



### Brodie Guest | Guest Automation

#### Building (Automation) Efficiency in Rinks

Everyone is talking about it, so let's talk about it now. Energy Efficiency. How about a step further, Building (Automation) Efficiency. New construction projects are very efficient with some buildings rated LEED certified and even some stating being net zero ready. But what about existing buildings with a limited budget and little to no automation? Does that sound like your facility? Let's step further again.

Simple Building Automation Systems controlling HVAC only is a great start and will still provide savings, but the savings are limited. Even setting back the schedule and setpoints in a simple furnace or roof top unit will help! This work can be completed in a phased approach. Advanced Building Automation Systems are larger and more complex, however by controlling all HVAC, mechanical, refrigeration and electrical systems will provide increased savings.

In recreational facilities that have rinks, we typically find that the HVAC automation and the ice plant Automation are separate. This may cause mechanical and electrical equipment and systems to 'fight' one another. Let's say the ice/slab is higher than normal above setpoint, so why is the Dehumidifier or bleacher heaters running when the ice plant needs to pull the ice/slab down? Or what potential heat recovery in the ice plant - is any of that waste heat being recovered - or are we just rejecting it outside? Having your facilities systems integrated and working together is the key.

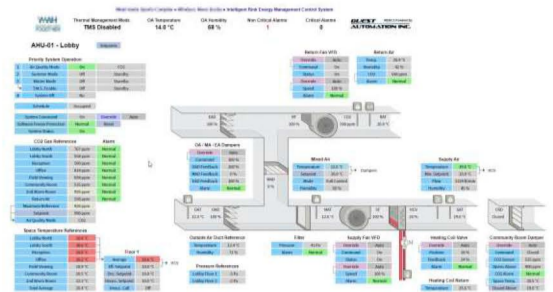
I've mentioned the ice plant and phased approach. Not all customers can afford to automate all or even the majority of mechanical, electrical, refrigeration systems in one phase, but there should be a focus of taking control of the biggest consumer in a hockey or curling rink, the ice plant. Done properly, there can be between 15-40% savings by automating the Ice Plant alone.

Advanced Building Automation Systems can also produce significant energy savings from utility meters and Intelligent logic. Peak demand limiting, load shifting and demand response curtailment to name a few, have proven to dramatically lower energy usage while, intelligently, not affecting the user conditions (customer comfort and ice quality). Recent projects have been operating at 16 ekW/ft2 while projects that started up in the Fall 2022, are operating at ~ 10 ekW/ft2. Impressive.

So, the next time you think about energy efficiency, look closely, you might be closer to your goal than you realize.

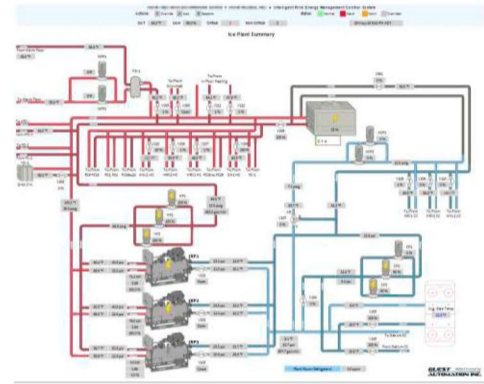
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**Entire Facility Controlled**  
All Refrigeration, Mechanical and Electrical systems on a single OPEN platform for Maximum Efficiency



**GUEST**  
**AUTOMATION**  
RINK AUTOMATION SPECIALISTS

**IoT - Internet of Things**  
Many different manufacturer's equipment integrated and working together



# Intelligent Rink - Energy Management Control Systems . . .

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Integration is so important and is quite frankly the key to success. The floor plan graphic and the energy flow of the system, the R on the left stands for refrigeration and the refrigeration plant itself, from here Heating, Cooling and Dehumidification to the rink space. Continuing to move to the right, heat to the Common Areas, offices, meeting rooms, and community rooms. Still passing 100% recovered heat to the turf field, which is extremely efficient! If the ice is out (like it is today) we have smart, integrated water heaters to heat only loads that require it from the Thermal Management System. We've all heard of the IoT, or the internet of things. This facility is completely integrated with several different manufacturer's equipment working and communicating together on a single platform, with complete mobility and access from any smart device, no plug ins or applications are required. Just simply log into your system, from any browser, from anywhere, to monitor and control your facility. The floor plan graphic also shows all space temperatures, humidity and air quality levels with a spectrum graphic quickly indicating if temperatures are at, above or below setpoint. Other graphics show the hot water system and the intelligent water heaters. Main Air Handling Unit graphic with a (Heated from the Ice Plant) Glycol heating coil instead of the traditional natural gas fired appliance.

Not only can you integrate building equipment but also building systems. There are ways to integrate two systems to provide facilities with information they need to make decisions. Which includes energy costing information, providing lifecycle planning, asset performance/efficiency and hidden energy cost.



INTELLIGENT RINK ENERGY MANAGEMENT CONTROL SYSTEMS

Controlling over 200 rinks across North America  
Producing verified rink energy savings up to 40%

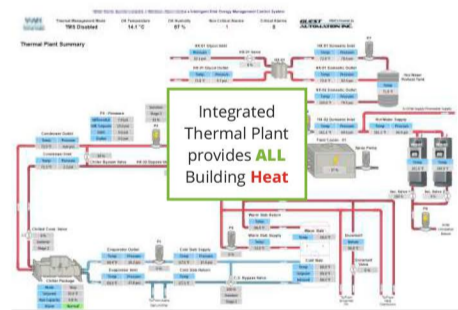
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#### West Hants Sports Complex Birthplace of Hockey, Windsor, Nova Scotia

Municipal Objectives for Project Exceed National Energy Code by 50%  
This required both high-performance and energy efficiency

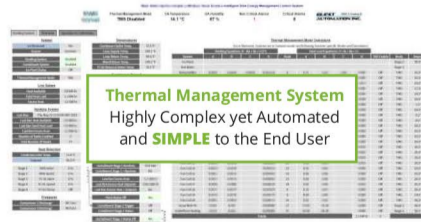
Operating at 16 ekWh/ft2. ENERGY STAR Median 43 ekWh/ft2



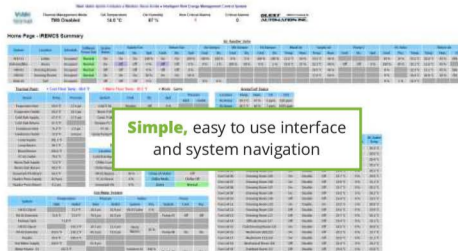
**All Heating, Cooling and Dehumidification** flows from the Integrated Thermal Plant



**Thermal Management System** Highly Complex yet Automated and **SIMPLE** to the End User



**Simple, easy to use interface** and system navigation



**All Refrigeration, Mechanical and Electrical Systems** on a single **OPEN** Platform

