After fielding many questions about our air quality and the HVAC systems that support our schools learning environments, we wanted to give you a brief overview of our current HVAC systems and let you know what enhancements are being made for the 2020-2021 school year

Before Covid-19 and beginning in 2008, the Conval District began significant upgrades to the HVAC air-handling systems. Overall, approximately 90% of the District air handling equipment has been replaced with new HVAC equipment since 2008. We have also installed building automation systems beginning in 2010 which allows us to remotely monitor temperature, carbon dioxide levels, and humidity in most areas within each school.

By the start of the school year 2020, our district will be 100% automated.

Current State

MERV 8 filters

- Merv 8 rated pleated filters will trap 20% of particulate .3-3.0 micron in size. They capture 70-85% 3.0 -10.0 micron in size and larger. All air delivered and circulated to the classroom passes through this filter

CFM delivery to the classrooms

- All classrooms require a minimum supply of air. During installations or recommissioning we utilize a flow hood to balance the air flows for all rooms affected to meet this requirement

Demand control ventilation/C02 monitoring

- Many classrooms or wings of the schools have CO2 monitoring. CO2 monitoring allows the outside air dampers to modulate and bring in the required outside air based on a programmed set point for CO2 levels. Outside air has a CO2 level in the 400's PPM. (parts per million) Most of our classrooms, when full of students, maintain readings around 1,200PPM of CO2. This level is right within standard according to ASHREA (American Society of Heating, Refrigeration and Air conditioning Engineers)

Electronically monitor/ trend and adjust settings for temperature and outside air introduction

- Our building automation systems at all schools allow us to monitor equipment operation, make adjustments, trend readings remotely and schedule times of operation.

Spot check CO2, temperature and humidity levels with calibrated instrumentation

- We own and utilize a hand held FLUKE air meter to double check CO2 and temperature readings. This instrumentation is calibrated annually and completely independent of our building automation systems... We are also able to check CO and humidity levels with this device.

Enhancements for the 2020-2021 School year

MERV 11 filters

- Merv 11 rated filters are a higher rated filter and will trap 20% of particulate .3-3.0 micron in size. They capture 65-79% of particulate 1.0 – 3.0 micron in size and they capture 85% and better of particulate 3-10 microns in size and larger. Again, all air delivered and circulated to the classroom passes through this filter

I wave Ionization units

- We have and will be continuing to install 143 Bi-polar ionization units into the ductwork of all HVAC units in the district. The ionizer emits positive and negative ions that kill mold, bacteria and viruses in the occupied space, thus improving air quality (iWave Air, 2020). This process also reduces allergens, static electricity as well as controlling odors and traps particulate without creating a harmful by-product. The ionizers are important because they remove hydrogen molecules. Without hydrogen molecules, the pathogens have no source of energy and will die. The ions also attach to allergens like pollen and other particles. This causes them to bond together until they are large enough to be trapped by the air handling filters.

Maximize outside air introduction into the facilities

- As noted in the current state, we have many classrooms and school wings that are controlled by CO2 sensors and subsequently the term "Demand Control Ventilation" is met by definition. Through remote monitoring of these outside air dampers we have noticed it is on rare occasion these dampers that bring in outside air to reduce the amount of CO2 in a classroom are open more than 20%. With that said, we will now be fixed positioning these dampers to stay open 50-60% when in operation. This should ensure air changes in the classroom space of 4-7 times per hour. We will also be programing start up and shut down times of HVAC units operation to be 3 hours before and 4 hours after the school day start/stop times.

As you can see, air quality is something we have been improving upon for years and continue to do so with the health of our students and staff in mind. Please feel free to reach out if you have questions.

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