BACKGROUND

The City of Toronto installed a Solar Wall on the Central Maintenance Garage to provide better insulation, preheat the incoming air, reduce energy costs, provide adequate ventilation, improve the building façade, and relieve the negative pressure situation.

Prior to installation the building, which is over 40 years old, had perimeter walls consisting of 66% single-pane glass that allowed a large quantity of cold air infiltration. The combination of poor insulation and a south-facing glass wall caused the interior of the building to be chronically hot in the summer and cold in the winter.

MONITORING

A reasonable approximation of solar wall performance can be achieved by using the manufacturer's specified airflow combined with temperature sensor data and damper status readings from the BAS.

PERFORMANCE ISSUES

The Central Maintenance Garage experienced a number of issues such as problems with integration with the conventional heating system that caused the Solar Wall system to significantly underperform relative to estimated performance. Please see the final report for a discussion of performance issues.

For more information, contact:
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Project Overview
Address: 843 Eastern Avenue
Building type and use: City of Toronto Vehicle Maintenance Garage
Owner: City of Toronto
System type: Solar Air Heating
Collector Manufacturer: SOLARWALL
System Size (kW): 369
System Size (sq. meters): 610
Installation Date: September 2002

Performance
Estimated Performance: 878,390 ekWh

Financial
Installed Cost (taxes included): $277,000
External Funding: $102,000
Annual Savings*: $29,750
Simple Payback (excluding external funding): 9.3 years

*Assuming the offset of 85,000 cubic metres of natural gas at $0.35/cubic metres

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