

GEMCO Solar Inc.

Shouldice Hospital

Application: Hospital- Solar Thermal

Shouldice Hospital is located at 7750 Bayview Avenue, Thornhill, Ontario. Founded in 1945, Shouldice Hospital is the global leader in hernia repair, equipped with 5 operating rooms and 89 hospital beds.



GEMCO Solar was engaged to provide the turnkey design and installation of Canada's first ever "Triple -State" absorption thermal Heating/Cooling system. The system is designed to address the cooling, heating and domestic hot water needs of the hospital using energy from the sun.

The Hospital is ideally located close to the Greater Toronto Area, and has a high public profile. The Shouldice project, provides a live test center to show case the viability of using this renewable technology as an offset to energy currently provided from traditional fossil fuels such as natural gas and electricity. The core components of the system include 10 solar cooling machines and 131 Solar Thermal collectors.

Based on preliminary energy modeling, the Heating/Cooling System is targeted to offset the following loads for the hospital: 36% Heating, 44% Cooling and 91% Domestic Hot Water and reduce CO² emissions annually by an estimated 150 tonnes - equivalent to removing 28 cars from the road per year. The expectation for this project is to achieve a reduction of 80+% in peak cooling for the building.

A key element of this test project is GEMCO's success in partnering with leading industry players. GEMCO has partnered with world leaders in the design and manufacturer of Solar Hot Water and Cooling products, ClimateWell AB and Kingspan Solar. Also partnering with SAIC Canada and Queens University's Solar Calorimetry Laboratory on the Project to track the long term performance of the Heating/Cooling system.

The ultimate goal for GEMCO is to utilize the experience, knowledge and data arising from this Heating/Cooling Project to roll out the technology across North America.

Site Description

Property Name	Shouldice Hospital
Location	Thornhill, ON
Type of Property	Hospital
Operation	Domestic Hot Water, Cooling and Heating
Solar Storage	4,364L
Displaced	Natural Gas and Electricity

Application Configuration

Solar Collectors: 131 Thermomax Collectors

Solar Chiller: 10 ClimateWell Solar Chillers

Heat Sink: Wet Cooling Tower

Distributions Type: Air Ducts

Project Highlights:

Forecasted Energy Savings:

- Cooling 306,295,104 (BTU) 36%
- Heating 136,407,859 (BTU) 44%
- DHW 536,690,050 (BTU) 91%
- 56% the Total Energy Load

Provided Energy:

Solar System	56%
Auxiliary System	44%

Reduction Peak Cooling: 80+%

Annual CO₂ Reduction: 100 Metric Tonnes

