

**Complying with  
ASHRAE guidelines  
for Indoor Air Quality  
during COVID-19**

**Reliable solutions**



Discover the advantages  
[www.belimo.us](http://www.belimo.us)

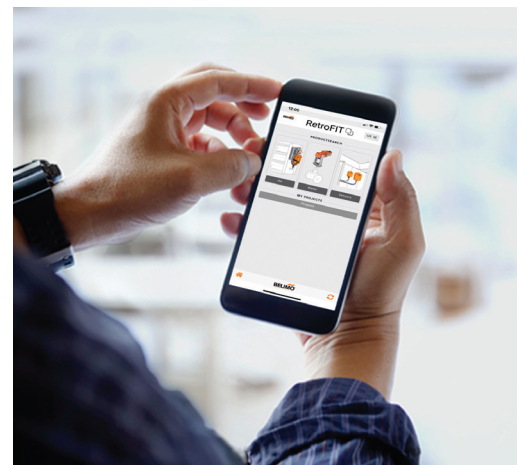
**BELIMO**<sup>®</sup>



# Improving IAQ for commercial buildings, hospitals, and schools



HVAC systems' operation is a critical requirement for reopening and maintaining adequate safe indoor air quality (IAQ). The [ASHRAE Epidemic Task Force](#) developed guidance to help facility managers improve indoor air quality to slow the transmission of viruses via the HVAC system. Belimo has reviewed the ASHRAE Epidemic Task Force recommendations and developed a checklist to evaluate field devices' operation. Non-functioning devices can be retrofitted to meet the indoor air quality requirements of the [ASHRAE reopening guidelines](#).



# 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, maximizing system performance, meeting UL standards and the new ASHRAE requirements.



## Custom or Standard Solutions

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



## Optimized Functionality

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

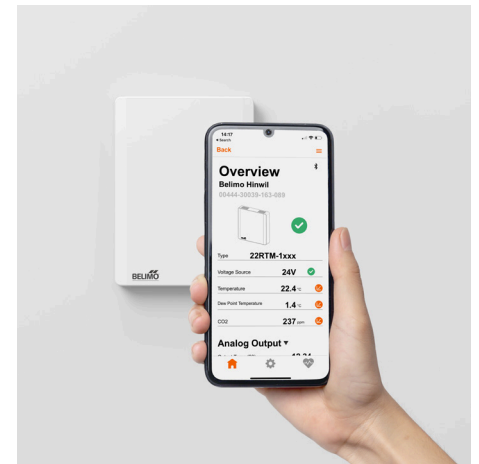


## Installation Efficiency

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

“We recommend Belimo for its reliability, availability and fantastic customer service. Belimo truly partners with their customers and stands behind their products.”

**Jeff Hurwitz, President**  
Interstate HVAC Controls



# 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.



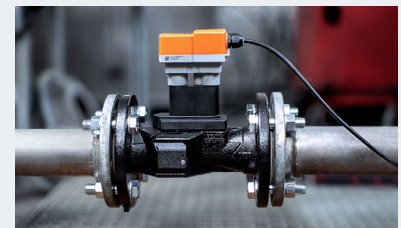
- ❑ Verify the differential [pressure sensors](#) or [switches](#) across your filter banks are operational and calibrated. Confirm the alarm limits in the BAS system are set to the differential pressure values indicating a clogged or dirty filter condition.
- ❑ With recommended requirements for air 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.
- ❑ Inspect and confirm the operation of the BAS humidity sensors. If using resistive type humidity and dew point sensors, consider changing to [capacitive technology \(CMOS\) sensors](#), which are more accurate and not susceptible to drift. The updated ASHRAE 62.1 standard also requires systems to limit the indoor humidity to a maximum dew point of 60°F (15°C) during both occupied and unoccupied hours, whenever the outdoor air dew point is above 60°F (15°C). Belimo's field selectable multi-sensors measure: temperature, RH, dew point, enthalpy, and absolute humidity.
- ❑ 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 to maintain maximum CO<sub>2</sub> concentrations of 800-1000 ppm in occupied spaces.
- ❑ Are you using the latest technology in CO<sub>2</sub> measurement? Dual-channel NDIR self-calibrating [room](#) and [duct sensors](#) meet the guidelines and ensure accuracy and reliability.
- ❑ Adding additional intake air to meet the new guidelines may cause building static pressure to change. Confirm static pressure is maintained at a positive pressure setpoint unless a specific zone calls for negative pressures like an isolation room.
- ❑ Are you using the latest technology in pressure sensors? Belimo's [pressure sensors with true auto-zero technology](#) automatically calibrates and meets the recommended guidelines ensuring accuracy throughout the product's lifespan.

Belimo sensors offer superior reliability, easy installation, and seamless integration with major Building Automation Systems (BAS). 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 (VOCs).



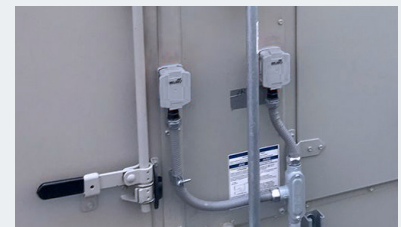
## DUCT

[Temperature, Enthalpy, Dew Point, Relative Humidity, CO<sub>2</sub>, VOC's, Pressure](#)



## PIPE

[Temperature, Condensation, Pressure, Flow](#)



## OUTDOOR

[Temperature, Enthalpy, Dew Point, Relative Humidity, Light](#)



## ROOM

[Temperature, Relative Humidity, Dew Point, CO<sub>2</sub>, Light](#)



# Improve occupant safety

Facility operators and building owners need to evaluate their building systems to ensure they meet ASHRAE guidelines. Strategies such as increased ventilation, improved filtration, and air cleaning aim to improve occupant safety, comfort, and productivity. Every HVAC system needs to be analyzed to ensure appropriate measures are taken to enhance the ventilation and reduce virus transmission in the building.

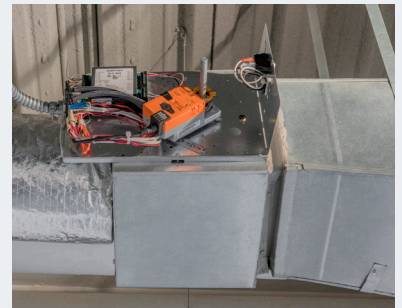


- Check the actuator for proper operation by verifying the damper is operating appropriately for on/off, floating, or modulating control.
- [Verify the damper actuator meets the torque requirements.](#)
- Is the actuator securely coupled to the drive shaft or linkage?
- Override the damper position with 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.
- [Replace broken linkages.](#)
- Replace damaged blades or edge seals and dry lubricate moving parts.
- Caulk damper frames to assure a tight connection to the structure.

If any of the above cannot be met – retrofit the damper with properly sized actuator and linkage solutions. The [Belimo Retrofit App](#) or [SelectPro](#) are quick and simple tools for accurately sizing and selecting valves, actuators, sensors, and replacement solutions. Belimo offers a full range of damper actuators, sensors, and economizer solutions 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**  
[22...1400 in-lb](#)



**VAV DAMPER ACTUATORS**  
[18...90 in-lb](#)



**FIRE AND SMOKE DAMPER ACTUATORS**  
[18...180 in-lb](#)

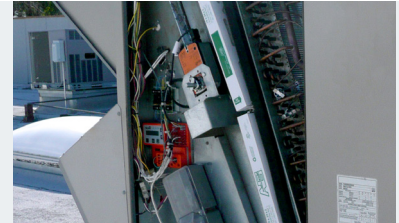
# Increase ventilation

Studies have shown, up to 70% of economizers are not functioning correctly. Many times economizer systems are not set up correctly or are left to operate in factory default mode. Economizer failures generally do not result in comfort problems; many failures go undetected. These problems persist, causing poor filtration, ventilation, and inefficient air exchange resulting in poor indoor air quality. Meanwhile, energy standards and building IAQ requirements are not being met.



- Verify the damper movement.
- Modify the sequence of operations.
- Check the operation of the minimum outside air (MOA) adjustment.
- Check for failed components such as sensors, linkages, and actuators.
- Purge all spaces pre- and post-occupancy to flush the building with clean air.
- Change the start of operation hours (e.g., change 6 am start to 4 am) to provide a virus-free ambient air environment.
- When activated, the DCV CO2 setpoint should be between 800-1000 ppm (during the COVID epidemic, ASHRAE recommends to disable demand ventilation control [DCV] and open outdoor air dampers 100% as outdoor and indoor conditions permit.).

If an economizer is not functioning properly or capable of meeting ASHRAE recommendations, replace it with the [Belimo ZIP Economizer](#) - the fast track to better IAQ. The [ZIP Economizer](#) is the most technologically advanced airside economizer solution on the market. The [ZIP Economizer](#) provides the highest energy savings through advanced economizer logic strategies and is compliant with the current energy codes and standards (ASHRAE 90.1, IECC, California Title 24, ASHRAE 189.1).



## ZIP ECONOMIZER™

[ZIP Code Patented Technology](#)

### CONTROL STRATEGY COMPONENT OPTIONS



**ECON-ZIP-TH**  
[Enthalpy Sensor](#)



**ECON-ZIP-COM**  
[BACnet MS/TP  
Communication](#)



**ECON-ZIP-EM**  
[Control Outside Air  
Dampers](#)



**ECON-ZIP-10K**  
[Enthalpy Sensor](#)



**22DC-51**  
[CO<sub>2</sub> Sensor](#)

# Ensure proper flow

[Belimo valve assemblies](#) and [valve actuators](#) are recommended replacements for failed or damaged components to improve occupant safety, comfort, and productivity. A poorly functioning HVAC system can be transformed into a safer system while minimizing operation costs.



- Verify control valves operate correctly by checking the valve strokes and ensure the selected signal, whether on/off, floating, or modulating, is working accurately.
- Verify the design flow requirement with a strap-on ultrasonic meter or with another measurement device.
- 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 stem for leakage.
- Close the valve, and confirm no fluid is passing through the valve seat by using a measurement device.
- Make sure the direction of the flow is correct and not reversed.
- Ensure that you have enough pressure drop across the valve using differential pressure sensors or other measuring devices.
- Verify water quality and remove any air bubbles from the installation.

If a replacement is needed, Belimo offers a full range of [valve actuators](#), [valve assemblies](#), [piping packages](#), and [pipe sensors](#) to meet your needs. If you need technical expertise, contact a [Belimo Regional Application Consultant](#).



## **PRESSURE INDEPENDENT VALVES**

[½"…6", 2-way and 6-way](#)



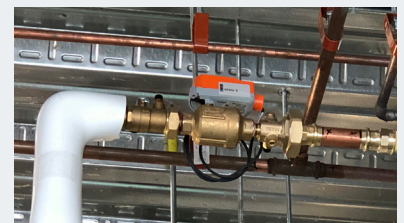
## **BALL & GLOBE VALVES**

[½"…6", 2-way and 3-way](#)



## **BUTTERFLY VALVES**

[2"…24", 2-way and 3-way](#)



## **PIPING PACKAGES**

[½"…2", 2-way and 3-way](#)

# Exceptional service

For over 40 years, [Belimo](#) has successfully focused on the heating, ventilation, and air conditioning markets providing quality solutions that will increase energy efficiency and reduce installation costs with the fastest delivery times in the industry. Our innovative products have always been designed to help achieve objectives better, faster, and more economically. Investing in new technology is key to our success, and Belimo will continue to offer products to help businesses succeed.



5-year warranty



Global support



Tested quality



On-time delivery



Extensive service



Complete product range

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