



**Guidance  
document for  
indoor air quality.**

**Building solutions – indoor air quality**

# Improving IAQ for commercial and public buildings.



Correct operation of HVAC systems is a critical requirement for maintaining adequate and safe indoor environment quality (IEQ). The REHVA Task Force on COVID-19 developed guidance to help facility managers improve indoor air quality (IAQ) to slow down the transmission of viruses via the HVAC system. Adapted from the REHVA COVID-19 guidance document dated August 3, 2020, Belimo has developed a checklist to evaluate field devices' operation. Non-functioning devices can be retrofitted to meet indoor air quality requirements.



REHVA COVID-19  
guidance directory

# Safe and reliable HVAC systems.

Proper air system performance in buildings can be challenging. Damaged, faulty or inadequate devices have a big impact on occupant safety, comfort and productivity. HVAC systems can be transformed into safe and reliable systems with Belimo actuators, valves, and sensors. Our retrofit solutions offer quick and convenient replacements, compatible with all major control systems, maximising system performance.



## Custom solutions

Tailored solutions that operate according to your system design, ensuring optimal performance.



## Optimised functionality

Integrated energy-saving solutions ensure proper air distribution, meeting IAQ requirements with increased service life.

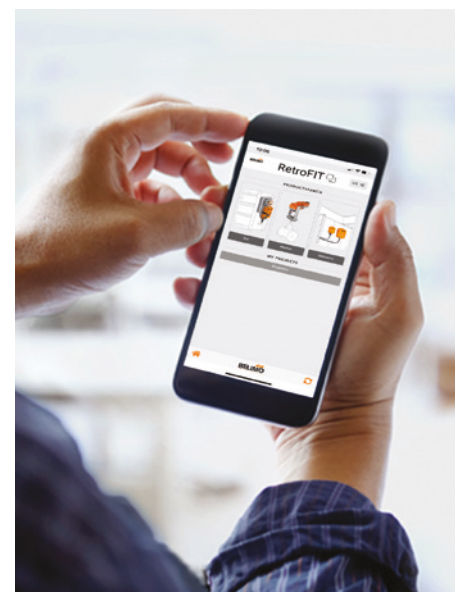


## Installation efficiency

Designed to quickly and conveniently upgrade to the highest quality products ensuring reliability and maintenance-free operation.

“The collaboration with Belimo is sensational. We receive competent advice and are given help if something doesn't work the way it should.”

**Samuel Lorez, Technical Manager**  
Lenzerheide Bergbahnen AG



# Verify indoor air quality.

Sensors that are faulty or out of calibration affect the ability to control temperature, humidity, air quality and building pressure. Sensors must be verified for operation and accuracy to improve system performance and ensure occupant safety, comfort and productivity.



- ❑ Verify the differential pressure sensors or switches across your filter banks are operational and calibrated. Confirm the alarm limits in the BAC system are set to the differential pressure values indicating a clogged or dirty filter condition.
- ❑ With recommended requirements for air flushes and increased outdoor air intake, it is essential to inspect and confirm the operation and setpoints of your AHU freeze stats. Replace if faulty and add additional low temperature detection sensors/freeze stats for duct coverage as necessary.
- ❑ Verify the existing room and duct, temperature, humidity and CO<sub>2</sub> sensors are operational and calibrated. Replace failed sensors and add new sensors as required to meet suggested guidelines.
- ❑ Verify the operation and calibration of the CO<sub>2</sub> sensors associated with the Demand Control Ventilation (DCV) systems. Replace failed sensors and add sensors as necessary to meet the guidelines.
- ❑ Confirm the DCV systems operate with a CO<sub>2</sub> setpoint according to REHVA of 400 ppm. Belimo recommends a setpoint of less than 1000 ppm.
- ❑ Inspect and confirm the operation of the BAC humidity sensors. Different to REHVA, Belimo recommends a humidity setpoint between 40 and 60%. In temperate climates, the humidity of air often drops to a relative humidity of below 40% during the colder months. However, the right setpoint for indoor humidity reduces the risk of disease transmission and allows the body to better repair and protect itself.

Belimo sensors offer superior reliability, easy installation, and seamless integration with major Building Automation Control Systems (BAC). We offer a complete range of sensors to measure temperature, humidity (relative humidity, absolute humidity, enthalpy and dew point), pressure, CO<sub>2</sub> and volatile organic compounds (VOC).

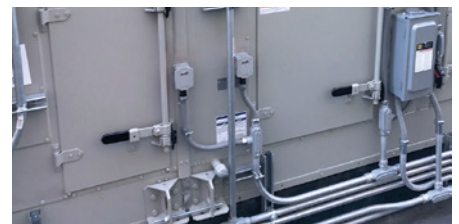


## DUCT

Temperature, Enthalpy, Dew Point, Relative Humidity, CO<sub>2</sub>, VOC, Pressure



Temperature, Condensation, Pressure, Flow



## OUTDOOR

Temperature, Enthalpy, Dew Point, Relative Humidity



## ROOM

Temperature, Relative Humidity, Dew Point, CO<sub>2</sub>

# Improve occupant safety.

Facility operators and building owners are well advised to evaluate their building systems to ensure they meet the REHVA COVID-19 guidance document. Strategies such as more fresh air, increased ventilation, improved filtration and air cleaning aim to improve occupant safety, comfort and productivity. Every HVAC system needs to be analysed to ensure appropriate measures are taken to enhance the ventilation and reduce virus transmission in the building.



- ❑ Check the actuator for proper operation by verifying the damper is operating appropriately for open/close, 3-point, modulating control or bus communication (BACnet, Modbus, KNX, MP).
- ❑ Override the damper position with the DDC system to verify feedback is tracking the signal.
- ❑ Visually check the damper for proper movement.
- ❑ Command the damper to close fully. Excess air should not pass through the damper.
- ❑ Adjust the damper coupling or linkage if needed and tighten the screws of the clamp with the required torque noted in the actuator mounting instruction.
- ❑ If a linkage is broken, check our actuator accessories for a replacement or contact your local Belimo representative.
- ❑ Replace damaged blades or edge seals and dry lubricate moving parts.
- ❑ Fire dampers have to be mounted and maintained according to the damper manufacturers installation and maintenance manual.
- ❑ Inspect the heat recovery equipment regarding leakage and do not switch off rotary heat exchangers since there is no impact to the leakage.
- ❑ Close recirculation dampers.

If any of the above cannot be met – retrofit the damper with properly sized actuator and linkage solutions. The Belimo Retrofit App is a quick and simple tool for accurately selecting valves, actuators, sensors and replacement solutions. Belimo offers a full range of damper actuators and sensors along with standard or custom linkages. With a wide variety of control signals and torque ranges, we can ensure your control dampers will operate with maximum reliability and high performance.



**AIR HANDLER DAMPER ACTUATORS**  
2.5...160 Nm



2...20 Nm



**FIRE DAMPER ACTUATORS**  
2...18 Nm

# Increase ventilation.

The amount of fresh outdoor air is a key fact when it comes to make buildings corona-proof. The more the rooms are ventilated, the safer it is to stay in those rooms. Keeping the CO<sub>2</sub> level below 1000 ppm decreases the risk of infection tremendously. Therefore, the ventilation should operate longer and on full speed in case it is not demand-controlled. The setpoint of demand-controlled ventilations should be adjusted.



- Verify the damper movement.
- In case of recirculation air operation, adjust the amount of recirculation air to the minimum.
- Check for failed components such as sensors, linkages and actuators.
- Change the operation hours. Start ventilation at the nominal speed at least 2 hours before the building opening time and switch to a lower speed 2 hours after the building usage time to provide a virus-free ambient air environment.
- In demand-controlled ventilation systems, change the CO<sub>2</sub> setpoint to 400 ppm according to the REHVA guideline (however, Belimo recommends a setpoint of less than 1000 ppm), in order to maintain the operation at nominal speed. Keep the ventilation on 24/7, with lower (but not switched off) ventilation rates when people are absent.
- In buildings that have been vacated due to the pandemic (some offices or educational buildings), it is not recommended to switch ventilation off, but to operate continuously at reduced speed during normal operation hours.\*
- Change the filters according to normal procedures. Clogged filters reduce supply airflow. Filters should be changed with the system turned off, while wearing gloves and respiratory protection and disposed of in a sealed bag.\*
- If ventilation control requires actions by occupants or there is no dedicated ventilation system in the building, it is recommended to install CO<sub>2</sub> sensors especially in spaces that are often used for one hour or more by groups of people, such as classrooms, meeting rooms and restaurants. During an epidemic it is recommended to change the default settings of the indicator so that the warning is set to 800 ppm and the alarm to 1000 ppm in order to trigger prompt action to achieve sufficient ventilation.

Belimo offers a wide range of sensors to measure CO<sub>2</sub> levels in the room and ventilation ducts as well as high quality actuators to replace faulty components in ventilation systems.



Damper actuators on air handling unit



**22ADP-184B**  
Differential pressure sensor for filter monitoring



**22RTM-19-1**  
CO<sub>2</sub> room sensor



**22DC-11**  
CO<sub>2</sub> sensor

\*Source: REHVA COVID-19 guidance document

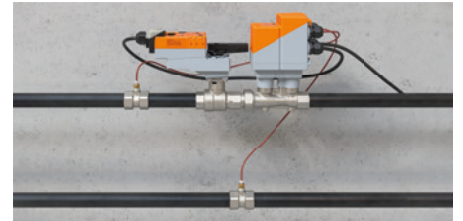
# Ensure proper heating and cooling capacity.

Belimo valves and actuators are recommended replacement for failed or damaged components to improve occupant safety, comfort and productivity. Unique solutions such as the Belimo Energy Valve™ help to gain knowledge about the hydronic system. This knowledge is needed in order to take the right measures. A poorly functioning HVAC system can be transformed into a more efficient system while minimising operation costs.



- ❑ Verify control valves operate correctly by checking the valve opening and ensure the selected signal, whether open/close, 3-point or modulating, is working accurately.
- ❑ Verify the design flow requirement by measuring the flow rate.
- ❑ Create system transparency by using a Belimo Energy Valve™ (and solve the low delta T with the integrated delta T manager).
- ❑ Override the valve position with the DDC system and verify that the feedback is tracking the signal.
- ❑ Change setpoint through the BMS or the thermostat to verify proper operation.
- ❑ Inspect the valve for leakage.
- ❑ Make sure the direction of the flow is correct and not reversed.
- ❑ Verify the pressure drop across the valve using differential pressure sensors or other measuring devices.
- ❑ Verify the water quality.

If a replacement is needed, Belimo offers a full range of valves, actuators and pipe sensors to meet your needs. If you need technical expertise, please contact your local Belimo representative.



**BELIMO ENERGY VALVE™**  
DN 15...150 / 2-way and 3-way



**ZONE VALVES**  
DN 15...25 / 2-way, 3-way and 6-way



**CHARACTERISED CONTROL VALVES AND GLOBE VALVES**  
DN 10...250 / 2-way, 3-way and 6-way



**BUTTERFLY VALVES**  
DN 25...700 / 2-way and 3-way

# 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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**BELIMO**<sup>®</sup>