

## **Prince William Ice Arena Project Highlights**

The Prince William Ice Arena was constructed in 2011 to replace the original ice arena that had collapsed due to snow. The new arena featured a much larger two story public area, dedicated club dressing rooms a gym and expanded retail areas. The new arena was outfitted with an NHL and Olympic Size ice surface.

When Bill and Pat Hutzler gave Accent Refrigeration Systems the design-build mechanical contract, their main emphasis was energy efficiency of the ice rink refrigeration system. The original ice surface employed three 125 horsepower compressors and three 40 horsepower brine pumps.

Through the use of component selection optimization, Accent Refrigeration was able to reduce the total system motor load by 175 horsepower while actually providing more refrigeration capacity.

The energy efficiency initiatives included the installation of an evaporative condenser with twice the heat transfer surface area of the previous condenser. The condenser fan horsepower was less than the previous condenser but the actual capacity was double the original unit due to the large heat transfer surface area. The condenser fans are speed controlled by Variable Frequency Drives (VFD's) which reduce energy consumption to less than a quarter in comparison to full speed fan motors. This also keeps outdoor ambient sound levels to a minimum.

The chiller selection was also optimized to function on a reduced flow brine system. Each refrigerated floor has a 30 horsepower and 15 horsepower pony pump. More than half the run time is spent on the smaller more efficient pony pumps

Three new Mycom M compressors were installed. Each compressor is driven by a 75 horsepower motor which in itself is pretty incredible given the size of the facility. The Mycom M has been gaining significant international attention as the most efficient ammonia compressor on the market today. Accent Refrigeration Systems were the first to introduce the Mycom M to the ice rink industry several years ago.

The compressor cooling loop was integrated with the building energy recovery system which totally prevents scale buildup in the compressor heads as well as making the waste compressor heat available for useful purposes within the facility.

Four 120 gallon hot water heat reclaim tanks were installed directly on the refrigeration package which made for a very clean installation and minimized on site piping. These tanks provide most of the hot water heating requirement for the facility.

A full condensing heat recovery system has been installed which has the ability to do the duty of the condenser and will provide waste heat for any of the facilities future requirements. The main heat recovery pump is also driven by a Variable Frequency Drive which reduces energy by both eliminating the need for condenser fans and keeping the condensing temperature at a very low level year round.

The snow melt pit was equipped with a custom manufactured enhanced surface area heat exchanger. This high efficient snow melting system enables the snow to be easily melted with no need to operate the refrigeration system at elevated condensing temperatures which can rob system efficiencies.

The entire system is controlled and efficiencies orchestrated by Accents Arena-Logic advanced computer control system which has been in continuous development for over 20 years.

When the refrigeration system was started in August during record heat, it was consuming less than 2100 kilowatt hours per day during the initial pull down and ice making. With the building now stabilized and in cooler November ambient temperatures the energy consumption was down closer to 1600 kilowatt hours per day. That is exceptionally low energy consumption for an Olympic and NHL ice facility in any location.

Accent Refrigeration Systems specializes in the design, manufacture and installation of high efficient refrigeration and energy recovery systems for the ice rink industry and has completed projects around the world.