

Tecofrost Natural Gas Engine Driven Refrigeration

THE NASHOBA VALLEY OLYMPIA skating facility in Boxborough, MA is a popular ice skating venue that has been a Tecogen customer for 20 years. The Nashoba facility consists of three surfaces and is known for welcoming

At any temperature, natural gas is an efficient and economical choice for your refrigeration needs.

skaters of all ages and skills, and offers a wide range of programs including public skating, U.S. Figure Skating Association programs and various levels of hockey.

The Nashoba originally purchased a first generation Tecofrost compressor unit in 1999 with the goal to maintain their ice surfaces more efficiently and at a significantly lower cost. After 20 years of reliable and near continuous operation, the unit reached the end of its useful life, prompting the Nashoba management to upgrade to the second generation Tecofrost in 2019. The newer product has a significantly higher efficiency, near-zero exhaust emissions and a more advanced compressor and control system.

Allowing the natural gas legacy to continue is the new Tecofrost engine driven refrigeration compressor that provides approximately 125 tons of cooling for ice surface refrigeration applications. A Tecofrost unit cuts operating costs by as much as 30-60% when compared to conventional electric compressor units because it is powered by natural gas rather than electricity. Natural gas supplies are abundant and inexpensive and projected to remain so for the foreseeable future. Electricity, on the other hand, is expensive in the northeast, especially in the summer months when ice surface maintenance loads are elevated. For the Nashoba, savings are projected to be in excess of \$50,000 per year.

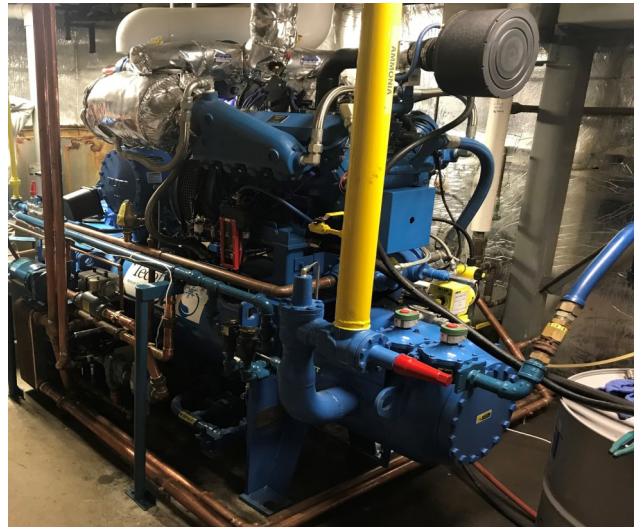


One of Nashoba Valley Olympia's ice rinks in Boxborough, MA in which the ice production is provided by Tecogen's Tecofrost.

In addition to utilizing low-cost natural gas in place of more-expensive electricity, the Tecofrost compressor will provide further efficiency and economy through heat recovered from the engine jacket and the engine exhaust gases. The hot water generated is truly a byproduct, without any additional fuel consumption needed. For the Nashoba, the free heat from the Tecofrost is applied to dehumidification, subsoil and space heating, Zamboni ice melting and domestic hot water, relegating their existing gas boilers to a back-up role.

The Tecofrost process where the engine waste heat is recovered is a form of distributed generation, and is considered “mechanical” cogeneration by utilities and the federal government with equal carbon benefit. As such, there are typically utility and government incentives available. For the Nashoba, a federal CHP investment tax credit is available while the local utility, National Grid has provided an efficiency incentive of \$45,000.

Tecofrost is an industrial 150-horsepower refrigeration compressor package jointly manufactured by Tecogen and the Vilter Division of Emerson Electric Company. It features Vilter’s robust VSM 501 single screw compressor and is suited for use with R-717 (ammonia) and many other refrigerants. Powering the compressor is Tecogen’s TecoDrive™ 7400 industrial engine which modulates output through variable speed operation similar to a VFD, which ensures that high efficiencies are achieved during both full-load and part-load operation. Tecofrost also



The new Tecofrost fully installed on site at Nashoba Valley Olympia in Boxborough, MA.

features Tecogen’s patented *Ultera* emissions controls, which ensure that emissions are kept to ultra-low levels and make it easy to get permitted in all parts of the country. Installation is simple and very similar to that for an electrically driven refrigeration package, in terms of footprint and connections.

In applications where resiliency is of importance, the Tecofrost unit can maintain operation with minimal electric service, just enough for controls and some ancillary equipment (about 3 kW).

“We were anxious about decommissioning our original Tecofrost compressor and were pleased to learn that Tecogen had reintroduced the product. If we had been forced to purchase an electric compressor elsewhere, our operating costs would significantly increase. Continuing our business with Tecofrost allows us to maintain our rink’s competitiveness and deliver reliable ice surfaces to our skaters,” said owner Lisa Cote.

For more information about Tecogen’s

Tecofrost Natural Gas Engine Driven Refrigeration

or our other Natural Gas Engine Driven Products please email us at products@tecogen.com

