



Fact sheet



GEO THERMAL ECO CHILL®

Saves Upper Canada College 38%

PROJECT OVERVIEW

Upper Canada College, one of Canada's most prestigious private schools, recently invested \$17.5 million in a new arena complex featuring CIMCO ECO CHILL® technology. The double-pad facility houses one NHL-sized and one Olympic-sized ice rink. "The new arena has had a dramatic effect on what athletic opportunities we are able to offer our boys," says Principal Jim Power. "We're thrilled to have completed the project and deeply grateful to those who stepped forward to make this vision a reality for our students and our community. The new ice increases accessibility for all students, so that more boys have time to practice and play, not just on teams but also as part of the core athletic program."

CIMCO's engineering team was called upon to design a refrigeration system that would effectively interface with the building systems to maximize energy savings, utilize green building refrigerants, and contribute towards achieving or exceeding minimum LEED (Leadership in Energy and Environmental Design) Silver Certification by the Canadian Green Building Council (CaGBC).

The UCC system incorporates a geothermal horizontal-loop piping system under the adjacent running track, connected to CIMCO's proven ECO CHILL® technology in the mechanical room. The geothermal loop acts as both a heat source and heat sink, depending on the seasonal needs of the building and the ice rink refrigeration system. To provide the highest quality ice, while maximizing heat recovery in accordance with NRCan's CoolSolution criteria, we installed an ECO CHILL 150A package.

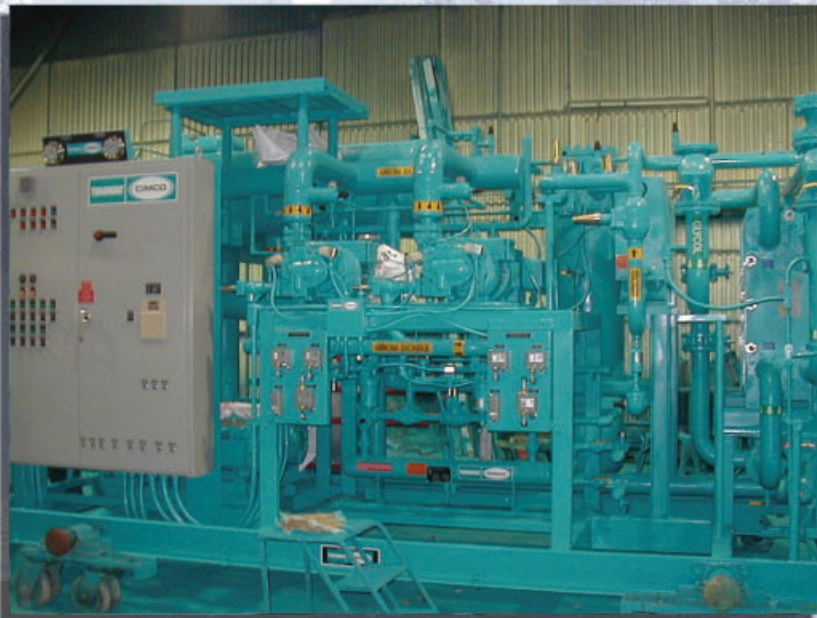
The package is connected to a thermal equalized glycol system to use waste heat for:

- sub floor heating below both rinks
- ice resurfacers snow melting
- service water heating for ice resurfacers equipment
- domestic water heating for dressing rooms & public washrooms
- building heating through centralized heat pumps and supplemental heating

The energy savings of the new arena are very impressive - a reduction of 38% compared to a conventional complex.

One of the important reasons that CIMCO was awarded this project was our industry-leading "Green" technologies.





UPPER CANADA COLLEGE

Toronto, Ontario

GENERAL INFORMATION

- Owner:Upper Canada College
- Project Type:New building
- Year of Construction:2008
- Rink Area:Hockey -17,000 sq. ft., Olympic-20,000 sq. ft.
- Number of pads:2
- Building Area:Approx. 65,000 ft. sq.
- Number of Seats:410
- Months of Operation (per year):.....
.....12 months (Hockey), Seasonal (Olympic)

REFRIGERATION SYSTEM INFORMATION

- Compressors:Bitzer
- Horsepower:3 x 75
- Plant Style:CIMCO Factory Skid
- Total System Tonnage:150 TR
- Refrigerant:R-717
- Evaporator Style:Flooded Plate/Frame
- Condenser:
.....Plate/Frame connected to facility geothermal loop

GEOHERMAL LOOP INFORMATION

- 20 horizontal loops each with reverse return headers feeding 4 run-out circuits
- Total linear footage of HDPE pipe: Approx. 80,000 ft.

MECHANICAL HEATING SYSTEM INFORMATION

- Radiant In Floor:Yes
- Domestic and Service Water Heating/Preheat:Yes
- Underpad Frost Protection:Yes
- Snow-melt Pit Heating System:Yes
- Seasonal Soccer Bubble Heating:Yes
- Integration with Building Heat Pumps:Yes

INTEGRATED CONTROLS SYSTEM DESIGN

- CIMCO ECO SENSE™ controller with fully integrated BMS system

HEAT RECOVERY INTEGRATION

- Yes

THERMAL STORAGE

- Yes("closed tank")

OPERATING MEASURES

- Load Shedding: Yes
- Floating Ice Temperature Control:Yes
- Setback Temperature Control:Yes
- Occupied/Unoccupied Settings:Yes
- INFRA Red Camera Control:Yes

SERVICE PROVIDERS

- Refrigeration Contractor:CIMCO Refrigeration
- Refrigeration Design:CIMCO Refrigeration
- Controls Designer:CIMCO Refrigeration
- Architect:B&H Architects
- Mechanical Designer:MNE Engineering Inc.

TOROMONT

CIMCO

www.cimcorefrigeration.com