



Northwest Catholic District School Board implements **Dynamic VAV Optimization** for safer reopening strategy

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In Northwestern Ontario, the Northwest Catholic District School Board educates hundreds of students from its five elementary schools. As part of its multi-year strategic plan, the School Board provides and supports staff with strategies and tools to maximize the academic achievements for the entire student body—including the well-being of the whole child. That means that the district not only has a strong focus on Catholic education, Indigenous learning, and French immersion, but they're also focused on creating a safe and healthy learning environment to benefit all.

Following the guidance

Prior to the 2020/21 school year, Facilities Manager Toby Munro says he reviewed all available guidance about how best to protect students, teachers, and staff. "There really wasn't a lot of knowledge early in the pandemic, especially about whether the virus itself was airborne. But when we connected the dots between major outbreaks in enclosed areas like institutional living facilities, we instinctively wanted to do something that would improve ventilation," he explains.

Already a customer of Siemens for a range of building automation and mechanical needs, Munro says he met with the local team to understand what options might be available to help mitigate virus transmission in their school buildings. "We relied heavily on Siemens, and they did a good job of researching and consulting across the industry to make recommendations that would keep us as safe as possible," he says.

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Ultimately Siemens and the Northwest Catholic District School Board decided to implement Dynamic VAV Optimization (DVO) in the three buildings utilizing Siemens' building automation platforms. This effort, along with improved filtration and other layered mitigation measures, would help safely reopen for the 2021-2022 academic year.

Understanding Dynamic VAV Optimization

DVO is an AI-powered solution that intelligently optimizes indoor environments by controlling AHU static pressure, supply temperature, and humidity. Since the pandemic began, DVO has helped reopen buildings with confidence by meeting the latest ASHRAE® Epidemic Task Force standards, including a range of strategies to promote a safer, healthier indoor learning 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 student or staff member who may be actively shedding virus

According to Munro, the building custodial and maintenance staff manage each building's automation system independently, and manually implementing the complex variables within ASHRAE-recommended Defense Mode would be time consuming and difficult for an already busy team. Thus, implementing a solution that could automatically adapt temperature, humidity, and static pressure setpoints based on priorities was essential. The good news was that this type of adaptive programming is exactly the type of problem that AI and machine learning are designed to solve.

Dynamic VAV Optimization applies AI to intelligently harmonize these parameters based on your priorities

Defense Mode

Establish environmental conditions, pursuant to ASHRAE® recommendations, to help minimize virus transmission while maintaining comfort



Why schools love it



Green Mode

After the pandemic, consider switching to Green Mode to enable energy-efficient comfort control and ongoing analytics to become even more sustainable



Fast, easy implementation via the Cloud

Adapt easily if ASHRAE guidance changes

Leverage federal COVID-19 relief funds

Provides ongoing operational benefits to continually optimize the indoor environment and save energy



Protecting students, teachers, and staff well into the future

Munro explains that the Northwest Catholic District School Board also anticipates improved energy consumption by taking advantage of DVO's Green Mode. "Where we live, the temperature swings are extreme. It can be tropical in the summer and Antarctic in the winter – literally +40° to -40° Celsius throughout the year. That's another part of why we landed on DVO; the goal is to bring in more fresh air, but only up to the point where you don't cause other problems for your system."

That is, bringing in additional cold, dry air can not only increase energy consumption in terms of heating, but it can also mean that an airborne virus could remain suspended longer in the drier air. "It's a balancing act," says Munro.

Funded in part by an infusion of COVID relief funds from the Canadian government, Siemens completed the implementation of DVO in time for the new school year to begin. And now that students, teachers, and staff have been back to in-person learning, Munro notes that they have not had a case of COVID that has spread among students in the buildings where DVO has been deployed. He credits the strategic combination of DVO, advanced filtration, PPE, and other mitigation measures.

"We know that there are a lot of ways to help protect people from this virus, and that's why DVO is layered into our mitigation program. When something like this is working well, people don't know it's happening—and that's important too," Munro concludes.

Contact us or learn more at usa.siemens.com/education.

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