

CHILLER, HEAT PUMP OR CONDENSING UNIT  
(COOLING, REFRIGERATION AND HEATING)

# ALTO CUMULUS

*Efficiency, quality and reliability  
built-in all our ecofriendly products*



**CARNOT**

A dark, industrial photograph of a large-scale refrigeration system. The image shows multiple rows of heavy machinery, including compressors and piping, housed within a metal frame. The lighting is dim, emphasizing the metallic textures and complex layout of the equipment. The text is overlaid on a semi-transparent white box in the center.

**« WITH CARNOT'S REFRIGERATION SYSTEM,  
WE HAVE TRIPLED THE VOLUME OF OUR  
WAREHOUSE AND MAINTAINED THE SAME  
LEVEL OF ENERGY CONSUMPTION. »**

**DENIS PAGEAU**

*Vice President of business development, Michal Inc.*

# CO<sub>2</sub> solution by Carnot: a smart, ecofriendly and profitable choice

Made by the most experienced company in CO<sub>2</sub> transcritical solutions in North America, the CO<sub>2</sub> refrigeration system by Carnot is the smart choice for owners of warehouses and distribution centers.

## PROVEN EFFICIENCY FOR MAJOR SAVINGS

Superior quality, performance and energy stability;

Flawless redesign to replace existing R-22 solutions;

Financial savings of up to 50% year after year due to the reduction of energy costs, maintenance and service costs and the elimination of refrigerant fees;

High standstill pressure system.

*"[...] As you know, we have completed our new cold store in Quebec and it is now in the process of taking in cranberries for our customers. At this point they have been frozen by others, but for the upcoming season, we intending to freeze 25 000 000 lbs. which is the capacity of the facility. We accomplished something of a record as the whole project was completed in 17 weeks through a wonderful effort of our contractors as well as the use of many computer assisted projects. Even the pipe welding was done with lasers.*

*It is a 'green' project using fully CO<sub>2</sub> refrigeration (no ammonia) which cannot be used with cranberries as any leak turns the berries black and unusable). Also, as the source of power in Quebec is hydro so we have a zero global warming effect, not to mention very low power rates at least one third what we pay in Massachusetts. So a big competitive advantage and we love doing business in Quebec!*

*The installation of the refrigeration system which consists of three compressor packages each with thirteen compressors was factory built and fully tested offsite in Trois-Rivieres, about sixty miles from our plant by Carnot Refrigeration. They also did all of the installation including evaporators, condensers and all the piping. Having built many cold stores over the years this project was by far and away the best and represents a new era in refrigeration technology. We can't say enough good things about Carnot, and I believe they have a bright future and will become a significant factor in the industry."*

**ROBERT HAMPSON**  
Advisor, Manulife

*Excerpt from an e-mail addressed to the Chairman of IARW*

SINGLE STAGE TRANSCRITICAL CO<sub>2</sub>

Compressor Stage	Cooling Capacity	Evaporating Temperature	Condensing Temperature									Gas Cooling
	[Tons]	[°F / °C]	[°F / °C]	50 / 10	55 / 12.7	60 / 15.5	65 / 18.3	70 / 21	75 / 23.8	80 / 26.6	85 / 29.4	85 GC
High Stage [HS]	15	32 / 0	Capacity [Tons]	15	15	15	15	15	15	15	15	15
			kW	5	6	7	8	9	11	12	15	16
			THR [MBH]	197	200	203	207	211	216	222	230	234
			COP	10.6	9.0	7.8	6.7	5.8	5.0	4.3	3.6	3.3
			Heat Reclaim			COP w/HR	21.2	18.1	15.5	13.4	11.6	10.0
Ejector Defrost			COP w/HR & ED	22.2	19.0	16.3	14.1	12.2	10.5	9.0	7.6	7.0

# CO<sub>2</sub> technology by Carnot: a powerful refrigeration system

## POWERFUL TECHNOLOGY,

Packaged solution designed by a qualified engineering team;

Hot gas defrost option;

Heat pump mode option for heating or HG defrosting of single evaporator installation;

Process optimization for increased efficiency;

Simplified quick-plug installation;

On-site assistance for equipment start-up;

Complete training for technical staff;

Fully automated system.

## A SMART SUSTAINABLE BUSINESS DECISION

Harmless refrigerant reduces or eliminates risk of facing environmental or health and safety restrictions in the future;

Equipment outlasts conventional installations;

Substantial financial savings are generated throughout equipment life;

Significant reduction in greenhouse gases (GHG);

Integrated gas cooler;

Simplified installation directly over the rooms



« CARNOT NOT ONLY HELPED US REDUCE OUR USE OF R-22 AND NH<sub>3</sub>, OUR ENERGY CONSUMPTION AND OUR WATER USE, BUT ALSO THE NEED TO DEPEND ON A CHEMICAL CONDITIONING PROCESS. IT'S A WIN-WIN SITUATION. »

LEADER IN HIGH PRESSURE **CO<sub>2</sub>** COOLING  
AND REFRIGERATION SYSTEMS

# PASSION INNOVATION THOROUGHNESS

INNOVATIVE COOLING SOLUTIONS BUILT  
FOR **ENVIRONNEMENTAL SUSTAINABILITY**

## WE OFFER

—

- Design and engineering
- Manufacturing
- Project management
- Commissioning and help desk 24/7

## WE SERVE

—

- Industrials
- Supermarkets
- Sports centers
- Data centers

## WE ARE

—

- Working to make Eco-friendly refrigeration a global standard





« SIMPLICITY  
IS THE ULTIMATE  
SOPHISTICATION »

- Leonardo Da Vinci

## EXCELLENT SERVICE, QUICK RESPONSE AND VERY COMPETENT STAFF.

### OPTIMIZED TECHNOLOGY, SUPERIOR RELIABILITY AND SAFETY

Designed in compliance with the highest quality standards in the industry;

Strict quality control in a controlled environment;

Highly reliable processes tried and tested in the most extreme conditions;

### POWERFUL TECHNOLOGY, QUITE SIMPLY

Remote controlled equipment and alarm system;

Real-time monitoring and performance reports by a highly qualified team;

24/7 technical support, quick and efficient interventions.

### 35% FASTER INTERVENTION

Alarm	Detection time	Customer reaction	Phone call	Technician diagnosis	Repair
⋮	⋮	⋮	⋮	⋮	⋮

### STANDARD INTERVENTION

Alarm	Remote control	Diagnosis and attempt to repair remotely	<b>75% of alarms resolved here</b>	Technician intervention on-site	Repair
⋮	⋮	⋮		⋮	⋮



# CO<sub>2</sub> technology by Carnot:

## customize your system

### ○ **HEAT RECOVERY / RCINTELLIGENT**

Reuse the energy created by your process using a custom heat recovery strategy for major financial savings year after year.

### ○ **CO<sub>2</sub> RAIN CYCLE**

Use the natural cycle of evaporation and condensation of CO<sub>2</sub> to avoid overusing compressors for major savings on operating costs.

### ○ **GAS COOLER /CONDENSER**

Integrated gas cooler with simplified installation directly above rooms.

Optional dry or adiabatic

### ○ **CUMULUS FEATURES**

Adiabatic, free cooling, hot gas defrost, and parallel heating & cooling operation.

### ○ **ENCLOSURE FOR OUTSIDE INSTALLATION**

Weatherproof construction.

### ○ **ENERGY METER WITH DISPLAY**

Real-time display of your refrigeration consumption.

### ○ **INTERNET MODULE**

To closely monitor your process using your smartphone or computer.

### ○ **TURNKEY INSTALLATION**

For peace of mind, done by professionals to meet your needs, from design to start-up.

# Carnot: a pioneer in transcritical CO<sub>2</sub> and cooling systems

Carnot has proven itself regarding the performance of its CO<sub>2</sub> transcritical refrigeration system. With the longest-lasting legacy of high quality demonstrations across North American and Europe since 2008, CO<sub>2</sub> refrigeration technology by Carnot has set standards with its efficiency, profitability, sustained performance in the most extreme conditions, simplicity and operational reliability.

## NOTEWORTHY FACTS

Installations performed throughout North-America and Europe;

Daily savings for our clients;

Highly qualified engineers who are constantly trying to set higher standards for CO<sub>2</sub> refrigeration technology;

Standards and certifications including CSA, UL and CE;

Awards and recognition from recognized organizations such as ASHRAE and EPA;

Competent customer service team focused on customer satisfaction.



**« CO<sub>2</sub> IS NOURISHMENT FOR TREES:  
SYNTHETIC MOLECULES ARE NOT. »**

**MARC-ANDRÉ LESMERISES**  
*CEO of Carnot, United Nations conference*

**REFRIGERATED WAREHOUSES  
DISTRIBUTION CENTERS**

**CARNOT**

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