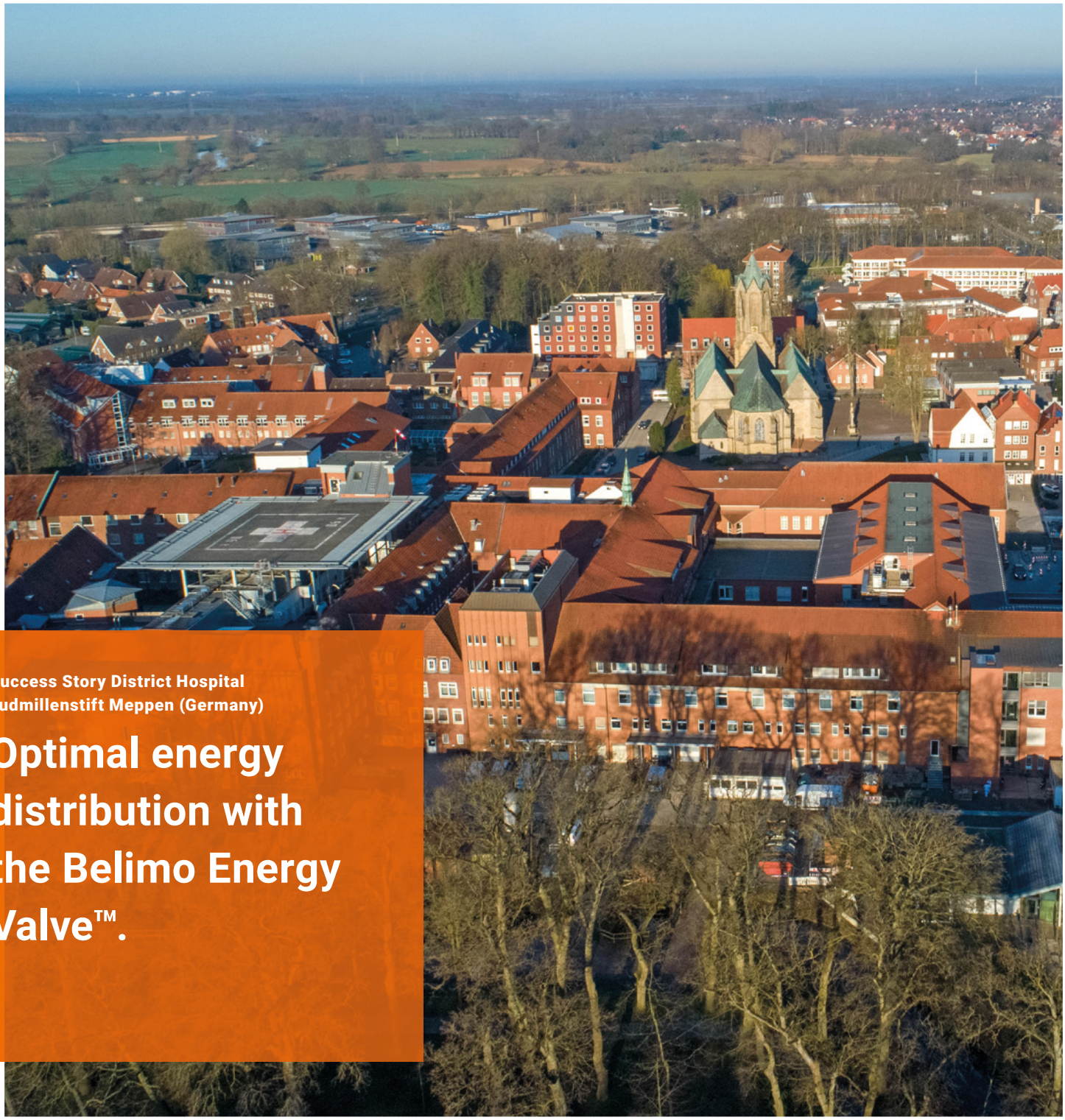

Success Story District Hospital Ludmillenstift Meppen (Germany)

Optimal energy distribution with the Belimo Energy Valve™.

Innovation makes it possible.

The Ludmillenstift Hospital is located in the town of Meppen in Lower Saxony (Germany) and has a history of over 160 years as a healthcare provider. The large interdisciplinary hospital offers high-quality patient care, state-of-the-art infrastructure and medical technology, advanced diagnostic and therapeutic expertise, and specialised medical services.

After years of growth, the HVAC system at Ludmillenstift Hospital had finally reached its limits. However, with the help of Belimo Energy Valves, the energy required by the heating network was able to be significantly reduced, thereby enabling intelligent, transparent, energy-efficient and load-dependent heating and cooling systems to be used while at the same increasing comfort and lowering energy consumption.

TYPE OF BUILDING
Hospital

PROJECT
Renovation/conversion/expansion

TRADES
Heating and cooling system

PRODUCTS
Belimo Energy Valve™

BELIMO

Intelligent solutions for more energy efficiency and comfort.

Technology also plays a crucial role in ensuring the functionality, comfort, safety and efficiency of the buildings that make up the hospital's infrastructure. However, the capacities of the special medical facilities could no longer cope with the increasing patient volume over the years, and repeated expansion and renovation measures led to serious difficulties in regulating and maintaining the heating systems and the hydronic distribution system.

The engineers at August Brötje KG looked at the existing plans of the heating system and came to the conclusion that the hydronic problems could be solved only by a central balancing of the sub-manifolds. They then carried out an extensive survey of the building's HVAC system, which disclosed various weaknesses and bottlenecks. As a result, the measured supply and return temperatures were 90/86°C, and the heat supply of the individual stations fluctuated so much that heat was supplied at random. The lack of hot water reaching the heating coils also repeatedly triggered the frost protection system to shut down the ventilation system in winter, which was especially problematic in the operating theatres. Overall, the heating supply simply had not been modernised at the same rate as the rest of the hospital.

To address the enormously high boiler flow and the high return temperatures of the system throughout the year, Peter Meier, the controls expert at August Brötje KG, had to define an extensive improvement project. This included, among others, the following specifications:

- Set all heating manifolds to their nominal flow to ensure that only the exact amount of water is supplied that is necessary for hydronic balancing.
- Record and quantify the thermal energy currently required at the respective distribution feeds.
- Reduce the return temperature of the system to achieve better efficiency in heat recovery towards the boiler for energy conversion (and prepare for the later planned use of a combined heat and power unit).
- Make the flow rate through the entire facility load-dependent so that the system can be operated efficiently and the maximum amount of water is not continuously pumped through the buildings.

"It was astonishing to see how the true flow rates of the heating supply became visible in the BMS for the first time. Together with the facility management team at the Ludmillenstift, we were able to identify the weak points in the hydronics system and take appropriate countermeasures."

Peter Meier, controls expert at August Brötje KG

The solution: The Belimo Energy Valve™.

The Belimo Energy Valve™ was the ideal solution for Ludmillenstift Hospital. This electronic characterised control valve combines pressure-independent control, flow and energy measurement, automatic hydronic balancing and data monitoring in just one device. By continuously measuring water flow and temperature of the supply and return (delta T), the Belimo Energy Valve™ determines the thermal energy being consumed. Automatic flow control makes sure that only the required amount of energy is supplied, regardless of any differential pressure fluctuations.

The Belimo Energy Valves dynamically control and monitor all hydronic manifold circuits by continuously measuring flow rates and water temperatures.

Partnership for energy efficiency.

The Belimo Energy Valves were first put to the test and proved to be a complete success in outside temperatures as low as -12°C. They controlled and monitored all hydronic manifold circuits by continuously measuring the flow and water temperatures from the very moment they were commissioned. The problems with the heat supply were finally located and solved. From this point on, all rooms and zones connected to manifold circuit 1 were supplied with the exact amount of water required for heating purposes. This significantly reduced the hospital's heating and cooling water requirements. The data measured and recorded by the Belimo Energy Valves also provided an in-depth view into the actual processes in the system, leading to recommendations for further potential improvements for energy efficiency. As an additional benefit, the hospital now uses the data from the hot water treatment for regulatory reporting to the health authority.

Intelligent and efficient HVAC systems ensure that all rooms in the Ludmillenstift Hospital are heated, cooled and ventilated as required.

As a result, in 2020 the Ludmillenstift Hospital was able to maintain comfort and energy consumption at 2013/2014 levels, despite having expanded floor space by 40 percent in the meantime.

The successful implementation, informative results and transparency of the data obtained during the test phase showed that the Belimo Energy Valve™ is not only perfect for the hospital's entire HVAC system but also for other applications where thermal energy and volumetric flow need to be monitored and recorded.

All inclusive.

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air-conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

EN – 12.2021 – Subject to technical modifications

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