



ARENA MANAGERS: How Can You Stop Brine Header Icing and Save Energy Dollars at the Same Time?

Canam offers ice rink facility managers a financially and environmentally sound solution to this costly and persistent problem - insulation in the form of polyurethane spray foam.

THE SYSTEM

Brine headers are the tubes that feed the refrigerant to maintain the ice surface. The type of header used in most artificial ice surfaces is classified as a "Two Pipe Header & Distribution" system. The headers are usually a steel pipe construction, run in a trench from the mechanical room. This system distributes a secondary refrigerant solution, usually ethylene glycol brine. As the temperature of the fluid is around -7C (or 20F), the headers will "sweat" and moisture will freeze on the pipes.

THE PROBLEM

- Condensation can cause rust and corrosion of the pipes, eventually leading to leaks
- Condensation can create slippery surfaces around the perimeter of the rink at the gates and the header trench cover, an obvious danger to patrons
- Frost heave, a phenomenon occurring as a result of the freezing and expansion of the condensation, can create "ploughed" surfaces and uneven distribution

THE SOLUTION

- Insulating the brine headers can eliminate condensation
- Insulating provides a moisture tight "cocoon" that encapsulates the lines and prevents moisture forming on the surface

- Foamed-in-place polyurethane is the material of choice - excellent thermal characteristics and waterproofing properties help minimize heat gain by the brine pipe and prevent moisture from penetrating through to the pipes

THE BENEFITS

- Reduced energy and maintenance costs, no painting required every few years
- Return on investment achieved in two to three years
- Increased safety to patrons
- Lasts the life of the system
- Implementation is straightforward and fast
- Insulation out-performs the traditional stop-gap methods of replacement and repainting
- Environmentally friendly
- Effective for both new construction and retrofit projects

THE INSTALLATION PROCESS

The Canam team can install brine header insulation for a typical trench in two days with two technicians. The process is as follows:

- Polystyrene foam board is suspended below the headers by wires to provide a base for applying the foam and to protect the trench (trench needs to remain clear to allow for easy maintenance).
- Two-component spray foam is applied over the pipes and the foamboard, leaving the brine header nipples exposed. Canam uses a polyurethane foam system that expands at a rate of 300% after application. Benefits of this two- component system include rapid expansion and cure, improved flexibility, low water vapor permeability and reduced sensitivity to ambient conditions. The insulation is foamed around dry, clean headers after the system has been tested for leaks, etc.
- Couplings used to run the brine to and from the rink are left exposed to allow for easy monitoring of any leakages that may occur in the normal usage of the system.



Brine headers feed refrigerant to maintain the ice surface, usually a steel pipe construction run in a trench like this.



Insulation is equally effective for both new construction and retrofit projects.



Foam board protects the trench and allows for maintenance access.



Canam uses a two-component polyurethane spray foam - the material of choice in this application.



The finished product. Once installed, the insulation may actually outlive the brine header system.

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