DOWTHERM™, DOWFROST™, and DOWCAL™

Hat Trick: The Right Fluid for a Three-Sheet Ice Skating Facility

DOWTHERM™ SR-1 Heat Transfer Fluid is playing a key role in keeping skaters fast and happy in Midland, Michigan. The new Midland Civic Arena, which opened its doors in September 2005, features three rinks that offer the community state-of-the-art venues for hockey, figure, speed, and general recreational skating. Two of the rinks are 85- by 200-foot NHL sheets, while the third is a full-sized Olympic sheet measuring 100-by-200 feet. Total area for the three rinks is 54,000 square feet.

The refrigeration system was designed and installed by Serve-Ice Refrigeration of Northville, Michigan. The firm is also under contract with the City of Midland to supervise operation and maintenance of the system.

The three rinks are serviced by a central refrigeration plant. According to Bob Bishop, president of Serve-Ice, the core refrigeration equipment consists of three Vilter compressors using ammonia as the primary refrigerant. Total cooling capacity for these units is 300 tons. The service refrigerant is 12,000 gallons of a solution of DOWTHERM™ SR-1 Heat Transfer Fluid and water. Fluid circulation temperature is -9°C (15°F) to maintain rink surface temperatures at -8 to -7°C (18-20°F). Each of the three rinks is served by a dedicated circulation pump, with a fourth pump on standby.

The system uses typical materials of construction for rink refrigeration. The chiller and main headers are carbon steel. Pumps and valves are cast iron, bronze, and stainless steel. Polyethylene is used for the rink tubing.

In addition to the ice refrigeration system, the facility also uses DOWTHERM™ SR-1 Heat Transfer Fluid for heating applications.

One is an under-floor heating system that provides frost protection beneath the rink floors. The other is a melting pit for "snow" collected by the ice resurfacer.

In support of its home community of Midland, The Dow Chemical Company donated 5,000 gallons of DOWTHERM™ SR-1 Heat Transfer Fluid to the project. This was the total amount of concentrated fluid needed for the final diluted solution of 12,000 gallons installed in the system. Along with the fluid, Dow also donated STYROFOAM™ Brand Insulation, which was used to insulate the floors and the roofs of the rink structures.

"We're big believers in using DOWTHERM™ Fluids as the recirculating refrigerant in systems like this; they take a lot of worry and bother out of the equation. The corrosion protection they provide means lower maintenance costs in the long-run. With competitive refrigerants like calcium chloride solutions, we typically see lots of pump repairs and other problems caused by corrosion," said Bishop. Since the facility opened in September 2005, the refrigeration system has performed very well. "We look forward to many years of excellent system performance…and a lot of fun for the citizens of Midland," said Bishop.

Hockey players are among the many who enjoy the superior condition of the Midland Civic Arena's three ice rinks, maintained with a solution of DOWTHERM™ SR-1 Heat Transfer Fluids.

DOWTHERM™ fluids are delivered into the new Midland Civic Arena.

DOWTHERM™ Fluids keep the rinks' circulation pumps operating virtually maintenance-free–much to the relief of facility maintenance person Fred Grubaugh.

Daniel Laitila of Serve-Ice (left) and truck driver Bernie McClain (right) work together to fill high-performance DOWTHERM™ SR-1 Heat Transfer Fluid into the Midland Civic Arena ice refrigeration system.

For more information, contact us at your convenience:

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