

EXXONMOBIL DEVELOPS New Lubricant for Refrigeration Compressors

- **Mobil SHC™ Gargoyle 80 POE designed for compressors that use carbon dioxide as a refrigerant gas**
- **Reduction of two percent electricity consumption compared with a conventional polyol ester-based oil**
- **Mobil SHC Gargoyle 80 POE meets growing need for applications cooled by natural refrigerant gases**

ExxonMobil has developed a synthetic oil for carbon dioxide-cooled industrial refrigeration applications. Mobil SHC™ Gargoyle 80 POE has been designed specifically for the lubrication of compressors and is particularly suitable for reciprocating compressors using carbon dioxide as a refrigerant gas, which are found in applications ranging from food preparation, freezing operations, cold storage and marine refrigeration.

The new lubricant has been formulated using polyol esters (POE) to enhance lubricity, wear protection and chemical and thermal stability. It supplements ExxonMobil's existing range of synthetic lubricants for refrigeration compressors and systems, the Mobil Gargoyle Arctic SHC 200 Series and Mobil EAL Arctic™ Series.

The three key qualities of Mobil SHC Gargoyle 80 POE are excellent low-temperature fluidity, in-service viscosity control and potential contribution toward system efficiency improvements, compared to mineral oils.

The development of Mobil SHC Gargoyle 80 POE was driven by the projected rapid growth of carbon dioxide as an industrial refrigerant gas over the next four years. ExxonMobil predicts that carbon dioxide will be one of the main industrial refrigerants by 2020 and will also feature regularly in light commercial refrigeration operations.

The new lubricant has been carefully formulated to exhibit a range of beneficial properties:

- Its high film thickness in the presence of refrigerant gases is intended to improve compressor protection and shaft sealing compared to mineral oil, potentially extending compressor life, reducing unscheduled downtime and lowering maintenance costs;
- Its high viscosity index translates into excellent low temperature fluidity and potential for improved evaporator efficiency;
- Its low traction coefficient should potentially contribute towards system efficiency improvements and reduced power consumption compared to mineral oils.[\[1\]](#)

"Natural refrigerant gases are growing in popularity in the refrigeration industry in Europe, and increasingly across the world," said Andrea Jacobsen, ExxonMobil's industrial marketing manager for Europe, Africa and the Middle East. "Our new synthetic lubricant for refrigeration compressors will meet this growing need while also adding a range of equipment-protecting qualities and, according to trials, potentially contributing toward enhanced energy efficiency.

Mobil SHC Gargoyle 80 POE in action

As part of its development, Mobil SHC Gargoyle 80 POE was tested on four reciprocating compressors over 18 months in a major food preparation facility in north-western France. The facility switched to Mobil SHC Gargoyle 80 POE from a conventional polyol ester-based oil and found the new Mobil synthetic lubricant delivered lower oil carter and piston temperatures and lower energy consumption. The customer experienced a reduction in energy consumption by up to two percent compared against similar compressor load. Lower operating oil carter temperatures translate into higher in-service viscosity and oil film thickness, which enhances lubricity and results in improved overall equipment protection and

lower wear tendency.

For more information on Mobil's range of industrial lubricants, please visit mobilindustrial.com.