

Engine oil analysis is a diagnostic process used to assess the condition and performance of lubricating oil in an internal combustion engine. By analysing the properties of the oil and the presence of various contaminants, this method provides valuable insights into the health of the engine and its internal components. It is a proactive maintenance technique that helps identify potential issues before they escalate into major problems, thus extending the engine's lifespan and preventing costly repairs.

Regular oil analysis can help avoid unexpected breakdowns, improve fuel efficiency, and reduce overall operating costs. Our Laboratory process of engine oil analysis involves the following steps:

1. **Oil Sampling:** A sample of the engine oil is taken from the engine's crankcase using a clean extraction method. The sample is collected in a suitable container that prevents contamination during the sampling process.
2. **Laboratory Analysis:** The oil sample is sent to a specialised laboratory equipped with testing equipment and experienced technicians. They perform a series of tests on the oil to assess its condition and identify any potential issues.
3. **Viscosity Test:** Viscosity measures the oil's resistance to flow and is a crucial parameter to determine its ability to lubricate effectively under different temperature conditions.
4. **Spectroscopy:** This test identifies the concentration of wear metals, contaminants, and additives in the oil. Abnormal levels of certain metals (e.g., iron, aluminium, copper) can indicate engine component wear.
5. **Particle Count:** The number and size distribution of solid particles in the oil are measured. Elevated particle counts might indicate abnormal wear or the presence of foreign debris.
6. **Water Content:** Excessive water in the oil can lead to corrosion and reduced lubrication efficiency. Water content is an essential parameter to monitor.
7. **Total Base Number (TBN) and Total Acid Number (TAN):** TBN indicates the oil's ability to neutralise acidic compounds, while TAN measures the accumulation of acidic compounds in the oil. These values help determine the oil's remaining useful life.
8. **Contamination Analysis:** Other contaminants like fuel, coolant, or dirt can find their way into the engine oil. The analysis identifies these substances and assesses their impact.
9. **Wear Debris Analysis:** Sometimes, a more detailed analysis of wear debris is performed, which involves microscopic examination to pinpoint the source of wear within the engine.
10. **Interpretation:** Once the tests are completed, the laboratory generates a comprehensive report detailing the condition of the oil and any potential problems found. This report often includes recommendations for maintenance or further investigation.