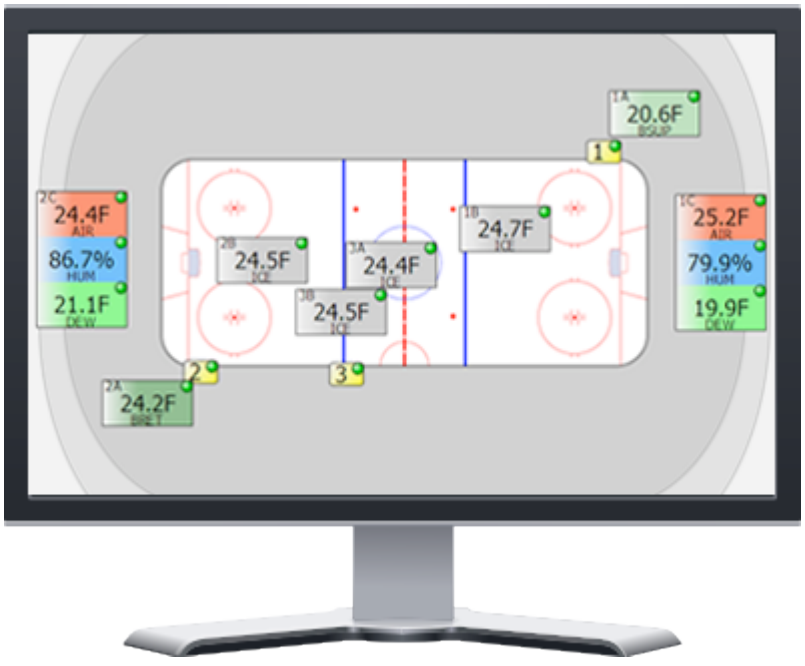
NHL Winter Classic Engineered to Perfection

Detroit Red Wings and Chicago Blackhawks battle it out in Chicago

By RFID-World.com Journalist Laurie Sullivan

When the Detroit Red Wings and the Chicago Blackhawks step on the ice for the Bridgestone NHL Winter Classic at Wrigley Field in Chicago on New Year's Day, eight probes and three transmitters will measure and collect data. The system will send updates on humidity, air flow, dew points and temperatures below the ice surface every 30 seconds to connected laptops and cellphones, so technicians can monitor environmental conditions on the outside field.

The Eye on the Ice system, implemented at Wrigley Field on Dec. 20, support 12-, 25- or 40-foot long probes set inside the ice that send data to nearby remote transmitters running on two AA batteries. The data is accessible on connected laptops and cellphones that run Microsoft Windows. Multiple facility layout options on the software provide ice technicians with a visual representation of sheets of ice. Full charting capabilities offer any combination of sensor plots on one graph. Technicians also have the option of exporting the data to a CSV file to build custom analysis in a spreadsheet.



Source: Eye on the Ice

More than 40,000 people are expected to fill the stands when the Chicago Blackhawks take on the defending Stanley Cup Champion Red Wings. Don Renzulli, senior vice president of events at the National Hockey League, told RFID World late Tuesday there are several applications that use sensors to measure environmental conditions.

Source: Eye on the Ice

For example, a device on a tripod connected to both phone and power lines, sitting just off the third-base dugout, and then moved into the outfield, measures wind speed. "We got an email the other day that the device measuring wind speed was frozen," he said. "Dan Craig also had a system made that lets him see different ranges of temperature all along the ice. The devices are wired into the truck, which send signals to his cellphone."

Craig, the NHL facilities operations manager, tapped Eye on the Ice to develop the application. Hans Wuthrich, an expert in ice making for the sport of curling, cofounded the Canada-based company along with Rick Forfar, a computer programmer. Eye on the Ice is a wireless environmental monitoring system that provides live updates on ice conditions. The embedded and wireless system was engineered and built by Winnipeg, Canada-based Norscan Instruments founded in 1980,

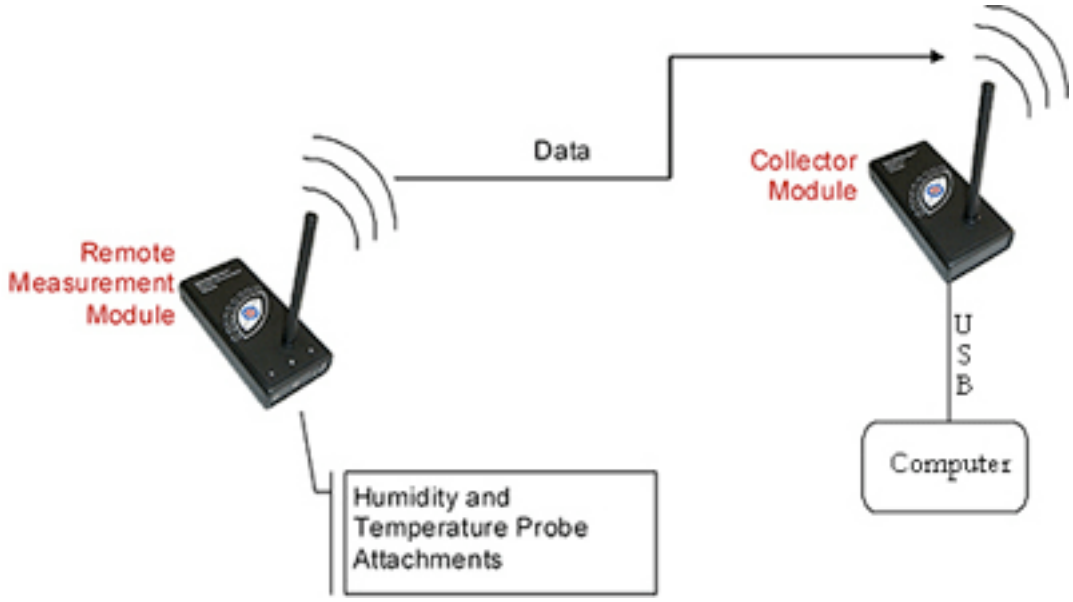
"If anything goes wrong, the system sends a text message to a mobile device, such as a cellphone, to alert the ice technician," Forfar said. "The system makes sure the thickness of the ice remains consistent, among other things."

As a pioneer in the development of advanced cable monitoring systems, Norscan has fostered a reputation for developing and providing quality products and services for global telecommunications and broadband markets. Norscan continues to expand its presence outside of telecommunications and broadband markets, developing automatic identification and sensor technologies for new industries and applications. The relationship with Eye on the Ice provides an example of the expansion.

Jason Fuith, business development manager at Norscan, describes the system as a proprietary error-checked protocol over an off-the-shelf FCC-certified radio operating at 900 MHz. The radio incorporates frequency hopping and has collision detection and retry, so multiple units may operate on the same channel. The frequency hopping reduces overall emissions footprint to allow maximum power output while still meeting FCC regulations, and reduces errors from other radio transmitters. CRC error detection is used to guarantee data integrity for up to 24 remote measurement modules (RMMs). Multiple collector modules (CMs) are used to provide separate sensor monitoring stations for the Eye on the Ice System.

The Eye on the Ice system can transmit signals up to 1,000 meters in open air line of sight and up to 100 meters in commercial sports facilities, even with multiple concrete walls and steel structures. Since some commercial facilities are not reachable in one hop, a repeater function was added.

Norscan's repeater technology for the application combines intelligent tracking of the sensor inventory at the CM and repeater function on any RMM when AC power is applied to the RMM. This makes any corner of the largest, most complex commercial building accessible to Eye on the Ice technology.



Source: Eye on the Ice

The Eye on the Ice system leverages thermistor technology for air and ice temperature measurement. The particular sensors being used have a stainless tip with industrial grade wire that remains pliable in low temperatures and have an accuracy of +/- 0.5°C over the range of -20°C to +30°C. The integrated humidity and air temperature sensor provides a digital output accurate to +/-5% Relative Humidity, and +/- 0.5°C for temperature.

If the Wrigley Field project goes well, the NHL could incorporate the system into all 30 NHL rinks.