



### **Dear Shareholders**

Belimo can look back on a good financial year. Sales in Swiss francs increased by 8.7 percent to CHF 579.9 million. In currency-adjusted terms, this equals a growth of 8.2 percent. Belimo increased its expenses on research and development by CHF 6.7 million in order to improve innovative capacity while nevertheless achieving a solid operating income (EBIT) of CHF 92.6 million, corresponding to an EBIT margin of 16.0 percent. Net income rose by 11.1 percent year-on-year to CHF 77.5 million.

Our worldwide employee survey confirmed the pleasing results from 2014, showing that Belimo employees are highly motivated and made the good results of this financial year possible through their great commitment.

Belimo launched a new product range in 2017 with autonomous sensors that guarantee reliable information recording and high data quality. We also introduced the first cloud-enabled application solutions onto the market: the third generation of Belimo Energy Valve™ can now be connected over the Internet to the Belimo Cloud. Thus the operation of the valve is continuously monitored and customers receive regular information about energy and performance data, as well as trend developments. The introduction of the VAV ZoneEase™ actuator, specifically tailored to the needs of the Asian market, was also a milestone for Belimo. The new solution for variable air volume (VAV) applications reduces the overall system costs and simplifies installation and maintenance thanks to the smartphone app and cloud functionality. These products show that the Internet of Things will also open up a new range of opportunities for Belimo.

The global sales and distribution organization was further extended: Belimo acquired the previously independent distribution company in Sweden and integrated it successfully into the Group. The company's market presence in China was also increased significantly towards the end of the year, with additional sales points in major metropolitan areas. Prominent projects such as the Hongqiao SunnyWorld Centre in Shanghai, presented on pages 12 to 17, confirm the success of Belimo's sustainable growth strategy.

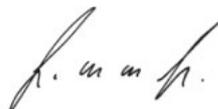
The Board of Directors proposes a dividend of CHF 85 per share at the 2018 annual general meeting. Based on the closing price of CHF 4 266 on December 31, 2017, this equates to a return of 2.0 percent per share.

On behalf of the Board of Directors and the Group Executive Committee of BELIMO Holding AG, we would like to thank our customers, suppliers and employees for their loyalty and successful cooperation.

We would also like to thank you, our esteemed shareholders, for the great trust you place in us and your loyalty to BELIMO Holding AG.



Hans Peter Wehrli  
Chairman of the Board of Directors



Lars van der Haegen  
CEO

The good financial year was shaped by the improvement of innovative capacity and broad growth.

## Europe

Sales in the Europe market region grew by 8.4 percent and in currency-adjusted terms by 8.1 percent. Belimo surpassed general market trends and gained market shares in almost every business area in the reporting year.

### Economic Environment and Markets

The large European economies continued to do well and the HVAC market experienced constant demand.

Belimo recorded excellent sales in Germany, Poland, Italy and the Netherlands in 2017. Despite uncertainties, the positive trend in Germany continued. Demand rose in particular for fire damper actuators. Growth rates increased significantly in Spain, the Czech Republic and Slovakia. Market recovery continued in Russia. Demand in the Middle East remained stable overall, with encouraging development in Saudi Arabia. The Turkey subsidiary, established in 2015, has been successfully established on the market and was developed further. Stabilization is imminent in Switzerland.

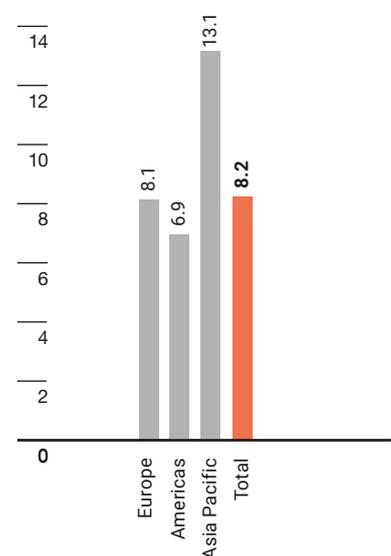
### Customers and Products

Water and fire protection applications experienced the strongest growth in the Europe market region. There was above-average growth in sales of innovative valve solutions. The successful introduction of new sensors complemented the Belimo product range and brought initial success.

Belimo presented its newest innovations at ISH (International Sanitary Systems and Heating Trade Fair) in Frankfurt in March 2017. ISH Frankfurt is the leading international trade fair for building, energy and air conditioning technology.

**SALES GROWTH 2017  
IN LOCAL CURRENCIES**

in percent



## Americas

Sales in the Americas market region grew by 7.9 percent and in currency-adjusted terms by 6.9 percent. With the exception of Brazil, all the major markets contributed to this positive result.

### Economic Environment and Markets

The US economy developed positively, leading to increased investments in non-residential buildings. The Canadian economy also recorded great results for the year, particularly in the western provinces. Growth in Latin American was moderate.

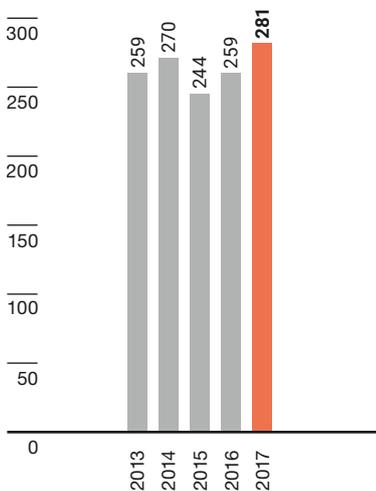
Belimo USA experienced above-average growth compared to the general economy. The Canada subsidiary made a particularly strong contribution to the positive sales developments, with double-digit growth. Market shares were gained in both markets, particularly for damper actuators in the OEM sector. Alongside normal building activities for new buildings, there were also increased investments in upgrading HVAC systems in existing buildings. Building users are increasingly focusing on energy-efficient and improved room climate.

### Customers and Products

The product range was further enhanced with the market introduction of innovative products in the first half of the year. The new butterfly valves generation, the Belimo Energy Valve™ and the new product range of sensors were well received by customers, reflected above all in the incoming orders in the second half of the year.

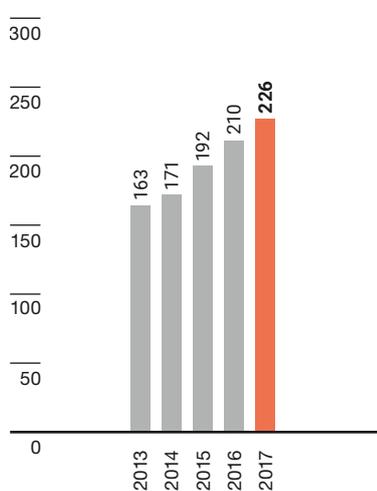
#### NET SALES EUROPE

in CHF million



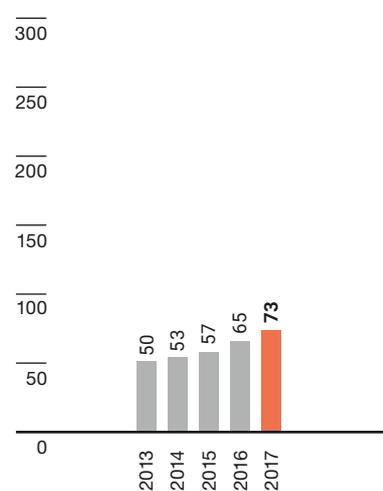
#### NET SALES AMERICAS

in CHF million



#### NET SALES ASIA PACIFIC

in CHF million



Sales of products for air and water applications developed well. In terms of air applications, there was very strong growth for fail-safe actuators. Thanks to the continued expansion of our range with innovative products, the company has also continued to increase market leadership for water applications.

Participation at the most important North American trade show platform, AHR Expo (International Air-Conditioning, Heating, Refrigerating Exposition) in Las Vegas, was a success for Belimo. The company's main innovations were presented to a wide specialist audience.

## Asia Pacific

Sales in the Asia Pacific market region grew by 12.5 percent and in currency-adjusted terms by 13.1 percent.

### Economic Environment and Markets

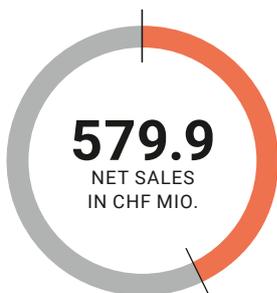
The Asia Pacific region continued to record strong economic growth. This was above expectations in most countries in the region and was also driven by strong domestic demand. Development on the HVAC market was varied.

Belimo China and Australia performed particularly strongly, with high growth contributions. The growth in China is primarily attributable to the company's increased market presence. The markets in South Korea, India and Hong Kong also made major contributions to the strong growth in the region. However, growth slowed in India and remained below expectations in Japan and Malaysia.

Further market shares were gained in the Asia Pacific region, particularly with water applications in the contracting business in China. Expectations were exceeded in Hong Kong, Thailand and South Korea.

### NET SALES BY APPLICATION

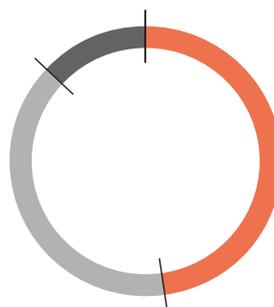
in %



■ 43 WATER  
■ 57 AIR

### NET SALES BY REGION

in %



■ 48 EUROPE  
■ 39 AMERICAS  
■ 13 ASIA PACIFIC

### Customers and Products

The market introduction of innovative products such as VAV ZoneEase™, the new butterfly valves and the new product range of sensors increased the awareness of Belimo in the region, further developing and reinforcing its position in the industry.

Water applications developed very positively. The main products driving growth in this area were characterized control valves, pressure-independent valves and butterfly valves. Growth in air applications was primarily driven by positive demand for non fail-safe actuators and VAV actuators.

Belimo increased its targeted marketing activities in the region in 2017. For example, it expanded its trade show presence at China Refrigeration in Shanghai and increased awareness of Belimo as a brand and Belimo solutions in the region at sector events, symposia and training sessions.

### Innovation

Research and development capacities were increased during 2017, to ensure sufficient resources are available for existing business and new growth initiatives of Belimo.

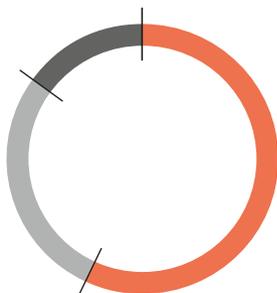
### Damper Actuators and Control Valves

Multiple projects have been running over the past year for new damper actuators for air applications and control valves for water applications. These projects are at different stages of development and will be launched on the market in 2019 and 2020. There has also been major progress in the development of application-specific integrated circuits (ASIC) and motors. This core competency is used as platform technology for most Belimo field devices. The laboratory for water applications in Danbury, CT (USA), was also expanded to allow for the testing of large valve dimensions.

#### EMPLOYEES BY REGION

(FTEs, YEARLY AVERAGE)

in %



- 57 EUROPE
- 28 AMERICAS
- 15 ASIA PACIFIC

#### EMPLOYEES BY FUNCTION

(FTEs, YEARLY AVERAGE)

in %



- 43 ASSEMBLY, LOGISTICS
- 33 SALES, MARKETING AND DISTRIBUTION
- 12 RESEARCH, DEVELOPMENT
- 12 ADMINISTRATION, MANAGEMENT

### **Sensors**

Sensor experts have been brought on board to expand our expertise in product management, research and development. A complete product range of air duct and pipe sensors was launched successfully on the market in 2017. Larger flow sensors for water applications with Belimo ultrasonic measurement technology will be added to the product range available on the market in 2018. Further sensor projects have been started and represent an innovative pipeline for future market launches.

### **Performance Devices**

Performance devices are modular products that utilize the synergies between sensors, actuators or valve technologies to create added value for customers. Examples include the Belimo Energy Valve™ control valves and VAV ZoneEase™ damper actuators mentioned in the preface. The platform technology used here, consisting of intelligent edge devices, has also been developed further with various industrial bus interfaces or Internet connection to the Belimo Cloud. The Belimo Cloud allows an open communication via application programming interfaces (API) and therefore data exchange with the application clouds of a wide variety of providers.

### **Asia Pacific**

Products specifically developed for the Asia Pacific market region were introduced onto the market for the first time in 2017. A zone solution based on the new damper actuator VAV ZoneEase™ has already been installed in the new Belimo Shanghai premises as part of a pilot project. This test facility uses Power over Ethernet (PoE) for communication and power supply, which further increases the simplicity of commissioning and maintenance. A further innovation, the Pressure-Independent Flow Limiter Valve (PIFLV), has been added to the product range of pressure-independent control valves. The new valve was specifically developed for use with fan coil units (FCUs), e.g. in hotels, and meets a major need in terms of water applications.

### **Residential**

The development of a system for controlling air and water flows in multi-family houses was driven forward in the reporting year. The solution will be available on the test market in Switzerland in 2018. Multiple test systems have been implemented in Germany and Switzerland in recent years as part of this project. The advantages of the Belimo multi-family house solution comprise increased quality assurance for installation and operation, guaranteeing comfort and energy efficiency.

## 2018 Outlook

The growth in the building technology sector, based on the long-term trends of urbanization, energy efficiency, safety and digitization, is likely to continue worldwide on the basis of positive economic forecasts. Indoor comfort, air quality, the conservation of resources and the protection of lives and assets remain the primary areas of interest.

We expect satisfactory development of private and public building activities in the Europe market region. The strongest growth is expected for the recently acquired subsidiary in Sweden and the newly established subsidiary in Turkey.

Various key indicators for the Americas market region indicate a continued upward trajectory in the US economy despite the eight-year expansion phase. Latin America should also benefit from the positive environment in the global economy, with the exception of a few countries such as Brazil with its challenging market environment.

In the Asia Pacific market region, the trend towards energy- and cost-effectiveness in buildings, and therefore an increased demand for innovative and quality components promise a positive outlook. The implementation of our strategy for a stronger presence in China and the foundation of a subsidiary in Malaysia should also support the constant expansion of our market leadership.

Given the additions to the sensor product range and the market potential generated by the new digital and communicating systems in the Belimo product range, expenses on research and development will remain on a high level in relation to sales in order to improve innovative capacity.

We aim to achieve sustainable and profitable growth as we continue to focus steadily on the robust Belimo values of customer value, operational excellence, solution leadership and a credibility culture.

This report contains comments relating to future developments which are based on assumptions and estimates of BELIMO Holding AG. Although the company assumes the expectations of these prospective comments to be realistic, they contain risks. These can lead to the actual results being significantly different from the prospective comments. Among the factors which can cause such differences are changes in the economic and business environment, exchange rate and interest rate changes, the introduction of competing products, inadequate acceptance of new products or services and changes in the business strategy.

BELIMO Holding AG neither plans nor commits itself to keep these prospective comments up to date.

## Sensors, damper actuators and control valves for a sense of well-being in rooms: intelligent HVAC components deliver excellent air quality for the highest level of room comfort.

State-of-the-art building automation is indispensable in generating good air quality and pleasant temperatures for best possible room climates. But ideal air quality is not the only prerequisite for room comfort – the pressure ratios between supply- and return air must be maintained in rooms and air ducts. Reliable HVAC components from Belimo perfectly harmonize these influencing factors so that ensured room comfort and productivity prevail at all times in different rooms.

Good, comfortable room climates are essential wherever people are; it impacts their productivity and the way they feel. The major factors affecting room climate are indoor air quality, temperature, humidity, and air flow.

### Air quality

When one enters a room, the air freshness is key to one's first impression. The CO<sub>2</sub> concentration, depending on the room occupation, can exceed a value of 1000 ppm (parts per million), and cause tiredness and loss of concentration. Therefore, it is important for rooms having varying occupants to measure and control the CO<sub>2</sub> concentration and increase fresh outdoor air provided to a room whenever needed.

Volatile Organic Compounds (VOCs) are introduced into the air by people and materials in the room, and the odor can be detected by one's sense of smell. The level of VOCs in the room is

### **OPTIMAL ENERGY DISTRIBUTION**

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Pressure-independent valves control the water flow supplied to the heating and cooling coil and are not affected by pressure fluctuations in the hydronic piping system. The valve size is selected based on the maximum required water flow of each circuit; no other selection calculations are necessary. By precisely controlling coil water flow from minimum to maximum, the pressure-independent valve eliminates the need for balancing valves, thus reducing installation and balancing cost. By far, the most significant benefit for the building owner comes in the form of energy savings by eliminating overflow thru the coil. Overflow wastes pumping energy and is the leading cause of the low Delta T syndrome found in hydronic systems. The pressure-independent zone valve from the Belimo ZoneTight™ product family ensures permanent hydronic balancing and constantly delivers the exact amount of water necessary.

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controlled by introducing fresh air and adjusting the air exchange rate of the room.

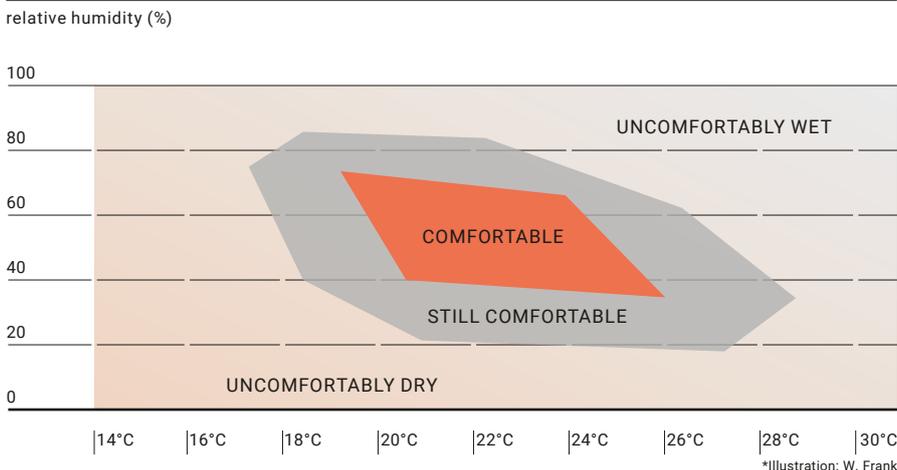
The temperature of the room becomes more noticeably the longer one is in it. During the heating period, temperatures that range from 20 to 22° C (compared to 25 to 26° C in summer) are recommended at floor level. Excessively high or low humidity also has a bearing on well-being, productivity and even health. The relative humidity in a room should thus be between 30 percent and 65 percent as minimum and maximum values, depending on the season.

Another factor in occupant comfort is the velocity of air movement. When drafts are present (often in rooms where ventilation and air conditioning systems are faulty), evaporative cooling increases on human skin and this can be unpleasant for many people. Air velocity is also important for room acoustics. Excessively high air speeds at variable air volume (VAV) boxes and air outlets can cause distracting noise and whistling.

### Room climate and the building automation system

While there are guidelines for indoor air quality (illustration “Room climate and thermal comfort” by W. Frank), the situation variables such as room function, clothing, activity level of those in the room and simply the very personal needs of room occupants vary greatly. The ability to control individual room climates is all the more important. This is where HVAC building automation comes in. Heating and cooling components in the central plant, air handling units, and terminal units for the room are fitted with sensors, damper actuators, and control valves and are networked with the building automation system (BAS). That system controls the air quality (CO<sub>2</sub> concentration and VOCs), temperature, relative humidity, and pressure in rooms, ducts, or pipes accurately and above all with longterm stability. Sensors send the variable reading to the BAS and controllers command actuators and valves to an open, closed, or intermediate position.

#### ROOM CLIMATE AND THERMAL COMFORT



\*Prof. Dr.-Ing. Wolfram Frank  
Professor emeritus at  
Siegen University, Germany,  
Faculty of Technical  
Natural Science, Chair  
in Fluids Engineering

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



**Architects** Foster + Partners | **Location** Shanghai Hongqiao CBD, China | **Project type mixed-use** Offices, hotels, exhibitions, commercial use  
**Site area** 28 000 m<sup>2</sup> | **Office buildings** 60 000 m<sup>2</sup> | **Exhibitions** 3 000 m<sup>2</sup> | **Commercial use** 70 000 m<sup>2</sup>



### 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.

#### About the building

The building complex was designed to make best use of daylight and natural ventilation. The office buildings are aligned to minimize sunlight and provide excellent views. The visual connections between the ground floor and the offices above are designed in the form of triangles. The circular characteristic of the building and the size illustrates the “end point” of the complex. It establishes a perfect ending point to the park with the adjacent canal and city district. A place at which the daily work routine takes place.

#### ROOM COMFORT

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.

## Green building with high-tech design



The building concept includes advanced, intelligent safety systems, smart building automation and leading edge office solutions. By virtue of its energy efficiency, the building complex has been awarded the Platinum LEED certification (Leadership in Energy and Environmental Design) and the comparable Chinese certificate (Three Star Green Building). The international building structures denoted “green buildings” as to the environmental performance of the building and the transformation towards sustainable design ensuring a comfortable living and working environment. LEED certification is based on a rating system to evaluate buildings with regard to their location, energy, water, material and resource demand but also with respect to room comfort and innovative design.



### 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

## 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.

### Pressure-independent zone valves 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.



“A sustainable design, best possible room comfort, and a reduction of energy costs and CO<sub>2</sub> 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.