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Rural Municipality of Ritchot, Manitoba
Population: 5,000

Île-des-Chênes Community Centre District Geothermal Project



The district geothermal system provides energy for the refurbished hockey rink
Credit: Rural Municipality of Ritchot

Summary

When the Town of Île-des-Chênes identified a geothermal system as the most cost-effective long-term option for replacing the ice plant in its hockey rink, it discovered that the up-front costs were daunting. The solution? Team up with another project, design a bigger system and attract more funding. The result is the first district geothermal heating and cooling system in the province. It provides energy for the town's refurbished hockey rink and fire hall and for a new LEED® (Leadership in Energy and Environmental Design) certified 1,860 square-metre community centre.

The community centre houses the town offices and features a 500-seat banquet hall and a daycare centre that can accommodate 94 children. It also has a retail area devoted to essential medical services, including doctors' offices and a pharmacy. The refurbished arena and new community centre have already created new jobs and the two developments are expected to stimulate economic development as the town grows to accommodate residents moving out from nearby Winnipeg.

Background

Île-des-Chênes is located about 27 kilometres southeast of Winnipeg, in the Rural Municipality of Ritchot. Traditionally a rural community, the town is going through a period of transition as it expands to accommodate Winnipeg residents who want to work in the city and live in a smaller community within the capital region. Île-des-Chênes currently has population of about 1,200 people, but it is expected to grow rapidly in the next few years.

Like many small communities with a limited tax base, Île-des-Chênes has always struggled to maintain infrastructure and common amenities. By the early 2000s, its town hall, which was housed in a 60-year-old schoolhouse, was existing on subsidies from the regional municipality, and the hockey arena was losing revenue because of downtime caused by an antiquated ice plant and a concrete ice surface that was pitted and heaving.

The Regional Municipality of Ritchot adopted a green policy in September 2009 and subsequently decided to replace the Île-des-Chênes Town Hall with a new community centre that would be built to LEED Silver specifications. The regional municipality applied for, and received, funding from the federal Infrastructure Stimulus Program, Community Adjustment Fund. Plans for the project included a geothermal heating and cooling system.

Project Development and Implementation

Soon after the Île-des-Chênes community centre project was approved, the municipality turned its attention to the town's nearby hockey arena and identified geothermal as a cost-effective energy solution for its ice plant. "Our consultant indicated it was costlier to set up but that it's worthwhile in the long run," says Roger Perron, economic development officer with the Ritchot Community Development Corporation. The arena is adjacent to the parking lot where the community centre's geothermal system would be installed so the obvious solution was to expand the system to serve both buildings. "We had funding from the federal government that covered the centre's geothermal system, so we made a proposal to the province for funds to cover the additional costs of installing the system in the arena." The province also contributed money to connect the fire hall to the system.

The geothermal system was installed under the parking lot and consists of 504 holes about 18 metres deep with two lines per hole. In total, the system has more than 18,000 metres of line that contain glycol. The glycol extracts heat from the ground in winter and disperses heat into the soil in summer. Pumps in the three facilities draw the glycol into the buildings where converters complete the exchange, providing heat or air conditioning.

The town removed the ice plant from the arena and installed the geothermal system in June 2010. It also replaced the arena's gas furnaces with heat pumps. That fall it connected the system to the fire hall and replaced that building's two gas furnaces with heat pumps. The new community centre will be complete and connected to the geothermal system by the end of 2011.

The geothermal system is expected to reduce operation costs for all three facilities. The LEED building is expected to yield a 60 per cent energy saving (over a conventional building of the same size), and the arena is expected to reduce its operating costs by 50 per cent.

The community centre, including its commercial kitchen, will operate only on electricity, completely eliminating gas emissions. Electronic fixtures and low-flush toilets will reduce water use in the complex by an estimated 43 per cent.

While the project will save money for the municipality and reduce its environmental impact, it will also deliver many social and economic benefits to the community. The community centre is now a real meeting place with a licensed banquet hall that can accommodate up to 500 people and a commercial kitchen. It can host larger functions than halls in neighbouring towns, and can be rented out for weddings, socials, concerts, trade shows and other events.

The other important new service in the community centre is the daycare centre, which can accommodate 94 children, including 43 toddlers between two and five years of age. Before the centre was built, the only daycare available in the community was before and after care in schools. There was nothing available for preschool children. The new bilingual daycare will employ nearly 20 full and part-time employees.

Medical facilities in the community centre's retail space will also provide new services to the community and boost employment opportunities. Services will include a pharmacy and offices for doctors, physiotherapists and chiropractors.

At the arena, hockey teams and other users are enjoying a dramatic improvement in the ice quality and other amenities. "With the new system and the new concrete," Perron points out, "we can have roller-blade hockey and other summer uses, which will be a real benefit for residents."

The town is also likely to benefit from economic spinoffs generated by the two developments, Perron believes. "We've sold the property where the Town Hall used to stand and the buyers are planning a condo building with 23 units. Other investors are looking at a development site to build a 240-suite residential complex. We have almost 53 hectares earmarked for development — space for 350 to 400 homes — so we're hoping the community centre project will have a ripple effect."

Results

- The LEED-certified community centre is expected to reduce annual energy consumption by about 60 per cent, compared to a traditional building.
- The building is expected to last at least 75 years.
- The centre was constructed as a post-disaster facility where residents can gather in the event of an emergency.
- The arena is expected to reduce its annual energy costs by about 40 per cent.
- The upgrade will allow the 35-year-old building to operate for many more years.

Lessons Learned

- GET THE RIGHT CONTRACTORS AND ENGINEERS. “I felt that there wasn’t enough communication between our contractors and engineers. And the lack of communication resulted in many change orders and some cost overruns.”
- FIND THE RIGHT LEADER. “Having the right person heading up the project is very important; it can make the difference between success and failure. The leader needs to be able to accept and deal with criticism from the public, the council or from anyone else with an interest in the project.”

Related and Future Initiatives

At this point, there are no additional similar initiatives planned. The municipality will continue to look at reducing emissions when purchasing new equipment or when planning smaller construction projects.

Partners and Collaboration

The municipality received funding from the federal and provincial governments.

Contact

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