

SUPERMARKETS

# CO<sub>2</sub> TRANSCRITICAL REFRIGERATION SYSTEM

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



**CARNOT**

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

# 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.

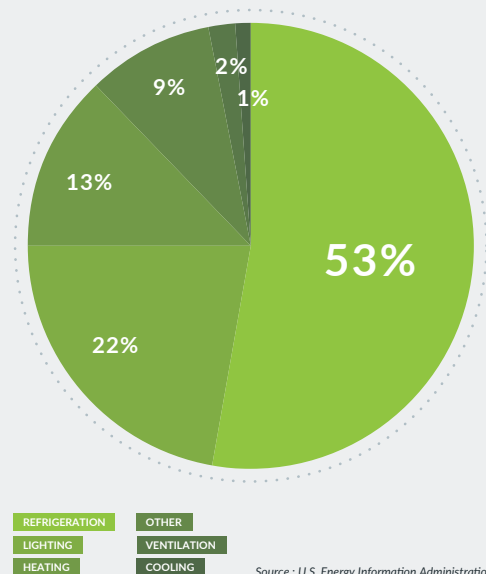
## PROVEN EFFICIENCY FOR MAJOR SAVINGS

Superior quality, performance and energy stability;

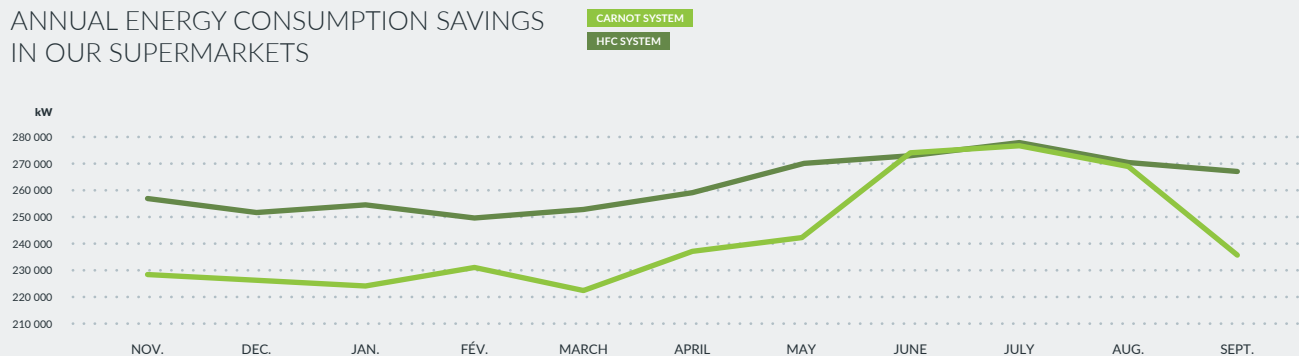
Flawless redesign to replace existing R-22 solutions;

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.

ENERGY CONSUMPTION PROFILE  
OF THE AVERAGE SUPERMARKET



ANNUAL ENERGY CONSUMPTION SAVINGS  
IN OUR SUPERMARKETS



TWO 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	70/21.1	75/23.8	80/26.6	85/29.4	85 GC
Low Stage [LS]	35	-20 / -29	Capacity [Tons]	35	35	35	35	35	35	35	35	35
			kW	21	21	21	21	21	21	21	21	21
			THR [MBH]	492	492	492	492	492	492	492	492	492
			Capacity [Tons] [LS THR ÷ HS Load]	141	141	141	141	141	141	141	141	141
High Stage [HS]	100	23 / -5	kW	62	71	82	94	108	124	143	169	179
			Total kW	83	92	103	115	129	145	164	190	200
			System COP	5.77	5.17	4.64	4.15	3.70	3.29	2.90	2.51	2.38
Heat Reclaim			MBH	500	500	500	500	500	500	500	500	
			COP w/HR	7.55	6.77	6.07	5.43	4.85	4.31	3.79	3.28	3.12
Ejector Defrost			COP w/HR	7.78	6.98	6.26	5.60	5.00	4.44	3.91	3.39	3.21

<sup>1</sup> Capacity [Tons] [LS THR + HS Load]

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

## POWERFUL TECHNOLOGY, QUITE SIMPLY

Modular solution designed by  
a qualified engineering team;

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);

Solution is eligible for current  
LEED programs.

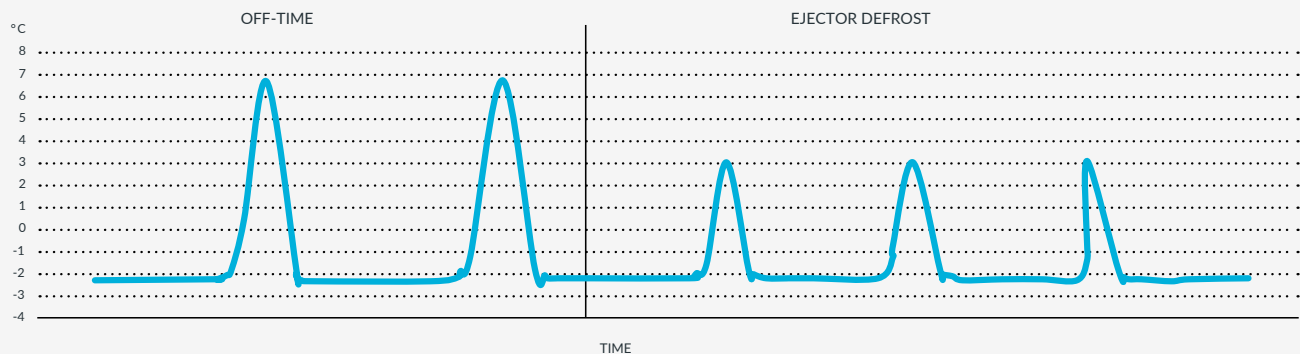


« VERY HIGH QUALITY AND RELIABLE  
REFRIGERATION SYSTEM AT A LOW  
MAINTENANCE COST. »

JOCELYN FORGUES  
*IGA Brompton owner*

# 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.



## FOZEN COUNTERS LT/ HOT GAS DEFROST

Defrost of low temperature evaporators is supplied by the hot gases released by the low temperature compressors. Compared to electrical defrost, this method has many advantages, such as:

- Reduction of energy consumption;
- Significant increase in product life cycle;
- Definite improvement in the product's appearance.

## REFRIGERATED COUNTERS MT/ ACCELERATED PASSIVE DEFROST

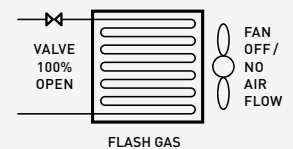
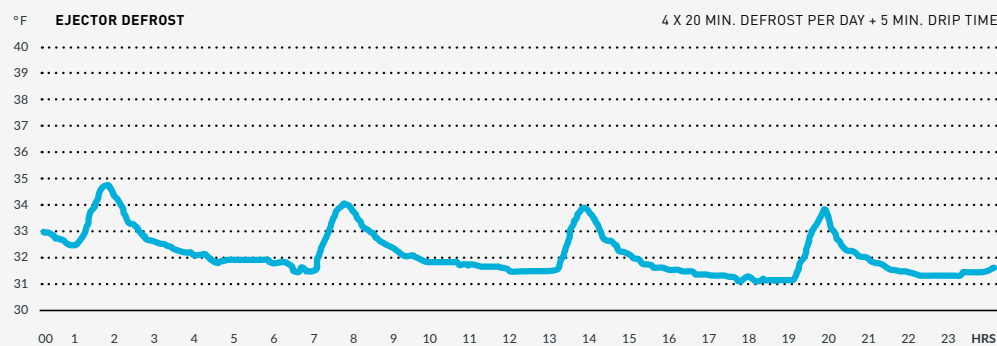
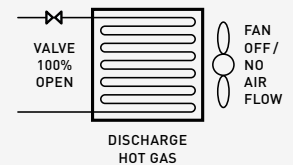
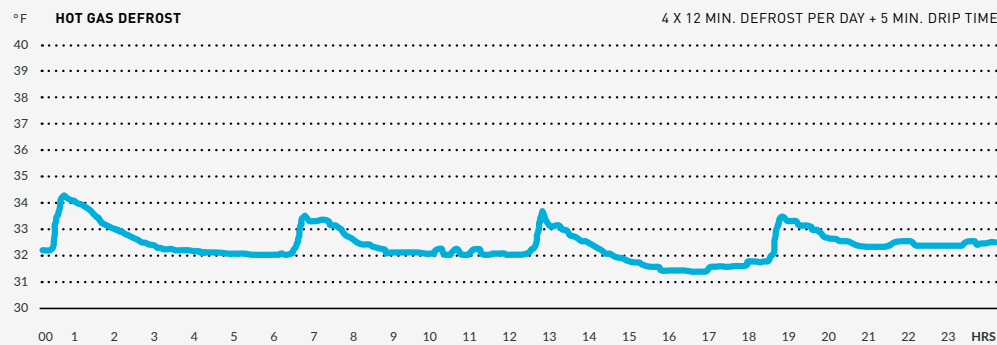
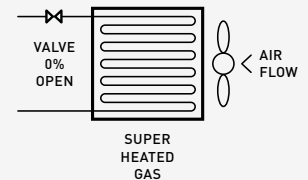
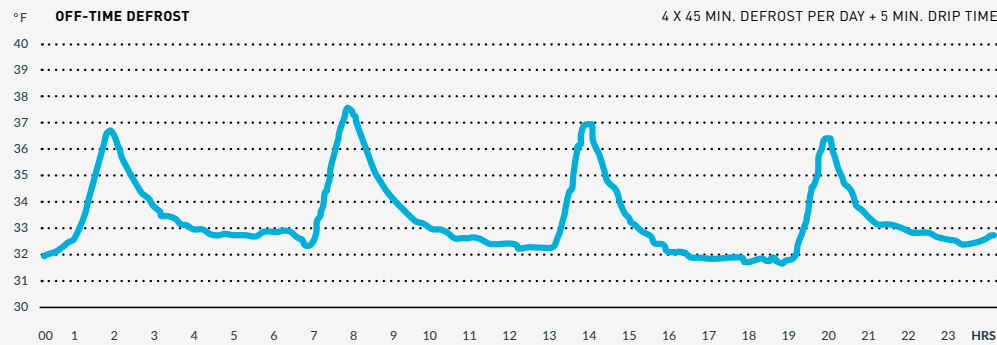
This defrost method allows the evaporators of a counter to defrost while remaining in refrigeration mode. Compared to electrical or hot gas defrost, this method has the following advantages:

- Electrical components not required;
- Better product temperature stability.

# Defrost technologies and meat product temperature

## PRODUCT TEMPERATURE IN DEFROST

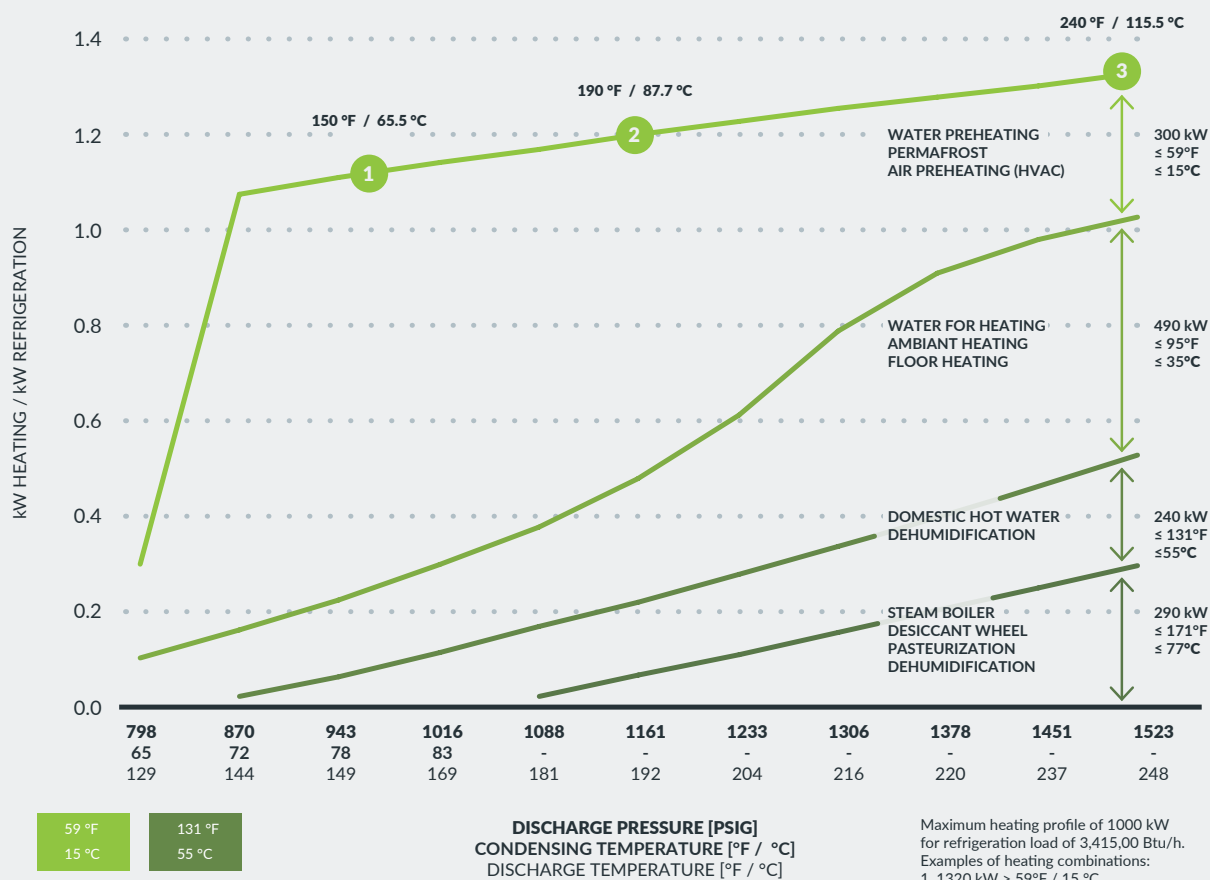
## CHART



# CO<sub>2</sub> solutions 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 AND COOLING SYSTEMS ARE THE SMART CHOICE.

## HEAT RECOVERY AVAILABLE WITH CARNOT CO<sub>2</sub> TRANSCRITICAL SYSTEMS



RCIntelligent is a smarter way to use the rejected energy of your process: system is composed of various components that recover energy rejected by the process in a smart and strategic way.



## 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;

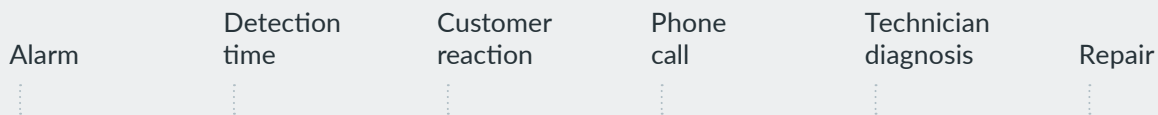
### POWERFUL TECHNOLOGY, QUITE SIMPLY

Remote controlled equipment and alarm system;

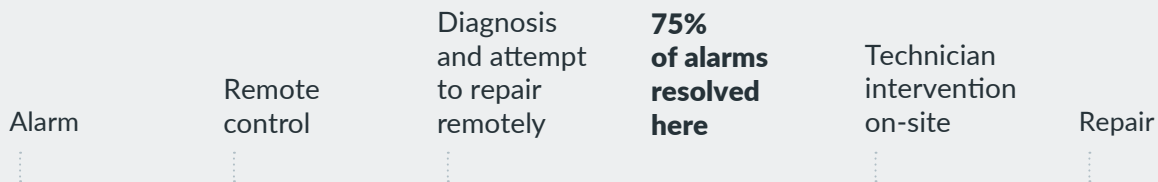
Real-time monitoring and performance reports by a highly qualified team;

24/7 technical support, quick and efficient interventions.

### 35% FASTER INTERVENTION



### STANDARD INTERVENTION



# 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.

### ○ **PARALLEL COMPRESSION**

Increased efficiency.

### ○ **GAS COOLER / CONDENSER**

Different options available for optimal performance and durability.

### ○ **HOT GAS DEFROST**

Defrost of low temperature evaporators is supplied by the hot gases released by the low temperature compressors for annual energy savings and a longer product life cycle.

### ○ **ACCELERATED PASSIVE DEFROST**

This method allows the medium temperature evaporators to defrost without adding unnecessary heat to the refrigeration system for annual savings and better temperature stability.

### ○ **24/7 REMOTE MONITORING AND IMPREMENTATION**

Real-time technical support.

### ○ **REMOTE CONTROL**

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*

**SUPERMARKETS**

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