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SUCCESS STORY: OFFENES HAUS OBERWART (AT)

65% lower heating capacity thanks to hydronic optimisation and Belimo Energy Valves

A cultural centre takes a major step towards a fossil-free heating supply

The Offenes Haus Oberwart (Open House Oberwart [OHO]) in Austria has been a symbol of art, culture, and openness for over 37 years. With theatre performances, concerts, workshops, and exhibitions, the cultural centre is an important meeting place in the region. To improve the building's energy efficiency and advance the phase-out of fossil fuels, the existing heating system underwent extensive modernisation.

The project focused on optimising the heating and hydronic systems, as well as transitioning from gas-fired heat generation to heat pump technology. The project was supported by Belimo and Belimo RetroFIT+ partner Epicon Energy GmbH.

BUILDING TYPE
Arts and culture centre

PROJECT
RetroFIT+

TRADES
HVAC

PRODUCTS
Belimo Energy Valve™, Pt1000 sensor

BELIMO

The art of hydronic optimisation

The existing heating system was based on a 106.5 kW gas boiler and supplied seven heating circuits serving various consumers, including column radiators, underfloor heating, fan coils, and a ventilation unit. High-temperature systems accounted for the majority of the heat emitted. Annual energy consumption ranged from 60,000 to 78,000 kWh, depending on weather conditions.

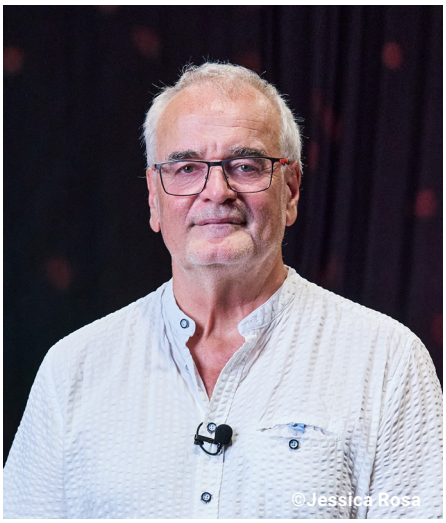
A detailed analysis of the existing system and associated costs revealed that the installed heat generation capacity was significantly oversized. Consequently, the plan was not merely to replace the heat generator but to analyse and optimise the entire heating system with regard to its hydronics, controls, and actual heating demand.

A multi-step approach to energy efficiency

As a first step, the hydronic circuit was completely redesigned. The existing manifolds were modernised and converted to an injection circuit using Belimo Energy Valves. A total of six Energy Valves and six Pt1000 sensors were installed. At the same time, the system was switched to dynamic hydronic balancing.

Belimo Energy Valves combine energy measurement, control, and optimisation in a single solution. As a result, they enable the system to operate in a transparent, energy-efficient, and low-maintenance manner. The measurement data obtained is transferred directly to the energy monitoring system and forms the basis for continuous optimisation of the system.

In addition, energy-efficient circulation pumps were installed, and the supply temperature was lowered to approximately 45°C. This approach allowed for a significantly smaller capacity for the new heat generation system: the previous 106.5 kW gas boiler was replaced by three cascaded air-to-water heat pumps with a combined output of just 36 kW. Furthermore, an 18.7 kWp photovoltaic system was installed on the roof of the building, with a portion of the solar power stored in a 13.7 kW salt-based storage unit.



"Despite the much lower energy costs, our rooms stayed warm even on the very cold days of last winter."

Thomas Monetti,
Chairman
Offenes Haus Oberwart

Real-time energy management

A key component of the project is the continuous monitoring of operating data. The Energy Valves enable the direct acquisition and transfer of relevant energy data. Building automation enables the analysis of operating states and the identification of optimisation potential at any time. In addition, remote assistance allows for the continuous adjustment of system parameters and supports energy-efficient operation in real time.

"Consume only as much energy as is needed."

Dominik Kainz,
Managing Director
Epicon Energy GmbH

Measure, control, and optimise in a single device: Belimo Energy Valve™

The foundation for sustainability has been laid

By combining hydronic optimisation, dynamic balancing, modern control technology, and the use of Belimo Energy Valves, the required heating capacity was reduced by approximately 65%. The hydronic modifications alone resulted in thermal savings of around 55%.

Operating costs have been reduced by around EUR 7,000 per year. The return on investment for the HVAC and measuring, control, and regulating technology measures is approximately 4.5 years. At the same time, the fossil-fuel-based heating supply has been completely replaced, creating a future-proof, efficiently controllable integrated system.

Keep an eye on all operating data at all times

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. Damper actuators, control valves, sensors and meters
represent our core business.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range of actuator and sensor solutions 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 worldwide
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive customer support

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