

Jewish Eldercare Centre Montreal, Quebec

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Energy contracting improvements, including implementation of geo-exchange system, controls upgrade and maintenance support, result in energy savings of more than \$250,000 annually, a \$20,000 annual reduction in operating/maintenance costs, and increased comfort.

Challenge

Not unlike many healthcare facilities, Jewish Eldercare Centre's capital budget was insufficient to maintain its two aging gas fired boilers and various existing control systems within its buildings. With unreliable systems not able to efficiently maintain humidity and temperature levels, the comfort of the centre's elderly residents was being compromised. To improve the indoor environment and eliminate the risk of system failure, Jewish Eldercare Centre knew it was vital to upgrade its systems. Due to the critical nature of its business, the long-term care facility wished to have an on-site technician available to ensure proper system operation, but was challenged with attracting and retaining experienced personnel. In addition, to lower costs and comply with government efficiency mandates, the centre sought to reduce its energy consumption.

Solution

After a thorough evaluation of several proposals, Jewish Eldercare Centre selected Trane for its upgrade project. Trane proposed energy saving products and services from the Trane® Building Advantage™ portfolio of solutions to answer the centre's objectives, including Energy Contracting, a renewable energy solution and building management tools. "We knew Trane's experience, and liked their approach," said John Paterson, head of technical services, Jewish Eldercare Centre. "They were professional, understood the constraints we were under and what needed to be done."

Obtaining financing backed by guaranteed performance

Jewish Eldercare Centre entered into an energy contract with Trane. Under the agreement, Trane provided the necessary documentation to the Quebec Government, allowing the



More than thirty wells were dug to sink piping for a new geo-exchange system at the Jewish Eldercare Centre, the second largest public Jewish long-term care facility in the Province of Quebec.

centre to obtain a loan to finance its HVAC upgrades based on guaranteed energy savings and a seven-year project payback.

Ensuring comfort using a renewable energy solution

Coordinating staff and sub-trades to minimize disruption in the 24/7 facility, Trane moved forward to refurbish the central heating plant, integrating a geo-exchange heat/cool system. Geothermal systems use the earth's renewable thermal energy for heating and cooling to provide a quiet, comfortable indoor environment. With sufficient land available, more than thirty wells were dug, each 500 feet deep, to sink piping to circulate glycol through a closed-loop system. A heat exchanger transfers heat between the antifreeze and the heat pump. When the weather turns cold, the geo-exchange system extracts heat from the earth to warm the Jewish Eldercare Centre. In summer, the system expels heat from the buildings to be absorbed by the earth. Coupled with new natural gas boilers, the facility operates at very high efficiency with sufficient back-up capacity to ensure uninterrupted comfort.

Improving energy efficiency and reliability

The geo-exchange heat pump system includes a Trane Series R™ Helical Rotary Water-Cooled Chiller. The Trane chiller is engineered to maintain tight tolerances for precise temperature control, and can be configured to produce leaving-evaporator solution temperatures as low as 10°F (-12°C), making it ideal for the geothermal application. With condenser water temperatures as high as 140°F (60°C), the chiller is also well suited for energy-saving heat recovery used to provide hot water for the facility. With fewer moving parts and a low-speed, direct drive compressor, the reliable helical rotary chiller provides a substantial energy savings over a conventional system, requires less maintenance, and operates quietly to help ensure a restful environment for residents and staff.

Reducing costs, employing energy management strategies

Additional upgrades were implemented to improve comfort, as well as reduce energy and maintenance costs. At nursing stations T12 lighting fixtures were replaced with T8 fixtures; the ventilation system was converted from fixed volume to variable speed; and the kitchen was upgraded with intelligent, variable volume hoods, with automatic sensors to initiate fans at set exhaust and temperature levels.

Facility operators use a web-based Trane® Tracer™ ES building management solution to help ensure building performance and efficiency. The Tracer ES gives operators an online, enterprise-wide view of their complex, even when they are off-site, enabling them to manage daily operations, control temperature and ventilation, monitor system performance, and implement energy saving strategies, such as load shedding during peak demand periods. The centre's technical services team is supported by an on-site Trane service technician and a supervisor to help maintain optimal system operations.



A Trane Series R Helical Rotary Water-Cooled Chiller, used for the centre's geothermal application, is able to maintain tight tolerances for precise temperature control and is also well suited for heat recovery.

Results

Energy saving products and services from the Trane® Building Advantage™ portfolio of solutions are helping to reduce Jewish Eldercare Centre's heating/cooling and operational costs. Under an energy contract with Trane, Jewish Eldercare Centre implemented upgrades including a renewable energy geo-exchange heat pump system using a Trane Series R™ Helical Rotary Water-Cooled Chiller, high efficiency boilers, improved lighting, controls, and Trane® Tracer™ ES building management solution. The upgrades are projected to provide more than \$250,000 a year in energy savings, with operating and maintenance costs expected to drop an estimated \$20,000 a year. With increased reliability and plant capacity, residents and staff are also enjoying enhanced comfort. "The project required a lot of collaboration, and it was good to work with a local supplier," said Mr. Paterson. "Trane had a willingness that I liked. I trusted them and I would recommend them to others."



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