GF Building Flow Solutions

Precision water control

Hycleen Automation System

Unlock the power of water automation

Hydraulic balancing is one of the most important processes for potable water in domestic installations. The procedure is responsible for the equal and consistent distribution of water flows and temperatures across the building. Furthermore the technology is essential to reduce energy consumption and increase comfort.

For many decades and particularly for hot water circulation, the conventional balancing valves were considered as the prevalent high-standard. These valves were usually commissioned one-time during installation and operated based on their initial settings for the rest of their utilization time.

But the thermomechanical stability and performance of the dynamic components in the system changes or degrades after just a few years. Experts in water system design concur, that an inaccurate or dysfunctional hydraulic balancing process is usually the responsible factor for many issues arising in potable water systems. The consequences could increase the risk of proliferation of bacteria and biofilms, water loss and increasing energy consumption. All these issues result in additional costs, loss of resources and health risks.

GF Piping Systems, as the leading water technology company, has pioneered the first digital and intelligent sensor technology, to prevent the deficiency of conventional hydraulic balancing. The Hycleen Automation System continuously manages and maintains the process of Hydraulic Balancing in a highly effective and efficient way. This end-to-end solution combines sensors and digitized valves connected to a central master unit. The control device automatically controls and optimizes the hydraulic balancing on a daily basis. This innovative system addresses the critical risk factors of domestic installations and offers remote, cloud based and centrally-controlled maintenance functions.

Continuous balancing of the hot water system

Prevent long stagnation periods

Keep water temperatures outside of Legionella growth range

Maximize energy & resource efficiency

Maintain water integrity

Maximize comfort

Challenges in water systems

Smart water solutions

Efficiency

20-30% energy savings

Smart hydraulic balancing significantly reduces energy consumption in buildings. Innovative digital systems ensure correct temperature balancing, reduce operational effort and wear of equipment.

Hygiene

900% growth

Waterborne bacteria such as Legionella have strongly increased in the last two decades. This can lead to significant issues in hospitals, schools or hotels where regular water exchange is not guaranteed.

The quality of potable water in buildings is becoming increasingly important. The sustainable and efficient use of resources is at the heart of any construction planning and ensuring safety in the operation of a building is essential.

Comfort

Warm water in 10 seconds

While visitors or residents of buildings have high expectations in terms of overall comfort, having the right technology to comply with water pressure, temperature and quality demands is not a given and requires strong efforts.

Simplicity

Managing multiple sites

Today, managing the water system of a building is supported by intelligent valves and sensors. This makes operation much simpler and reduces labor costs significantly. All remotely controlled for multiple sites and systems.

Water in harmony

Energy optimization

Sustainability and the efficient use of resources in buildings has become more and more critical for all experts in the construction industry. Over the last 50 years, improved materials, insulation and new heating technologies have strongly contributed to reduce energy consumption for room heating. In contrast, such reduction has not yet been achieved for the consumed energy required for heating potable water. Consequently, the potential for energy savings and reduction of emissions lies in developing solutions for potable water systems.

The water distribution systems in a building, over the years of usage, experience significant inaccuracies in the consistency and distribution of hot water. The deterioration of installed valves, pipes and fittings have a strong impact on the hydraulic balancing and further factors such as calcification and lack of maintenance contribute to the inefficient use of energy.

In general, warm water should be heated and stored at an optimal temperature of 60°C and a regular exchange of the water circulation should be ensured to maintain drinking water hygiene. While in some parts of a large building, the water can reach the optimal temperature and circulation flow rates, other parts of the system may not, therefore allowing water to stagnate and cool to temperatures that promote the growth of bacteria and biofilms. Raising the temperature of the hot water at the boiler to mitigate heat losses across the system will negatively impact the energy efficiency and increase overall operational costs. The future therefore lies in intelligent and digital sensor technology for hydraulic water balancing.

Upgrading the water system with the Hycleen Automation System prevents the deficiency of conventional hydraulic balancing. It ensures, that hot water is generated and stored at optimal temperatures and water consistently circulates thanks to the constant surveillance and commissioning of the system.

Reduced resource consumption

By constantly controlling and optimizing the warm water circulation and distribution, stagnation periods and flushing cycles, the Hycleen Automation System reduces energy and water consumption and shrinks the CO_2 footprint.

Data driven operations

Our system regulates and controls itself based on real-time data from sensors. This helps identify trends, create optimum baselines, maintenance and investment decisions. It provides easily understandable data which can be used to optimize the way water distribution is working in terms of energy saving or hygiene improvement.

Cost savings

The Hycleen Automation System lowers the costs thanks to its contribution to energy efficiency, the extension of the life of the pipe system and the savings in labor hours.

Pathogenic growth prevented

Maintain safe temperatures

While drinking water in the municipal water network is pure and clean, the challenge to ensure water hygiene increases once it has entered a buildings distribution pipe work. Many waterborne pathogens, such as Legionella, exist in natural waters and are considered harmless in small concentrations. But they reproduce rapidly in adverse conditions like stagnant water combined with certain temperature ranges.

The World Health Organization (WHO) classes Legionella as the bacteria that causes the highest health burden of all waterborne pathogens. Inhaling contaminated aerosol while showering or using a water system can cause serious lung infections and consequent health risks. The prevalence of Legionnaires disease in western countries has significantly increased in recent years. This alarming fact puts pressure on diverse stakeholders with different obligations to ensure compliance and quality of water systems. Regulators and authorities will need to develop according directives and guidelines for the industry while operators and owners will increasingly need to take measures to keep cold water constantly under 25°C and avoid warm water temperatures between 25-55°C and the stagnation in the water circulation.

The Hycleen Automation System is the solution for ensuring optimal drinking water hygiene. Valves and sensors ensure constant water temperatures and regular water exchange and automatically alert if there are malfunctions or abnormalities in the water system. The technology can also be operated from any location using remote access and can be integrated into any required building control system.

Pathogenic growth prevented
By dynamically optimizing temperatures and flow, the Hycleen Automation System prevents stagnation and temperatures that promote Legionella growth.

Expertise assured
Based on current state of knowledge, the Hycleen Automation System helps optimize energy and water consumption and prevent microbial growth.

Documented legal compliance
Log key data and create reports which cannot be manipulated. Checked locally or online, these can help serve as proof for compliance with law and regulatory standards.

Increase well-being

Enhanced comfort levels

The perception of human comfort in buildings has changed significantly over the last decades - new technologies, digitalization, but also the impact on energy consumption and climate change mitigation have increased expectations and challenges for building design, personal well-being and operational levels.

Human comfort relates primarily to the thermal, visual and acoustic comfort in buildings. But also optimizing the water distribution to obtain consistent water pressure and reduce waiting time of warm water offers significant convenience for residents, hotel guests and visitors.

By maintaining a constant hydraulic water balance to optimize distribution temperatures, the Hycleen Automation System not only provides a pleasant experience to end users, it also benefits the experts responsible for the operation and maintenance of a building. The system is fully automated and works around the needs of the specific water circulation in the entire building. It ensures the hydraulic balancing to avoid water stagnation, automated maintenance by flushing of the cold water and the monitoring for standard compliant procedures. In case of abnormalities, a warning message is automatically sent. The possibility of remote access also ensures maximum comfort for the building operators.

Constant temperatures

By continuously optimizing the hot and cold water distribution across the entire building via hydraulic balancing, we minimize the waiting time for hot water to be delivered to outlets.

Automated operations

The Hycleen Automation System is fully automated and works around the needs of your system. From guaranteed hydraulic balancing to self-maintaining valves and intelligent thermal disinfections.

Trusted partner

For more than 200 years customers benefit from our expertise in the hygienic and sustainable management of domestic water systems. Once installed and connected to the cloud, we can support you remotely in the operation and optimization of your Hycleen Automation System.

Constantly connected

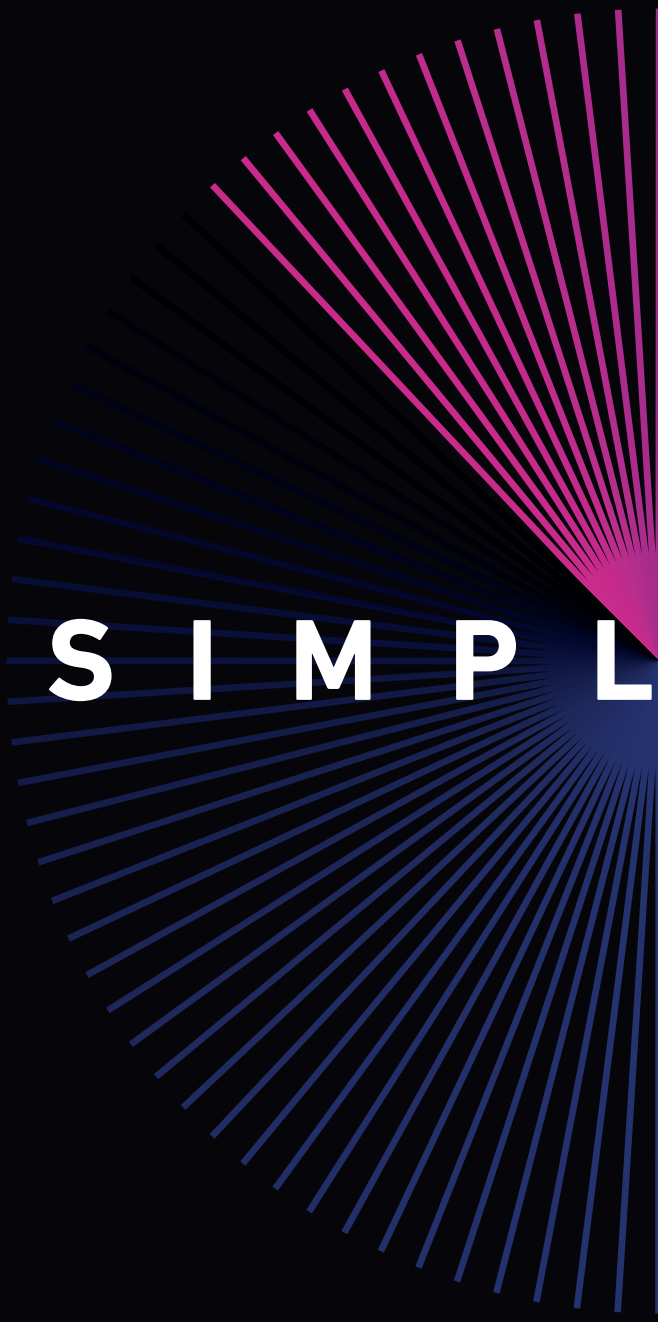
Anywhere, Anytime

The innovative Hycleen Automation System is designed with the main objective to provide a simple, use-friendly and secure plug-and-play solution to our customers. The result sets new standards in the simplicity of installation, commissioning and operation of the system.

The benefits and advantages are primarily centered towards larger buildings where a regular maintenance and the accurate control of the water temperatures is required. For a building operator, the manual commissioning of a hydraulic balancing system is complex, time consuming and the monitored raw data does not reveal potential deterioration trends and risks in the water system.

The Hycleen Automation System has been developed to solve all the challenges in your piping system. Right from the installation, the technology can be integrated in a new or an existing system and all parameters can be conveniently adjusted to meet individual needs. The plug-and-play commissioning facilitates the connection of valves and sensors to the central control unit. The according models and types are automatically recognized, assigned to the respective application and ready to use. One or even more systems and therefore several buildings can be connected to the solution and monitored remotely. The connected water installation provides the necessary water temperature analysis, potential errors and compliance information to meet regulatory standards.

The Hycleen Automation Systems significantly reduces the resources and operational effort for building operators, owners and plumbers and ensures a reliable and comprehensive management of your water system.



Simple usability
Integrates into your system seamlessly and is easy to install, set-up and use. Have key information at your fingertips and assurance from a comprehensive alerting system.

Global control
Control and communicate all valves via remote access to the on-site digital operator anywhere in the world on desktop or mobile, all via the cloud. Receive alarms and information you need directly.

Seamlessly connected
Integrate your existing BMS; including 3rd party sensors and actuators through leading hardware and software, all connected to the cloud.

One family

One system working in harmony

The Hycleen Automation System by GF Piping Systems offers a sophisticated package for the automation of potable water installations. Sensors and controllers integrated in the valves capture data and the Master controls system balancing, flushing, and disinfection to provide safe, consistent, potable water while also maintaining optimum system temperatures. All this is delivered using a simple plug-and-play system with a single power and data cable set up.

Hycleen Automation Master

The Master provides a point of central control for all Hycleen Automation System valves in the drinking water system as well as monitoring of the flow and temperature sensors. It offers touchscreen control through an intuitive user interface and plug-and-play commissioning.

Cabling

The system only requires simple wiring. Prepared connectors allow the installation engineer to deliver faultless wiring, and a low-risk installation.

Electronic circulation regulating valve and flushing valve

Gunmetal valves, with an integrated controller for connectivity with the master, provide circulation and flushing. The valves are also supplied with a suitable insulation box.

Uni Controller

Control is managed through a universal junction box that connects external sensors such as motors, circulation pumps, and other valves.

Sensors

Sensors include a flow sensor for measuring the volume and speed of the water, and a T-sensor for temperature and drain monitoring for a safe flushing process.

Synchronized water control

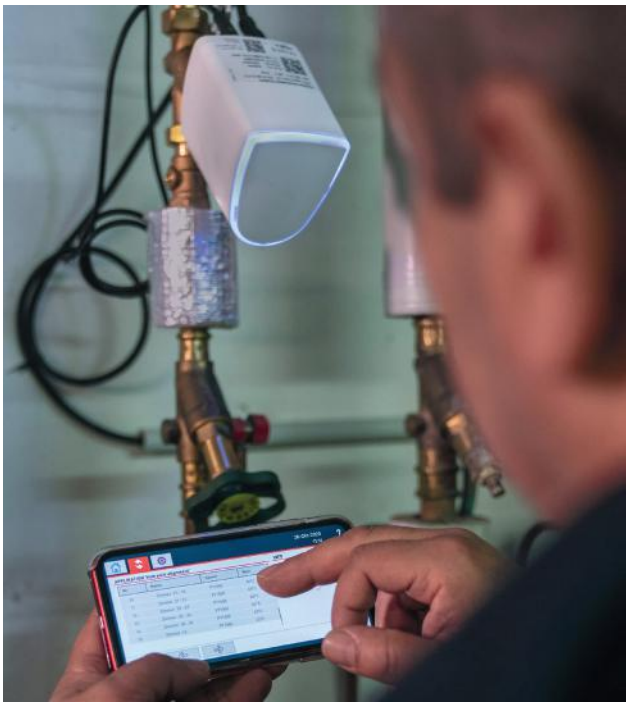
Effective reduction of energy consumption

When the time came to refurbish an apartment building in Halle (Germany), the Bauverein Halle & Leuna eG seized the opportunity to launch a pilot project for a more sustainable water supply with the Hycleen Automation System. The project paid off. Following the refurbishment, the energy consumption for hot water decreased by 22.7% compared to the previous year. The refurbishment also meant lower maintenance costs for the housing cooperative and, with the cloud-based solution Hycleen Connect, multiple properties can now be monitored, visualized, and optimized from one control center.

Controlling Legionella by utilizing high temperatures and circulation

Using the Hycleen Automation System, the Moss municipality installed a system that automatically ensures a consistently high temperature and regular water replacement throughout the hot water supply system at both the Peer Gynt Health Center and at Orkerød Nursing Home (Norway). Combined with the prior mapping of the pipe system and its usage, as well as regular water sampling, this has minimized the formation of biofilms. In addition, the facility's operations are now documented across all subsections.

The Hycleen Automation System is used in various applications. Through our reference stories you can learn more about how we help our customers meet the challenges of drinking water hygiene and energy efficiency.



Cloud-based monitoring of the drinking water installation

The team from the Holiday Inn Express Cologne (Germany) noticed that something was wrong with the hot water as it would never reach the correct temperature in the staff room of the hotel. During modernization, the Hycleen Automation System was installed to support the drinking water supply. Shortly after installation of the intelligent valves and sensors, the system immediately delivered the notification 'Error "temperature of valve 6 too low."' The faucet of the sink in the staff room was quickly identified as the source of the error and the entry of cold water prevented. Thanks to the Hycleen Automation System, the hotel now has a safe, reliable drinking water supply.

Clean drinking water for the wellbeing of guests

It took almost three years to convert the 500-year-old Hotel Sonne in the center of Sissach (Switzerland). Great efforts had been made to preserve the historic building structure wherever possible and appropriate, blending this with a modern infrastructure. In addition to providing a versatility for entertaining and accommodating guests, the family has also incorporated apartments for the elderly. This change of use tipped the scales in favor of installing a drinking water system that needed to meet the highest hygiene standards and so the owners decided on the Hycleen Automation System. Fifteen circulation valves, and one new flush valve, were installed and can now be controlled safely and conveniently via the Master.

Trust the leaders

One water management solution

Ready when you are
The Hycleen Automation System is a highly effective solution for a safer, resource-efficient, comfortable, and reliable management of domestic water systems. But these benefits are not exclusive to the Hycleen Automation System. All our products - and especially our service offering – provide heightened performance and productivity safety and GF Piping Systems will support your project, retrofit, or new build, every step of the way.

Design
The GFPS water experts are your link to installers, planners, technical, and facility staff, supporting them in designing and commissioning your piping system and water management requirements. The Hycleen Automation System is a straightforward plug-and-play system but we always support the set-up on-site to ensure the system is optimized for your individual needs and preferences.

Training
The GFPS water experts provide sound trainings, materials, and instructions to ensure that technical and facility managers operate the Hycleen Automation System in the most efficient way, understand alerts and can carry out all tasks from set up through to maintenance accurately and with confidence.

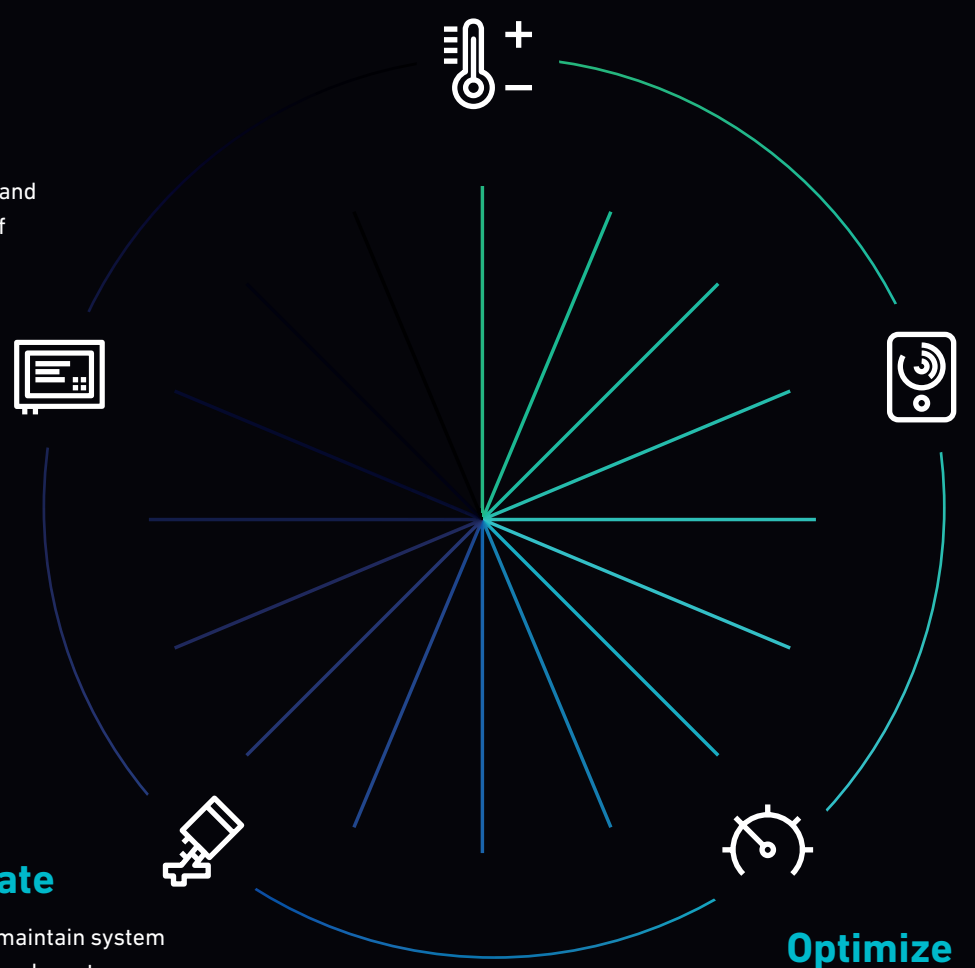
Assessment
The GFPS water experts are true partners to you and your team, supporting you in analyzing and detecting the problems and challenges of your domestic water system.

Remote & on-site support
The reliability of the Hycleen Automation System - as well as the high quality and standards of our pipes and fittings - is undisputed. However, in case there are uncertainties in the way it operates or for advanced troubleshooting, the GF water experts are always available to provide support. The cloud option gives our experts the access to fix most issues remotely or guide you to the right solution. For all other cases on-site support is never too far away.

Next steps
Achieving your sustainability, cost, comfortability, compliance, or safety goals is just an email or phone call away. You will find the contact details for the GFPS organization in your country on the back of this brochure. Further information, technical details, reference projects etc. are available on GFPS.com and YouTube (search, Hycleen).

Measure

Check water temperatures, flow and distribution.



Control

Real-time logging and alarming in case of deviations.

Analyze

Assess risks and root causes.

Operate

Run and maintain system at safest and most efficient point possible.

Optimize

Re-calculate and implement best setting of valves and activities.

GF Building Flow Solutions

Leading with Water

Uponor Corporation
Ilmalantori 4
00240 Helsinki
Finland

www.uponor.com

37 786 62
e / 03.25