People who stay in hotels know how important a comfortable room climate is. At the newly built 4-Star-Superior Hotel Melchior Park in Würzburg, Germany, the builders therefore opted for electronic pressure-independent 6-way zone valves of the Belimo ZoneTight™ product family. These “All-in-one” control units measure the flow electronically and automatically ensure the correct amount of water when differential pressure changes occur. The integrated pressure release function guarantees maximum plant safety. This means that an optimum distribution of heating and cooling is ensured at all times.

Electronic pressure-independent 6-way zone valves from Belimo.

Optimum cooling and heating, always exactly where they are needed

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4 stars, 118 rooms and more
Hotel Melchior Park has a gross floor area of 12,240 m² in 118 rooms, a wellness area with a swimming pool, a restaurant, conference rooms and an underground car park. The surface heating equipment, static heating surfaces, ventilation and air conditioning systems, hot-water generation and swimming-pool technology are supplied via district heating transfer station. A central cold-water generation system with buffer tank feeds the ventilation and the recirculating air units for cooling.

The hotel rooms are heated primarily with underfloor heating with a maximum surface temperature of 26°C. Fan coil units are located in the ceiling for reaction load and cooling load coverage. The electronic pressure-independent 6-way zone valves from Belimo installed there control the flow of hot and cold water and thus contribute to an optimal room climate.

Intelligent valves for safe operation
Original planning called for the use of simple 6-way zone valves on the fan coil units which need to be equipped on each side with balancing valves so that hydronic balancing can take place. The quantity of water that flows into each area is determined at the time of hydronic balancing by the degree of opening of individual valves. If hydronic balancing is absent, then radiators which are installed very close to the source of the heat are better-supplied, while radiators farther away do not heat up.

In order to minimise the outlays required for hydronic balancing while at the same time enabling optimum distribution of hot and cold water, the heating manufacturer recommended the installation of intelligent, electronic pressure-independent 6-way zone valves from Belimo. As these are equipped with a sensor for permanent volumetric flow measurement, the balancing valves can be dispensed with and the electronic hydronic balancing proceeds automatically. Thanks also to its simple installation and commissioning, this new solution is less expensive than the one originally planned with 6-way zone valves without sensor.

6-way zone valve with integrated flow sensor
The electronic pressure-independent 6-way zone valve from the Belimo ZoneTight™ product family combines the benefits of two tried and tested Belimo valves in a single unit. It brings together the good planning reliability and efficiency of the electronic pressure-independent EPIV valve and the ease of installation of the compact 6-way zone valve. The electronic pressure independence allows the consulting engineer to configure the valve in accordance with the volumetric flow required – quickly, rapidly and safely, and without time-consuming calculation of the kvs value.

During operation, the electronic pressure-independent 6-way zone valve assumes the function of up to four two-way valves. No additional throttling valves need to be fitted. The integrated flow measurement and the electronic flow control allow the desired amount of water to be ensured for both sequences (cooling and heating) during both full-load and partial-load operation (e.g. when only a few hotel rooms are occupied). The automatic flow control of the 6-way zone valve always supplies the required flow, independent of differential pressure fluctuations. The operating result can be significantly optimized via the measured values available for call-up in real time. The zero-leaking characterised control valve (Leakage rate A according to EN12266-1) prevents energy losses, and the medium is sealed in the element in closed configuration when heating/cooling elements are combined.

The pressure in the sealed medium may rise or fall as the result of changes in the medium temperature caused by changes in the ambient temperature. The 6-way characterised control valves have a patented, integrated pressure release function for the purpose of compensating for such pressure changes and thus ensure a high degree of plant safety.

Versatile communication possibilities
The pressure-independent 6-way zone valve can be controlled by conventional control signals or per Belimo MP-Bus®, or also per BACnet MS/TP or Modbus. Furthermore, it can easily be put into operation and monitored, on-site and wirelessly, using a smartphone with an integrated NFC (Near Field Communication) interface or per Bluetooth in conjunction with a ZIP BT NFC adapter. Analysis and evaluation, in addition to the adaptations of the valve settings, are possible with these applications.

Safe and efficient
The utilisation of intelligent 6-way zone valves makes the control of fan coil units more efficient, more convenient and economical. The flow is measured electronically by the valve system, which automatically ensures hydronic balancing as well as the correct amount of water when there are changes in differential pressure, and the integrated pressure relief function guarantees maximum plant safety. Consulting engineers, plant engineers, system integrators and operators can thus be sure that maximum comfort, energy efficiency and sustainable economic efficiency are guaranteed in the building.