How can your HVAC system help learning environments become safer?

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Ingenuity for life

Reopening your school is a key priority. Doing so as safely as possible is of utmost importance.

Every day, we learn more about COVID-19 and the virus that causes it: how it spreads, how it affects us, how to combat it.

Controlling the indoor environment may help improve our health and safety and – of course – the ability to reopen and reoccupy schools. For guidance, HVAC professionals have long turned to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), which has established an Epidemic Task Force in response to the COVID-19 pandemic.

This committee's work recently culminated in comprehensive guidance for Building Readiness. Recommendations include modifications to HVAC control sequences, ventilation and filtration standards, and other steps designed to help make buildings ready for occupancy once again*.

ASHRAE recommends consideration of the following strategies to promote a safer, healthier indoor environment:

- Control indoor temperature and humidity levels in accordance with ASHRAE guidance to reduce the risk of person-to-person spread among building occupants

- Increase outdoor air, diluting the effect of any sick occupant who may be actively shedding the virus

- Leverage your existing Building Management System (BMS) to program these changes as an "Epidemic Mode" sequence of operations

Manually implementing ASHRAE'S recommended **Epidemic Mode** may be time consuming and difficult. Although scheduling and setpoint changes are well within BMS sequencing capabilities, balancing increased outdoor air with temperature and humidity control – while minimizing increases in energy consumption – is complex. Failure to meet this challenge may mean your school building isn't as safe as it could be. And because the guidance may continue to evolve as we learn more about COVID-19, ongoing programming changes could be needed to stay in alignment with evolving recommendations.

But, this is exactly the type of problem that artificial intelligence and machine learning algorithms were invented to solve.

*https://www.ashrae.org/ ile%20library/technical%20resources/covid-19/ashrae-building-readiness.pdf

The journey toward a smart school starts today.

Smart buildings are uniquely equipped to help solve complex problems like:

- Supporting healthy learning environments
- Improving comfort
- Managing workload
- Reducing hot/cold calls
- Optimizing energy consumption
- Leveraging digital strategies to improve operations
- Solving rogue zone behavior
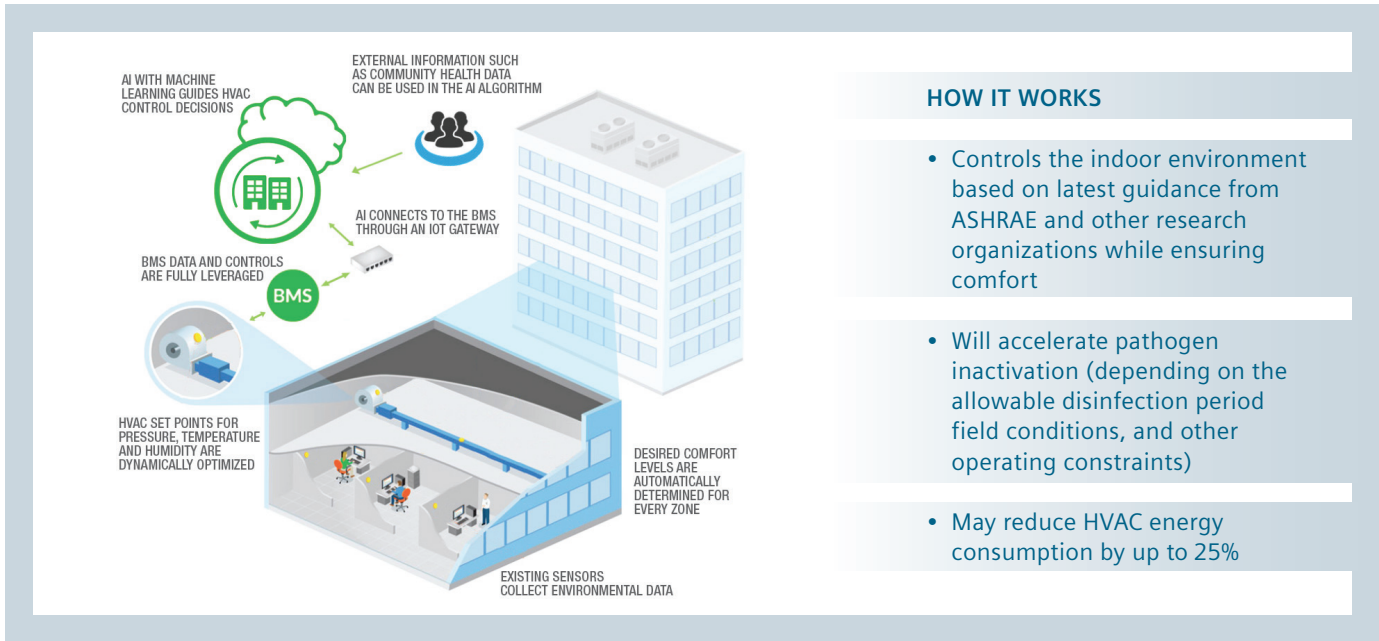
HOW IT WORKS

- Controls the indoor environment based on latest guidance from ASHRAE and other research organizations while ensuring comfort

- Will accelerate pathogen inactivation (depending on the allowable disinfection period field conditions, and other operating constraints)

- May reduce HVAC energy consumption by up to 25%

Optimization strategies powered by machine learning let you adapt to industry recommendations

Machine learning and artificial intelligence (AI) continue to evolve and adapt, and today they have given us Dynamic VAV Optimization (DVO). It's our answer to dynamically and automatically optimizing HVAC systems based on your priorities. Relying on a patent-pending software solution, DVO integrates with your existing Siemens Building Management System for rapid deployment deployment in your school building.

Modes of operation

Green Mode – Control AHU fan speed and supply temperature to dynamically adapt to occupants' comfort requirements, minimize energy consumption and costs, and reduce hot/cold calls. DVO helps enable energy savings that can continue to provide value.

Defense Mode – Establish environmental conditions, pursuant to ASHRAE recommendations, that may help minimize virus transmission while still operating within acceptable comfort bounds.

Decontamination Mode – Assist in accelerating the rate of decay for viruses by using elevated temperature during unoccupied periods.

Each mode of operation is configurable to optimize results for your school, based on its location, layout, hours of operation, and other factors.

For more information, visit usa.siemens.com/education

DVO – How it works

- Integrate cloud-based software with existing BMS

- Leverage existing control devices and sensors

- Configure operations remotely for rapid deployment

- Collect data from sensors and other external sources

- Apply machine learning to make intelligent HVAC control decisions according to comfort, health, and safety requirements