



A Rockwell Automation Company

## The Town of Okotoks Twin Arena/Curling Rink Ice Plant Control System Upgrade

### The Client:

The Town of Okotoks is a rapidly growing community about 18 km south of Calgary with a population of approximately 16,500. As with many small Alberta communities, Okotoks' rapid growth is necessitating the upgrade and expansion of its recreation facilities. Okotoks residents currently enjoy the amenities of the Okotoks Recreation Center and will soon

also have access to the Centennial Arena (under construction). The Okotoks Recreation Center is managed by the Town of Okotoks and boasts two ice skating surfaces and an 8-sheet curling rink.

### The Requirement:

The Okotoks Recreation Center artificial ice plant is an ammonia (NH<sub>3</sub>) compressor based system. The chilled NH<sub>3</sub> passes through a brine chiller to cool a brine solution. The brine solution is pumped through the many coils embedded in the ice rink floor slabs, which in turn keep the ice frozen on the rink surfaces. Rink ice temperatures are monitored and controlled by floor slab temperature sensors. Rink temperatures are closely controlled for good ice during hockey games, figure skating and curling.

In 2004 Okotoks' Town Council recognized the need to expand and upgrade their recreation facilities. The upgrades were applied to the existing Murray and Piper arenas and the curling rink, all located at the Okotoks Recreation Center.

The various pieces of refrigeration equipment were slated for

rebuilding, replacing or expanding (added equipment) with the end result being a system comprised of 3 ammonia compressors, two cold brine chillers and two heat exchangers for heat floor operation. A complete new control system was required to coordinate operation of all the equipment and to provide the energy saving features required by the client.

Hinz has years of experience in refrigeration plant control system design and worked with both the Town's consultant and the refrigeration contractor on similar projects such as High River Arena, Banff Arena and the Red Deer Centrum.

Hinz was contacted to provide a control system solution for the Okotoks Recreation Center.

### The Design Solution:

Hinz made an initial site visit to obtain details on the existing system. After this review and consultation with Thermo Carb Consulting Ltd. (Town of Okotoks' Consultant) and Cimco Refrigeration, Hinz recommended a PLC-based control system with a panel mounted color touch screen Human Machine Interface (HMI).

The existing control and operations of the Ice Plant was duplicated and then improved on in the new control system. The new HMI provides a more graphical look and feel with intuitive screen navigation and control. The design solution had to be very cost effective to meet the Town of Okotoks operation's budget. Hinz provided this solution under a "fixed price" contract.

An Allen-Bradley SLC 500 PLC and an Allen-Bradley PanelView Plus 1000 10" color touch screen was specified. This system is easily supported by local companies or by Hinz out of Calgary/Edmonton. Mycom MyPro safety shutdown panels were used to monitor compressor subsystem status and a discrete interface between the PLC

and the MyPro panels allowed for safety shutdown alarming on the touch screen display panel.

Hinz designed the new control panel from scratch and had it constructed at a local panel fabrication company. The panel was mounted and wired by the project electrical contractor. Hinz provided full panel commissioning (I/O wiring checks) and system startup support.

The new enhanced control system and interface offers operators easy access to the many alarm and operational set points and quick reference to system status and temperatures. The "Setback" feature can be configured to allow the ice temperature set point rise by a specified amount when the ice is not in use thereby reducing power consumption in "off hours" and generating savings for the client. Setback operation is similar to a setback thermostat available for reducing overnight temperatures in the average household

The project was successfully completed in the fall of 2006.



A Rockwell Automation Company

# The Town of Okotoks Twin Arena/Curling Rink Ice Plant Control System Upgrade

PanelViewPlus 1000



SLC 5/03 Chassis

1746-P2	0	1	2	3	4	5	6	7	8	9
	1747-L531	1746-IA16	1746-IA16	1746-OA16	1746-OA16	1746-NI4	1746-NO4I	1746-NR8	1746-NR8	1746-NR8

DH-485

Discrete I/O



CM101  
Mycom  
MyPro



CM201  
Mycom  
MyPro



CM301  
Mycom  
MyPro

## System Specifications:

Allen-Bradley SLC 500 based PLC system c/w:

- 1747-L531, PLC processor
- 1746-A10, 10 Slot Rack
- 1746-P2, 120VAC Power Supply
- 1746-NI4, 4 Point Analog Input Module
- 1746-NO4I, 4 Point Analog Output Module
- 1746-NR8, 8 Point RTD Input Modules
- 1746-IA16, 16 Point, 120VAC Discrete Input Modules
- 1746-OA16, 16 Point, 120VAC Discrete Output Modules
- 2711P-T10C6A1, PanelView Plus 1000, 10" Color Touchscreen Operator Interface Terminal

For further information or to contact a Hinz office near you, please check our website at:

[www.hinz.com](http://www.hinz.com)