

DATA CENTER
SOLUTIONS

INROW WITH CUMULUS

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



CARNOT



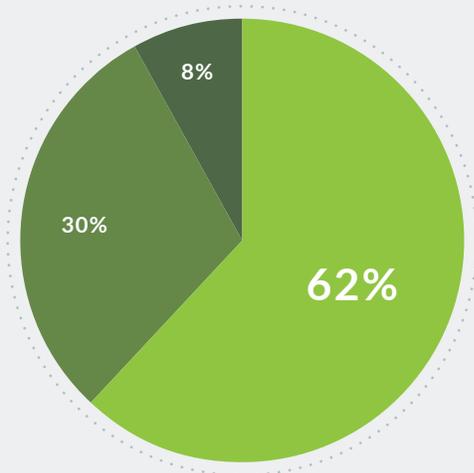
« BELL IS FACING A VERY PARTICULAR CHALLENGE REGARDING THE GROWING DEMAND FOR DATA STORAGE WHILE ATTEMPTING TO REDUCE OUR ENERGY CONSUMPTION. »

BENOIT SICOTTE

Senior Manager - Corporate Responsibility, Bell Canada

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

ENERGY CONSUMPTION PROFILE
OF AN AVERAGE COMPUTER ROOM



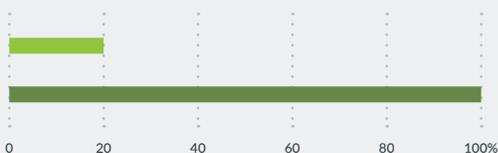
IT DEVICES SUCH AS SERVERS

AIR CONDITIONING

OTHER

Source : METI Green IT Promotion Council 2018

AVERAGE ENERGY CONSUMPTION
USING RAIN CYCLE™



CARNOT PATENTED RAIN CYCLE™ FREE COOLING

STANDARD INSTALLATION

Made by the most experienced company in CO₂ transcritical solutions in North America, the CO₂ cooling system by Carnot is the smart choice.

PROVEN EFFICIENCY FOR MAJOR SAVINGS

Superior quality, performance and energy stability;

Flawless redesign to replace existing R-22 solutions;

Financial savings of up to 80% year after year due to the reduction of energy costs, maintenance and service costs and the elimination of refrigerant fees.

ECOFRIENDLY CO₂

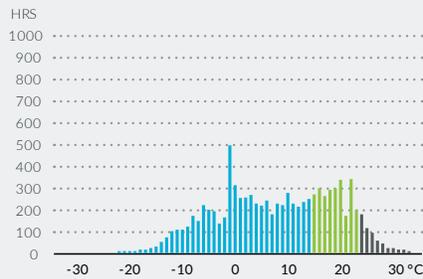
100% natural non-toxic, which eliminates the need for several pieces of equipment and safety programs;

Almost total elimination of greenhouse gases GHG;

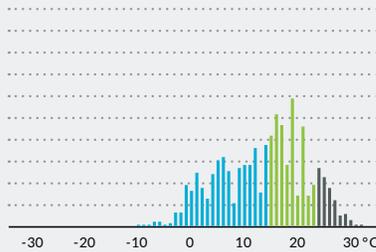
Non-flammable;

No phase out issues.

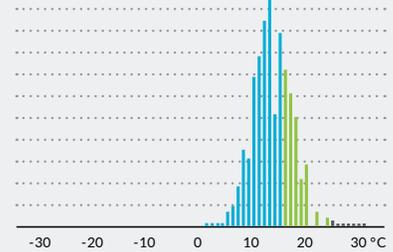
Co2 Advantages: rain cycle free-cooling™



MONTRÉAL



NEW YORK

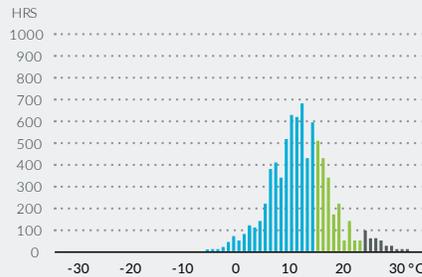


SAN FRANCISCO

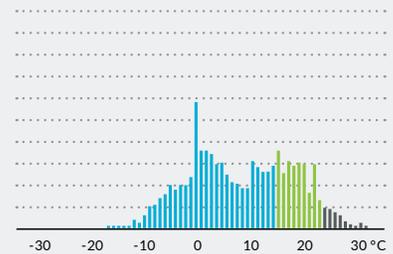
FREE COOLING OPERATION

SUBCRITICAL OPERATION

TRANSCRITICAL OPERATION



SEATTLE



TORONTO

kW TOTAL POWER CONSUMPTION FOR 80 % LOAD
pUE POWER UTILISATION EFFECTIVENESS

Notes Data for Cumulus 10 (40kW) with an IRC12 "Naturally Cooled by Carnot", based on a supply air temperature of 24°C (75 °F) and outdoor air temperature of 35°C (95 °F)

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;

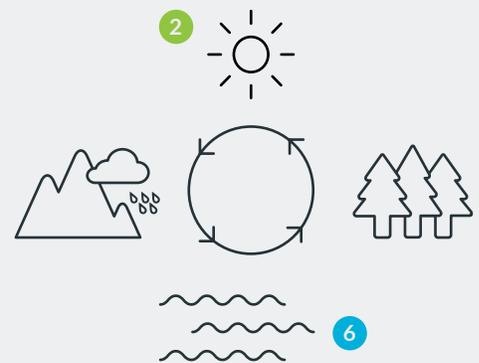
Substantial financial savings are
generated throughout equipment life;

Significant reduction
in greenhouse gases (GHG);

Solution is eligible for current
LEED programs.

Canadian patent CA 2815783 US patent 13/894.034

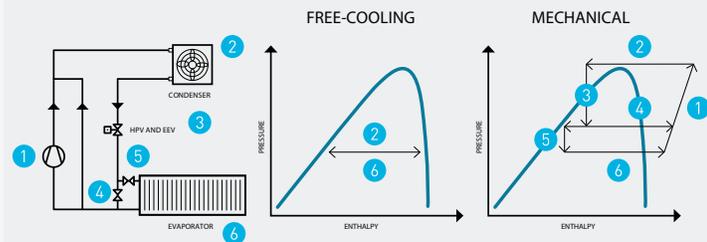
NATURAL RAIN CYCLE



2 : CONDENSATION

6 : EVAPORATION

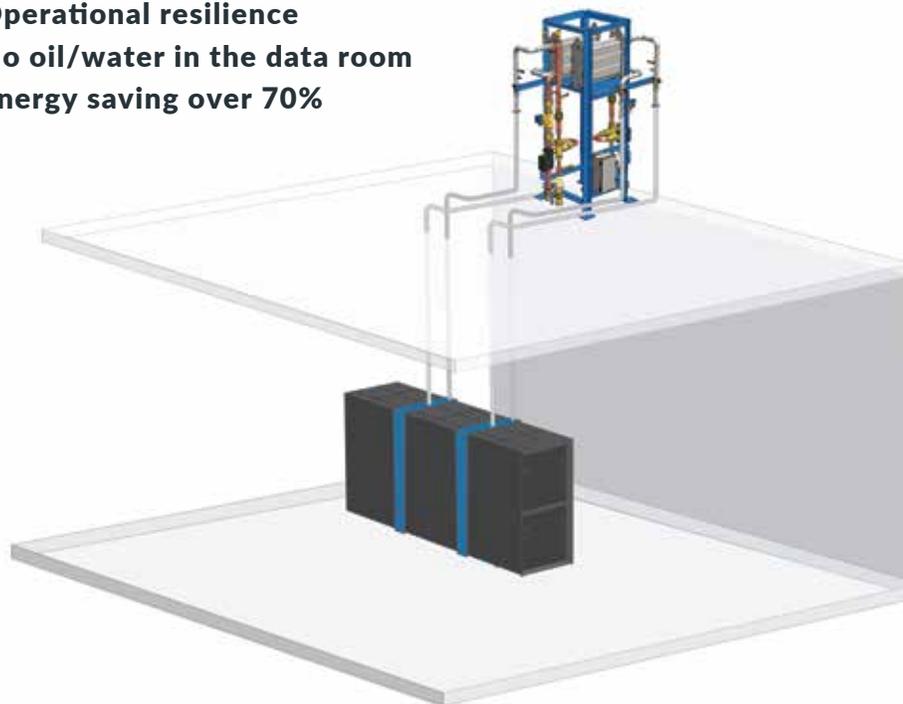
PATENTED RAIN CYCLE FREE COOLING IN PH DIAGRAM



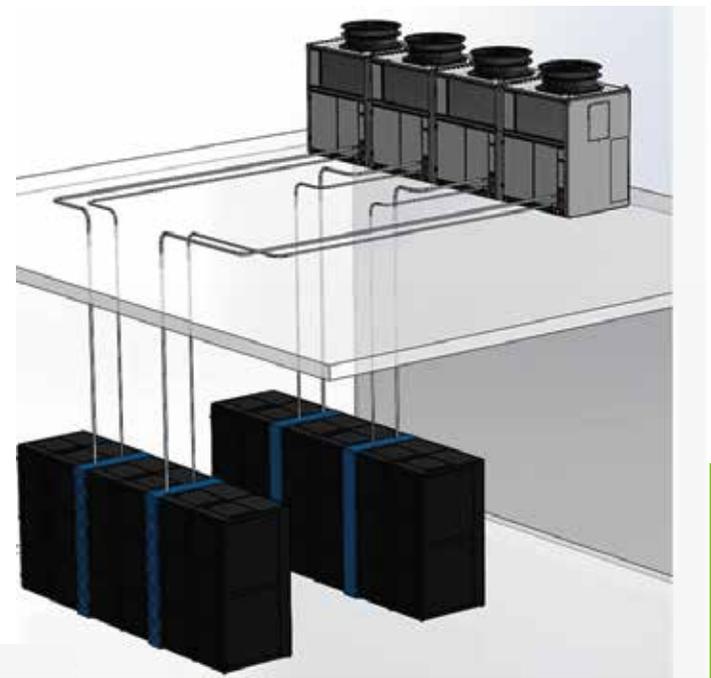
Cumulus (Natural Refrigerant In-Row system) Capacity: 10TR (40 kW) 1 unit (40 kW)

Option CO₂ / Water

Operational resilience
No oil/water in the data room
Energy saving over 70%



Option CO₂ / CO₂



« **SIMPLICITY
IS THE ULTIMATE
SOPHISTICATION** »

- Leonardo Da Vinci



Rain Cycle Free-Cooling™



Naturally cooled by **CARNOT™** 

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;

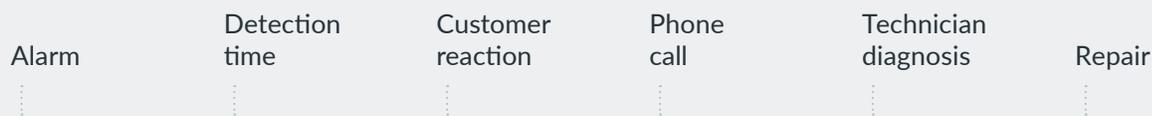
POWERFUL TECHNOLOGY, QUITE SIMPLY

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.

○ **GAS COOLER / CONDENSER**

Different options available for optimal performance and durability.

○ **STAINLESS STEEL**

Stainless steel covering and piping.

○ **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, 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 **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

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SOLUTIONS**

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