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DATE: 4/16/2008
TO: **Supermarket End-Users and OEMs**
FROM: Emerson Climate Technologies, Inc. – Refrigeration Division
SUBJECT: **Launch of Subcritical CO₂ Refrigeration Copeland Scroll® Compressors**
EFFECTIVE DATE: Immediate

We are pleased to announce the launch of a Subcritical CO₂ Refrigeration Copeland Scroll Compressor product line-up for use in low temperature cascade systems. These compressors were designed using Emerson Climate Technologies' rigorous testing and qualification process that ensures high efficiency and reliability. The subcritical CO₂ refrigeration Copeland Scroll compressors have also met all UL regulatory requirements and represent the first and at this time the only compressor platform in the United States to carry UL approval for high pressure subcritical CO₂ systems.

The Subcritical CO₂ Refrigeration Copeland Scroll Compressor line-up will feature rotalock refrigerant connections and will have a suction service valve with an ASME pressure relief device installed on the compressor. The platform consists of four models shown in the matrix below:

Model Number	Motor Variations	BOM Variations	Nominal Horse Power hp	Cooling Capacity ⁽¹⁾		Displacement ⁽¹⁾		Net Weight	
				Btu/h	(kW)	CFH	(m ³ /h)	lbs	(kg)
ZO34K3E	TFD	269	1.9	32,800	(10)	174	(4.9)	68	(31)
ZO45K3E			2.6	41,000	(12)	229	(6.5)	71	(32)
ZO58K3E			3.4	53,200	(16)	292	(8.3)	75	(34)
ZO104KCE			6.0	90,100	(26)	496	(14.0)	88	(40)

⁽¹⁾ Evaporating -31°F (-35°C), Condensing 14°F (-10°C), Suction Superheat 18F (10K), Subcooling 0F (0K) @ 60Hz

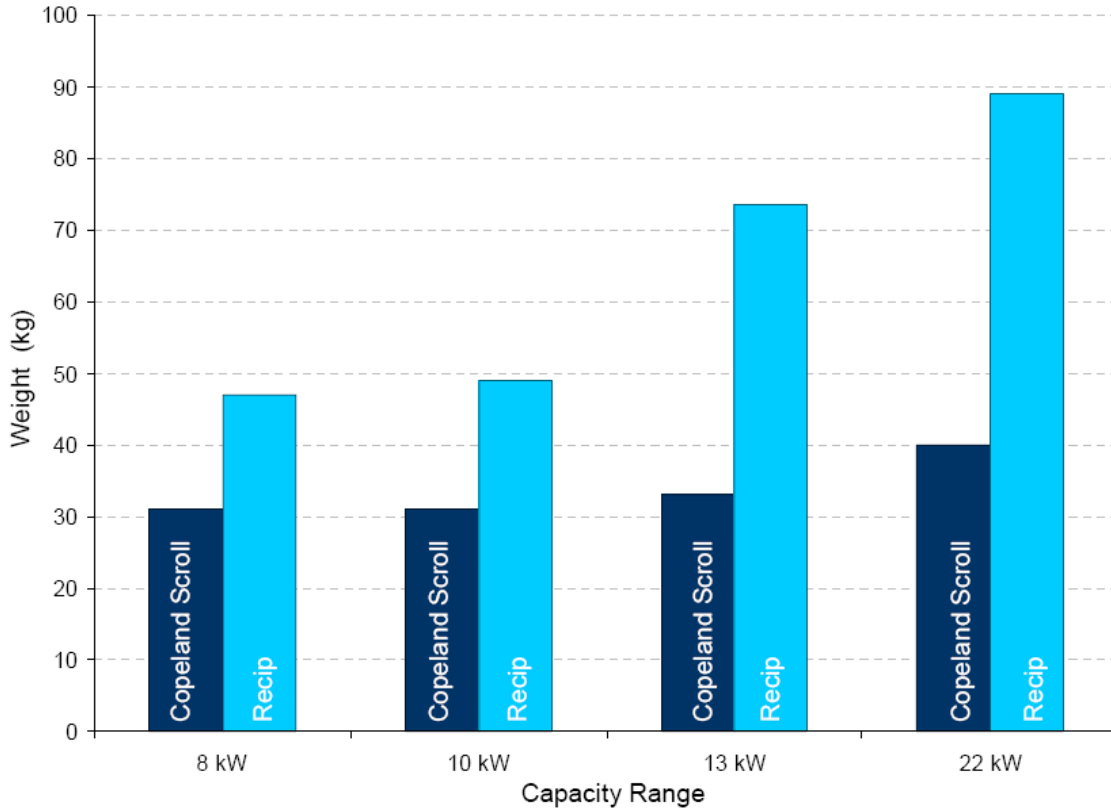


The subcritical CO₂ refrigeration Copeland Scroll compressors were developed in response to the increasing environmental concerns about HFC-based refrigeration systems. The overall environmental impact of systems is driven by direct refrigerant leaks into the atmosphere as well as indirect emissions from generating energy to run the system. Because the Copeland Scroll compressor is hermetically sealed it eliminates possible leak points found in reciprocating compressor such as gaskets and bolted joints therefore reducing the potential direct refrigerant emissions. The strong steel shell used in the hermetic design also allows these compressors to withstand the high pressures associated with CO₂ systems.

A complete summary of the direct and indirect impact of different systems was summarized in an Emerson Climate Technologies webcast and can be viewed by visiting http://www.emersonclimate.com/refrigerant_webinar.htm.

Because of the size and weight of the subcritical CO₂ refrigeration Copeland Scroll compressors, these compressors offer additional environmental benefits by providing more capacity per unit of mass (See Figure 1) along with the benefits of reducing overall system size and applied cost.

Figure 1: Weight Comparison Copeland Scroll vs Reciprocating Compressor



In efforts to expand the subcritical CO₂ refrigeration Copeland Scroll compressor line-up, Emerson Climate Technologies has plans to develop three additional compressor models shown in Figure 2. Because this product line-up utilizes scroll compression technology, there are also future plans to provide subcritical CO₂ refrigeration Copeland Scroll Digital compressors with Emerson Climate Technologies' patented modulation technology providing the ability to modulate anywhere from 10 to 100 percent of the compressors capacity.

In parts of Northern Europe, CO₂ based refrigeration supermarket systems are being applied and evaluated due to F gas regulations and taxes on HFCs. While we do not have the same regulatory pressure in the US, Emerson Climate Technologies recognizes the opportunity for subcritical CO₂ scroll compressors to reduce the overall carbon footprint of refrigeration systems. Therefore we have shipped samples and shared product information with all of the major US supermarket OEMs. We also have product available for US supermarket retailers that would like to test a system. Upon evaluation, Emerson Climate Technologies will provide field support, aftermarket assistance and application review with your OEM of choice.

Please contact your Emerson Climate Technologies sales representative if you would like to review the pros and cons of various systems.

Figure 2: Launched and Future Product Line-Up Capacity Range

