

## The Importance of Oil Quality

### *What does quality mean?*

The word quality in a hydraulic context has two definitions

- 1) The type of oil used for a particular application
- 2) The condition of the oil used in that application

### *The type of oil*

A typical hydraulic oil system consists of pumps, control valves and actuators. The diversity of oil hydraulic systems, and applications, has resulted in the development of a wide range of fluids. The viscometric, thermal, anti-wear and lubricating properties of a hydraulic oil are an important consideration when determining the application and environment in which the system has to perform.

### *The condition of the oil*

Hydraulic fluids perform four main functions

- The primary function is to create force and motion as flow is converted to pressure near the point of use
- Second, by occupying the space between metal surfaces, the fluid forms a seal, which provides a pressure barrier and helps exclude contaminants
- A third function is to provide lubrication between metal surfaces
- The last function provided by the fluid is cooling the system.

If any of these functions are impaired, the hydraulic system will not function as designed. Worse, sudden and catastrophic failure is possible. The resulting downtime can easily cost thousands of pounds.

Regular oil sampling and analysis can detect changes in oil quality, for example

- Contamination
- Wear
- Chemical differences

If the system is not monitored regularly, some sort of system failure will provide the first indication that the contamination level is out of control. These failures may be in the form of :

- Loss of machine efficiency and cycle time due to increased internal leakage
- Increased heating and component damage, due to increased internal leakage
- Short component life (months instead of years), due to accelerated wear
- Valves sticking, erratic machine operation or both
- Loss of machine accuracy due to damage of valve metering surfaces
- Shorter fluid life, due to oxidation, accelerated by metal particles, aeration, water, or high temperature
- Catastrophic failure

It is necessary to recognize and understand the definitions of oil quality to ensure a system performs in the manner for which it is designed.

Systems Services do not recommend the mixing of hydraulic fluids—even of the same viscosities (unless of the original manufacturer). Systems Services only recommend the use of premium fluids from well known manufacturers—please enquire for further information.

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