

INNOVATORS IN REFRIGERATION AND COOLING TECHNOLOGIES

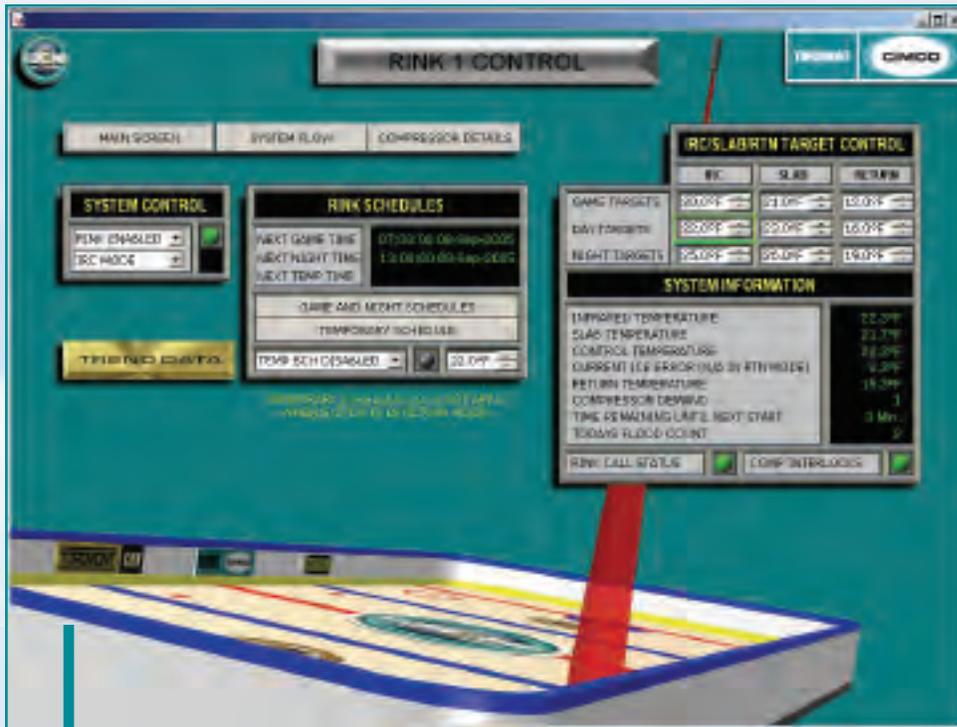


CIMCO Ice Rink Controllers



Total Rink Control





Ice Quality Changes with Temperature

All ice sports have their own optimum ice surface temperature, which relates directly to the hardness of the ice. Testing has proven that the hardness of the ice varies greatly within a narrow temperature span. The sliding coefficient between a skate blade and the ice surface is at its optimum at exactly 28°F. With warmer ice temperatures the skate blade cuts deeper, while at colder temperatures friction is also increased due to frost formation on the surface. Constantly changing external heat loads on the ice surface cause the temperature on the ice to vary from ideal levels. Counteracting this effect requires a continuously regulated refrigeration capacity for ideal energy management and system balancing.

Energy Savings Pay for the Investment

A key feature of the ECO SENSE™, 5000E and 1000E systems is the automatic scheduling of ice temperature. According to pre-programmed temperatures, the systems will automatically start, stop and modulate the required capacity, thus maintaining a high quality surface during game-time, and minimizing unnecessary expenses during set-back. Significant energy savings are achieved by raising the ice temperature during unoccupied hours, and running maximum refrigeration only when needed. With these substantial savings, the payback period is very short, sometimes even less than two years.

How Do Infra-red Controls Work?

In the past, traditional methods of controlling an ice rink refrigeration system were by using the temperature of the circulated brine or the underlying floor temperature. Operators adjusted the brine or floor temperature to a level that hopefully provided the ice hardness required for the particular activity. Considering the number of factors that can affect the ice surface temperature, such as heat load from spectators, lighting, relative humidity and ice thickness, it is easy to understand why most rinks do not operate as efficiently as possible.

Today, CIMCO Refrigeration's ECO SENSE™, 5000E and 1000E Rink Controllers are revolutionary, next generation temperature control systems. They use a camera mounted over the ice that is able to sense the exact ice surface temperature by measuring the infra-red energy being emitted from it. Subtle changes in rink conditions can cause changes in the ice surface temperature long before the brine or underlying floor slab temperature changes. By instantly detecting this change, the control system signals the ice plant to react and maintain optimum ice conditions under all conditions.

CIMCO has worked closely with the largest manufacturer of infra-red sensors to develop a camera specifically designed for rink service. Our CAG engineering team, CIMCO in-house electronics group, has developed the hardware and software that mates this technology to your existing relay logic, PLC or computer control system. Our control strategy rejects false readings and fine-tunes the refrigeration plant to the unique response characteristics of each facility, providing your skaters or curlers with the finest ice possible.



CIMCO ECO SENSE™ and 5000E Ice Rink Controllers

CIMCO's ECO SENSE™ and 5000E are the skating industry's most sophisticated ice temperature controllers for single or multi-pad facilities. ECO SENSE™ incorporates all the features of the 5000E, plus the technology to drive the ECO CHILL™ "heat reclaim design". Using a CIMCO infra-red camera mounted above the ice surface, both ECO SENSE™ and 5000E controllers constantly read the ice surface temperature and relay the information to a computer, which regulates the entire refrigeration system (including brine pumps). They combine every function necessary for superior management of the refrigeration system, ensuring the highest quality ice surface at the lowest possible cost.

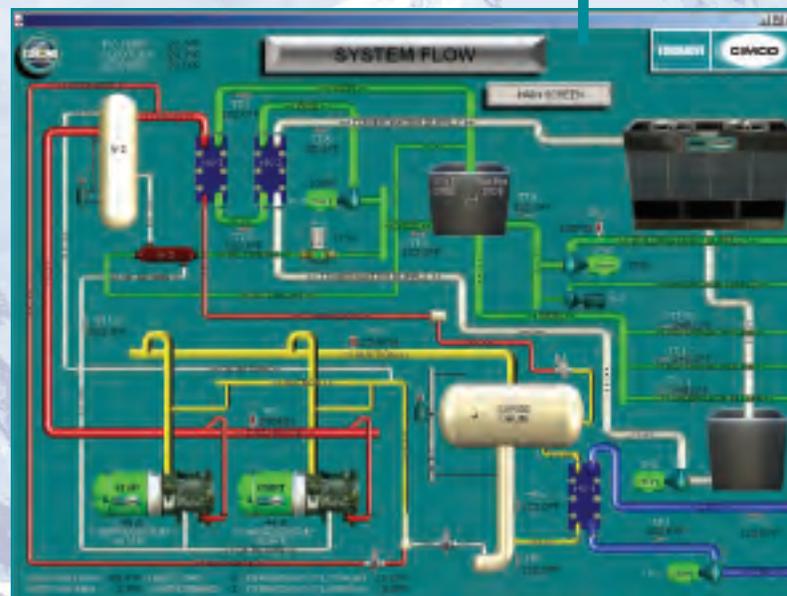


Features

- Sophisticated programming is designed to extract maximum efficiency from all components of the refrigeration plant
- Controller regulates all aspects of the refrigeration system, including brine pumps, compressors, condensers, leak detection and exhaust systems
- Computerized trend logging of all system data, including ice temperature, brine temperature, motor status, etc.
- Capability to comprehensively control all building management of HVAC equipment, including boilers, air handling equipment, lighting, etc.
- Based on a NATIVE BACNET controller. BACNET is an industry standard that allows direct communication with 3rd party HVAC control systems
- Ice temperature setpoints for any number of individual ice surfaces are user-programmable for game time, night setback and normal day operation
- Ethernet connectivity allows 24/7 remote technical support and training with internet or dial-up access. Using internet or dial access, CIMCO's Automation Group can upgrade the control program and graphics interface
- Customized 3-D graphic displays to match the individual system configuration
- State-of-the-art Flash Memory with real-time clock/calendar, multiple weekly games/event schedules
- Optional multi-user interface via TCP/IP
- Customizable alarm-routing using hard-wired alarms, alphanumeric pager, e-mail and text messaging.
- Options for energy management include: "time-of-day" metering control, Dispatch and Pre-dispatch electrical pricing structure
- Existing 3000E/4000E systems can be upgraded to the 5000E

Advantages

- Reduced equipment run times
- Lower maintenance costs
- Higher ice quality
- Easier ice quality maintenance
- Improved system efficiency
- Maximum energy conservation
- Easy to use without computer experience
- Available for single or multi-pad arena facilities



CIMCO 1000E Ice Rink Controller

Excellent for retrofit and community rink applications, CIMCO's 1000E is an economical, stand-alone unit that will work in conjunction with your existing refrigeration control system. Temperature readings of the ice surface are taken with an infra-red camera and a sensor in the slab to provide the microprocessor with information. This information allows the processor to fully control the refrigeration system during all facets of rink operation to maintain the best ice surface conditions at all times.



1000E Features

- Low cost
- Easily installed
- Day & Night setbacks
- 2 brine pump outputs
- 6 compressor outputs
- Precise control of ice temperature
- Remote status reporting through optional modem
- 48-hour trending of ice temperature

CIMCO

The Cold Specialists

Design & Engineering

CIMCO has built its reputation by having the best technical sales, manufacturing and refrigeration engineers. From coast to coast, our team of application specialists can draw on over 90 years of experience to design the refrigeration and process

cooling plants that will meet your specific needs. From initial concept, through site supervision, to project commissioning, CIMCO engineers are available to ensure the success of your project.

Manufacturing

We have established our reputation by using the latest manufacturing techniques to produce the world's leading refrigeration equipment. In fact, many of the products that become part of our refrigeration systems are manufactured by CIMCO,

such as: shell and tube heat exchangers; pressure vessels; dehumidifiers; water tanks and pumping sets; microprocessor and relay logic control systems and complete packaged refrigeration and process cooling systems.

Components

At CIMCO, we ensure that every component used in our systems is chosen based on the knowledge gained from past experience. Each product is carefully evaluated, tested and proven before it becomes part of a CIMCO system. From the

compressor, through to the simplest control, each unit is carefully assessed and matched with components of proven dependable performance to keep our clients and their products cool.

Installation & Service

A key aspect of our success has been our experience in preparation, installation, start-up and balancing of our systems. CIMCO offers preventive maintenance and service inspection programs with reliable,

professional follow-up service. When it comes to keeping things cold or on ice, only CIMCO does it better than Mother Nature.

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REFRIGERATION**

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