



Pathfinder Update: COVID-19 and Retro-Commissioning

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Re-opening buildings during the COVID-19 pandemic creates a challenge to building owners and operators. To focus on the safety of occupants, every system in the building must be considered in a new light.

Organizations such as the Centers for Disease Control, American Society of Heating, Refrigeration, Air-Conditioning Engineers (ASHRAE), and New York State have issued guidelines to prepare buildings for occupancy.

Pathfinder's engineers and Commissioning Authorities have reviewed, analyzed and developed guidance for reopening buildings and will update this document as recommendations evolve. Our focus is on building systems, including mechanical, electrical, plumbing and fire protection, with key considerations for air filtration, air flow and humidity. Within these areas, we have looked at:

- Improved Air Filtration
- Adding Ultraviolet or Ionization Air Sanitizing Technology
- Indoor Air Quality Testing
- Changing Current Sequence of Operations to Increased Outside Air
- Verifying Air Balancing to make sure room air flow and outside air volumes are within acceptable ranges.

Any building reopening should occur with a multi-disciplinary approach to provide for safe re-entry and should adhere to the most current governmental guidelines and policies.

Air Filtration

In most commercial HVAC systems, the filters are measured in Minimum Efficiency Reporting Values (MERV). Pathfinder recommends a minimum MERV 14 filter. Lower efficiency filters won't capture virus particles, while high efficiency filters may pose considerably more resistance to air flow. If an AHU's blower motor is not sufficient for the task, an increase of static pressure will slow the flow of air which is counterproductive to the goal of catching the virus in the filtration system. Likewise, good air flow aids in humidity control; relative humidity of 40-60% will limit the virus' ability to infect occupants.

Ultraviolet Sanitization

Ultraviolet emitters have, to varying degrees based on implementation, been shown to kill viruses. Options range from installation attached to a cooling coil, installed downstream in ductwork or a complete UV sanitization unit. Location of any UV system requires consideration of exposure to UV lighting, which is harmful, and training of maintenance personnel.

From ASHRAE

“Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 (COVID-19) and thus the risk of transmission through the air. Unconditioned spaces can cause thermal stress to people that may be directly life threatening and that may also lower resistance to infection. In general, disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus.”

ASHRAE Position Document on Infectious Aerosols;
https://www.ashrae.org/file%20library/about/position%20documents/pd_infectiousaerosols_2020.pdf

Increased Outside Air

During a retro-commissioning process, it can be determined how much outside air your HVAC system can handle during 24/7 operation or during a night flush. Once-through outside air aids in diluting viruses and contamination in spaces. This constant or increased operation will help move air particles and reduce the settlement of virus on surfaces like ductwork. Evaluating system condition, capacity, allowable outside air, and programming are factors in this retro-commissioning.

Air Balancing

Retro-commissioning can provide balancing (or re-balancing) verification, as your occupancy and usage of spaces will likely change with re-opening. Outside air is typically reduced to provide energy savings. During this period, it makes sense to adjust Sequence of Operations to aid in continually flushing out spaces.

Retro-Commissioning

With retro-commissioning, existing systems can be tested for operation and recommendations for filtration options provided. Recommendations for system upgrades or replacement are then considered.

The process will begin with a review of existing documentation, such as drawings, specifications, BAS reports, and recent Testing, Adjusting and Balancing or Commissioning Reports.

ASHRAE recommends that building owners have a *Building Readiness Team* that includes a Retro-commissioning provider, among other specialties such as TAB, BAS, and engineer. This team will look at how the building should operate normally, how it is actually operating, and make recommendations to tune up systems that are not operating as intended. Following this, an engineer can make recommendations for temporary or longer modifications to address the COVID-19 virus.

NYS has issued a document “Interim Guidance for Commercial Building Management” suggesting procedures to ready your facility for a re-opening.

<https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/commercial-building-management-master-guidance.pdf>

Your qualified Commissioning Authority, like those at Pathfinder, can guide you through the retro-commissioning process to get your building back into operation using the standards established by governmental authorities and recommendations provided by organizations like ASHRAE.

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