



**Markham Village
Community Centre**

Markham, Ontario

PROJECT SUMMARY

Refrigeration Plant Replacement—Ammonia to XP10

The Challenge: Markham Village Community Centre had an aging ammonia-based refrigeration system with heightened concerns on safety, regulation compliance and maintenance. The owner needed to address these items without a resulting operating cost increase post construction.

The Solution: In 2019 I.B. Storey Inc. Rink Engineering Experts were engaged to evaluate options and develop a comprehensive solution. Opteon™ XP10 refrigerant was leveraged in combination with automation & equipment upgrades yielding superior sustainability results (financial & environmental). The upgraded system incorporated safety and maintenance improvements and advantages.

Refrigeration Plant

Capacity Increase -TR

49%

Average Slab Reduction

2°F

Plant kWh Savings

13%

Sustainability Improvements

Plant Water Savings

42%

Annual Compressor Overhaul Spending:

\$0

Equivalent tree seedlings planted:

175

About XP10

- ◆ Non-Toxic
- ◆ Non-flammable
- ◆ 630 GWP

Contact Chemours for more information on Opteon™ Refrigerant products at nhl.com/opteon



Opteon™



OFFICIAL REFRIGERANT SOLUTION OF THE NHL®

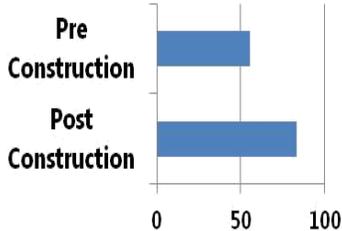
Project Challenges Addressed

- ◆ **Safety, Regulatory and Capital:** Utilizing Opteon™ XP10 Refrigerant saved ownership from extensive upgrade expenses on plant room to meet ammonia-based codes and regulations allowing for funding to be used in a fiscally responsible manner placing less financial burden on the overall municipality. This approach was clearly the best option in consideration of surrounding area density (residential and commercial space).
- ◆ **Operating Cost:** A modest utility savings was achieved which providing a better quality of ice achieving a primary objective of the owner.
- ◆ **Service Delivery:** The existing plant sizing was from a different era limiting service delivery. The upgrade incorporated a 49% increase in capacity permitting enhanced service delivery without an increase in utility costs.

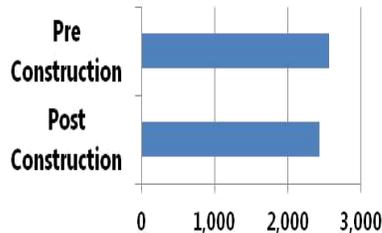
Refrigeration Upgrade & Billing

Refrigeration Plant Capacity TR

(Identical Conditions)



Daily Average Facility Electricity kWh



About the Facility

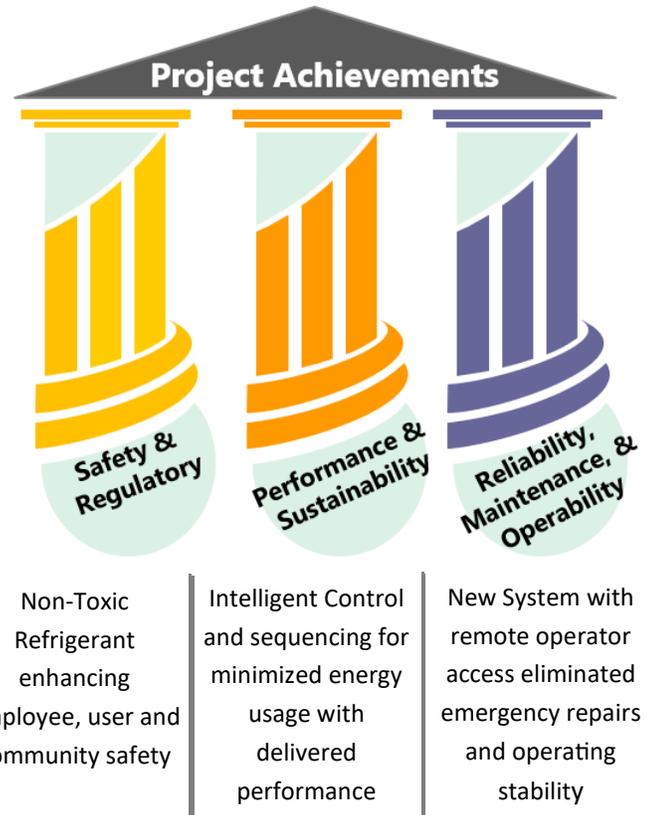
Markham Village Community Centre is located next to the Markham Village Library and features an arena with 6 dressing rooms and seating on one side of the pad for 450 people. The Centre also has a board room, a community meeting room and a lounge for hosting community events.

About I.B. Storey

Recognized as the leading Application Specialists in rink engineering, I.B. Storey has been providing customized, innovative approaches for over a decade. The firm's experience is unparalleled in finding solutions for a wide ranging client base from community to semi-professional and professional facilities across North America.

Project Details & Achievements

The project consisted of a full plant replacement installing a packaged industrial refrigeration plant with new pumping system, full heat recovery, low water condenser and direct digital controls all expertly sequenced.



I.B. Storey Inc
 Charlottetown PE ◆ Vaughan ON ◆ Redington Shores FL
 902-367-3545 ◆ 416-800-1482 ◆ 813-333-7684
 info.ibstorey.com



**Official Rink Engineering
 Consultant of the NHL®**

- ◆ Post Construction Savings obtained from Measurement & Verification completed in compliance with EVO 1000-1:2016 Industry Standards and per Manufacturers Ratings
- ◆ The content of this case study is the sole responsibility of I.B. Storey Inc.
- ◆ The information set forth herein is furnished free of charge and based on technical data that I.B. Storey Inc. believes to be reliable. It is intended for use by persons having technical skill, at their own risk. Because conditions of use are outside our control, I.B. Storey Inc. makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under, or a recommendation to infringe, any patents or patent applications.

NHL and NHL Shield are registered trademarks of the National Hockey League. © NHL 2021. All Rights Reserved.