CARNOT

-CO2 Racks with Ejector Defrost-

« See the possible where the others see the impossible »

A pioneer in transcritical CO_2 refrigeration and cooling systems

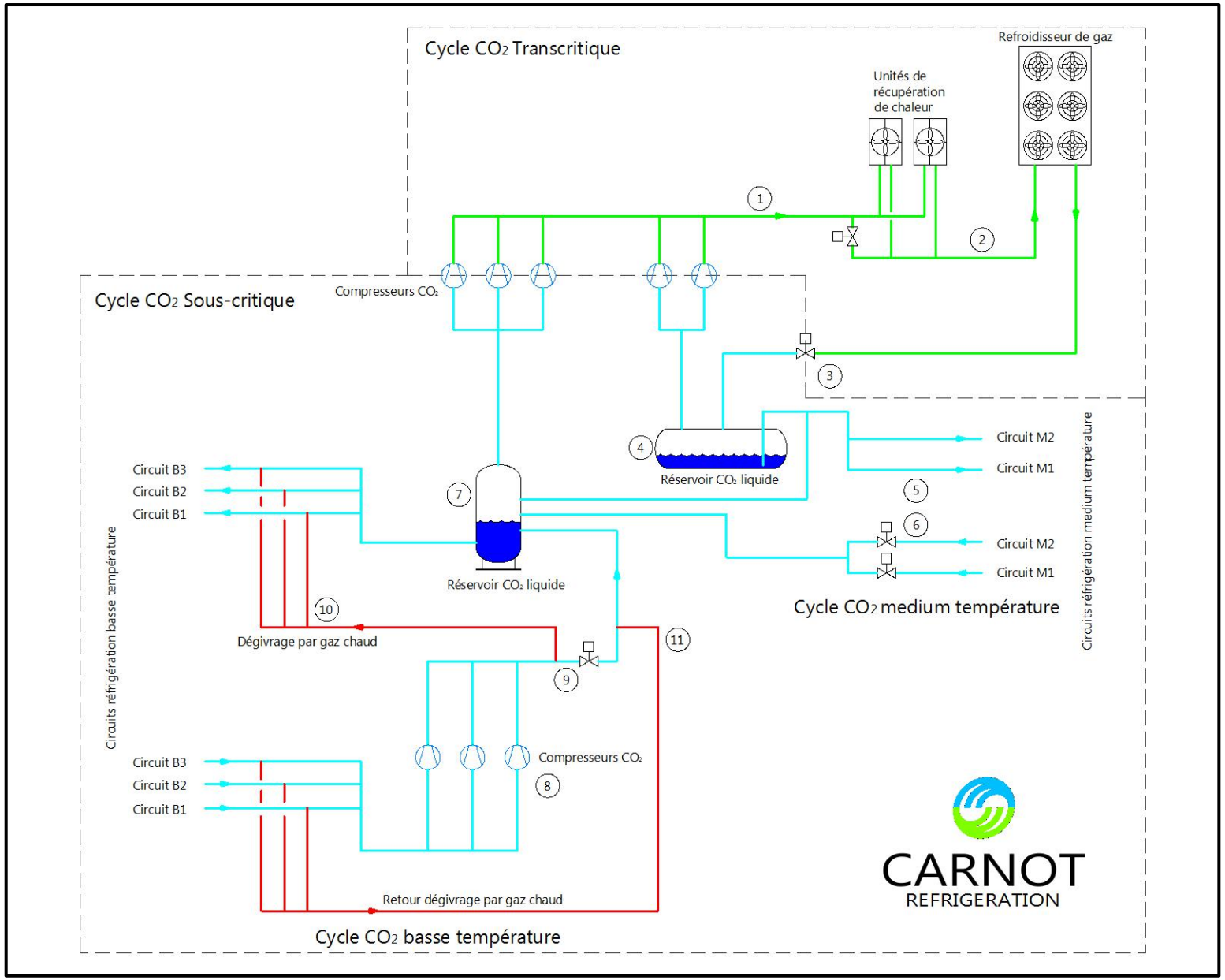
« CO_2 is essential to sustain life on our planet»

- Chlorofluorocarbons (**CFCs**) contain **C**arbon and some combination of **F**luorine and **C**hlorine atoms.
- Hydrochlorofluorocarbons (**HCFCs**) contain **H**ydrogen, **C**hlorine, **F**luorine, and **C**arbon atoms.
- Hydrofluorocarbons (**HFCs**) contain **H**ydrogen, **F**luorine, and **C**arbon (no chlorine).
- Hydrofluoroolefin (**HFOs**) contain **H**ydrogen, **F**luorine, and **C**arbon...

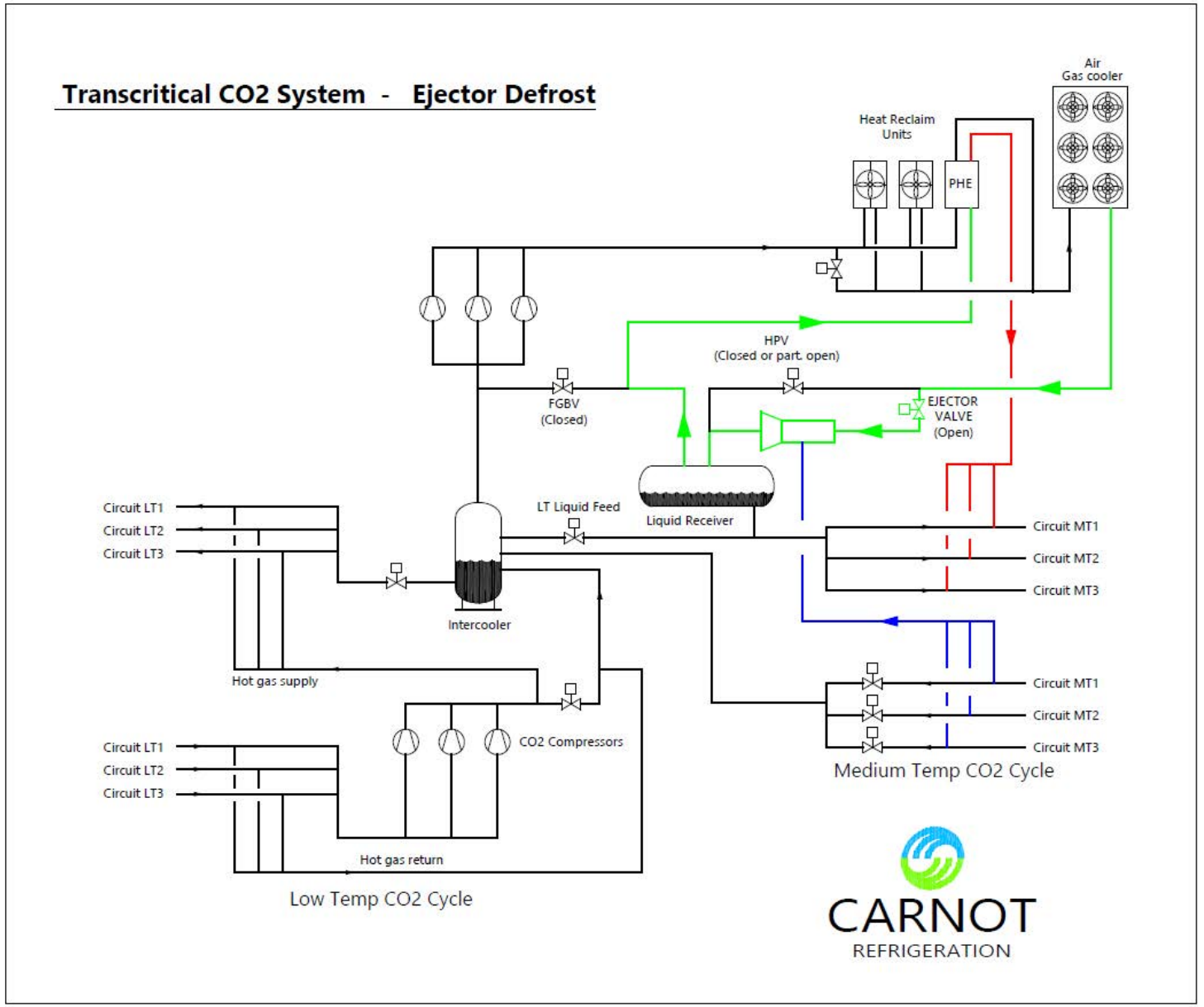
Carbon Dioxide :Comparative analysis with synthetic refrigerants (compared to NH_3)

	CAPACITY	ODP	GWP	TOXIC	FLAMMABLE
CO_2	0.86	0	1	NO	NO
HFO	0.68	0	700	YES	YES
R-410A	0.68	0	2088	NO	YES
R-134A	0.58	0	1300	NO	NO
R-22	0.52	0.05	1700	NO	NO

Carnot Refrigeration's Process



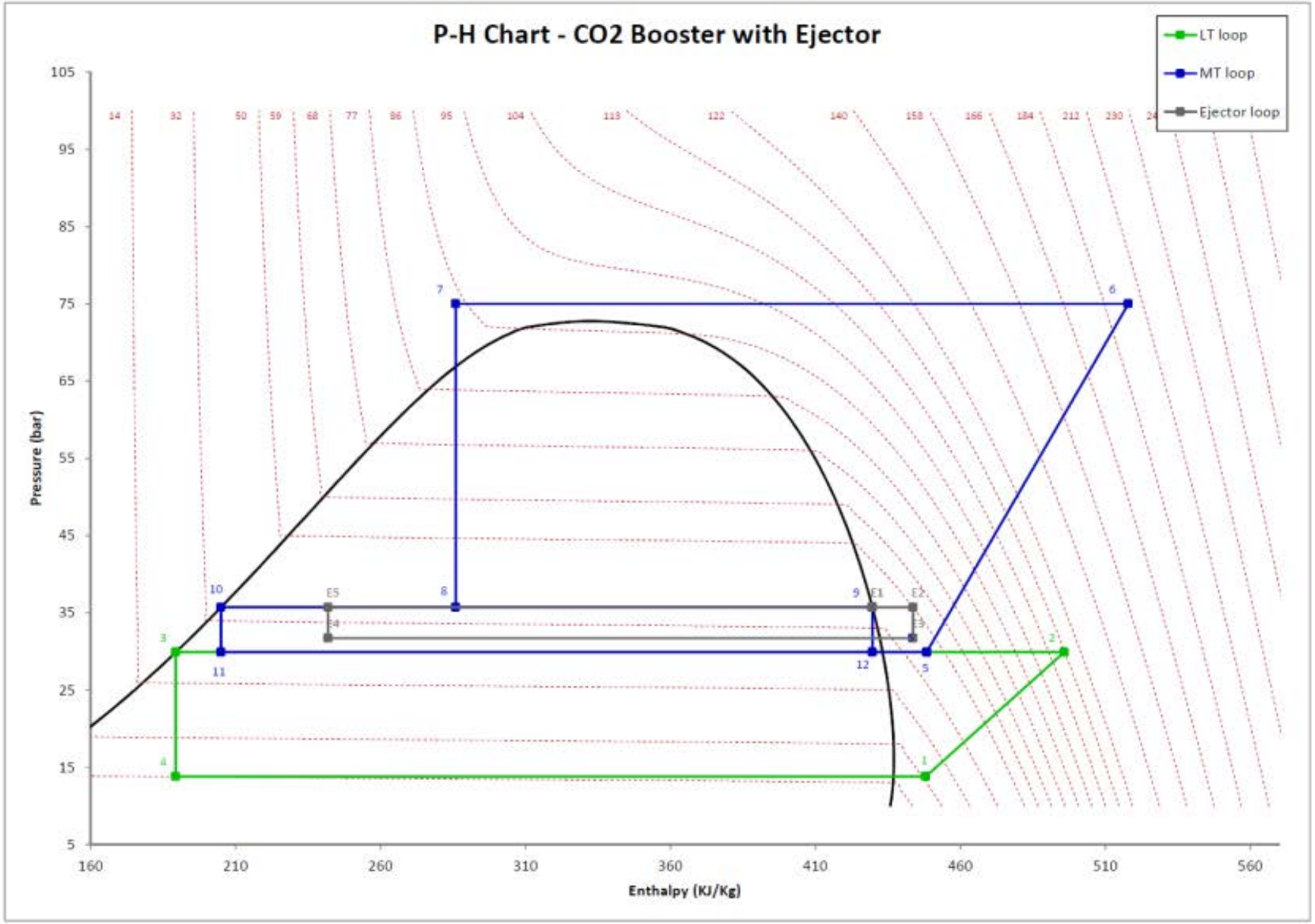
Carnot Refrigeration's Process combined with defrost by ejector



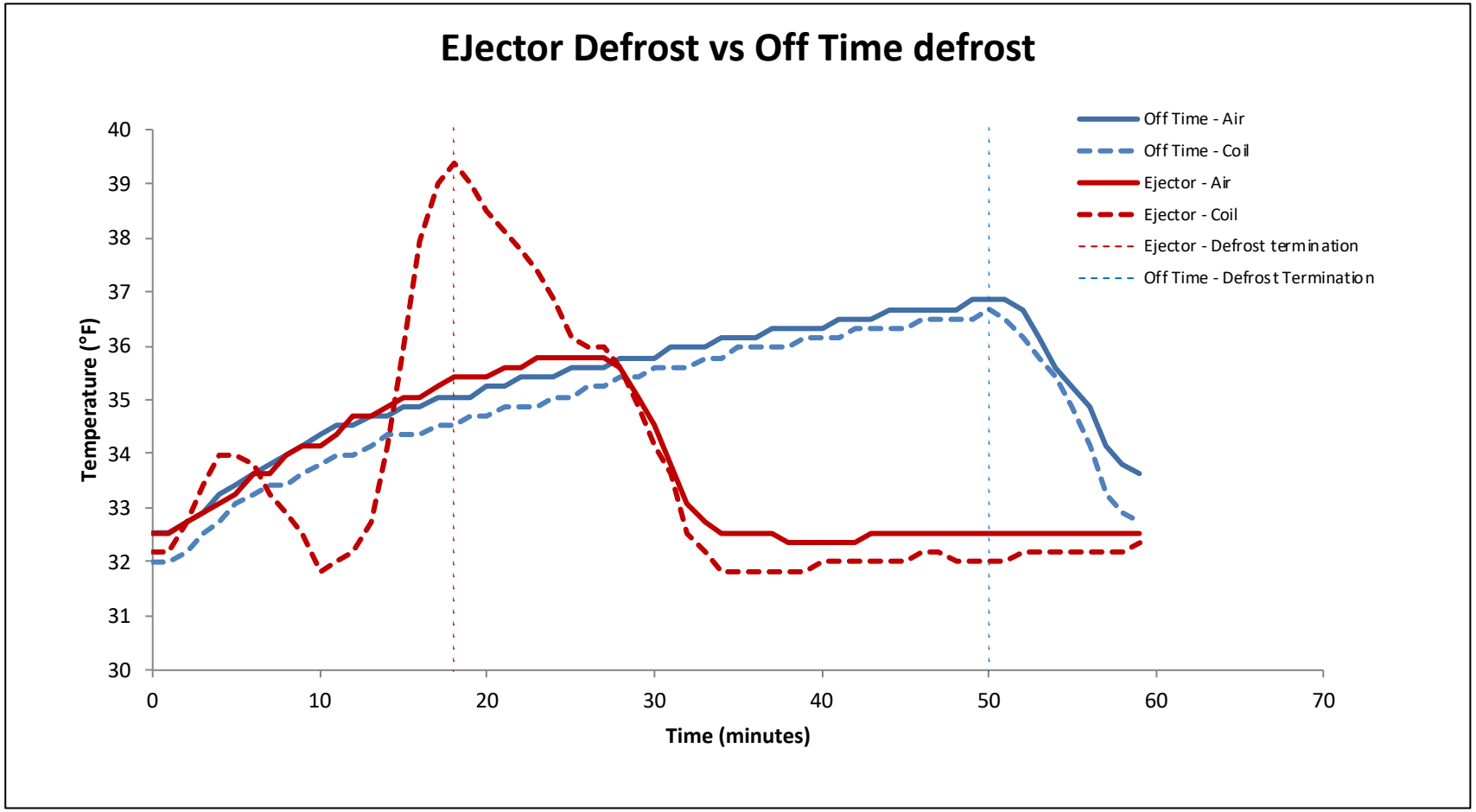
LT Compressor Loop	
1	Suction
2	Discharge
3	Outlet intercooler
4	Inlet evaporator

MT Compressor Loop	
5	Suction
6	Discharge
7	GC Out
8	Receiver IN
9	Receiver Vapor
10	Receiver Liquid
11	Evap Liquid
12	FlashGas Mix

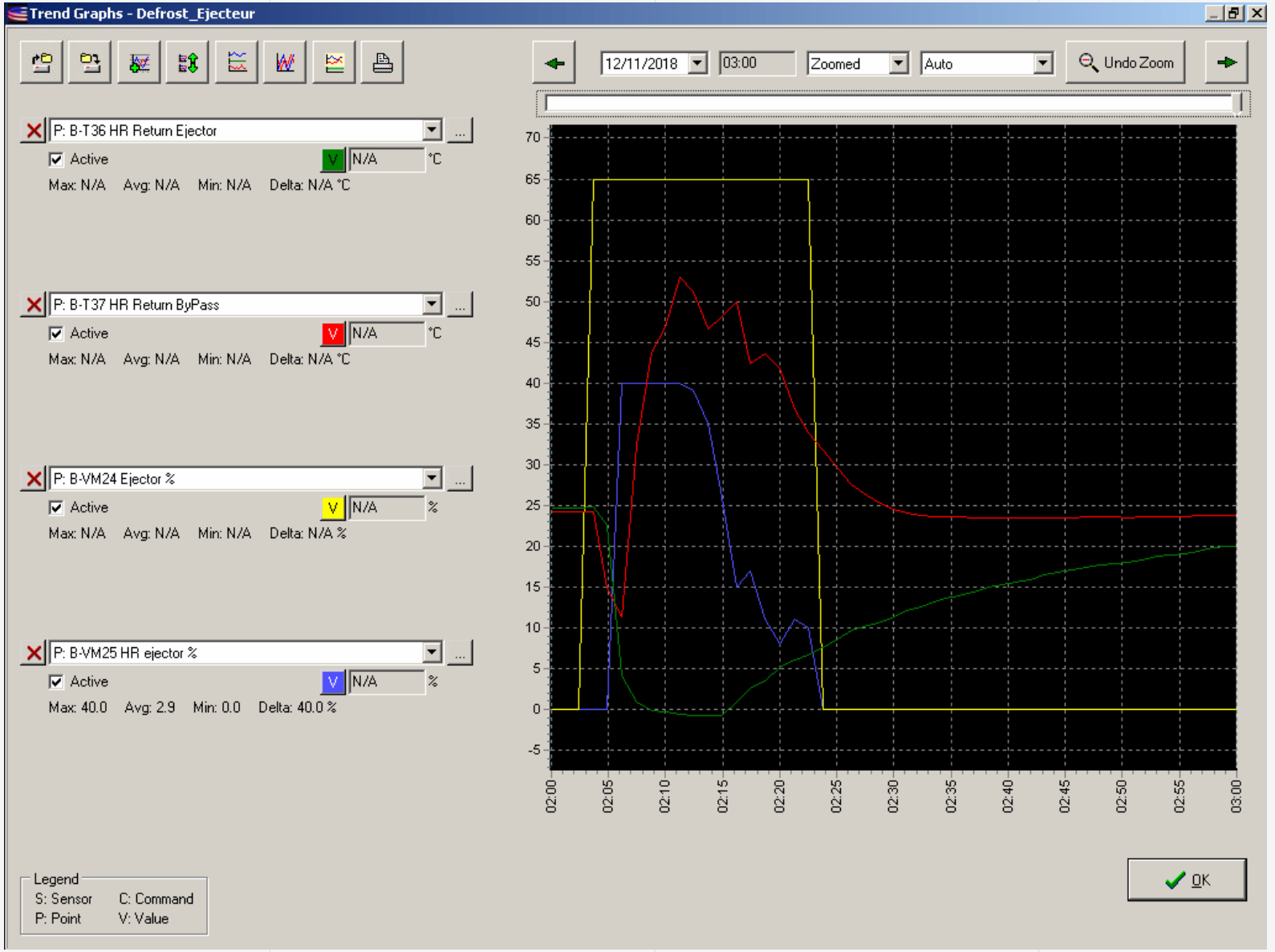
Ejector Loop	
E1	Receiver Out
E2	Exchanger Out
E3	EEV Out
E4	Evap Out
E5	Receiver IN



Carnot Refrigeration's Process combined with defrost by ejector

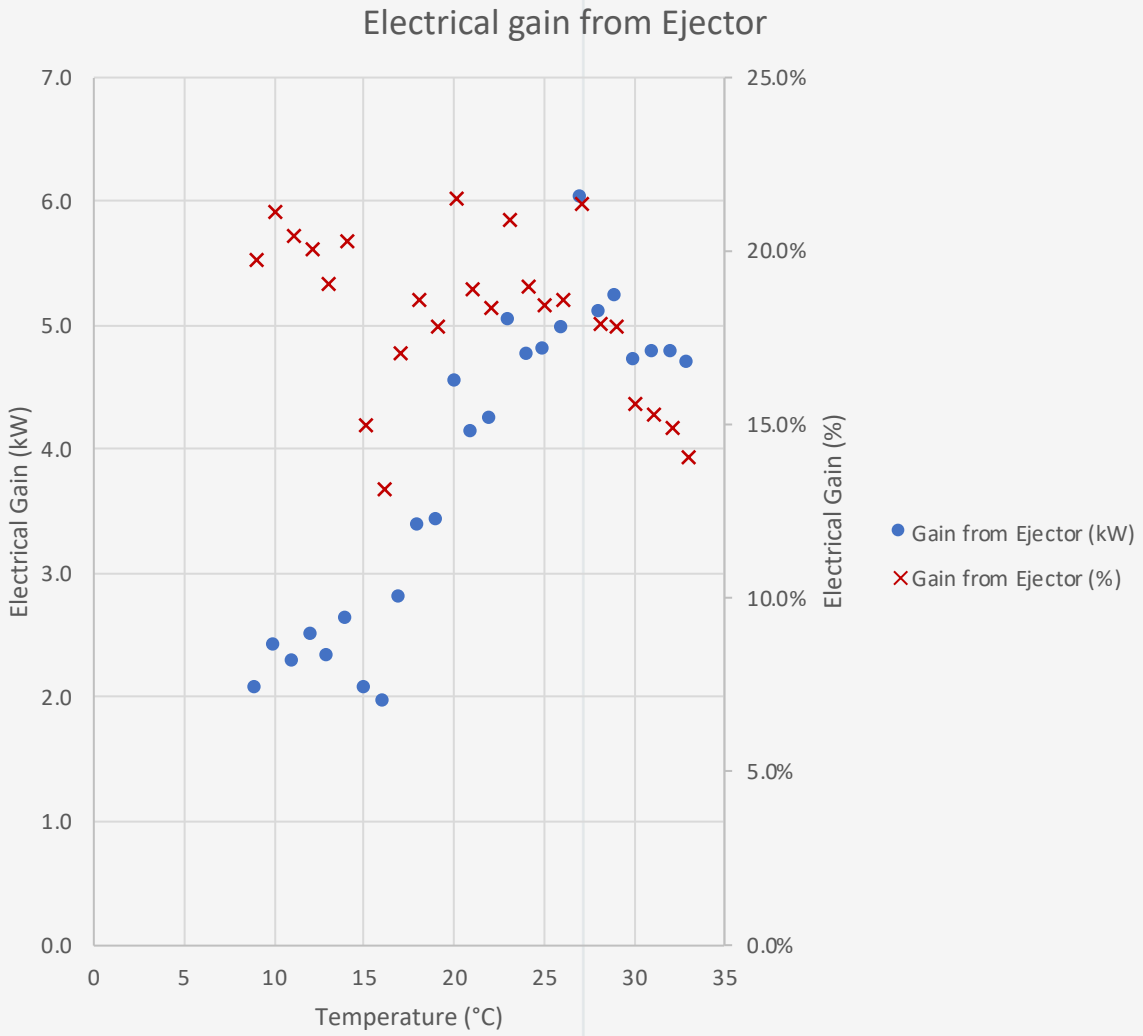


Carnot Refrigeration's Process combined with defrost by ejector



Carnot Refrigeration's Process combined with defrost by ejector

Outdoor Air Temperature (°C)	Electricity from refrigeration (kW)	Gain from Ejector (kW)	Gain from Ejector (%)
9	10,5	2,1	19,8%
10	11,4	2,4	21,1%
11	11,1	2,3	20,4%
12	12,5	2,5	20,0%
13	12,2	2,3	19,1%
14	12,9	2,6	20,2%
15	13,8	2,1	15,0%
16	14,9	2,0	13,1%
17	16,4	2,8	17,0%
18	18,2	3,4	18,5%
19	19,2	3,4	17,8%
20	21,1	4,5	21,5%
21	21,9	4,1	18,9%
22	23,1	4,2	18,3%
23	24,1	5,0	20,9%
24	25,1	4,8	19,0%
25	26,0	4,8	18,4%
26	26,8	5,0	18,5%
27	28,2	6,0	21,3%
28	28,5	5,1	17,9%
29	29,3	5,2	17,8%
30	30,2	4,7	15,6%
31	31,1	4,8	15,3%
32	32,0	4,8	14,9%
33	33,4	4,7	14,1%



Some of our customers

Our awards

- ASHRAE Best Technology Award — Institutional Existing Building 2015
- ASHRAE Best Technology Award — Industrial Facility 2010
- EPA Best of the Best Prize — First CO_2 transcritical design in USA 2013

CARNOT

— carnotrefrigeration.com —