

GF Piping Systems



# Mining

Plastic piping systems in  
mining applications

# Building the lifelines of the world

GF Piping Systems is the global expert for the safe and reliable transportation of water, chemicals, and gas. The maintenance-free and long-lived piping systems made of plastics help implement vital applications of our customers faster, more cost-effectively and more sustainably. GF Piping Systems supports its customers throughout all phases of their projects from planning to commissioning.

## + Maintenance-free plastic

Piping systems made of plastics are maintenance-free, light and very durable. They help reduce repair and overall costs and are suitable for the transport of drinking water, abrasive and aggressive liquids, as well as gas.

## + Complete system solutions

With more than 60'000 products, GF Piping Systems can offer complete system solutions. In addition, custom-made special parts and special series are also possible. Customers benefit from perfectly matched solutions from a single source.

## + Local support

GF Piping Systems has its own sales companies in 34 countries, which means it is always by its customers' side. Our production sites in 32 locations in America, Europe, and Asia ensure sufficient availability and quick, reliable delivery.

## + Service in all project phases

GF Piping Systems supports its customers both in the initial switch from metal to plastic and in retrofits – across all project phases. They benefit from more than 60 years of experience in plastic systems and application knowledge from 100 countries.

## + Partner for digitization

With its advanced automation and digitization solutions, GF Piping Systems allows its customers to optimize their applications and gives them easier access to their system data. Digital tools support you in every phase of the project.

## Facts and figures

- **Established:** 1802 (Georg Fischer) in Switzerland
- **Locations:** 34 countries with own sales offices
- **Turnover:** 1.802 billion Swiss francs (2019)
- **Employees:** 6'892 (2019)

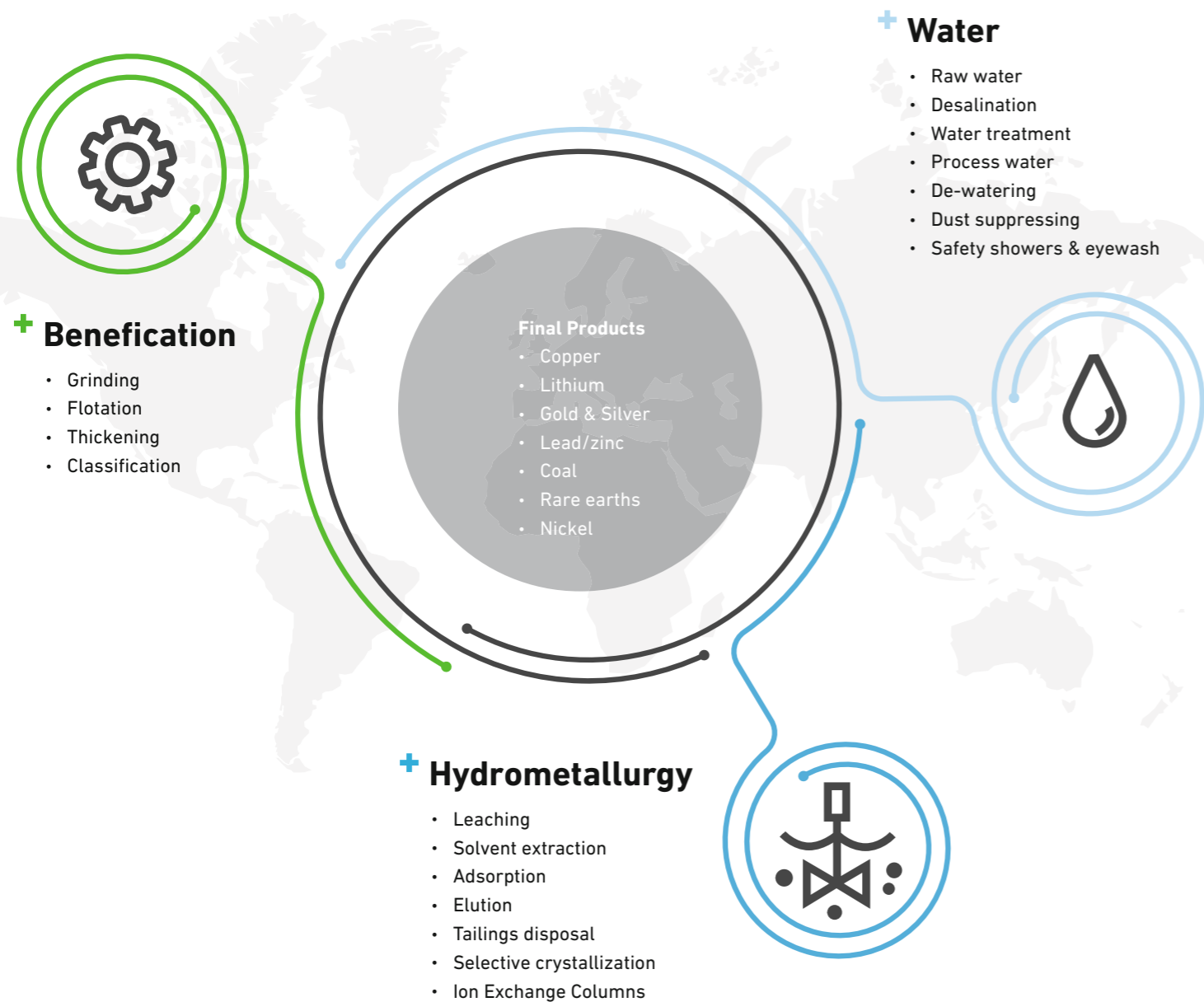
## Areas of use

- Water distribution
- Chemical dosing & distribution
- Desalination
- Compressed air
- Safety showers & eyewash
- Power stations
- Water treatment
- Freeze Prevention

# GF Piping Systems supply to the mining industry

Plastic piping systems have been relied on for decades to convey media; whether it is water, slurries or hazardous chemicals used in mineral processing. GF have the piping systems to suit.

GF solutions are applicable over a broad temperature range, from freezing to boiling temperatures. The harsh environment within mining sites and the conveyance of chemicals place high demands on the piping systems in terms of safety, reliability, economy and maintenance.



## Water

We support our customers in implementing sustainable, future-oriented and well-designed plant concepts with state-of-the-art planning techniques to optimize the technical and economic efficiency of processes.



### Raw water / Process water / De-watering / Dust suppression

EPE pipe and fittings are commonly used to distribute water to, from and around mine sites. Increasingly, legislation demands water movement be monitored or metered. GF flow measurement instruments are ideal for water monitoring.

**GF products**

- PVC-U system
- Instrumentation
- ecoFIT and ELGEF Plus system

### Water treatment

Improving the quality of water to reduce its impact on the environment is always a challenge. Providing instrumentation, automation, valves, pipes and fittings, GF is the right partner for all water treatment applications.

**GF products**

- PVC-U system
- PVC-C system
- ecoFIT and ELGEF Plus system
- PROGEF system
- Instrumentation

### Desalination

Minimize risks of leaks jeopardizing environment and people with Double Containment systems in chemical dosing lines.

Using thermoplastics yields the lowest long term cost in raw water, osmosed water, and re-mineralization lines.

**GF products**

- PVC-U system
- PVC-C system
- ecoFIT and ELGEF Plus system
- PROGEF system
- Instrumentation
- CONTAIN-IT Plus system

# Benefication

Improving the quality of water to reduce its impact on the environment is always a challenge. Providing instrumentation, automation, valves, pipes and fittings, GF is the right partner for all water treatment applications.



## Evaporation Ponds

Mineral-carrying brines must be evaporated before further refining. Sometimes waste brine is also evaporated to lower waste flows. The highly concentrated brines are extremely corrosive, making thermoplastic the best option for piping. Additional chemicals (soda ash) added for pre-processing are also best conveyed and prepared in plastic pipes. GF products are used to transport brines before and after evaporation.

### GF products

- ecoFIT
- ELGEF Plus system
- Design Flow HDPE system metric and inch



## Grinding

Involves rotating cylindrical mill containing a charge of loose grinding media. Water is added to the mill. Ore is ground to form a slurry. GF products are used for transport of process water and slurry.

### GF products

- ecoFIT and ELGEF Plus system
- Compression fittings



## Flotation and Thickening

De-watered slurry from grinding enters the flotation circuit. Air bubbles and reagents are introduced into slurry. For thickening, removal of suspended solid particles from liquid flocculants are often used. Dilute slurry enters a feed well.

### GF products

- PVC-U system
- PVC-C system
- ecoFIT and ELGEF Plus system
- PROGEF system
- Instrumentation
- CONTAIN-IT Plus

# Hydrometallurgy

GF Piping Systems develops application-oriented system solutions that enable profitable operations and are ideally suited for the mining industry.



## Leaching

Leaching involves extraction of a soluble constituent from a solid by solvent. Bacterial Leaching uses naturally-occurring bacteria to harmlessly oxidize ore that is high in sulfides, thus making processing of the ore much easier and more cost effective.

### GF products

- PVC-U system
- PVC-C system
- ecoFIT and ELGEF Plus system
- PROGEF system
- SYGEF system
- Instrumentation
- CONTAIN-IT Plus



## Solvent Extraction / Electro Winning

Mass transfer operation based upon chemical difference. Feed solution containing solute to be extracted and feed solvent as a solute extractor. GF products are used in chemical processing and transport the liquid. Copper sulfate in solution coming from SX is electrochemically deposited in plates. This raffinate is extremely corrosive to metals.

### GF products

- PVC-U system
- PVC-C system
- ecoFIT and ELGEF Plus system
- PROGEF system
- SYGEF system
- Instrumentation
- CONTAIN-IT Plus



## Adsorption / Merrill Crowe

Adsorption is a process where a solid is used to remove a soluble substance from an aqueous solution. GF product applications: safe transport of Sodium Cyanide (NaCN) in double contained pipe work (CONTAIN-IT and CONTAIN-IT Plus exclusive to GF)

### GF products

- PVC-U system
- PVC-C system
- ecoFIT and ELGEF Plus system
- PROGEF system
- SYGEF system



# Safe and reliable piping systems for a wide range of applications across mining industry

Reliable piping systems are essential for the safe transport. GF Piping Systems produces piping systems and system solutions for a wide range of applications across mining. The company's systems and solutions are available in various materials and cover a broad spectrum of operating temperatures, dimensions and nominal pressures so customers can find the optimal solution for their needs.

## System portfolio

### PVC-U system



Product Range: 6mm-400mm (ISO/DIN/JIS)  
 1/2"-24" (BS/ASTM)  
 Pressure: Up to 16 bar  
 Temperature: 0°C to +60°C  
 Jointing Technology: Cementing  
 Material: PVC-U  
 Valve: Manual, actuated

### PVC-C system



Product Range: 16mm-225mm (ISO/DIN/JIS)  
 1/4"-24" (BS/ASTM)  
 Pressure: Up to 16 bar  
 Temperature: 0°C to +80°C  
 Jointing Technology: Cementing  
 Material: PVC-C  
 Valve: Manual, actuated

### ecoFIT & ELGEF Plus



Product Range: 20mm-1200mm (ISO/DIN)  
 3/4"-36" (ASTM)  
 Pressure: Up to 16 bar  
 Temperature: -50°C to +60°C  
 Jointing Technology: Electrofusion, Socket-, Butt-, IR Plus fusion  
 Material: PE  
 Valve: Manual, actuated

### PROGEF system



Product Range: PROGEF Standard: 16-500mm  
 PROGEF Natural: 20-110mm  
 Pressure: Up to 10 bar  
 Temperature: 0°C to +80°C  
 Jointing Technology: IR Plus-, Socket-, Butt-, BCF fusion (PROGEF Natural only)  
 Material: PP  
 Valve: Manual, actuated

### SYGEF system



Product Range: SYGEF Standard: 16-450mm  
 SYGEF Plus: 20-450mm  
 Pressure: Up to 16 bar  
 Temperature: -20°C to +140°C  
 Jointing Technology: IR Plus-, Socket-, Butt fusion  
 Material: PVDF, ECTFE  
 Valve: Manual, actuated

### Instrumentation



Product Range: Flow, conductivity, pH, ORP (Redox), temperature, pressure, level, dissolved oxygen and chlorine  
 Jointing Technology: Special installation fittings, strap on saddles, ISO/NPT pipe threads  
 Material: PP, PVC-U, PVC-C, PVDF, Ryton body, PTFE junction, 316L stainless steel

### CONTAIN-IT Plus



Product Range: Medium: 20-225mm  
 Protection: 50-315mm  
 Temperature: -50°C to +140°C  
 depending on medium pipe  
 Jointing Technology: Cementing, Socket-, IR Plus-, Electrofusion, Butt fusion,  
 Material: PE100 for jacket pipe  
 PE100, PP, PVC-U, PVC-C, PVDF for medium pipe  
 Valve: Manual, actuated

### Pre-Insulated system



Product Range: carrier pipe any material (plastics, Steel, FRP)  
 Insulation: closed cell Poly Urethane foam, thickness  
 Pressure: up to 16 bar (plastic carrier pipe), 60 bar (metal carrier pipe)  
 Temperature: from cryogenic to 150 °C  
 Jointing Technology: depending on carrier pipe

# Material, operating temperature and pressure are decisive for the selection of the right tube system

## Areas of use

System	Operating temperature																			Dimension
	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130	
ABS	-50 °C to +60 °C (d250 – d315 oper. temp. +40 °C)																			d16 – d315, 3/8 – 8"
CONTAIN-IT Plus	-50 °C to +140 °C																			d50/20 – d315/225
CONTAIN-IT	-0 °C to +60 °C (outer)																			3 + 4 + 6" outer
COOL-FIT 2.0	0 °C to +60 °C																			d32 – d140
COOL-FIT 4.0	-50 °C to +60 °C																			d32 – d450
ecoFIT	-50 °C to +60 °C																			d20 – d630*
ELGEF Plus	-50 °C to +60 °C																			d20 – d2000
Malleable Cast Iron Fittings	-20 °C to +300 °C																			1/8 – 4"
MULTI/JOINT	-5 °C to +50 °C																			d50 – d2000
PRIMOFIT	-20 °C to +150 °C (depending on seal)																			3/8 – 4 inch/d20 – d63
PROGEF Natural	0 °C to +80 °C																			d20 – d110
PROGEF Standard	0 °C to +80 °C																			d16 – d500
PROGEF Plus	0 °C to +80 °C																			d20 – d315
PVC-C	0 °C to +80 °C																			d16 – d225, 1/4 – 24"
PVC-U	0 °C to +60 °C																			d6 – d400, 1/8 – 24"
PVC-U clear	0 °C to +60 °C																			1/4 – 12"
SYGEF ECTFE	0 °C to +80 °C																			d20 – d110
SYGEF Plus & Standard	-20 °C to +140 °C																			d16 – d450
Threaded Fittings in Stainless Steel	-20 °C to +300 °C																			1/8 – 4"

# Corrosion-free, durable and cost-efficient installations

## Key benefits of thermoplastics



**Corrosion-free**

- Long lifetime
- No incrustation thanks to smooth internal surface



**Chemical resistance**

- Good compatibility with chemicals
- Most economical solution for your requirements



**Low total cost of installation**

- Reduced pipe sizes
- Reduced welding times



**Low material weight**

- Low density – no machinery required to carry material
- Low anchor forces save installation costs



**Low thermal conductivity**

- Thermal insulation – no additional wrapping costs
- No corrosion due to less condensation and higher resistance results in cost savings



**No electrical conductivity**

- No corrosion
- No additional earthing required

# Making our global footprint sustainable

We at GF Piping Systems understand that everything is connected – what we do inevitably always affects someone, somewhere. Environmental impacts of human activity are apparent on a daily basis, and every stakeholder must take responsibility for their part. As a company that is active worldwide, it is our mission to show our commitment, by supporting our customers' success with innovative, energy saving solutions making the collective global footprint more sustainable.

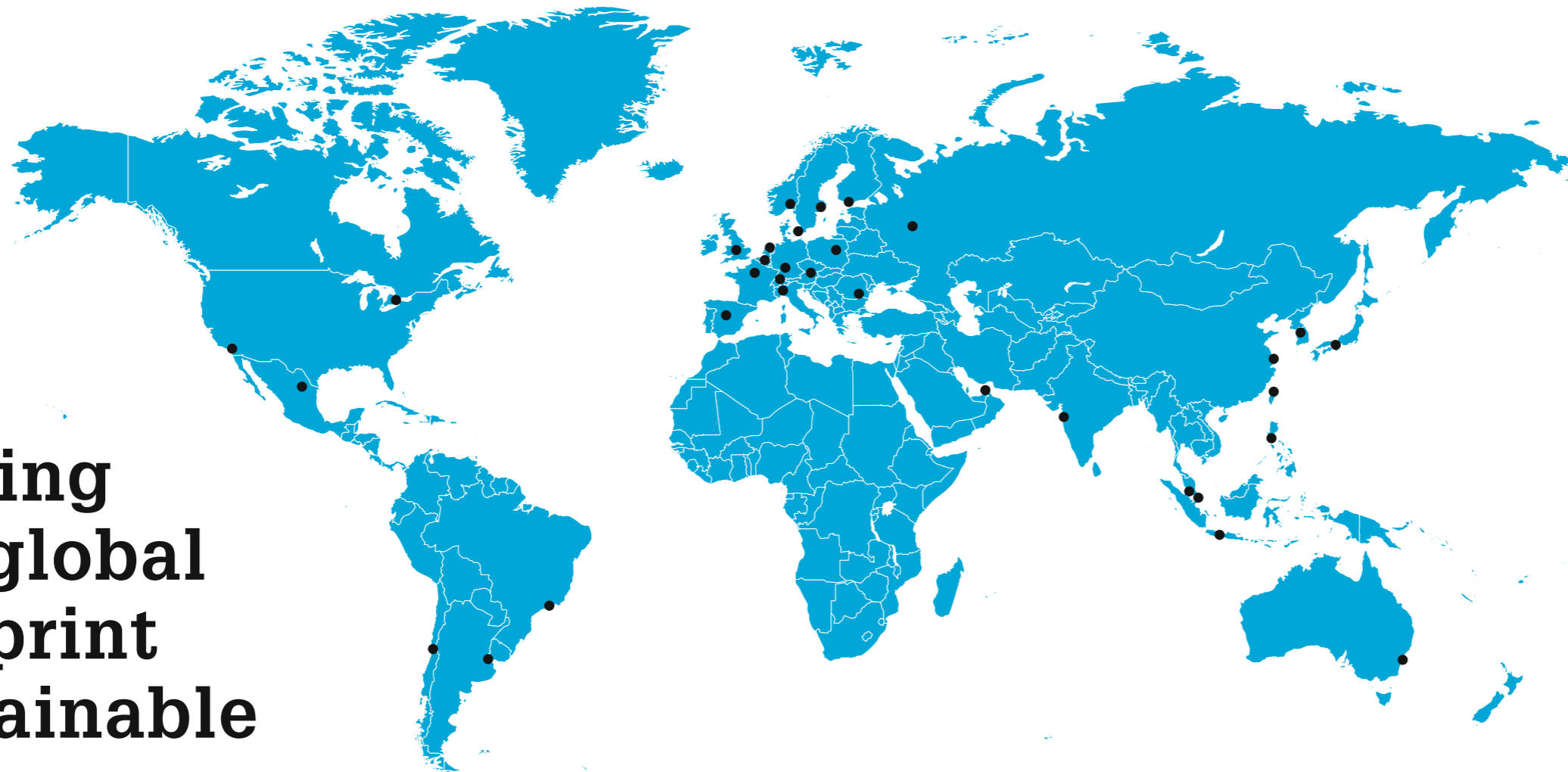
### Sustainable operations

GF Piping Systems is making flow sustainable: Environmental regulations, water scarcity and an increasing demand of consumers and society for greener and more sustainable solutions is an important set of trends shaping customer behavior. Saving energy in high-consumption areas such as the cooling of data centers or food storage, reducing the carbon footprint of cruise ships or decreasing the levels of chemicals in industrial wastewater treatment are examples of some of the areas where GF Piping Systems can provide attractive solutions.

Peace of mind when it comes to the safety and hygiene of water, gas or chemical flows is important in our field of expertise. Our mission at GF Piping Systems is to make sure that customers enjoy sustainable flows of water, gas or chemicals, without safety issues, leakages and other environmentally challenging consequences. Our solutions improve our customers' sustainability in terms of energy use and the resulting CO2 footprint, while GF Piping Systems supports the sustainable success of its customers by increasing their efficiency during processes such as installation and operation.

### Supporting the global effort

On a Corporate level, GF is a participant of the UN Global Compact, with GF Piping Systems directly contributing to the United Nations' Sustainable Development Goals. Support for the global effort includes the goals on Good Health and Well-being, Clean Water and Sanitation, Industry, Innovation and Infrastructure, Sustainable Cities and Communities, Responsible Consumption and Production, as well as Climate Action.



Good health and well-being



Clean water and sanitation



Industry, innovation and infrastructure



Sustainable cities and communities



Responsible consumption and production



Climate action

## Specialized Solutions

# One partner from planning to commissioning

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



Specialized Solutions from GF Piping Systems are the helping hand our customers need, ready when they are.

### Consultancy

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

### Condition analysis

The integrity of a piping system is essential for water utilities. Ultrasonic NDT (Non-Destructive Testing) provides testing options at the point of installation, while Pipe Condition Assessment can be employed during operation to acquire real data about the state of piping systems.

### Training

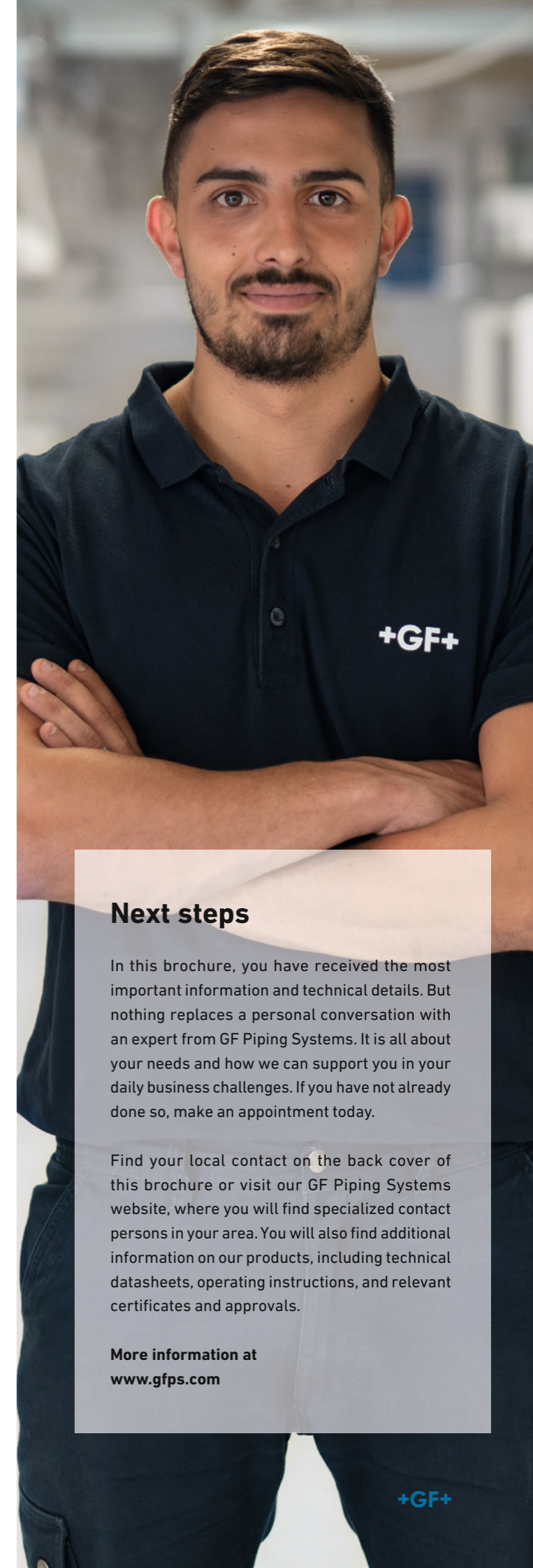
Instructional courses can help you to teach your customers or installers essential knowledge for the welding of pipes and piping components, as well as an in-depth understanding of butt and electrofusion connections. With Specialized Education, we help prevent damage, with well trained and qualified installers and provide you with on-site support in your local language.

### Custom Product Design and Prefabrication

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

### More information at

[gfps.com/specialized-solutions](http://gfps.com/specialized-solutions)



## Next steps

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

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

More information at  
[www.gfps.com](http://www.gfps.com)



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

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