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## *Building HVAC Systems and COVID-19*

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The role of heating, ventilation, and air conditioning (HVAC) systems as part of creating a healthy indoor environment is both a historical and an ongoing discussion that has drawn the interest and expertise of the Center for Disease Control (CDC), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and the Occupational Health and Safety Administration (OSHA) and many others. Generally, the recent guidance from these organizations falls into three basic categories: increasing the amount of outside air delivered to spaces, using high efficiency filtration in systems that circulate air between large numbers of spaces, and maintaining temperature and humidity levels within spaces <sup>(1)</sup>. However, it must also be acknowledged that basic principles of physical distancing, surface cleaning and disinfection, handwashing and other strategies of good hygiene are equally or more important in the role of preventing the spread of illness <sup>(2)</sup>. HVAC systems are not an appropriate substitute for physical distancing, wearing of facial coverings, sanitation and disinfection practices and the personal responsibilities outlined in the campus policies for each student, visitor, faculty, and staff member of the UGA community.

As FMD considers how to implement emerging HVAC best practices, the limitations of existing systems are carefully considered. In many systems, limitations on heating and cooling capacities prevent simultaneously increasing the outside air while maintaining appropriate temperature and humidity levels. In other systems, the increased air pressure drop from higher efficiency filters will limit airflow unacceptably or cause equipment damage.

Keeping these system limitations in mind, FMD is employing strategies to comply with industry best practices and guidance to the greatest degree possible. In newer systems with the ability to better control outside air, increasing outside air amounts is relatively simple. In these newer systems FMD is also investigating running the building HVAC systems continuously (24x7) or implementing an overnight cycle where buildings are flushed with increased volumes of outside air without exceeding heating and cooling system capacities. This may help to limit any day-to-day concentration buildup of infectious particulate. In older systems, FMD is evaluating if increased outside air volumes can be implemented within the limits of system designs.

Regarding filtration, UGA's operational standards utilize MERV-11 or better filtration in systems circulating air between large numbers of spaces. In addition, UGA's design standards have required building scale HVAC systems on campus to be equipped with Ultra Violet (UV) systems that are integral to the air handler since 2012. FMD will be conducting inspections, cleaning coils and replacing air filters (as needed) and verifying the function of UV systems (where equipped) in campus HVAC systems prior to the fall semester as part of our routine preventive maintenance program.

When considering indoor temperature and humidity limits, the data is not clear on what limits are most effective in mitigating COVID-19. However, there are other airborne contaminants (molds, other viruses, and bacteria) that must continue to be controlled. Some research indicates that relative humidity levels between 40%-60% help to maintain control of these contaminants. Spaces will continue to be maintained within this range where possible.

FMD will continue to stay abreast of changing guidance and will make adjustments where possible within the capabilities of the systems on campus. Additionally, FMD is actively assisting the Preventive Measures Advisory Board (PMAB) to examine unique needs presented to the PMAB by individual departments or colleges.

Endnotes:

- (1) Guidance for Building Operations During the COVID-19 Pandemic, ASHRAE, ([https://www.ashrae.org/file%20library/technical%20resources/ashrae%20journal/2020journaldocuments/72-74\\_ieq\\_schoen.pdf](https://www.ashrae.org/file%20library/technical%20resources/ashrae%20journal/2020journaldocuments/72-74_ieq_schoen.pdf))
- (2) Non-health care workplaces fall into the medium and lower exposure risk categories described in Guidance on Preparing Workplaces for COVID-19, U.S. Department of Labor, Occupational Safety and Health Administration OSHA 3990-03 2020.