

WINERIES
BREWERIES

CO₂ CHILLER/ HEAT PUMP

*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 cooling system by Carnot is the smart choice.

Our commitment is to offer you an accurate cooling system to maintain critical temperature set points during your process.

PROVEN EFFICIENCY FOR MAJOR SAVINGS

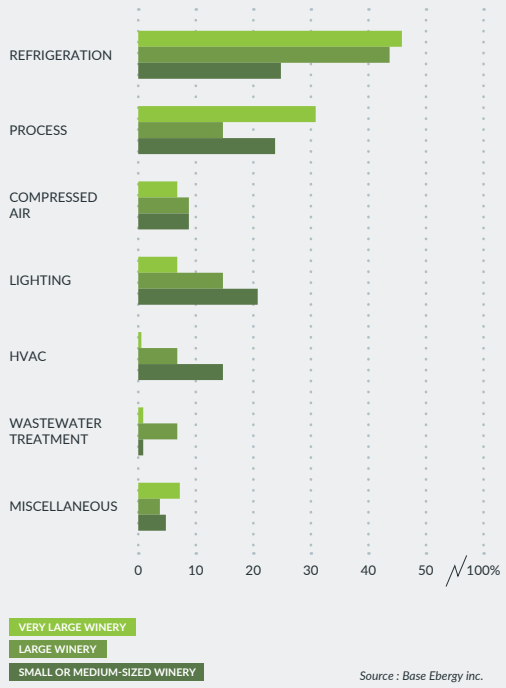
Superior quality, performance and energy stability;

Flawless redesign to replace existing R-22 solutions;

Smart use of CO₂ cycle (rain cycle) to avoid use of compressors most of the year;

Financial savings of up to 30% year after year due to the reduction of energy costs, maintenance and service costs and the elimination of refrigerant fees.

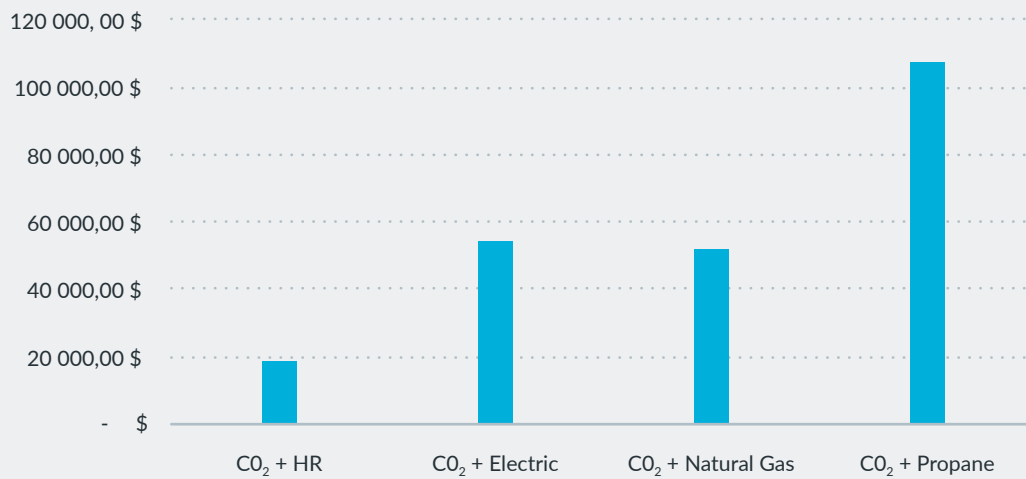
ELECTRICAL CONSUMPTION DISTRIBUTION IN A WINERY



« CARNOT'S SYSTEM ALLOWED US TO PRODUCE MORE WINE AT A HIGHER QUALITY AND AT A LOWER ENERGY COST. »

GORDON ROBERTS
Winemaker, Marynissen Estates

Annual Cost - Combined Cooling and Heating



From temperature

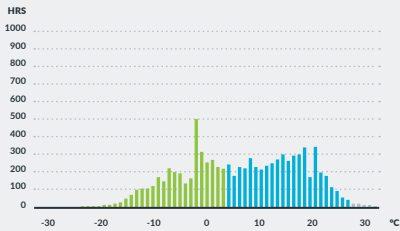
0.06\$/kWh electric

05\$/m³ Natural Gas

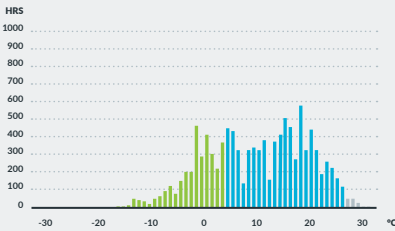
0.86 \$/L Propane

SINGLE STAGE TRANSCRITICAL CO₂ CHILLER

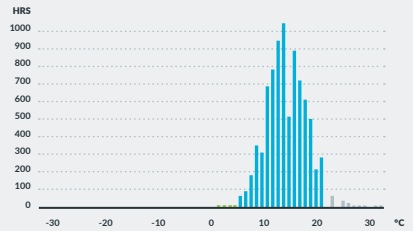
Compressor Stage	Cooling Capacity [Tons]	Glycol Return Temperature [°F] / [°C]	Glycol Supply Temperature [°F] / [°C]	Condensing Temperature [°F] / [°C]	Gas Cooling								
					55/12.7	60/15.5	65/18.3	70/21.1	75/23.8	80/26.6	85/29.4	85 GC	
High Stage [HS]	50	40/4.4	30/-1.1	Capacity [Tons]	50	50	50	50	50	50	50	50	50
				kW	26	30	35	40	46	54	66	65	
				THR [MBH]	690	703	718	736	757	784	824	821	
				COP	6.7	5.8	5.1	4.4	3.8	3.3	2.7	2.7	
				MBH	400	400	400	400	400	400	400	400	
Heat Reclaim				COP w/ HR	11.2	9.7	8.5	7.4	6.4	5.5	4.5	4.5	



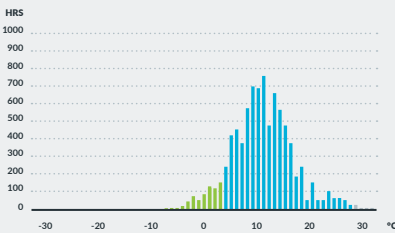
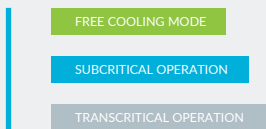
MONTRÉAL



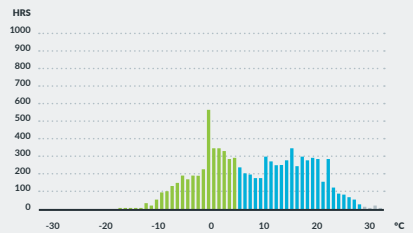
NEW YORK



SAN FRANCISCO



SEATTLE



TORONTO

- Kwref [kw]** Refrigeration capacity
- Thr [kw]** Rejected capacity
- KW [kw]** Energy consumption
- COPr** Refrigeration coefficient of performance
- COPc** Combined coefficient of performance including heating or rain cycle free cooling
- FC** Free cooling
- Note** Chiller power = compressor power + fan power

CO₂ technology by Carnot: a powerful cooling system and heat recovery 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;

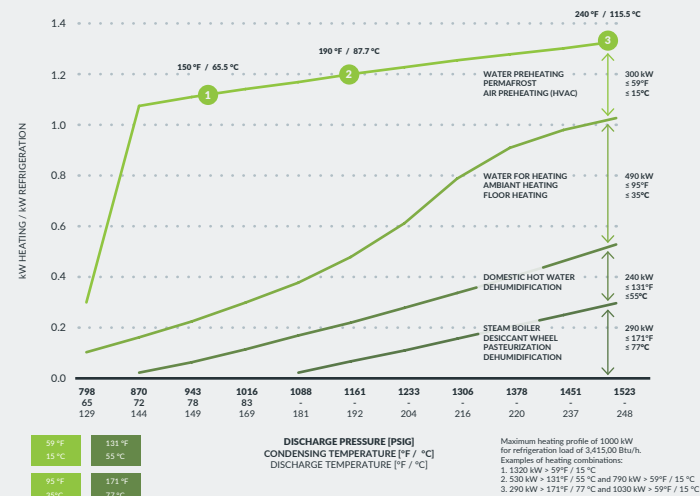
Equipment outlasts
conventional installations;

Substantial financial savings are
generated throughout equipment life;

Significant reduction
in greenhouse gases (GHG);

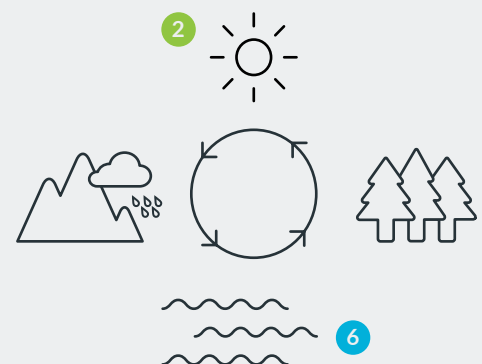
Solution is eligible for current
LEED programs.

HEAT RECOVERY AVAILABLE WITH CARNOT CO₂ 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.

NATURAL RAIN CYCLE



2: CONDENSATION

6: EVAPORATION

RCINTELLIGENT MAKES YOUR SYSTEM WORK AS HARD AS IT SHOULD, NOT MORE.

DECISION-MAKING ALGORITHM

- 1. Is the refrigeration capacity sufficient?
- 2. Is the preheating of hot water sufficient and our heating needs are met?
- 3. Decision: reduce the head pressure to improve the overall Cop. to improve the overall Cop.

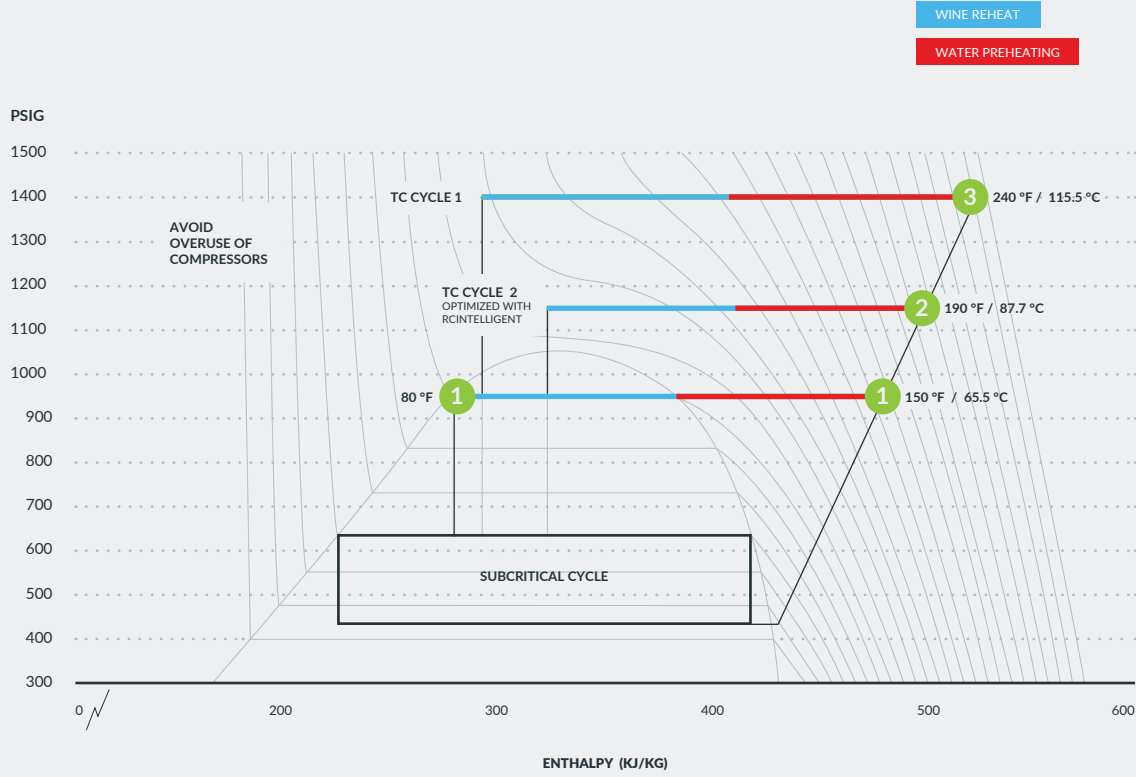
REAL-TIME ARTIFICIAL INTELLIGENCE TO ENSURE OPTIMAL PERFORMANCES

Reduction of energy consumption for heating process;

Elimination of boiler to produce heat;

Significant recurrent financial savings.

ADAPTIVE OPERATIONAL SYSTEM



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;

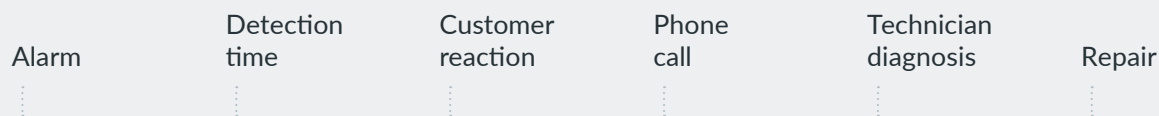
POWERFUL TECHNOLOGY, QUITE SIMPLY

Remote controlled equipment and alarm system;

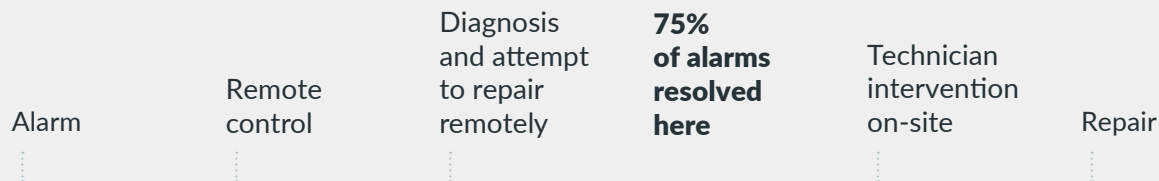
Real-time monitoring and performance reports by a highly qualified team;

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.

○ 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 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 and UL;

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 SOLUTIONS BUILT
FOR **ENVIRONMENTAL 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

**WINERIES
BREWERIES**

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