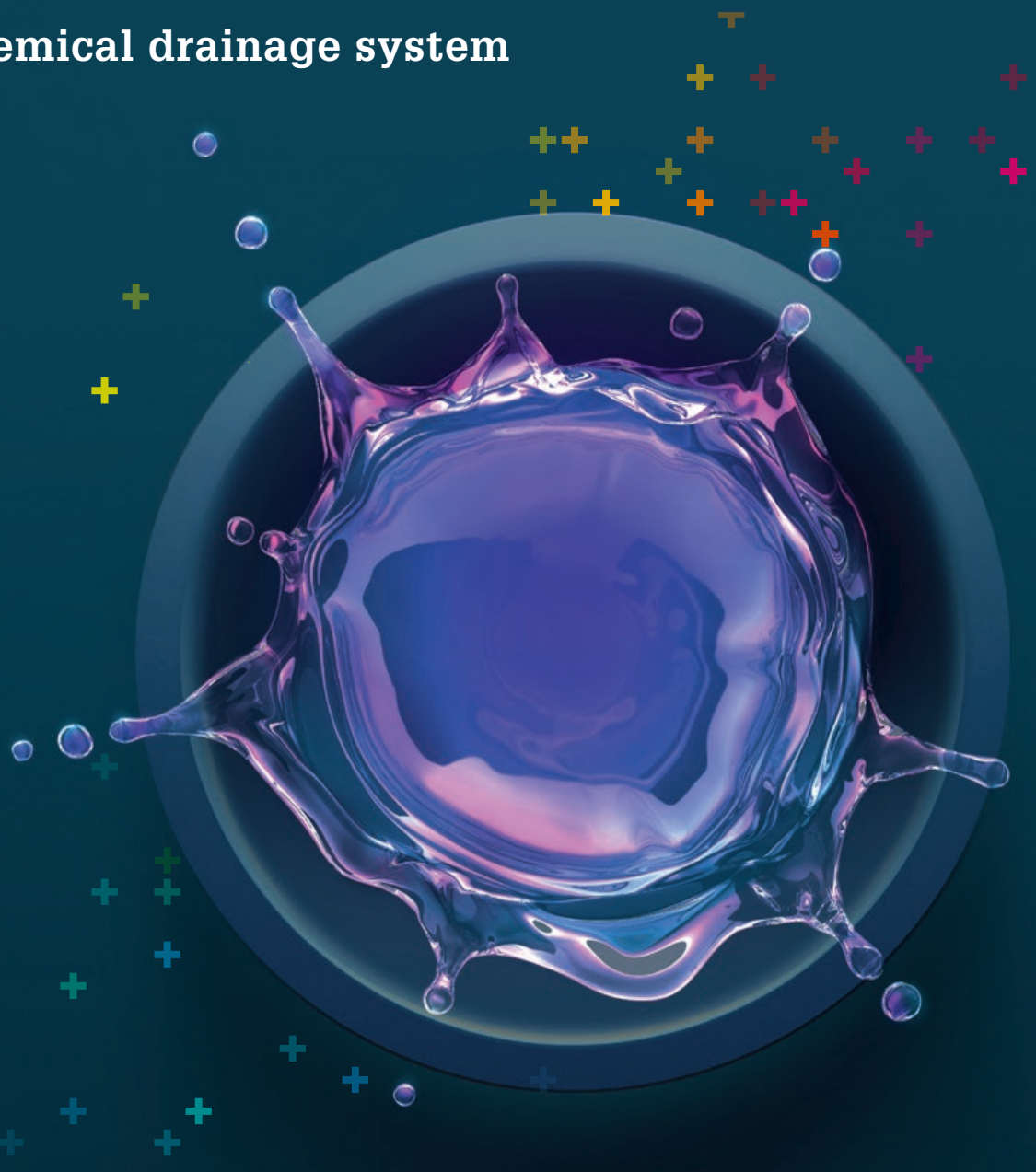
Expansion/Contraction: 0.20mm/m°C

Approvals: WRAS, BSi Kitemark

FUSEAL®

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®

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

Heat Interface Units

HIUs

FEATURES

- Operating pressure up to 16 bar
- DHW flow-rates up to 28 l/min possible*
- DHW thermal output loading up to 75kW
- Space heating thermal loading up to 30kW

* Subject to primary supply conditions

Heat Interface Units

HPTP-01 – High Performance Twin Plate (residential heat interface units).
Fully electronically controlled HIU for efficient and accurate production of space heating and domestic hot water preparation.

FAB's;

- Compact dimensions
  520mm wide, 550mm tall 240mm deep
- Separate filters and drains on each circuit
- Differential pressure rating up to 600kPa
- Metal exterior cover
- EPP insulated interior cover and heat exchangers
- MODBUS data communications
- Legionella cycle
- Auto-fault diagnosis
- Programmable control options
- Pump protection program to avoid seizure

Applications

> District Heating
> Centralised heating plant
> Residential multi-occupancy living
> Flats and apartments
> Houses

Technical information

BESA Regime tested with excellent performance results

Space heating via radiators or UFH

Open protocol MODBUS communications

Commissioning menus

Test ports

UFH slab drying cycle

Keep-warm control options (DHW or CH plate use and on/off operation)

Primary Circuit

Max, pressure	16 bar
Max. temperature	95°C
Max. flow rate	1300lt/h
Liquid	Water - Water + glycol max. 30%
Heat meter predisposition	110 mm - 3/4"M

Heating Circuit

Max, pressure	3 bar
Max. temperature	90°C
Max. flow rate	1400 lt/h
Liquid	Water - Water + glycol max. 30%
Max. power with △T 20°C	15kW - 22kW - 32kW models
Residual head at 1000 lt/h	50 kPa
Pump	UPM3 Hybrid 15-70 130
Electrical consumption	max. 52Q
Expansion vessel	9 lt
Setting safety valve	3 bar

Sanitary Circuit

Max, pressure	10 bar
Max. flow rate with △T 35°C	28 lt/min

The GF HPTP-01 (high performance twin plate) HIU has been developed with the future of energy use and modern living in mind.

The HPTP-01 has full electronic control, which enables the highest level of control of consumed energy, and provides a wealth of operational programs and features to optimise the HIU for individual project requirements, whilst providing excellent hot water and space heating efficiencies and comfort.

The HPTP-01 HIU BESA Regime results demonstrate excellent product performance in all areas of testing.

GF offer a 3 years parts and labour warranty, as standard.

Prefabricated Utility Cupboards

FEATURES

- Tailored solutions to meet your project requirements, designed and built by GF
- Produced within a quality controlled environment
- Projects managed throughout duration to ensure quality and scheduling are constantly met
- Includes use of GF piping systems and HIU's to offer a complete solution

Prefabricated Utility Cupboards

The use of prefabrication and offsite solutions within construction is a rapidly growing method for delivering the highest level of product quality whilst maintaining strict programme scheduling for critical parts within modern buildings.

GF Piping Systems in the UK have a wealth of experience in prefabrication and are global leaders in the production and supply of piping systems and HIUs. We are proud to be able to bring these competencies together to offer a complete offsite solution for apartment utility cupboards, fully installed, piped, pre-wired and finished to the highest standards expected by our clients.

GF also fully QA check each build, including pressure tests for all pipework and dead end test all electrical services supplied.

The trend for offsite and prefabrication will continue to grow as it offers further benefits in terms of product security, build continuity, finished quality and assists with current challenges of social distancing on sites by limiting the number of tradespeople needed for installations in confined spaces.

Applications

Multi-occupancy residential buildings, for installation within apartments.

Products typically installed within;-

- Heat Interface Units
- Cooling Interface Units
- MVHR's
- Pipework
- Radiator/UFH Manifolds
- Consumer unit
- PIR lights
- Electrical sockets, spurs and controls

Technical information

2D (flat panel) and 3D (full cupboard) Prefabricated utility solutions.

Frame and carcass in a range of materials and finishes.

All production by qualified fabricators.

Robust, secure packaging and containment for transport & site positioning.

Large prefabrication centre which has a throughput capacity of >50 PUC's per week.

In-house project management

In-house CAD design

Large warehouse for stock profile management

GF's most recent success has been delivering 427 PUC's to our client Woodford Heating & Energy Ltd for Phase 2 of the White City Living scheme.

The program ran from November 2019 to October 2020 with weekly site deliveries of fully prefabricated utility cupboards, to the project specification.

GF worked very closely with our client to provide a customised solution that solved their concerns over transportation, handling, product quality, interior finishes and delivery scheduling.

WOODFORD
HEATING AND ENERGY

iLITE

Multilayer pipe system

Innovative potable water and heating system 16 to 32mm

Wimbledon AFC Project

FEATURES

- Excellent flow rates
- Intelligent tool – only one step required
- WRAS approved
- Quick and easy to install

iLITE

iLITE is GF Piping Systems' innovative solution for potable water and heating projects. Only one intelligent tool is required for all joint dimensions from 16 to 32mm. This tool rapidly and safely expands the pipe, with two axial movements in the opposite direction to ensure all joints are completed in one quick and easy step. This expansion ensures excellent flow rates throughout the system.

The tool is used with a comprehensive range of PPSU fittings, which are uniquely designed for a strong, reliable joint. Multilayer pipe is used with this system, and a full range of WRAS approved DZR brass transitional fittings complete the solution.

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

Dimension range: d16 – d32mm

Jointing technology: Axial press jointing

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

Technical information

Size range: d16 - d32mm

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

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 - 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 3/8 - 4" BS inch
PN12 Class D 6" BS inch
PN12 Class 7T 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

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

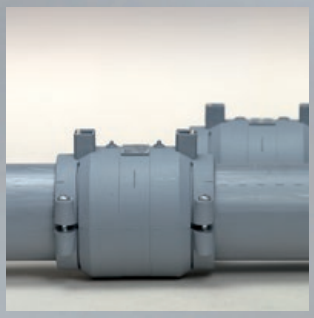
Practice, along with experience on site, is a key factor in executing work to professional standards. This is why we do not just provide manuals and instructions for the correct use of our products and systems, but also offer our clients a modern, practice-oriented training environment. Our training 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

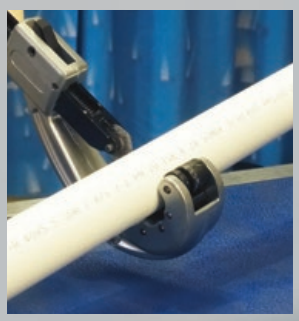
Insert pipe into fitting and tighten screws

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 (iLITE)

Cut the pipe

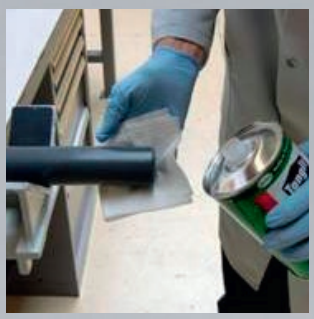
Tool press technology

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

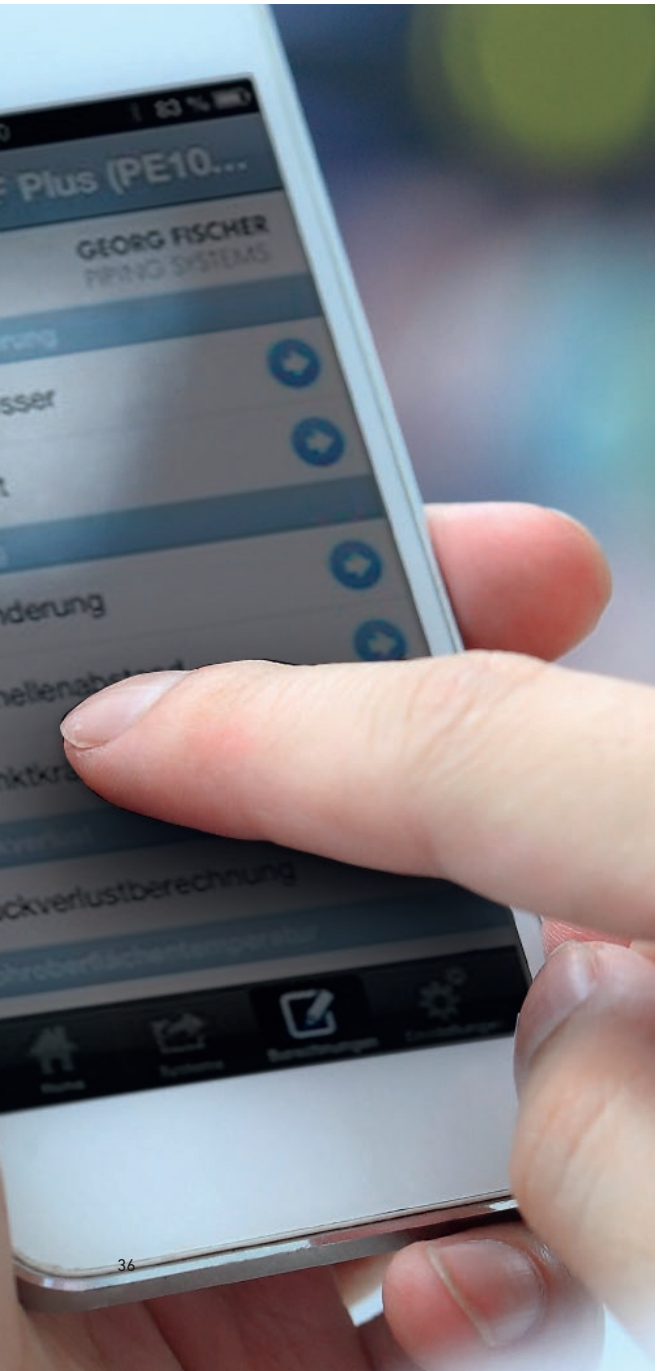
Client Resources and Services

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.

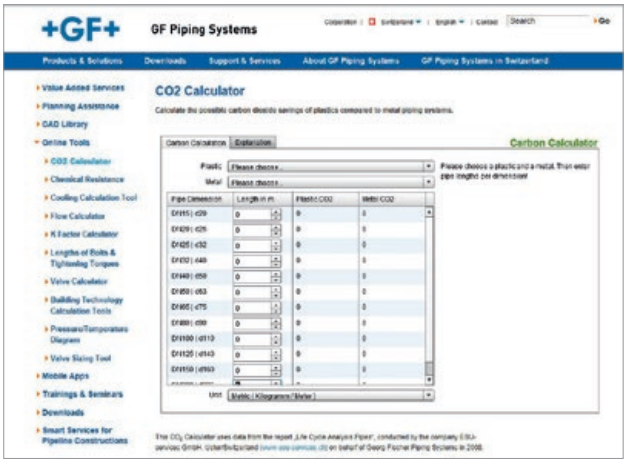


Online tools & apps

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.



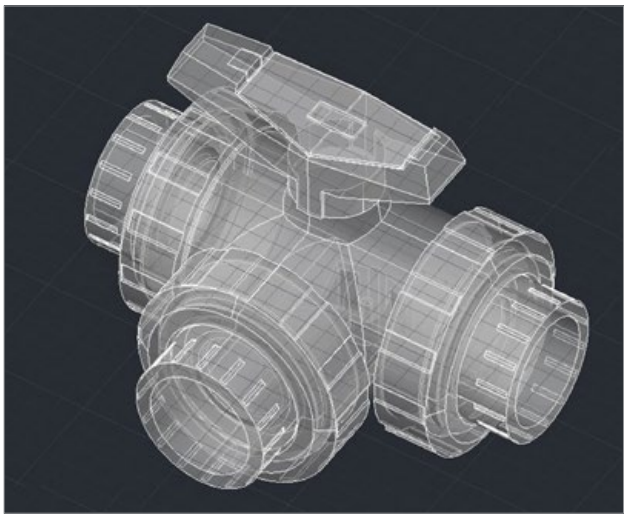
CAD library

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/



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

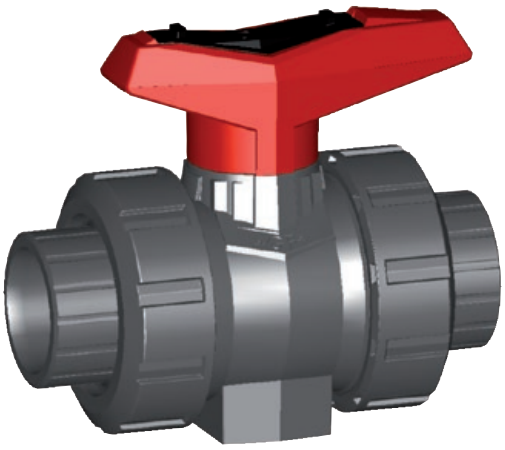
BIM

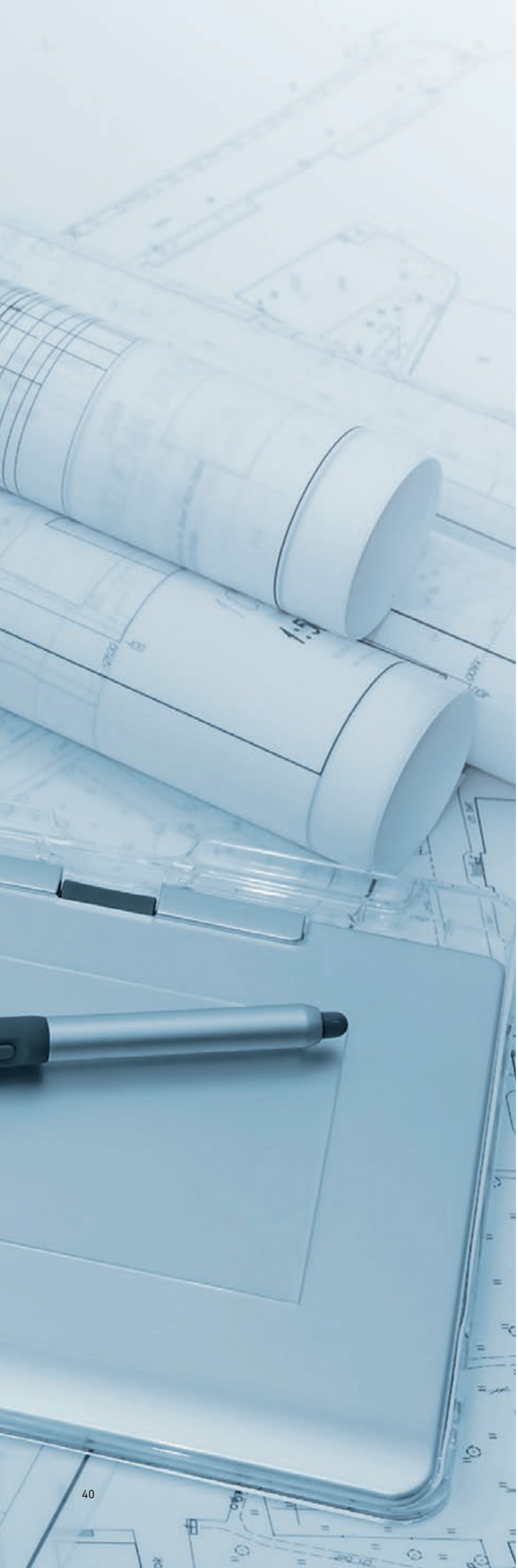
At Georg Fischer, we recognise the importance of providing you with up-to-date tools and services to ensure your projects with us are smooth and successful.

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





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:

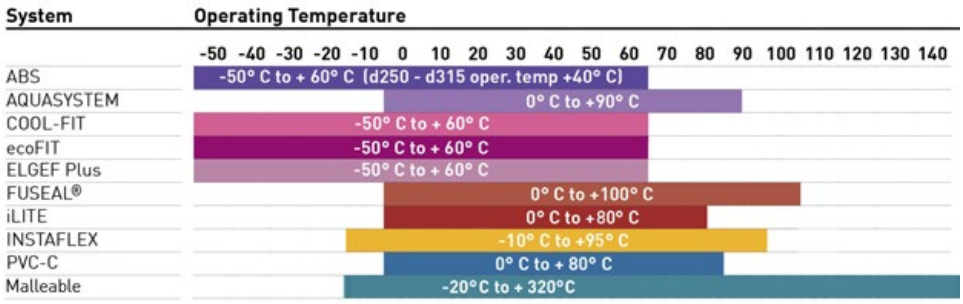
- Product catalogues
- Technical manuals
- Planning documents
- Installation instructions
- Technical specifications
- Approval certificates
- CAD models
- BIM models

For more information please visit www.gfps.com/uk

Approval

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.



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
FUSEAL®	d38 - d457	1 1/2" to 18"	Elevated pressure drainage system of up to PN3.4 @20°C
iLITE	d16 - d32		PN10 @ 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

Certification

	INSTAFLEX	AQUASYSTEM	COOL-FIT	ecoFIT/ELGEF	ABS & PVC-C	Malleable	iLITE	FUSEAL®
IIP UNI	√	√		√	√			
DIN DVGW	√				√		√	
WRAS	√	√	√	√	√		√	
	√			√	√			
	√	√		√	√			
Lloyd's Register	√	√			√			
DNV	√	√		√	√			
kiwa	√	√			√			
	√	√		√	√			
	√							
FM APPROVED				√		√		
ASTM								√

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_2 sustainability calculations
- Audited testing laboratories

Technical drafting
- CAD drawings
- CAD Design libraries

Software tools & Training
- Technical advice on thermoplastic systems

Bid / offer
- 3rd 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_2 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

GF Piping Systems

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:

www.gfps.com/uk

Call Head Office: 024 7653 5535

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