Case Study

Tecogen

Advanced Modular CHP Systems

CH-200x Chiller & CM-75 Cogeneration Module

The Great Neck NY Ice Rink has gone all-out to offer increased energy savings and a more enjoyable, comfortable indoor skating experience in its Parkwood Sports Complex in Great Neck, NY.

During renovations of the Andrew Stergiopoulos Ice Rink, park officials added a new natural gas engine-driven chiller to provide a smooth, reliable skating surface for patrons. The new ice-making system also saves energy, making it economically possible to extend the annual skating season into spring and fall months. As an added benefit, it provides air conditioning so the building is able to serve as a summer recreation center.

heat from the chiller and generator also regenerates a Munters desiccant dehumidification system installed to reduce excess moisture in the rink.

Making all this possible is a new TECOCHILL® CH-200x natural gas engine-driven chiller that provides 95 tons of cooling. The new chiller maintains a glycol-water mixture at 15ºF as it circulates beneath the ice sheet at the rink. It replaced an aging electric chilling system that was costly to operate.

“People are looking for alternative ways to save energy,” says Great Neck Park Superintendent Neil Marrin. “We’re converting from electric chillers to gas.”

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"It's an energy conservation project," says Joe Weinschreider, Mechanical Engineer, P.C., Rochester, New York, which designed and managed the installation. "They're able to save a significant amount of money on their energy bill. Previously, they had aging electric chillers. They wanted something more reliable. Natural gas is a more competitive energy solution."

The new chiller, when re-set to a higher temperature, can also supply comfort cooling during the summer months, making it possible to use the rink as a recreation hall. And keep the rink open for skating beyond its usual October-to-March skating season.

"We found that with other rinks using natural gas-fired chillers, if operating costs are kept low enough, they have the potential to extend the skating season," says Jeff Glick, Regional Sales Manager for Tecogen, manufacturer of the chiller as well as the TECOGEN® CM-75, a 75 kW natural gas-fired cogeneration module also newly installed at the rink. "The #1 cost of operating a rink is making the ice. If we can cut this operating cost, they may want to open up a month earlier in the season. Because of the long hours an ice rink typically operates, the savings are large."

Electricity produced by the cogeneration model offsets most of the facility's existing power usage. The engines on both the chiller and cogeneration module are equipped with low emission control systems.

In addition to using low-cost natural gas, thereby saving on the ice making costs and peak demand charges, the engine-driven chiller will provide added efficiency and economy through heat recovered from the engine jacket coolant and the engine exhaust gases. The hot water generated is truly a byproduct, without any additional fuel consumption being needed. This waste heat from both the natural gas chiller and natural gas cogeneration module will be used throughout the sports complex. Eventually, some of this heat will also be used to warm an adjacent swimming pool.

The key to energy savings is that there are multiple uses for the "waste" heat so that it really never goes to waste, says Glick.

In this case, recovered heat from the chiller and generator also regenerates a Munters desiccant dehumidification system installed to reduce excess moisture in the rink. As a further bonus, the Munters system raises the temperature of the air in the rink, making it more comfortable for skaters and spectators.

The primary reason for installing a dehumidification system was to provide a more comfortable skating experience, Marrin says.

When humidity builds up inside the rink, particularly during the fall and spring, it causes fog that can obscure vision, both in the air and on skaters' safety glasses. Excess moisture can also cause increased building maintenance problems and slush buildup on ice, according to Jacqueline McIlrath, Marketing Coordinator for Munters Commercial Dehumidification.

Another important use for the chiller's heat recovery is to provide the hot water for the Zamboni machine. Each time the Zamboni resurfaces the ice it deposits 160 gallons of hot water onto the ice surface. The hot water melts the top of the ice and freezes to form a fresh, smooth surface. By using the hot water byproduct from the chiller, the rink will be cutting its overall energy usage. In addition to saving energy this hot water will also indirectly save wear and tear on the Zamboni tires and preserve the rink's ice surface. The hot water that is being recovered from the engines is now being used to melt the ice shavings in a new indoor ice pit. The use of the new indoor pit now eliminates the need for the Zamboni to drive across the parking lot to be emptied. This in turn halts the tracking in of corrosive road salt that previously damaged the tires and the rink's surface.

This totally efficient system is expected to save operating costs and bring in a steady stream of satisfied skaters.

For more information about Tecogen's
CH-200 Chiller & CM-75 Cogeneration Module
or our other Natural Gas Engine-Driven Products please visit
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