



Case study: AirTech
Desiccant dehumidification
controls humidity at
Chatham Kent Health Alliance

BENEFITS

- Cost-effective temperature and humidity control
- Reduced interruption to services
- Increased staff and patient comfort

Consistent dew point control allows critical spaces to operate at lower temperatures ideal for patient health and provider comfort

The facility management team at Chatham Kent Health Alliance (CKHA) has a reputation for taking a progressive approach to continuous building renewal. Advancements to the 200+ bed location have included numerous updates with some of them completed through a program driven by utility savings.

THE CHALLENGE

The latest initiative was to address the lack of control over high humidity in both the surgical suites and MDRD (Medical Device Reprocessing Department). Today's surgical teams are required to wear heavy protective gowning, as a result, lower space temperatures are preferred. At the same time, some medical procedures require a lower ambient temperature in order to lessen the patient's metabolic rate and help prepare for a

safer surgery. These lower temperatures demand lower dew points to keep moisture away from critical surfaces and maintain relative humidity in an operating range acceptable for essential services.

Harrie Bos, Manager Engineering Services, CKHA, was familiar with Munters desiccant dehumidification technology and some of its successful humidity control projects in surgical suites. He began discussions with John Gowing, El Solutions, Sales Representative for Munters, regarding his high humidity challenges; throughout most of the season, the facility's chilled water systems were capable of producing a low temperature fluid, allowing critical spaces to maintain tolerable humidity and temperature specifications, however, during peak summer humidity periods, the air-handling units (AHU's) were

challenged to maintain acceptable Relative Humidity levels when lower space temperatures are preferred.

As discussion and research continued, a decision was made to separate the endoscopy suite from the other OR (Operating Room) suites. The endoscopy system redesign provided an excellent opportunity to evaluate and measure the impact of humidity control with Munters' desiccant dehumidification technology. The successful humidity control in the endoscopy suites formed a solid internal reference (or talking) point for future meetings about the remaining systems.

THE SOLUTION

To advance the dehumidification project, the facility operators hosted a meeting with management from both surgery and MDRD. The individuals attending were keenly interested to hear

that the same Munters technology controlling humidity in the endoscopy suites, could provide the same control in the surgical suites and MDRD. Following a chiller disruption and the resulting interruption to essential services, the move to request funding for the Munters desiccant dehumidification systems for the surgical suites and OR was fast-tracked.

The project received funding and three identical Munters Model HCU- 6000 units were installed; all designed to pre-condition and dehumidify outdoor air to an ideal low dew point level. A single Munters' unit supplies dry ventilation air to the MDRD AHU, while the remaining two Munters units supply dry-air to the existing OR AHU. The cooling coils inside the existing AHU's are no longer required to sub-cool and dehumidify ventilation air. Essentially, the cooling capacity requirements for the existing coils are significantly reduced. Previously, the chiller plant's lowest fluid operating temperatures were dictated by the two critical spaces (OR & MDRD). However, with the installation of Munters desiccant dehumidification units, chilled water supply temperature can be raised while improving both chiller capacity and efficiency. Recognizing that the Munters desiccant units are performing all the latent work (dehumidification), the existing AHU's have a single-task of conditioning the space sensible (dry-bulb temperature) load requirements. De-coupling the existing cooling coils from having to perform both sensible and latent work, significantly reduces the reheat energy requirements for the OR suites.

MUNTERS TECHNOLOGY

Munters DryCool dehumidification systems yield some of the highest moisture removal efficiency (MRE) levels in the industry. The direct expansion system



utilizes both the cooling energy from the compressor and the heat-reclaim to regenerate the desiccant rotor (exceeding the criteria of ASHRAE 90.1). Building operators bring the new dehumidification systems on-line whenever the outdoor ambient conditions rise above 5°C/41°F - ensuring the critical spaces will always maintain the required low dew points.

Preliminary results of controlling space humidity in the critical areas with the new dehumidification technology are very promising. For the first time, the affected OR suites are able to maintain 50% Relative Humidity at critically lower space temperatures ranging between 18°C to 20°C (65°F to 68°F). James Woodall, Manager Engineering Services CKHA, has already recognized some additional merits of the Munters installation discovered during a brief interruption in the chiller's operation. During this chiller interruption, the Munters units continued to maintain humidity control in the critical spaces. This allowed space temperatures to be quickly reestablished once the chiller operation was restored.

Managers are pleased they are no longer seeing interrupted procedure hours that were the result of high humidity. Beth

Hall, Director of Facilities and Support Services, commented, "We are happy to finally see the project receive funding and approval. John (Gowing) and his team have been instrumental in providing the evidence to demonstrate the benefits of this equipment for our OR's and MDRD and eliminate the risk associated with high humidity levels in these departments."

"Patient safety is our number one priority and with the installation of the Munters units, we have been able to accurately control humidity levels in the department, limiting risk, and eliminating the need to delay surgical procedures and instrument processing", added Tina Cousineau, the MDRD Manager.

As the technology becomes more familiar to the facility operators there will be additional saving opportunities during shoulder months; the chillers can be off while the Munters units continue to dehumidify the air.

The completion of this Munters dehumidification project puts CKHA in a leadership role amongst their peers in the province, specifically when it comes to efficient and successful humidity control in their critical spaces.