CASE STUDY

DRY-O-TRON® by Dectron

DRY-O-TRON® DS-150 DEHUMIDIFIER WITH CHLORAGUARD®

Indoor pool at Nottawasaga Inn Resort, Alliston, ON

Resort Becomes First Canadian Indoor Pool to Apply Gas-Phase Air Purification for IAQ

Guests breathe a new 'freshness' in natatorium after HVAC dehumidifier retrofit that also brings a green energy-saving strategy.

Alliston, Ontario—En route to replacing an aging dehumidifier for its natatorium, the Nottawasaga Inn Resort discovered that recent dehumidification technology advancements offered solutions to the challenging eye and lung irritation nuisance of every indoor pool—chloramines.

The year-round convention/resort facility 40 miles north of Toronto has become Canada's first indoor pool facility to use gas-phase air purification — optioned on its new dehumidifier purchase — to combat chemical odors that's common among natatoriums. Indoor air quality (IAQ) improved quickly and significantly as a result of eliminating chloramines. "Within 48 hours of starting up the new dehumidifier there was a unique freshness to the indoor air that was never experienced before and it was a 100-fold improvement than before the dehumidifier installation," said Peter Biffis, director of Nottawasaga Inn Resort. "We continually get positive comments from guests and lifeguards."

Chloramines are formed in all pools when chlorine molecules attach to ammonia and other organic byproducts of the human body. When swimmers complain of chlorine odors or irritation, experts say it's actually chloramines to blame. Natatoriums, such as the Nottawasaga's 7,000-square-foot pool area in the 41-year-old resort's popular 70,000-square-foot Sports & Leisure Dome, must be chemically shocked routinely to control water-borne bacteria, but the gaseous chlorine-based by-product can linger and re-circulate through the HVAC dehumidification system. All indoor pool dehumidifiers have conventional mechanical fabric media filters, however they're only effective in trapping airborne particulates, not gasses.

Conversely, gas-phase filtration uses carbon-based impregnated pellets as a media to continuously adsorb the gaseous contaminants as the natatorium's air is re-circulated through the pool dehumidifier. Similar technology has been used for decades to remove gaseous contaminants at waste water treatment plants, paper/pulp mills, petrochemical refineries and other heavy industrial applications. Recently, a proprietary blend of adsorbent compounds was developed specifically for indoor pools by the Circul-Aire air purification subsidiary of IAQ equipment manufacturer, Dectron Internationale, Roswell, Ga. Dectron now markets indoor pool air purification under the brand of Chloraguard®,

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which is an option for DRY-O-TRON® pool dehumidifiers. Nottawasaga is the first Canadian application of a Chloraguard system on its new DS-150 dehumidifier that also recovers heat to provide free pool water heating. The dehumidifier also controls air temperature / humidity and ties into the resort's central plant boiler and heat pump systems.

Unlike other coal-based gas-phase medias, the Nottawasaga's gas-phase air purification uses Circul-Aire's proprietary, custom-mixed green blend of coconut-based media that's more environmentally-friendly to use and manufacture. Since all gas-phase media loses effectiveness between four to six months in pool applications, media effectiveness can be tested and/or replaced via TECH-CHEK™ samples that are sent to Circul-Aire's in-house ISO-Certified laboratory.

Gas-phase filtration also has energy and building envelope conservation advantages. Prior to Chloraguard's development, the only alternative IAQ solution to chloramines build-up, especially during large bathing loads Nottawasaga experiences regularly during holidays, was introducing additional outdoor air to the dehumidifier's return air. However, continually heating outdoor air to maintain the natatorium's 84°F air temperature set point is expensive during Canada's long winters, especially with the inevitable rise of gas-fired heating costs. Additionally, chloramines exposure can corrode and prematurely end the lifespan of a facility's building components, such as door hinges, electrical contacts, plumbing fixtures, lockers, etc.

"During the retrofit design period the resort's board of directors requested a unit design that would provide more outdoor air to relieve the chloramines build-up during capacity days, but we didn't think we could get larger ductwork into the tight-spaced mechanical room," recalled Ed Carney, BTech., sales engineer at manufacturer's representative, Kilmer Environmental,Toronto. "So I suggested trying the newest technology in controlling chemical gasses in indoor pools… gas-phase filtration, which would perform better and save energy versus increasing and heating outdoor air."

Although the new 13,500-cfm dehumidifier was an identical model (DS-150) drop-in replacement, refrigeration component technological advancements have improved energy efficiency the last 15 years. The new unit has a 70-minimum circuit ampacity (MCA) and 110-maximum overload protection (MOP) versus the older unit's 83-MCA and 125-MOP, which calculates into a total kilowatt/hr savings of 24,000 kW/hr. annually based on 90-percent compressor run times.

Biffis believes the enhanced IAQ will translate into increased resort business. "When our golf course closes for the season, the indoor pool is the jewel of our facility, so when people have a great experience without any negative effects of chloramines that are common in all indoor pools, the word of mouth spreads quickly," added Biffis. "I wish this technology (gas-phase filtration for indoor pools) had been available years ago."

Dectron Inc., an ISO-Certified company, is a global HVAC industry leader. For more than three decades, 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 CHLOR-AGUARD® 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.

Chloraguard® media is conveniently filled into individual modules at the Circul-Aire® factory.

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