



## Aquatic center's dehumidification worries take a dive with renovation

After nearly 15 years of successful operation, facility executives at the Centennial Sportsplex decided in 2001 to make some upgrades to the 145,300-sq-ft structure. Executives not only wanted to improve the overall facility but to do so while also reducing energy consumption throughout.

Located in Nashville, the structure is the largest multirecreation facility in the middle Tennessee region. Facility attractions include an aquatic center with two pool areas, two ice arenas (home of the NHL Nashville Predators professional hockey team), a fitness center with two exercise rooms, 15 lighted outdoor tennis courts including a 2,500-seat stadium and four indoor courts, plus accessory offices for each location.

Siemens Building Technologies, under the umbrella of an existing Performance Contract with Metropolitan Nashville/Davidson County, worked closely with Metro Parks' personnel to develop a \$2.1 million multisite improvement project executed over the last two years. Siemens representatives tabbed **Nautica Dehumidifiers** to handle the dehumidification.

Ben Buckner, energy engineer for Siemens, worked closely with the Nautica team headed by national sales manager Brian Mason. "From a maintenance standpoint, Nautica dehumidifiers are ideal because they have a very small refrigerant loop compared to other vendors," Buckner said.

Because facility managers for Centennial Sportsplex knew that most of the improvements would be mechanical in nature, there was concern about service and maintenance issues. With new equipment being retrofitted to existing architecture, officials needed some assurances that everything would transition smoothly and efficiently. That's when Buckner introduced the Siemens' Guaranteed Performance Contract Offering involving Nautica dehumidifiers and their own DDC controls (the latter for a separate project within the complex).

### SYNCHRONIZED SAVINGS

"The problem was that the owner had the funds to upgrade the building and wanted to spend money wisely, while also addressing the biggest problem areas first," Buckner said. In addition, "Some of the [existing] equipment had been damaged by poor power quality while some OEMs of other equipment had gone out of business, which made finding spare parts difficult."

Buckner continued, "Nautica's energy-saving equipment naturally synchronized [with the project] to deliver products that eliminated deferred maintenance while at the same time saving energy and, ultimately, repaying the capital dollars needed for the project."

Upon evaluating the entire recreational facility, Siemens personnel determined that installation of two Nautica dehumidification units and a ventilation system for the aquatic center would improve energy efficiency figures. Centennial's Tracy Caulkin's Competition Pool — named after Nashville's 1984 gold medalist Olympic swimmer — and



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related spa areas now house the Nautica dehumidifying air handlers rated at 283-lb/hr and 13,627-cfm each. The MSP® (multiple small plates) dehumidifying coils used in this unit result in moisture removal efficiency exceeding 7.0-lb/kWh when calculated in accordance with ARI Standard 910.

Each of the Nautica dehumidifying air handlers installed at the facility is connected to a Larkin 40-ton, water-cooled condensing unit with high-efficiency WTT brazed-plate condensers. The heat of compression is rejected into an intermediate loop maintained between 110°F to 120° then transferred to pool water, spa water, room air, and finally to an outdoor fluid-cooler when other options are satisfied.

### 80% ENERGY RECOVERY

In addition to the dehumidification system, a Nautica 8,000-cfm rooftop ventilator feeds 4,000 cfm of outdoor air to each dehumidifying air handler for proper ventilation air within the aquatic center. The MSP heat exchanger used for this project resulted in more than 80% energy recovery for the Centennial Sportsplex Aquatic Center.

Nautica's MSP dehumidifying coils consist of a single airstream device comprised of multiple small plate air-to-air heat exchangers coupled with a cooling coil. "The multiple small plates give superior performance and efficiency while having a very low pressure drop in compact design," Mason said, "which keeps the fan horsepower down and saves money."

He added, "The tonnage required to drive our high-efficiency MSP coil is typically half that of conventional technology. And because of that, the airflow required for our units is greatly reduced as well."

As an example, Buckner stated that though the Nautica dehumidification system is not separately metered, Siemens has estimated savings for the Centennial Aquatic Center at up to \$20,000 a year.

The owner's representative for Centennial, John Holmes, is satisfied with the equipment as well. "I am happy for the energy savings," Holmes reports, "but the first priority has always been environmental control for our patrons' comfort. The new system has addressed that problem." **ES**