

Baie-Ste-Anne caisse populaire

Water-to-Air Heat Pump Installation

Baie-St. Anne, N.B. Canada

Baie-Ste-Anne caisse populaire

Where energy accounts for \$avings

Baie-Ste-Anne is a picturesque fishing village on a wind swept stretch of coast in northeastern New Brunswick where the average temperature in January is a cool 10 degrees Celsius (4884 C degree days) The local credit union, La Caisse Populaire de Baie Ste-Anne Ltee is situated on the main highway which runs from Chatham Head eastward to Escuminac. The caisse moved here in 1978 but 10 years later, with a staff of six full time employees serving a membership of 2500, the building had become cramped. It was time to renovate and expand. Work started on the renovations in October 1989. The credit union acted as its own contractor with Dominique Martin, the manager of the caisse, supervising the construction. NB Power helped the builders with energy-saving details: one of the directors of the caisse works as an energy adviser for NB Power, so the project was able to take full advantage of his technical expertise to make the building into a model of energy efficiency.



Baie-St. Anne Caisse Populaire

Energy-efficient features

Although the original plans called for the roof and walls to be insulated to R40 and R20 respectively They said nothing about the slab the building stands on. NB Power recommended putting R12 around the perimeter of the building. from the top of

the slab to a depth of at least 2 feet. The windows are in the south and southwest walls to benefit from solar gain. The location of the lot on the north side of the highway was a decided advantage because it meant that the front of the building naturally faced south. The windows were designed with a low overhang that lets in the sun in winter but keeps it out in summer. The windows are double-glazed Low E glass which costs about 10% more than standard glass but the extra investment is more than returned in an excellent energy pay-back (dollars saved on heating and air conditioning costs). Other advantages to Low E glass are reduced frosting and condensation in winter and fewer draughts. Low E also cuts down on the sun's ultraviolet rays which fade

furniture and carpets.

In keeping with the demand for energy savings, NB Power energy adviser Norbert Martin recommended energy-efficient T8 lamps. The Bale-Ste-Anne caisse populaire is the first building in New Brunswick to be fitted with the new T8 fluorescent fixture, according to lighting manufacturer Sylvania. The credit union chose Sylvania's Octron T8 lighting system because it is the most energy-efficient T8 lighting on the market. Although each fixture costs slightly more to buy than a standard fluorescent, the Octron system is approximately 22% more efficient than the system it replaces and more than makes up the difference in the purchase price in energy-saving dollars. Also, because the Octron consumes fewer watts, it gives off less heat thereby reducing the air conditioning load. The credit union employees like the Octron lighting because it doesn't flicker or hum and special louvres reduce the glare.



Caisse Populaire Manager Dominique Martin and NB Power Energy Advisor Norbert Martin

Heat pumps win out in heating costs analysis

The original architectural drawings called for conventional baseboard heating with a roof-mounted central air conditioning system. Before construction started, NB Power did two heating cost analyses: one for the planned conventional heating system and one for an earth energy (ground water heat pump) system. Ground water heat pumps use the simple technology of the household refrigerator to extract heat from the ground. They can provide three times as much heat as the electricity needed to run them and air conditioning at 20-30% savings over a more traditional system. The analyses showed that even though the earth energy system would cost approximately \$1400 more than the conventional system, it would save money in operating costs and would, in fact, pay for the difference in less than a year. (the additional \$1400

was what it cost to drill a second well with some associated plumbing.) Two heat pumps provide all the heating and cooling for the Bale-Ste-Anne caisse populaire and the downstairs heat pump also heats the domestic water. The heat pumps take their water from the new 100-foot deep well which easily supplies the needed 30 gallons per minute. When the ground water has given up its heat, it is returned to the ground via the building's original well. A New Brunswick company, Maritime Geothermal Ltd. from Petitcodiac, manufactured the heat pumps and the heating system was designed by Adseft & Associates of Keswick Ridge near Fredericton. The duct work for the hot air and the cold air return cost \$12,600 but this cost would also have applied to the conventional system for duct work for air conditioning. NB Power's senior energy adviser, George Dashner, advises that whenever a commercial building requires air conditioning a heat pump will be cost effective.



Well designed energy efficient T8 lighting

Energy savings account for money in the bank!

By March 1990 the renovations were completed. The result is an attractive two-story building with double the square footage (from slightly over 1700 sq. ft. to 4000 sq. ft.) of the original building. NB Power monitored the building's energy performance with special meters for a year (March 1990-March 1991). The cost to heat and air condition the building and to provide hot water for one full year at an average of 7 1/2 c/kWh was only \$1150, NB Power estimated that it would have cost approximately \$2875 to have heated and cooled the building with the conventional system called for in the original architectural drawings. The

caisse's total energy bill for the year, which includes the costs for running all the office equipment and the lighting as well as heating, air conditioning and heating the domestic water was \$2829. This works out to be only \$633 more than the previous year's energy bill despite the fact that the building had doubled in size and that air conditioning had been added According to NB Power, the Bale-Ste-Anne caisse populaire has one of the lowest electrical operating costs of any building in New Brunswick.

Says manager Dominique Martin with a smile, "The Federation des caisse populaires acadiennes is most impressed and our members are very pleased with the entire building." And well they might be for the Caisse Populaire de Bale St-Anne banked on energy conservation and is now reaping dividends for its membership.

Technical Advisor: George Dashner

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