



ASIA PACIFIC SUCCESS STORY
HONGQIAO SUNNYWORLD CENTRE

Health, a sense of well-being, and productivity are dependent upon room climate

Pressure-independent zone control in the Hongqiao SunnyWorld Centre, Shanghai

At first glance, the impressive architecture of the globally illustrious office of Sir Norman Foster + Partners is a striking feature of the state-of-the-art multi-functional Hongqiao SunnyWorld Centre in the heart of the Shanghai Hongqiao CBD district. The building complex is located near the fourth largest Chinese airport and not far from the National Exhibition Center. Over 70 000 square meters of commercial floor space surrounded by international hotels, a highly efficient, flexible office and a residential building has been constructed. The ground floor of which is characterized by vibrant stores, restaurants and plenty of space for public use. A generously appointed, park-like green space in the center of the complex is an attractive spot for residents and passersby to while away their time.

ARCHITECTS

Foster + Partners

LOCATION

Shanghai Hongqiao CBD, China

PROJECT TYPE MIXED-USE

Offices, hotels, exhibitions, commercial use

SECTOR

HVAC

PRODUCT

2300 Belimo pressure-independent zone valves



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HVAC installation – room comfort and energy efficiency

A displacement ventilation technology is deployed in the heating, ventilation and air conditioning concept of the building complex. In this process, supply air (outside air) is introduced slowly into the ventilated room through displacement air outlets positioned near the floor. This causes a “fresh air lake” to form near the floor, the air of which flows upwards on warm surfaces – such as those of people. So fresh air is available when it is required without the air volume of the whole room having to be circulated. Displacement ventilation is suited for comfort areas as well as for the ventilation of areas with thermal loads (such as in industry).

Displacement ventilation is very economical due to the lower required air volume and the lower system pressure for building operation and usually also associated with a lower acoustic load (office, lobby). The control of the air supply takes place via VAV actuators, that are preceded by air coolers. These heat exchangers are equipped with zone valves from Belimo. Such pressure-independent valves on the cooling and heating coils were already defined as a prerequisite when planning the SunnyWorld Centre, as this concept ensures a comfortable room climate and a significantly reduced energy consumption at all times.

In public access areas with less strict acoustic requirements (such as entryways, waiting rooms and entrances of elevators), fan coil units (FCUs) are also used for the supply of conditioned fresh air. They are provided with the accurate quantity of water required via pressure-independent zone valves.

“Dynamic balancing using pressure-independent control valves is certainly a sensible approach. Savings in energy costs are achieved, while room comfort increases. Besides uniform load distribution, this principle of operation actually prevents annoying flow noises.”

Thomas Leser, Manager New Markets Belimo Automation AG



“A sustainable design, best possible room comfort, and a reduction of energy costs and CO₂ emissions were the focuses from the very start of the planning stage. The high-tech products from Belimo are global market leaders in the industry and perfectly suited to these strict HVAC requirements. Belimo does not only offer excellent solutions – it also provides professional support in consultation and product selection.”

Maggie Zheng, Vice General Manager of Royal Service Air-Conditioning Corporation. Royal Service Air-Conditioning Corporation is a high-profile manufacturer of heating, ventilation and air conditioning systems, and is a customer of Belimo.

Pressure-independent zone valve from the Belimo ZoneTight™ product family

A total of 2 300 pressure-independent zone valves are deployed across the entire building complex. These control valves assume a central role in the HVAC system because they automatically perform dynamic balancing and continually control the flow rate as required. This guarantees that the exact amount of water required is supplied to each terminal unit water coil found in VAV boxes and FCUs. Additional aspects in the planning and realization of the HVAC installation in this challenging building complex were flexible design capabilities, reliable valve design and products requiring little or no maintenance – all of which were factors convincing the building owner to opt for the Belimo solution.

Construction industry in China

Given the demographic situation, the geographic size and the rapid rate of urbanization, the construction industry in China is seeing very high growth rates and it is currently the biggest construction industry market in the world. The standard of living and quality expectations of people are increasing with this rapid growth. For example, building and infrastructure standards in cities and towns have been improved markedly to meet these new expectations of the quickly growing middle class. Quality in the construction trade and for buildings has progressed massively and is improving further still. For example, HVAC systems with central water and air conditioning are being deployed more in place of the previously dominant, window mounted air conditioning units or “mini-split” systems that serve multiple rooms. Central HVAC systems not only increase levels of room comfort, but also draw much less energy. This enables the expectation of higher levels of room comfort to be met in addition to the goal of increased sustainability and conservation of resources.



Pressure-independent zone valve from the Belimo ZoneTight™ product family

The pressure-independent zone valve supplies a specific flow for each degree of ball opening regardless of system pressure fluctuations. The valve performs the function of a balancing valve and control valve in one unit:

- Optimal system performance ensuring room comfort and reliability
- Stable control of variable flow hydronic systems for a lifetime of efficiency
- Tool-less assembly and flow adjustment because actuator and valve snap together quickly and easily
- Time saving automatic and dynamic hydronic balancing

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