

October, 2011

CASE STUDY – COMMERCIAL/INDUSTRIAL APPLICATIONS

Longo's Supermarkets Distribution Center

When Longo's Supermarkets set out to build a [LEED](#) (Leadership in Energy and Environmental Design) Gold certified head office and distribution center in 2009, they looked to [Neelands Refrigeration Limited](#) and [Hill PHOENIX®](#) for an environmentally friendly, cost-effective warehouse refrigeration answer. Longo's was already using [Hill PHOENIX's Second Nature® glycol systems](#) on the retail side of the business, so they were aware of the benefits: significantly reduced refrigerant charge and reduced operating costs. The new warehouse installation would yield additional advantages including increased useable warehouse space; decreased installation, capital and maintenance costs; and improved system redundancies.



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“We started using glycol three or four years ago in the stores and have become more and more comfortable with glycol as a refrigeration medium,” said Paul Collette, project manager, real estate and construction for Longo’s Supermarkets. “We also like the green aspects of the Second Nature systems, which lower the amount of refrigerant use. And we trust the expertise of Hill PHOENIX and Neelands.”

Until recently, the options for refrigerating large commercial and industrial facilities (i.e., cold storage warehouses, distribution centers, and ripening facilities) have been mostly limited to ammonia-based and synthetic refrigerant systems; both have significant limitations. Code requirements on ammonia systems often call for full-time, on-site engineers for safety and other operational reasons. And synthetic refrigeration systems require large amounts of synthetic refrigerants that are increasingly regulated and costly to install.

Over the years, Second Nature systems have become an increasingly attractive alternative to ammonia and direct expansion (DX) systems for commercial and industrial operations. Second Nature systems can be deployed in various configurations ranging from machine rooms and mechanical centers to distributed system enclosures for retail applications. Longo’s chose a mechanical center configuration that eliminated the need for a conventional compressor room and freed-up more warehouse space for its intended purpose – warehousing product.

Hill PHOENIX Mechanical Centers are completely self-contained, factory built and delivered to the customer pre-wired, pre-piped and pre-assembled. The “plug-and-play” format reduces installation costs when compared to more traditional systems.

Second Nature versus Traditional DX Systems

Second Nature in a warehouse application allows for larger but fewer evaporators/air-units compared to a similar-sized DX system, effectively reducing capital costs, as well long-term mechanical maintenance. From a design standpoint, because Second Nature employs a parallel or multi-compressor system, redundancy is built-in. Traditional DX systems do not have such redundancies, so a single component failure can be catastrophic for the facility.



Another advantage of Second Nature over DX: 100 percent of the evaporator/air-unit is utilized because the air unit is fully flooded compared to 90 percent of evaporator usage in a traditional DX system using superheat. Longo's retail stores have experienced substantially reduced pull-down times, and similar performance is expected in the warehouse.

Combined, the two Second Nature warehouse units provide 185 tons of refrigeration for more than 56,000 square feet of space. Each of the units has two medium-temperature racks and two glycol pump stations. A conventional low-temperature rack is also included in one of the units.

| | +28 Meat | +35 Dairy/Deli | +35 Dry Produce | +38 Wet Produce | +55 Dry Produce | +35 Dock | +55 Dock | Totals |
|-----------------------|----------|----------------|-----------------|-----------------|-----------------|----------|----------|--------|
| Square Footage | 8,240 | 6,800 | 7,000 | 6,800 | 7,500 | 10,000 | 10,000 | 56,340 |
| Tons of Refrigeration | 35 | 25 | 25 | 25 | 25 | 25 | 25 | 185 |

Furthering the energy efficient benefits of the system, the company is recycling waste heat from the refrigeration system racks. Waste heat is used to heat glycol, which is then circulated through pipes underneath the freezer to keep the ground from freezing and heaving. The same waste heat process is used to pre-heat air for the office space.



No matter your refrigeration needs, Hill PHOENIX Second Nature systems give customers industry leading flexibility, sustainability and cost effective operations. For more information visit: www.hillphoenix.com/refrigeration-systems/commercial-industrial-systems.

About Longo's

A family owned organization, Longo's first opened its doors in Toronto in 1956 and now has 21 stores employing more than 3,000 people across the GTA. Inspired by their Founders, Longo's team of food experts are dedicated to exceeding customer expectations by offering the best food experience to every customer every time by providing Fresh & Unique Offerings; Everyday Foods & Groceries; Services for Ease; and Education and Ideas For Adventures In Food. For more information visit: www.longos.com.

About Hill PHOENIX

Hill PHOENIX Inc., a Dover Company, is based in Conyers, Ga. The company designs and manufactures commercial / industrial refrigeration systems and integrated power systems, commercial refrigerated display cases and specialty products and walk-in coolers and freezers. Visit www.hillphoenix.com or call 800-283-1109 for more information.