How Recreational Facilities Take Advantage of the Diverse Uses of Geothermal Heating and Cooling

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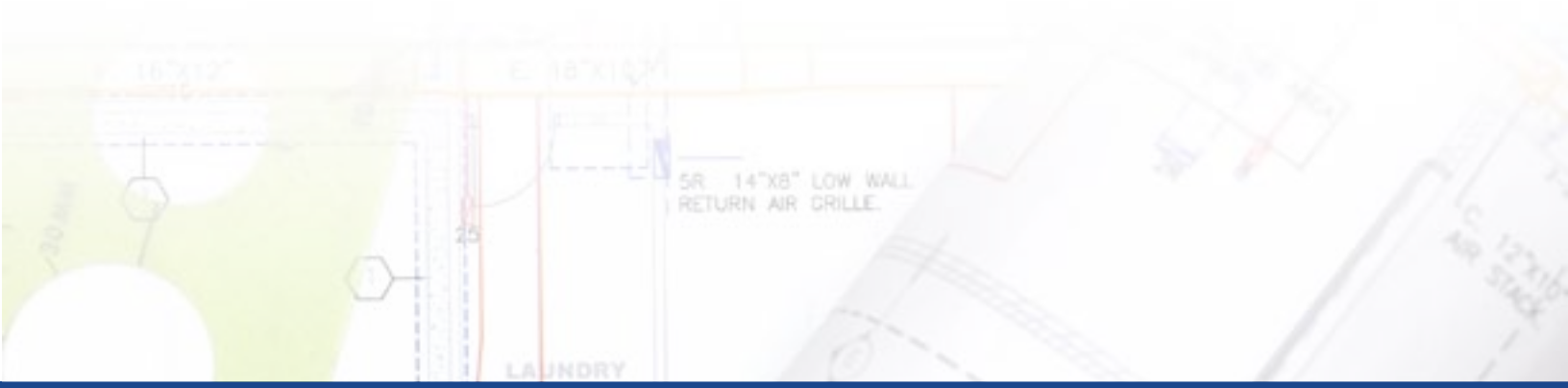
As building designs continue to make strides towards improved efficiency, lower operating costs and environmental responsibility, finding alternative energy sources is an increasingly high priority. Many buildings are turning toward geothermal energy for its reduced costs, consistent heating and cooling, and the comfort it provides its users. Maritime Geothermal Ltd.'s Nordic® products have been selected for use in a range of commercial structures in order to achieve these goals.

Built to exacting standards, the design of Maritime Geothermal Ltd.'s suite of commercial products is influenced by our dramatic Canadian climate. The result is Nordic® heat pumps that are robust and efficient, and well-suited for an extraordinary range of commercial applications, including zoos, hockey rinks, hospitals, apartment buildings, public markets and more.

Read on to discover how three vastly different facilities are benefitting greatly from the implementation of geothermal energy.



The James K Irving Arena

Project Background

The James K Irving Multifunctional Center was designed and built in Bouctouche, New Brunswick. The Irving family donated the land that the centre was built on, and contributed a significant portion of the building's funding as way to give back to the community that helped establish the Irving Company when it began in 1899 as a sawmill.

Quick Facts

- **Location** — Bouctouche, New Brunswick
- **Nordic Model** — W400
- **Unit Capacity** — 24 tons.
- **Units Installed** — 6
- **Total System Capacity** — 144 tons.
- **Unit Type** — Water-to-water
- **Unit Functionality** — Simultaneous ice making application with in-floor heating capability.
- **Project Size** — 8,200 square metres

The multifunctional centre features an NHL sized ice surface with standard seating of 1,100 and expandable seating up to 2,000. There is a walking track used by the local schools and the wider community, a gym, health facilities, a public meeting space, and offices for the municipality and other local agencies in addition to a canteen.

Geothermal Advantage

As one of the most sustainable buildings in New Brunswick, the J. K. Irving Centre features numerous efficient technologies, including low-flow faucets and showerheads, and occupancy sensors to ensure lights are on only when people are in the building. There are also several large south facing windows for the office area to increase the natural lighting available, reducing reliance on electric lighting.

The geothermal system was able to accomplish everything that the building required: not just in-floor heating and air conditioning, but also chilling the ice resurfacing water, chilling the antifreeze mixture in the ice rink piping and pre-heating the facility's hot water.

The Result

The source side of the units is used to chill the antifreeze mixture in the ice rink, reducing temperatures to 2°F in order to create and maintain a solid ice surface. The sink side is used for radiant heating of the seating area flooring to help keep spectators warm during a game.

The Halifax Seaport Farmers' Market

Project Background

The Halifax Seaport Farmers' Market opened in 2010 as one of North America's most energy efficient buildings. As the longest continuously running Market in North America, it was important for the new building to promote local farmers, artisans and craftspeople in the most environmentally responsible way possible.

With over 250 vendors, the market was outgrowing its space, and when it was time to redesign the facility it was important for the vendors and market shoppers that this new structure was a leader in environmental initiatives. The structure was funded partially by the province of Nova Scotia, and had to represent the most technologically advanced and sustainable building processes possible.

Quick Facts

- **Location** — Halifax, Nova Scotia
- **Nordic Model** — W400
- **Unit Capacity** — 35 tons.
- **Units Installed** — 4
- **Total System Capacity** — 140 tons.
- **Unit Type** — Water-to-water
- **Unit Functionality** — Water-to-water heating or cooling (reversible) units with domestic hot water.
- **Project Size** — 55,000 square feet.
- **Project Value** — $12 million
- **Designed By** — Lydon Lynch
- **Awards** — LEED Platinum

Geothermal Advantage

This building incorporates a whole host of efficient features, including four wind turbines, and 600 solar evacuated tube collectors to harvest energy from the roof, a 10,000 litre rain water collection storage tank used for toilet flushing and irrigation, a bio wall and 25,000 square foot green room.

In line with their desire to incorporate as many possible environmentally responsible features as possible, the Halifax Seaport Market relies on Maritime Geothermal Ltd.'s Nordic® heat pumps to maintain a consistent temperature within the structure.

The Result

There are four Commercial W water-to-water heat pumps installed on the second level of the building, helping the development achieve a 75% reduction in the amount of power required of a typical market building.

Granby Zoo

Project Background

The Granby Zoo is one of Quebec's leading tourist attractions and Canada's oldest zoo. Over half a million visitors tour the zoo each year. Located in the town of Granby, east of Montreal, the zoo is home to around 1,000 animals from 200 different species.

The costs of operating the facility are enormous. Beginning in 2006 they undertook a significant renovation to update and modernize the entire property including their climate control systems. In addition, they have also incorporated LED lighting, solar energy, and attempted to reduce their use of natural gas.

Quick Facts

- **Location** - Granby, Quebec
- **Nordic Model** - W400
- **Unit Capacity** - 35 tons.
- **Units Installed** - 2
- **Total System Capacity** - 70 tons
- **Unit Type** - Water-to-water
- **Unit Functionality** - Water-to-water heating and cooling (reversible) and heat recovery
- **Awards** - Special Mention in the Canadian Geoexchange Coalition's Excellence and Leadership awards in 2007

Geothermal Advantage

A huge consideration for the zoo when it was time to install a new system was the ability to provide consistent and comfortable temperatures for the animals. As the animals come from a variety of climates, including Africa, Asia and South America, ensuring the temperature in their enclosures mimicked their natural habitat was fundamental to the success of the project. Nordic® products were selected because they are designed for a range of climates making them the toughest and most reliable, and able to provide a stable climate for all of the animals.

As sustainability is a hugely important consideration for the zoo, they turned to the most eco-friendly energy source they could find - geothermal. Granby Zoo is a fantastic example of how beneficial it is for established businesses to undertake a retrofit of their existing infrastructure.

Nordic®'s commercial water-to-water heat pumps were installed in the enormous Elephant Pavilion, the Hippopotamus River, the Temple and the Ungulate Building. Sixty-five wells were drilled to accommodate the installation.

The Result

As a result of the move to geothermal, the zoo has reduced its greenhouse emissions by 21%, and slowed the increase in heating costs of maintaining the correct temperatures in the enclosures. The zoo now boasts reduced heating costs and substantially lower emissions, and has one of Canada's most extensive geothermal energy systems. Visitors now even come to the zoo the learn about sustainability.

For more on how Maritime Geothermal Ltd.'s Nordic® heat pumps can impact your property, call to **speak with one of our experts** or **find your local dealer** today.