

Renewable Energy Case Study

Centennial Recreation Centre – Solar Heating System



Photo Courtesy of SolarOntario.com Ltd

Facility Profile

The Centennial Recreation Centre in Scarborough has indoor swimming pool, hockey ice rink, figure skating rink, a community centre, and an auditorium.

It has a total building area of 8457 m²

The indoor pool has an area of 240 m². Before solar heating was added, the pool water was heated solely by four natural gas fired boilers. The boilers maintained the pool water at a temperature of 28°C.

Implementation of New System

- An unglazed solar collector technology was installed to supplement natural gas for pool water heating.
- The solar system consists of 56 unglazed solar collector panels covering 248 m² of the south facing roof of the swimming pool area. These collectors weigh only 20 kg each when full.
- The piping system has a dedicated pump and is piped as a secondary water system to the swimming pool water circulation system.
- The system is controlled by the building's computerized control system. A temperature sensor mounted adjacent to the solar panels measures ambient conditions (solar and wind temperature) and determines whether solar heating is available. The controls also prevent losses when heat is not available

Benefits of New System

- The main advantage of an unglazed system over other solar systems is lower capital cost.
- When the solar system is operating, between April and November, it will provide over 50% of the swimming pool heating load.
- The solar system will provide 304 GJ of energy which will provide annual savings of \$5,626 in avoided natural gas use.
- It will also avoid creating 28 tonnes of CO₂ gas emissions.
- The expected useful life of the unglazed collectors is 20 years.

Project Summary	
Project commencement:	August 2006
Total project cost (before grants):	\$101,798
Grants	\$39,768
Estimated cost avoidance:	\$5,626/yr
Simple payback period:	11.0 years
Estimated natural gas savings:	13,610 m ³ /yr
Estimated renewable energy delivered:	84 MWh/yr (thermal)
Estimated CO ₂ emission reduction:	28 tonnes/yr
Project Funding: City of Toronto, NRCan, TAF	