

The Coca-Cola Company

Refrigerants, Naturally!

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CO2 Units In The Field

- **Five main suppliers: Danfoss, Embraco, Frigoglass, Sanden and Sanyo. 2 to 3 additional supplier by early 2009.**
- **A total of 8.525 CO2 units have been deployed by end 2007.**
- **By end 2008, the total number will be around 40.000 units.**
- **Additional 70.000 units are planned for 2009/2010.**



Energy Consumption, New Cassette Design. 1

- CO2 and R134a global S-Cassette tested in a 510L cabinet.
- Energy savings between brackets.

TCCC's Test Conditions	CO2 - (KWh/day)	R134a – (KWh/day)
<u>D</u> (40.6°C - 75%RH)	8.25	7.78 (5.7%)
<u>C</u> (32.2°C - 65%RH)	5.79 (16%)	6.91
<u>B</u> (23.9°C - 45%RH)	4.97 (3.3%)	5.14

P.S.: CO2 cassette equipped with cap tube. R134a cassette equipped with expansion valve. This gives an advantage of few % for R134a system.



Energy Consumption, New Cassette Design. 2

- CO2 and R134a global S-Cassette tested in 550L cabinet & different CO2 comp.
- Energy savings between brackets.

TCCC's Test Conditions	CO2 - (KWh/day)	R134a – (KWh/day)
<u>D</u> (40.6°C - 75%RH)	9.67 (24%)	12.77
<u>C</u> (32.2°C - 65%RH)	5.78 (30%)	8.30
<u>B</u> (23.9°C - 45%RH)	4.40 (21.8%)	5.63

P.S.: Both CO2 AND R134a cassettes are equipped with cap tube.



EC Comparison: CO2 Medium Cass VS. HFC

D Condition

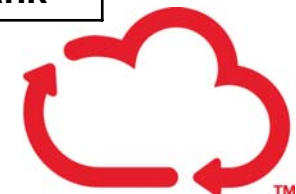
40.6°C, 75%, Dif 3°C

Refrigerant	CO2	HFC (R404A)
Test equipment	Double glass door cooler	
Dimension	W1280mm x D792mm x H2130mm	
Capacity	1210 L	
Storage Capacity	355ml Cans - 980 pcs	
Fluorescent light	Internal :28W x2(vertical), External :28W x1	
Door glass	Triple pane with Argon gas	Double pane with Argon gas
Direction of heat exhaustion	Rear only	Rear and Door glass
Cassette type	TCCC Global M size	Original HFC system
Power source	50Hz, 220V	50Hz, 240V
Energy Consumption	12.60kWh/day (-7.7%)	13.66kWh/day

Fountain equipment: COP Comparison

- Sanyo's CO2 compressor.
- System optimized for "C" conditions.
- Further optimization of SLHX, oil circulation & air flow will improve the system's COP.

	"C" Condition 32°C Ambient	"D Conditions 40°C Ambient	
R134a	1.1	1.0	COP
	25.8 KG	27.9 KG	Ice Bank
CO2	1.9	1.5	COP
	26.9 KG	27.2 KG	Ice Bank
CO2	2.4	1.9	COP
	22.3 KG	22.5 KG	Ice Bank



CO2 System's Reliability

- Approximately 14,000 units in service globally today,
- Refrigeration failures have been well below current standards for R134a and limited primarily to quality issues and/or peripheral devices (not CO2 circuit),
- Each compressor manufacturer has completed extensive reliability tests with thousands of hours of life proven in the lab in varying conditions,
- Infant mortality and life-cycle failures specific to reliability are few (handful) if any.

