



Grundfos MIXIT Cases & Articles

# The all-in-one mixing loop solution for simplified, efficient and intelligent HVAC systems

**GRUNDFOS** 

Possibility in every drop

# Grundfos MIXIT: Transforming HVAC systems for a simple and sustainable future

Grundfos MIXIT represents a breakthrough in HVAC system management. It's an all-in-one mixing loop solution that simplifies operations, enhances energy efficiency, and ensures seamless integration with digital platforms.

As buildings account for a significant portion of global energy consumption and greenhouse gas emissions, innovations like MIXIT are crucial for achieving sustainability goals. Because MIXIT is not just about simplifying the complexity of traditional mixing loops; it's about transforming the way we manage and optimise HVAC systems. By integrating advanced digital technologies and real-time data monitoring, MIXIT paves the way for a new era of energy-efficient, reliable, and cost-effective building management.

By reducing system complexity, enhancing energy efficiency, and leveraging connected intelligence and openness, Grundfos MIXIT sets a new standard for HVAC system performance and sustainability. Read more in this e-book, including real cases that show how you can benefit from Grundfos MIXIT.

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# Reducing system complexity with Grundfos MIXIT

With HVAC and water systems becoming more intelligent, it's crucial to reduce system complexity to achieve operational efficiency and reliability. Our all-in-one mixing loop solution, Grundfos MIXIT, redefines traditional mixing loops for simpler and more efficient operation.

## Mixing loops redefined for the modern age

HVAC and water systems consume a large portion of energy in buildings and account for a significant amount of greenhouse gas emissions. With governments introducing new regulations and building codes, the demand for more energy-efficient HVAC and water systems is growing – and an obvious way to meet this demand is through digitalisation. New digital tools are transforming HVAC systems, making them more intelligent and capable of adjusting to demands automatically.

But growing intelligence also makes systems more complex, and designers and operators must ensure that systems remain intuitive and manageable even as they become more advanced. To support

this, we've targeted a crucial part of many commercial building operations: the mixing loop. We've redefined the mixing loop, creating a solution that's more efficient and easier to use.

## How traditional mixing loops work

Mixing loops adjust the flow temperature in HVAC systems to the demand in different areas. They make it possible to set up zones with different flow temperatures within the same system by means of a controlled addition from the return flow. This might be necessary when different parts of the building have different heat requirements due to their location or type of use or when areas with underfloor heating require a lower supply flow temperature than areas with radiators.



Depending on the hydraulic system and circuit, traditional mixing loops usually consist of 8-12 different components. From secondary circuit pumps and controllers to sensors, control valves and actuators, every part needs to work together seamlessly. But the more components you have, the more complex everything becomes.

During design, sizing and configuration, each component must be sized for the system, compatible with each other, and configured and integrated into the system. Individual components must be individually wired, connected, checked and aligned, increasing the risk of not meeting deadlines and exceeding budgets. Commissioning individual components separately also increases the risk of the

system not running optimally. If just one element is set up incorrectly, it could affect the entire system's performance. A low differential temperature, for instance, can raise costs by 10-30% compared to the calculations used during sizing.

Limited space is another challenge that goes along with traditional setups. The more individual components you need to install in confined areas, the more difficult service work gets. The many different components also blur the lines of responsibility. What tasks fall under HVAC, electronics, and building automation? It can be challenging to define clearly. Ultimately, this can compromise monitoring, maintenance and optimisation, leading to delays and rising costs.

## Did you know?

The compact design of the MIXIT reduces the space needed for the mixing loop by up to 50%.

### Streamlining HVAC operations with the all-in-one Grundfos MIXIT

To support system integrators, building managers and others involved in HVAC and water systems, we've developed a solution that streamlines operations, reduces potential failure points and improves reliability. Grundfos MIXIT is an innovative all-in-one mixing loop that consolidates the many traditional components into a single, cohesive unit. This integration dramatically simplifies the setup process, allowing everything to be installed and commissioned together.

The pump and control unit communicate wirelessly, eliminating complex piping and individual component wiring. The interfaces required to connect to building management systems are also integrated into the control unit, which not only speeds up installation but also ensures more reliable operations from the start. Additionally, the compact design of the MIXIT reduces the space needed for the mixing loop by up to 50%, freeing up room for other essential system components

and maintenance activities. Over the lifespan of the system, reduced complexity also translates into lower maintenance and operational costs since systems that are easier to manage and maintain are less likely to suffer from unexpected breakdowns.

### Enhancing efficiency and reducing installation complexity

Grundfos MIXIT reduces time spent on system installation and commissioning by up to 50%. That means you can complete projects quicker, reduce labour costs and get systems operating much faster. The integrated design also minimises potential points of failure, improving system reliability and reducing installation errors. Planners, designers and operators benefit from a simpler system that reduces selection and sizing time by up to 20% and costs by up to 25%. The total design work is actually reduced by 50%, which really streamlines the construction phase and makes it easy to follow the intended specifications.

The integration you get with Grundfos MIXIT also reduces the cognitive load on system integrators. Maintenance and troubleshooting are more straightforward, and the integrated control and fieldbus interfaces simplify integration into the BMS by 30-40%. You can complement this integration with the Grundfos GO app, which allows you to set up the system with just a few clicks. If further support is needed, customers benefit from a single point of contact, simplifying the maintenance and troubleshooting process and ensuring a streamlined, reliable system with fewer components to manage.

### Challenges and solutions in retrofitting older systems

But, isn't it challenging to implement a new solution in your system, you might think? Of course, it can be difficult to integrate modern, sophisticated components into legacy systems without undertaking complete overhauls. Older systems may not have been designed with future upgrades in mind, so this requires a careful balance to enhance efficiency and functionality without exceeding the constraints of the infrastructure in place.

That's exactly why Grundfos MIXIT is designed as a modular solution. Modular systems are flexible and adaptable, allowing for incremental upgrades that can improve system efficiency and performance without the need for extensive modifications. Grundfos MIXIT's design allows it to be integrated into existing setups with minimal disruption, so you can get an immediate boost in performance and efficiency. This not only extends the useful life of the existing systems but also spreads out the investment over time. The modular approach provides a pathway to modernisation that respects the limitations of older systems while still pushing the envelope in terms of efficiency and environmental responsibility.

### A future-proof solution built to adapt to evolving needs

By simplifying system complexity and enhancing operational efficiency, MIXIT sets a new standard for commercial and district heating systems. As we move towards a more sustainable future, the importance of reducing system complexity and improving efficiency will only grow. By reducing the

number of components and simplifying the system, MIXIT supports sustainability initiatives by reducing material usage and waste. Grundfos is committed to leading this transformation, and with the MIXIT solution, we're not just simplifying systems – we're empowering the future of heating.

Grundfos MIXIT is designed to be easily scalable, making it suitable for a wide range of applications, from small commercial buildings to large district heating systems. The MIXIT solution can be operated in three versions, which differ in terms of functionality and communication options. The hardware is the same – the versions differ only in which functions are activated in terms of the software. This has the key advantage that no hardware has to be retrofitted – a software upgrade is sufficient. This can also be carried out at a later time, for example, if the system has not been integrated into the control system from the outset.

## Fast installation and commissioning

Grundfos MIXIT reduces time spent on system installation and commissioning by up to 50%.

# Maximising energy efficiency in HVAC systems

As global energy consumption continues to rise, the need for efficient HVAC and water systems becomes increasingly pressing. Grundfos MIXIT is designed to maximise energy efficiency, support sustainability goals, and reduce operational costs.

## Why our buildings need to be more energy efficient

New sustainability regulations and green building codes are being implemented around the world, calling for significant improvements in energy efficiency and reduced emissions. The challenge is to adapt to these new rules without increasing costs. At the same time, these demands are also an opportunity to drive innovation and modernisation in buildings.

Buildings are responsible for approximately 40% of global energy consumption<sup>1</sup>, and HVAC systems account for about 40% of energy use in commercial buildings<sup>2</sup>. That's a lot of energy use – but it's also a huge opportunity to save energy. Correct commis-

sioning of HVAC systems alone can reduce energy consumption by up to 25%<sup>3</sup>. But despite this, 33% of all current buildings are still not commissioned correctly<sup>4</sup>. Let's explore how to optimise energy use in buildings by targeting mixing loops.

## The potential of optimising mixing loops

Mixing loops typically manage the flow temperature across various building zones. They usually operate by combining hot water from the primary circuit with return water from the secondary circuit. This makes it possible to modulate temperatures across different zones, but because traditional mixing loops need to be manually set up and adjusted, they often fall short in terms of energy efficiency.



Manual work can lead to delays in responding to changing environmental conditions, such as when the sun on one side of the building makes it warmer, or an open window lowers the temperature in another part of the building. Manual adjustments also leave these systems vulnerable to human errors – and then there's the lack of integrated controls. Older systems tend to operate independently from other building management systems, which makes it difficult to get a complete overview of energy use and optimise across the entire building's ecosystem.

## Enhancing energy efficiency with an all-in-one intelligent solution

These challenges highlight the need for more

advanced mixing loop solutions that can adjust dynamically and integrate with other building management systems. By rethinking the traditional mixing loop concept, that's exactly what we've created with the all-in-one Grundfos MIXIT. This mixing loop solution works seamlessly and can handle multiple applications within heating, cooling, and water, and with the ability to cover both two-way and three-way valve configurations, it's ideal for many applications.

Grundfos MIXIT is equipped with features like enhanced, advanced energy monitoring that provides real-time consumption data so you get a complete system overview. With access to over 100 data points in real-time via the platform of

your choice, you can continuously monitor and optimise energy consumption. This continuous monitoring enables up to 15% additional energy savings without compromising comfort<sup>5</sup>.

### **Seamless integration and free data flow for enhanced performance**

Combining MIXIT with our building management system Grundfos BuildingConnect or the Grundfos GO app enhances system performance and energy savings. BuildingConnect offers easy monitoring, optimisation, and control of your building's HVAC systems – and you can also get seamless integration with existing building management systems through the open API. The integrated fieldbus simplifies integration with any BMS, and the flawless interaction between system components and built-in flow sensors ensures continuous optimisation and efficient data flow, enhancing overall system performance and energy efficiency.

The unrestricted data flow between Grundfos MIXIT and other system components also significantly boosts performance and energy efficiency.

### **Did you know?**

HVAC systems account for about 40% of energy use in commercial buildings.

Real-time remote monitoring provides a comprehensive performance overview of the mixing loop, enabling proactive adjustments and optimisation. This can also save up to 50% on installation and commissioning time<sup>6</sup>, reducing potential errors and enhancing overall efficiency.

### **Taking mixing loops energy efficiency to a new level with supply source setpoint**

One of the latest features in Grundfos MIXIT is “supply source setpoint”, which is designed to enhance energy efficiency in both single and multiple-unit heating and cooling configurations. By accurately regulating the temperature within a configurable range from 0°C to 100°C, this feature ensures optimal performance and uniform compatibility across various units. The setpoint control is managed through a consistent 0-10 volt output signal from the CI03 on the MIXIT, which adapts according to the temperature demands of each setup.

For systems with multiple units, you can get easy setup via the Grundfos GO app, where the default values of +5°C for heating and -2°C for cooling can be customised. For example, in a heating scenario where the setpoint is 50°C, the supply source setpoint automatically adjusts to 55°C. This coordinates responses across all connected units with the MIXIT unit that handles the highest demand controlling the setpoint. It also means you can precisely manage temperature settings and offsets within the range of 0°C to 100°C, maintaining system efficiency even if one unit stops or an alarm is triggered.

### **Adjust to weather conditions to ensure perfect comfort**

Another new introduction to Grundfos MIXIT is the Weather Curve feature. Where many systems, even intelligent ones, are limited to a fixed outdoor temperature range and a decreasing setpoint, the Weather Curve feature is more flexible and precise. By expanding the configurable outdoor temperature range and reaching -60°C to 60°C, the system can adapt to more extreme conditions, ensuring that energy usage is optimised for any climate.

The feature also gives you the option of a fully adjustable setpoint that is not dependent on the outdoor temperature. This means the system can maintain optimal efficiency levels by adjusting its output more accurately according to real-time demands instead of relying on a fixed schedule. The ability to configure the curve through the fieldbus means you can seamlessly update and adjust based on the weather and forecasts. The feature also enables the curve to continue beyond the entries, so you get continuous and dynamic adaptation to changing environmental conditions.

### **What does the future hold for energy-efficient HVAC systems?**

Looking to the future, it's likely that HVAC systems will incorporate new technology like IoT and AI to become even more intelligent. This can also make them an even bigger part of a fully integrated network that manages heating, cooling, lighting, and security. This holistic approach to building automation has the potential to not only enhance comfort and safety but also significantly improve energy efficiency more than we've already seen.

### **Save 25% energy**

Correct commissioning of HVAC systems alone can reduce energy consumption by up to 25%.

### **100+ data points**

With access to over 100 data points in real-time via the platform of your choice, you can continuously monitor and optimise energy consumption.

We're already seeing cases of smart buildings that use data-driven insights to optimise all aspects of building operations automatically, responding to both external conditions and internal demands in real-time. This intelligent has the potential to transform everyday living and working environments while pushing the boundaries of what building management systems can achieve in efficiency and innovation.

The integration of renewable energy sources with HVAC systems could also transform energy efficiency in buildings. By combining these systems with solar thermal panels or geothermal energy sources, it's possible to create hybrid systems that harness the stability of geothermal heat or the abundance of solar energy to make us less reliant on traditional, fossil-fuel-based heating and cooling methods – and create buildings that are more efficient and sustainable.

# Optimising HVAC systems through connected intelligence

In the digital age, you need to take advantage of connected intelligence and openness if you want to maximise performance in HVAC systems. Grundfos MIXIT leverages advanced connectivity to streamline operations, enhance performance, and ensure seamless integration with third-party platforms.

## Modern challenges call for digital solutions

These days, buildings and their management systems are becoming increasingly digital and intelligent. Every building has its own set of specifications, requirements, and operational protocols, and it's essential to have a system that can adapt to demands and provide maximum safety and comfort while using as little energy as possible.

That's exactly what Grundfos MIXIT's advanced connection capabilities and digital platforms offer: a tailored fit for any building's operational ecosystem. Read on to find out how Grundfos MIXIT can help you operate and automatically adapt to demand, delivering the exact performance that's necessary and minimising energy loss.

## Addressing the unique challenges of each building

So, how exactly does Grundfos MIXIT meet each building's unique challenges? It comes down to advanced connection capabilities, which allow data analytics to integrate seamlessly. This digital integration ensures precise design and application, making the all-in-one solution a perfectly adapted component of the building's operational ecosystem. In many ways, its adaptability allows you to craft an almost bespoke experience for any building configuration.

Compared to traditional HVAC systems, there's a big difference. Traditional systems often require a lot of manual adjustments and frequent maintenance,



which can lead to higher operational costs and energy use. Standalone components and sub-controllers in many mixing loop solutions are also often time-consuming to integrate into building management systems and can result in 10-20% less efficient HVAC installations. Add to that, manual control limits optimisation to occasional on-site adjustments.

## Free data flow with connectivity for enhanced performance

Grundfos MIXIT combines the traditional components of a mixing loop into one unit, making it easier and faster to ensure correct commissioning and balancing. This means you get unrestricted data flow for increased system transparency, boosting

performance and energy efficiency. Grundfos MIXIT supports seamless integration with existing building management systems through its open API, and the integrated fieldbus allows for easy incorporation into any building management system.

Grundfos MIXIT also comes with a built-in monitoring solution, connected to either Grundfos BuildingConnect or an existing BMS system, which gives a complete overview of performance and energy consumption. With access to over 100 data points in real-time, you get a complete overview for easy proactive monitoring, operation, and optimisation of HVAC installations, delivering as much as 25% energy savings. The lifecycle costs of MIXIT systems are also significantly lower due to reduced

## Did you know?

Standalone components and sub-controllers in many mixing loop solutions are also often time-consuming to integrate into building management systems and can result in 10-20% less efficient HVAC installations.

maintenance needs and enhanced system longevity. The platform supports remote management, enabling you to control the system from anywhere in the world.

Grundfos GO provides an intuitive platform for the easy setup and control of the MIXIT system. With Bluetooth connectivity, integrating the system is quick and seamless. This simplification of commissioning and adjustments ensures precise control over system operations, reducing the time and complexity involved in setup and maintenance. In total, you can save up to 50% on installation and commissioning. If you want to add additional functionality, such as an additional sensor, the solution also offers built-in setup guides to help you do it.

### Recent new feature – flexible combined setup

To improve the solution and ensure it's always as intelligent as possible, we're continuously adding new features to Grundfos MIXIT. One of the latest upgrades is improved Setpoint Source func-

tionality, which offers more flexible and accurate temperature control in heating, cooling, and combined heating/cooling setups. The setpoint input for combined heating/cooling used to be more restrictive as it used the same setpoint for both heating and cooling but didn't have the ability to adjust based on outdoor temperatures.

With the upgrade, it's now possible to select distinct setpoints for heating and cooling when in combined mode, so you can tailor the system's output more closely to actual needs and external conditions. This helps minimise energy usage and maintain ideal indoor temperatures. The system also makes it easy to steer clear of inefficient settings by disabling the selection of invalid setpoint inputs, further enhancing the overall efficiency and making the system easier to use.

### Impact of IoT and big data – and data security in connected systems

With growing intelligence and connectivity, it becomes easier to optimise systems remotely and make sure everything is operating smoothly. It becomes possible to predict when a critical component is likely to fail or require maintenance, preventing downtime, extending the lifespan of the system, and saving money on emergency repairs and replacements. These technologies create a smarter, more responsive system that can adjust to both immediate conditions and anticipate future needs, ensuring optimal performance at reduced expenses.

But at the same time, the importance of cybersecurity also increases. Connected systems offer

enhanced operational efficiencies but also pose potential risks if data breaches occur. Companies must implement robust cybersecurity protocols to protect sensitive operational data, including, for instance, the use of end-to-end encryption, regular security audits, and secure access controls. Additionally, training staff on cybersecurity best practices is crucial to safeguarding the system against potential threats. Protecting these systems not only secures data but also ensures that the HVAC operations remain uninterrupted and reliable.

That's why all connected Grundfos products, including Grundfos MIXIT, are designed to operate securely behind firewalls or within private networks. It is essential that the Ethernet port of the MIXIT unit is connected only to a network that is either isolated from the internet or secured behind a firewall. Direct internet connections and TCP/IP port forwarding are strictly prohibited to mitigate cybersecurity risks. For remote access, industry-standard technologies such as VPNs are recommended to establish a secure and encrypted connection.

### A scalable solution that's built for the future

One of Grundfos MIXIT's standout benefits is that it doesn't just improve HVAC and water systems today—it's built for the future. Connectivity and compatibility with a wide range of components, providers, and platforms mean you get a forward-thinking design that ensures Grundfos MIXIT is ready to adapt to whatever advancements in technology we'll see in the future—and whatever requirements building management will come to have.

We're also continuously updating and adapting the solution. In the future, it's likely that machine learning and AI technology could be used to analyse the extensive data collected by Grundfos MIXIT, for example. This could offer insights that make it possible to optimise HVAC systems even more, reaching an unprecedented level of efficiency and intelligence. In any case, we'll need as much innovation as possible to ensure that our solutions contribute to a future in which we need and use less energy. The simpler our solutions can get, and the more efficient they can get, the better.

Looking ahead, HVAC technology trends are set to include the integration of renewable energy sources, the use of phase change materials for enhanced heat storage, and advancements in non-volatile refrigerants. Whatever the next step is, Grundfos MIXIT is well-positioned to adapt, with its modular design allowing for easy integration with evolving infrastructures – so it can continue to meet the evolving demands of energy-efficient building management.

## Seamless integration with open API

Grundfos MIXIT supports seamless integration with existing building management systems through its open API.

# Simplicity and efficiency in Idrætscenter Jammerbugt's facilities

Grundfos MIXIT units have significantly improved the heating efficiency and saved costs in Idrætscenter Jammerbugt's facilities, including sports halls, swimming pools, and hostels.

## The challenge

Danish sports centre Idrætscenter Jammerbugt faced challenges with its outdated heating systems. The sports and swimming halls, fitness centre, and hostel required efficient temperature control and flow management. Traditional systems were time-consuming to adjust and often resulted in uneven heating and high energy consumption.

## The solution

Grundfos MIXIT units were installed throughout the centre. Combined with the new ventilation system, the mixing loop solution provided precise control over heating zones. The MIXIT units,

integrated with the Siemens Building Management System (BMS) and managed via the Grundfos GO app, made it easy to adjust and optimise performance remotely.

## The outcome

The installation of MIXIT units has transformed the sports centre's heating management. Temperature adjustments that previously took hours can now be done in minutes, significantly reducing energy use. The ability to control heating zones remotely has enhanced operational efficiency, while the sleek design of the MIXIT units has improved the facility's aesthetic.



## Technical insights

MIXIT units provide precise temperature control and flow management, integrated with existing BMS systems and operated via the Grundfos GO app. The units also have built-in temperature sensors for optimal heat utilisation and automated adjustments based on external conditions.

[→ More case details](#)



Significant **reduction in temperature adjustment time** from 2 hours to half hour



**Built-in temperature adjustment** that compensates for outdoor temperature



**Seamless integration** with Siemens BMS and **easy remote management** via Grundfos GO

# Future-proofing an architectural gem with next-level efficiency and comfort

By implementing Grundfos MIXIT, Søllerød Park has significantly improved heating efficiency and resident comfort, ensuring a sustainable future for the iconic residential area.

## The challenge

Søllerød Park, a picturesque residential area north of Copenhagen, Denmark, faced significant challenges with its outdated mixing loops across 19 buildings. These inefficient and varied systems required constant manual adjustments, leading to high energy costs, frequent issues, and resident discomfort due to inconsistent heating.

## The solution

During an exhibition in 2023, Søllerød Park's operational team discovered the Grundfos MIXIT solution. Convinced by its potential, Søllerød Park ordered and installed 19 MIXIT units, completing the installation in just 14 days. This all-in-one

mixing loop unit quickly simplified commissioning and balancing, enhanced energy efficiency, and provided future-proof technology through software updates.

## The outcome

Although the installation was recently completed, the expected benefits are already clear. The MIXIT units have streamlined heating operations, reducing the need for constant manual adjustments and improving resident comfort. The estimated payback time for the investment is five years, reflecting significant energy savings and enhanced operational efficiency.



## Technical insights

Grundfos MIXIT units integrate seamlessly with existing systems, offering real-time monitoring and control via the Grundfos GO app. The all-in-one design includes advanced energy optimisation features, ensuring efficient and consistent heating across all buildings.

[→ More case details](#)



**Installed 19 mixit units in 14 days** across Søllerød Park's 19 buildings



Expected **payback time of five years** based on energy savings and operational efficiency



**Enhanced resident comfort and reduced costs** and manual adjustments

# Efficient heating upgrades in Cône-sur-Loire, France

Niev Habitat and Engie Solutions significantly improved the heating efficiency and comfort for residents in the Saint-Laurent neighbourhood's rehabilitated housing units with Grundfos MIXIT.

## The challenge

Niev Habitat, managing over 8,000 housing units, had to upgrade 136 apartments in Cône-sur-Loire, France. The project included exterior insulation, window replacements, the demolition of two buildings, and the replacement of an outdated substation. The goal was to enhance tenant comfort and reduce heating costs while approaching BBC (low-energy building) standards.

## The solution

Engie Solutions, collaborating with Grundfos, chose the MIXIT solution for the new substation, in large part due to its ease of implementation, operational efficiency, and integration. Combined

with a Grundfos MAGNA3 pump, the MIXIT solution simplified the installation and commissioning process, ensuring efficient and optimal performance.

## The outcome

The installation of Grundfos MIXIT improved the heating system's efficiency, providing better comfort for tenants and reducing energy costs. The built-in energy optimisation features of MIXIT allowed Engie to monitor and optimise the heating installations in real-time. The Modbus and BACnet integration facilitated seamless connectivity with Engie's control systems, enhancing overall system management.



## Technical insights

Grundfos MIXIT offers a straightforward installation and commissioning process with integrated energy optimisation features. The system's Modbus and BACnet ports enable easy integration with existing monitoring systems, providing real-time data for efficient management.

[→ More case details](#)



**Upgraded 136 housing units** with a new, efficient substation



**Enhanced tenant comfort and lower energy costs** via advanced heating system optimisation



**Seamless integration with engie's monitoring systems** via Modbus and BACnet ports

# Enhancing energy efficiency at a Danish factory with MIXIT intelligent controller

By using intelligent solutions like Grundfos MIXIT, companies can get the most out of their heating systems, improving energy efficiency and reducing costs.

## The challenge

Envases Europe A/S, located in Odense, Denmark, produces tin packaging for the food and beverage sector. With buildings dating back to the 1950s, their heating system relied on outdated gas-powered boilers. The company decided to connect to the city's district heating system and implement a heat recovery system to reuse excess production heat.

## The solution

It was clear that advanced control was required in the heating system, so Envases Europe opted for the Grundfos MIXIT solution. This intelligent controller integrates seamlessly with their

Building Management System via built-in fieldbuses, and the MIXIT units provide precise control over flow and temperature across different building zones. In addition, the Grundfos GO app makes operations even simpler, enabling easy adjustments via Bluetooth.

## The outcome

The new MIXIT units and the transition to district heating have significantly improved Envases Europe's energy efficiency. The company now recycles 23 GWh of heat annually, enough to supply 1,300 households, and saves an additional 14 GWh from the heat recovery system, equating to around 3,000 tonnes of CO<sub>2</sub> emissions saved each year.



## Technical insights

MIXIT units at Envases provide real-time data and control through integrated sensors and fieldbuses, enabling precise adjustments and optimisation of the heating system via the Grundfos GO app and BuildingConnect.

[→ More case details](#)



**Optimised heating system** with 35 MIXIT units and MAGNA3 pumps



**23 GWh of heat recycled annually**, saving 3,000 tonnes of CO<sub>2</sub>



**Payback time of 1.5 years** for the entire retrofit project

# Reducing energy usage at Credit Union's refurbished headquarters

Grundfos MIXIT, a fully integrated mixing loop solution, streamlines installation and enhances energy efficiency at Tipperary Credit Union's refurbished headquarters in Ireland.

## The challenge

Tipperary Credit Union wanted to refurbish its headquarters to enhance energy efficiency and performance. The old HVAC system was inefficient, involving complex mixing loops with up to 12 components per zone, leading to high energy consumption, costly operations, and an outsized carbon footprint.

## The solution

Grundfos MIXIT was chosen for its ability to simplify the control and management of HVAC systems. MIXIT integrates all traditional mixing loop components into a single, stand-alone unit that automatically adjusts and balances according

to system demands. Manufactured and tested offsite, MIXIT was delivered as a plug-and-go solution, making installation and commissioning quick and straightforward.

## The outcome

Two MIXIT units were installed to manage different areas of the building, combined. This significantly reduced energy usage while maintaining a comfortable environment. The built-in BACnet and Modbus connectors facilitated easy monitoring via the Building Management System (BMS) and the Grundfos GO app, allowing for remote control and automatic software updates.



## Technical insights

Grundfos MIXIT offers integrated BACnet and Modbus connectors for seamless BMS integration. The Grundfos GO app can monitor and control the system remotely, ensuring continuous optimisation and efficiency.

[→ More case details](#)



**Significantly reduced** installation and commissioning time



Installed as part of a **comprehensive range of energy-efficient solutions**, including solar panels, EV chargers and heat pumps



**Easy integration with BMS** and remote monitoring capabilities via the Grundfos GO app

# Smart mixing and cloud monitoring redefine energy contracting

Grundfos MIXIT and BuildingConnect deliver precise control and real-time monitoring for OVE Property Supply, optimising efficiency and reducing emissions in residential heating systems.

## The challenge

German energy service provider OVE Property Supply manages over 550 energy systems supplying heat and electricity to residential areas. The company needed a solution to optimise the efficiency and CO<sub>2</sub> footprint of their heating systems, particularly focusing on the mixing loops that control flow temperature in low-temperature circuits. Traditional systems lacked the control and data necessary for continuous optimisation and efficient energy management.

## The solution

OVE adopted the Grundfos MIXIT solution, which can communicate wirelessly with pumps and

connect to the Grundfos BuildingConnect cloud platform. This enables real-time data and control and simplifies the system by eliminating the need for separate piping and cabling.

## The outcome

MIXIT has enabled precise flow adjustments and optimal Delta T settings, leading to more efficient energy operation. With over 80 MIXIT units in use and plans to increase to over 100, OVE has retrofitted systems to reduce network losses, save energy, and lower CO<sub>2</sub> emissions. The cloud-based monitoring and control provided allows OVE to oversee operations remotely, ensuring ongoing optimisation and efficiency.



## Technical insights

MIXIT offers over 100 data points for monitoring and control, accessible via BuildingConnect without needing a BMS. This comprehensive data access allows OVE to remotely manage and optimise parameters like operating times, flow rates, speed, and energy consumption. The system's advanced integration capabilities facilitate easy monitoring and optimisation

[→ More case details](#)



OVE has implemented **80+ MIXIT systems** across Germany, enhancing the efficiency of residential heating networks



Real-time data enables **continuous optimisation for reductions** in energy use and emissions



With the **cloud-based buildingconnect platform**, OVE manages systems remotely

# Seamless BMS integration for a more sustainable new factory

By integrating Grundfos MIXIT with the Building Management System, an expanded Grundfos factory in Serbia maximises efficiency and comfort, achieving LEED Gold certification.

## The challenge

To scale up the production of energy-efficient circulator pumps, Grundfos Serbia embarked on a project to nearly double the size of its factory. This expansion required aligning with stringent sustainability goals, including energy and water savings. A critical requirement was ensuring seamless integration of the Grundfos MIXIT with the existing Sauter Vision Center (SVC) Building Management System (BMS).

## The solution

Nine MIXIT controllers were installed across the factory, including underfloor heating and air handling units. These units were integrated into

the SVC BMS using Modbus RTU communication, allowing for real-time monitoring and control.

## The outcome

The integration process was smooth and efficient. The MIXIT system provided many user-friendly data parameters, enabling precise control over temperature, flow, and more via the BMS. This advanced setup allowed for optimal comfort and significant energy savings, contributing to the factory's LEED Gold certification. Intuitive commissioning, scheduling, and alert functions also reduced maintenance time and enhanced operational efficiency.



## Technical insights

The MIXIT units integrated seamlessly with the BMS. The system leveraged Modbus RTU for communication and wireless data transfer between MIXIT and pumps, streamlined operations, and eliminated the need for extra communication modules.

[→ More case details](#)



The factory expansion includes **nine mixit controllers** and **55 energy-efficient pumps**



**Achieved LEED Gold certification**, helping meet rigorous sustainability targets



**Real-time monitoring and control** optimises comfort and reduces energy and water use

# From coal to cloud in a German hospital

Bergmannsheil and Kinderklinik Buer GmbH modernised their heating system with Grundfos MIXIT and BuildingConnect, significantly improving energy efficiency and operational control.

## The challenge

Bergmannsheil and Kinderklinik Buer GmbH, a hospital in Gelsenkirchen, faced challenges with an outdated heating distribution system. The system, expanded over decades, was oversized and poorly insulated, leading to substantial heat loss and inefficient energy use. Additionally, the system lacked flexibility, with the heat flow only adjustable centrally, causing uniform distribution that did not cater to varying demands across different buildings.

## The solution

In summer 2022, during ongoing operations, the hospital modernised its heat distribution system. The project involved installing new insulated pipes,

replacing obsolete pumps with high-efficiency pumps, and integrating Grundfos MIXIT units in all eight heating circuits. The hospital also adopted the Grundfos BuildingConnect platform for real-time monitoring and control.

## The outcome

The modernisation has allowed for individual control of heating circuits, reducing the flow temperature by 10 degrees and achieving an estimated 20% reduction in heat consumption. The cloud-based system enables remote monitoring, reducing response times to system alerts and improving operational efficiency.



## Technical insights

The Grundfos MIXIT units serve as three-way valves in mixing circuits, featuring integrated components like sensors and intelligent temperature control. The BuildingConnect platform provides access to over 100 data points, allowing detailed control and monitoring of the system via the cloud, accessible from various devices.

[→ More case details](#)



Integrated eight MIXIT units for **improved control across hospital heating circuits**



Achieved a 10-degree reduction in flow temperature, leading to **at least 20% energy savings**



**Enabled remote monitoring and control**, enhancing operational efficiency and response time

# Looking for more cases?

## Find the latest here

This e-book only contains a selection of our Grundfos MIXIT case stories. If you want to explore the rest, we've collected them in one easy-to-access place – so you can find the case story that details exactly what you're interested in. The site is kept up to date so you always get the most current and relevant case stories about how Grundfos MIXIT has saved energy and increased building efficiency for our customers.



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# Sources

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- <sup>2</sup> Energy optimization for HVAC systems in multi-VAV open offices: A deep reinforcement learning approach, [sciencedirect.com](https://sciencedirect.com), Feb 15, 2024
- <sup>3</sup> Grundfos calculation.
- <sup>4</sup> Grundfos calculation.
- <sup>5</sup> Grundfos calculation.
- <sup>6</sup> Grundfos calculation.

Grundfos is one of the world's leading suppliers of solutions across the full range of pump applications – all the way from water supply to district heating. We think beyond the pump, and our goal is to provide you with intelligent solutions that achieve a higher level of performance in your systems. This approach has made us a preferred partner for contractors, consulting engineers and installers looking to build the most sustainable and efficient buildings and systems in the world.



Learn more about  
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