



DRY-O-TRON® DS-282 DEHUMIDIFIER

HVAC Spec Complements Kenora Recreation and Wellness Centre's Indoor Pool "Forest" Design

Ductwork does not grow on trees, so engineer supplies dehumidification through crawl space and airflow innovations.



Kenora, Ontario – Aside from the challenges associated with a 125°F annual ambient temperature differential and a humidity load of 360-lb./hr., the HVAC design for the Kenora Recreation and Wellness Centre's new indoor pool also had to complement the architect's interior "forest and ponds" concept.

open architecture roof. Strategic architectural lighting makes the tree effect most visible at night through the natatorium's windows.

Additionally, since ductwork does not grow on trees, instead of the standard overhead ductwork specified in a majority of natatoriums,

was critical and dependent on the ductwork, diffusers, and air movement. A Dectron Inc., Roswell, Ga., DRY-O-TRON® Model DS-282 heat recovery dehumidifier supplies 25,000-cfm of dry conditioned air to a perimeter 38-inch-diameter spiral ductwork. Take-offs supply a linear floor diffuser that encircles the space.

Kenora now has one of the most state-of-the-art "forests" ... or should we say, natatoriums in Ontario.

Few trees have successfully inhabited the surrounding rock landscape in the western Ontario city of Kenora; therefore, the \$8.7 million center's interior structural system was designed to emulate a forest of trees. Several 14-inch-diameter round steel columns, each with four to six 11-inch-diameter tree-like branches, rise up 26 feet to support the 11,300-square-foot natatorium's

the ducts are concealed in a sub-level crawl space devised to hide visual distractions, such as ductwork, piping, and pool/spa support equipment.

Obtaining the correct airflow and temperatures to cover the R-22 insulated walls, which consist of 25-percent glass, plus the 26-foot-high steel R-40 insulated ceiling,

Calculating the humidity load from a 181,000-gallon/25-meter pool, a 67,000-gallon leisure pool, a 5,000-gallon children's pool with an accompanying 60-foot-long waterslide, and a spa was subsequently critical in sizing the dehumidification equipment. The DS-282 – the fourth largest dehumidifier in the Dectron line with 60-tons of refrigeration – is critical for keeping relative



The background "forest" overlooks the waterslide and "pond" at the Kenora Recreation and Wellness Centre.

humidity at a comfortable 50 percent and preventing condensation from appearing on the structure's walls and ceiling, especially when seasonal winter temperatures plunge to -35°F.

Dectron's manufacturing capabilities for large units, plus the specification of one large dehumidifier versus smaller units piped in tandem, also saved the city of Kenora additional money. Not only did one large unit require less installation labor, but also more importantly, it consumed only one-fifth of the mechanical room's precious 2,000-square-foot space.

Since energy efficiency was a critical factor to city officials, the DS-282 recovers heat from the refrigeration process to provide space cooling or heating, plus free pool water heating for two of the facility's four vessels. With the exception of the 104°F spa, all three pool temperatures are designed to stay within one or two degrees below the space's ambient design temperature

of 83°F to limit water surface evaporation. Establishing the final space condition temperature was a big concern, as it would affect the evaporative rate of the four bodies of water at each of their respective temperatures. Therefore, the decision was made to use a mid-range selection that could be regulated through the building automation system.

"Run around coils" that recover heat from the washrooms and changing area to pre-heat and lessen the heating load of the dehumidifier as it brings in mandatory outside air during the winter months was also specified.

Other HVAC design innovations included an in-floor radiant heating system utilizing piping connected to a 96-percent efficient gas-fired boiler. The underside of the radiant floor area was painted with an innovative insulation coating to prevent overheating the service space below. Besides floor surface

comfort and quick drying advantages, the radiant system provides approximately 40 percent of the space heating, while the Dectron system provides 60 percent.

Although it has a population of only 16,000, Kenora now has one of the most state-of-the-art "forests" ... or should we say, natatoriums in Ontario.

Dectron Inc., an ISO-Certified company, is a global HVAC industry leader. For more than 28 years, Dectron's highly-skilled engineers and technical staff have been designing and manufacturing innovative, state-of-the-art DRY-O-TRON® dehumidification equipment that use leading-edge technology to recycle energy, conserve pool water, and CHLORAGUARD® filter natatoriums. Dectron Inc.'s DRY-O-TRON® line of products encompasses an extensive array of custom and semi-custom systems for industrial, commercial, and residential applications.



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