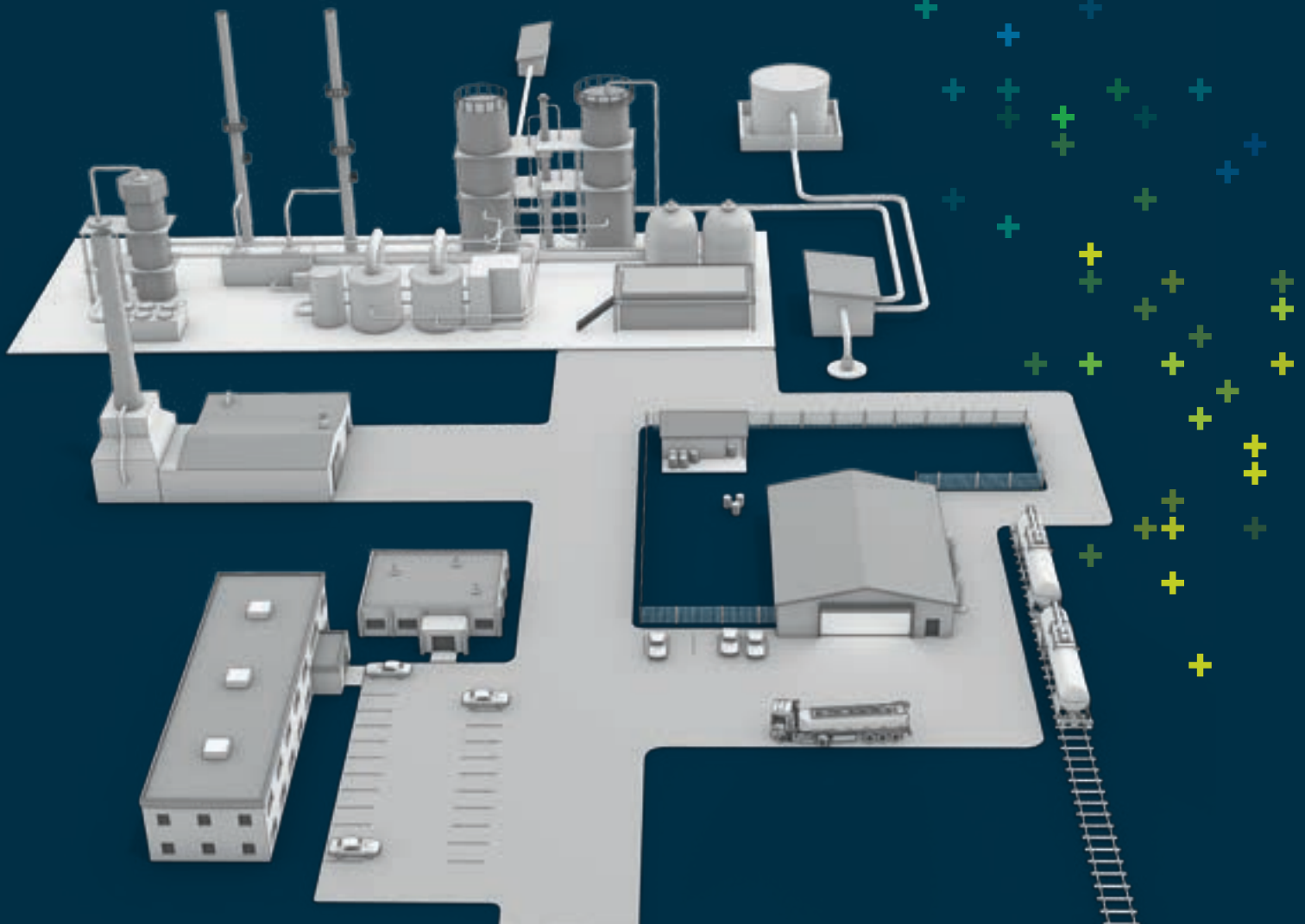
GF Piping Systems

+GF+

Your Chemical Process Industry System Solution

Chemical Production
Chemical Distribution
Surface Treatment
Mining Industry



Content

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The Best Choice for You

Corrosion and chemical resistant system solutions

Georg Fischer

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 121 companies with more than 14 400 employees across 32 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 Utilities
- Water Treatment

Global presence

Our global presence ensures customer proximity worldwide. Sales companies in 28 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 centers 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.

From Source to Your Point of Use

Wherever you need it

Water and energy are becoming more scarce, and therefore more valuable, resources. The shortage of drinking water is essentially due to the unequal distribution and limited supply of fresh water. At the same time, the medium-term energy supply is jeopardized because the demand for energy is rising while raw material resources dwindle. This is why sustainable management of water and energy resources is increasingly important.

GF Piping Systems, a leading supplier of complete solutions in plastic, sees a stable water supply and better energy efficiency as the main challenges for this century. For decades, we have been developing reliable solutions for numerous applications in industry, for utility and building technology and are thus contributing to the efficient, resource-conserving and economic use of water.

Industrial applications
Our solutions support the production processes of our customers by supplying and treating water in the desired quality.

Energy
Applications in renewable energies and power plants require permanently leakproof piping systems.

Transport
Safe piping systems connect the areas in which water is produced, used and treated.

Domestic applications
Piping systems from GF Piping Systems provide households and industrial buildings with clean drinking water and an ideal climate.

Waste water treatment & reuse
A very energy-efficient means of producing water is the recycling of waste water. Our systems make it possible to purify waste water so it can be used as industrial or drinking water.

Potable water
From filtration to reverse osmosis and neutralization, products and solutions from GF Piping Systems are used.

Extraction
Our products are used to extract water from fresh water sources and increasingly in desalination plants.

Chemical Process Industry

Decision-makers have one goal in common: to manufacture chemical products cost-efficiently in a complex market

+ Keeping an eye on value

GF Piping Systems sets milestones – also in the area of added value services. Our customers benefit in multiple ways when using plastic piping systems from GF Piping Systems.

+ High cost-efficiency

Our innovative plastic piping systems allow our customers to operate with lower costs on the basis of the natural advantages of plastic compared to metal.

+ More safety

Wherever required, our double containment piping systems comply with the demanding current health and safety regulations.

+ Lower energy consumption

Smoother inner walls prevent incrustation in pipes and enable even throughput with a constant pump pressure.

+ No corrosion

Plastics don't rust like metal piping systems may.

+ Less downtime

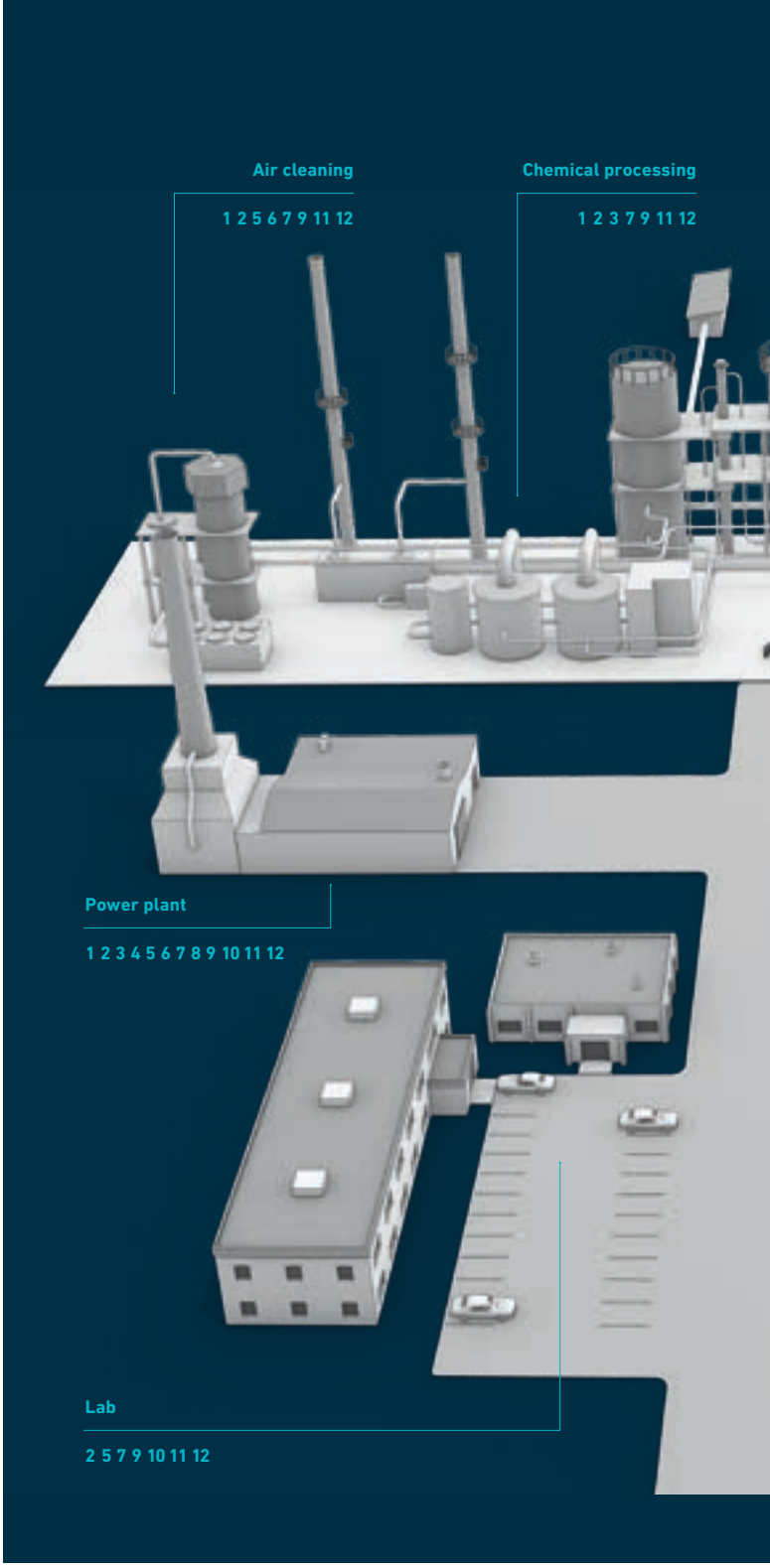
Using our measurement and control components assures our customers optimal control of production processes, a reduction of operating costs and less downtime.

GF Piping Systems steps up to this challenge with a comprehensive system offering of pipes, fittings, valves and the ideal jointing technology as well as an optimally adapted selection of components for measurement and control technology. Our customer focus is on Chemical Production, Chemical Distribution, Surface Treatment and Mining. We continually set ourselves new goals on the path to perfect global customer service in a complex market.

Chemical Production

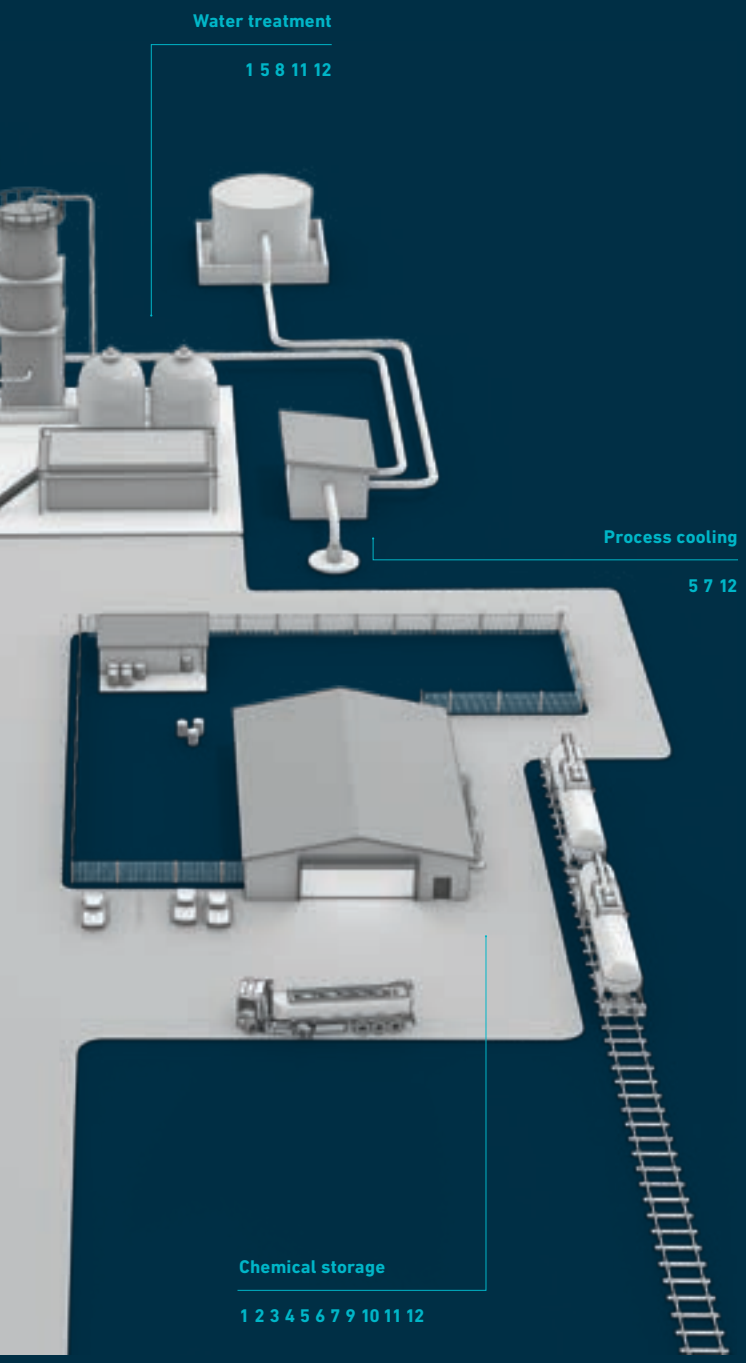
Plastic piping systems from GF Piping Systems afford the greatest possible degree of safety and efficiency

GF Piping Systems operates behind the scenes in a multitude of chemical processes. The harsh environment in chemical plants and chemical conveyance, places high demands on piping systems in regard to safety, efficiency and maintenance.
Thanks to our decades-long experience and our extensive know-how, we are able to ensure the highest degree of quality and safety for our products as well as for the people in the surrounding area. For over 50 years, industry has trusted thermoplastic pressure piping systems from GF Piping Systems from water for process cooling to transporting hazardous liquids. Our proven plastic piping systems offer a maximum of corrosion protection, even in challenging industrial sectors such as the chemical industry.



Extreme conditions

The piping systems in chemical production are subjected to extreme conditions. Aggressive substances need to be transported and processed, which places high demands on the system solutions. Besides being very reliable, these need to afford safety and efficiency as well as maximum corrosion protection.



Applications in chemical production

The needs of our customers in focus.

Many of the chemicals we use daily are manufactured with the help of our products. The production of chemicals contributes to and safeguards our comfortable lifestyle, our health and our nutrition. Because our products satisfy the most stringent criteria of legislators and the chemical industry in all the main application areas, GF Piping Systems makes a significant contribution to progress and securing the future globally. Customers are invited to consult with our specialists on site to determine where our products can best be used.

1 Filling of tanks
2 Dilution
3 Mixing
4 Draw-off
5 Neutralisation
6 Gas scrubber
7 Process cooling water
8 Membrane technology
9 Chemical conveyance
10 Fire extinguishing system
11 Emergency showers
12 Maintenance & repair

Our service

In the run-up to the project we offer our customers individual and competent support in selecting the most suitable piping system including the appropriate jointing technology for their particular application. In addition to technical criteria, we also factor in the costs incurred over the entire lifetime of our products and systems.

Added value for our customers

With system solutions from GF Piping Systems our customers profit substantially from:

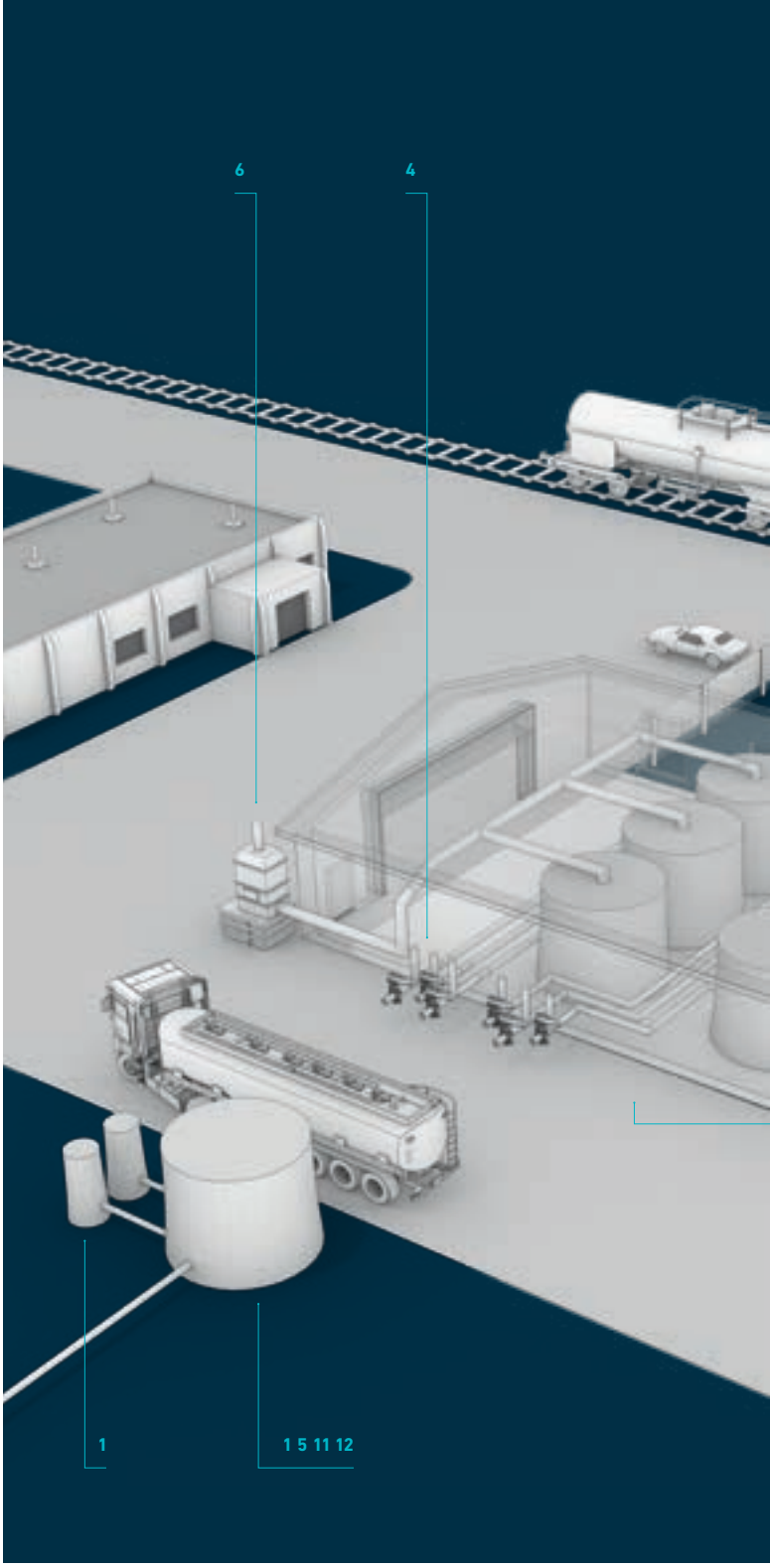
- Maximum corrosion protection
- Safe and best-practice complete solutions
- Reduced maintenance costs
- Simple, but unrestrictedly high-quality installations
- Energy-saving systems with optimized flow
- Customised solutions

GF Piping Systems is represented worldwide. Our international presence offers our customers ideal pre-sales and after-sales service right there at the respective manufacturing base.

Chemical Distribution

System solutions from GF Piping systems comply with the highest safety standards worldwide

Pipe systems from GF Piping Systems are predestined for all applications in Chemical Distribution, especially for transporting acids, alkalis and chemical compounds. Choosing the most suitable piping system including automation technology allows us not only to increase productivity and reduce maintenance costs but also to realize a significant improvement in product quality for our customers.
GF Piping Systems is a reliable partner for safe and cost-efficient chemical distribution. We also offer first-class customer service which includes extensive training and consultations on site.

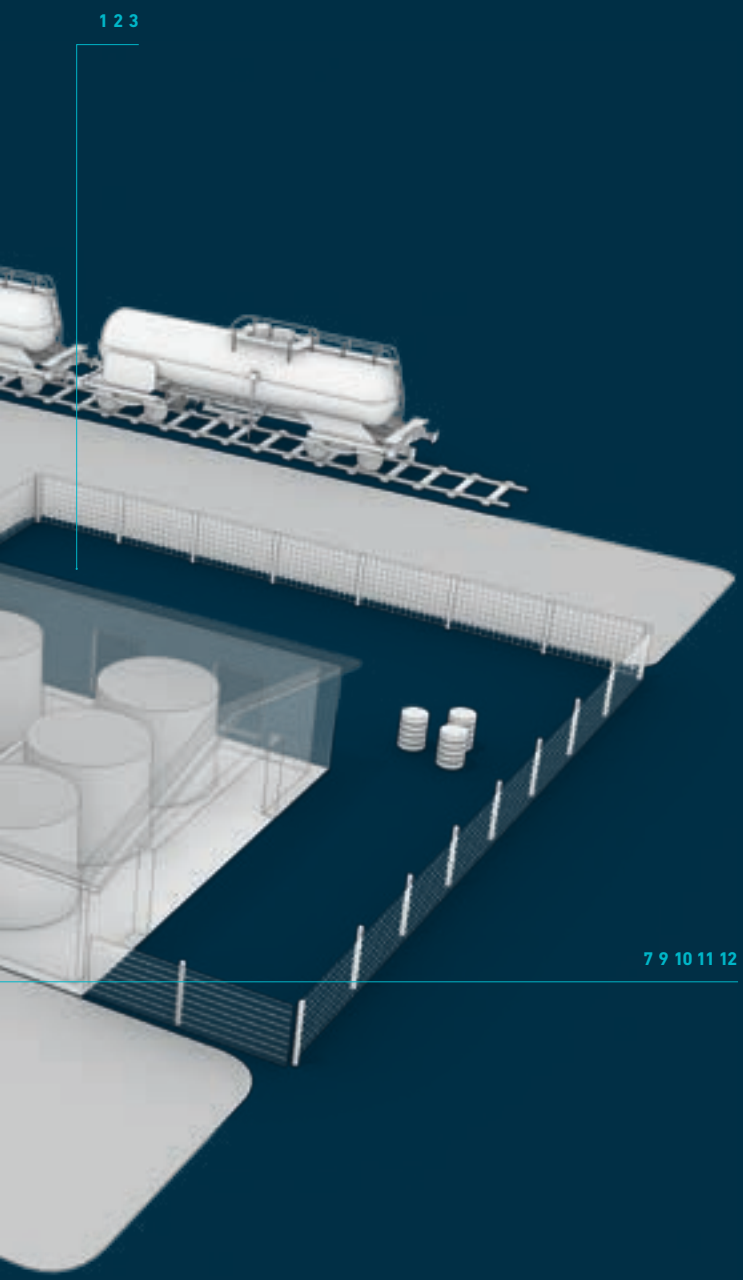


Safe and precise

Transporting chemicals from their storage place to the actual process application must be planned and carried out reliably and safely. For the components of the piping system this means the materials used must be one hundred percent compatible with the properties of the chemicals.
Piping systems from GF Piping Systems meet these stringent specifications regarding chemical resistance, temperature, pressure, optimal quality and safety.

Large diversity of chemicals

Typical chemicals frequently transported in chemical distribution are hydrochloric acid, formic acid, sulphuric acid, hy-



Applications in chemical distribution

GF Piping Systems supplies solutions for any challenge.

For our customers in the chemical distribution business, the highest product quality and a maximum of process reliability is an absolute must, precisely because chemical media are transported in diverse concentrations and dosages. The products supplied by GF Piping Systems meet these demanding criteria. By request our specialist teams will consult with our customers on site to find the best possible solution for the individual operation and setting.

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drofluoric acid, nitric acid, phosphoric acid, acetic acid, caustic soda and caustic potash in different concentrations and purities. Pipe systems from GF Piping Systems ensure safe operation and transport as well as less downtime.

Our special service

Following an in-depth analysis of the overall situation and the application, our material specialists will advise and support in selecting the optimal materials, in designing the system cost-effectively and in choosing the best jointing technology.

Added value for our customers

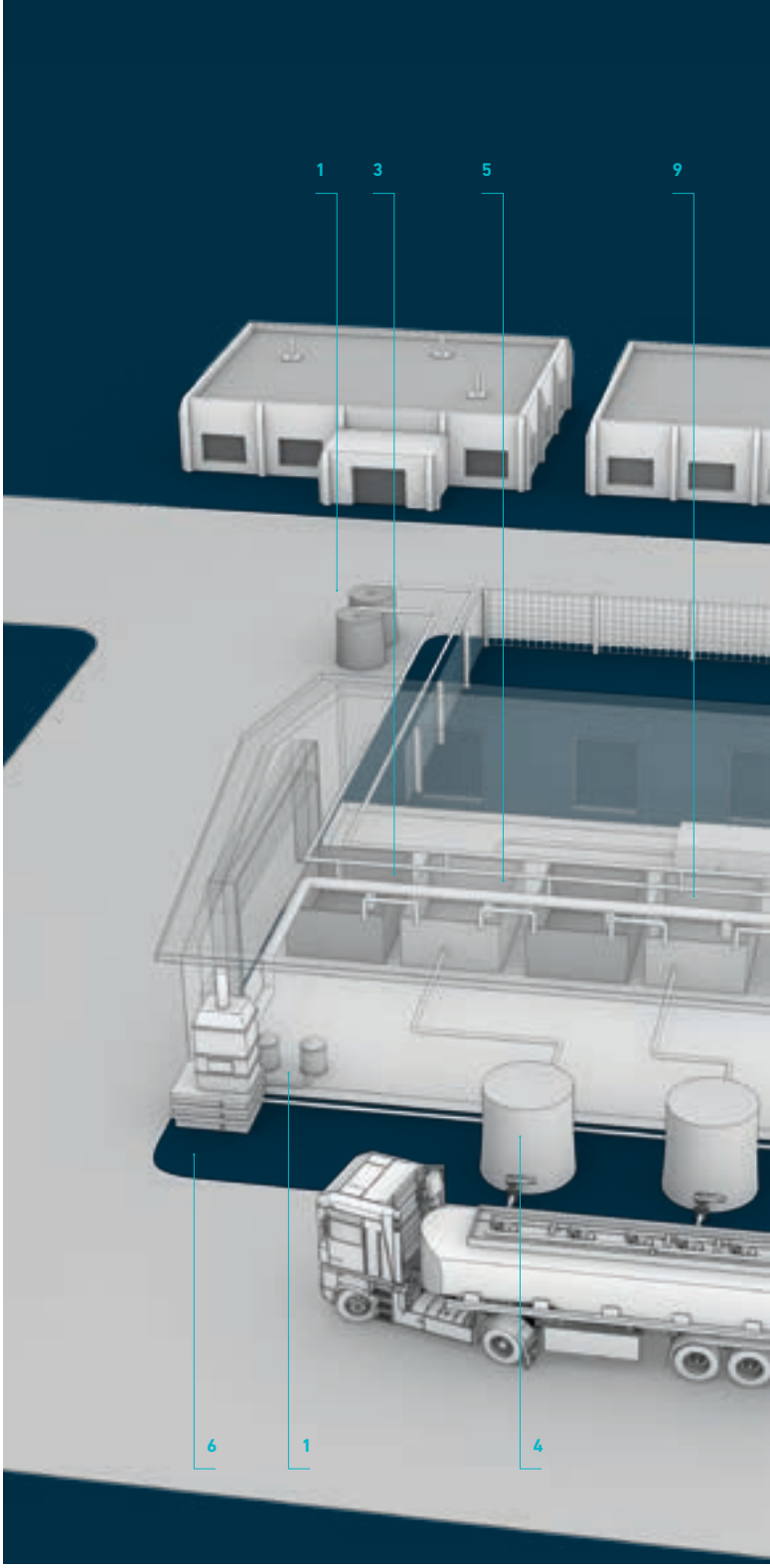
Our application-oriented system solutions and high-quality components feature:

- Reliable operation
- Less downtime
- Significantly reduced installation costs
- Corrosion resistance
- Lower plant energy costs

Surface Treatment

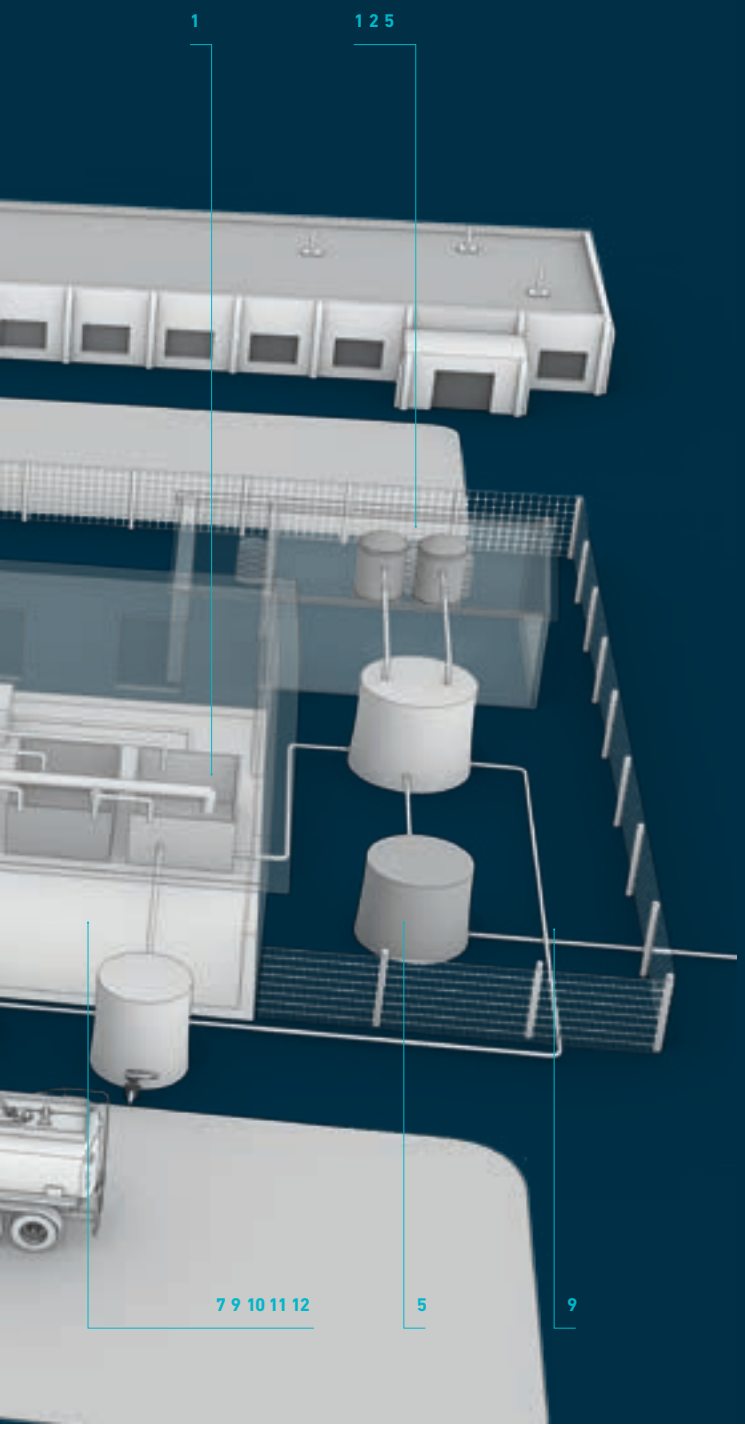
Complete solutions from GF Piping Systems offer high industrial safety for every step of the process

The surface of an object is its interface to the environment and decisive for chemical, physical and corrosive resistance. To be completely certain that a product complies with their standards and requirements, a customer will often need to treat the surfaces of its products. The main techniques used in surface treatment are electroplating, strip coating and hot-dip galvanizing. Due to the fact that our products meet the most stringent requirements, GF Piping Systems is in a position to offer complete solutions for the surface treatment industry.



Safety for every step along the way

Surface Treatment is a complex domain of the chemical industry. It comprises four steps: surface preparation, rinsing, electroplating and finishing. GF Piping Systems with its wide range of products for every process step offers comprehensive solutions for all applications from transport of liquids to exhaust gas scrubbers.



Applications in surface treatment

A discerning market that demands the highest level of quality and absolutely reliable products.

Corrosion is an important issue in this sector of industry. It is a natural and unavoidable occurrence, but can be minimized and delayed. By targetting the corrosion process, thermoplastics from GF Piping Systems can offer a solution to help prevent this attack on metal systems. Different techniques used in surface treatment are implemented to apply a coating to metal and plastic components for both aesthetic and physical properties. GF Piping Systems offers comprehensive solutions for this complex and multifaceted industrial sector as well.

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Optimal corrosion resistance

Our complete solutions ensure optimal corrosion resistance while also reducing maintenance and repair costs. Moreover, with plastic piping systems from GF Piping Systems incrustation can be prevented and a consistent flow can be achieved. In this way, it is possible to keep the pump output steady when conveying liquids.

Reliable control technology

The use of measurement and control technology from GF Piping Systems enables our customers to improve quality, safety and profitability. Automating process control provides a maximum of operational safety without additional maintenance efforts. For example, by installing the respective sensors from GF Piping Systems, controlling the chemical feed lines during electroplating is no longer a problem.

Added value for our customers

GF Piping Systems complies with the specific requirements, implements processes efficiently and offers its customers:

- Everything from one source
- Maximization of profits
- Lower maintenance costs
- Optimal corrosion resistance
- Lower energy costs

Mining Industry

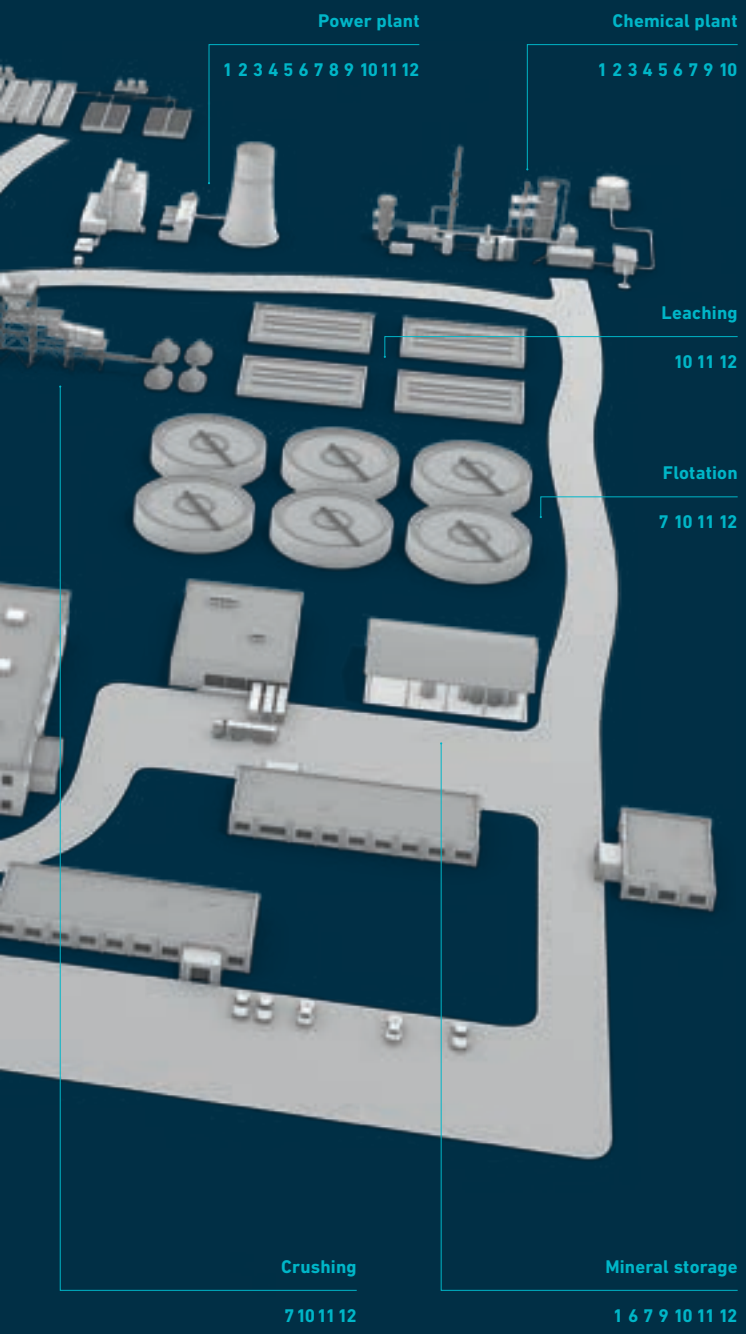
Products and applications from GF Piping systems fulfill the highest expectations in the harsh environment of mining

Piping systems must also meet the highest level of quality standards regarding safety, efficiency and maintenance in mining. Plastic piping systems have been used for decades to convey fluids and it makes no difference whether it is water for transporting slurries or hazardous liquids for specific purposes in mining, such as sulphuric acid, sodium cyanide, hydrogen chloride, sodium hydroxide, carboxymethyl cellulose, etc. When the right plastic piping systems from GF Piping Systems are used, corrosion presents no problem.

Modern-day mining requires innovative products and solutions because of the degree of automation and mechanization and the rising pressure of costs. GF Piping Systems offers innovative and efficient solutions.

Decades of experience

GF Piping Systems with its complete product offering for plastic piping systems ensures safe operation in all environments. For over 50 years the safe conveyance of chemicals has figured among the fields of applications for the wide range of products from GF Piping Systems.



Applications in the mining industry

GF Piping Systems offers low-corrosion system solutions tailored to the individual needs of our customers.

The aggressive environment of mining sites presents a particular challenge for piping systems. GF Piping Systems develops customer-specific solutions adapted to the actual conditions. For example, the pipe-in-pipe containment system CONTAIN-IT Plus has proven ideal for use with dangerous fluids. Product lines in PE, PROGEF (PP) or PVC-U are lightweight and corrosion-free. Measurement and control devices for simple installations to networked control or pump systems round off our product offering. With over 20 different systems, consultation with our specialists will determine the right material choice.

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Quality management

All the system components are tested according to the strict guidelines of accredited test labs. The management and production are ISO 9001 and ISO 14001 certified and thus ensure dimensional accuracy, suitability, function and conformity in all application areas in which the products are used throughout the world.

Benefits

We offer system solutions targeted to specific applications and for each application we have exactly the right jointing technology. This significantly cuts down on installation and maintenance time. The creativity of our employees and the know-how in the company form the foundation for solutions that are developed together with our customers and tailor-made for the mining industry. We also continually expand our expertise and ensure professional project organization.

Added value for our customers

- Corrosion resistance
- Safety
- Cost-efficiency
- Low maintenance
- Everything from one source
- On-site support

Applications

Filling of Tanks

In every manufacturing and processing plant, a tank is required to store liquid media. GF Piping Systems offers fast, reliable and safe tools for filling and emptying tanks. Our product range comprises of a large spectrum of piping systems including measurement and control technology, automatic and manual valves as well as an extensive array of valves for demanding applications.

Main benefits

Safety	Highest chemical resistance
Simplicity	Chemical advice from our specialists
Efficiency	Principle of parallel lines eliminates pump investments
Environment	No contamination from chemicals

Key products in filling of tanks

+ Safety

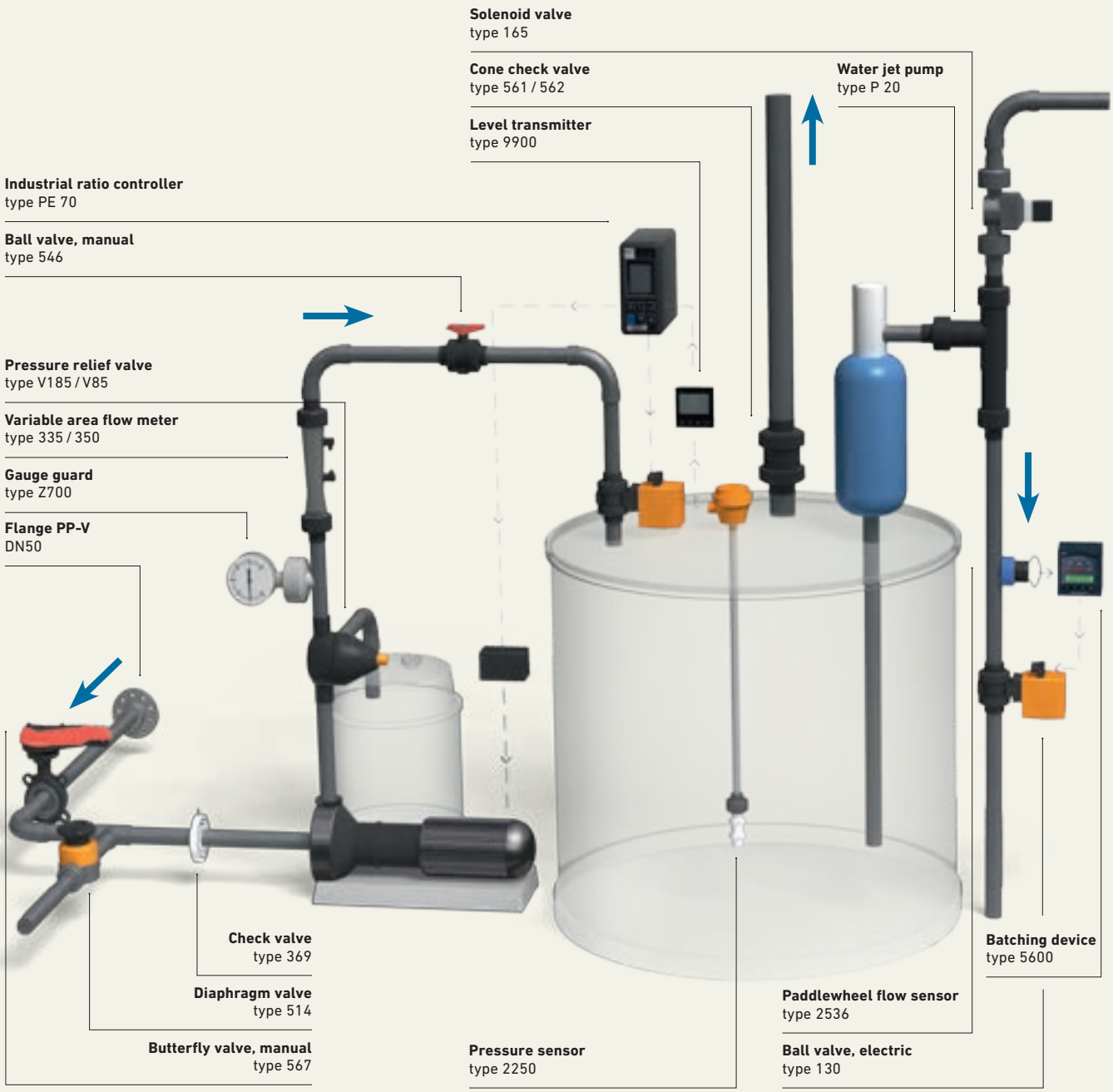
Level sensor type 2250

The hydrostatic level measurement sensor type 2250 has a one-piece PVDF injection molded housing and a ceramic membrane for high performance in corrosive liquids. Measurements are even reliable when foam or gas is present in the media.

+ Simplicity

Variable area flow meter type 335 / 350

The large range of these radially dismountable measurement devices opens the way for a wide array of uses with diverse media. For example, the type 350 is available in the installation length 350 mm. The great advantage is the easy-to-read measured value without electrical connections.



+ Efficiency

Water-jet pump type P 20

The P20 water-jet pump can replace an electric pump where compressed air is already available. The pump is self-priming and has no mechanical moving parts. So overall the system uses less energy and requires very little maintenance.

+ Environment

Cone check valve type 561 / 562

The valve is compact, easy to install and very reliable. The wide range of products and materials as well as the many connection options makes this valve ideal for many different applications. Installation in any orientation is possible.

Applications

Chemical Distribution / Conveyance

To transport chemicals from a storage tank to the areas of use, we need pumps and pipe systems. The material selected for the transport lines, storage and measurement of a chemical must be compatible with the chemical's properties. All chemicals must be handled in such a way as to minimize the probability of stress cracking in plastic piping. Double containment systems and special jointing technologies, such as infrared and bead- and crevice-free fusion, are additional parameters that should be taken into consideration when selecting the right system. The expert teams at GF Piping Systems advise our customers, at their request, on how to configure the individual system and support them in developing customised solutions.

Main benefits

Safety	Double containment piping system is an option
Simplicity	Easy to retrofit
Efficiency	Fast, easy and safe installation
Environment	Leakproofness with reliable connections prevents failures

Key products in chemical distribution / conveyance

+ Safety

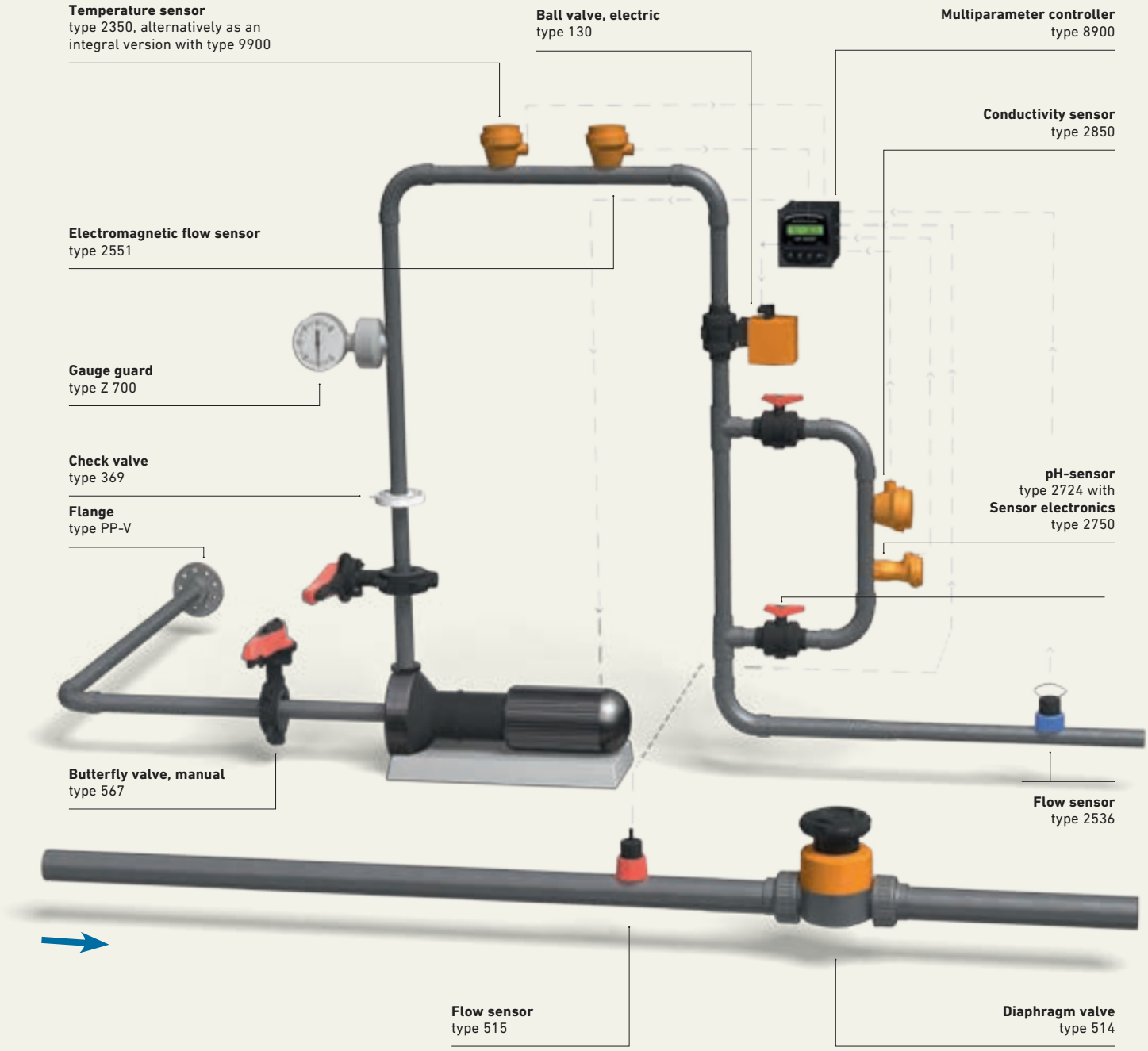
Double containment system CONTAIN-IT Plus

Wherever environmentally hazardous media is transported, double containment piping systems and leak monitoring can be implemented to virtually exclude the risk of accidents. The innovative technology permits laying the inner and outer pipeline separately. Pressure testing is done before final jointing is carried out.

+ Simplicity

Temperature integral system, sensor type 2350 & type 9900

The Signet sensor has a one-piece PVDF injection molded housing that is ideal for use in high purity applications. In aggressive liquids it is superior even to metal sensors and eliminates the need for expensive immersion sleeves. The system is also available as a blind version.



+ Efficiency

Butterfly valve type 567 / 578

The double eccentric operating principle of the butterfly valve type 567 / 578 guarantees good friction behavior and therefore less wear and tear compared to conventional centric butterfly valves.

A high level of security against water hammer is thus provided.

+ Environment

Paddlewheel flow sensor type 2536

The robust paddlewheel flow sensor with highest repeat measurement accuracy is easy to install and offers exceptional added value with little to no maintenance required.

The type 2536 has an open collector output with a flow value range of 0.1 – 6.0 m / s.

Applications

Mixing – Batching Control

Careful thought should go into choosing the right dosing system. GF Piping Systems has a comprehensive line of products that comply with the respective health, safety and waste water regulations. Our measurement and control technology ensures precisely controlled batch processes. Over 40 years ago we already patented the first paddlewheel sensor in the world, setting what is now a widely adopted industrial standard. Our product range includes materials and technology specially designed for numerous process applications.

Main benefits

Safety	Increased safety for personnel
Simplicity	50 years of experience in chemical advice
Efficiency	Accuracy + / - 1 percent
Environment	No chemical contamination

Key products in mixing – batching control

+ Safety

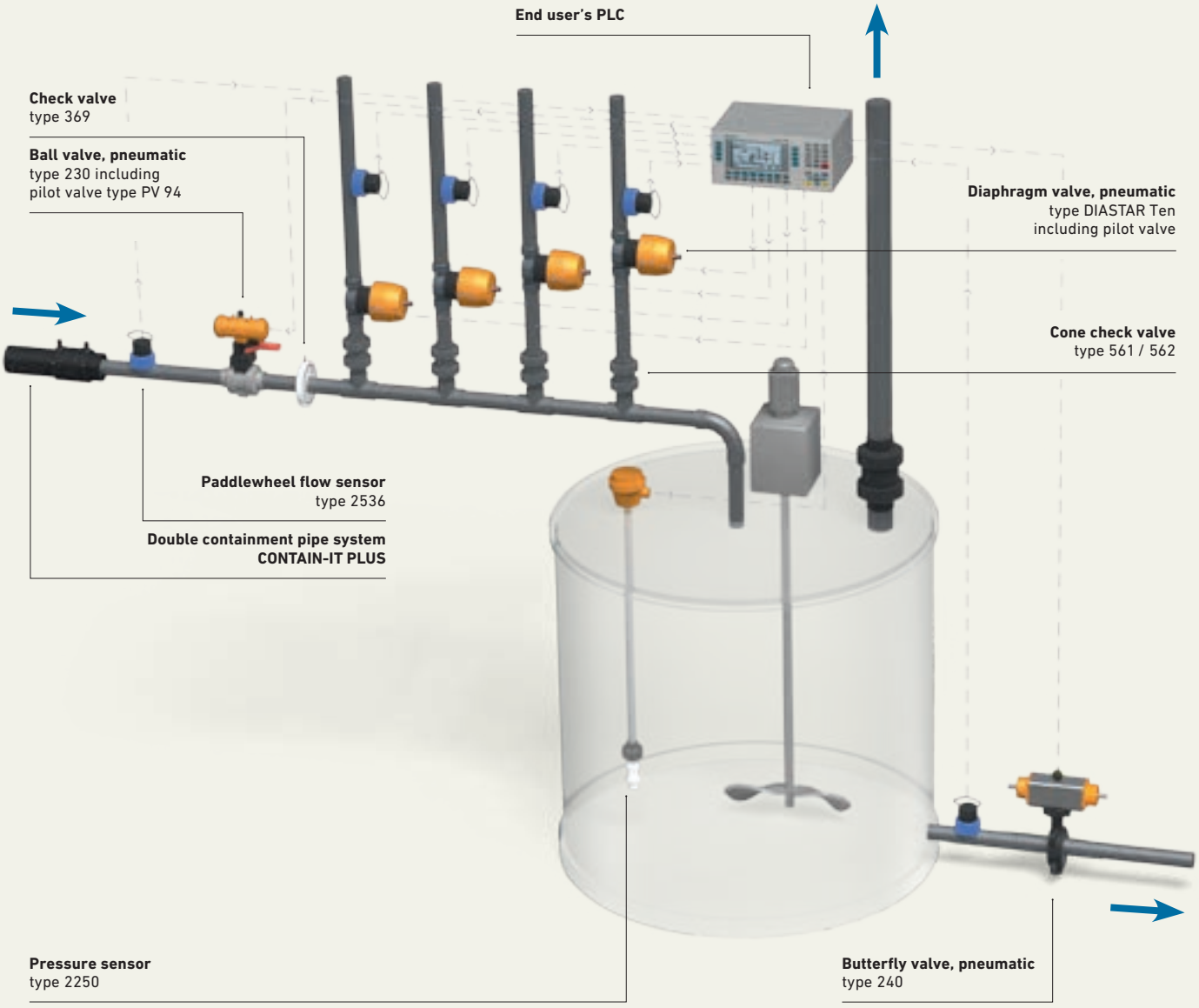
Pneumatic diaphragm valve type DIASTAR TenPlus

This type has the strongest actuation and the highest closing forces. It is implemented wherever high line pressure, up to 10 bar, needs to be reliably controlled. Together with a maximum of operational safety, efficiency and flexibility are valuable characteristics.

+ Simplicity

Wafer check valve type 369

The check valve can be mounted vertically and horizontally and is ideal for compact installations. It is robust, maintenance-free and approved for a nominal pressure up to 6.0 bar. Depending on the application, it is available in PVC-U, PP and PVDF with reset spring in V4A and Hastelloy for chemical processes.



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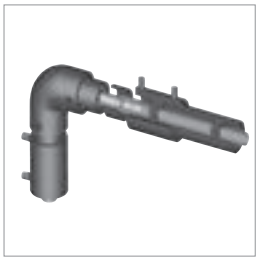


Double containment system CONTAIN-IT PLUS

Wherever environmentally hazardous media is transported, double containment pipe systems and leak monitoring can be implemented to virtually exclude the risk of accidents. The innovative technology permits laying the inner and outer pipeline separately. Pressure testing before final jointing is carried out.

Applications

Mixing – Ratio Control

Mixing chemicals with a ratio controller is a safe and highly effective method. A ratio controller from GF Piping Systems is capable of comparing two feed ratios with a set value. These figures relate to a known percentage of the desired mixture. The customer can set the percentage concentration, which he would like to feed into the system on that particular day. Storage tanks are not required as the chemicals are fed directly after mixing (in-line mixing).

Main benefits

Safety	Maximum safety in operation
Simplicity	No X-raying or cleaning
Efficiency	No investments for an additional mixing tank
Environment	Less waste water

Key products in mixing – ratio control

+ Safety

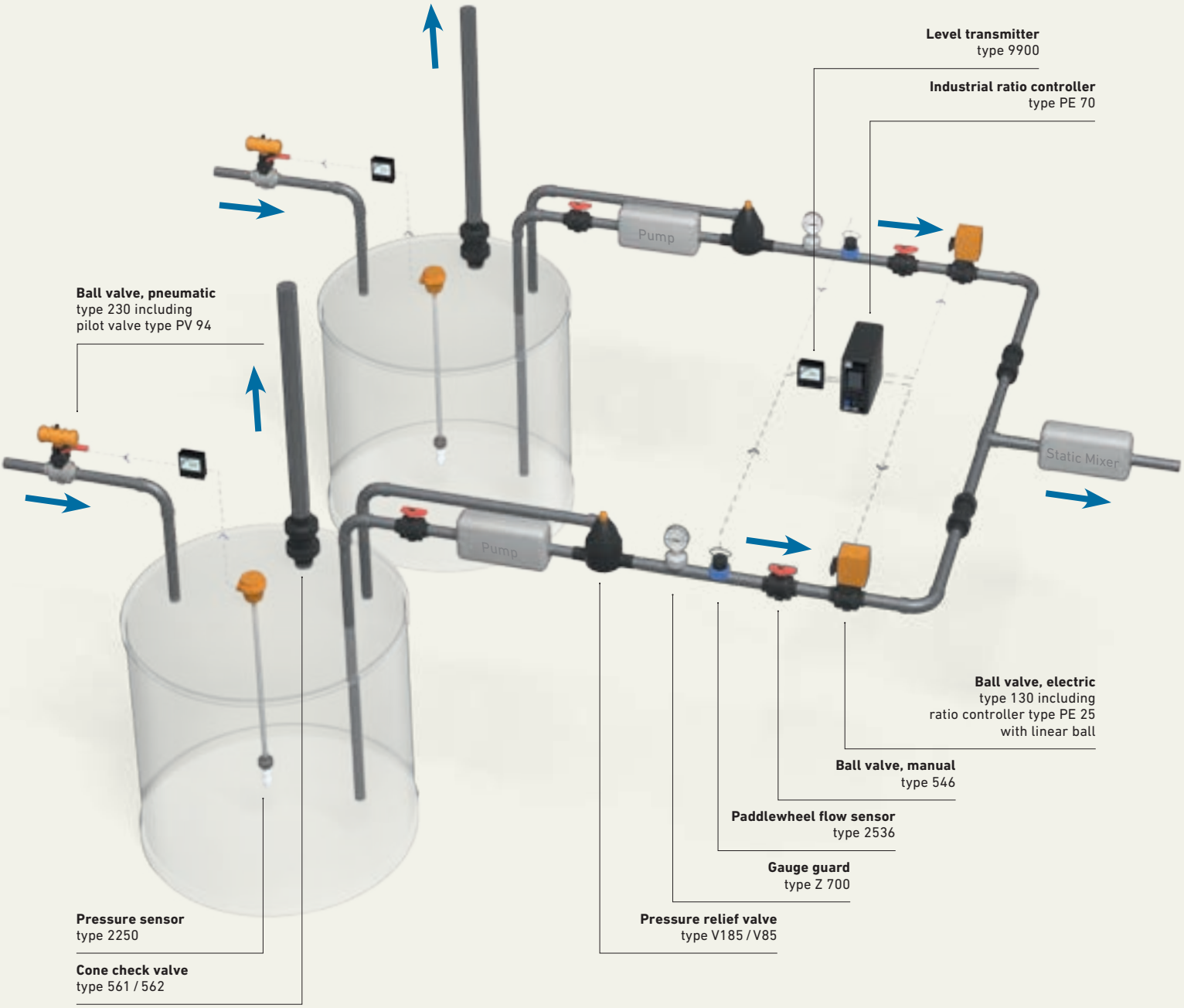
Electric ball valve type 130

The modular constructed ball valves were designed with the safety requirements of our customers, in addition to the ecological and economic requirements, in mind. For the ball valve type 130 the base body of the ball valve type 546 is combined with the electric actuator in the EA series.

+ Simplicity

Transmitter type 9900

A device for measuring flow, pH / ORP, conductivity, temperature, pressure, level and salinity. The new Signet single-channel transmitter combines flexibility with high user-friendliness. The large backlit display makes it easy to read even from a distance.



+ Efficiency

Industrial ratio controller type PE 70

The ratio controller type PE 70 allows accurate control. It is frequently used for ratio control and simple controlling tasks in industrial applications.

+ Environment

Cone check valve type 561 / 562

The valve is compact, easy to install and very reliable. The wide range of products and materials as well as the many connection options makes this valve ideal for many different applications. Installation in any orientation is possible.

Applications

Draw-off Station

Piping systems in draw-off stations must be resilient and low-maintenance. With quick and economical filling, a major requirement, the two stage shut down function can help eliminate over and under filling. Furthermore, no maintenance costs are incurred and no contamination of moving parts (rust, incrustation) takes place. The drawing-off process itself, however, requires reliable system components for smooth operation. Flow controllers and sensors permit drawing off precise preset amounts. Our customers realize optimal results with the measurement and control technology and automation from GF Piping Systems.

Main benefits

Safety	Highest chemical resistance
Simplicity	Expert support in materials selection
Efficiency	Two stage shut down reduces chemical waste and improves accuracy
Environment	No chemical contamination

Key products in draw-off station

+ Safety

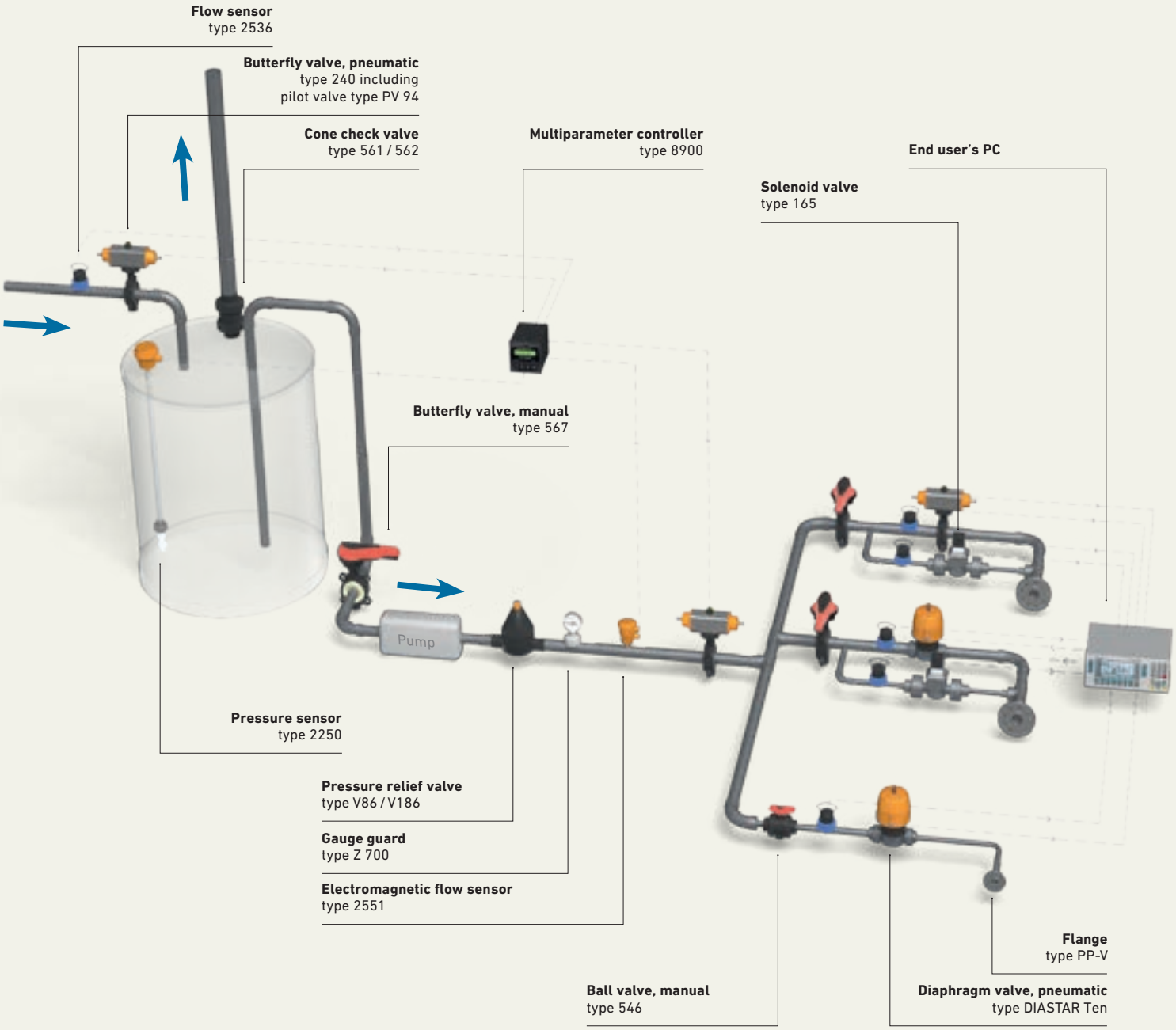
Butterfly valve type 567 / 578

The double eccentric operating principle of the butterfly valve type 567 / 578 guarantees good friction behavior and therefore less wear and tear compared to conventional centric butterfly valves. A high level of security against water hammer is thus provided.

+ Simplicity

Gauge guard type Z 700 / Z 701

The gauge guard measures the pressure of liquid media and enable a fast visual check. To ensure absolute chemical resistance, the manometer is separated from the medium with a PTFE-coated membrane.



+ Efficiency

Pressure regulating valve type V86 / V186

Pressure regulating valves serve to maintain a constant working or system-related pressure, to equalize pressure pulses and to reduce pressure peaks in process plants. They feature a compact design and good control characteristics and are low-maintenance. The adjustment range is 0.5 – 9.0 bar.

+ Environment

Solenoid valve type 165

The 2-way valve is pilot-operated by the medium pressure. It has a 100 percent duty cycle and an integrated manual override. It is available for operating voltages 24V DC, 115V AC and 230V AC.

Applications

Dosing / Dilution

Dosing and / or diluting chemicals requires highly specialized and reliable workflows, especially with aggressive chemicals. Concentrated chemicals in small amounts are dosed in-line or through a static mixer that ensures correct dilution in the process.

With a selective combination of pressure control valves, flow meters and control instrumentation, a plastic system is easily constructed to customer specifications.

Main benefits

Safety	Fully automated process
Simplicity	CAD data for easy planning
Efficiency	High dosing precision, using fewer chemicals
Environment	Energy savings thanks to smooth surfaces (no incrustation)

Key products in dosing / dilution

+ Safety

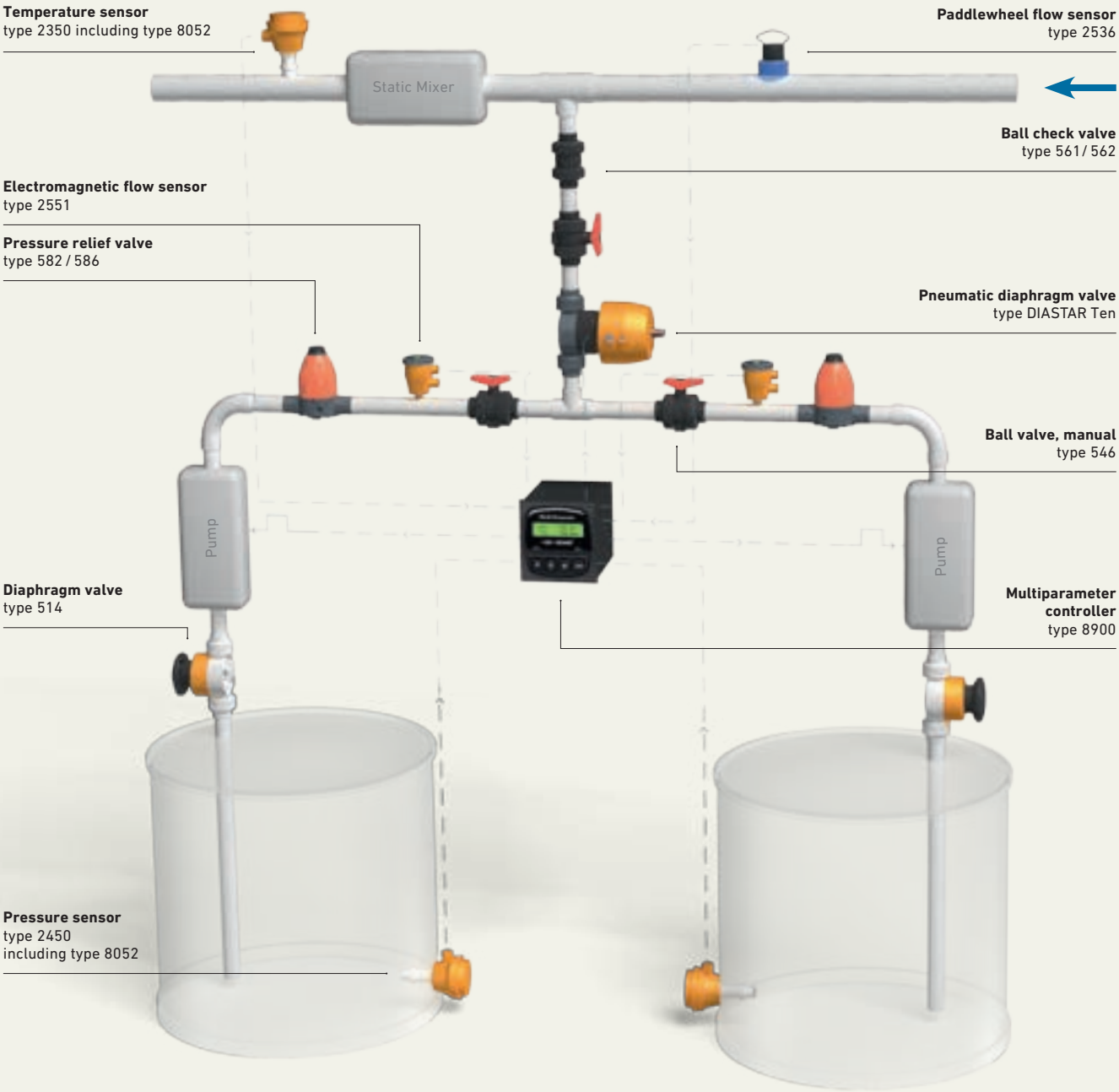
Pressure relief valve type 582 / 586

Pressure relief valves types 582 / 586 serve to monitor working or system-related pressure, to equalize pressure pulses and to reduce pressure peaks with good control characteristics. The optional available pressure gauge simplifies the start-up of the system significantly.

+ Simplicity

Ball valve type 546

Quality, design and innovative features make this ball valve unique. A modular system and compact design with many connection options ensure maintenance-free operation. Furthermore, two O-rings on the stem giving added safety features.



+ Efficiency

Diaphragm valve type 514

The optimal flow geometry provides twice the flow with the same amount of energy. Installation dimensions identical to previous models allow easy backward compatibility. Innovative body design with no metal fasteners.

+ Environment

Temperature sensor type 2350

The Signet temperature sensor's PVDF housing is injection molded in one piece and has excellent chemical resistance. It withstands aggressive media considerably longer than metal sensors.

Applications

Air Cleaning (Gas Scrubber)

Exhaust gases must be cleaned before being released into the atmosphere. As the dirty gas flows into the washer, the harmful substances are washed out on spraying levels so that the clean gas rises and can be emitted. Regardless of the type of gas, a combination of chemicals is used to neutralize the harmful substances. Here GF Piping Systems offers a complete solution, perfectly adapted to the needs of our customers. Even if the waste water doesn't need to be treated, we have a solution with the totalizing flow meter for data analysis.

Main benefits

Safety	Fully automated process, reduces human error
Simplicity	Complete system solution
Efficiency	Automated process, minimal use of chemicals
Environment	Clean air to environment

Key products in air cleaning

+ Safety

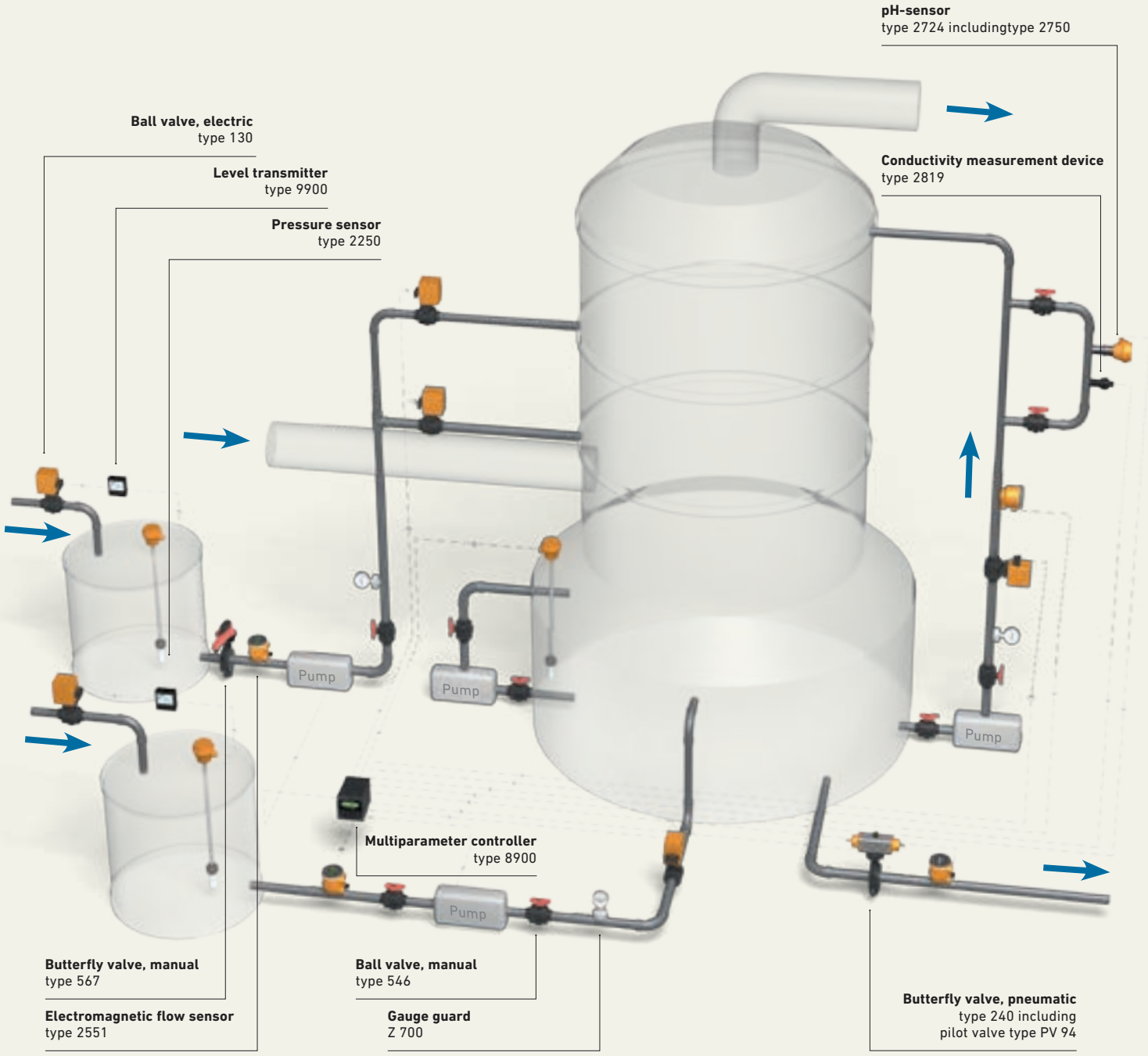
Electric ball valve type 130

The modular constructed ball valves were designed with the safety requirements of our customers, in addition to the ecological and economic requirements, in mind. For the ball valve type 130 the base body of the ball valve type 546 is combined with the electric actuator in the EA series.

+ Simplicity

Electromagnetic flow sensor type 2551

The patented magnetic flow sensor type 2551 (size range: DN15–900 mm) is an insertion sensor without moving parts. All versions are corrosion-resistant to ensure a long service life and minimal maintenance costs. The sensor is also available as a metal version, type 2552 (up to DN2550 mm - 102").



+ Efficiency

Pilot valve type PV95

The $^{3}/_{2}$-way solenoid valve serves to drive single-acting pneumatic actuators in the dimensions DN65–DN150.
They are mounted directly to the actuator via a hollow screw. The solenoid valve is available in the nominal width DN2 and diverse voltages.

+ Environment

Pneumatic butterfly valve type 240

The pneumatic butterfly valve consists of the valve body type 567 and the pneumatic actuator. Thanks to the double eccentric design, the disk does not touch the seal in the open position. It is the perfect choice to satisfy the high requirements of industry.

Applications

Neutralization

In many water treatment processes, the water needs to be adapted to a pH-value that complies with treatment specifications. For example, waste water must be neutralized before it is fed into public treatment plants. Alkaline or acidic waste water is regulated by adjusting the pH-value. For alkaline neutralization, several chemicals like caustic soda are generally used direct or in combination with a precipitation of soda solution. Sulphuric acid, hydrochloric acid or carbonic acid are often used as acids in a batch process. GF Piping Systems, with its custom-made solutions in measurement and control technology, offers high process reliability and cost optimization in this cost-intensive area.

Main benefits

Safety	Fully automated process
Simplicity	Only one controller required
Efficiency	Reduced chemical requirement
Environment	Less waste water

Key products in neutralization

+ Safety

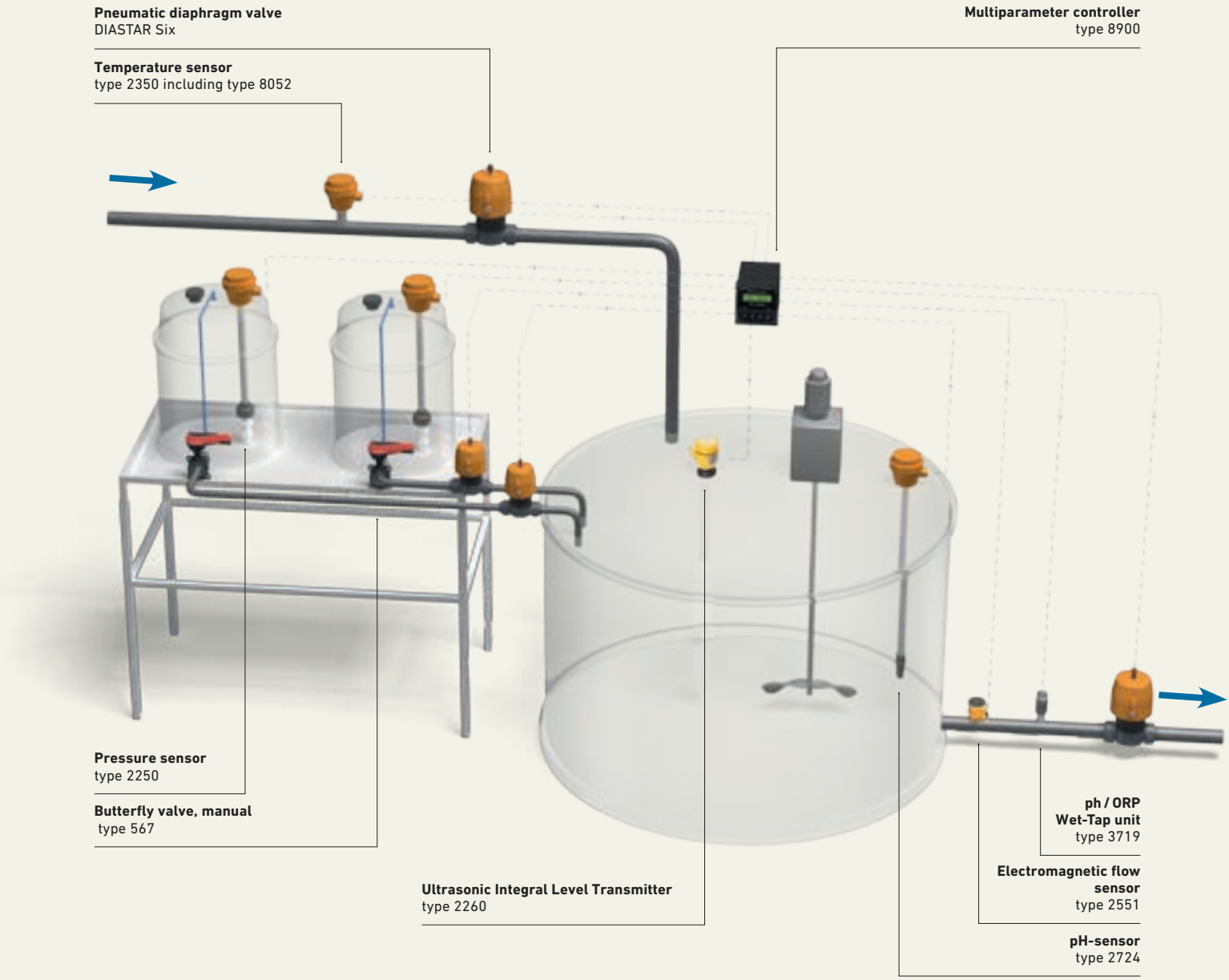
Multiparameter controller type 8900

The Signet multiparameter controller has perfected the concept of modularity. It is equipped with the combination of inputs, outputs and relays specified by the user. The unit accepts up to six input devices to measure flow rate, pH value, conductivity, pressure, level and temperature.

+ Simplicity

Electromagnetic flow sensor type 2551

The patented magnetic flow sensor type 2551 (size range: DN15–900 mm) is an insertion sensor without moving parts. All versions are corrosion-resistant to ensure a long service life and minimal maintenance costs. The sensor is also available as a metal version, type 2552 (up to DN2550 mm - 102").



+ Efficiency

Pneumatic diaphragm valve type DIASTAR Six

The cost-efficient solution with long service life for elastomer diaphragms up to 6 bar. It unites high quality with the basic functions of a pneumatic actuator. Optimal flow geometry provides twice the flow with the same amount of energy. Backward compatibility to previous models is also warranted.

+ Environment

pH / ORP Wet-Tap unit type 3719

With the pH / ORP Wet-Tap unit type 3719, pH or ORP electrodes can be installed or removed during routine maintenance work and electrode calibration without switching off the process. Two O-rings on a special, compact pull-back unit ensure process isolation – without a separate valve.

Applications

Membrane Technology

Membrane technology is a future-oriented technology and includes diverse filtration techniques that are all based on different degrees of membrane porosity. This technology is increasingly being implemented to harvest drinking water and process water from surface water and seawater. This is an ideal application area for corrosion-free piping components made of plastic. Complete solutions from GF Piping Systems offer a maximum of security and profitability for efficient processes, for instance by eliminating maintenance costs caused by rust and deposits. Furthermore, GF Piping Systems provides a limited 25-year warranty on the whole piping system.

Main benefits

Safety	Many material approvals
Simplicity	Customization on site possible
Efficiency	Compact design
Environment	The carbon foodprint is 25 percent lower compared to metallic systems

Key products in membrane technology

+ Safety

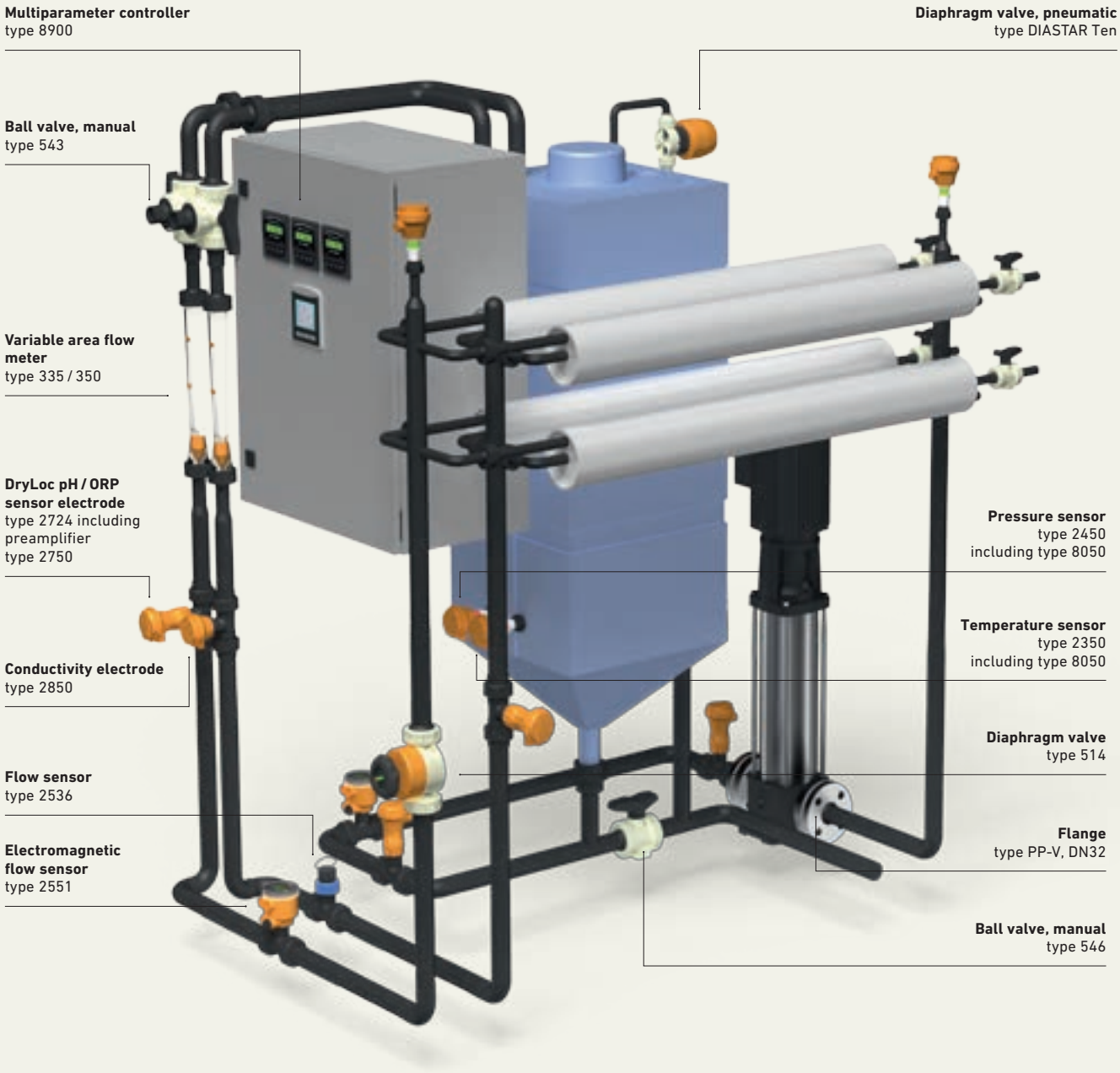
Diaphragm valve, pneumatic type DIASTAR Ten

Ideal for all standard applications up to 10.0 bar that require integration of accessories. With the corresponding interface, it is easy to connect it into the system control. The DIASTAR Ten also offers the option of having a PTFE membrane.

+ Simplicity

DryLoc® pH / ORP sensor electrode type 2750

The electronics offer automatic temperature compensation as well as automatic configuration for pH or ORP operation. The sensor electrodes are available for integrated in-line assembly as well as for submersible installations and have a 4-20 mA output.



+ Efficiency

Conductivity electrode type 2839-2842

The product range includes conductivity electrodes with four cell constants from 0.01–10.0 cm-1. They are suitable for monitoring high-purity water qualities and for deionization regenerating. The 316 SS electrodes are fitted with injection-molded PEEK™ process connections and insulators.

+ Environment

3-way ball valve type 543

The valve for all mixing and diverting processes, offering highest quality, operational flexibility and safety in any application. Available in horizontal or vertical configurations, and operated manually, pneumatically or electrically, the 3-way ball valve allows a wide range of options.

Applications

Surface Treatment

In surface treatment or electroplating there can be no contamination in the process chain, which is why the process is subjected to stringent control. To convey chemical media, high-quality system solutions and components made of plastics are therefore the perfect choice. GF Piping Systems has numerous measurement and control technology devices on offer, from the simple pressure sensor to fully automated and networked control systems, enabling our customers to optimize their processes. Using dedicated jointing technology, system life can be improved.

Main benefits

Safety	High chemical resistance
Simplicity	Chemical recommendations
Efficiency	Fully automated solution
Environment	Less waste water and chemicals used

Key products in surface treatment

+ Safety

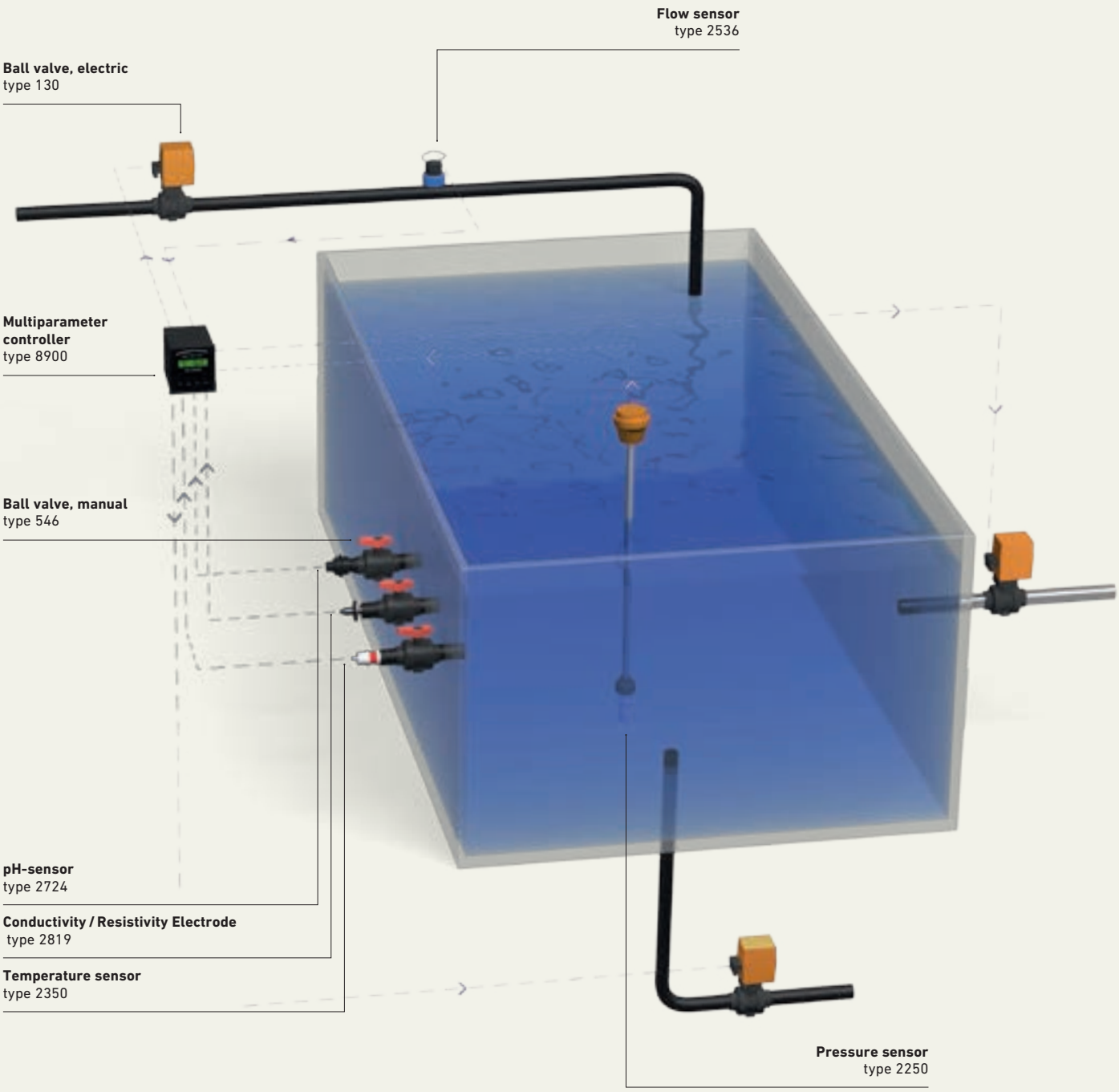
Electric ball valve type 130

The modular constructed ball valves were designed with the safety requirements of our customers, in addition to the ecological and economic requirements, in mind. For the ball valve type 130 the base body of the ball valve type 546 is combined with the electric actuator in the EA series.

+ Simplicity

Level sensor type 2250

The hydrostatic level measurement sensor type 2250 has a one-piece PVDF injection-molded housing and a ceramic membrane for high performance in corrosive liquids. Measurements are even reliable when foam or gas is present in the media.



+ Efficiency

Multiparameter controller type 8900

The Signet multiparameter controller has perfected the concept of modularity. It is equipped with the combination of inputs, outputs and relays specified by the user. The unit accepts up to six input devices to measure flow rate, pH value, conductivity, pressure, level and temperature.

+ Environment

Dry-Lock pH / ORP electrode type 2724

The electrodes have an integrated temperature sensor, the patented DryLoc® twist lock with corrosion-resistant, gold-plated contacts. The electrodes are available flat or bulb.

Further Applications in Chemical Process Industry

Fire fighting

Pipes made of PE100 have FM approval and can be used for underground fire extinguishing pipelines. PE100 is especially valued for being highly flexible, easy to connect and having a long service life. With the GF Harvel BlazeMaster system a CPVC fire sprinkler piping system is available, that exceeds applicable industry standards.

Emergency showers

Safety showers are an important part of industrial health and safety concepts. Here GF Piping Systems offers an energy-efficient and durable solution with its pre-insulated COOL-FIT system. Under certain conditions, COOL-FIT can even be an alternative to conventional heat tracing on metal pipes.

Process cooling water

Cooling takes place in most industrial processes; either the medium is cooled directly in the process or indirectly via secondary cooling of the process environment.

GF Piping Systems offers corrosion-free, complete solutions with low heat loss.

Water and gas - maintenance and repair

It is estimated that 20 to 30 percent of water production is lost or cannot be accounted for. For older networks, the losses could be up to 50 percent. The reasons for these losses are leaks, measurement errors, pipe cleaning or theft. GF Piping Systems offers innovative products for fast repair and dependable monitoring and maintenance of the water network. Solutions to repair up to 2 800 mm available.

The chemical process industry with its multitude of demanding application areas and materials has a definite need for safe, reliable, efficient and economical plants, components and piping systems. GF Piping Systems has enjoyed considerable success in developing application-oriented system solutions for challenging tasks for over 50 years.

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. When planning and implementing our individual solutions, factors such as flexibility, quality and reliability particularly set apart our services and guarantee added value for our customers.

Water distribution

Connecting mains, supply pipes and hydrants safely and reliably is crucial for water distribution. GF Piping Systems offers a comprehensive package of products that includes typical diameters of 355 mm as well as larger dimensions with an average pressure of 6.0 bar, but which can reach 25.0 bar or higher.

Fire protection / sprinkler systems

Sprinkler lines and connections to fire extinguishers must meet local fire protection criteria. Because they are used so seldom or have low volume flow, these pipelines also need to be corrosion resistant. GF Piping Systems has the perfect solution.

Industrial grade water

Industrial water is a specification category under deionized water. Potable water is produced in a number of steps, for example filtration, decalcification, neutralization and desalination. Industrial water complies with specific criteria, may however contain certain bacteria and impurities per specification.

Specialty waste

In order to transport chemicals from process applications to further treatment, pumps and piping systems are required.

The material used to transport and measure the chemical effluents must be compatible with the respective properties. Every chemical must be handled so as to minimize stress cracking corrosion in the pipe.

Further applications

GF Piping Systems develops application-oriented system solutions that enable profitable operation and are ideally suited for the chemical process industry. The specific value-adding services that complement our solutions are as diverse as our customers and their individual requirements.

In alignment with the demanding customer and industry specific requirements we offer a variety of applications. In an optimal way they fit in the process structure of the overall system and thereby fulfill the claimed high quality and performance standards uncompromisingly when it comes to meeting them.

Seam gas / LNG

During gas extraction and distribution, a number of challenging processes exist. Products and systems from GF Piping Systems offer intelligent solutions to tackle many of these demanding operations, enabling efficient and safe processing in key application areas such as water treatment, distribution, chemical dosing and compressor stations.

Process / house vacuum

In laboratories and in industry, vacuums are generated with diverse pumps. The quality of the vacuum depends on the specific application. The vacuum levels can be low, medium, high or ultra-high, with most applications requiring low or medium vacuum. Vacuum is often used to transport water in large buildings without pumps.

Media filtration

In multi-level filtration processes, sand, anthracite or stones can be used to remove particles from fluids. These processes require valves, actuators as well as measurement and control technology. Application-oriented system solutions from GF Piping Systems help to realize these processes efficiently.

Compressed air

Compressed air is expensive, which is why the compressed air system must be leakproof and durable over its entire lifetime. To compensate pressure surges, it must be flexible and not transmit vibration. GF Piping Systems has developed safe, efficient and ecological plastic piping systems for this demanding application.

Industrial cooling water

Cooling towers and heat recovery systems are basic components in every cooling and refrigeration plant.

Because the installation is outdoors, the piping system has to contend with certain conditions, e.g. temperature fluctuation, UV radiation and static restrictions. GF Piping Systems has the answer: the COOL-FIT ABS system.

Ion exchanger

In the chemical process industry, ion exchangers are primarily used in water treatment, specification and decontamination. The compact design of these installations presumes flexible piping components. GF Piping Systems has the fitting solution for every application, satisfying even the highest standards.

DI water / specified water

Specified water qualities, such as deionized water, are often required in the chemical process industry. A suitable layout of the piping systems is equally essential for safe and steady conveyance of water in the required quality. Experienced specialists from GF Piping Systems are available to provide on-site support.

Water transport lines

Water transport pipelines convey water from the source to the point of use. Plastic pipelines are an optimal solution here because they are laid quickly and are also safe and corrosion-free. All the components from GF Piping Systems can be joined together reliably and in a cost-effective way.

Reference

Filling of Tanks

Reliable plastic piping systems from GF Piping Systems for the batching of Acetic Acid.

Univar is a full-service provider for industrial and speciality chemicals. With approximately 170 locations and nearly 60 distribution centers worldwide, the company is among the market leaders in the sector. Univar operates its own service division, supporting its customers in the purchase of chemicals, storage and inventory management as well as mixing and packaging.

Leading global chemicals distributor.

New tanker filling installation

At their site in Wellingborough (UK), Univar carried out an upgrade to its existing acetic acid installation. The scheme included a new tanker filling station, comprising of polypropylene pipes, fittings and valves from GF Piping Systems, as well as the Signet paddlewheel sensor and batch controller.

High-performance system solutions

The Univar project team has high standards for quality and safety in every detail. Besides chemical resistance, great emphasis was placed on reducing maintenance of the valves and piping systems used to transport the aggressive medium. In collaboration with a sub-contractor, a thorough review and evaluation of the project was undertaken. The decision to work with GF Piping Systems was taken due to the reliable and high-performance system solutions as well as the back-up offered by expert personnel.

The plus: training for skilled personnel

The long term relationship between GF Piping Systems and Univar Wellingborough meant that competent and experienced staff of GF Piping Systems were on hand for training and support throughout the project.
For example, in the run-up to the installation, plastic welding training courses were given to the contractor. Univar operatives were trained as well to deal with future maintenance. This ensured a good quality and safe installation from the outset. Thanks to this measure, the installation was put into operation efficiently without any setbacks.

System and product selection

- PROGEF (PP)-system
- Automated valves
- Flow sensors
- Batch controller

On-site chemical conveyance.

Main benefits for the customer

- **High chemical resistance**
- **Project support**
- **Less maintenance**
- **Extensive training**

Reference

Process Cooling Water

Complete piping system in PROGEF (PP) and PE as an efficient solution for aggressive anodic surface treatment.

Since 1976 ALANOD produces anodized aluminium coils. Developing continuously and most of all very fast, ALANOD immediately became the leading European manufacturer in this segment. Most of ALANOD's specifically manufactured surfaces are used in the lighting industry. At the same time ALANOD has developed specialty finishes for domestic appliances, construction, automotive, computer and solar industries. Computer-assisted, state-of-the-art anodizing and coating lines process up to 30 000 metric tonnes of aluminium coils per year. The headquarter of ALANOD is in Ennepetal, Germany.

alanod
BRILLIANT SURFACES

Leading producer of high-quality aluminum strips.

The new anodizing plant

ALANOD constructed a new 80-metre long anodizing line at its location in Ennepetal. At the heart of this plant are PP-H baths filled with a mixture of sulphuric acid, phosphoric acid and water. The aluminum strips are dipped in this baths, thus becoming finished. The company G & H Kunststofftechnik, Sprockhövel, was commissioned with the planning and building of this tub construction. The specialists from North Rhine-Westphalia had already realized a similar plant for ALANOD in England back in 2007. Already at that time, it was decided to construct the chemical lines in PROGEF and the cooling water piping in PE supplied by GF Piping Systems.

Planning tool: CAD library

Again for this new project, G & H Kunststofftechnik relied on the comprehensive product selection from GF Piping Systems: butterfly valves, ball valves, butt fusion fittings and DIASTAR diaphragm valves in PROGEF.

To cool the transformers and switch panels, the G & H engineers decided on the PE product range from GF Piping Systems. The CAD library was a welcome tool for the experts already from the initial planning stages. This much-used planning tool offered by GF Piping Systems contains over 25 000 drawings and technical details, which can be integrated directly in the drawings.

System and product selection

- PROGEF (PP)- and PE system
- Butterfly valves
- Ball valves
- Pneumatic diaphragm valves

Cooling system for transformers and switch panels.

Main benefits for the customer

- **Extensive CAD library**
- **High chemical resistance**

Reference

Mixing through Batch Control

Complete plastic systems from GF Piping Systems ensure absolutely reliable mixing of aggressive media.

Brenntag is a global market leader in chemical distribution and offers business-to-business solutions for industrial and speciality chemicals throughout the world. The core business is analysis and creating mixtures of these chemicals. The company is represented in over 400 locations and 60 countries.

Global market leader inchemical distribution.

New batch mixing plant

In Guntramsdorf, Austria a new plant was built by Brenntag in which some aggressive media, such as sodium hypochlorite, hydrochloric acid and caustic soda, are used as process media. These substances place high demands on the piping system and its safety. As a first step, GF Piping Systems drew up an in-depth material expertise for the Brenntag engineers, recommending a safe and effective material: PVC-U cemented with DYTEX. Additionally, GF Piping Systems specialists took over the on-site training of the installers in the DYTEX cementing technique.

Flexibility despite automation

The plant had to be easy to operate despite the high level of automation and also extremely flexible to adapt to the diverse mixtures and blends. Furthermore, weight measurements of the mixing fluids were to compensate the temperature-dependent volume changes. The extensive catalog of requirements was fulfilled by the pneumatic actuated ball valves and diaphragm valves with end position feedback switches from GF Piping Systems. These flexible valves provide the necessary reliability and security in transporting aggressive media.

System and product selection

- PVC-U with Dytex
- Actuated ball valves and diaphragm valves with end position feedback

Valves from GF Piping Systems comply with the highest standards of the chemical process industry.

Main benefits for the customer

- **Support in materials selection**
- **Training for installers**
- **High chemical resistance**
- **Flexibility in operation and high automation**

Reference

Mixing with Controlled Dosing

PVC-C pipelines and measurement and control technology from GF Piping Systems provide ideal solutions for the paper industry.

Eka Chemicals AB is a subsidiary of the AkzoNobel Group with headquarters in Göteborg, Sweden. One of the world's leading manufacturers of bleaching and performance chemicals for the pulp and paper industry, Eka Chemicals also develops and markets speciality chemicals for other industries. The company has 2 700 employees and 36 production sites in 19 countries.

Leading manufacturer of bleaching and performance chemicals for the paper industry.

Chlorine dioxide generators

Eka Chemicals builds between 15 and 20 generators every year at the Bohus site in Sweden for customers throughout Europe and the Middle East. The chlorine dioxide (ClO2) generators are sold or leased to customers in the pulp and paper industry and to water utilities. To produce chlorine dioxide safely and efficiently, four separate lines are installed in each generator. The systems are designed so that the flow rate can be measured on the inlet water pipes as well as the individual dosing lines. Another specification for the piping system is high corrosion resistance and easy calibration of the flow sensors.

Innovative solutions

In view of the high requirements, the choice fell to PVC-C as the material because of its very good chemical properties.
GF Piping Systems supplies complete solutions, consisting of pipes, fittings, valves and flow sensors. The customer was particularly interested in the Magmeter.
This flow sensor from Signet can be used for different dimensions, thus reducing inventory.

System and product selection

- PVC-C system with PVC-U installation fittings
- SYGEF (PVDF) / HasteloyC Magmeter

Magmeters ensure high accuracy.

Main benefits for the customer

- **High chemical resistance**
- **Easy calibration**
- **Corrosion and deposit-free**

Reference

Mining Industry

Hardwearing in use and easy to install: Products of GF Piping Systems.

High-quality plastic solutions of GF Piping Systems are used at mining sites worldwide, successfully facing the aggressive and harsh environment. Zinc, copper, lead, silver, gold, alumina, nickel and rare earths – in various mining applications piping systems out of plastics provide longevity, operating as well as economic efficiency and safe media conveyance where traditional metal solutions are failing due to chemical attack. Throughout regions, rich of mineral resources, such as Australia, Africa, Asia and the USA the mining processing industry relys on customized solutions of GF Piping Systems.

Gold mining under extreme conditions

The world's third largest gold producer located in Mali trusts in mining solutions of GF Piping Systems to meet new environment and safety standards. The provision of UV-resistant containment pipe systems ensure safe conveyance of caustic cyanide used in the gold mining process.

Unique cross-border project

Engineering in Japan and Australia, skid manufacturing in Thailand and onsite in Malaysia – a unique global project management. Global expert teams of GF Piping Systems realized a Rare Earths mining project including product specification, technical advice, training and project management.

Safety in focus

Safety showers and eye wash stations at a mine site in Queensland were equipped with COOL-FIT pipe system to face ambient temperatures on site reaching on exposed pipe surfaces up to 60 °C. The solution saves vital time in an emergency due to the fact that no purging of the water is needed anymore.

Added value in service

- Customized system solutions with individual consulting services
- Generating cross border synergies
- Global project support
- On-site installer trainings

Low-corrosion system solutions for demanding applications.

Main benefits for the customer

- **Superior corrosion and chemical resistance under extreme conditions**
- **Comply with high environment and safety standards**
- **Cost-efficiency**
- **Long service life with minimal or no maintenance**
- **Low thermal conductivity**

Benefits of plastics

A lifetime of consistent performance.

The big advantage of plastics compared to metals is that there is no electro-chemical corrosion. In addition to this, plastic is lighter than other materials. Moreover, the outstanding chemical resistance of plastic, especially when conveying highly aggressive or pure media, has a positive impact. The «Total Plastic Solution» from GF Piping Systems ensures safety in all applications. Safe and reliable processes and workflows achieved through the use of plastic piping systems translate into consistently high efficiency for our customers over the entire lifetime of their operations.

Metal pipes	Plastic pipes
High density • Crane required to position • Pipe brackets far apart • High anchoring forces, strong supports	**Low density** • Up to d110 can be carried by hand • Short distances between brackets • Low anchoring forces, easy and economical
Thermal conductivity • Insulation required for preventing energy loss • Condensation causes corrosion	**Low thermal conductivity** • Low heat conductivity due to thermal insulation • Low condensation build-up and high chemical resistance prevent corrosion
Electrical conductivity • Risk of contact corrosion	**No electrical conductivity** • No corrosion
Chemical resistance • Poor resistance to acids necessitates use of alloys – costly	**High chemical resistance** • In combination with the right jointing technology, a minimum service lifetime of 25 years is realized

System Overview

Our products build complete system solutions for your applications

Plastic piping systems are ideal for use in water treatment. Plastics do not form galvanic elements and are not conductive. GF Piping Systems with its comprehensive product range offers its customers high product reliability in combination with jointing technologies proven over time in practice. Customized solutions are also available on request.

PVC-U System

Solvent cementable plastic, universal use, good chemical resistance, easy to join with special adhesives.

Dimensions 6–400 mm / ¼ –24 inch*
Temperature 0 °C – + 60 °C / 32 °F – + 140 °F*

PVC-C System

Solvent cementable plastic, universal use, good chemical resistance, easy to join with special adhesives.

Dimensions 16–225 mm / ¼ –24 inch*
Temperature 0 °C – + 80 °C / 32 °F – + 210 °F*

PROGEF (PP) System

Polypropylene, socket, butt and BCF- / IR-Plus fusion.

Dimensions
PROGEF Standard 16–500 mm
PROGEF Plus 20–315 mm
PROGEF Natural 20–110 mm
Temperature 0 °C – + 80 °C

ecoFIT (PE) System

Fuseable plastic (butt, socket, electro, and IR-Plus fusion), UV and impact resistant.

Dimensions 20–1 200 mm
Temperature -50 °C – + 60 °C

SYGEF (PVDF) System

Polyvinylidene fluoride, (butt, socket, IR-Plus and BCF-Plus fusion), excellent chemical resistance.

Dimensions
SYGEF Standard 16–315 mm
SYGEF Plus 16–450 mm
Temperature -20 °C – + 140 °C

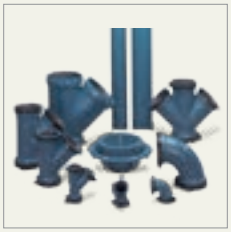
Automation

A broad range, especially designed for harsh environments, consisting of sensors, transmitters, actuators and controllers, which is simple to use and highly reliable.

CONTAIN-IT Plus System (CONTAIN-IT Containment System**)

Double containment piping system for extra protection when hazardous media is conveyed.

Dimensions 20 / 50–225 / 315 mm
Temperature -50 °C – + 140°C



Fuseal System

Fuseal is resistant most acids and alkalis, alcohols and solvents which often cause corrosion in metallic systems.

Dimensions ¼" to 12" ASTM Standard
Temperature 0° C to + 80°C

MULTI / JOINT System

Mechanical solutions for pipelines. The only restraint wide-range fitting for above and below ground applications.

Dimensions DN50 to DN400: restraint wide-range fittings
DN450 to DN600: non restraint wide-range fittings
Temperature -5 °C – + 50 °C

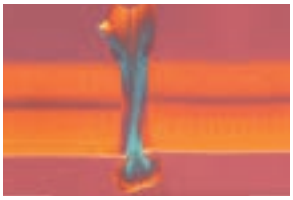
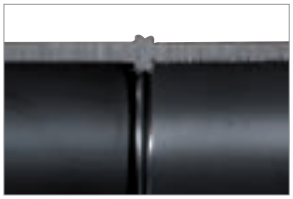
* Sch80

** CONTAIN IT System:
Containment piping system for existing single wall system containment.
Dimensions: 4 inch and 6 inch
Inner pipe containment range: 1/2 –4 inch IPS and copper, 20 mm – 110 mm
Temperature: 32 °F – + 140 °F (0 °C – + 60 °C)

Additional information

Jointing Methods

Material, application and medium are key criteria for selecting your jointing technology.

Main benefits of Jointing technology	Joining technology	Joint cross-section	Macro-image
Solvent cementing – the fast connection The simple and reliable jointing. No machine is needed, only gap filling Tangit cement and a few simple tools.			
Electrofusion – the easy connection State-of-the-art semi-automatic technology, combined with a low weight, make the MSA-Plus machines perfect for on-site fusion.			
Socket fusion – the strong connection The strong, fast and easy solution to produce heavy-duty connections, in the workshop or on the field.			
Butt fusion – the economical connection Economical and flexible fusion especially for bigger diameters. From manual machines to full CNC control with traceability.			
IR-Plus (Infrared) fusion – the clean connection Fast, repeatable and clean welds via non-contact heating. Full traceability of the welding process, with user guidance.			
BCF-Plus (Bead and crevice free) fusion – the smooth connection Bead and Crevice Free jointing with high welding factor, low stress, completely smooth with no intrusions in the fusion zone.			
Mechanical joints – the quick connection Fast exchangeability, detachable, customizing, transitions and washing are just a few of the benefits.			

For more information about training courses from GF Piping Systems please contact our local sales companies.

For Your Operational Safety

Thermoplastics – high quality materials

Professional material technology

Chemical resistance at 20 °C (Applications can be very dependent on the concentration)		Partially crystalline thermoplastics			Amorphous thermoplastics		Stainless Steel	
Media	**Chemicals**	**PE**	**PP**	**PVDF**	**PVC-U**	**PVC-C**	**1.4401 316**	**1.4301 304**
Oxidizing Acids (HNO_3, H_2CrO_4, H_2SO_4, etc.)	$HNO_3 \leq 25\,\%$	o	o	+	+	+	o	o
	$25\,\% \leq HNO_3 \leq 65\,\%$	o	-	+	o	+	o	o
	H_2CrO_4 aqueous solution	o	o	+	o	o	o	o
	$H_2SO_4 \leq 70\%$	+	+	+	+	+	-	-
	$70\,\% \leq H_2SO_4 \leq 96\,\%$	-	-	+	+	+	-	-
Non Oxidizing Acids (HCl, HF, etc.)	$HCl \leq 30\,\%$	+	+	+	+	+	o	-
	$HF \leq 40\,\%$	+	+	+	+	-	o	-
	$40\,\% \leq HF \leq 75\,\%$	+	+	+	-	-	-	-
Organic (formic acid, acetic acid, citric acid, etc.)	$HCOOH \leq 25\,\%$	+	+	+	+	+	o	-
	$25\,\% \leq HCOOH \leq$ tech. pure	+	+	+	+	-	o	-
	$CH_3COOH \leq 50\,\%$	+	+	+	+	+	o	-
	$50\,\% \leq CH_3COOH \leq$ tech. pure	+	+	+	o	-	o	-
	$C_3H_4OH(COOH)_3$	+	+	+	+	+	o	-
Bases	Inorganic (NaOH, KOH, etc.)	+	+	-	+	o	+	+
	Organic (amine, imidazole, etc.)	+	+	-	o	-	o	o
Salts	NaCl, $FeCl_2$, $FeCl_3$, $CaCl_2$, etc.	+	+	+	+	+	o	o
Halogens	Chlorine, bromine, iodine, (no fluorine)	-	-	o	o	o	o	-
Fuels / Oils	Aliphatic hydrocarbons	o	o	+	+	o	+	+
	Aromatic hydrocarbons	-	-	+	-	-	+	+
Solvents	Chlorinated hydrocarbons	-	-	o	-	-	o	o
	Ketones	+	+	o	-	-	+	+
	Alcohols	+	+	+	o	-	+	+
	Esters	o	o	o	-	-	+	+
	Aldehydes	+	+	-	-	-	+	+
Phenols	Phenol, Cresol, etc.	+	+	+	-	-	+	-

+ resistant o conditionally resistant, please consult us - not resistant

Please note: The above list is only intended as a guideline and does not replace an indepth review of material suitability for the particular application. The information is based on our experience and is state of the art. These data are general indicators only. In practice, however, other factors such as concentration, pressure and jointing technology must also be taken into consideration. The technical data are not binding and are not expressly warranted characteristics of the goods.

Please contact us for help in selecting the right materials.

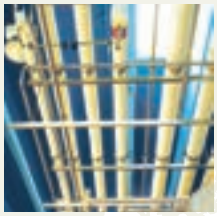
Worldwide at Home

Products and systems are ideally adapted to customer needs.

The name Georg Fischer stands for innovation, reliability and longevity – and has done so for over 200 years. Our global presence ensures customer proximity worldwide. Our sales subsidiaries and partners in over 100 countries offer complete solutions from one source, which include technical advice and planning services as well as training.
Our distribution centres have built up an organized network over the years and customers highly appreciate our on-time deliveries. As a system provider, we are also glad to develop individual solutions for our customers. On request, our global customizing teams put together tailor-made, individual piping components according to customer specifications – whether as a small series or one-off production.

Everything from one source

Individuality – from the planning stage to installation


Pipes

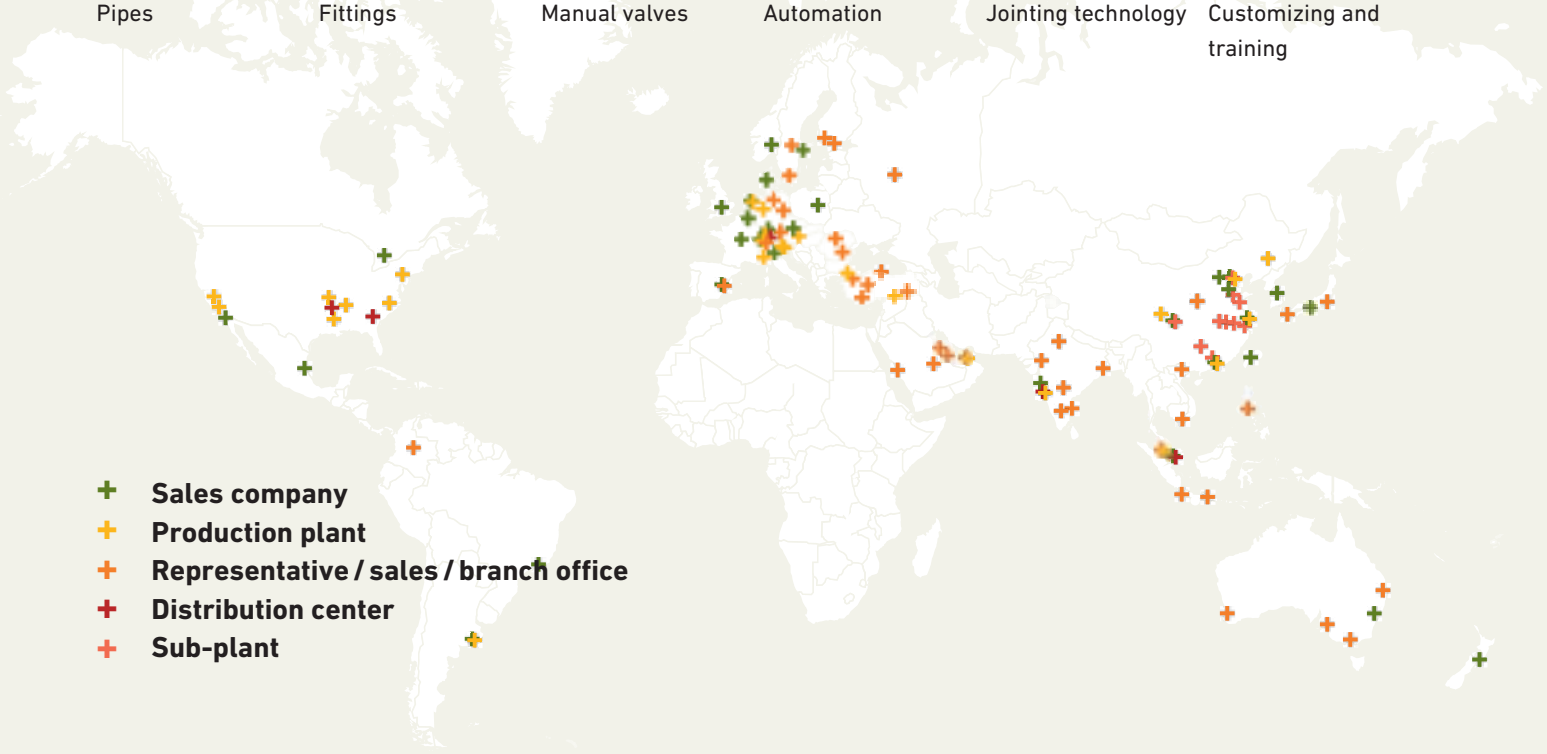

Fittings


Manual valves


Automation


Jointing technology


Customizing and training



Value Added Services

From planning support to implementation – our specialists are always close by

As a leading provider of piping systems in plastic and metal, we offer our customers not only reliable products, but also a large package of services. Our support ranges from a comprehensive technical manual or the extensive CAD library to an international team of experts, who work closely together with local sales companies. And when it comes to implementing a project, our customers additionally benefit from a wide range of training courses, either on site or in our modern training centres worldwide.

Generating a genuinely individual added value for our customers is our ultimate goal when implementing our tailor-made solutions. With our application knowledge and product expertise, we support our customers during the planning process, the sustainable realization of the projects and the provision of services. Our expertise in developing and producing piping systems, combined with our profound industry and market knowledge, based on longstanding experience, makes us a qualified and professional partner for our customers.

1 Chemical resistance

Our specialist teams have decades of experience in the area of chemical resistance. They can offer individual support and advice in selecting the right material for the corresponding system solution. On request, a team will examine and select the appropriate material for special applications.

2 CAD library

The extensive CAD library is the most frequently used planning tool at GF Piping Systems. The database comprises over 30 000 drawings and technical data regarding pipes, fittings, measurement and control technology as well as manual and actuated valves. The big advantage of the CAD library is that the data can be integrated directly in CAD models.

3 Technical support

Technical support and material selection are key factors for a successful installation. A team of specialists headquartered in Switzerland is available to support the GF Piping Systems sales companies around the world. For technical advice or for general information, our customers are supported individually by the specialist team in the corresponding sales company.

4 Online and mobile calculation tools

Our numerous, multilingual online calculation tools are very useful for configuring and calculating. By means of pressure / temperature diagrams, the pressure of liquid media recommended for pipes and fittings at various temperatures can be easily defined. FlowCalc App, the mobile application of GF Piping Systems, is an on-site planning tool for pipe diameter and flow velocity calculation to select the right dimension of piping systems when no expert is near by.

5 On-site training

Our experts are available to support our customers locally and conduct training in diverse fusion and jointing techniques on location. The duration and structure of the training depends on the project and the system being installed.

6 Customizing

The customizing teams at GF Piping Systems work closely together around the globe. The focus of these teams is to manufacture custom parts for special systems. In addition, a variety of special solutions can be produced in small series. Standardized processes warrant the highest level of quality for the individual solutions of our customers.

7 Technical manual

For our customers, we have documented the extensive know-how of GF Piping Systems in planning and installing plastic piping systems in our technical manual. This detailed documentation is available in both printed and digital version. The established reference book is helpful in planning large and small projects.

8 Training courses

GF Piping Systems offers a wide range of training courses that allow participants to gain confidence in working with our products and proven jointing technologies. The practical training is clearly defined, structured and adapted to the various levels of participants' experience.

GF Piping Systems

Worldwide at home

Our sales companies and representatives
ensure local customer support in over 100 countries

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