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Protect Your Hydraulic Cylinders to Protect Your Bottom Line

Hydraulic fluid contamination can damage cylinders, leading to wear, abrasion and worse

Contaminated hydraulic fluid is the cause of 75% to 80% of hydraulic[1] component failures. Today's hydraulic systems operate under such extreme pressures that contaminant particles too small to be seen by the eye can cause wear, abrasion and even catastrophic damage inside the hydraulic cylinder and beyond.

This is why effective, efficient hydraulic filtration is a must. It protects your hydraulic cylinders, which limits inefficiencies and lowers the total cost of ownership.

[1] https://www.hydrauliccylindersinc.com/avoiding-hydraulic-fluid-contamination/

What Do We Mean by Contaminants?

Hydraulic equipment often works in extreme conditions. In dusty, dirty or moist environments, the dangers to your sensitive hydraulic systems are everywhere. Even microscopic particles of dust or moisture getting into your cylinders can cause component failure, and the opportunities for exposure are seemingly endless. Even internal dangers – particles from normal wear and tear – can wreak havoc in a hydraulic system.

These particles can be smaller than a red blood cell and still cause damage.

Contamination of the Cylinder Is a Multitiered Problem

When contaminants enter the cylinder, via dirty piston rods, broken or worn seals or even simple assembly of new components that weren't properly installed, there are a number of ways they can cause problems.

First, these particles can cause inefficiencies. Small areas of wear and tear can cause leaks – and when valves and cylinders start leaking, system efficiency drops significantly. Pressure drop within the cylinder adds stress to hydraulic pumps, which means the system requires more power to run and more fuel is consumed. And leaking seals mean more hydraulic fluid usage due to loss. It's a chain reaction of inefficiency, and it all adds up to higher cost of ownership.

Second, and arguably worse, is eventual component failure. Those particles eventually cause abnormal wear, etching and abrasion inside the cylinder. The abrasive wear generated by the foreign particles leads to more contaminants in the system as the metal shavings are added to the system. Those new particles cause an even more abrasive effect inside the cylinder… and you see where this goes. It's a cascading effect that will eventually lead to damaged rods, barrels and seals. These lead to bigger problems, and it all leads to higher costs of ownership.

For instance:

- Wear to the rod seal causes leakage and loss of fluid. This means more fluid usage and more expenses.
- Wear to the guide bushing or piston bearing can cause the rod to become misaligned, which makes the whole component less efficient. It also causes fluid seepage.
- Excess wear to the piston seal causes a drop in pressure, which can mean slower cylinder speeds, resulting in less work done by the equipment.

Earlier, we mentioned how inefficiencies can cause increased stress on hydraulic pumps. That excessive stress can cause a hydraulic pump to overload… resulting in premature failure and breakdown. Consequently, the asset will no longer be available. How much does an hour of downtime cost an operation?

Effective Filtration Is the Answer

With so many ways for a hydraulic system to break down due to contamination, how does a fleet manager protect the fleet? With efficient, effective hydraulic filtration. Virtually any contamination can lead to inefficient operation or costly downtime, so it's vital that your filtering system works on a microscopic level, capturing all manner of contaminants. But how much does filter efficiency matter? According to ISO 4406, an improvement in fluid cleanliness by two ISO codes can extend hydraulic component life by 60 percent.

How much would the average fleet save annually by getting 60 percent more life out of its components?

Lower Cost of Ownership Is Everyone's Goal

With the costs of everything from fuel to components to labor rising every day, it's more important than ever to lower costs and raise efficiency wherever possible. Effective hydraulic filtration can protect expensive, sensitive equipment, save money in fuel, fluid and components, and help eliminate downtime. In short, it can lower the overall cost of ownership.

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