

First U.S. Ice Rink to Use Sustainable CO₂ Refrigeration

HCFC-22 is frequently used as a refrigerant in ice rinks. Starting on January 1, 2020, U.S. production and import of HCFC-22 will end, so ice rinks across North America will be looking for opportunities to “future proof” their facilities by moving to natural refrigerants.

Like many rinks around North America, the Harry J. McDonald recreational center in Anchorage, Alaska was built in the 1980s. Its aging Freon-based system was experiencing nagging refrigerant leaks, aging equipment and rising maintenance cost, necessitating a complete makeover of the facility and the refrigeration package and floor system.



About the System

The Advansor Direct Transcritical CO₂ system for ice rinks delivers superior performance — improved ice quality and pump power savings of up to 90% — compared to traditional systems. It’s also environmentally friendly. CO₂ is an entirely nontoxic, environmentally safe refrigerant with excellent heat-transfer capabilities. Plus, it’s a fraction of the price of traditional refrigerants.

The Hillphoenix Advansor system provides a much higher coefficient of performance (COP) than that of ammonia-calcium chloride systems. And easily accessible heat recovery can be a heating source for the entire facility including indoor areas, locker rooms, and utility water.



Results

The first U.S. ice rink to use sustainable CO₂ refrigeration is benefiting from lower operational costs and reduced environmental impact just two months after opening.

“We’re already seeing savings, and we’re anticipating energy savings of 25 percent to 40 percent when all the results are in,” said John Rodda, Parks & Recreation Director for Anchorage, Alaska. The city operates the Harry J. McDonald recreational center, which reopened its ice rink to skaters and hockey teams in early January, following a nine-month renovation and installation of a carbon dioxide-based ice rink refrigeration system from Hillphoenix.

The energy-efficient CO₂ system has lowered the ice rink’s electric bills, and it also has greatly reduced spending on refrigerant. CO₂ refrigerant costs significantly less than Freon, which was used by the rink’s previous system. Equally important, moving to the newer refrigerant eliminated polluting emissions from Freon.

Rodda sees the McDonald Center ice rink as a proving ground for CO₂ as U.S. ice rinks start to comply with upcoming federal requirements to phase out Freon. “We’ve got ice rinks calling us from all over the country to see how it’s going,” he said.

Anchorage’s early adoption of CO₂ was a well-studied decision. Parks & Recreation spent a year considering options. “We looked at all the potential non-Freon refrigerant solutions, but sooner or later, they all were likely to be affected by environmental concerns,” Rodda said. “We decided CO₂ had the most benefits.”

Parks & Recreation then considered vendors and settled on Hillphoenix because of its experience with CO₂; its reputation for stability and strong customer support; and technology-enabled capabilities of its CO₂ refrigeration system, such as remote monitoring. Hillphoenix has installed CO₂ ice rinks in Canada and has worked with CO₂ refrigeration systems since 2005.

“We are pleased to be partners with the Anchorage Parks & Recreation Department in its pioneering efforts to build more efficient and environmentally sustainable ice rinks using CO₂,” said Tim Henderson, Industrial Program Manager for Hillphoenix. “We anticipate public and private ice rinks around the country will follow Anchorage’s lead.”

The city has plans to upgrade three more ice rinks to CO₂ over the next few months, and Rodda expects those projects to yield similar results. “Trying something new was smart, environmentally friendly and efficient,” Rodda said. “From what I’ve seen in a short period of time, we made the right decision in choosing CO₂.”

About Hillphoenix

Hill PHOENIX Inc., a Dover Company, is based in Conyers, Ga. The company designs and manufactures commercial refrigerated display cases and specialty products, refrigeration systems, integrated power distribution systems and walk-in coolers and freezers. Visit www.hillphoenix.com or call 844-591-5937 for more information.