

REFRIGERATED WAREHOUSES
DISTRIBUTION CENTERS

CARNOT TRANSCRITICAL CO₂ SYSTEM

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



CARNOT

A PERSONALISED AND COMPLETE OFFER

From Carnot's team, offering a superior quality service to our customers is the essence of all our decisions and actions.

What sets us apart is inspired by our commitment to our customers.

Our mission is to make sure you are confident that your project is in good hands.

A service that meets your expectations

A team of professionals and a tailored support

An assistance program: always at your disposal 24/7.

That's the Carnot commitment!

CO₂ solution by Carnot: a smart, ecofriendly and profitable choice

Made by the most experienced company in CO₂ transcritical solutions in North America, the CO₂ 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.

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

DENIS PAGEAU

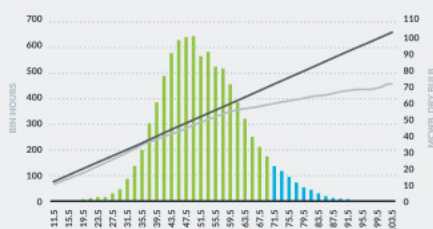
Vice President of business development, Michal Inc.

TWO STAGE TRANSCRITICAL CO₂

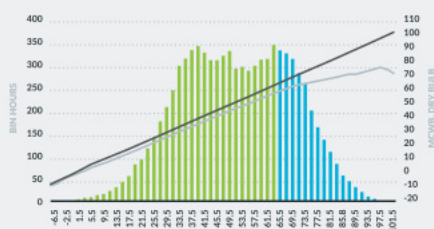
Compressor Stage	Cooling Capacity	Evaporating Temperature	Condensing Temperature									Gas Cooling
	[Tons]	[°F]	[°F]	50	55	60	65	70	75	80	85	85 GC
Low Stage [LS]	200	-20	Capacity [Tons]	200	200	200	200	200	200	200	200	200
			kW	120	120	120	120	120	120	120	120	120
			THR [MBH]	2809	2809	2809	2809	2809	2809	2809	2809	2809
High Stage [HS]	80	23	Capacity [Tons] ¹	314	314	314	314	314	314	314	314	314
			kW	137	158	182	209	240	276	319	377	399
			Total kW	257	278	302	329	360	396	439	497	519
			System COP	3.84	3.55	3.27	3.00	2.75	2.50	2.25	1.99	1.90
Heat Reclaim			COP w/HR	4.18	3.87	3.56	3.27	2.99	2.72	2.45	2.17	2.07
Ejector Defrost			COP w/HR	4.26	3.94	3.63	3.33	3.05	2.77	2.49	2.21	2.11

¹ Capacity [Tons] [LS THR + HS Load]SINGLE STAGE TRANSCRITICAL CO₂

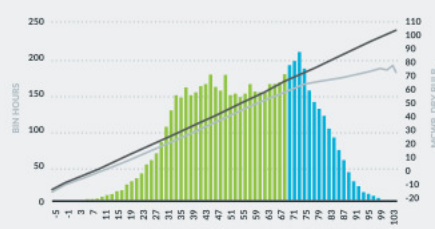
Compressor Stage	Cooling Capacity	Evaporating Temperature	Condensing Temperature									Gas Cooling
	[Tons]	[°F]	[°F]	50	55	60	65	70	75	80	85	85 GC
High Stage [HS]	350	32	Capacity [Tons]	350	350	350	350	350	350	350	350	350
			kW	117	137	159	184	213	247	289	342	370
			THR [MBH]	4599	4666	4743	4829	4929	5045	5185	5370	5463
			COP	10.6	9.0	7.8	6.7	5.8	5.0	4.3	3.6	3.3
			Heat Reclaim	COP w/HR	10.8	9.3	8.0	6.9	5.9	5.1	4.4	3.7
Ejector Defrost			COP w/HR & ED	11.6	9.9	8.5	7.3	6.3	5.5	4.7	3.9	3.7



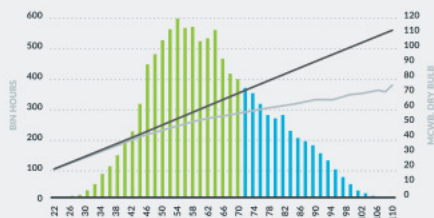
SEATTLE



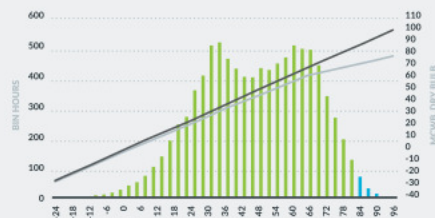
BOSTON



PHILADELPHIA



TURLOCK



ALBANY

kW ENERGY CONSUMPTION
 THR REJECTED CAPACITY
 COP w/HR REFRIGERATION COEFFICIENT OF PERFORMANCE
 COP w/HR & ED COMBINED COEFFICIENT OF PERFORMANCE INCLUDING HEAT RECLAIM OR EJECTOR DEFROST

CO₂ 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);



« CARNOT NOT ONLY HELPED US
REDUCE OUR USE OF R-22 AND NH₃,
OUR ENERGY CONSUMPTION AND
OUR WATER USE, BUT ALSO THE
NEED TO DEPEND ON A CHEMICAL
CONDITIONING PROCESS. IT'S A
WIN-WIN SITUATION. »

Transcritical CO₂ compared to central low-charge NH₃

HENNINGSEN FACILITIES



SYSTEM COST
\$534K LESS



BUILDING COST
\$200K-\$400K LESS



UTILITIES
LESS WATER AND SEWER



MAINTENANCE (ESTIMATE)
LESS COSTLY



CONSTRUCTION SCHEDULE
5-6 WEEKS SAVED



EFFICIENCY (ESTIMATE)
46,000 KWH/YR SAVED



WATER TREATMENT
NONE



RELIABILITY
THE SAME



« 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;

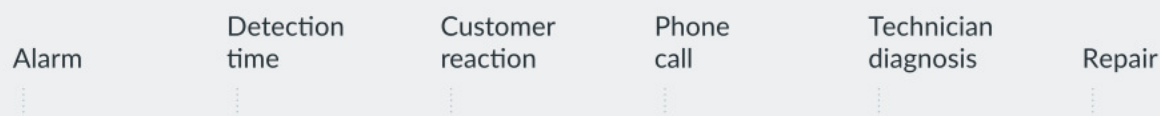
POWERFUL TECHNOLOGY, QUITE SIMPLY

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



STANDARD INTERVENTION



CO₂ 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.

○ **CO₂ RAIN CYCLE**

Use the natural cycle of evaporation and condensation of CO₂ to avoid overusing compressors for major savings on operating costs.

○ **GAS COOLER / CONDENSER**

Different options available for optimal performance and durability.

○ **STAINLESS STEEL**

Stainless steel covering and piping.

○ **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 CO₂ and cooling systems

Carnot has proven itself regarding the performance of its CO₂ transcritical refrigeration system. With the longest-lasting legacy of high quality demonstrations across North American and Europe since 2008, CO₂ 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 CO₂ 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.

LEADER IN HIGH PRESSURE **CO₂** 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

**« CO₂ IS NOURISHMENT FOR TREES:
SYNTHETIC MOLECULES ARE NOT. »**

MARC-ANDRÉ LESMERISES
CEO of Carnot, United Nations conference

**REFRIGERATED WAREHOUSES
DISTRIBUTION CENTERS**

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