PHOTOGRAPHER: RALPH FEINER

SUCCESS STORY SCHARMOIN MOUNTAIN RESTAURANT, LENZERHEIDE (CH)

When you know where the energy flows, you know how to control it.

Energetically optimised operation and heat supply thanks to the Belimo Energy Valve™.

The altitude of Scharmoin Mountain Restaurant in the Arosa Lenzerheide snow sports region (Switzerland) is 1,900 metres. The time frame for completion of the construction project was only eight months. Independent of the climatic conditions, the opening was set for the start of the ski season 2013/14. The mountain restaurant building houses not only the entire heat energy supply for the restaurant, but also for the neighbouring cableway operations building. To ensure energy-optimised and thus sustainable operation, the operators at Lenzerheide Bergbahnen AG decided to integrate the building technology into their management system. With the Belimo Energy Valve™, this was possible without any problems.

TYPE OF BUILDING
Mountain restaurant

PROJECT
New building

TRADE
HVAC

PRODUCTS
2 Belimo Energy Valve™, 2 globe valves (3-way), 3 characterised control valves (three-way)

BELIMO

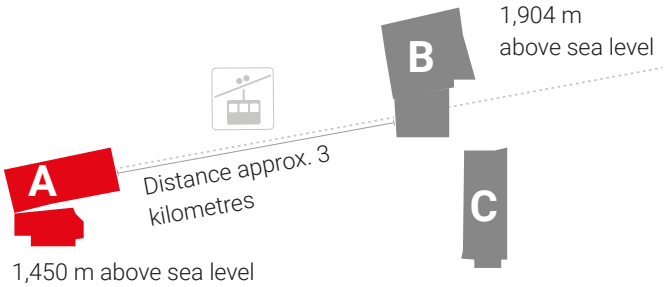
Scharmoin Mountain Restaurant – More than an energy-saving ski hut.

The realisation of the new Scharmoin Mountain Restaurant presented several challenges to the planning engineers, operators and construction companies. In addition to the narrow time frame of only eight months, the condition was to erect the new building on the foundation and building shell of the existing mountain restaurant.

One critical factor at a height 1,904 metres was the weather. Weather conditions were not allowed to influence the time frame, since the opening was set for 14. December 2013. To meet this ambitious time frame, meticulous planning was indispensable. Not only for the building but also for the building systems. This is why all disciplines were included in the planning.

One challenge for the heat supply was that the entire heat energy supply was to be housed in the Scharmoin Mountain Restaurant, but should also supply the adjacent cableway operations building (middle station). To ensure an optimum operation, the building technology was incorporated into the management system of the Lenzerheide Bergbahnen AG. The integration was implemented by the building automation experts AZ systems AG with open and closed loop control components from WAGO Kontakttechnik GmbH. In addition to the ventilation and heating regulation with a separately developed software to forecast the weather from AZ systems AG, the lighting, blind and shading regulation, which are controlled via the position of the sun, were also integrated into the management system. The entire system extensively runs automatically and is controlled from the control centre, which minimises the building services effort for the restaurant operators. A further advantage of the management system is that owners can track the function and energy requirements of the system in real time (see figure on page 3).

The function and control of the energy supply is provided by the central system in the valley station. While the pellet heating is housed in the mountain restaurant, the cableway operations building is also supplied from there.



A) Lenzerheide Bergbahnen AG, control centre, 1,450 above sea level
B) Middle station operations building, 1,904 above sea level
C) Scharmoin Mountain Restaurant, 1,904 above sea level

"The default works well; if you want to go a step further, however, tailored solutions are required. Thanks to the Belimo Energy Valve™, we can recognize the precise energy requirements of the heating system and produce exactly the amount of heat that is actually needed. Which also has a positive effect on the pellets in stock. The stock is thus adequate for 1.5 seasons."

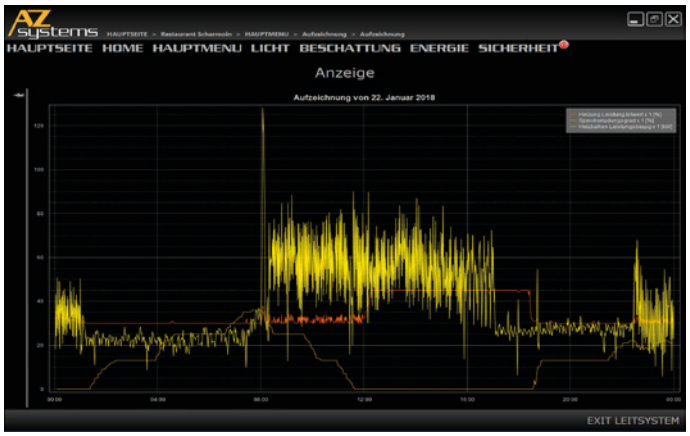
Samuel Lorez, Technical Manager
Lenzerheide Bergbahnen AG

No challenge is too big for Belimo to handle.

Various characterised control valves and globe valves from Belimo are installed in the heating distribution system and integrated into the management system via an MP bus. A Belimo Energy Valve™ is installed in the district heating pipeline to the cableway operations building (middle station). This allows the current energy data to be recorded and the output for the cableway operations building to be regulated and, if necessary, limited.

Belimo Energy Valve™ – to know where the energy is going.

Another Belimo Energy Valve™ is installed in the supply line from the boiler to the distribution bar (see figure) and measures the current heating output and energy consumption of the heating system. Due to this continuous power evaluation, the pellet boiler is controlled according to requirements. The boiler therefore only produces as much energy as is actually needed. The two reservoirs installed, each with a capacity of 3,000 m^3, are used a buffer. This controlled operation of the boiler according to power consumption and storage level also reduces switching cycles to a minimum, which further increases boiler efficiency. At the beginning of the heating season, there were concerns that the pellet stock, with a capacity of 150 tonnes would be too small. However, only 10 tonnes were consumed per month. In this way, an initial potential for savings through installation of the energy valve was recognized and the system thus optimised. The absolute data transparency of the Belimo Energy Valves™ also demonstrated that the energy-oriented engineering and energy-efficient operation resulted in very low volumetric flows. These can be recorded and visualized precisely by the Belimo Energy Valve™, which considerably simplifies control and operation of the system.



Extract from the management system: Evaluation of the energy consumption in kilowatts (yellow) and as a percentage (red), as well as the memory (orange) for one day.

ADVANTAGES OF THE BELIMO ENERGY VALVE™

The Belimo Energy Valve™ unifies the five Functions measuring, controlling, balancing, shutting and energy monitoring in one easy-to-assemble unit.

- Transparency: Recording of all system data indicates optimisation potential
- Innovative: possibility of power control option, independent of differential pressure and watertemperature
- Versatile: Conventional control or communication via the Belimo MP bus, BACnet IP, BACnet MS/TP and Modbus
- Time-saving: Strikingly reduced effort thanks to dynamic balancing
- Flexible: Adjustable max. flow rate and adjustable max. output
- Efficient: No leakages thanks to seal-tight characterised control valve; the Delta-T manager prevents the Low Delta-T Syndrome

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

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