



Small Duct High Velocity Heating, Cooling and IAQ Systems

Hi-Velocity Systems Case Study

Peachland Primary School - Okanagan Valley, BC

The Peachland Primary School Restoration Project in the beautiful Okanagan Valley in British Columbia was an excellent opportunity to demonstrate the Hi-Velocity System's compact, flexible and energy efficient characteristics. Using leading edge technology, we were able to satisfy the many demands and needs for this multifunction facility while maintaining top quality Indoor Air Quality (IAQ) and energy efficiency. The Hi-Velocity System heats and cools the building as well as filters, purifies and introduces fresh-air into the individually controlled areas of the school.



Each of the primary areas in the school has its own climate control thermostat. First, the Boys and Girls Club has three thermostats, one for each of the classroom areas and one for the office/entrance/kitchen area. The Chamber of Commerce and Art Gallery share a separate thermostat in the central corridor area. And finally the Meeting Room and Art gallery each have their own individual control. Each of these three areas features one dedicated Hi-Velocity System. Small diameter flexible duct provides quiet comfort while optimizing the efficiencies of this advanced zoning system.

The Hi-Velocity System delivers air from compact 2" or 3" outlets, providing quiet draft free air circulation into each area. Another unique feature of the Hi-Velocity System is that even temperatures are achieved floor to ceiling in each room, which are heated or cooled as the thermostat demands. Also featured are HRV's (Heat Recovery Ventilators) to reclaim energy from the exhaust air and pre-condition incoming fresh air. Each air handler comes equipped with a Hi-Velocity HEPS Air Purification System, which not only includes a high efficiency MERV-11 filter but also features UV lights and a patented titanium catalyst. The HEPS not only filters the air but it also helps to eliminate odours and airborne contaminants including bacteria and viruses for a cleaner and safer environment.



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Operational efficiencies were a key factor in the consideration of equipment for this project. High efficiency VFDs (Variable Frequency Drives) are utilized on all Hi-Velocity fan coils, which are controlled by the PSB (Pressure Sensing Board) installed in each unit. This control will modulate the power input to supply only the energy needed for the air required, maximizing motor efficiency.

Each unit is designed for constant air circulation, so that fresh air is continuously introduced, and all of the air is filtered and cleaned year round. When in recirculation mode, the fan draws less power than a 100 watt light bulb. For this application, each Hi-Velocity fan coil is attached to a multispeed heat pump condensing unit, to reduce on off cycling and increase operational efficiencies. Emergency back-up heat is supplied by a high-efficiency side wall vent boiler. Alternative sources of heating and cooling such as solar and geothermal can also be incorporated at a later date as they become more cost effective.



The newly renovated Peachland Primary School with its window and insulation upgrades, coupled with the Hi-Velocity System and its support equipment, will provide a low energy high comfort multi-use space for many years to come.