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Better Air Everywhere

Integrated Ventilation Solutions from Systemair and Fantech

Creating optimal learning environments begins with the air students and educators breathe. In today's educational facilities, proper ventilation isn't just a mechanical requirement, it's a foundational component of health, focus, and overall student success. That's why Systemair and its North American subsidiary, Fantech, are committed to delivering Better Air Everywhere.

From classrooms and offices to labs, libraries, and cafeterias, Systemair and Fantech provide integrated ventilation systems that work together seamlessly, simplify specifications, and meet the unique demands of educational spaces.

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Why good indoor air quality is critical in schools

For schools, the first and most crucial step is to gauge indoor air quality in a classroom. Depending on the presence of people, their activity level, and the resulting emissions of bio effluents within a given space, CO_2 is highly considered a reliable indicator of indoor air quality. Several studies have been conducted to find a correlation between CO_2 concentration and cognitive student performance. More than a few have found that within one hour, CO_2 concentration in a classroom can significantly affect students' concentration and decision-making performance, as well as cause dizziness and fatigue.[1]

There are several types of particles in the air to which we as people react differently. When it comes to particles causing foul odors, it is easy to diffuse the concentration by simply opening the windows or the door to let fresh air in. This is a quick and easy solution to address odor as our own receptors can indicate when the odor is present. Other particles can be more problematic. Airborne viruses and bacteria, for example, can easily pass between people with no tangible signs until symptoms occur, putting students at greater risk. This is because, in the absence of tangible negative effects, people are less likely to open windows.

[1]Is CO2 an Indoor Pollutant? Direct Effects of Low-to-Moderate CO2 Concentrations on Human Decision-Making Performance Usha Satish, Mark J. Mendell

Also, during the cold season, many people opt to keep the windows and doors closed, preferring to breathe in stale air rather than risk cold drafts that may also cause colds.

A study took place in 150 classrooms in Graubünden, Switzerland. The study looked at the correlation between poor air quality and its influence on the number of Covid19 infections. While the study is still ongoing and cannot be generalized in short time frame, first results have shown that significantly more individuals were infected in poorly ventilated classrooms.[2]

[2]https://www.empa.ch/web/s604/covid-and-co2

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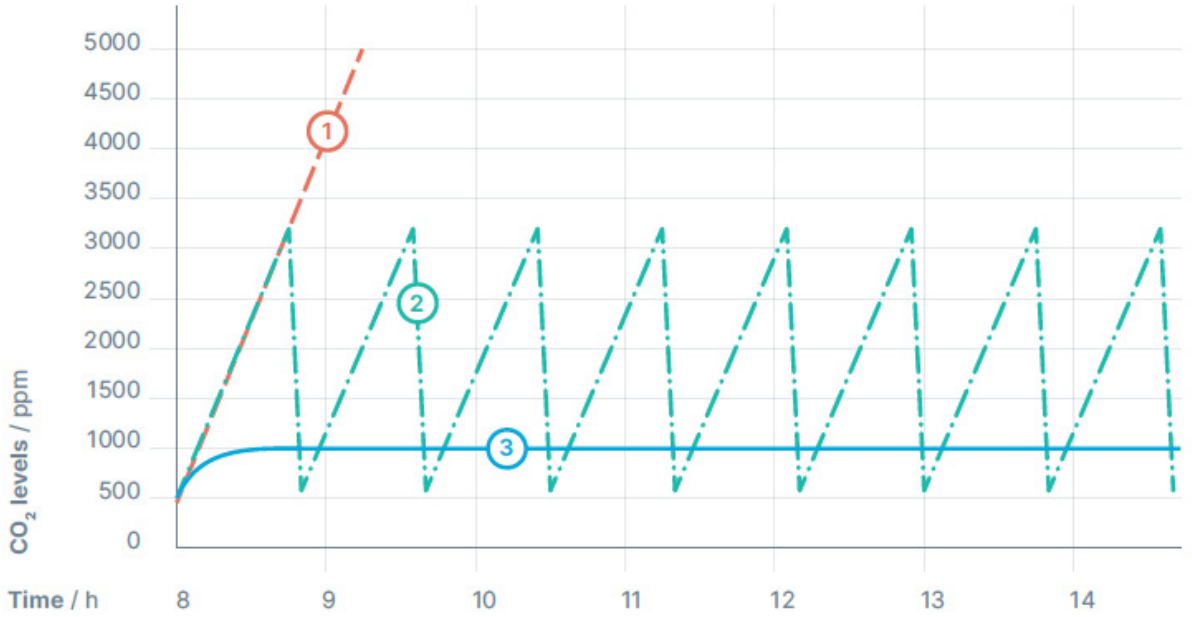
Mind your difference: Comparing the impact of no ventilation, natural and mechanical ventilation

To demonstrate the impact of different ventilation solutions in schools, a simple $C0_2$ calculation analysis has been done for a classroom with 165 m^3. There are 8 classes per day lasting 45 minutes each with a 5-minute break in between. The class has 30 students including teachers. Information about CO_2 levels in human's breath was taken from VDI standards.



1

Calculation simulates the impact of having **no ventilation'** and shows what happens with C02 levels if students are kept inside the classroom for the **whole day with windows kept closed.** C02 levels will rise consistently to about 2700 ppm each school hour. After just an hour, concentration of C02 will be high enough to cause sleepiness among students. **After two hours, there will be a high drop in students' concentration and self-initiative.**

2

Calculation simulates, **natural ventilation'** and shows what happens **if windows are open during each 5-minute break.** The **draft must be strong enough to** achieve full air exchange within these 5 minutes. In this case, ppm levels will be **averaging below 2000 ppm, which is already critical.** Taking this into account, windows should be opened once more during school hour, which would result in average ppm levels of around 1000.

3

Calculation simulates the impact of, **mechanical ventilation' with the CO_2 sensor set to 1000 ppm.** Sensors adjust the unit's operation depending on actual levels inside the room. (930 m3/h in our calculation) The unit can work at **minimum operational** cost while supplying students with enough **fresh air** to provide **optimal indoor air quality.** The draft will not be felt with careful design, while room conditions can be kept at optimal levels.

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Using CO_2 as an indicator and benchmark, it is clear that having no ventilation should no longer be an option for educational facilities. Although natural ventilation can keep CO_2 levels relatively low, it still allows the infectious particles to stay inside for the whole hour before it is ventilated out. Should there be no possibility of installing mechanical ventilation, natural ventilation is still an option, should the school staff follow the guidelines.

Smarter Design Starts with Compatibility

Whether building a new school or upgrading an existing one, specifying HVAC products that are designed to work together saves time, reduces risk, and ensures performance. Systemair and Fantech, operating under the same global family, offer a complete line of ventilation solutions that complement each other—and deliver a cohesive experience from design through installation and beyond.

Take Systemair's Changeair vertical unit ventilators, for example. Purpose-built for classrooms, they're the only units in the market featuring a differential pressure monitoring system for their energy recovery wheel. This advanced feature improves indoor air quality, controls humidity and temperature, and helps limit the spread of airborne illnesses—while also boosting energy efficiency.

For smaller or specialized spaces like offices, modular classrooms, and staff lounges, Fantech HRVs and ERVs are a natural fit. Compact and versatile, they can be floor-, wall-, or ceiling-mounted to suit tight mechanical rooms or unconventional layouts.

Together, Systemair and Fantech bring Better Air Everywhere—not just in classrooms, but across the entire school campus.

Designed for Durability & Ease of Maintenance

Educational facilities operate on tight schedules and tighter budgets, and facility teams often juggle multiple responsibilities. That's why both brands prioritize serviceability. With user-friendly designs, easy access panels, and tool-less filter replacement, Systemair and Fantech units reduce maintenance time and help staff stay focused on keeping the school running—not chasing hard-to-reach filters or struggling with complex repairs.

Systemair's classroom ventilators are frequently praised as some of the easiest to maintain in the industry. With accessible compressors, coils, and filters, technicians can complete tasks quickly, minimizing classroom disruptions and maximizing uptime.

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Ventilation for Every Learning Space

From pre-K through higher ed, every corner of an educational facility can benefit from tailored ventilation. Systemair and Fantech offer solutions for a wide range of applications:

Classrooms & Modular Buildings

Changeair units deliver long-lasting performance and are ideal for both permanent and relocatable learning environments. Their durability often outlasts traditional rooftop systems and allows for future repurposing.

Science Labs & Art Studios

Topvex units provide quiet, high-efficiency ventilation with advanced filtration, supporting both air quality and acoustic needs in sensitive spaces.

Libraries & Lecture Halls

When noise levels matter, Geniox units deliver discreet, effective ventilation that enhances comfort without interrupting concentration.

Bathrooms & Restrooms

The Fantech bathfan line offers low-sones operation—perfect for ADA bathrooms and single-stall restrooms—promoting quiet, fresh environments for staff and students alike.

Cafeteria Kitchens

Fantech exhaust solutions and rooftop ventilators remove heat, odors, and humidity efficiently, ensuring better air in food prep areas and throughout adjacent spaces.

Every Room and Space

Systemair's air distribution products are developed and rigorously tested in certified laboratories to assure reliable operations of each component.

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Why Better Air Matters in Education

Research continues to show a direct connection between indoor air quality and student performance. Poor ventilation has been linked to reduced attention, lower test scores, and increased absenteeism. In contrast, classrooms with fresh, filtered air support cognitive function, reduce illness transmission, and create a more comfortable, productive environment for everyone inside.

That's why Systemair and Fantech are driven by the belief that clean air should be a standard—not a luxury—in our schools. Together, we're delivering Better Air Everywhere—for students, teachers, staff, and the communities they serve.

Partnering for Long-Term Success

With a shared focus on ventilation, energy efficiency, and serviceability, Systemair and Fantech simplify the process of designing healthy, high-performance learning spaces. Whether you're working on a new construction project or retrofitting an aging facility, you can rely on our integrated solutions to meet your goals—and exceed expectations.

To explore how Systemair and Fantech solutions can enhance your next educational project, visit systemair.net or connect with your local representative.

Let's build a future where every student breathes better, learns better, and thrives—because they have Better Air Everywhere.

Scan the code to email our ventilation experts to help you with your next project.

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