

# Connections that last

Joining Solutions



# Versatile jointing solutions for application-optimized connections

From material supply to cutting-edge jointing solutions, GF is your trusted partner, offering premium thermoplastic materials and state-of-the-art jointing solutions designed to meet the evolving demands of your applications. Explore our innovative solutions tailored to address the complexities of modern industry.



## Precision leads to success and quality

Reliable piping connections are the backbone of resilient systems and operational efficiency. Flawless jointing helps maintain the seamless media flow in your piping systems. Advanced jointing technologies, such as plug-and-play solutions like electrofusion, offer rapid, precise, and repeatable installation processes, even in confined or challenging environments.

At GF, we go beyond installation by helping you safeguard your system's integrity. Our cutting-edge weld assessment services, including Non-Destructive Testing (NDT) and Weld Bead Inspection (WBI), provide analytically backed insights into your system's condition at installation, ensuring peace of mind and operational confidence.

## Knowledge is power

With a shortage of skilled workers and experienced installers retiring, practical training has become more vital than ever.

- 89% of construction firms faced challenges in hiring skilled workers in 2023<sup>1</sup>
- 40% of all failures occurring in the first 5 years on newly installed plastic pipes due to installation errors<sup>2</sup>

These findings underscore the critical impact of proper training and skilled labor in reducing joint failures. In response to these challenges, we provide comprehensive training programs that equip installers with essential skills for safe, high-quality work. The global technical training standardized across all 26 training centers ensuring professionals stay informed about the latest technologies, standards and installation methods.



#### Trusted partner with a 60+ legacy

With over 60 years of expertise in polymer piping systems and three decades in infrared fusion technology, we're pioneers in jointing solutions. Our global prefabrication shops utilize advanced in-house technologies, enabling customers to concentrate on their core business while we prepare their systems ahead of time.

Operating in 33 countries with 40 state-of-the-art locations, we enhance project execution and speed up time to market. Our jointing solutions deliver high-performance piping systems complemented by a comprehensive suite of installation tools, digital services, and exceptional after-market support facilitating swift and dependable installations for your time-sensitive projects, even under challenging conditions.



**> 60,000 products**  
**7 jointing technologies**  
**1 single supplier.**

<sup>1</sup>. The Association of General Contractors of America (AGC). (2022). Construction Workforce Shortages Risk Undermining Infrastructure Projects as Most Contractors Struggle to Fill Open Positions. <https://www.agc.org/news/2022/08/31/construction-workforce-shortages-risk-undermining-infrastructure-projects-most-contractors-struggle-0>. Retrieved December 20, 2023.

<sup>2</sup>. Plastic Pipe Database Committee (PPDC). Report from June 2024 by the American Gas Association, accessed via [www.aga.org/natural-gas/safety/promoting-safety/plastic-pipe-data-collection-initiative/](http://www.aga.org/natural-gas/safety/promoting-safety/plastic-pipe-data-collection-initiative/).

Strong partner for quality and durability

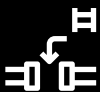
# Peace of mind through jointing excellence

Experience jointing excellence with our advanced thermoplastic materials and plug-and-play jointing solutions, backed by 60 years of trusted expertise.



## Strong operational safety

At GF, we have redefined jointing technologies with advanced CNC butt fusion and infrared fusion, enhancing automation and minimizing human errors. Every weld is carefully monitored to uphold the highest standards of safety and quality, backed by our state-of-the-art testing tools, including Weld Bead Inspection and ultrasonic Non-Destructive Testing.



## Strong and fast installation

Our innovative prefabrication methods, using our premium materials and plug-and-play jointing technologies in our workshops, ensure fast and reliable piping system installations. Comprehensive training programs empower operators with the latest installation skills, providing excellence in every project.





#### **Strong global partner**

With an impressive legacy spanning over 60 years, we provide construction teams with customized solutions by integrating polymer materials and jointing technologies from a single source, enhancing both efficiency and reliability. With a presence in 33 countries we have a partner network to achieve construction excellence, from large construction sites to pristine cleanrooms.



#### **Strong and sustainable connections**

In today's challenging construction environment, we offer seven cutting-edge jointing technologies to meet your diverse application needs. Our flexible rental options provide access to the latest technology while supporting sustainability through the reuse of expertly serviced machines.

60+ years of innovation legacy

# Trusted innovation leader since 1964

With over 60 years of disruptive innovation, we have pioneered the industry shaped by key milestones in our legacy: advancing infrared fusion (IR) machines for over three decades, creating the formula for cementing and aligning with modern fusion technology trends.

1964

1989

## Pioneering cementing solutions

As a pioneer in solvent cementing, GF has developed an advanced gap-filling formula for secure bonding of pipes and fittings without complex pre-treatment. In response to the growing global demand, we have partnered with Henkel to offer "Tangit," a versatile adhesive designed for PVC-U, PVC-C, and ABS materials. Through strategic collaborations, we are committed to ensuring the worldwide availability of Tangit, meeting the evolving needs of our customers with reliability and efficiency.

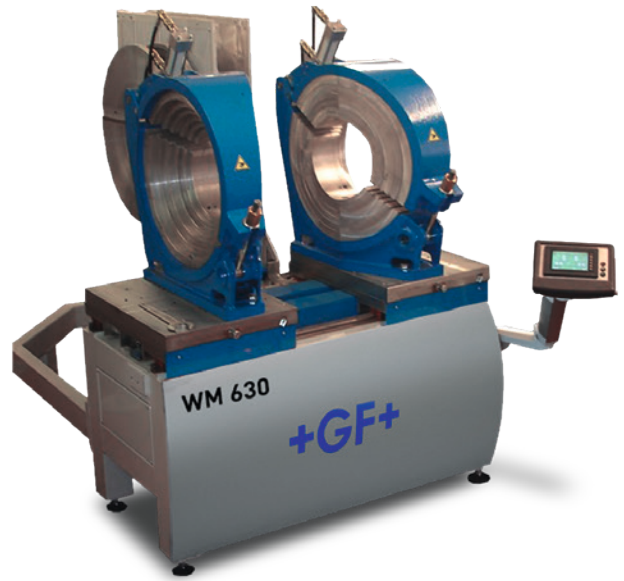


## Ahead of its time: The first modern electrofusion machine

Our electric welding machine revolutionized the welding process for ELGEF electrofusion couplings and clamps, boasting an innovative design that was ahead of its time, complete with a multifunctional LCD interface. While the core welding principle remains steadfast, we've significantly enhanced handling and digitization to meet the evolving needs of our customers.

### Elevating workshop efficiency

Our fully automatic butt fusion machines have revolutionized workshop operations since the WM 630 CNC launch in 2007. With an intuitive touchscreen interface, we've elevated ease and efficiency, setting new benchmarks in the industry. This innovation not only streamlines setup and execution but also boosts precision and productivity, reinforcing our leading position in butt fusion technology.



2007

2024



### IR technology: Redefine tomorrow

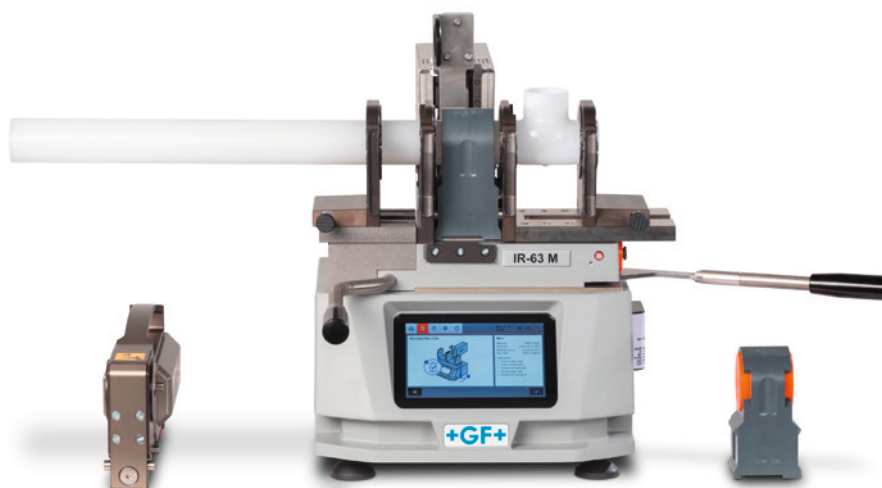
In the quest for efficient, contamination-free installations, GF leads the way with innovative infrared fusion technology. Our IR-63 M fusion machine combines the time-tested and reliable IR fusion method and advanced it with the latest cutting-edge technology for higher precision, enhanced efficiency, and unwavering reliability of your installations.



**60+ years  
of innovation**

# Stronger together

No matter the conditions or environment, with seven cutting-edge jointing solutions at your fingertips, we ensure reliable and efficient performance in any environment. Connect with confidence.



## Infrared fusion technology

### Description

IR fusion machines are characterized by contact-free melting of the components to be fused. This eliminates the possibility of contamination, or the pipe facing sticking to the heater. Due to the minimally defined weld bead, there is a good flow in the fusion zone, which increases the pipe's free passages.

### Materials

PP-H (PROGEF Standard/Plus), PP-n (PROGEF Natural), PVDF (SYGEF Standard/Plus), ECTFE (SYGEF), PE100 (ecoFit), PVC-U, PFA

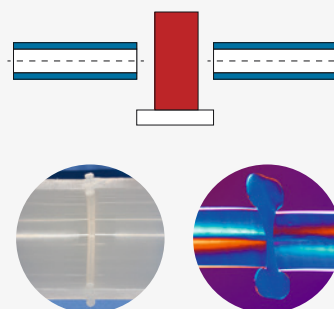
### Dimensions

d20 – d400 mm / (½ "–16")

### Portfolio

Manually operated: Compact, robust, and lightweight; for remote and workshop use. Fully-automated: Minimizes operator errors by fully automating facing, heating, and jointing; for workshop use.

### Fusion principle and examples



### Application

IR fusion machines are perfectly designed for industrial applications and cleanroom conditions

### Key advantages

- Contactless fusion
  - Short fusion times
  - Minimally defined bead and minimized thermo-stress
  - High process reliability and reproducibility.
- The very high degree of automation additionally increases efficiency and reduces the likelihood of human errors.



## Bead and crevice-free fusion technology

### Description

The BCF fusion machine ensures high reproducibility of fusion weld quality, even for remote fusion. An external heating unit causes the material to flow into the fusion zone without changing the material property. A bladder positioned in the fusion zone inhibits bead and crevice formation, maintaining a very smooth internal pipe surface.

### Materials

PVDF (SYGEF Standard/Plus), PP-n (PROGEF Natural)

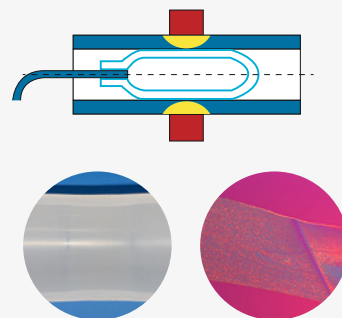
### Dimensions

d20 – d110 mm / (½ "-4")

### Portfolio

Manually operated fusion machine with integrated remote welding capabilities

### Fusion principle and examples



### Application

Ideal for high-purity industrial applications in segments like microelectronics, lifescience or specified water applications

### Key advantages

- No bead and crevices
- No dead legs
- Risk reduction of microorganic deposits
- Stress-free and extremely smooth fusion zone

## Complete fusion solutions



## Electrofusion technology

### Description

Electrofusion technology is unique due to its specialized fittings, which contain integrated heating elements activated by an electric current. This current heats the fitting evenly, causing it to fuse seamlessly with the thermoplastic pipes.

### Materials

PE100 (ELGEF Plus), PP (PROGEF Standard, Fuseal), PB (INSTAFLEX)

### Dimensions

d20 – 1200 mm

### Portfolio

Basic-Level Units:

- Simple plug-and-play design for smaller sizes  
MSA 160 (with transport case), MSA 315.

Premium-Level Units:

- Powerful and configurable designed for utilities, industry, and energy  
MSA 2.0, MSA 2.1 (Bluetooth), and MSA 340 (more power, GPS traceability)

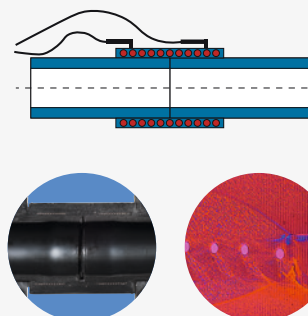
Special Applications Units:

- Suitable for a broad range of materials designed for marine and food/beverage  
MSA 2 (PB and PVDF) in two versions MSA 2 MULTI (230V), MSA 2 CF (for COOL-FIT, 115V).

Top-Level Units:

- Maximum power for gas utilities and advanced industry applications  
MSA 4.0 (Bluetooth, GPS, best-in-class traceability).

### Fusion principle and examples

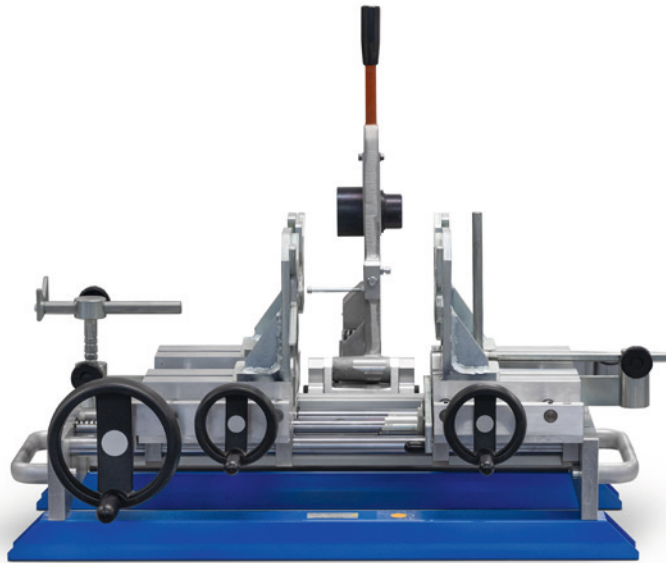


### Application

Broad spectrum of applications ranging from gas and water infrastructure to special industrial applications

### Key advantages

- Highly reliable and robust, even in tough environments and tight spaces
- Lightweight and practical design
- User-friendly interface for easy operation by one person requiring minimal training
- Impressive data storage capacity, enabling thousands of operational records for complete traceability and rapid job retrieval
- 50% faster installation time thanks to insulation technologies and innovative electrofusion jointing, thereby reducing on-site work and labor costs



## Socket fusion technology

### Description

Socket fusion machines enable secure connections for thermoplastic pipes by heating and inserting the pipe end into a fitting, forming a leak-proof, homogenous joint. GF provides an extensive range of compatible fittings specifically designed for the fusion process, ensuring reliable performance when used with our compact, mechanical socket fusion machines.

### Materials

PP (PROGEF Standard), PE100 (ecoFIT), PVDF (SYGEF Standard)

### Dimensions

d16 – 125 mm

### Portfolio

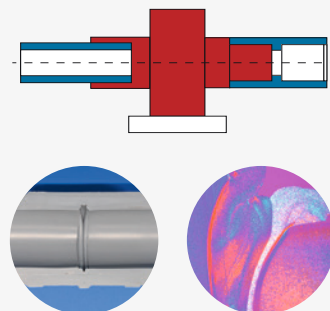
Tool and Toolsets:

- Simple and cost-effective heating tool  
MSE 63/MSE 110 (d16-110 mm)

Manually operated:

- With sturdy base frames and clamping devices  
SG125/160 (d16-160 mm)

### Fusion principle and examples



### Application

Ideal for industrial use, gas/water distribution, designed for workshops and confined job sites

### Key advantages

- Efficient and cost-effective solution for precise temperature control, ensuring reliable joints
- Compact and robust design: Vibration-resistant for stability across diverse environments, with space-saving portability
- High-temperature accuracy: Maintains fusion temperature post-heating for consistent weld seams

## Complete fusion solutions



### Butt fusion for workshop

#### Description

Butt fusion technology joins thermoplastic pipes by heating and pressing their ends together, forming a strong, homogeneous joint. This process requires precise control over all fusion parameters to ensure consistent quality.

#### Materials

PE100 (ecoFIT), PP (PROGEF Standard/Plus), PP-n (PROGEF Natural), PVDF (SYGEF Standard/Plus), PB (INSTAFLEX)

#### Dimensions

d20 – 1200 mm

#### Portfolio

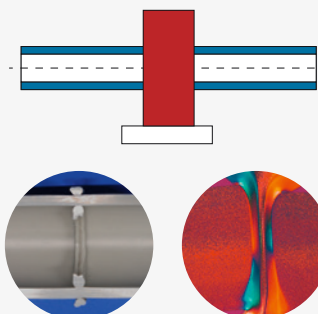
Designed for infrastructure prefabrication in workshops:

- Mechanical, portable butt fusion machines:  
MC 110 / MD 160 (d20-160 mm)
- Hydraulic butt fusion machines:  
WM 315/630/1200 (d90-1200 mm)

Designed for industrial applications:

- Mechanical butt fusion machines:  
IM 160 / IM 315 (d32-315 mm)

#### Fusion principle and examples



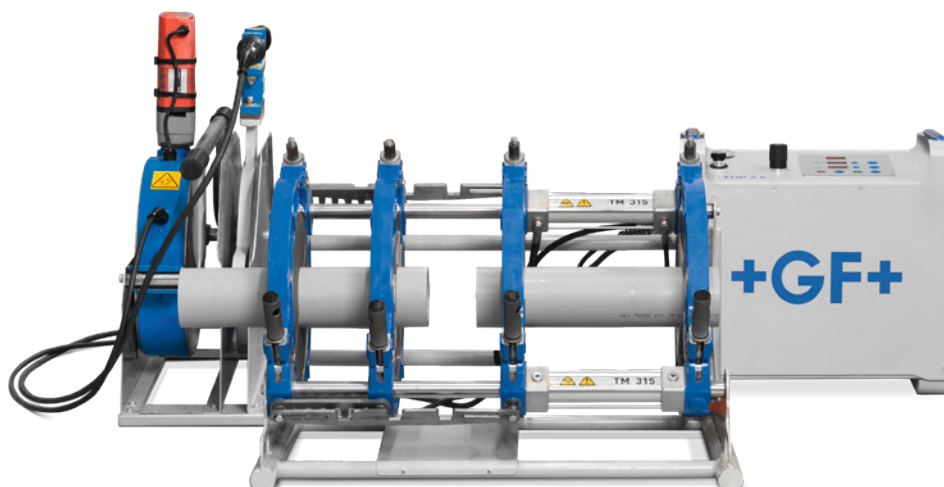
#### Application

Portable butt fusion machine MC (Minicron), compact butt fusion machine MD (Midicron) and workshop machine (WM) range for pre-fabrication for workshops

Industrial machines (IM) for straight jointing of fittings in industrial applications

#### Key advantages

- Efficiency: Rapid set-up with automatic features minimizes installation time and operator effort for all jointing processes
- Flexibility: Customized mechanical and control systems accommodate a full range of pipe dimensions and diverse application needs
- Precision Control: Our machines offer various upgrades, including CNC 4.0 and Bluetooth connectivity



## Butt fusion on construction site for heavy-duty operations

### Description

GF provides a versatile selection of hydraulic butt fusion machines tailored for construction sites for your varied installation conditions. From manual ECOS machines to fully automated systems with GPS and CNC 4.0 technology, we cater to all project needs whether you seek a more manual or advanced digital solution.

### Materials

PE100 (ecoFIT), PP (PROGEF Standard/Plus), PB (INSTAFLEX)

### Dimensions

ECOS 160-630

GF 800 / 1000 / 1200

TOP 2.0 160-630

CNC 4.0 160-630

### Portfolio

Basic Machines:

- ECOS 160-630 (d40-630 mm)
- GF 800/1000/1200 (d500-1200 mm)

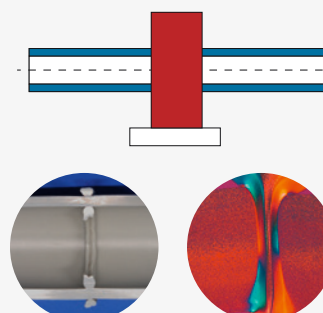
Middle-Class Machines:

- TOP 2.0 160-630 (d40-630 mm)  
Features: Integrated control panel, digital display, data logger, Bluetooth connectivity

Advanced Automatic Machines:

- CNC 4.0 160-630 (d50-630 mm)  
Features: Touchscreen interface, for operator guidance, integrated GPS and Bluetooth

### Fusion principle and examples



### Application

Ideal for municipal, industrial, and infrastructure projects, designed for harsh construction sites in the water and gas utilities and mining

### Key advantages

- From basic to middle-class, to digitally advanced: Our machines span from manual systems (ECOS series) to cutting-edge automated models (CNC4.0 with GPS), catering to your specific needs
- Trench-ready and durable: Built to endure harsh trench conditions, our machines ensure heavy-duty performance

## Complete fusion solutions



## Cementing

### Description

Cementing is a quick and effective method for creating strong, leakproof joints in plastic piping systems without costly equipment, especially when time is critical. Specifically designed for plastic piping systems, both solvent and solvent-free cements form a secure bond between two elements, ensuring resistance to stress, thermal expansion, and harsh media, and are also certified for drinking water applications.

### Materials

PVC-U, PVC-C and ABS

### Dimensions

d6 – 400 mm

### Portfolio

Solvent cement

- Tangit PVC-U Plus
- Tangit PVC-C Plus
- Tangit ABS
- Tangit PVC-U / PVC-C / ABS cleaner & primer

Solvent free cement

- Tangit RAPID
- Tangit KS Cleaner

### Application

For every application the right adhesive: From drinking water applications to aggressive chemicals

### Key advantages

- Versatile solutions: Find the perfect adhesive for your needs – whether for drinking water systems or handling aggressive chemicals, we provide reliable solutions tailored to your application.
- Committed to sustainability, safety, and simplicity: As a pioneer in sustainable adhesive technology, we ensure our products meet the latest regulations, giving you peace of mind.
- Your health and safety come first – our solvent free adhesives create safer workplaces for you and your team.
- Achieve a strong, durable joint with an easy process and no need for expensive equipment. Plus, we offer professional training to ensure safe and reliable application. Everything you need, all from one trusted partner at GF.



## Mechanical connections

### Description

Mechanical connections present a practical and efficient alternative to traditional welding and cementing methods, crafted to facilitate quick and secure pipe assembly without requiring specialized tools.

### Materials

Suitable for a range of materials and pipe sizes

### Dimensions

d16 – over 1000 mm, depending on the system used

### Portfolio

GF provides a comprehensive portfolio of mechanical connection solutions, including flanges, unions, fittings, gaskets, couplers, and many more, allowing quick and dependable assembly across various applications.

### Application

From industrial systems and utility networks to modern building technology, our mechanical connections provide secure, durable, and reliable solutions for your piping system.

### Benefits

- **Simplicity:** Streamlined installation processes that not only save valuable time but also help reduce labor costs
- **Safety:** The absence of heat and chemicals significantly minimizes safety risks
- **Versatility:** Designed to be compatible with a wide range of materials and sizes, making it suitable for diverse applications.
- **Reusability:** Ideal for temporary setups and maintenance, enabling effortless disassembly



## Installation tools

### Description

In addition to our extensive range of seven welding technologies, we also offer a corresponding selection of installation tools designed to ensure exceptional jointing quality and prevent any installation mishaps. Our comprehensive toolkit addresses every aspect of the installation process, from cleaning and bending to squeezing.

One of the standout offerings in our portfolio is the plastic pipe cutter PECut 1200. This tool is ideal for installing distribution and cooling systems (ELGEF Plus, ecoFIT, and COOL-FIT) in their most-demanded dimensions to handle large wall thickness variations with a single solution.

### Application

Comprehensive portfolio for the entire installation process in various applications such as infrastructure, industrial applications, shipbuilding, water treatment and many more.

### Benefits

- **Sturdy and reliable** for various diameters and profiles
- **Indispensable** for preparing pipes, fittings, profiles, sheets, and foils
- **Lightweight design** for easy one-person transport
- **Stress-free and straightforward** installation

Performance assured, for your peace of mind

# Safeguard your piping

We help you prevent damage before it occurs. GF provides different ways of assessing whether a piping system is going to be working properly in the future. We offer two systems that deliver steadfast data about the status of your system, based on science, giving you peace of mind for your operation at all times.



## Weld-Bead-Inspection Tool for IR fusion

### Description

The Weld-Bead Inspection (WBI) Tool from GF assesses the quality of infrared-weld beads more reliably than ever. It provides information about the geometry of the outer weld bead at the inspected points. Every element has been designed to be intuitive and efficient. No misinformation or falsification, the WBI Tool automatically documents facts of bead shapes for both traceability and accurate accountability.

### Materials

PP-H (PROGEF Standard/Plus), PVDF (SYGEF Standard/Plus), ECTFE (SYGEF), PE100 (ecoFit)

### Type of fusion

Welds created by infrared fusion machines

WBI-63 Tool: d20–63 mm

WBI-225 Tool: d20–225 mm



## Ultrasonic NDT (Non-Destructive Testing)

### Description

The Ultrasonic NDT solution present at our prefabrication workshops provides analytically backed proof of weld quality at the point of installation. Our field inspectors visit your construction site, looking for any indication in your welds, down to the millimeter, using various ultrasonic techniques (TOFD, PAUT) and patented advanced field equipment. If existing, they measure, locate and save these indications in a field report. The report then feeds the assessment algorithm, resulting in a clear “Pass” or “Fail” statement. When the welds are approved, you can close the trench, with complete peace of mind.

### Materials

HDPE 100, RC, PP

### Type of fusion

Welds created by butt and electro fusion machines

# Digital welding data management

Embark on a revolutionary journey in welding data management with our new business service CONNECT Welding Data. Join us in redefining how you document your welds and manage inspections.

## CONNECT Welding Data

### Description

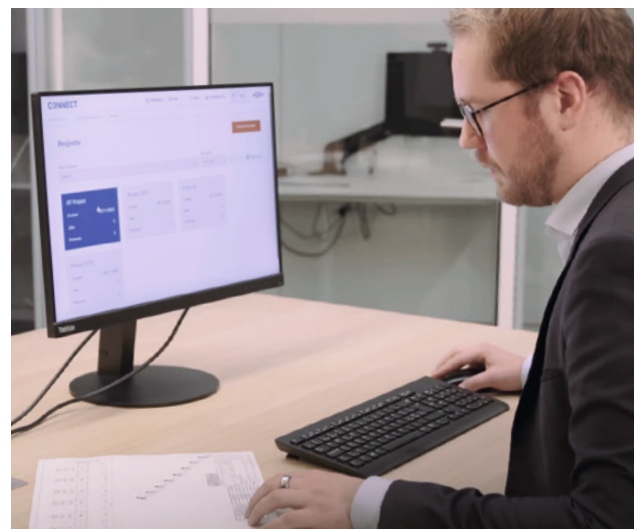
CONNECT Welding Data by GF is your gateway to the future of professional welding. Automatically capture all essential welding data directly from your welding machine, and easily enhance your records by uploading your documents. The result is a seamless, transparent overview of your entire inspection process. With CONNECT Welding Data, you'll keep a close eye on welding quality, streamline operations, and maximize safety across your business.

### Efficient

- Efficient welding data documentation: Upload pictures, documents, reports or isometric drawings
- Seamless welding data integration: Over-the-air data transfer and USB connectivity
- Customizable welding data management: Organize data efficiently by project, welder, or customer
- Customizable welding data export: Select relevant files to create your project documentation in your desired language
- Comprehensive database search: Easily locate welding protocols across the entire database.

### Secure

- High data security: We prioritize protecting your data and ensuring it remains secure at all times
- Anti-manipulation mechanism: CONNECT Welding Data checks that your welding data has not been manipulated
- Manage user rights: Specific project access for all involved people to maximize efficiency
- 24/7 remote access: Access your data anytime, anywhere with ease – an internet connection and your login credentials are all you need.



## CONNECT

Start now and experience perfectly documented welding procedures that are accessible anytime and anywhere.

Learn more at

[Marketplace – CONNECT Welding Data](#)



# Ensuring fusion machine excellence worldwide



● Certified Service Center

**Why after-sales service matters**

With a presence in roughly 50 countries through a network of over 40 certified service centers, GF brings global expertise and localized support to every corner of the world. Our regional centers are dedicated to maintaining and calibrating fusion machines, providing essential after-sales service to ensure reliable performance and extended machine lifes-

pan. Regular maintenance and calibration are essential to keep your fusion machines running smoothly and to prevent costly downtime. Our specialized after-sales service ensures that your equipment remains in top condition, enhancing longevity and reliability for continuous operation. You can rely on our expert support whenever you need it.



#### Global network of equipment rental

For short-term construction or installation projects, getting immediate access to the right equipment wherever you need it – without bureaucratic delays – ensures efficiency and flexibility. Our global rental service offers access to high-quality fusion machines without long-term commitment, giving you the flexibility to use the equipment only for as long as

needed. With our rental fleet, you can be assured that each machine is well-maintained and ready to perform. Additionally, after a specified rental period, you have the option to purchase the equipment, providing the flexibility to test it thoroughly or rent it for a defined duration before committing to a full investment.

# Quality knowledge directly from the market's innovation leader

As we navigate the challenges of a dwindling skilled workforce and increasing retirements, it becomes essential to prioritize effective training in construction. Timely and precise installation and maintenance of piping systems are vital, requiring installers to perform with efficiency.

## Learning where you need it

Our experts are at your side wherever you are and conduct hands-on training sessions in the various fusion and jointing methods on site. Through the specialized education offered by our GF Global Academy, both onsite and online, we empower you to prevent damage before it happens by equipping installers with the necessary skills and knowledge. Graduates of our training programs earn professional certificates from one of GF's 26 training centers worldwide, ensuring they meet the highest standards of quality and expertise.

## Global Academy certified

Participants who complete one of our training programs with certification receive an official GF course accreditation. We verify that the knowledge transferred in every course is the same worldwide and up to date with our latest products and innovations. Take your skills and career to a new level and sign up for a course today, or request us to arrange a training service at your own location.

## A global network of training centers

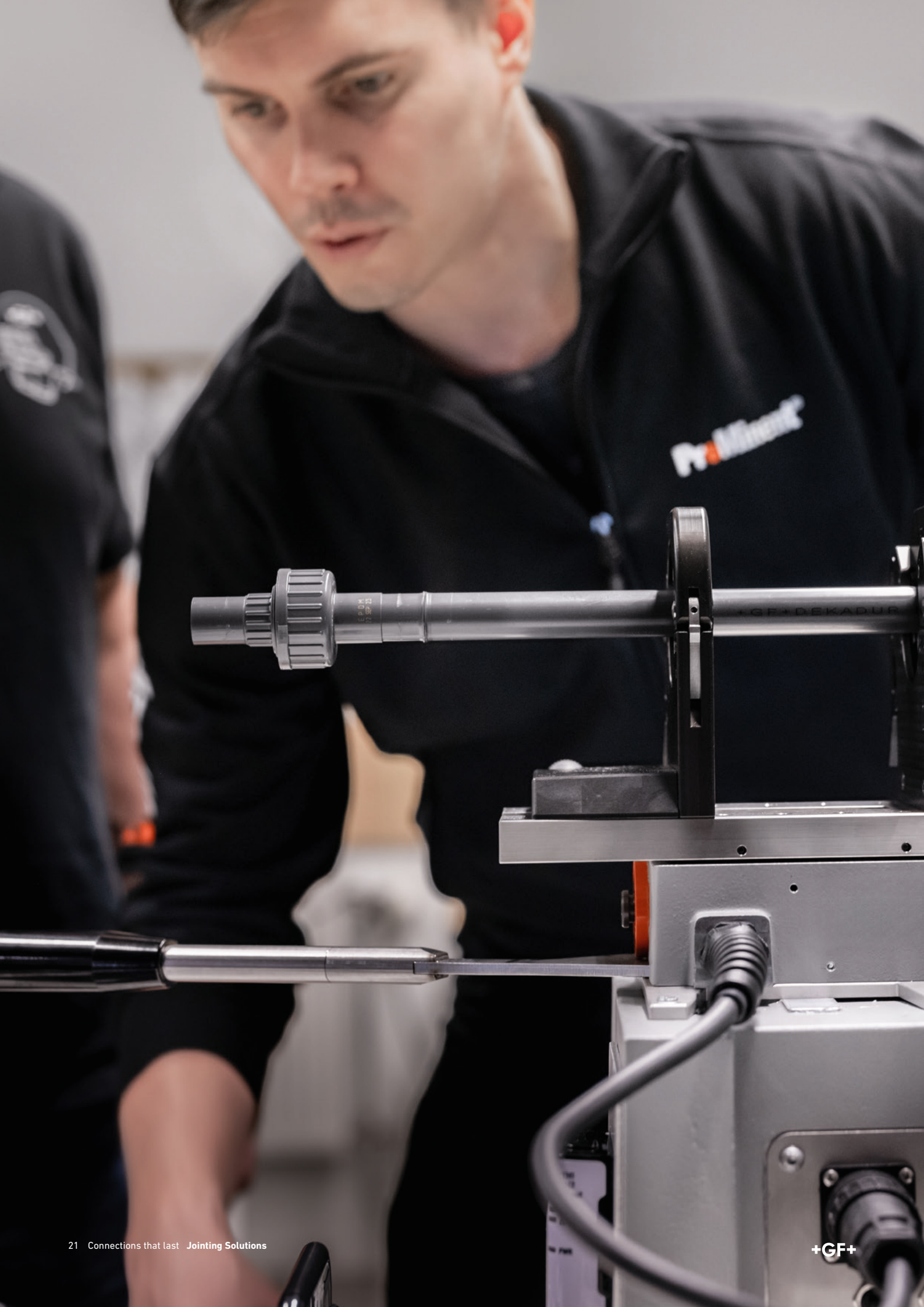
Practice makes perfect: Experience is one of the most decisive factors for the success of an application, and there is no substitution for it during the installation. Visit one of our training centers near you or get up to speed with an online training offer.

## Practical training and theory

Clearly designed and structured training courses ensure that participants with varying levels of experience receive the knowledge transfer required to maintain the highest installation standards and quality.

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





# Stronger together

Transform your individual piping system components into seamless flow solutions with our cutting-edge jointing solutions. We cover every step from pipe preparation and fusion to inspections and training, ensuring jointing excellence.



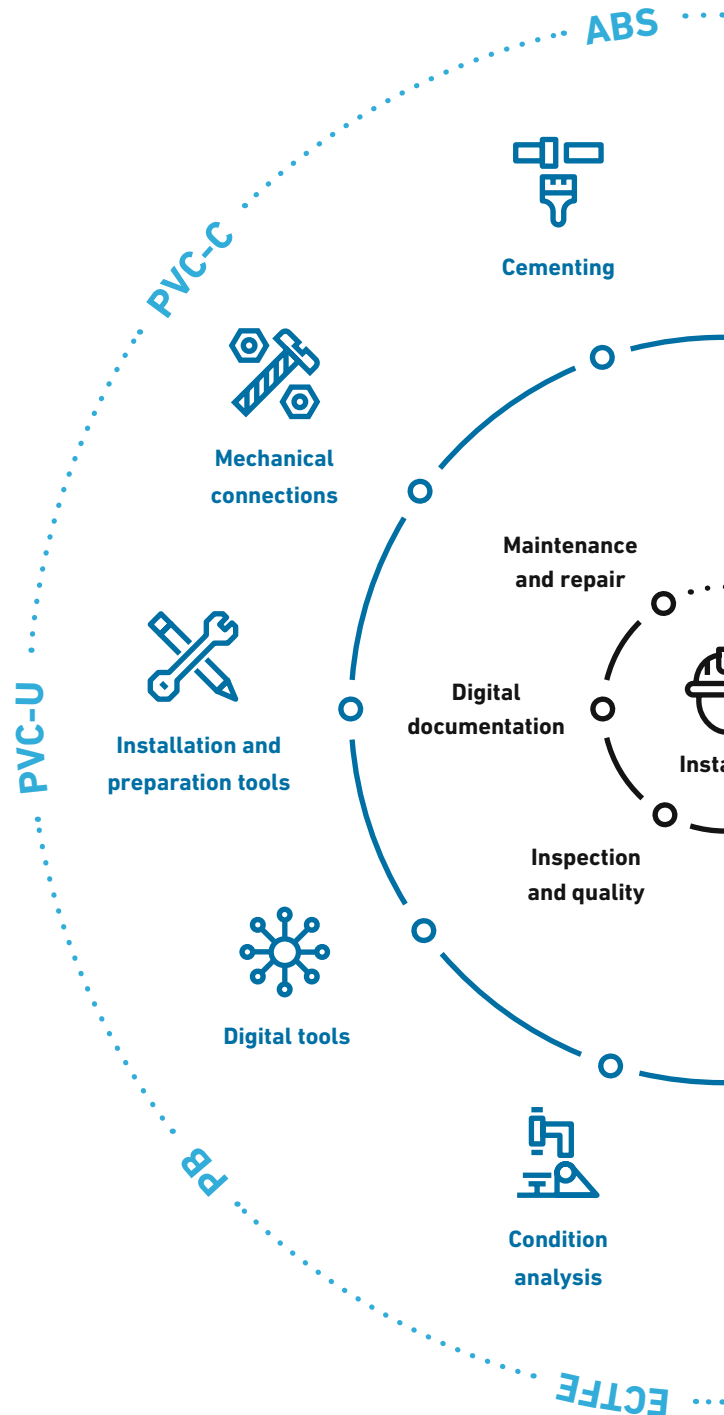
## Installation and preparation tools

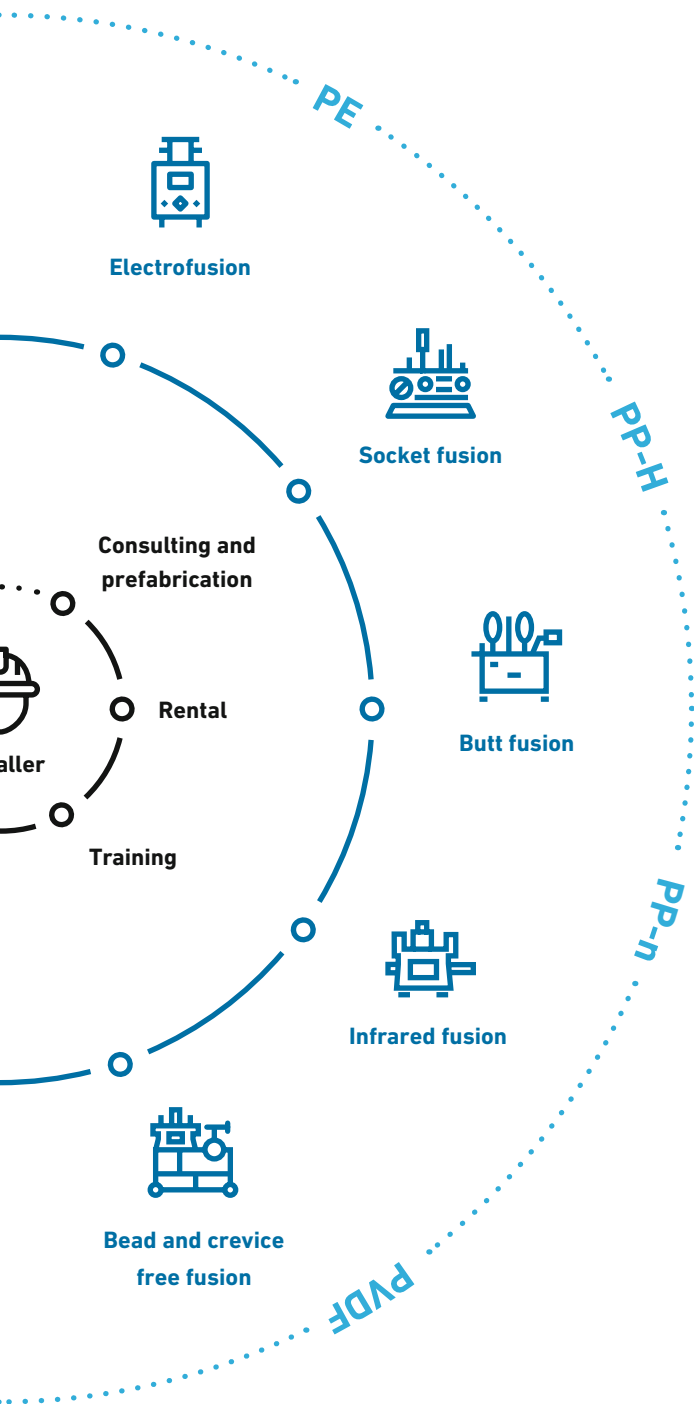
Attaining excellent jointing in piping systems starts with thorough pipe preparation. Our extensive range of robust and easy-to-use tools empowers installers to achieve strong connections. We offer guidance in selecting appropriate materials and matching them with compatible jointing technologies and tools.



## Services and digital solutions

Experience our extensive training programs, which are offered in virtual, in-house, or on-site formats, designed to empower installers with the essential skills for expertly building polymer piping systems. Our digital solutions provide users with seamless access to cloud-based documentation, greatly improving the traceability of welding processes. With the backing of our global training, rental, and maintenance services, we are committed to delivering prompt customer support to maximize continuous operations.





#### Jointing solutions and prefabrication

In our modern prefabrication workshops, we elevate off-site manufacturing with advanced jointing technologies. This approach transforms individual components into cohesive flow solutions, reducing on-site work. By creating complete modules off-site, we ensure optimal connectivity and performance, delivering high-quality solutions tailored to your project.



#### Inspection and quality validation

At GF, we offer tailored support and application-focused services throughout your installation's lifecycle. With the utilization of ultrasonic Non-Destructive Testing (NDT) and the Weld Bead Inspection (WBI) tool, we are dedicated to conducting thorough assessments of welds in order to scientifically verify their integrity. Moreover, our comprehensive services encompass on-site field weld checkups and advanced material testing, empowering informed decision-making at each stage of your project, thus contributing to the overall success and longevity of your installations.

More information at  
[gfps.com/jointing-solutions](https://gfps.com/jointing-solutions)

## Local support around the world

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

**[www.gfps.com/our-locations](http://www.gfps.com/our-locations)**



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