The Coca-Cola Company

Alternative Refrigeration Backgrounder

Commitment

- The Coca-Cola Company confirms its commitment to transition to HFC-free refrigeration where cost efficient alternatives are commercially available.
- This policy covers both refrigerant gases and foams.
- We also confirm that by 2010 our new equipment will be 40% to 50% more energy efficient than equipment bought in 2000.
- We will continue to exchange knowledge and expertise with industry technology leaders, NGOs, and regulatory agencies.

Status

1. After an intense four-year research and development programme, we have come to the conclusion that CO2-based refrigeration is currently the best option for Coca-Cola's global commercial refrigeration needs.
2. In our initial field tests, CO2-based equipment proved to be safe, reliable and more energy efficient than equivalent HFC-based equipment.
3. Field trials are taking place around the world and we and our bottlers will significantly expand them this year and next year, as we prepare for successful commercial roll-out.
4. We have successfully developed Stirling refrigeration for small equipment and we are confident that Stirling may represent another very efficient alternative over time.
5. As of today, some 50% of our suppliers worldwide have already switched out of HFC foam. After the end of this year, only equipment using non-HFC-blown foam will be certified for purchase in the Coca-Cola system.
6. Our policy will ensure that new sales and marketing equipment purchased by the Coca-Cola system in 2010, will emit (directly and indirectly) 700,000 tons less of CO2-equivalent greenhouse gases than would have otherwise been emitted by utilizing the models we had in 2000.

Levels of investment

- The Coca-Cola Company has invested some 10 million US$ so far in research and development on alternative refrigeration technologies.
- Our suppliers and technology partners have invested more than double this sum so far.

Coca-Cola commitment to sustainable refrigeration

The Coca-Cola system has some 9 million coolers and vending machines in the marketplace worldwide, which use HFC as refrigerants and in insulation foam. While we estimate that our business system comprises only 1% of total compressor sales and less than 0.2% of total HFC sales worldwide, we acknowledge our responsibility and want to lead the way on environmental issues, including climate change.

We recognized the need to act early. When CFCs, then the global standard refrigeration gas, were identified as contributing to the destruction of the ozone layer, we were one of

the first to decide to move out. Starting in 1994 we switched new purchases to HFCs, an ozone-friendly alternative, which became the new industry standard. However, HFCs have a strong global warming potential, something that was not understood then as it is today.

Again, we recognized the need to act. In 2000 our Chairman and CEO, Doug Daft, articulated our vision and gave The Coca-Cola Company, its bottlers and its suppliers a new, bold challenge. We committed that by mid 2004, we would move to alternative HFC-free technologies, where cost-efficient alternatives are commercially available. This policy applies to both refrigerant gases and insulation. We also committed that by 2010, our new equipment will be between 40% and 50% more energy efficient than the machines we used in 2000.

Progress to date

When our new policy was unveiled, no HFC-free technology able to meet our global needs was available off the shelf. To overcome this problem, we started, together with key suppliers and technology partners, a research and development programme called eKOfreshment. Together we have spent more than 30 million US$ to assess and develop innovative technologies.

We assessed more than 10 emerging technologies potentially suited for our needs. This allowed us to narrow down our search to three promising alternatives: Hydrocarbons, CO2 and Stirling. On all three technologies we analyzed the technology gaps and, together with our partners, we worked hard to find ways to fill them. Many patents have been filed and many technological breakthroughs have taken place, ranging from dynamic pressure control systems, to expansion valve technology, from advanced heat exchange technologies to advanced simulation models. All three technologies were brought to a development stage that makes them potentially viable from a commercial standpoint.

We then embarked on a comprehensive series of lab tests and field tests of these refrigeration technologies. We assessed their performance, their ability to meet our particular needs, and their ability to reduce energy use. Finally we decided which one offered us the best option for commercial roll-out, in terms of reliability, energy-efficiency, cost, environmental profile, ability to cover all our equipment sizes, and possibility of global commercial availability.

Confirming our vision

Today we can say that our vision of a reliable, energy-efficient, HFC-free, commercially viable refrigeration system is becoming a reality.

On the basis of the work done over these past four years, we have come to the conclusion that **CO2-based refrigeration is currently the best option for the global needs of Coca-Cola's sales and marketing equipment**. CO2 systems in our tests proved to be reliable and performed according to our specifications. CO2 systems are currently capable of meeting our needs for medium and large units - the majority of our purchases – and availability for small equipment is within reach. Our preliminary field tests indicate that, in real life circumstances, they use less energy than equivalent equipment using HFC as a refrigerant. CO2 is a natural gas, it is safe and non-hazardous, and its global warming potential is a factor of 1 - compared with 1300 for HFCs.

Field tests are already taking place in Spain, Japan, Greece and Australia and we are planning to expand trials this year. More than 650 HFC-free units (50 of which with CO2) will be placed in the Olympic venues in Athens this summer. Large-scale field tests led by our bottling partners will be crucial for our success, so many more CO2 units will soon be used by them throughout the world.

Commercial roll-out plans for CO2 refrigeration systems are being discussed with our bottling partners, and we will begin the transition as commercial units are made available to us at competitive prices. We are committed to do it right - as fast as possible, as slow as necessary.

In 2000 we also pledged to move out of HFC in insulation foam. As of today, some 50% of our suppliers worldwide have already switched out of HFC foam. After the end of this year, only equipment using non-HFC-blown foam will be certified for purchase in the Coca-Cola system.

We estimate that the combined effect of these measures will ensure that new sales and marketing equipment purchased by the Coca-Cola system in 2010, will emit (directly and indirectly) 700,000 tons less of CO2-equivalent greenhouse gases than would otherwise have been emitted by sticking to the models we had in 2000. This is the equivalent of 150,000 less cars on the road or 200,000 acres of trees to sequester th CO2.

While we are committed to CO2 as our alternative refrigeration of choice, we will not stop our innovation efforts. CO2 systems put us in a good position to fulfill our promise to improve energy efficieny by 40-50% by 2010, yet work still needs to be done in this area. We continue working on other technologies. For example, we and our partners have developed a much enhanced future for Stirling refrigeration and we are currently field-testing a small vending machine using this technology in Japan. We are confident that Stirling may represent a real, very efficient alternative over time. Our first tests indicate that already today it performs well in small equipment – a smaller segment of our equipment size range, but an important size for many other companies and applications.

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For further information, please contact:
Salvatore Gabola, mobile (+32) 49 7052477, tel. (+32) 2-5592477, sgabola@eur.ko.com

For more information on Coca-Cola and the environment, please visit:
http://www2.coca-cola.com/citizenship/environment.html