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TECHNI-GRAM



FROM :

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Maximizing Hydraulic Efficiency

The debate on the issue of filterability of hydraulic oil continues to cause confusion within the industrial/construction industries. On one hand, filter manufacturers argue that <3 micron filterability is absolutely necessary, while most lubricant manufacturers indicate <3 micron filterability is overkill. Since most reputable lubricant manufacturers filter products at a minimum of 10 microns (SWEPCO utilizes 5 micron filtration), and most hydraulic equipment has a film thickness of greater than 44 microns holding the bearings apart, the concern over possible filtering out of some additives...primarily V.I. improvers...helps build the case for ASTM (American Society of Testing and Materials) to develop a method for developing a full battery of tests for assessing hydraulics.

Off-road applications are a particular concern since most hydraulic filtration systems are designed to deal with an average contaminant load and very few off-road applications are clean enough to be considered "average". The concern within the construction industry is so great that Vickers, a major hydraulic component manufacturer, markets a special filter to keep contaminants from entering through the reservoir breather. According to Vickers research, most of the contaminants in a hydraulic system comes in through the reservoir's breather, so the company designed a vent filter that goes far beyond the 40 mesh screen traditionally used. The H²O-Gate Vent Filter uses barrier technology that prevents moisture from entering but allows it to exit. It reduces the relative humidity inside the reservoir to a point where water can't condense. It is also 99.7% efficient at removing 3 micron particles, which includes half of all dust, most exhaust soot, and all smog particles.

According to Vickers, to maximize hydraulic component life, equipment managers need:

- A breather that will keep dust and moisture out
- Sealed reservoirs, with access plates in place and sealed and gasketed input and output ports
- Adequate wipers on cylinder rods
- Adequate filtration
- A filtration system to clean stored oil going into reservoirs
- An oil analysis program for monitoring fluid cleanliness

Of equal concern is hydraulic system overheating. As a hydraulic system overheats, it breaks down the hydraulic oils lubricating properties, damages seals, increases demands on the machines engine and shortens the life of the hydraulic system.



... to keep it running

Worse yet, overhauling caused by leaks affects control valve response and reduces the productivity of the machine. Up to 16% of machine efficiency can be lost without the operator being aware of it.

WARNING SIGNS OF OVERHEATED HYDRAULIC SYSTEMS

- Sluggish performance
- Slow control response
- Strong hydraulic oil smell
- Oil tank discoloration
- High hydraulic temperature gauge read

Fortunately, there are preventative steps that can correct or prevent the most common causes of hydraulic overheating:

AVOIDING HYDRAULIC SYSTEM OVERHEATING

- Use a quality hydraulic fluid with the correct viscosity. Don't substitute other system oils for hydraulic fluid.
- Check and top off hydraulic fluid level
- Check and clean radiator and cooler cores
- Make sure operators don't engage controls while waiting during trenching or loading
- If a hydraulic pump is suspect, have the equipment dealer inspect system flow and pressure