

**LUBE**

# TECHNI-GRAM



**FROM:**

LEWIS FOX  
DIRECTOR OF TECHNOLOGY

May 1998

## TRENDS IN INDUSTRIAL GEAR OILS

The power transmission ability of gears comes from the meshing of opposing teeth or threads that project from a blank on which they are formed. Most gear are designed and manufactured precisely according to their intended service. In modern machinery, there is no place for a "rough" gear.

The difference in loading from one pair of gears to another in a multiple-reduction gear set must be considered when selecting a suitable lubricant to meet all conditions of speed and load. Because all frictional surfaces within the gear system including the gear shaft bearings, are supplied from a common lubricant source, some compromise must be made in the selection of a lubricant. The compromise is usually one of viscosity, while the following are common required properties for industrial gear oils:

- Suitable viscosity
- Load carrying ability
- Demulsibility
- Rust and corrosion protection
- Oxidative and thermal stability
- Resistance to foaming

Industrial gear oils work in much more diverse conditions and applications than automotive gear oils. The lubricants often must perform in the presence of large quantities of water, as in steel mills, or in highly contaminated environments such as mines or quarries, sustaining high loads, speeds and operating temperatures.

Two major trends are affecting the formulation of modern industrial gear lubricants:

- Increased emphasis by end users on reducing cost. Therefore, they are demanding longer lubricant life, which reduces maintenance and disposal cost.



*... to keep it running*

- Design changes to improve gearbox efficiency. As a result, gearboxes have been downsized and operate at higher speeds and loads, resulting in higher operating temperatures. These smaller gearboxes also have smaller oil capacities, so less lubricant is available to cool the equipment and suspend contaminants.

To meet the needs of modern industrial gearboxes, lubricants must provide:

- Extended durability
- Improved thermal stability and cleanliness
- Improved high-temperature EP protection
- Extended demulsibility life
- Improved contaminant resistance

More and more, *industrial* customers are experiencing the increased performance benefits and added protection SWEPCO's 200 Series EP Gear Lubricants provide in the most demanding industrial applications under the most severe operating conditions. Obviously, the fact that SWEPCO's EP gear lubes exceed API's newest gear lubricant category, MT-1, has proven instrumental in providing industrial customers this added protection.

### **MT-1 GEAR OIL**

This category defines a gear lubricant which has the **thermal stability, high temperature cyclic durability, and a copper compatibility** level that are not required by API GL-1 through GL-5. Other characteristics, **anti-wear, anti-foam, anti-oxidation, and compatibility with seal materials** are maintained at historic levels.

SWEPCO gear oils not only meet, but exceed, standard performance bench test, thus categorizing them as "Next Generation" performers for **extra durability** and **thermal stability**. Through the use of SWEPCO's 200 Series EP gear lubes, industrial customers are assured of the longer life and improved high-temperature protection they are demanding.