CGC GROUP
HYBRID HEAT PUMP SYSTEM

Energy
in Motion

CGC IS 23.8% More efficient!

Geothermal Springdale Professional Building. CGC Hybrid Heat Pump System.

Brampton, Ontario





Caneta Energy has completed a comparative modeling analysis of the CGC Group Hybrid Heat Pump system concept and a conventional water-to-air heat pump system. Both systems were modeled as ground coupled.

The Results

The HVAC and whole building results for the CGC Group Hybrid Heat Pump system are compared to the conventional ground source results for the Springdale Office Building in the table below.

The Hybrid Heat Pump (HHP) system had annual operating savings of $11,858 compared to the conventional GSHP system, and it has electricity savings in both heating and cooling. Unlike the conventional GSHP system, the heat rejected to the heat pump loop during simultaneous heating and cooling reduces the heating load experienced by the central water-to-water heat pump. This heat recovery accounted for a 38% reduction in heating load.

Because of the improved efficiency in heating, the Hybrid Heat Pump system extracts approximately 33% more heat from the ground than the conventional GSHP system. However, due to the improved cooling efficiency, the CGC system rejects approximately 11% less heat to the ground than the conventional system.

Conclusion

Caneta Energy has completed a comparative analysis of the CGC Group Hybrid Heat Pump system and a conventional ground source heat pump. Annual operating savings are 21.5% compared to the baseline ground source system proposed for the Springdale office building.

The heat recovery benefit of the CGC Hybrid system is significant. "Caneta Energy has modeled heat pump systems in a significant number of buildings over the past number of years. We have seldom seen a concept as promising as the CGC Group Hybrid system, particularly when used in a ground coupled system with water-to-water heat pumps between the building loop and ground heat exchanger. When the building is balanced thermally, the ground heat exchanger can be bypassed to maximize heat recovery and minimize pumping. This provides the benefits of conventional water-loop and ground source concepts in one system."

Caneta Research Inc.
R.L. Douglas Cane, P. Eng
Principal

Other benefits of the CGC Geothermal Hybrid System:

- Higher cooling EER
- Higher COP with water to water heat pumps
- Lower flow rates with only 2 GPM vs. 3 GPM
- Quieter in the heating mode with compressors turned off
- More reliable operation in the heating mode with fan coil function and no reliance on unit compressors
- Better heating comfort
- Longer unit compressor life with cooling mode operation only

System Type	HVAC Only (Anually)		Whole Building (Anually)	
	Energy Use (kWh)	Operating Cost ($)	Energy Use (kWh)	Operating Cost ($)
Conventional GSHP	619,963	55,169	1,577,827	143,056
Hybrid Heat Pump	472,309	43,311	1,430,280	131,198
Savings	147,654 (23.8%)	11,858 (21.5%)	147,547 (9.4%)	11,858 (8.3%)

CGC Group Inc., 150 Britannia Road East, Unit #1 Mississauga, Ontario, Canada L4Z 2A4
Toll Free: 1.888.220.5551, Tel: 905.568.1661, Fax: 905.568.2839
www.cgc-group.com

CGC GROUP
HYBRID HEAT PUMP SYSTEM

Energy *in Motion*