



Community Center

Fort Smith Recreation Center, NWT



Top left, front view of the Recreation Center at Fort Smith.

Bottom left, the large grey SolarWall® system on the side of the building. Right, close-up of the 1,615 ft² of collector area.

Background

Continuous ventilation air is required to maintain a high standard of indoor air quality in recreation centers, such as the new one that was being constructed in Fort Smith. Featuring a fitness room, gymnasium, curling rink, and squash courts, the facility was going to be in operation 7 days a week & 14 hours a day. This meant that indoor ventilation heating would represent the largest single use of energy in the building.

Solar air heating is particularly attractive in northern and remote communities given the long heating season, solar availability and the high cost of transporting fossil fuels.

Solution

A grey SolarWall® heater was installed on the southwest wall of the building. The 1,615 ft² (150 m²) SolarWall system was combined with a Heat Recovery Ventilator (HRV) to preheat incoming air to the HRV. The combination SolarWall / HRV yielded significant energy savings and a short payback period (3 years).

The combination SolarWall / HRV system has proven to be exceptionally efficient in the north, given:

1. Long operating hours,
2. Low outdoor air temperatures,
3. Clear, sunny weather, and
4. Snow to reflect an additional 50% solar gain

Results

The SolarWall system at Fort Smith was monitored and has been shown to be extremely effective. (Copies of the report are available). With the two systems in place, virtually no additional heating of ventilation air is required during the day. Over the course of each year, approximately 4000 litres of oil will be displaced by the SolarWall and HRV system.

Due to the success of this initial job in "Canada's Arctic", many other SolarWall systems, including the Iqualuit Airport, Western Arctic Research Station, Indian & Northern Affairs Canada's Geoscience Building in Yellowknife, the Youth Offenders Correctional Facility in Inuvik, Alaitus School in Rankin Inlet, Weledah Catholic School in Yellowknife, and several others have also been installed.

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