

Use of Zerol Ice in Remanufactured Compressors



- Improve wear metal performance
- Reduce warranty return rate
- Provide customers with energy savings through a reduction in running amps
- Reduced operational noise

Zerol Ice was recently introduced to the HVACR aftermarket for application in air conditioning, refrigeration systems. Developed by Shrieve Products Company, manufacturer of Zerol alkylbenzene refrigeration oil, Zerol Ice is a complete lubricant yet is designed to be mixed with the system's existing oil at a residual of 5-10%. Once mixed with the existing oil, Zerol Ice does two very meaningful things: it improves or enhances lubricity by reducing friction drag and it improves the existing oil's thermal properties.

Reduced Friction Drag: As shown in Falex Wear Analysis tests, Zerol Ice improves the lubricity of mineral, alkylbenzene and POE oils dramatically. And because of the improved lubrication or reduced friction drag, the compressor has to do less work . . . and this yields a reduction in running amps as well as improved service life. Of equal importance is the fact that a compressor wear analysis conducted by an outside facility also established improved bearing wear with Zerol Ice.

Improved Thermal Properties of the Oil: As the Zerol Ice mixes with the existing oil, it improves the oil's thermal properties. This yields better oil return as well as moderate improvement in heat transfer in the coils.

Taken together, Zerol Ice will enable a remanufactured compressor to use less energy while providing improved performance and service life. Customers are happy and the remanufacturer experiences fewer warranty returns.

Actual Experience

An independent compressor re-manufacturer incorporated the use of Zerol Ice into the remanufacturing of three Copeland compressors: KAL 1 hp, LAC 3 hp and the LAH 3 hp. After several months of use and monitoring, they were able to establish a significant reduction in wear-related warranty returns on all three lines. Moreover, through the use of a test stand, they were able to monitor running amps on finished LAH 3 hp compressors.

AMP reduction: They have a test stand to which each compressor can be hooked up. Nitrogen is used as a gas, and operating pressures are dialed in using conditions of 30 psi suction and 135 psi discharge. Selectively, they would hook up a fully functional compressor without Zerol Ice and measure running amps. Then they would charge the unit with Zerol Ice, using 7%-8% residual, and measure the running amps once again. Consistently across all the legs (L1, L2, L3) an amp drop of 0.5 to 1.0 amps was seen.

More importantly, better results could be expected when actual refrigerant was used (instead of nitrogen).

Warranty Returns: They have seen their returns drop from 14-15% all the way to 1-2% on the unit lines where Zerol Ice has been used. The most significant improvement is in the LAH and LAC Copeland compressors. Also, compressors with brass bearings have shown improvement with Zerol Ice. They state that the brass bearings seem to swell more or generate more heat, and Zerol Ice has helped here.