



**Application Engineering Bulletin  
AE-1282**

**Issued March 1989**

## **OIL ADDITIVES**

Copeland regularly receives inquiries requesting evaluation, testing, and/or approval of oil additives. These inquiries almost always include claims of substantial efficiency improvements from a decrease in energy consumed in the compressor bearing surfaces. Often the claimed energy savings are significantly greater than the energy consumed by the bearings as determined by both test and analysis.

Copeland historically has been a leader in developing energy efficient compressors, and reducing energy consumption in bearing surfaces has been an area of significant achievement. Investigations of how to reduce bearing losses have included extensive review and testing of oil additives by Copeland's Product Engineering, Hermetic Chemistry and Tribology groups.

Over the last several years, as a result of internal and external requests, Copeland has tested several oil additive products and has not been able to detect any meaningful change in compressor power consumption when measurements were made under controlled laboratory conditions with properly broken-in compressors on laboratory calorimeters at constant

evaporating and condensing conditions. These tests would not take into account any changes in compressor energy consumption which may be caused by changes in suction or discharge pressure resulting from the additives' alteration of the evaporating or condensing processes in a system's heat exchangers. Such changes in pressures theoretically could occur in some systems and could affect compressor energy consumption to some degree.

Although Copeland can't comment on any specific product, from our own testing and past experience, Copeland generally does not recommend use of any additives to reduce compressor bearing losses or for any other purpose. Furthermore, the long term chemical stability of any additive in the presence of refrigerant, low and high temperatures, and materials commonly found in refrigeration systems is complex and difficult to evaluate without rigorous controlled chemical laboratory testing. Use of additives without adequate testing may result in malfunction or premature failure of components in the system and, in specific cases, may result in voiding the warranty on the component.

