

Tecochill Natural Gas Engine Driven Cooling

The Skating Club of Boston is a not-for-profit figure skating club founded in 1912 and is based out of Norwood, Massachusetts. The current facility, opened in 2020, features three rinks including a 2,500-seat Olympic-sized arena that hosts nationally televised events and a world class training facility for Olympic athletes.

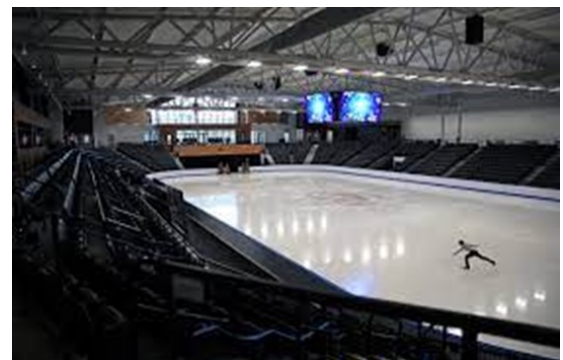
Natural Gas Engine Driven Chillers are a form of mechanical Combined Heat and Power (CHP).

At the Skating Club of Boston, Tecogen currently has 1000 tons of nominal cooling capacity. This includes four Tecochill CH-200x chillers (800 nominal tons) used entirely for making the three sheets of ice, and one Tecochill CH-200x used as a “swing” chiller which can alternate between producing air conditioning and ice production.

The rinks are used to host training for some of the most notable figure skaters, national and international figure skating championships, and Theatre On Ice shows. Having reliable production of ice is a top priority for the club, and Tecogen has to delivered reliable products for over forty years and the Tecochill is just one example of that.

Tecogen’s efficient Tecochill chillers are powered by natural gas instead of electricity. Tecochill chillers can provide cooling at a significantly lower cost than conventional electric chillers. Customers like the Skating Club of Boston can realize additional savings by utilizing the engine waste heat. Waste heat can be used by ice rinks to supply dehumidification, space heating, refilling of Zamboni hot water tanks for ice resurfacing, domestic hot water, ice pit melting, and sub-soil heating. Tecochill chillers typically reduce utility bills by 30-60% in ice rinks, who are high energy users.

Capturing the engine waste heat while providing chilled water is considered a form of mechanical cogeneration by the utilities and government. The Skating Club of Boston received a massive incentive from the local utility, discounting the total implementation of Tecochills significantly. Tecochill chillers are powered by robust and efficient TecoDrive engines, an



The Skating Club of Boston’s new facility located in Norwood, Massachusetts was opened in 2020 and features an Olympic-sized arena.

industrialized V8 that Tecogen has spent decades perfecting for this application. With over 80 million run-hours, this is a proven engine design, and features variable speed operation and a low-pressure gas fuel system designed to have a high part-load efficiency and longer life. The engine powers a screw compressor that's suited for use of R-134a as well as many other refrigerants. Tecochill also features Tecogen's patented Ultra ultra low-emission package, which ensures the emissions are kept at ultra-low levels enough to be permissible in all parts of the country. Installation is simple and the footprint and connections are comparable to an electric chiller system.

In an ice rink application, where resiliency is important, the Tecochill unit can maintain operation with minimal electrical service, only 3 kW of electric power is required for the controls and ancillary equipment. In the case of an outage, only a smaller back-up generator would be necessary to keep the ice from melting. The Tecochill chillers at The Skating Club of



Tecochill plant located at the Skating Club of Boston. Five CH-200x chillers make up to 1000 nominal tons of cooling to produce ice for three rinks and air conditioning.

As we move towards the future of decarbonization, Tecochill and CHP systems are a likely a transitional pathway to zero carbon. Natural gas-fired systems can reduce carbon emissions by replacing the marginal fuel source. Steve Lafaille, Tecogen's VP of Business Development, explains how the marginal fuel source is offset, "When a customer installs a CHP system and they start making some of their own power. They're allowing the natural gas usage (at the utility) to ramp down by X amount that the cogeneration system provides. The clean sources, like solar, wind and arguably nuclear, are must-take sources and then the next piece is the natural gas plant ramping up and down. When the cogeneration system turns on, we are offsetting the natural gas plant but without the T&D losses or the inefficiency of the power plant."

In The Skating Club of Boston, we estimate that the five Tecochill STx-200's are saving around 1000 tons of CO₂ emissions annually. The advantage of using Tecochill is that it saves energy while saving a lot on the cost of energy.



For more information about Tecogen's Tecochill product or our other Natural Gas Engine Driven Products please email us at sales@tecogen.com



Boston maintain a glycol-water mixture temperature between 12-20 F as it circulates beneath the ice sheets. The range allows the rinks to change the ice hardness for the expected use.

