

from experience

COVID-19: Mitigating Disease Transmission with HVAC Solutions

HVAC solutions guaranteed to eliminate the spread of COVID-19 do not exist yet (and beware anyone who says they have something that does). After all, the scientific and medical communities' understanding of COVID-19 continues to evolve almost daily. At the same time, Hixson appreciates your desire to protect your workforce. Below we present three options that MAY prove useful to the mitigation of COVID-19. These options are presented based upon Hixson's experience, current knowledge of COVID-19 transmission, and guidance from codes, industry standards, and best practices published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the WELL Building Standard:

- 1. Ultraviolet Germicidal Irradiation (UVGI).** UVGI has traditionally been used to mitigate biological and bacterial growth on fixed elements within HVAC equipment (cooling coils, drain pans, etc.). Another application is upper room UV lighting which kills airborne viruses, when applied appropriately, by bathing the airstream at the ceiling level with UV light. Located in Air Handling Units (AHUs), traditional UVGI systems are relatively inexpensive (\$3,000-\$10,000) to install in new equipment, but are more expensive when retrofitted in existing systems.



Photo: <http://ecohvac.com.au/hvac-uvc-germicidal-light-system/>

- 2. Filtration.** Filtration can provide an effective means of capturing particles within air streams. Current medical journals note that the diameter of the SARS-CoV-2 virus ranges between 60 to 140 nanometers (0.06 to 0.14 microns). To capture viruses of these sizes, most U.S. filter manufacturers are recommending, at a minimum, MERV 14 filters. Note that filtration effectiveness increases with proximity to the source of the airborne contamination. The use of multiple local, portable air filtration units may prove to be a more effective approach to capture the airborne virus at its origin than sole reliance upon central HVAC systems.
- 3. Room Air Makeup.** Another technique to consider is to consistently remove a percentage of interior air from the building by increasing outside air (ventilation air) and exhaust airflows. While a higher percentage of outside air will increase overall energy cost due to higher cooling and heating loads, the energy cost may be reduced by using energy recovery, e.g., plate-to-plate heat exchangers. The minimum amount of outside air required for different types of spaces is described in both the [ASHRAE 62.1 Standard](#) and the [International Mechanical Code \(IMC\)](#).

Remember, these options are not suggested as absolute guarantees against the spread of COVID-19. Instead, think of them as "seatbelts." Seatbelts will not prevent an accident, but they might provide an extra layer of security should one occur. Although there is no clear path to resolving this issue at this time, it is our hope that practical and effective solutions will present themselves in due course.

experience in brief

UV lamps typically need to be replaced every 9000 hours at an approximate cost of \$10/sf installed.

continuing education

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[Online](#)
June 2020

"Navigating the Complexities of Hazardous Materials Storage & Use Compliance"
A Hixson **Food Plant of the Future** webinar
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