

**MYCOM**  
MAYEKAWA

# Ammonia Reinvented

Energy-Saving, Eco-Friendly, Safe  
Ammonia Refrigeration System



# Panel Discussion

## Characteristics and Applications of Small Charge Systems

- Mycom will discuss our experience with small charge systems
- Focus on technology that allows for the expansion of ammonia use
- CC-108/109



# Mayekawa's 90<sup>th</sup> Anniversary



90th ANNIVERSARY  
**MAYEKAWA**









**90th ANNIVERSARY**  
**MAYEKAWA**



# Current Factors

- Environmental impact
- Utility costs
- Maintenance burden
- Safety

# Word Association Test



<http://missmalady.blogspot.com/2010/11/word-association-test-proves-im-out-of.html>



# Ammonia!



welcome to [aboutammoniarefrigeration.com](http://aboutammoniarefrigeration.com)

[History](#) | [Environmental Achievements](#) | [Economic Advantages](#) | [Return to IIR](#)

Ammonia is perhaps most well recognized as a household cleaner. However, ammonia commonly makes another important contribution to daily life as an industrial refrigerant. It is responsible for the year-round availability, volume and variety of food and beverages served daily on breakfast, lunch and dinner tables around the world. The use of ammonia as a refrigerant is definitely among the most important developments of modern times, and a significant contributor to our modern lifestyle.

The development of mechanical refrigeration dates back to the early days of the Industrial revolution. [more](#)

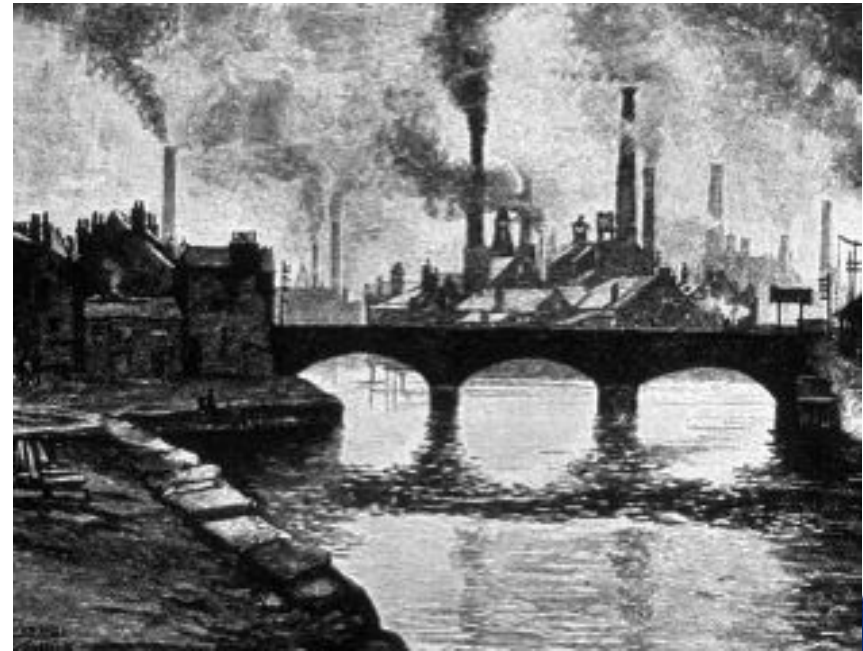
From an operational perspective, ammonia is generally accepted as the most efficient and cost effective industrial refrigerant. [more](#)

The advantages of ammonia refrigeration are well known. Ammonia does not destroy atmospheric ozone and does not contribute to the greenhouse effect linked to global warming. [more](#)

International Institute of Ammonia Refrigeration  
<http://www.iir.org>



# Ammonia!!?!?



# Ammonia Reinvented

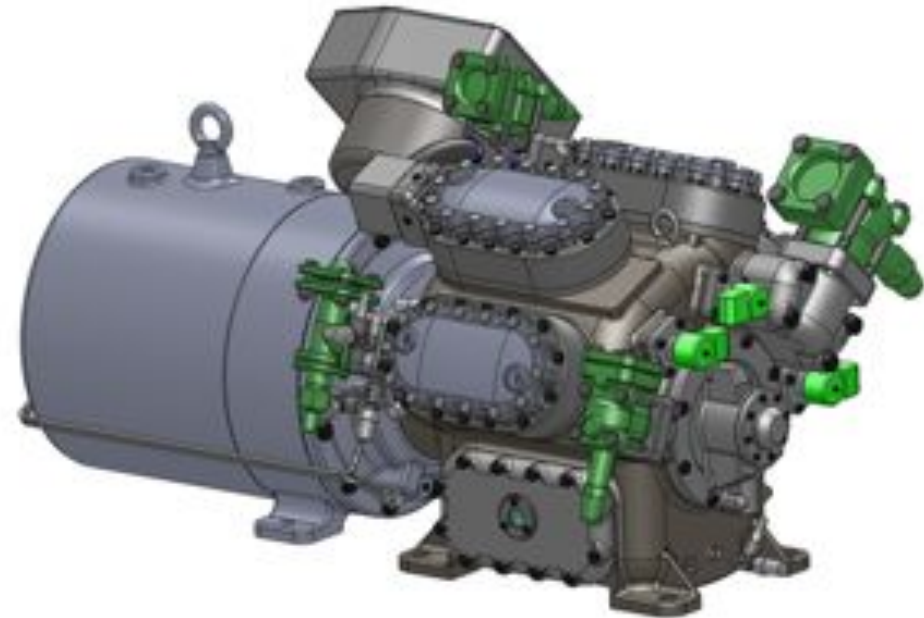
Maintain the traditional strength of ammonia systems and address concerns that limit current applications

- Innovation
- Integration



# Innovation

- N8HKM Compressor
  - Semi Hermetic reciprocating compressor
  - 3 motor sizes
  - Semi-hermetic induction motor
  - Based on venerable K Series recip platform



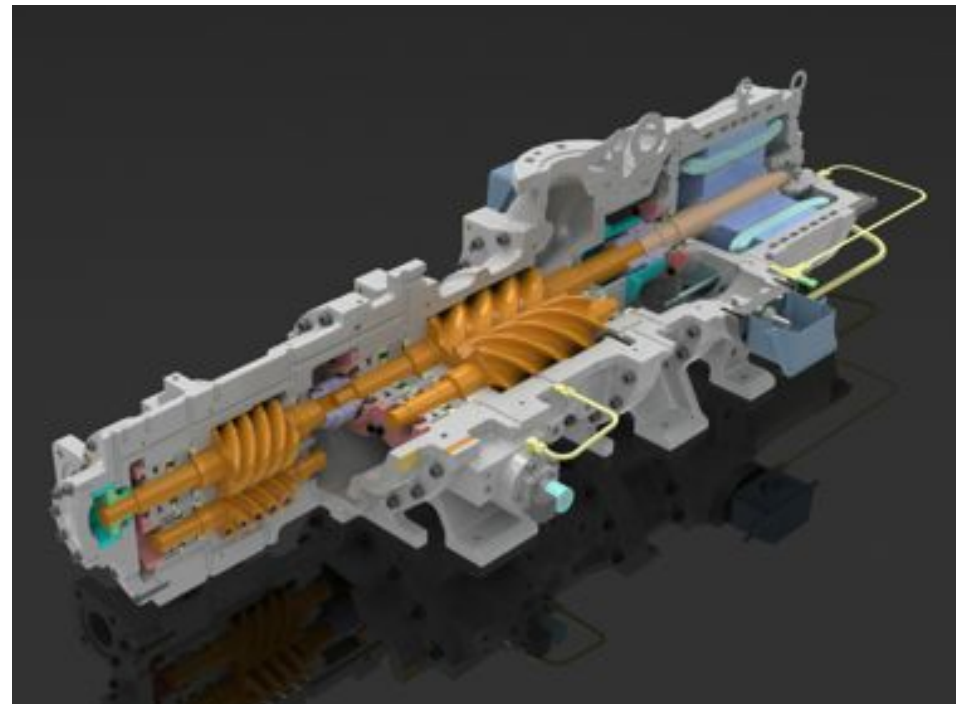
# Integration



- e5 Chiller
  - Glycol or CO2 chiller
  - 45-65 lbs charge
  - 18-35 TR
  - Modular Design

# Innovation

- NewTon Compressor
  - Semi hermetic
  - IPM Motor
  - Single and two stage option



# Integration



- NewTon
  - NH<sub>3</sub>/CO<sub>2</sub> Solution
  - Designed for safe efficient operation
  - Cellular communication for predictive maintenance

# Application

Customer	Volume	Age	Refrigerant formerly used		Power reduction
	(m3)	(year)	Refrig.	Comp.	(%)
<b>Tokyo Toyomi (Case 2)</b>	<b>45,000</b>	<b>29</b>	<b>HCFC-22</b>	<b>Screw</b>	<b>31.1</b>
Niigata Reizo	10,000	33	HCFC-22	Recip.	41.2
QP “Kewpie”	16,250	27	HCFC-22	Recip.	24.9
Sensui Reizo	6,125	38	HCFC-22	Screw	29.3
Ajinomoto	7,500	25	HCFC-22	Recip.	28.0
Gliko	30,000	30	HCFC-22	Screw	19.8
Showa Reizo	32,500	22	HCFC-22	Recip.	28.0
AMB Funabashi	30,000	25	NH3/Brine	Recip.	34.0



# Innovation

- M Series Compressor
  - Highly efficient
  - Large displacement (752 CMF Max)
  - 0% Unloading



# Integration



- M-Series Package
  - Higher cfm/ft<sup>2</sup>
  - PLC control panel
  - Used with VFD for maximum efficiency

# Application



**M Report 3**  
A Voice from M-series User

"Canlan Ice Sports Corp is the North American leader in the development, operations and ownership of multi-purpose recreation and entertainment facilities. We are the largest private owner/owner and operator of recreational ice sports facilities in North America and currently own and/or manage 30 facilities in Canada and the United States with 70 surfaces including ice rinks and indoor soccer fields. Canlan Ice Sports' competitive edge comes from knowing all aspects of the ice sports facility industry and from consistently delivering high quality programming through each of our world-class facilities." (icisports.com)

**Canlan Ice Sports**  
Canlan Ice Sports Corp.  
www.icisports.com

Soon after the M-series had made its debut in the North American market in 2006, Canlan Ice Sports installed their first M-series (N9M) in 8 Rinks in Burnaby, BC. Since then, Canlan has replaced R9 and F9B machines for a total of five N9M machines in various Canlan facilities for the efficiency and energy-savings that the M-series compressors deliver.

In 2011, their facility in Oakville, ON, received an Energy Conservation Award in Oakville from Oakville Studios for the energy-savings they gained from the compressor upgrade to an M-series compressor earlier this year. Also, currently they are nominated for an award with the Ontario Power Authority based on the compressor installation. David explains, "So far we've experienced very little oil consumption with the units and all of them were supported by energy conservation grants from electrical utilities."



In coming years, both Canlan and Mayekawa/MYCOM expect the M-series compressors to replace many of the compressors running at ice arenas. "The compressors have been studied and widely accepted by Canadian utility companies, which makes it very easy to receive energy incentive funding," says David whose experience with the M-series is shared in following paragraphs.



**David Stewart**  
Director, Energy Management, Facilities Assets and Equipment  
North America  
Canlan Ice Sports Corp.  
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Canlan's first M-series compressor was installed in 8 Rinks in 2006 as a pilot project to prove-out efficiency on paper. The pilot was supported by BC Hydro which contributed approximately 40% of the capital cost. They began to see the benefits with a few short months. There was a significant decrease in energy consumption and oil usage.

**MYCOM**

- Energy Savings Award through use of M Series compressor
- Reduction of oil consumption
- Attracting incentive funding for use

# Innovation, Integration, Application

- Components that improve performance in one or more of the concentration areas
- These are integrated into solutions that harmonize performance in all concentration areas
- Solution advances the goals of our customers and mark the success of the product.



# Solution Map

## Utility Cost

Efficient IPM  
Motor

Ammonia  
Refrigeration

## Maintenance

Shaft Seal  
Elimination

Shaft  
Alignment  
Simplification

## Environment

Natural  
Refrigerant  
Use

Decreased  
energy  
consumption

## Safety

Shaft Leak  
Elimination

Low charge  
application

# Ammonia Reinvented

- Allows current ammonia users to benefit from new technology
- Expands potential for use in new applications
- Reduces barriers to adoption



# Thank you

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