Peterbilt 89e Diesel Engine

Before there was further damage or it became necessary to stop the equipment without further information, ALS was hired to perform oil analysis for predictive maintenance. Possible risks without predictive maintenance:

- Catastrophic failure
- Loss of production
- Reduced resale value

Analysis

A problem with a diesel engine was recently discovered. Laboratory results indicated that a coolant leak was present and immediate action was needed to save the equipment.

Diagnosis

The spectrochemical analysis showed high concentrations of sodium and potassium, both prominent additives engine coolants. The copper, tin and lead levels were also elevated indicating possible damage to engine components. Additional tests showed that glycol and water were present in the lubricant.

Corresponding analytical results showed a high concentration of sodium and potassium (coolant additives), as well as the excessive wear metal concentrations (lead, copper, and tin). This sample tested positive for coolant and had a large amount of free water in the sample. The water contamination prevented an accurate viscosity to be performed.

Solution

The customer was notified immediately upon completion of the testing. The unit was pulled from service and the coolant leak was identified. Upon inspection the mechanic found a thickened gel type material on the valve covers of this engine. Damage was observed to the connecting rod bearings and the cylinder linings. The source of the engine coolant leak was discovered and repaired. Additional damage to the connecting rod bearings were made.

Result

Coolant contamination can cause bearing problems, especially in copper-lead and bronze-lead bearings as well as poor lubrication and increased corrosion. Coolant contamination may also react and cause an increase in sludge and other degradation products. without detection engine repairs would have cost an additional $4,000 at a minimum.

Customer feedback to the testing laboratory was “Saved Engine from Catastrophic Failure.”