SUCCESS STORY LEICHTBAUCAMPUS OPEN HYBRID LABFACTORY, WOLFSBURG (D)

Record energy consumption according to the source and bill it accurately.

New materials and production technologies for sustainable mobility.

The LeichtbauCampus Open Hybrid LabFactory (OHLF) in Wolfsburg, Germany enables the research and development of new and innovative lightweight construction concepts for the coming vehicle generations in a novel cooperation model. The technological activities of the research campus focus on the simultaneous development of materials and production technology in multi-material systems for hybrid lightweight construction. The OHLF is a project funded by the German Federal Ministry of Education and Research as part of the "Research Campus – Public-Private Partnership for Innovation" funding initiative. The 10'000 m^2 large floor area is divided into office, laboratory and technical centre areas as well as the complex technical building equipment. In the middle of the building is the 2'100 m^2 technical centre, the heart of OHLF. The hall, which is more than three storeys high, houses production facilities and facilities for design and simulation.

TYPE OF BUILDING
Research factory

PROJECT
Data logging and individual billing

TRADE
HVAC

PRODUCTS
Pressure-independent control valve EPIV
Belimo Energy Valve™
Belimo ZoneTight™ valve
Belimo MP-Bus®

BELIMO®

The technical centre – the heart of OHLF is constantly changing.

The laboratories for testing technology and analytics as well as air-conditioned meeting and computer rooms are located around the technical centre. In the basement, the supply units, a heating system (district heating), a compressed air centre and the water supply are installed. On the roof of the building, there is a chiller for the ventilation and air conditioning systems and a cooling tower for the chilled water of the machines in the technical centre.

Precise dimensioning and presetting of the valves becomes easy

The biggest challenge in air, heat and especially cold distribution is that the production facilities in the technical centre are only set up successively after the completion of the building and the installation of the building services, and are subject to constant change depending on the status of the project. When the building was commissioned, no performance data was available for many devices and systems. The entire network serves different consumers and is very powerful. Under these conditions, normal differential pressure regulators could not be used here, and hydronic balancing by the building services was not possible.

With the use of the pressure-independent Belimo control ball valves EPIV with electronic flow adjustment, the complex, precisely fitting dimensioning and presetting of valves has been considerably simplified. The EPIVs (electronic pressure-independent valves) can be programmed to the values of the consumers currently in use and easily adapted to the new conditions in the event of changes in the network. The network can be put into operation without all consumers already being connected. Thanks to Belimo's EPIVs, the time required for hydronic balancing is significantly reduced and can therefore be carried out quickly and easily whenever necessary.

Record consumption data individually and bill to the nearest cent

Belimo Energy Valves™ are also used at certain positions in the chilling circuits. In addition to volumetric flows, these Internet of Things (IoT) devices also record energy quantities (heating and / or cooling) and store them for 13 months. In this way, heaters or chillers can be optimally conditioned, district heating contracts can be optimised in terms of connected load and costs significantly reduced. Valves from the Belimo ZoneTight™ product family are also installed in the heating circuits, and the fire dampers are controlled by Belimo communication and power supply units.

Cooling for ventilation and air conditioning systems.

The heating station with three connected circuits for ventilation, offices and heat supply in the technical centre.

Volumetric flow controllers ensure constant conditions for air and room climate in the laboratories.

The offices, laboratories and machines in the OHLF technical centre are used by several institutes (TU Braunschweig, Fraunhofer, etc.) and companies. For this reason, a way had to be found to accurately account for cold and heat according to the costs-by-cause principle. By integrating an energy management software into the building management technology, it is possible to document the consumption data of all media. After installation of the Belimo valves, which collect all consumption data in the heating and cooling networks, these measured values are also available and enable cent accurate billing of cooling and heating for the various building users.

Four functions in a valve unit

The electronic pressure-independent characterised control valve EPIV combines the four functions of measurement, control, hydronic balancing and shut-off in one ready-to-assemble unit. The time-saving and reliable valve design is based on the maximum volumetric flow. The valve also ensures automatic, permanent hydronic balancing. The correct amount of water is also provided in the event of differential pressure changes and in the partial load range. The integrated ultrasonic measurement and electronic flow control thus ensure the exact volumetric flow required. All corresponding measuring values can be called up as real-time information.

The valves can be connected conventionally to the higher-level control system using four-wire analogue technology or bus technology (Belimo MP-Bus® or Modbus). In the OHLF, all valves are connected to the higher-level control system via the Belimo MP-Bus®. This reduces the cabling effort and simultaneously transmits more information.

In the middle of the OHLF building, with an area of 2'100 m², is the technical centre.

CONVINCING ADVANTAGES OF THE EPIV

- No energy loss due to unintended activation.
- Replaces control, shut-off and balancing valves.
- Excellent control stability and quality.
- Reduced energy consumption and saves costs.
- High operating safety.
- Simple hydronic balancing.
- Flexibility in planning and later reutilisation.
- Fast and easy commissioning.
- Data transparency.
- Nominal diameter DN 15 to DN 150.

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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