

Resort's Four-Season Pool and Spa Paradise in Canadian Mountains Features State-of-the-Art HVAC System



IAQ, energy efficiency and moisture removal are combined for indoor mountain fantasy.

Half of the swimming experience in the new 30,500-square-foot aqua club at the four-season resort in Mont Tremblant, Quebec, is a breathtaking view of the Laurentian mountain range.

However, without a state-of-the-art HVAC system for Tremblant's newly-built, \$4 million AquaClub La Source—owned by IntraWest Corp., Vancouver, B.C.—the vast 150 linear feet of windows revealing this picturesque scene would be covered with a blurry surface of condensation.

With the combined evaporative effects of not only a 2,800-square-foot, free-form pool, a 205-square-foot spa, a 738-square-foot waterslide pool, plus a waterfall in this indoor aqua park, calculating the moisture removal was no easy task for consulting engineering firm, Expert Conseil G. L'écuyer Daoust Inc., Montreal. "When you have this many bodies of

water in an indoor application, moisture control is of the utmost concern," said Yves Daoust, partner, Expert Conseil L'écuyer Daoust Inc.

This evaporative challenge is no fault of the project's architectural firm, Gross, Kaplan and Coviensky, Montreal. GKC successfully designed the water features into rocks, trees, and other natural landscaping to help Tremblant's 2 million annual vacationers fantasize swimming at a Laurentian mountain lake. However like most indoor pool structures, the inherent evaporation rate of the AquaClub La Source's many bodies of water requires strict moisture control to promote the building's longevity as well as provide for healthy indoor air quality.



To keep the windows clear and the space's relative humidity at 50%, the engineer specified a Dry-O-Tron® model DS-150 dehumidifier manufactured by Dectron Inc., Roswell, GA, that removes 145 pounds of moisture/hr. The Dry-O-Tron® also economically heats the swimming pool and the waterslide pool with recovered heat.

The design was installed by sheet metal contractor Ventilex Inc., Boisbriand, Quebec, and calls for a 36-inch-round, under-deck supply duct that reduces to 26-inches with takeoffs that supply 72 X 3-inch linear supply grilles. The Dry-O-Tron® supplies comfortably dry conditioned air along the windows via these grilles to eliminate condensation and retain a clear view of the outdoor pool, spa and mountain skyline.

Supply air is also distributed overhead as well from a 16-inch round decorative duct that feeds a supply loop in the middle of the room near the ceiling.

Calculating the evaporative rates was no easy task. Assisted by manufacturer's representative, Michel Beaulieu, partner at Techno-Economique, Montreal, Daoust took the total surface area of the vessels and used the "Evaporation Rate Formula" recommended by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) to achieve a calculated evaporative rate. Dectron was instrumental in

establishing these formulas in ASHRAE's HVAC Applications Handbook.

These calculations are based on expected air temperature, water temperatures and an "activity factor," which relates to an expected occupancy (derived from Dectron's years of application expertise in indoor pools).

Equally important as the humidity control is the space's indoor air quality. Using outside air as determined by ASHRAE guidelines. Daoust's design calls for approximately 4,000 cfm of outside air induction when the pool is occupied. To save energy, outside air dampers are closed automatically during hours when the pool is closed. To save further operating costs, Daoust specified an economizer function that increases outside air when cooling is required.

Dectron Inc. is part of the Dectron Internationale group of companies who specialize in complete indoor air quality solutions. The group's expertise ranges from low temperature refrigeration to humidity control to gas phase filtration and energy recovery. The company is unique in North America in that any of these technologies can be combined together in a packaged single-source solution.

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