

Making the Transition to Lower-GWP Refrigerants

Copeland™ Hermetic CS compressor line qualified for use with R-407A, R-448A and R-449A



By Varun Garg
 Manager, Product Management—Refrigeration
 Emerson

For decades, R-404A has been one of the most commonly used hydrofluorocarbon (HFC) refrigerants in walk-in coolers, freezers and a variety of other commercial refrigeration applications. In recent years, HFCs like R-404A have been targeted for phase-down via global regulatory efforts to limit the use of refrigerants with high global warming potential (GWP). Even though the 2015 HFC regulations introduced by the Environmental Protection Agency (EPA) have temporarily stalled in the U.S., the California Air Resources Board (CARB) is still moving forward with these initiatives — as are many other states that have vowed to also pursue similar measures. As a result, many operators are actively seeking lower-GWP options to help them achieve regulatory compliance and meet corporate sustainability initiatives.

There are many important considerations when switching to a lower-GWP alternative refrigerant. Many operators are hesitant to transition to an option that will force them to overhaul their current refrigeration architecture or introduce new



compression technology that may drastically change their service, maintenance and operational requirements. Emerson is helping operators meet these varied objectives by qualifying its Copeland Hermetic CS line of compressors for use with lower-GWP refrigerants R-407A, R-448A and R-449A.

Copeland Hermetic CS compressors are commonly used in self-contained, remote walk-in coolers along with ice, soft serve and frozen carbonated beverage applications. For operators familiar with Copeland Hermetic CS compressors, moving from R-404A to one of these alternative refrigerants eliminates the complexity of a compressor platform switchover while helping to satisfy their lower-GWP requirements. Currently, the Copeland Hermetic CS compressors are qualified to use these approved low-GWP refrigerants in medium-temperature applications only. The final performance ratings will be published on the Copeland Online Product Information (OPI) tool by December 2018 for R-407A and by February 2019 for R-448A and R-449A.

Reduce your company's carbon footprint

Switching from R-404A to R-407A, R-448A and R-449A provides operators with lower-GWP options to help them meet regulatory targets or sustainability objectives.

R-404A	3,922 GWP
R-407A	2,107 GWP
R-448A	1,273 GWP
R-449A	1,282 GWP

Qualified for new and retrofit options

With this new qualification, operators now have the option to retrofit their legacy Copeland Hermetic CS compressors. However, it's important to understand that R-407A, R-448A and R-449A are not considered true "drop-in" replacements. Even though operators can keep the same compression platform, switching from R-404A to one of these lower-GWP options requires adherence to Emerson's Refrigerant Changeover Guidelines to help ensure optimum system performance. Considerations such as expansion valve adjustments, proper lubrication and filter changes must be followed per Emerson's aforementioned Refrigerant Changeover Guidelines application engineering bulletin.

For new applications, this newly qualified Copeland Hermetic CS line of compressors grants operators the flexibility of determining which replacement options are best suited to meet their external regulatory requirements and/or internal sustainability initiatives. Emerson recommends consulting its application engineering bulletin or a certified compression expert to help better understand the performance characteristics of each low-GWP refrigerant option.

The qualification of R-407A, R-448A and R-449A for use in Copeland Hermetic CS compressors gives operators access to lower-GWP options in many of their existing medium-temperature applications. As the phase-down of higher-GWP refrigerants will likely continue into the foreseeable future, Emerson will continue its efforts to support the industry with products qualified for the use of even lower-GWP alternative refrigerants.