# Preventive & Predictive Maintenance Extend Equipment Service Life

Within a complete maintenance program, preventive and predictive maintenance strategies complement one another. Individually, they each involve regularly scheduled maintenance tasks that extend equipment life and maximize reliability. But together, they combine regular inspection procedures and observations with enough fluid testing and analysis to identify problems and schedule the downtime for correcting them before it's too late.

Preventive maintenance procedures are those scheduled, routine tasks, such as oil and fuel filter replacements, belt and gasket checks, oil analysis and lubricant changes. Scheduling these tasks at set intervals can prevent unnecessary equipment failures.

Predictive maintenance practices utilize a "condition-based" approach to determining when maintenance is warranted taking into consideration equipment application and operating environment when reviewing test results.

For example, an engine manufacturer may recommend 15,000 miles between oil changes. Fleets hauling heavy loads only short distances or the constant stop-and-go routines of many captive fleets could overextend the lubricant's suitability for continued use if taken that far between oil changes. If oil analysis results show that the oil is no longer able to perform at a level that maintains optimal, safe equipment operation, a decision is made to schedule the unit for time out of service to change the oil.

A truly predictive approach to maintenance identifies abnormal equipment or fluid conditions in their earliest stages so equipment can be scheduled for maintenance before small problems become bigger failures that result in unnecessary downtime and losses in production.

It is important to note, however, that predictive maintenance practices should never replace preventive measures, which include too many routine system and component checks that can extend equipment life and prevent costly failures. Eliminating routine actions like fluid level checks, chassis greasing, monitoring coolant levels and degradation and checking cooling system performance would adversely affect equipment life expectancy.

Equipment warranties are also often based on compliance with the OEM's recommendations for regular service intervals, which typically require a series of maintenance tasks that help prevent abnormal wear and contamination from occurring. Oil analysis can identify minor wear and contamination issues OEMs deem out of character for normal use.

## Basic Oil Analysis

Basic testing identifies changes in lubricant properties caused by contaminants, such as fuel, coolant, dirt, wear particles and glycol. It also monitors additive levels to determine when “lube mixing” has occurred. It includes metals and elemental analysis, viscosity, water, fuel dilution, soot, glycol and oxidation/nitration.

These basic tests, along with actionable maintenance recommendations from experienced laboratory analysts, allow fleet managers to make informed maintenance decisions that save money and improve equipment reliability.

## Standard Oil Analysis

Standard testing determines a lubricant’s suitability for continued use and confirms that oil change intervals are sufficient. This level of testing adds TBN (total base number) and TAN (total acid number) to the basic test slate. Laboratory recommendations also take operating environment and driver behavior into consideration. Safely extending drain intervals can mean substantial savings in lubricant and labor costs – the larger the fleet, the bigger the savings.

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