R-22 System Conversions - Unqualified Applications

Over the last 15 years, hundreds of thousands of R-22 designed ACR systems have been successfully converted to a non-ozone depleting alternative refrigerant, like ICOR's NU-22B (ASHRAE designated R-422B). However, not all R-22 designed systems are qualified for use with an ASHRAE 400 series refrigerant.

Flooded Chillers

It was determined many years ago, during the CFC phase out, that the ASHRAE 400 series of refrigerants would be vulnerable to fractionating in flooded applications (chillers with flooded evaporators) resulting in a serious loss in system performance. ICOR DOES NOT recommend the use of any 400 series refrigerant in a flooded application.

Electronic Expansion Valves (EEV or EXV)

Electronic Expansion Valves have been used for several years in larger tonnage systems. While the majority of ACR systems utilize fixed orifice, or the more conventional TXV, for metering refrigerant, the EEVs have been used by several different equipment manufacturers and can be found in applications worldwide. EEVs are very sophisticated and sensitive devices that are each designed for use with a specific refrigerant. R-22 designed systems that are equipped with EEV metering will not operate properly with any alternative refrigerant.

Trane® 3D® Scroll Compressors and Danfoss SM Scroll Compressors*

While most scroll compressors are equipped with oil pumps designed to insure adequate lubrication, the Trane 3D scroll compressor utilizes a lesser efficient sling type design for circulating oil. In our research, we found evidence that these compressors have a long history of lubrication issues, and especially when they are used in tandem.

In a DuPont™ ISCEON® MO99™* technical information bulletin from 2013, when converting a Trane system using the 3D scroll compressors, DuPont recommended a single oil change from the system's original mineral oil, to an OEM approved POE oil. After discussing this strategy with both Trane and American Standard® distributors, we have concluded that this is not a sound, or cost-effective strategy and believe the best solution is to avoid using any 400 series R-22 replacement (which includes NU-22B) in Trane systems that utilize the 3D scroll compressors.

*ISCEON and MO99 are registered trademarks of the Chemours company.

* Trane, American Standard, and 3D Scroll are registered trademarks of the Ingersoll Rand company.

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