driSteem™

GTS® Gas-to-Steam humidifier saves 64% on utility bills

When electric utility and maintenance costs at the Region of Waterloo (Ontario, Canada) Water Testing Laboratory became more than the budget could bear, Brian Bechtel, coordinator of energy management for the Municipality of Waterloo, sought a more economical way to attain the indoor air quality levels he required for employee comfort and water testing accuracy. By identifying the problem—an inefficient humidification system—Bechtel literally received more than he bargained for: an energy cost savings of 64% when he switched to a gas humidification system from DriSteem.

An important component of IAQ, proper humidification helps increase employee comfort and reduce static electricity, which can affect test equipment. "But the cost to humidify the building was escalating, not only because of electric rates, but also because the electric canister-type humidification system required frequent maintenance and canister replacement due to hard water conditions," said Jim Bender, PE, HTS Engineering, Kitchener, Ontario. The firm helped the Waterloo facility to specify a new system.

Working with Union Gas Limited of Ontario, a gas utility, which funded an energy cost study, Bechtel installed an energy-efficient gas to steam humidification system. With an 80 percent efficiency rating, the DriSteem GTS humidifier cost only $2,500 to run over a 14-month period, compared to over $7,000 for the electric system, according to the study conducted by Culham and Associates, consulting engineers, Mississauga, Ontario. "These figures reflect what many of our customers are discovering," said Bender. "More and more, customers are investigating their options with gas."

A DriSteem GTS humidifier installed at the Region of Waterloo Water Testing Laboratory significantly reduced utility and maintenance costs while providing optimal indoor air quality for employees and testing apparatus.

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- From an independent study conducted by Culham and Associates, Consulting Engineers, Mississauga, Ontario, Canada

Why humidify?

At the Waterloo testing facility, which monitors, samples and tests the area water supply, humidification is critically important because specific room temperatures and humidity levels are a requirement for certification of the two laboratories, one for organic testing, the other for inorganic testing. Air handling units supply 100% fresh air to the labs—11,500 cfm—and, especially during the cold months, this fresh air must be humidified to required levels.

Humidification is also important for the 35 people who work there. Not only does humid air feel warmer to occupants, but without proper humidification, the air in a typical commercial building can dry to levels of relative humidity below that of the Sahara Desert. Low humidity causes nasal and throat membranes to dry and increases susceptibility to colds and viral infections. Maintaining 40% to 60% relative humidity improves indoor air quality by decreasing bacteria and viruses in the air (a factor when humidity levels are below 40% RH), and hindering the development of fungi, chemical interactions and ozone production (more prevalent when levels are above 60% RH).

With proper humidification, employees at the testing facility can work more comfortably to help deliver an important service to the residents of Waterloo.

DRI-STEEM GTS SYSTEM ALSO REDUCES MAINTENANCE COSTS

Until recently, most small to medium sized office buildings were humidified with disposable canister-type electric humidifiers where submersed electrodes generate steam for distribution by the HVAC system. These humidifiers require frequent maintenance or replacement when canisters become filled with mineral deposits. Waterloo's water supply contains significant levels of lime and calcium, and the canisters required frequent replacement.

Designed to work with any type of water—tap, softened or deionized/reverse osmosis—and regardless of water hardness, the DriSteem GTS is designed for easy maintenance. The Vapor-logic® controller can be programmed to monitor and regulate all functions, including a drain and flush cycle. Plus, the heat exchanger continuously sheds mineral buildup due to constant thermal expansion and contraction, and a water skimmer removes floating minerals. The 304 stainless steel humidifier includes two-sided access so all components are within easy reach, including a removable cleanout plate to remove tank sediment.

Installed in the mechanical room, the DriSteem GTS humidifier uses multiple low nitrogen oxide (NOx) burners to heat water in the evaporating chamber to produce steam. Steam created in the evaporating chamber flows through the steam hose or piping into the dispersion assembly located in the air handling units, where it is discharged into the airstream. The products of combustion are exhausted out the flue.

"Installing the new gas to steam humidifier has significantly saved our energy costs and solved our maintenance issues," said Bechtel. "Considering that we're a government-funded agency, that's especially good news because we can apply the savings to improving programs for the residents of the Municipality of Waterloo."

DriSteem Corporation
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