

INSIGHT

Three ways to lower the spread of airborne viruses in facilities

As the COVID-19 pandemic continues, the entire world is focused on finding ways to help limit exposure and spread of the virus. Public awareness of how viruses in general are transmitted and the importance of sanitizing and cleaning buildings and surfaces is at an all-time high.

Currently many of the community and non-healthcare buildings are empty due to stay at home orders. As phased re-openings begin and we start returning to our offices and schools, building owners and facilities managers have a lot to consider, including any additional preventative measures they can implement to help maintain healthy indoor air quality while reducing risk to airborne virus exposure. Guidelines on re-commissioning buildings are available from the American Society of Heating and Air-Conditioning Engineers (ASHRAE) and in specific response to the pandemic, ASHRAE is recommending three demonstrated methods of controlling airborne infection that have proof of efficacy: ventilation, particle filtration and ultraviolet (UV) light.

Ventilation and Filtration

The two primary factors determining the quality of indoor air quality are ventilation and filtration. The introduction of clean outdoor, uncontaminated air into a building can dilute and aid with the expulsion of contaminated air from inside a building. Clean air can reduce the

concentration of CO_2, off gases from materials, and undesirable odors. The introduction of outside ventilation air can also create a positive pressure inside the building and push contaminated air out of the building through relief air openings and vents.

Filtration also has an extremely positive effect on indoor air quality by removing undesirable particles from the air as it is circulated through the HVAC system. Filter efficiency determines the size of the unwanted particles that can be extracted from the airstream. High filter efficiency coupled with good air distribution and circulation can remove smaller, and more airborne particles to provide a healthier and more comfortable indoor air environment.

Ultraviolet Light

Short-wavelength ultraviolet (UV) light, also referred to as UV-C, is proven to be capable of eliminating airborne viral and bacterial particles from the air that are too small to be captured by filtration. UV equipment designed for installation in HVAC duct and air handling systems and applied in addition to filtration can greatly reduce the concentration of viral and bacterial particles. When installing UV light within the airstream it is important to consider location, velocity and other factors to provide desired results.

Taking Action Now

These three methods, when combined, can help reduce the concentration of undesirable particles, aerosols and airborne viral particles to provide a more comfortable and healthier indoor air environment for people to occupy and work in.

Facilities managers may be reluctant to implement some of the recommendations because of the additional costs for an increase in energy use as well as more expensive higher efficient filters, however numerous research studies have shown the benefits of improved indoor air quality far exceed the costs.

- Numerous research studies have shown that indoor air quality improvements result in a 5 to 10 percent improvement in productivity. In comparison, according to the EPA, almost $60 billion dollars per year are lost in productivity due to poor indoor air quality.
- Studies have discovered links between poor indoor air quality and occupant health. However, more recently published research went a step further to establish a clear relationship between improved ventilation and enhanced cognitive function workers.

Current Trends and Future Outcomes

There are many possible outcomes that could affect future requirements for facility HVAC systems. Based on current trends some of these might include the following:

- HVAC related emergency response plans for non-healthcare buildings.
- Public awareness will result in more stringent commercial building cleaning and sanitizing protocols/practices to help limit the spread of bacteria and viruses (building owners may use this as a marketing tool in the future).
- HVAC building code changes for multi-resident/family buildings, i.e. nursing homes, to address ways to help mitigate the spread of airborne diseases.
- Increased demand for upper-air UV-C fixtures within general building environments as well as in HVAC systems.

Improvements to HVAC systems will help improve indoor air quality, but there are a lot of variables at play. These recommendations may help limit the spread of COVID-19, and other diseases, but should be viewed as ways to reduce risk rather than prevention.

What types of HVAC challenges are you having? We would love to hear from you. Connect with us below, or use this link to learn more about Bartlett & West's HVAC-related services.