



Copeland Scroll™ And Stream Semi-Hermetic With Refrigerant R407F

Reduce The Carbon Footprint Of Existing And New Installations



EMERSON
Climate Technologies

R407F – The Right Choice For R404A Retrofits And A Viable Alternative To R134a In CO₂ Hybrid Systems

R404A is the most commonly used refrigerant today. However, many end-users, equipment and compressor manufacturers are investigating ways to minimize their impact on the environment. Improving system architectures, changing compressor technology, or using a refrigerant with a lower global warming potential (GWP) can significantly improve the carbon footprint of an installation.

In applications where switching to natural refrigerants is not deemed feasible, switching from R404A to R134a is one way to reduce GWP (from 3922 to 1430). However, this requires compressors of larger displacement for the same capacity as well as important system design changes, and therefore additional capital investments.

Switching to R407F appears to be a better choice as it has a similar cooling capacity to R404A yet significantly reduces the GWP of an installation (from 3922 to 1824) and improves the overall energy efficiency of the system by at least 10 percent. Furthermore, it can be used for both medium and low temperature applications.

As a result, R407F has all the properties necessary to be an excellent option for both for retrofitting existing medium and low temperature installations with little or no change in terms of design, and for the medium temperature side of new equipment such as hybrid systems using CO₂ for low temperature.

Field Proven With Copeland Compressors

In early days of 2011, collaborative R407F trials took place between end-users, consultants, installers, Honeywell and Emerson in several countries including the UK, France, Poland and Hungary. These trials used Copeland Scroll™ in medium and low temperature applications and showed system efficiency improvements of up to 15 percent. Other trials undertaken with Emerson Discus® semi-hermetic compressors also delivered outstanding results in terms of reducing the carbon footprint of the supermarket.



Copeland™ Scroll compressors with refrigerant R407F



Copeland™ Stream compressors with refrigerant R407F

Compressors Released For R407F

Following the successful release of all Copeland Scroll™ ZB and ZF compressors for refrigerant R407A, these models are now also available for R407F applications.

Additionally all of the models in the Stream semi-hermetic compressor range are also available for applications using this refrigerant.

This enables our customers and end-users to benefit from the superior efficiency our product offers while simultaneously using the GWP properties of R407F to considerably reduce the overall Total Equivalent Warming Impact (TEWI) of their refrigeration installations.

Features And Benefits

- 50 percent reduction of carbon footprint from direct emissions compared with R404A
- Up to 15 percent improvement in energy efficiency compared with R404A based on supermarket energy efficiency reports
- Direct retrofit to existing R404A installations with few changes
- An excellent alternative to R134a for hybrid systems that avoids the surcharge associated with R134a

Scroll Compressors

Medium Temperature			Low Temperature - Liquid Injection		
Model	Cooling Capacity kW (1)	COP	Model	Cooling Capacity kW (2)	COP
ZB15KCE-TFD	3,0	1,7	ZF06K4E-TFD	1,3	0,9
ZB19KCE-TFD	3,8	1,8	ZF08K4E-TFD	1,6	1,0
ZB21KCE-TFD	4,7	2,1	ZF09K4E-TFD	1,7	1,0
ZB26KCE-TFD	5,4	1,8	ZF11K4E-TFD	2,2	1,0
ZB30KCE-TFD	6,6	2,0	ZF13K4E-TFD	2,5	1,0
ZB38KCE-TFD	8,2	2,0	ZF15K4E-TFD	3,1	1,0
ZB45KCE-TFD	9,7	2,0	ZF18K4E-TFD	3,6	1,0
ZBD21KCE-TFD	4,7	2,1			
ZBD30KCE-TFD	6,8	2,2			
ZBD38KCE-TFD	8,4	2,2			
ZBD45KCE-TFD	10,0	2,2			

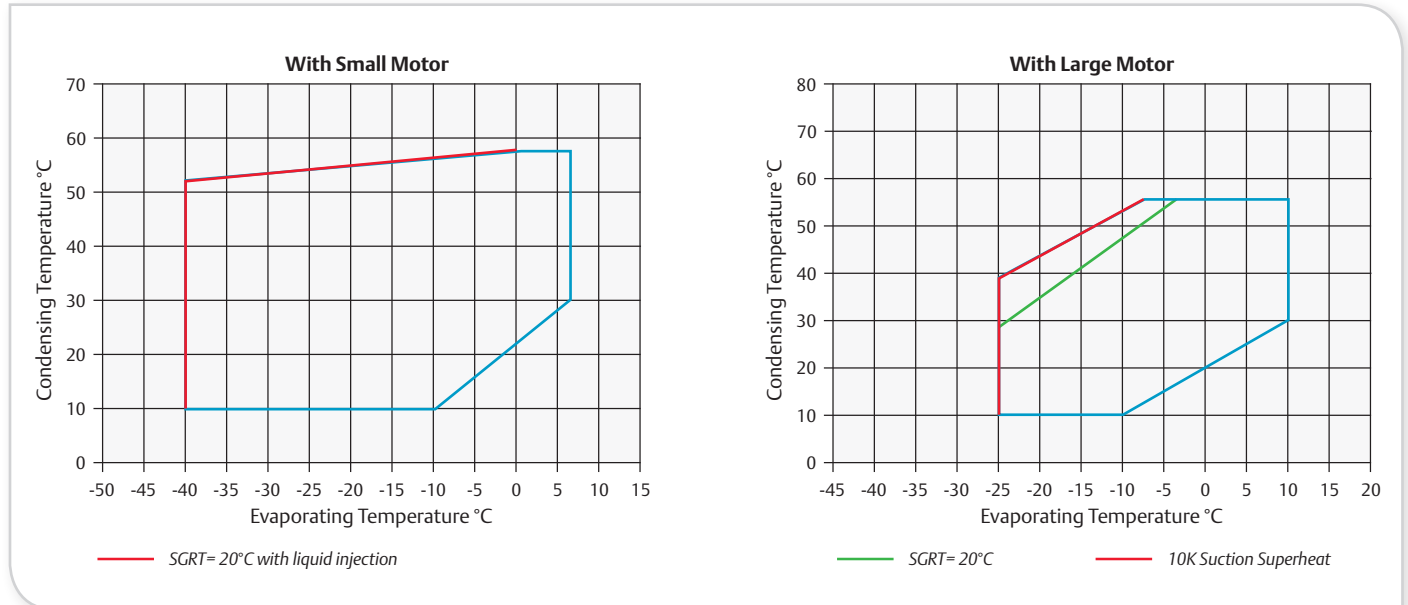
(1) Medium Temperature -10°C / 45°C / 20°C SGRT
 (2) Low Temperature -35°C / 40°C / 20°C SGRT

Stream Compressors

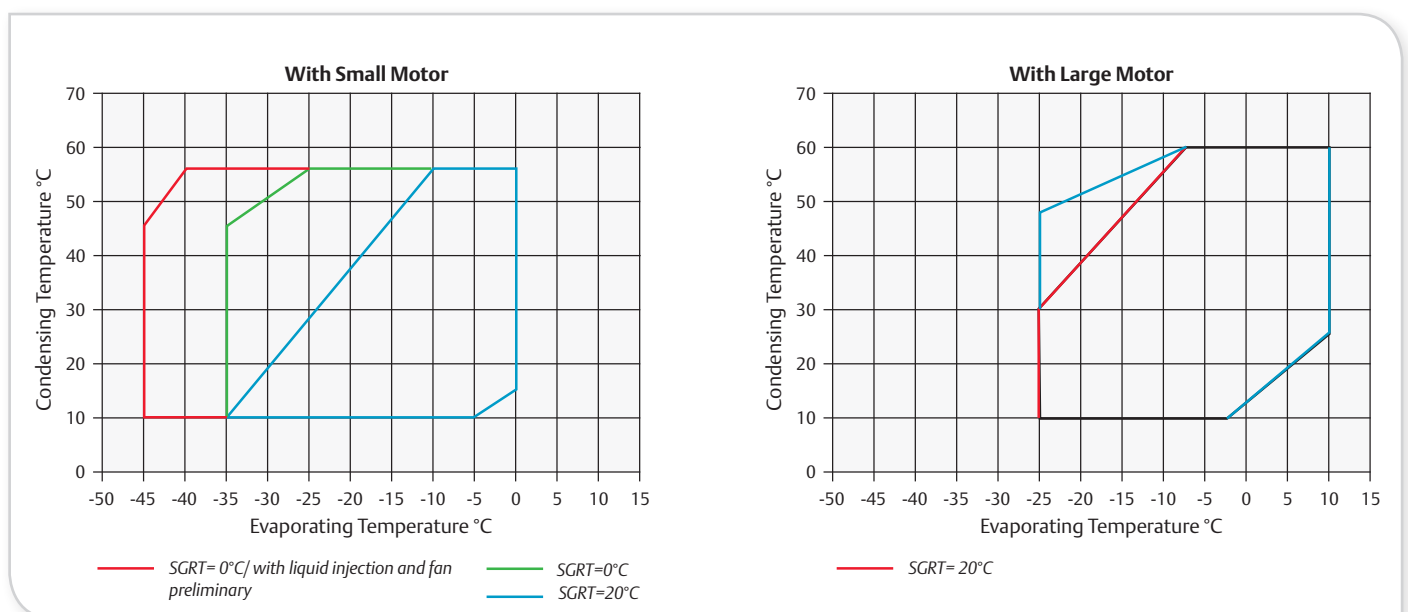
Medium Temperature					
Stream	Cooling Capacity (kW)	COP	Stream Digital	Cooling Capacity (kW)	COP
4MF-13X	31.2	2,4	4MFD-13X	31.2	2,4
4MA-22X	32.3	2,5	4MAD-22X	32.3	2,5
4ML-15X	37.5	2,4	4MLD-15X	37.5	2,4
4MH-25X	37.6	2,5	4MHD-25X	37.6	2,5
4MM-20X	40.6	2,4	4MMD-20X	40.6	2,4
4MI-30X	41.4	2,5	4MID-30X	41.4	2,5
4MT-22X	46.1	2,4	4MTD-22X	46.1	2,4
4MJ-33X	46.1	2,4	4MJD-33X	46.1	2,4
4MU-25X	51.2	2,3	4MUD-25X	51.2	2,3
4MK-35X	51.6	2,4	4MKD-35X	51.6	2,4
6MM-30X	63.0	2,4	6MMD-30X	63.0	2,4
6MI-40X	63.4	2,5	6MID-40X	63.4	2,5
6MT-35X	68.8	2,4	6MTD-35X	68.8	2,4
6MJ-45X	70.1	2,4	6MJD-45X	70.1	2,4
6MU-40X	77.1	2,3	6MUD-40X	77.1	2,3
6MK-50X	79.1	2,4	6MKD-50X	79.1	2,4

Medium Temperature -10°C / 45°C / 20°C SGRT

Operating Envelopes For Scroll With R407F



Operating Envelopes For Stream With R407F



For detailed product information including performance, electrical and mechanical data on each compressor and the complete list of available compressors please refer to our selection Software Select 7.



Emerson Climate Technologies At A Glance

Emerson Climate Technologies is the world's leading provider of heating, ventilation, air conditioning, and refrigeration solutions for residential, industrial, and commercial applications. We combine technically superior products and services from

our industry-leading divisions and brands with our global engineering, design and distribution capabilities to create reliable, energy efficient climate systems that improve human comfort, safeguard food, and protect the environment.

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For more details, see www.emersonclimate.eu

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