



Dordan Mechanical was performing the base building work for construction of a new wing at Loyalist College in Belleville, Ontario. With our comprehensive ventilation offering and HVAC system expertise, O'Dell was contacted to deliver a cost-effective solution for the labs that would provide students and instructors with a safe working environment.

The Challenge

The classroom spaces were earmarked to accommodate fully operational laboratories, which required ventilation of numerous laboratory hoods and point-source extraction.

The O'Dell Solution

O'Dell offered an uncompromising and economical solution to maintain a safe working environment for Loyalist College's new laboratory.

The lab hoods and the desktop ventilation requirements were addressed separately.

Lab Hood Design

The lab hoods were installed in two main classrooms: Wet Lab 1 and Wet Lab 2, with six and four hoods respectively. Each hood operated at two different exhaust levels depending on the sash height. This required a variable exhaust airflow solution for each hood and classroom.

From each hood, the airflow is controlled by a Krueger model RVE 316 stainless steel terminal unit complete



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with SS airflow sensor. At the heart of the terminal unit is a Belimo VFP-600 airflow sensor, an VRP-M controller and a fast acting, 2-second stroke LMQ24-MFT actuator. The complete Belimo package is easily commissioned and customized on site with a user-friendly software package.

Exhaust for the lab hoods was provided by a single-dedicated PennBarry FH exhaust fan in each classroom. The fan was complete with a bypass plenum to allow for variable exhaust airflow from the classroom while maintaining an acceptable discharge plume height. The dampers on the bypass plenum are controlled by a Honeywell controller and Greystone static-pressure sensor located in the main exhaust duct.

Desktop Ventilation

Four separate desktop ventilation systems were installed in four different classrooms. The complete desktop ventilation system was provided by Plymovent and consists of four, six, twelve and thirteen fume arms respectively, pressure controls (similar to lab hoods) and VFD-driven direct-drive exhaust fans.

Each user workstation was provided with a MINIMAN-75, 3" exhaust arm, complete with isolation damper. When the system is in use, the student opens the damper to provide adequate ventilation over their experiment.

As dampers throughout the system open and close, the static pressure in the main exhaust duct for the classroom changes. Similar to the lab hood controls, this pressure is monitored and the exhaust airflow is modulated via a VFD to maintain a preset value.



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