NEW TECHNOLOGY

Vilter Reciprocating Refrigeration Compressors Keep Skaters on Ice in New Everett Events Center

The Everett Events Center, a $71.5 million multi-purpose complex, is located in downtown Everett, Washington overlooking the Puget Sound area. Developed by the City of Everett Public Facilities District to host an array of events, the facility features concerts, rodeos, ice skating and family shows. Opened in September 2003 under the management of Global Spectrum, this venue with adjustable seating capacity up to 10,000 is home to the new Western Hockey League franchise, the Everett Silvertips, and also accommodates other sporting events such as basketball, volleyball, wrestling and gymnastics.

Vilter VMC 450 XL reciprocating compressors provide reliable 7/24 performance to make and maintain the two ice sheets featured at the Everett Special Events Center.

The multi-purpose Everett Events Center in downtown Everett, Washington hosts a wide variety of concerts, rodeos, ice skating activities and family shows. The complex features two NHL regulation ice arenas with ice for all the events produced by Vilter reciprocating compressors.

An adjacent facility, the Comcast Community Ice Rink, contains an additional NHL regulation 200' x 85' size ice sheet designed for public skating, local hockey leagues and figure skating instructional sessions. Together, the Everett Events Center's two ice sheets can be converted into a 57,000 square foot space to host trade shows, expositions, consumer shows and special events. The ice arenas have a total of 36 miles of pipe installed for the ice floors, and employ an ammonia refrigeration system.

Ice production relies on three Vilter VMC 450 XL reciprocating compressors to provide continuous operation in this high-performance, 7/24 continuous application. All told, the capacity of the system produces enough ice to make up to 4 million 1" ice cubes.

According to Everett Special Events Center Chief Engineer Walt Jackson, the Vilter VMC 450 XL reciprocating compressors were selected because they eliminated the need to use CFC based refrigerant, and they provide very good, constant volume. As Jackson points out, "There are no complicated metering devices, and the time proven, simpler mechanisms provide reliable performance for many years. They're just bulletproof. And unlike some other compressor styles, reciprocating compressors have the ability to handle a saturated vapor or very wet refrigerant coming over the top of a separator."

PACE Industrial Incorporated, Vilter's distributor, supplied the Vilter VMC 450 XL compressors for the project after careful

consideration of the application's rigorous operating requirements and the need for long-term reliability. Brian Hewlett, Technical Sales Representative for PACE, stated, "We used Vilter equipment on the Everett ice rink project because Vilter's equipment fit the application perfectly and will assure the customer a reliable, efficient refrigeration system that will produce quality ice year after year, after year."

Producing and maintaining flawless ice sheets for the two arenas requires accurate, trouble-free performance not only on the part of the compressors, but all components in the refrigeration system. The system contains a heat exchanger from the ammonia to the secondary refrigerant (calcium chloride brine), which is transported through piping in the floor beneath the ice at controlled sub-zero temperatures. After the concrete arena floor is thoroughly cleaned, the ice sheets are built up through a complicated process involving several separate layers. First, floor temperatures are lowered to between 15°F and 18°F. Next, a light coat of water $\frac{1}{8}$" thick is applied and frozen. A water-soluble white paint is then applied to the ice covered floor and allowed to dry. An additional thin layer of ice is applied to act as a clear coat sealant. The floor is then measured, marked, and decorated with appropriate logotypes. An additional coat of water is then added to produce an ice sheet with a total thickness of $\frac{1}{4}$". From this point forward, the floor is flooded with 140°F heated (oxygen reduced) water in multiple stages to build up an extremely transparent ice sheet $1\frac{1}{2}$" thick.

Interior of the Everett Events Center shows a newly installed ice sheet ready for action. The reciprocating compressors hold the ice to a constant temperature during ice skating events and hockey games.

With the addition of players and a house full of spectators, operating temperatures are lowered so that the system sends out calcium chloride brine through piping in the floor at a precisely controlled +7°F. This last step is critical to maintain the target ice temperature of 14°F while the game is in progress.

In addition to reliable operation, Jackson stated that Vilter reciprocating compressors are "well suited for pump-out operations in the refrigerant system. When you have to take ammonia in the system and pump it out to store it in a different vessel within the system, that's where you'll find most pump-out systems are reciprocating compressors."

The Vilter VMC 450 XL reciprocating compressors can operate at compression ratios up to 14:1 with certain refrigerants, and they can be belt-driven up to 300 BHP to produce operating pressure differentials up to 250#, actual discharge pressures to 350#, and suction pressures to 150#.

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