



Clean water for life

Hygiene for potable water solutions

The clean water and sanitation challenges

Access to clean drinking water and sanitation is a fundamental human right. Yet, according to the World Health Organization and UNICEF, more than 2 billion people worldwide do not have access to basic sanitation (more than 25% of the world's population), and about 3 billion people worldwide lack adequate facilities to wash their hands at home safely.¹

Sustainable construction challenge

With the global population expected to reach nearly 10 billion people by 2050, and two-thirds of the people living in cities,² sustainable urban concepts will be essential for meeting future environmental challenges. Water management systems within these concepts must fulfill certain key criteria to meet today's needs while building operators and owners must also meet drinking water directives and environmental, social, and governance (ESG) targets. But, how can owners, managers, or maintenance personnel responsible for managing building water supply meet the challenge and improve awareness?

Water directives

Across the world, regulations and guidelines are provided for managing water supplies in buildings where water is required for drinking, washing, showering, swimming, and other recreational activities. Water quality must be controlled and maintained from entering the building until it exits to prevent waterborne microorganisms' development, reproduction, and spreading. Regulations and guidelines, including the EU drinking water directive, which is to become a law for all member countries by the end of 2022, lays out an approach to guaranteeing water quality based on managing risk, testing frequently, and monitoring constantly.

Digitally enabled accountability

Accountability needs to be driven through reporting, and water management systems need to deliver this transparently for all stakeholders to truly understand it and make the maintenance of it much easier. With many millions of independently owned buildings and facilities, the consequences of the separation of ownership and oversight have been a tendency for water safety in buildings to be overlooked or, at best, receive limited attention. Digital enablement across systems can provide valuable insights to help operators keep facilities compliant and support continuous improvement in quality management.

Ensuring clean water for life

GF Piping Systems has been pioneering piping systems and technology that delivers safe and effective water management systems in buildings, including advanced solutions that meet the most stringent drinking water directive and enable ESG reporting capability within your enterprise. Tailored to ensure facilities can be more energy-efficient and provide the highest levels of safety and comfort for residents, patients, or guests, we've designed our solutions to improve sustainability, exceed compliance, and lower maintenance costs - today, tomorrow, and into the future.

Why is drinking water hygiene in the building so important?

Maintaining drinking water hygiene in a building is a challenge. The cold water from the municipal water network enters the building and travels through a complex network of pipes with small dimensions for a long time in an elevated temperature range. These conditions are ideal for the proliferation of certain bacteria (*Legionella* and *Pseudomonas*) and can pose a threat to human health.

¹ World Health Organization and UNICEF Progress on household drinking water, sanitation and hygiene 2000-2017. Special focus on inequalities external icon. United States: United Nations Children's Fund (UNICEF) and World Health Organization (WHO) Joint Monitoring Programme for Water Supply and Sanitation, 2019.

² United Nations. www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html

³ Clean water for life - Hygiene for potable water solutions

Improving access to clean water globally



Lack access to safe drinking water

Over 785 million people on Earth lack access to essential water services. Around 884 million people do not have safe drinking water.³

884 million people



Disease prevention

Water, sanitation, and hygiene can prevent at least 9% of the global disease burden and 6% of global deaths.⁴



Energy efficiency

Hycleen Automation System enables owners or managers of large houses and buildings with multiple connections to save up to 25% of energy consumption.



25% energy consumption saving



Water wasted each day

Five hundred million gallons of water are wasted each day in the U.S. due to inefficient hot water systems.

500 million gallons

³ Prüss-Üstün A., Bos, R., Gore, F. & Bartram, J. 2008. Safer water, better health: costs, benefits and sustainability of interventions to protect and promote health. World Health Organization, Geneva.

⁴ Prüss-Üstün, Annette & World Health Organization. (2008). Safer water, better health: costs, benefits and sustainability of interventions to protect and promote health. / Annette Prüss-Üstün ... [et al]. World Health Organization.

⁵ Sustainable Hospitality Alliance (2018), Water Stewardship for Hotel Companies, available from www.sustainablehospitalityalliance.org

1'500 liters
per room,
per day



Hotel water usage

A hotel can use an average of 1'500 liters per room per day, vastly exceeding local populations in water-scarce destinations.⁵



Rest assured

Over 20% of healthcare-associated infections (HAIs) are linked to Legionella and other waterborne pathogens making water management essential for healthcare facility managers.



Low carbon

Over their entire service life, plastic systems have a carbon dioxide balance 80% lower than metal systems.



80% lower CO₂ balance

50 years
service
life

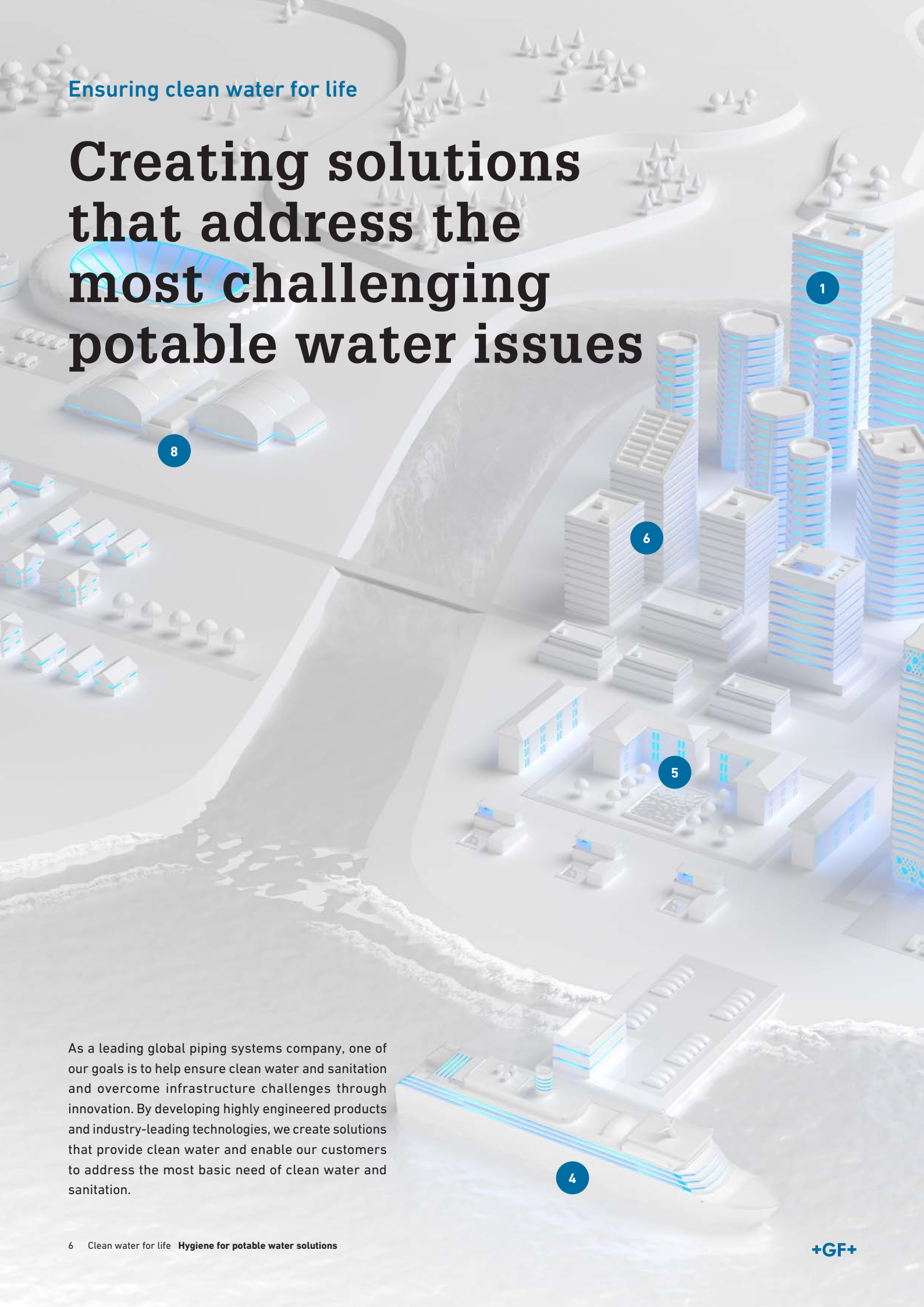


Pipe network renewal

In continuous operation at 70 degrees Celsius, the JRG Sanipex system has an expected service life of 50 years.

Ensuring clean water for life

Creating solutions that address the most challenging potable water issues



As a leading global piping systems company, one of our goals is to help ensure clean water and sanitation and overcome infrastructure challenges through innovation. By developing highly engineered products and industry-leading technologies, we create solutions that provide clean water and enable our customers to address the most basic need of clean water and sanitation.



1. Residential apartment blocks

Comfort, hygiene, and sustainability are key trends in residential buildings. They rely on environment-friendly heating and cooling systems and durable and hygienic potable water installations.

2. Hospitals

Hospitals can be very large buildings or complexes with extensive water systems. Drinking water should be suitable for human consumption and all usual domestic purposes, including personal hygiene for patients.

3. Hotels and resorts

Hotel guests expect first-class service and comfort, including perfectly functioning and environment-friendly heating, cooling, and water supply systems that minimize the formation of bacteria and biofilms to risk their health and water supply and wastewater drainage without disturbing noises.

4. Cruise liners

Corrosion-resistant and sanitary systems are important when conveying potable water from the water tank in the ship engine room to the cabins. Solutions need to be robust, easy to install, and provide corrosion-free solutions for the marine environment.

5. Aged-care facilities and retirement homes

Like hospitals, water systems in care facilities and homes can be extensive and supply water to rooms and wards that are not always occupied. Hot water distribution systems are usually maintained at lower temperatures to reduce the risk of scalding. These increase the likelihood of providing habitats for Legionella, Mycobacterium spp, and Pseudomonas aeruginosa.

6. Commercial buildings

Water safety in commercial buildings is critical to ensure what ultimately reaches the end-user is safe. Clean drinking water needs to be provided for employees and visitors at all times and employers must provide workers access to toilets and drinking facilities.

7. Factories or manufacturing plants

Industrial buildings can include devices for worker safety such as eyewash stations and safety showers and provide access to drinking water.

8. Sporting facilities and health centers

Sporting facilities and health centers can include swimming pools or spa pools. At large sporting clubs, recovery equipment can include immersion pools and communal pools.



21% CO₂ reduction

At GF Piping Systems we are committed to reducing the CO₂ emissions by 21% by 2025 within our production processes and facilities.

Future-focused

Sustainable building frameworks

Future-focused facilities

Facilities managers are well versed in the laws and regulations that guide and control their water systems. These may vary locally, covering the design and management of water distribution and maintaining water quality, and are particularly stringent in residential, hospital and care, and hospitality facilities.

Experts in water system design demand that pipework designs are free of both dead spots and dead legs and the use of high-quality, non-corrosive pipes – suggesting those resistant to disinfectants and high temperatures and less prone to calcification. Building owners and operators must ensure and document accuracy in the hot and cold-water temperatures that inhibit bacterial growth and regular water exchange throughout the building.

GF Piping Systems Sustainability Framework

Our water management solutions are designed for longevity, recyclability, and maximum efficiency when distributing hot and cold water. This way, we minimize your environmental impact across the life of your water systems. Throughout our global manufacturing facilities, we are committed to reducing the CO₂ emissions by 21% by 2025 within our production processes and facilities and ensuring that social or environmental benefits accompany 70% of all product sales.⁶

⁶ Georg Fischer Sustainability Framework 2025

Greener buildings

Sustainable Building (SB) rating systems such as BREEAM (UK), LEED (USA), DGNB (Germany), and SWGW (Switzerland) encourage designers and stakeholders to think about conservation of water and ensuring the materials and systems used help minimize water consumption and the energy demands of construction.

GF Piping Systems uses and evaluates its systems according to the following programs developed for building assets:

- BREEAM 2016
- LEED 2009
- LEED v4
- DGNB 2015
- DGNB 2012

Using the criteria provided by these rating systems can often result in a more efficient, durable, and resilient project for new facilities. Such a sustainability framework helps reduce waste and energy costs and provides tax incentives and long-term operating costs savings opportunities.

The positive environmental effects of constructing greener buildings allow owners to operate more efficiently by reducing their water and energy consumption and investing in higher quality materials that reduce operational and maintenance costs.

Rest assured

Pure, clean water is essential in any medical environment. Keeping patients and residents comfortable and safe, preventing disease, and protecting against infection starts with water and how it moves around a health and care facility.

The clean water challenge

Without the right components, proper installation, and optimal operating conditions, water systems can easily become contaminated - leading to disease and even death. Maintaining water purity from inlet to tap is a challenge that needs addressing, or facilities run a significant risk to patient's health and lives. The significance of safe, clean water for healthcare environments is rarely recognized until something goes wrong, which often has devastating effects. That's because effective water management happens out of sight and mind.

⁷ Hospital water and opportunities for infection prevention. Brooke K. Decker, Tara N. Palmore. *Curr Infect Dis Rep*. Author manuscript; available in PMC 2017 Sep 5.

Hospitals should have prospective water safety plans that include preventive measures, as prevention is preferable to remediation of a contaminated hospital water distribution system.⁷



Hygiene assured

Prevent and protect against disease with safe, clean water – a foundational element in medicine and care.



Intelligence assured

Optimize and protect piping with automated flushing and cloud-based circulation control.



Lifetime assured

Benefit from solutions designed around your requirements that meet the highest hygiene standards, and are crafted to last.



Quality assured

Maximise your water system efficiency with data insights via our unique cloud tools and platform.



Efficiency assured

Manage resources, prevent water loss, and save energy with digitized system controls and environmentally friendly design.



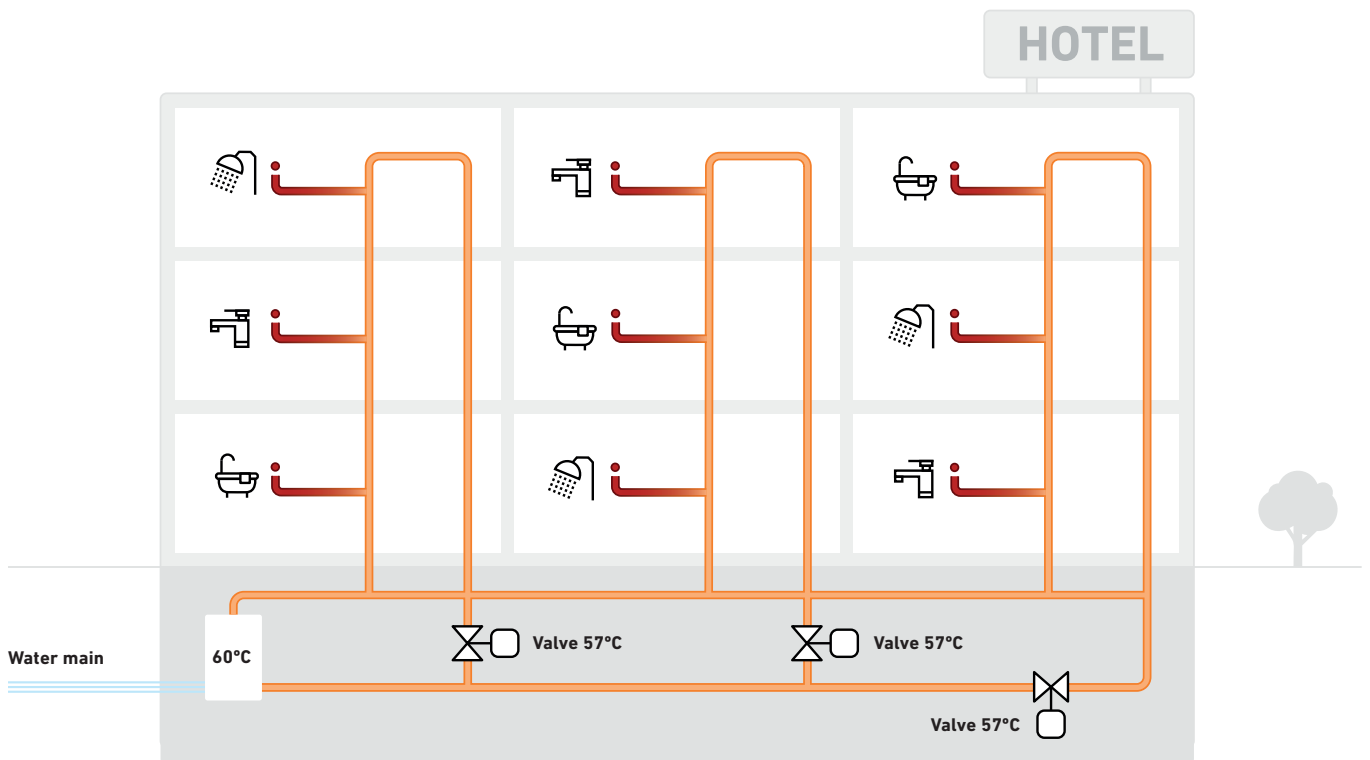
Protection assured

Minimize system interruptions and failure with installation and support from our water management experts.

Comfort assured

Hotels and hospitality facilities cannot open without clean water. Every hotel aims to provide comfortable environments for their customers to make every guest feel important and provide unlimited access to water.

With hydraulic alignment



Manage your water use sustainably

In hotel, leisure facilities and residential buildings as well as buildings with hygiene-sensitive areas, drinking water distribution entails some challenges. These include ensuring the right temperature for drinking water, avoiding stagnation, and ensuring the drinking water installation is regularly maintained.

Additionally, problems can occur with hot water that doesn't have a working hydraulic alignment. Biofilm and Legionella can grow in the poorly maintained circulation lines of a water management system where there is stagnant water and unfavorable temperatures, which can cause an acute hazard to health and a longer waiting time for hot water.

⁸ Sustainable Hospitality Alliance (2018), Water Stewardship for Hotel Companies, available from www.sustainablehospitalityalliance.org



In some locations, tourism uses over eight times more water per person on average than the local population.⁸

Clean water technology

Total water control

Control, analyze and optimize your drinking water installation.

GF Piping Systems offer a portfolio of systems and products specifically for the needs of health and care, hospitality, and residential facilities. Our wide portfolio enables complete system integrity and automation to provide stress-free operation.

With accessible insights in the palm of your hand, whenever, wherever needed - providing you with peace of mind that the global leader of water management systems is helping to manage your infrastructure. These pioneering, intelligent end-to-end solutions ensure that your facilities provide the highest comfort levels for your patients, guests, and residents while tackling disease prevention through digitalization. The holistic offering from one provider allows for flexibility with project specifications and can allow for economies of scale on larger projects.



Monitoring and optimization

Hycleen Automation System

Digitalized drinking water monitoring and control.

Applications

Drinking water hygiene

Consistently high temperatures and regular water exchange prevent biofilm formation and Legionella infestation thanks to hydraulic alignment and automatic flushing. Automatic alerts indicate if there are malfunctions or abnormalities.

Energy-saving potential

Building owners can enjoy reduced energy consumption thanks to the optimal hydraulic balancing feature of the system. Facilities teams receive optimization recommendations deduced from the analysis and evaluation of the logged data so that lower temperatures are required to produce hot water throughout the enterprise.

Comfort enhancement

Fast discharge times of the desired water temperature with sufficient water pressure thanks to continuous hydraulic balancing.

Easy to install and use

The system handles the hydraulic balancing process and prepares all data in an easy-to-use report, simple commissioning with just one cable and the plug and play function. Intuitive user interface and arranged logs help with operation and evaluation.

The Hycleen Automation System makes it easier to maintain drinking water hygiene and optimize energy consumption. It ensures hydraulic balancing and constant water temperatures, flushes the pipes, logs all data, and is easy to install and commission.

Valves and sensors connect via a central control unit, allowing monitoring for any abnormalities and controlling the system. It can also be operated from any location using remote access via Hycleen Connect and be integrated into the building control system.

Key Benefits



Hydraulic balancing

- According to temperature, dynamic
- According to temperature and flow, static
- Constant
- Thermal disinfection



Flushing

- Temperature-controlled flushing
- Time-controlled flushing
- Consumption-controlled flushing



Actuator automation

- Simple programming of actuators by system relay or 4-20mA signal.
- Triggers: time, alarm, temperature, etc.



Data login record

- All data saved in comprehensive logs



Maintenance

- Weekly automated maintenance process



User-defined messages

- Alert via e-mail or SMS
- Requires Hycleen Connect
- Users can define their own alert

Access anywhere, anytime

Hyclean Connect

Cloud-based remote access and monitoring for your drinking water installation.

Hyclean Connect is the innovative solution for a secure connection and remote access to the Hyclean Automation System from anywhere in the world. Connected drinking water installations can be conveniently controlled and monitored. Reporting and alarm systems help ensure system operability and highlight optimization potential. The GF Piping Systems Specialized Solutions team provides support via remote access in case of problems.

Remote monitoring

building managers have access to a centralized point to operate different buildings and coordinate maintenance services.

Cost reduction

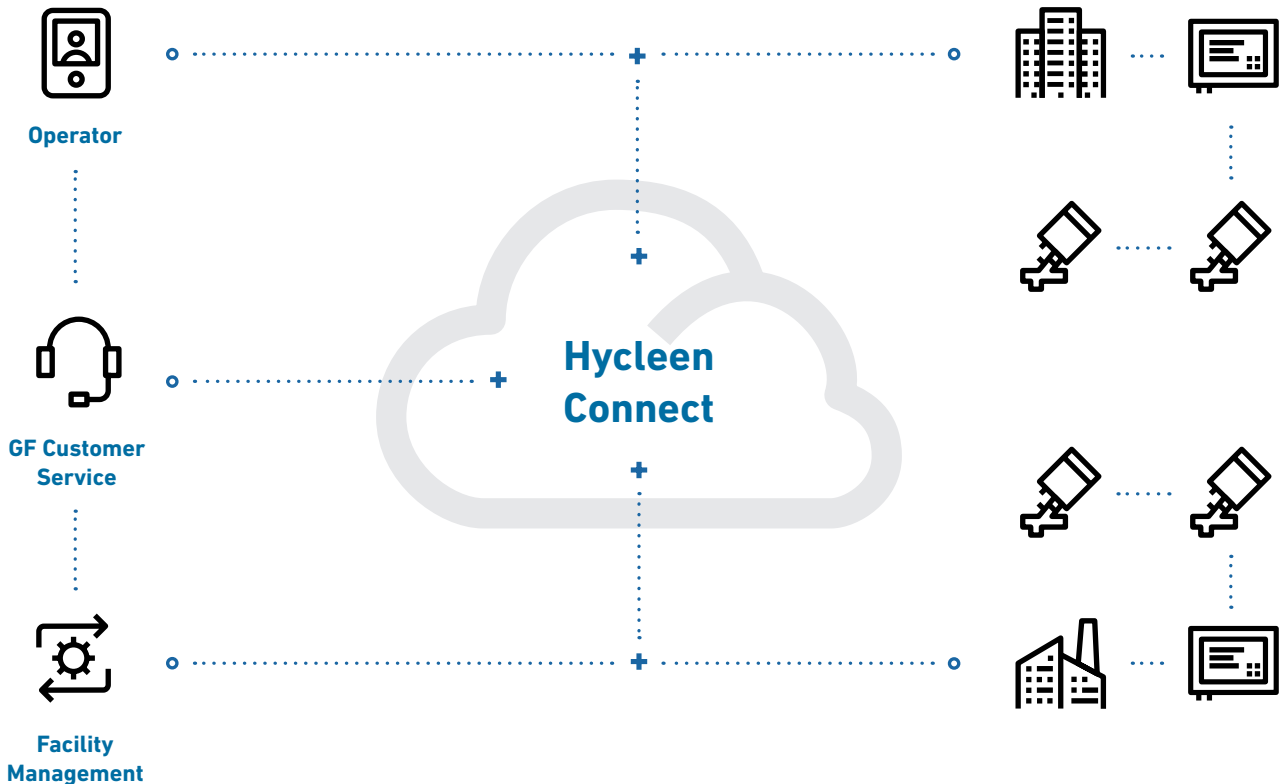
Optimizing maintenance processes leads to a decrease in costs.

Data accessibility

The available data makes it easier to document the conditions for the public health authorities.

Reaction time

The trigger of immediate alarms, based on data recorded by the system, making it fast to correct any problems or errors within the system.



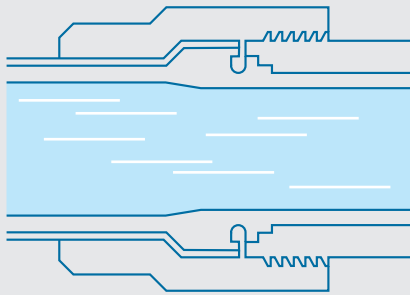
Quality assured

Water-pocket free technology

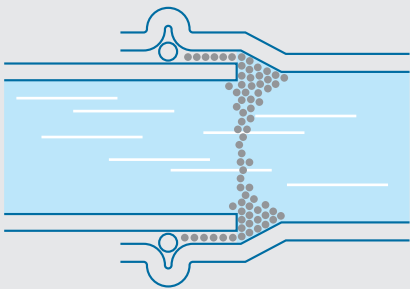
Hygienically flawless and safe.

GF Piping Systems flared clamp connection technology is scientifically tested by the Fraunhofer Institute to ensure all connection points meet sterility criteria. The clamp connection technology is available with the JRG Sanipex and Sanipex MT systems and prevents a breeding ground for Legionella or bacteria.

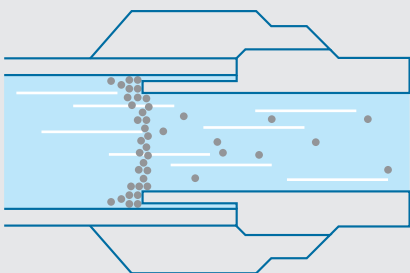
Without dead space, the full pipe cross-section has further benefits, including minimal flow noise, practically no pressure losses, and is certified according to BREEAM, LEED, and DGNB.



**JRG Sanipex MT
water-pocket free full flow**



**Conventional system
with water-pocket**



**Conventional system
with water-pocket and
section narrowing**

One community, one purpose

How we're already helping to ensure clean water globally

At GF Piping Systems, we use cutting-edge technology designed for versatile use in potable water applications. Potable water installations must comply with the highest hygiene standards, and hot water distribution requires an energy-efficient system including reliable measurement and control technology to ensure a high comfort level. Here are some examples of the long-lasting and efficient piping systems we've already supplied to residential houses, hotels, hospitals, and leisure and recreational facilities.



South West Ohio hospital, Dayton, Ohio, USA

A hospital in south west Ohio wanted a solution for their low return water temperatures. They turned to HEAPY, a nationally recognized engineering leader in healthcare, to find a solution. Hycleen Automation System was selected to automatically balance the hot water return system and provide temperature monitoring at each valve, logging critical data and detailed reporting of system conditions. The engineers quickly and easily replaced the traditional balancing valves with ten new Hycleen smart valves. The hospital chose to integrate the Hycleen Automation System into the existing building management system, giving them even greater flexibility to control and monitor their system.



Bauverein Halle & Leuna eG, Housing cooperative, Halle (Saale), Germany

When the time came to refurbish one of the housing cooperatives' 7'500 apartments in the west of Halle, Saxony-Anhalt, the management team seized the opportunity to look for a more sustainable approach to water supply. Following the refurbishment, and installation of the Hycleen Automation System, the energy consumption for hot water decreased by 22.7% compared to the previous year, achieving a saving of just under EUR 3'000 – despite a 164 m³ increase in hot water consumption for the year 2020. The refurbishment also means lower maintenance costs as Hycleen connect – the cloud-based remote access solution – now remotely monitors, visualizes and optimizes the control of multiple properties from one control center.



Hospital Emile Muller, Mulhouse, France

To ensure its patients' safety, the Hospital Emile Muller facility management installed the Hycleen Automation System to provide consistent water temperatures and regular water exchange. As a result, patients receiving treatment at the French hospital can rely on a safe potable water system and maximum comfort. The team also installed SANIPEX and COOL-FIT systems to ensure a reliable, dead-end free design to allow the hospital staff to focus on their daily business without interruption.



Peer Gynt Hospital, Moss, Norway

The Moss municipality has installed the Hycleen Automation System to optimize drinking water hygiene and automatically ensure a consistently high temperature and regular water replacement throughout the hot water supply system. In addition to installing the system, a prior mapping of the hot water system enabled the removal of seldom used branches and dead-end pipes, which helped reduce energy demand for the circulation and regular flushing required in these pipes.



ROX boulder and climbing center, Herrenberg, Germany

The newly constructed bouldering and climbing facility in the Stuttgart area of Germany chose the Sanipex MT dead-space free piping system for the sanitary and bathroom areas, which in combination with the jointless, back-ventilated WandoVario® system from Hug ensure hygienic operation, preventing moisture leakage and biofilm formation. Additionally, the fast and precise prefabrication and assembly ensured a short construction timeframe, meeting the opening event timeline.



Holiday Inn Express Cologne, Troisdorf, Germany

The hotel management team embarked on a modernization of the Holiday Inn Express Cologne's drinking water system. Upon installing the Hycleen Automation System and replacing the old circulation valves, they have successfully reduced energy consumption for the hot water supply by circulating the required amount of hot water in the pipes. The hotel expects to save up to 15 percent of hot water energy consumption and reduce maintenance costs by monitoring and controlling the drinking water system from another hotel in Düsseldorf.

Making an impact

Clean water is more than a passion

GF supports and promotes cultural and social programs in its local communities. More generally, it aspires to enrich lives and create an overall positive impact. Within GF's corporate citizenship programs, which help improve access to drinking water and education, the company also cooperates with many different NGOs.

GF Clean Water Foundation

GF's Clean Water Foundation has supported 160 drinking water projects worldwide since 2002. To date, GF has invested more than CHF 12 million and improved the lives of more than 330'000 people by providing better access to safe drinking water. In 2021, the Clean Water Foundation granted about CHF 500'000 to projects in Somalia, Zambia, Cambodia, Nicaragua, and Uganda. Most of the projects focus on improving water filtration and distribution infrastructure in rural communities and hospitals.

CLEAN WATER

A commitment of GF

Trinkwasser team

Sustainability and clean drinking water: Two things that are important to Andri Ragetti, GF's brand ambassador. The 23-year-old Swiss world champion freestyle skier is a vocal supporter of our clean water efforts and throughout his exploits in competition around the world he brings the message to the next generation that clean water is a goal for everyone.

“The supply of clean, potable water is one of the major global challenges. As a specialist in water networks, we understand how important clean water is.”

Yves Serra, Chairman of the Board at GF

Walk for water

Another trusted partner of the Foundation is Water Mission, a non-profit organization in the US. To support Water Mission's fight against the global water crisis, GF hosts global "Walk for Water" fundraisers. During these events, participants walk approximately 1.5 miles to the midway point holding empty buckets, which they must fill with dirty water and carry another 1.5 miles to the finish line. The walk allows participants to experience the same day-to-day challenge as the 2.2 billion people worldwide that live without access to safe drinking water. In 2021, GF Piping Systems hosted a "Walk for Water" event in Irvine, California. Together with its sponsors, the 220 participants raised USD 150'000 for Water Mission. This effort alone will provide more than 6'000 people with clean water for the rest of their lives.

Why is our work so important?

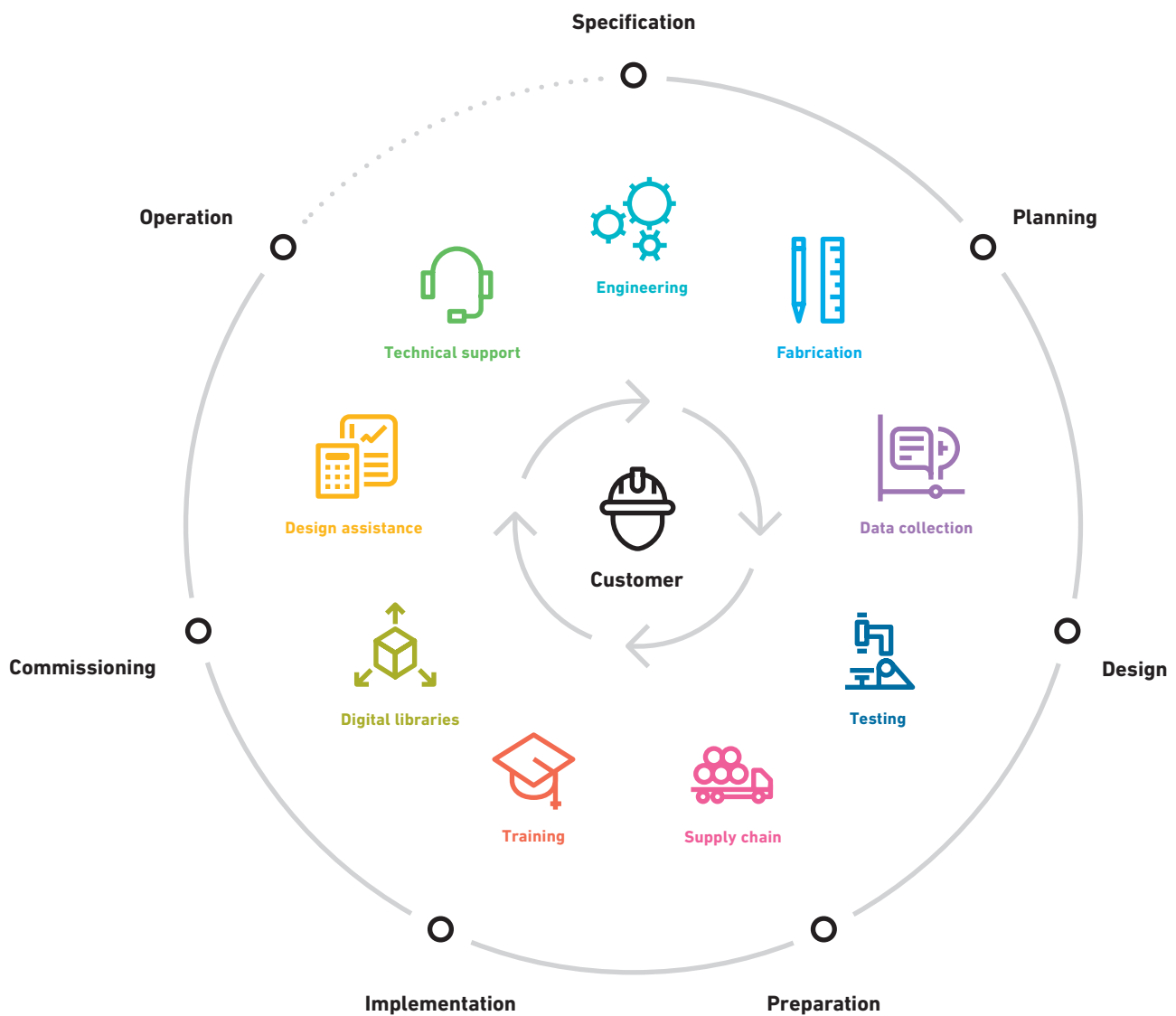
There is an acute water shortage in over 30 countries around the world. As a result, twelve percent of the world's population have no access to clean drinking water and suffer from thirst and hunger. The shortage of water also endangers harvests, long periods of drought lead to migration, flight, and even war. Eighty percent of all diseases in developing countries can be linked to contaminated drinking water, and a lack of clean drinking water causes about 3.5 million deaths worldwide per year.

Are you interested in presenting a project for clean drinkable water to the GF Clean Water Foundation or donating to those who need it?

Find out more information at cleanwater.ch



One partner from planning to operation



Ready when you are

GF Piping Systems provides project support every step of the way to achieve construction excellence. Because of our depth of knowledge of applications and skills in water management solutions for buildings and facilities, we can work alongside you during the planning, execution, and maintenance phases for your construction and retrofit projects. Our many years of experience in developing and producing heating and sanitation systems combined with the knowledge of the industry make us a qualified, professional partner for every situation.

Digital libraries

The libraries cover three key areas for designing, creating, and maintaining a project: Building Information Modeling, the Plant Design Software, and the CAD Library helping you reduce costs and construction times while ensuring design accuracy and integrity. Reduce time and effort while ensuring design accuracy and integrity.

Custom product design and prefabrication

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

Instructional and virtual reality training

Installers can master installation techniques related to our portfolio in a safe environment using our instructional courses or our pioneering virtual reality training modules. With each module, your team of installers can become better prepared for the experience of being on-site, welding, and installing our world-leading piping systems.

More information at
gfps.com/specialized-solutions

Next steps

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

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

More information at
gfps.com/cleanwater

Local support around the world

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

www.gfps.com/our-locations



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