Complying with ASHRAE guidelines for Indoor Air Quality

Retrofit solutions for comfort and safety

Discover the advantages
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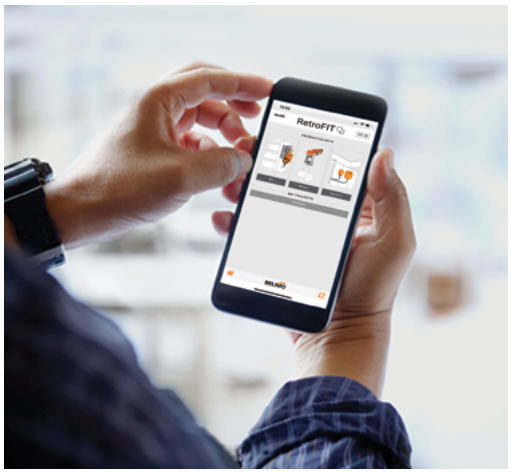
BELIMO

Improving IAQ for commercial buildings, hospitals, and schools

HVAC systems play a vital role in maintaining safe and healthy indoor air quality (IAQ). The ASHRAE Epidemic Taskforce developed guidance to help facility managers enhance IAQ and reduce the risk of airborne contaminant transmission through HVAC operation. Belimo reviewed these recommendations and created a checklist to evaluate the performance of field devices. Non-functioning or outdated components should be retrofitted to meet indoor air quality requirements.



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 damper actuators, control valves, and sensors. Our retrofit solutions offer quick and convenient replacements, compatible with all major control systems, maximizing system performance, meeting UL standards as well as 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.
- ☐ As air flush requirements and outdoor air intake increase, verifying proper operation and setpoints of AHU freeze stats becomes critical to prevent coil freeze events. Replace if faulty and add additional low temperature detection sensors/freeze stats.
- ☐ Verify the operation and calibration of the room and duct, temperature, humidity and CO_2 sensors associated with the Demand Control Ventilation (DCV) systems. Replace failed sensors and add sensors as needed 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. 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.
- ☐ Confirm the DCV systems operate to maintain maximum CO_2 concentrations of 800-1000 ppm in occupied spaces.
- ☐ Are you using the latest technology in CO_2 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, CO2, and volatile organic compounds (VOCs).

DUCT
Temperature, Enthalpy, Dew Point, Relative Humidity, CO_2, VOC's, Pressure

PIPE
Temperature, Condensation, Pressure, Flow

OUTDOOR
Temperature, Enthalpy, Dew Point, Relative Humidity, Light

ROOM
Temperature, Relative Humidity, Dew Point, CO2, Light

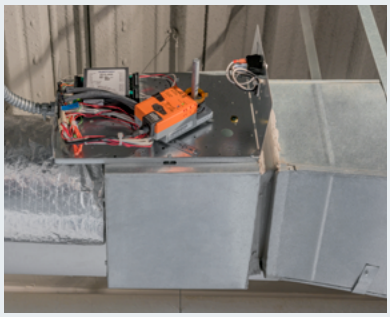
Improve occupant safety

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.
- ☐ Verify the acuator is securley coupled to the drive shaft. If it is non-directly mounded, verify components to ensure secure connection.
- ☐ 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.
- ☐ 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 mounting accesories, if needed. The RetroFIT+ App or SelectPro™ are quick and simple tools for accurately sizing and selecting control valves, damper 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

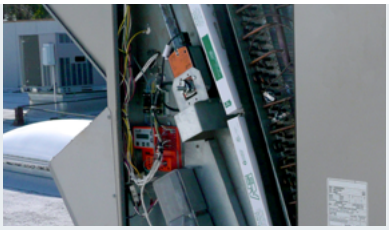
FIRE AND SMOKE DAMPER ACTUATORS
18...180 in-lb

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) and adjust accordinaly. Minimum position should never be fully closed for occupied spaced.
- ☐ Check for failed components such as sensors, linkages, and damper 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 CO_2 setpoint can be adjusted from 0...2000 ppm. The reccommended setpoint is 800-1000 ppm.

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
CO2 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 stoke and ensure the selected signal, whether on/off, floating, or modulating, is working accurately.
- ☐ Verify the design flow requirement with a clamp-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.
- ☐ Close the valve, and confirm no fluid is passing through the valve seat by using a measurement device.
- ☐ Make sure the flow direction of the valve 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, 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

All inclusive.

At Belimo, we continually invest in new technologies that increase customer value by improving occupant comfort, energy efficiency, simplified installation, and maintenance-free operation. Our sales team is available to consult and provide insight and advice on how to achieve the best solution to help increase your system performance.

Belimo will continue to focus on providing you with exceptional product availability, fast delivery times, and world-class customer service and technical support. We remain dedicated to continuously improve our standards and are committed to providing you with the highest value possible.

Whatever your HVAC application, our global network of support experts are on hand and ready to assist.

- 5-year warranty
- Global support
- Tested quality
- On-time delivery
- Extensive service
- Complete product range

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Belimo Americas
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