

GF Piping Systems → worldwide at home

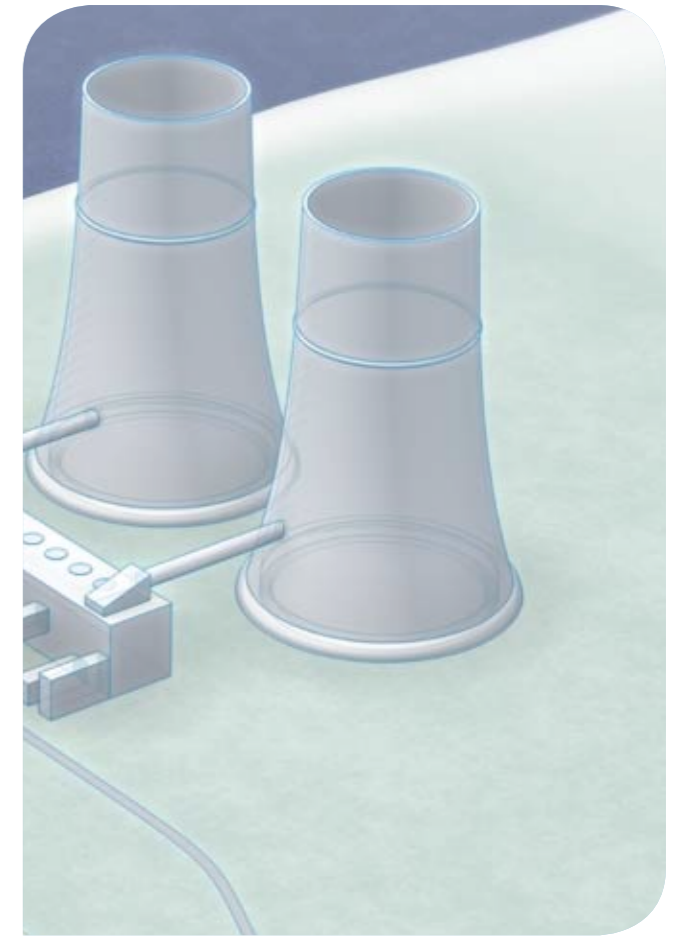
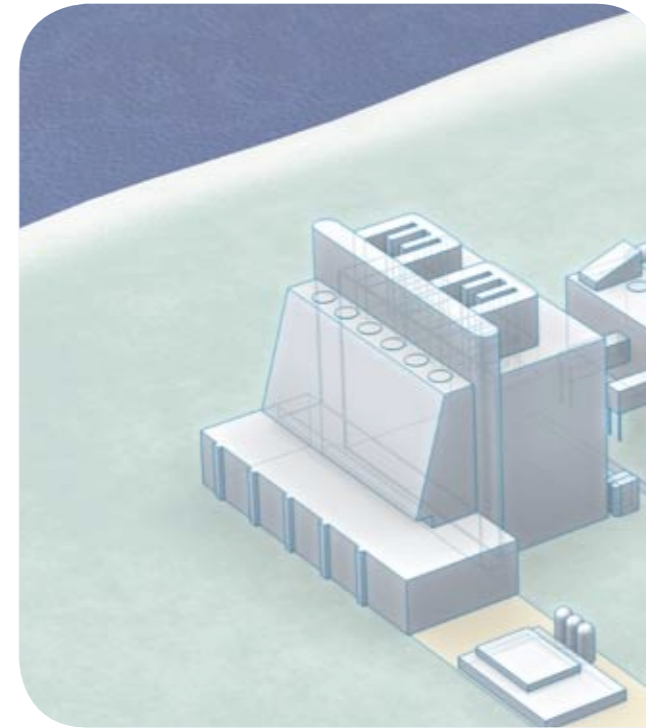
Our sales companies and representatives ensure local customer support in over 100 countries.

www.piping.georgfischer.com



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

Adding Quality to People's Lives



Power Plants Applications

Your Applications → our Systems

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Georg Fischer Piping Systems

Your global benefits at a glance

Training

- Various materials and products
- Installation techniques
- Jointing techniques
- Professionally trained staff

Planning

- Planning documentation (online, CD-ROM and Media Cockpit)
- Product library (online and CD-ROM)
- Online catalogues

Standards

- ISO
- BS
- ASTM
- JIS

Distribution network and availability

Piping Systems in power stations

Within power stations metal piping has been used from the beginnings and proven their reliability. Many properties are seen as given e.g. high maintenance costs, especially for corrosion protection.

But what if new piping systems have been developed which provide a superior resistance to corrosion, incrustation, abrasion and chemical resistance (especially to acids) which leads to reduced costs in planning, operation and maintenance?

Georg Fischer Piping Systems has developed since more than 50 years all kinds of plastic components which are needed to install a 100% reliable and long life time piping solution which fits customer demands. This includes pipes, fittings, valves, actuators, measurement and control, jointing technologies, technical and installation support and training. GF plastic piping systems are designed for 25 years operation when choosing the suitable material at specified conditions.

Select from more than 20 different plastic piping systems and do not hesitate to ask us for support.

Chemical Compatibility at 20° C	Group of Chemicals	Amorphous Thermo-plastics					Partially Crystalline Thermoplastics		Steel	
		PVC-U	PVC-C	PE100	PP	PVDF	Steel 1.4401	Steel 1.4301	316	304
Acids	oxidizing	+	+	-	-	+	0	0		
	inorganic	+	+	+	+	+	0	-		
	organic	+	0	+	+	+	0	-		
Bases	inorganic	+	0	+	+	-	+	+		
Salts		+	+	+	+	+	0	0		
Halogens	without F	0	0	-	-	+	0	-		
Fuels/Oils	aliphatic hydrocarbons	+	+	0	0	+	+	+		
	aromatic hydrocarbons	-	-	-	-	+	+	+		

+ good 0 fair, please consult us - poor

Metal corrosion and incrustation:

The above list of basic suitability is only intended as a guideline and does NOT replace a detailed material recommendation for your application. This information is based on our experience and state-of-the-art technology. These data are general indicators for orientation, whereas for practical use other factors must also be taken into consideration. The technical data are not binding and not expressly warranted characteristics of the goods.



Metal versus Plastic

Metal and plastic piping system comparison

Each system has its advantages, but if you are looking for chemical resistance, easy installation, no incrustation and corrosion free piping system solutions, GF piping systems are the one you should look for.

We provide an entire system made out of the best material of choice for the requested application. This will lead you to the best possible system solution to reach the optimized total cost of ownership.

Comparison of Piping	
Metal piping	Thermoplastic piping
high density	low density
→ need a crane to carry it	→ carried by hand until d 110
→ wide distance of supports	→ low distance of supports
→ high anchor forces, strong supports	→ low anchor forces, easy and economical to install
thermo-conductive	low thermo conductivity
→ energy losses – need for insulation	→ low heat conductivity provides thermal insulation
→ condensation and medium chemical resistance causes corrosion	→ less condensation and high chemical resistance avoids corrosion
electric-conductive	no electric conductivity
→ galvanic corrosion risk	→ no corrosion
medium chemical resistance	excellent chemical resistance
→ bad resistance against acids, alloys are needed – costly	→ combined with right jointing technology life times of 25 years for the piping system are given
highest temperature resistance	temperature resistance max. up to 140° C
high pressure resistance	limited pressure up to 16 bar
rough surface	smooth surface
→ have pressure losses	→ through a higher flow rate the DN of the pipe can be reduced
→ risk of incrustation and roughing	→ incrustation risk limited, no roughing
high maintenance costs	lowest maintenance costs
→ painting, replacement due to corrosion, production stops	

Temperature

SYGEF PVDF	-20° C to + 140° C	16 - 315 mm / 3/8 - 12 inch
PROGEF PP	0° C to + 80° C	16 - 400 mm / 1/2 - 14 inch
PVC-C	0° C to + 80° C	16 - 225 mm / 3/8 - 8 inch
PVC-U	0° C to + 60° C	6 - 400 mm / 1/8 - 18 inch
PE and ELGEF	-40° C to + 60° C	16 - 630 mm

Power Plant Applications

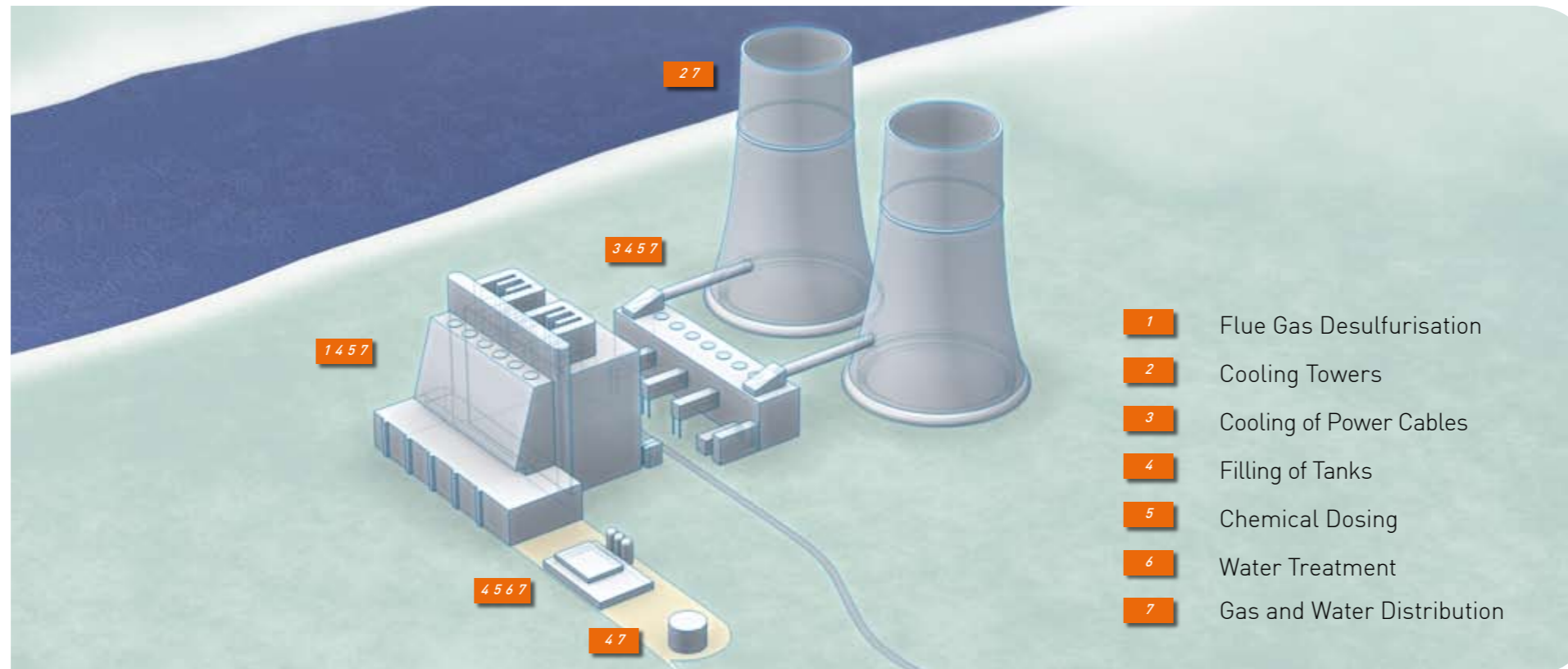
GF Piping Systems offers several options to fit with your needs...

the total system provider



1 Flue Gas Desulfurisation

Flue gas desulfurisation is an essential key technology in environmental protection. Sulphur dioxide can be removed very effectively from flue gas e.g. using the wet lime method. Limestone reagent reacts with sulphur dioxide from the flue gas producing a gypsum byproduct. As this process contains several aggressive chemicals, abrasion resistance is an important issue. PROGEF PP piping systems have proven their reliability for many years.



- 1 Flue Gas Desulfurisation
- 2 Cooling Towers
- 3 Cooling of Power Cables
- 4 Filling of Tanks
- 5 Chemical Dosing
- 6 Water Treatment
- 7 Gas and Water Distribution



7 Gas and Water Distribution

In liquid distribution, whether for main lines or service lines, a safe connection - especially with different materials - is always a primary concern. GF Piping Systems has the right solution even for your most difficult connections.

- Our complete systems solutions are:
- PE welded distribution systems, Butt fusion and Electrofusion
 - Mechanical restraint distribution systems for PE, PVC, DCI
 - Repair tapping concept for all types of distribution systems
 - Asset management monitoring solutions

For the secure transport of liquids, it is essential that pipes, fittings, valves and other components are connected safely and reliably - especially in applications where different materials are used.

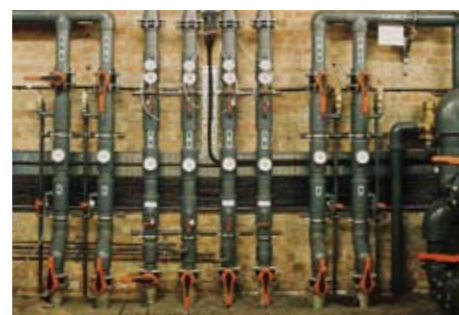
PE is the right material with profitable characteristic and can be connected and welded in later state to act flexible on future changes in the plant design.

For further information please refer to our application brochures Water Treatment No. GMST5908, Gas and Water Distribution No. GMST6055 and Chemical Distribution and Chemical Plant No. GMST6028.



2 Cooling Towers

Within power stations the loop of water vapour circulation needs to be closed. Therefore steam which has not been condensed in the turbines needs to be condensed. Cooling towers after the condensers ensure the cooling of remaining condensation heat. Water for the cooling process is one of the principal demands of power stations. GF product lines are corrosion and incrustation free.



3 Cooling of Power Cables

Cooling stations are designed to circulate water through pipes, buried adjusted to the high voltage cables, once the cable circuits become more than 50% loaded. With using GF piping a dramatically reduced installation time offers enormous decrease of investments and renovation costs combined with 25 years life time of the system.



4 Filling of Tanks

In any application where liquids are needed for the process, tanks need to be filled. A simple system installation from GF Piping Systems using the principle of parallel pipes with compressed air, allows you to convey all your liquid media. With GF Signet level sensor and submersion skid measuring of even harsh chemicals, becomes safe. Using the GF Piping System solutions offers longer life time expectancy for your whole installation.



5 Chemical Dosing

Safe conveyance and exact dosing of chemicals are an important topic in power stations. Piping systems from GF are ideal for all applications involved in chemical conveyance primarily for acids, alkalis and specialities. Choosing the appropriate piping system offers a highly reliable and corrosion free solution which leads to increased productivity, decreased production and maintenance costs.



6 Water Treatment

Power stations require high water quality to feed boilers, processes, cooling systems, etc. Avoiding contamination, scale formation and corrosion in these systems is essential. Our high quality valves, our inert plastic materials, our reliable instrumentation and our high level of expertise allow GF Piping Systems to provide our customers with reliable quality systems.