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.

**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

**Site Description**

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Shouldice Hospital</th>
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</thead>
<tbody>
<tr>
<td>Location</td>
<td>Thornhill, ON</td>
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<tr>
<td>Type of Property</td>
<td>Hospital</td>
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<tr>
<td>Operation</td>
<td>Domestic Hot Water, Cooling and Heating</td>
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<td>Solar Storage</td>
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<td>Displaced</td>
<td>Natural Gas and Electricity</td>
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**Application Configuration**