BELIMO ROOM SENSORS

Improved air quality and visibility for a healthier and more productive environment

Collège Laval a Class Act Continues to Make a Big Impact on Unparalleled Education

Collège Laval maintains an unparalleled quality of education by taking the health of its students and staff very seriously. The relationship between well-being and productivity is well established, and Collège Laval places comfort and safety at the heart of its priorities to ensure everyone's potential and talent are developed.

By installing 115 smart room sensors within the college, it is now possible to precisely detect air quality in real time, even from a smartphone. To achieve this, the college staff worked together with Immotik, a distributor, installer, and integrator of BACnet products, to select and install a network of sensors in the six wings of the college. Every sensor can be scanned quickly and easily to access data in real-time, without prior calibration, via the Belimo Assistant App and a smartphone. It also allows field adjustment, commissioning, and troubleshooting even without power.

TYPE OF BUILDING
School

PROJECT
Retrofit

SECTOR
Education

PRODUCTS
Room Sensors

BELIMO

Collège Laval is an incomparable environment for learning and living.

Collège Laval is one of the largest private secondary education colleges in Quebec. It's recognized for its commitment to innovation and excellence. Laval, this private institution, has been a shining example since 1888 and constantly strives for continuous improvement. Through its motto Live, Innovate, Excel, it perpetuates its unique concept of education—perfect harmony between formal schooling and knowledge of oneself and others. A few key figures regarding the establishment and its size: Collège Laval welcomes more than 2000 students in six wings, spread over 388,000 square feet. The school has state-of-the-art infrastructure, including 84 classrooms, a swimming pool, three dance studios, three gymnasiums, and a theater, all ideal for furthering the entire education of its students. It also stands out for its ambitious educational plan and numerous initiatives, such as the healthy lifestyle awareness program and the two courses, Move and Shine, that enable students to select their interests and passions according to their personalities.

The province of Quebec: a land of challenges and a model for standards

It is recognized and accepted that many environmental factors can affect students' level of concentration and even their health. Regarding air quality in educational establishments, monitoring and acting quickly on carbon dioxide (CO2), humidity, and temperature levels are essential.

Abnormally high CO2 concentrations significantly affect concentration, decision-making, and academic performance. In September 2021, the Quebec government's Ministry of Education announced that 90,000 CO2, temperature, and relative humidity sensors were installed in all preschool, primary, secondary, vocational training, and adult education facilities in Quebec. Thus, the Government of Quebec stood out by becoming the first in Canada to deploy such tools to ensure good air quality in all classes in its school network. These sensors make it possible to monitor the operation of the ventilation, identify classrooms where ventilation is deficient, and take corrective action for the medium and long term. Finally, a good supply of air and good ventilation reduce the aerosol transmission of diseases, which helps prevent the transmission of COVID-19 when used in parallel with other measures such as mask wearing and social distancing. Since the CO2 is produced mainly by the occupants of the premises, a rate below 1500 parts per million (ppm) is an indicator of good ventilation, with a rate below 1000 ppm being the ideal target of the Ministry. [1]

"We like the design, the absence of LCD screens, the simplicity of the Belimo application, and the fact that we can check the ambient air conditions locally in each room, in real-time."

Michel Thibeault, Director of Maintenance and Equipment, Collège Laval

Values to rely on: Innovation and leadership

With new energy standards and better insulation, buildings are becoming more energy-efficient, but air quality can rapidly deteriorate. The Indoor Air Quality undertaking is part of this program launched by the Ministry of Education to systematic measurement and control of the levels of CO2, relative humidity, and temperature in school buildings. Installing these room sensors allows continuous data collection to make environmental changes more efficient.

To ensure good indoor air quality, Collège Laval ensures that the average daily concentration of CO2 is lower than 1000 ppm, below the ideal threshold set by the Ministry for new buildings. The relative humidity must be between 30% and 50% depending on the season, and the ambient air temperature must be between 20°C and 24°C.

If necessary, real-time readings allow changes to be made quickly and directly in the affected rooms. Significant energy savings can be achieved by implementing targeted and immediate measures. This approach of using CO2 levels as a proxy indicator of the proper functioning of HVAC systems is efficient for managing such a large facility.

Data on daily averages can identify trends and target buildings requiring broader response plans and larger-scale remedial work. Therefore, it is paramount to provide reliable and accurate measurements to enable HVAC systems to sense and deliver the necessary levels of comfort and air quality. All this must be energy efficient and effective in maximizing well-being and productivity. This massive data network will also allow the Ministry of Education to identify significant trends and plan investments to improve air quality in Quebec's educational establishments.

IMMOTIK Quebec

Immotik is a specialist in automated control and regulation of mechanical building systems offering cutting-edge technologies to deliver improved building performance. Drawing on many years of experience, its team of highly qualified instrumentation and control personnel has succeeded in working on projects for both the private sector and the government. Working together with their partners and customers to find control strategies and offer suitable products to meet their heating, ventilation, and air conditioning requirements, providing comfort, indoor air quality, and energy efficiency. Immotik has been working on energy efficiency projects at Collège Laval for more than two years.

Charles Thibaudeau and Luc Brochu

"We were very impressed with the results of the Belimo sensors, which proved to be very accurate and with very stable readings."

Charles Thibaudeau, Control Contractor, Immotik

During vendor selection for the Collège Laval project, tests with two sets of industrial CO2 sensors were performed and monitored for two weeks. The Immotik was impressed with the results of the Belimo CO2 sensors because they did not have to be calibrated. Another competing product was excluded from the project due to its low accuracy and inconsistent readings. The ease of installation and commissioning also played a significant role in the final decision.

Immotik has installed more than 115 Belimo sensors in the college, providing accurate readings and maintaining a healthy classroom environment without any prior calibration. The sensors are also connected to the building management system, making it possible to monitor the indoor air quality status and then aerate or ventilate as needed to maintain the appropriate air quality in different rooms.

Customer satisfaction feedback

The accuracy and stability of the readings were crucial in our decision-making, but the (dual-channel) technology is one of the main features that won us over. In addition, we did not measure any drift (continuous deviation of the read value from the accurate measurement), so we did not have to calibrate them. Belimo sensors are now installed in the college, providing accurate readings and maintaining a healthy classroom environment without adjustments. Built-in Near Field Communication technology allows fast and easy access to data, on-site control, commissioning, and troubleshooting using a smartphone and the Belimo Assistant App, allowing very efficient process execution. In short, simplicity, precision, reliability, and exceptional connectivity, enable fast commissioning and easy maintenance.

"To help maintain healthy CO2 levels in Collège Laval classrooms, we evaluated and tested several ambient CO2 sensors (using a portable industrial CO2 sensor). We were very impressed with the results of the Belimo sensors, which proved to be very accurate, and with very stable readings," said Charles Thibaudeau, Control Contractor at Immotik.

[1] "Suivi de la Qualité de l'air intérieur: Mesure des taux de dioxyde de carbone dans les bâtiments scolaires," page 5, April 2021, Directorate for the expertise and development of school infrastructures, General Directorate of infrastructures, Quebec.
http://www.education.gouv.qc.ca/fileadmin/site_web/documents/reseau/rapport-qualite-air2.pdf

BELIMO ROOM SENSORS

DETAILS AND SPECIFICATIONS

With simple, clean aesthetics, they are ideal for installation in visible areas and have the slimmest profile of all sensors on the market.

Type of Device	ambient temperature sensor
Type of Sensor	air quality
Type of Product	sensor
Measured Values	CO2, temperature, humidity
Electrical Connection	terminals
Installation	room
Enclosure Rating	IP30, NEMA 1
Measuring Range of Humidity	0...100% RH
Measuring Range of Temperature	32...122°F [0...50°C]
Output Signal	0...5 V, 0...10 V, 2...10 V, MP-Bus
Voltage	AC/DC 24 V

CS_28 – 08.2022 – Subject to technical modifications

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