



MEMORANDUM

TO: M/E Clients
FROM: M/E Engineering, P.C.
DATE: July 31, 2020
SUBJECT: **COVID-19**

The following recommendations for K - 12 schools have been gleaned from multiple sources including CDC, ASHRAE and vendor white papers with the intent to help guide our K - 12 clients to effective decisions as they develop their re-opening plan. The attached articles provides guidance from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) for building operations in response to the COVID-19 pandemic. Together these key factors should be discussed as the country continues to reopen.

<https://www.ashrae.org/news/ashraejournal/guidance-for-building-operations-during-the-covid-19-pandemic>

[ASHRAE Epidemic Task Force, Schools & Universities | Updated 7-17-2020](#)

M/E staff will continue to transparently work with your facilities personnel to review all implications so the appropriate adjustments to existing/new system design and operation can be evaluated.

I. General

- Increase outdoor air ventilation (use caution in highly polluted areas); with a lower population in the building, this increases the effective dilution ventilation per person.
 - Our designs provide the required Outside Air (OA) per current code (NYS 2020) and SED, which only requires us to meet a minimum standard. We can exceed that minimum, and often do when appropriate/desired. Increasing the quantity of outside air is directly related to overall operational costs.
- Disable demand-controlled ventilation (DCV).
 - DCV sequences set the room total air circulation rate/OA rate lower to reduce fan energy and costs associated with conditioning outside air. These measures are very important long term and are required by Energy Code. Additionally, New York State Ed has various requirements for tracking and monitoring DCV (whether Occupancy based or Carbon-Dioxide measuring). We will continue to include DCV in our designs as required by Code/NYS, however, the BMS system will have full control as to whether it is enabled or disabled.

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- Further open minimum outdoor air dampers, as high as 100%, thus eliminating recirculation (in the mild weather season, this need not affect thermal comfort or humidity, but clearly becomes more difficult in extreme weather).
 - Our designs meet Current NYS 2020 Energy Code requirements for economizer function to increase the outside air to 100% when indoor/outdoor conditions allow. This can be accomplished using Dry-Bulb or Enthalpy measuring.
- Improve central air filtration to the MERV-13 or the highest compatible with the filter rack, and seal edges of the filter to limit bypass.
 - As a standard, we provide MERV-8 pre filters and MERV 13A final filtration in all our central air handling solutions.
- Keep systems running longer hours, if possible 24/7, to enhance the dilution and filtration of contaminants outlined above.
 - For large occupancy spaces (Gym, Cafeteria) we include a pre and post flush sequence to circulate large volumes of air. This strategy can be extended to all central air systems via the BMS.
- Consider portable room air cleaners with HEPA filters.
 - We can provide a recommendation and cutsheets as needed.

The following excerpt is from "ASHRAE Position Document on Infectious Aerosols", published April 14, 2020.

"Statement on operation of heating, ventilating, and air-conditioning systems to reduce SARS-CoV-2 transmission: Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air. Unconditioned spaces can cause thermal stress to people that may be directly life threatening and that may also lower resistance to infection. In general, disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus."

II. Classroom Unit Ventilators

- Consider replacing the MERV-8 filters provided within each unit ventilator with an equivalent MERV-13 filter. This may require increasing the fan speed to "Hi" in order to maintain proper total airflow. Manufacturer information indicates that MERV-13 pleated filters will degrade down to MERV-8 capacity quickly, therefore unless multiple filter changes are enacted, this may not be an ideal solution.
- Increase outdoor air introduced into classrooms by opening the units outside air damper beyond its minimum position.
- Disable Demand Control Ventilation completely per ASHRAE and SED guidelines.
- Re-set Time Of Day schedules so that units run 2 - 3 hours prior to and after the set occupied Time Of Day schedule.
- In the event the MERV-13 filter option is not adopted, or unavailable due to high demand, districts may consider the use of portable HEPA filtration Units. Approximately two (2) units per classroom may be necessary and their availability is diminishing. In addition, early inquiries with SED indicate that portable units will not be aidable. M/E is working towards a permanent solution that maybe aidable.

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III. Packaged Rooftop Units (RTU's)

- Seal all filter access doors and ensure filter rack systems properly support filters to prevent cavens and bypass air.
- Replace existing filters with minimum MERV-13 (preferred MERV-13A), if possible. Pre-test total airflow and re-test after filter replacement. If needed, reestablish pre-test volume by adjusting fan speed. MERV-13A filters are rated based on performance after electrostatic charge has dissipated. It is important that filters are provided with their ASHRAE 52.2-2017 (Appendix J) test report, including Dust Holding Capacity and arrestance values.
- Increase outside air as much as possible based on heating coil or cooling capacity.
- Pre and post purge building by running units 2 - 3 hours beyond the programmed Time Of Day schedule.
- Additional remediation may be considered but must be carefully investigated based on specific RTU and ductwork configurations. Under the current jurisdiction of SED, the use of bipolar ionization, ion generators, corona discharge and UV technology is not permitted due to the potential harm to the occupants. M/E Engineering will remain engaged with SED and will inform our clients if and when these newer technologies are deemed acceptable for use.

