COVID-19 Facility Management

HVAC Maintenance Considerations to Slow the Spread

Since December 2019, COVID-19, also known as the novel Coronavirus, has been spreading throughout the world. On January 20, 2020, health officials confirmed the first case in the United States. Now, the United States has approximately 35,000 actively ill individuals due to COVID-19 and is expected to see an increase in cases.

COVID-19 has caused much panic and despair around the world. The virus, which sometimes causes a serious and life-threatening respiratory illness, is easily spread via air particles from a sneeze or cough. Many measures need to be taken to slow and hopefully prevent the virus from spreading.

To get a full understanding of how facility managers have an impact on the situation, we (virtually) met with CBRE | FacilitySource’s HVAC expert, Doug Ellis, to discuss how proper maintenance of an HVAC system can help slow COVID-19 spread in a commercial building.

“Inside air quality is really important in slowing the spread of viruses in commercial facilities,” Doug said. “HVAC technicians can do many things to promote proper air flow.”

You can read more of Doug’s insights into HVAC maintenance below. Of course, all HVAC maintenance must abide by the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) standards and be performed by a licensed or certified HVAC technician in strict accordance with original equipment manufacturer (OEM) recommendations.

Did you know? HVAC Workers Have Been Deemed “Essential”

According to the Department of US Security, those who work with HVAC units have deemed as “essential” workers during the COVID-19 pandemic. This means that they are exempt from travel restrictions and can perform their duties as needed during the emergency.

HVAC Measures to Slow the Spread of COVID-19 in Commercial Buildings

There are various methods a facility manager can take to slow the spread of COVID-19 in commercial buildings. The following preventative measures can be taken:
Run Exhaust Systems

A key method to slow the spread of COVID-19 in commercial buildings is to bring outdoor air in. Running exhaust fans can produce a negative air pressure for a building and therefore promotes outside air to be brought inside and circulated throughout.

Bringing fresh air from the outdoors into a building is important because a consistent air circulation prevents air particles, such as viruses, from staying in one place (See Appendix section at the end of this article for more information on how this is done).

Flush the Air

Flushing a facility’s air also promotes optimal air flow and is an important step in removing virus particles from a building. For a facility to be flushed, an HVAC professional technician must open the building’s dampers based on manufacturer recommendations. Please note that when flushing air, outside air temperature and humidity should be taken into consideration.

Did you know? High Humidity Can “Stick” Virus Particles to the Floor

One helpful tip in slowing the spread of COVID-19 is to temporarily increase a facility’s humidity to 40%-60%. Heavier and wetter air weighs down certain particles in air (such as viruses), making them fall to the ground for an easy and sanitary clean up. The dryer the air, the more a virus can freely circulate throughout a building.

Clean Coils, Grills, Registers, and Inside Air Handling Unit (AHU) Cabinets

Ensuring proper sanitation throughout an HVAC system is important. If COVID-19 particles are present anywhere within an HVAC system, taking measures to keep each part of the system clean can slow the spread of the virus.

Two parts of an HVAC system that are especially important to keep clean are evaporator coils and AHU cabinets. Right before air enters a room, it passes through an evaporator coil. As for AHU cabinets, these parts should remain clean so they can efficiently filter and circulate air. The cleaner the cabinet, the more efficient it can be in catching germs and virus particles such as COVID-19.

Change Filters

First and foremost, a filter will not catch or filter COVID-19 in the air. Even High Efficiency Particulate Air (HEPA) filters will only catch partials as small as 0.3 microns. COVID-19 virus
particles are 0.1 microns. However, filters may aid in catching the virus if it is “riding” a particle of dust or moisture from a sneeze. Therefore, frequently changing filters as a precautionary may help prevent transmission to a degree.

**Conclusion: HVAC Maintenance Is an Important Step in Slowing the Spread of COVID-19**

As more and more positive COVID-19 cases are discovered each day, we as a society need to do everything in our power to slow the spread of the virus. For commercial facilities, implementing certain maintenance HVAC measures can be a big help. By encouraging the flow of fresh air and abiding by specific sanitary measures, COVID-19 can hopefully soon become a thing of the past.

**Important HVAC and COVID-19 Resources**

All measures should be within CDC, ASHRAE, and OSHA standards.

Links:
- Centers for Disease Control and Prevention
- ASHRAE
- Occupational Safety and Health Administration

**Appendix: Enhancing Occupant Safety by Increasing Outside Airflow**

**Guidance**

Among the CDC guidance for building operators concerning COVID-19, the universal guidance to enhance occupant safety is to increase outside air flows in commercial buildings, where possible. See CDC guidance.

**Process Initiation**

Virtually all commercial HVAC systems have the ability to vary the mix of outside air and return air from the space, and this mix is automatically tuned to maximize energy efficiency under normal conditions. Overriding the normal operation of the system can be accomplished in a few ways, and with some precautions, as described below:

1. Open a work order with a licensed or certified HVAC technician to modify the normal HVAC system functions. This step is important so there is a record of each system
override because when the pandemic passes, it will be important to ensure that every system is returned to normal automatic operation.

2. Check freeze stats on each unit to ensure coils are protected from freeze damage before any overrides are undertaken.

3. Cycle unit heating and/or cooling valves to ensure full operability. Using more outside air will require more heating or cooling (and therefore use more energy), and this step is important to ensure space comfort is maintained.

4. Perform normal HVAC system controls operability checks to ensure all controls function as designed. Where problems are noted, fix the deficiencies before overriding the system to ensure space comfort is maintained.

5. If the HVAC system is controlled by a Building Automation System (BAS), then a maximum outside air override command should be available from the BAS console. This is the best way to perform an override as systems can be put into override, and released from override, centrally and en masse.

6. If the HVAC system has local controls only, depending on manufacture and model there may be maximum outside air override settings available via the local control panel.

7. Failing that, most dampers can be driven to full open and then the damper motor power source can be disconnected, allowing them to remain full open.

8. Avoid disconnecting damper linkages in order to force outside dampers open manually, if at all possible. Maximum and minimum outside air settings have been manually set on each damper by an air balance contractor when the system was commissioned. Disconnecting the linkage could cause more outside air to enter the system than the heating or cooling coil is designed to condition, which will lead to constant space comfort issues and possible coil damage. If disconnected, ensure that a proper air balancing is conducted once normal automatic operation has resumed.

**Ongoing Operations**

At a minimum of once per week, or more frequently as operating conditions require, work orders should be directed to ensure each system operating with maximum outside air is physically checked for the following:

1. Filter Viability. Filters may load up more frequently depending on the quality of outside air. Ensure the normal filter replacement cycle is strictly followed.

2. Humidity Control. Humidity may become an issue in high ambient humidity areas. Remember to check your condensate drain operation regularly and look for
condensation issues inside buildings which would lead to dialing down on outside air to find a happy medium. Where dehumidification controls are in place, check for proper operation.

Legal Disclaimer

All COVID-19 related materials have been developed with information from the World Health Organization, Centers for Disease Control and Prevention, and strategic suppliers providing services in affected regions. They may not be suitable for application to all facilities or situations. Clients need to determine the best course of action for their facility needs and risks. We make no representation or warranties regarding the accuracy or completeness of this material. CBRE | FacilitySource disclaims all liability arising from use of these materials by others.