

# **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)
<b><u>D</u></b> (40.6°C - 75%RH)	<b>8.25</b>	<b>7.78 (5.7%)</b>
<b><u>C</u></b> (32.2°C - 65%RH)	<b>5.79 (16%)</b>	<b>6.91</b>
<b><u>B</u></b> (23.9°C - 45%RH)	<b>4.97 (3.3%)</b>	<b>5.14</b>

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)
<b><u>D</u></b> (40.6°C - 75%RH)	<b>9.67 (24%)</b>	<b>12.77</b>
<b><u>C</u></b> (32.2°C - 65%RH)	<b>5.78 (30%)</b>	<b>8.30</b>
<b><u>B</u></b> (23.9°C - 45%RH)	<b>4.40 (21.8%)</b>	<b>5.63</b>

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



# EC Comparison: CO2 Medium Cass VS. HFC

D Condition

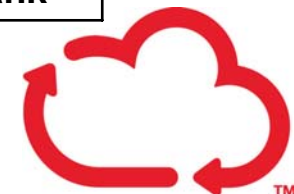
40.6°C, 75%, Dif 3°C

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
<b>Energy Consumption</b>	<b>12.60kWh/day (-7.7%)</b>	<b>13.66kWh/day</b>

# 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	
<b>R134a</b>	<b>1.1</b>	<b>1.0</b>	<b>COP</b>
	<b>25.8 KG</b>	<b>27.9 KG</b>	<b>Ice Bank</b>
<b>CO2</b>	<b>1.9</b>	<b>1.5</b>	<b>COP</b>
	<b>26.9 KG</b>	<b>27.2 KG</b>	<b>Ice Bank</b>
<b>CO2</b>	<b>2.4</b>	<b>1.9</b>	<b>COP</b>
	<b>22.3 KG</b>	<b>22.5 KG</b>	<b>Ice Bank</b>



# 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.**

