



How McGill University is winning using sustainable technology to reduce its Legionella risk

The Challenge

The McIntyre pavilion houses the prestigious medical faculty in a 15 story building with 1,600 square feet per floor. To ensure HVAC cooling needs, the pavilion relies on two 850 ton cooling towers with 15,000 liters (4,000 gallons) of water. Despite maintaining a chemical treatment program, the towers were often affected by a high bacterial count ($>10^5$ UFC/mL) and several cases of Legionella bacteria. The HVAC department was seeking a better and proven alternative to reduce its chemical footprint while minimizing the bacteria counts and eliminate the Legionella outbreaks. The province of Quebec requires that cooling tower owners test Legionella monthly using an accredited laboratory.

The Solution

Contacted in 2018, EMO3 solved the challenge with the installation of the **Insitu-O3™** water treatment solution that integrates EMO3's high-capacity **Taurus™** ozone cell. McGill wished to have a hands-free system, thus the system came equipped with a PLC and sensors with a water pump to ensure continuous water treatment. Since ozone as a green technology is an excellent oxidizer for water treatment, it is produced on site using ambient air.



The **Insitu-O3™** incorporates a closed loop, continuous cycle water treatment thus avoiding sequential biocidal injection cocktails. The **Insitu-O3™** is independent of the thermal load of the chillers, thus providing a continuous water treatment. In addition, several sensors provide optimal control, alarm reporting and logging capability for the operators



Since 2019, McGill has achieved bacteria counts less than 10^3 UFC/mL and has had no Legionella counts in the tower Furthermore, McGill has eliminated the recurring need for biocide as well as the handling and managing of dangerous chemical products.

The Results

Solutions can often be considered 'pain relievers' or 'gain creators', in the case for McGill University the solution accomplished both by mitigating Legionella risk with sustainable water treatment while saving on recurring chemical costs. As Sean Dolphin, HVAC Supervisor mentions "We have been impressed with the performance of the **Taurus™** series ozone cells for the cooling tower water treatment. The ease of use and hands-off approach has provided peace of mind for the mechanical staff." Since the installation in 2019, the results have been exemplary with the following benefits:



1. Complete elimination of 250 liters (66 gallons) per year of biocide representing a savings of \$8,000 per year.
2. Elimination of storing and handling of dangerous products resulting in an improvement in occupational safety.
3. Elimination of disinfection procedures for Legionella detection representing an annual maintenance cost reduction of \$900.
4. Water savings in reduced blowdown by improving cycles of concentration resulting in a reduction of water consumption of 54,000 liters per year.
5. Legionella: The client is required to sample on a monthly basis all serogroups of Legionella. Since the installation in 2019, there has been zero Legionella detection.

EMO3 offers a free ROI estimate for every project. Contact us at info@emo3.com to get your ROI estimate and learn how to take advantage