

HVAC Interventions During the COVID-19 Pandemic: A Synthesis

Purpose

Since the outbreak of COVID-19, building operators have been working to find strategies that will reduce the spread of the coronavirus while keeping occupants safe and comfortable. The role of heating, ventilation and air conditioning (HVAC) in the spread and/or prevention of infectious diseases has become a common discussion point.

Findings

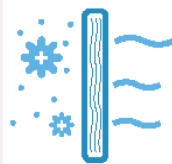
Woolpert reviewed existing research, including data from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and concluded that permanently disabling HVAC systems will do little to prevent the spread of infectious diseases. Reducing the likelihood of exposure to pathogens and bacteria through HVAC systems is best accomplished by implementing a customized program of risk-reduction strategies.

Recommendations

Woolpert recommends implementing the following risk-reduction strategies:

Air Purification

Air purification technologies use electronically created fields to effectively eliminate airborne pathogens in virtually all HVAC systems. Multiple purification systems, which can be easily adapted to specific user needs, have already been third-party tested and proven effective against viruses similar to the coronavirus. We recommend third-party tested air purifiers as a primary risk-reduction strategy for the coronavirus.



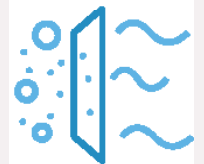
Ultraviolet Light

When used to sanitize ductwork, Far-UVC light is effective at low-dose rates, is faster than traditional UVC, has a high absorption rate in bacteria and viruses, and is safe to use around humans because it does not penetrate the skin or eyes. Far-UVC light is a viable option assuming monitoring conditions are met and the operator is informed of the increased cost and maintenance.



Air Filtration

Standard MERV 8 filters trap many airborne pathogens; however, the coronavirus is an especially small particle requiring a finer filter, such as a MERV 15 or HEPA filter. We recommend the use of filtration as the primary strategy only in specific cases where MERV 15, with pre-filtering (if feasible), can be applied cost effectively.



Woolpert **recommends against** the following risk-reduction strategies:

- Adjusting ventilation and/or exhaust rates
- Altering room pressures
- Changing natural ventilation use
- Disabling demand-controlled ventilation functions
- Adjusting temperature or humidity

While these strategies may have temporary risk-reduction benefits, they are not viable as permanent solutions due to concerns over other airborne issues (such as mold), cost inefficiency and occupant comfort.