



Royal Oak Schools response to COVID 19 for HVAC Systems

We have taken the following steps to mitigate the negative effects of the COVID virus and provide the safest environment for our students and staff.

1. Air filters use a universal rating called a MERV (Minimum Efficiency Reporting Value) rating. Recommendations are to outfit equipment with the highest rating possible to filter the air and still not potentially damage equipment or reduce airflow to the point of diminishing returns. Recommendations are to get all equipment as close to a MERV 13 rating as possible. Our intent was to follow that strategy as closely as possible. This was accomplished by installing filters of various ratings and testing the airflow differential over the course of several days. Where MERV 13 filters were viable they have been ordered and are being installed as they come in from our supplier. Our supplier provided an expert opinion during this process. We examined many possibilities for air purification including what were judged to be both viable and non-viable solutions. We found our resulting process to be typical of most other Michigan school districts. With the denser filter material we will have to implement at least one more filter change into our filter change schedule. This will be determined by air flow measurements as the school year progresses.
2. As to whether windows should be open during occupied hours, it is universally accepted that this recommendation was made to account for school districts that do not have the equipment to properly control temperature in instructional areas year round. There is science to suggest that open windows can cause problems with blowing across occupants and spreading contagions as a result. We made the determination that with our installed systems, being of very recent technology, have the ability to provide the safest environment possible without the potential problems of all windows being open. It would not be possible to control temperature in high heat or deep cold outdoor situations with window openings adding to the classroom climate.
3. All HVAC units that are designed to specifically bring in fresh air already operate on 100 percent outside air. Those units are Heat Recovery Units (HRU), Energy Recovery Units (ERU) and Energy Recovery Ventilators (ERV). These units, which are the most responsible for outside air intake use exhausted air to temper the incoming air either using it to heat it in the winter or cool it in the summer. Once this temperature exchange takes place through heat exchangers or energy wheels the indoor air is exhausted. These units don't recirculate air, but still filter the outside air that is brought in. These units will be outfitted with MERV 13 filters and those that utilize a secondary bag filter already have MERV 13 filters installed.

4. Air Handling Units (AHU) and Roof Top Units (RTU) Heat Ventilators (HV) that condition air for specific areas, say an office area or a cafeteria for example, are currently running with the outdoor air dampers 100 percent open. For this condition, we are accepting a loss of efficiency for the reward of not recirculating air in occupied areas. These units will all be outfitted with MERV 13 filters as we have determined that to be viable as long as we check airflow on a regular basis to make sure to not put extra strain on electric components.
5. For most classroom areas that have Fan Coil Units (FCU) or Unit Ventilators (UV) we have installed the highest rated filters we can without affecting unit operation. FCU's which are in most classrooms are not the primary source of fresh air and thus don't act as the primary filtration. Again in this instance we made airflow readings and temperature scales over the course of days to determine the best environment and also the best opportunity to maintain temperature and not cause equipment failure over time. Filters for these units (FCU) are at a MERV 9 which is still within the >90 to >95 % average arrestance and 1.0-3.0 micron size particle filtration according to ASHRAE standards.
6. All chilled water and Direct Expansion (DX) cooling systems are running prior to building occupancy and no areas of our systems have had standing water such as our cooling towers, which run 24/7 and utilized year round to aid in cooling application throughout their respective buildings. They are constantly chemically treated as are all of our mechanical water systems to insure they are free of organic material and material corrosive to the system itself.
7. All equipment, be it inside, in a fan, equipment room, outside on pads, or on rooftops has been evaluated for operation and filtration to provide the optimum safe environment in this new time of caution and safety. We continue to monitor operations via our Building Management System (BMS) both onsite and remotely to give the best chance to spot problem areas before they become a problem to health or to instruction.

If you have any questions please contact Pat Murphy at patrick.murphy@royaloakschools.org or by calling (248) 545-0064.