

The performance and longevity of equipment can be greatly undermined by the contamination of hydraulic fluids and lubricants, as Pirtek's Business Development Director Alistair Wiggins reports.

Why is hydraulic fluid care important?

The performance, life and reliability of hydraulic components are acutely sensitive to the quality and maintenance of the hydraulic fluid used in the system. That is why it pays to use a high-quality hydraulic fluid, inspect fluid samples at regular intervals, and practice regularly scheduled preventive maintenance. By observing these simple precautions, system downtime will be reduced and the overall life of the hydraulic system will be increased. High-performance hydraulic systems require very clean oil to maximize performance and extend the life of system components. It is not unusual for high performance hydraulic equipment to "silt up" and perform erratically when subjected to contamination.

How is the life of a hydraulic system shortened?

Hydraulic fluid contamination and deterioration are normal consequences for most hydraulic systems. Failure to adequately remove contaminants, or to change hydraulic fluid before severe fluid breakdown occurs, will lead to poor system performance.

The most common hydraulic fluid contaminants are entrapped air and water, along with particles of metal, rubber or dirt. To maintain clean hydraulic fluid, samples must be taken regularly and appropriate mitigation should be immediate.

Fluid deterioration might more appropriately be called "additive deterioration." Additives give the oil its particular characteristics; and because these additives are most susceptible to chemical and physical change, their deterioration is what leads to fluid breakdown.

Fluid deterioration is often caused by operation at high temperatures. Fluid reservoir temperatures are best kept below 140° F (60° C).



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How can hydraulic system life be maximised?

Regular monitoring and maintenance of the hydraulic fluid promotes the maximum operating performance and service life of the hydraulic system and its components.

Two specific items must be checked regularly: contaminants in the fluid; and the fluid's chemical makeup. Fluid sampling and analysis is the best way to determine whether the fluid and filters should be changed. Fluid analysis will provide an accurate viscosity reading while detecting specific contaminants such as water or foreign particles. It can also be used to check the chemical makeup of the fluid to identify whether the additive package is still able to perform as it was originally intended. A correct evaluation of the contaminants in the hydraulic system is important. When the contaminating material is identified, its source can be investigated to prevent future contamination. One of the most common causes of hydraulic contamination is after a failed hydraulic hose is changed. All too often, the new hose is not cleaned prior to installation results in contaminants being introduced to the system.

What does clean hydraulic fluid look like?

Looking at and smelling hydraulic fluid is the simplest and most effective way to determine the fluid's condition. Clean fluid is amber in colour. A milky, dark, or otherwise abnormal colour may indicate the presence of one or more contaminants. A milky appearance implies contamination by water. If the fluid looks milky, take immediate action to avoid severe damage to your hydraulic system. Stop the influx of water and remove the water from the system immediately. Water can be removed by passing the fluid through water-absorbing filters, or by flushing or draining the entire hydraulic system. A marked change in the smell of the hydraulic fluid can indicate a chemical breakdown. This type of breakdown is generally due to air that has become entrapped in the fluid, which creates varnish-like nitrogen-oil compounds that contaminate the fluid. If a distinct change in the smell of hydraulic fluid is detected, have it chemically analyzed. Pirtek centres are able to offer a complete oil analysis and flushing service and will be available to visit your facility to carry out an inspection.



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