

FROM FLUID TO FRICTION: HOW OXIDATION WRECKS LUBRICATION

One of the most important factors in machinery health is **lubrication**, and the **viscosity** of your oil plays a major role. So, what happens to viscosity when oil **oxidizes**? The answer: **it increases**—and that's a problem.

Oxidation is a natural chemical reaction between oil and oxygen, accelerated by heat, pressure, metal catalysts, and time. As oil oxidizes, it begins to form **acids, sludge, and varnish**. These byproducts thicken the oil, causing its viscosity to rise beyond the manufacturer's specified range.

While thicker oil might sound like extra protection, it can actually do the opposite. **Increased viscosity** can reduce flow, restrict lubrication to tight tolerances, and cause overheating, wear, and premature failure. It also puts more stress on pumps and increases energy consumption. Equipment designed for a certain viscosity simply doesn't perform the same when that property changes.

Monitoring oil oxidation and viscosity is essential for proactive maintenance. Techniques like **oil analysis** and **infrared spectroscopy** can detect changes in chemical composition and viscosity, allowing teams to intervene before serious damage occurs.

- Bottom line: when oil oxidizes, it doesn't just age—it transforms. And if left unchecked, it takes your machinery health down with it. Always keep an eye on your oil's condition.

