



Smart mixing and cloud monitoring

The mixing loop solution Grundfos MIXIT in energy contracting

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Possibility in every drop



The initial situation

"When it comes to heat contracting, a decisive factor for us is to closely monitor and continuously optimize the operation of our energy systems," says Alexander Grafe, Managing Partner of energy service provider OVE Property Supply. "This applies in particular to mixing loops, as these have a considerable influence on the efficiency and CO₂ footprint of the overall system. That's why we looked into innovative solutions for mixing loops and became aware of MIXIT."

The medium-sized company in Bad Rothenfelde (Germany) pursues integrated approaches for supplying electricity and heat to residential districts. OVE has already implemented more than 550 energy systems throughout Germany, ranging from apartment buildings to residential districts. The company supplies around 13,000 residential units in Germany, most of them via local heating grids. For efficient operation of low-temperature circuits, mixing loops are used to bring the flow temperature to the optimum temperature level when it is transferred to the house or residential unit.



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In the past, these mixing circuits were realized conventionally with individual components. "With the classic temperature-based mixer control, however, we only had access to the usual parameters of the mixer," says Alexander Grafe.

"Even via the building management system, we didn't have as much control over the mixer and pump as we would have liked in order to increase efficiency potential."

"MIXIT makes it very easy to precisely adjust the flow and find the optimum Delta T."

Alexander Grafe, Managing Partner OVE

Complete solution with integrated control

In 2017, OVE first learned about the Grundfos MIXIT solution, in which key components such as valves, sensors, stepper motor and temperature control are already integrated into the control unit. Piping and cabling of individual components is no longer necessary, especially as the MIXIT control unit can communicate wirelessly with the MAGNA3 secondary circuit pump via radio interface. Since 2021, OVE has been using the latest MIXIT generation, which has been fundamentally enhanced in terms of hardware and software and offers even more communication options, including an integrated RJ45 interface for the Grundfos BuildingConnect cloud monitoring solution.

The first OVE project with the current MIXIT model was a residential complex that is mainly supplied by a gas-powered combined heat and power unit and a low-temperature circuit. Using the mixing loop solution, the 60- to 70-degree flow of the energy system is lowered to the level of the 40- to 45-degree

supply circuit. The integrated ball valve of the MIXIT control unit is operated as a 3-way valve in order to add a partial quantity of the return flow to the flow.

"Realizing such a mixing loop with an integrated solution is of course much easier," says Alexander Grafe. "The seamless interaction between the control unit and the pump is also a decisive advantage. The control unit controls the operation of the pump and also uses its sensors. You just have to parameterize the control unit instead of each individual component. The bottom line is that the solution makes it very easy to precisely adjust the flow and find the optimum Delta T, i.e. the spread between flow and return temperatures, for the most efficient operation of our energy systems - our top priority in contracting."

Optimizing via cloud

A decisive advantage is the simple online access to real-time data from operation. The MIXIT control unit provides more than 100 data points from the mixer and pump, which can be used even without BMS via the Grundfos BuildingConnect cloud platform. "As we bill our customers for finished heat, it is very important for us as a contracting company to be able to constantly monitor the operation of the mixing loop and optimize it if necessary," says Alexander Grafe. "With a mixing loop with individual components, you need control technology for this. This is associated with considerable costs and additional work, but ultimately you can only control the mixer. With the Grundfos solution, we have considerably more data points under control and also have access to the pump operation. For example, we can continuously monitor the operating times, volume flow, speed and energy consumption of the pump. The

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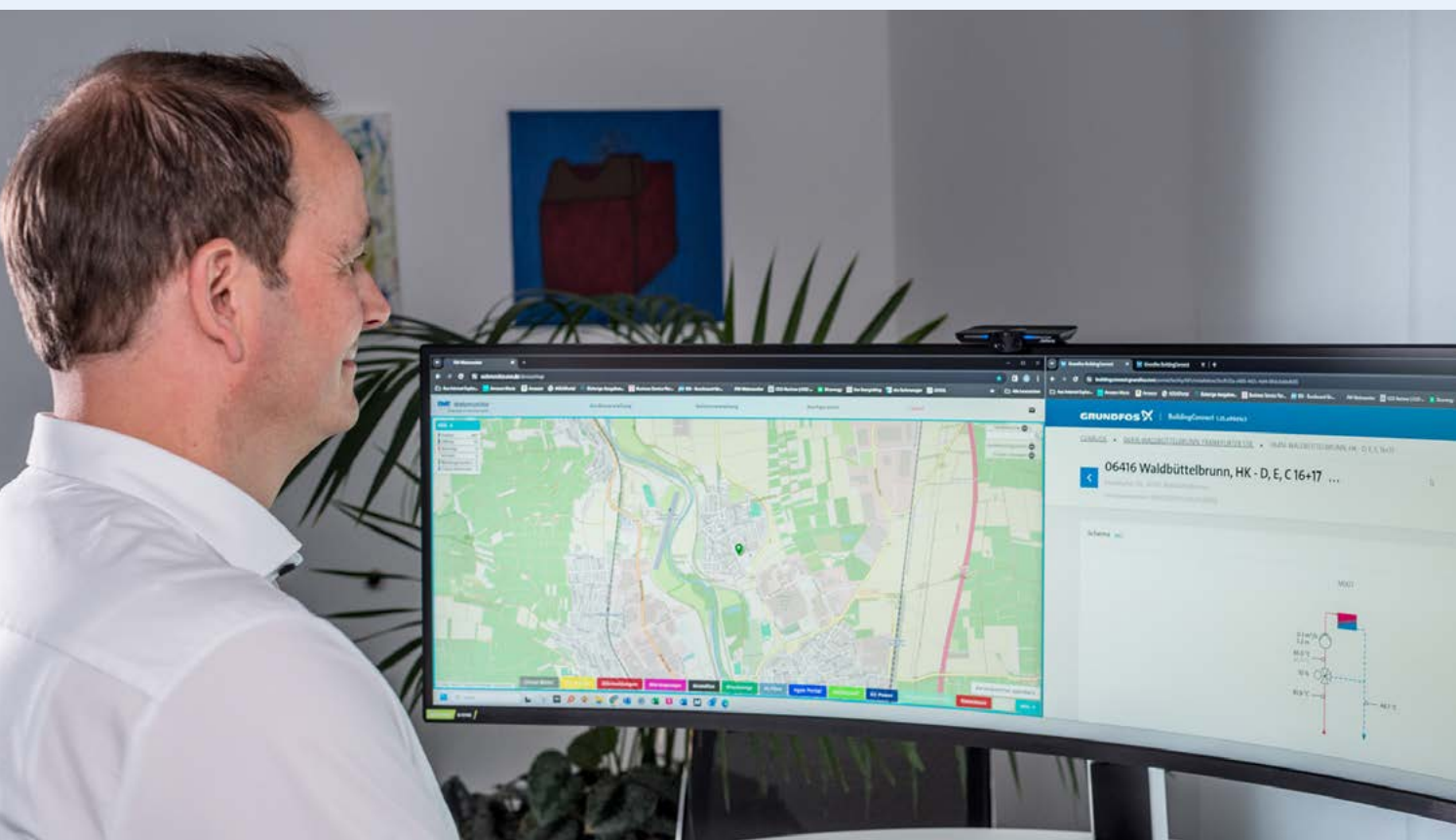
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With Grundfos BuildingConnect, the energy service provider monitors and controls all MIXIT systems from the control room at the company headquarters. "With the cloud solution, we only need an active internet connection and have visualized access to all data points of the mixing loop via the dashboard," says Alexander Grafe. "This is comparable to other platforms that we use to control our CHP units or heat pumps, for example. For a mixing loop control system, however, such a solution is exceptionally advanced and is definitely a very useful tool for us."

MIXIT a new standard

OVE currently has around 80 MIXIT systems in use across Germany. The contracting specialist has also retrofitted existing heat supplies with conventional mixing loops in order to reduce losses in the distribution networks with the help of MIXIT and BuildingConnect, thereby saving primary energy and CO2 emissions. Older MIXIT systems have now also been upgraded to the



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latest generation and are controlled online via BuildingConnect. "The MIXIT solution is our standard for all new projects with mixing loops," explains Alexander Grafe. "We expect to have over 100 devices in use by the end of the year."

Most OVE projects are district supply systems in which several dozen terraced houses, semi-detached houses and apartment buildings as well as facilities such as daycare centers or nursing homes are supplied via a local heating network. They are usually implemented with an air/water heat pump cascade and pellet boiler, either as a high-temperature network with central hot water supply or as a low-temperature network with hybrid home transfer stations with underfloor heating distributors and a combined electric flow heater to support peak loads for DHW heating. Most district concepts also include PV systems on suitable roof surfaces to supply heat pumps, e-mobility and user electricity (as tenant electricity).

Whether apartment building or district supply: The energy service provider is very satisfied with the mixing loop solution from Grundfos. "The complete solution has proven itself in



our numerous projects," says Alexander Grafe. "It reduces the planning and installation effort, is easy to use and gives us maximum control over the mixing loop operation. Of particular interest to us as a contractor is the ability to monitor the operation of dozens of systems throughout Germany centrally from our company headquarters and to consistently optimize them with the help of the numerous data provided."