

# Venmar gets high marks for air quality



*"The Venmar HRV450w units have improved the air quality and the temperature conditions in our building. Students and teachers are able to work in a much more comfortable environment as a direct result of the Venmar units."*

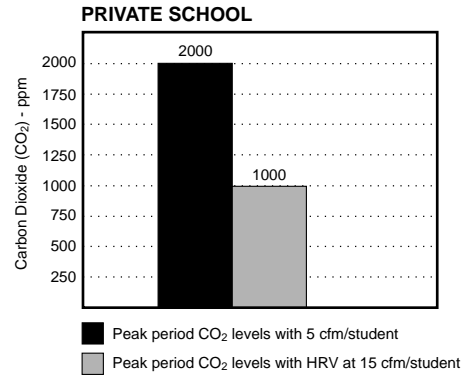
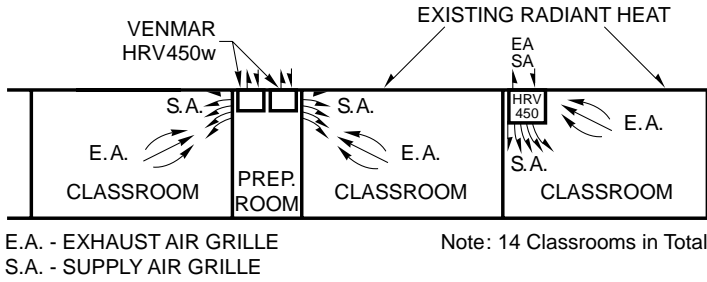
*Mr. Jim Vanderkooy - Principal*

"School Daze" took on its full and literal meaning at a private Ancaster, Ontario high school. Inadequate ventilation of 14 classrooms resulted in stale, stuffy air that had students and staff complaining of lethargy and impaired attention spans. In fact, carbon dioxide readings in a number of classrooms showed levels of 1,300 to 2,000 ppm, depending on the number of students in class. Designed and built prior to 1990 building code ventilation requirements of 15 cfm per student, the school's rooftop system had a capacity of 5 cfm per student. To make matters worse, as a result of initial budget constraints, the 14 problem classrooms were not air conditioned. Something had to be done - that's where Venmar came in.

## **Situation**

Major changes to the rooftop units and distribution system were required if the ventilation rates were to be significantly improved.

- Each of the school's two wings were served by a rooftop air handler with heating and fresh air intake.
- Only one of the wings had a unit that lent itself to easy upgrading for improved air quality.



## Standards and Requirements

Standard	ASHRAE 62-89
CFM per student	15
Building type	School
Occupancy	30 students
Ventilation required	450 cfm per classroom

## Restrictions and Limitations

The existing system had its own built-in restrictions:

### WING #1

- One unit, equipped for air conditioning, had additional airflow capacity which would allow for an increase in ventilation air.

### WING #2

- A second unit, without air conditioning, could not easily be modified to increase fresh air into the air handler.

Given the building's purpose, there were other key considerations as well:

- Operating noise levels
- Disruptions during construction

## Design Solution

Two possible solutions for upgrading the ventilation rate in the classrooms were considered. The first called for modifying the rooftop system and distribution ductwork. The second, involving the installation of Venmar HRV450w units with hydronic heat and split air conditioner in each classroom, was retained for a number of reasons:

- heat recovery feature
- simpler installation details
- low noise level
- overall performance
- estimated payback under two years

## The Results

Following the installation of the ventilation system, new carbon dioxide readings were taken.

- New carbon dioxide levels: 500 to 1,000 ppm, depending on the number of students in class.
- HRV option was more cost-efficient in the longterm than the marginally less expensive rooftop modification alternative.

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Printed in Canada  
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PN 152107  
02/00