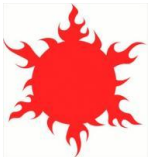
ICE RINK ENERGY SOLUTIONS

The process of designing an ice rink requires a complete understanding of the systems that allow the rink to operate properly and efficiently. Many ice rinks provide the skaters with less than perfect ice for all of the various types of skating. The ice you skate on has been applied to either a concrete floor or a prepared sand base. Then layers of ice are created, some as thin as 1/32" , and frozen prior to the next layer. When finished and ready for the skater, the ice will be a total thickness of approximately 1 to 1- 1/4" in thickness.

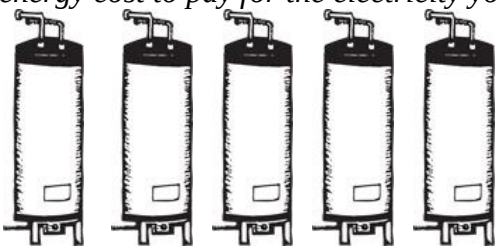
The ice surface must be monitored and maintained at very precise temperatures that can be adjusted as necessary for the type of skating to take place. Hockey skaters prefer an ice temperature between 16 and 20 degrees F which is classified as 'fast ice'. Fast ice is harder and colder with a smoother surface. While Figure skaters prefer a warmer ice in the range of 22 and 24 degrees F which is classified as 'slow ice'. Slow ice is warmer and softer and allows for delicate maneuvers and softer ice for landings.

Refrigeration Systems: Each refrigeration system must be specifically designed for the environmental area where the rink is located. Temperatures and humidity levels must be precisely controlled for perfect ice to be made and maintained. This requires a perfect marriage between the refrigeration systems and the building it is housed in.

Building Envelope: The building must be well insulated and vapor sealed. This controls the amount of heat gain that must be accounted for during refrigeration and the amount of infiltrating vapor that must be eliminated through dehumidification. Controlling the amount of humidity is one major step towards creating perfect ice. There is another important item necessary to allow efficient operations, and that is the 'low-emissivity' sheeting. Upwards of 30 to 33% of heat gain entering the building is radiant heat from the sun that enters through the roof. The low-emissivity barrier film should be rated at .03, which means that 97% of the radiated sun's energy is reflected away from the ice and interior of the building. We take this into account in our ice rink solution and specify the placement and the fastening of the sheeting.



Heat Reclaim Systems: During the process of cooling the ice rink with the refrigeration system there is a great amount of heat that is transferred from the ice that must be disposed of. Instead of disposing of it outdoors with the condenser we recommend harnessing that heat and putting it to use. Why spend the money to purchase gas or electricity to heat hot water when you can reclaim the heat you have from the ice. *With proper heat reclaim systems you can save enough energy cost to pay for the electricity you have used in the refrigeration process.*



The uses for the reclaimed heat are many. It is used to heat the subsoil under the ice slab thus preventing slab heave from frozen soils. You can use this heated water for the Zamboni; for walkway snow melting; for melting ice in the snow melt pit; and for many more uses.

The above are only a portion of the specific items that, if properly integrated into the rink system, provide solutions that lead to energy efficient ice rink operations.