Motor Oil Test Tells Much About Engine

By Norm Hudecki

Used motor oil is not useless motor oil. In fact, the used, drained motor oil from one's vehicle can prove to be as valuable as the "fresh" motor oil put in a car or truck.

By testing a small sample of one's used motor oil, motor oil engineers and technicians can detect various defective and/or deteriorating parts in an engine, among other things. This engine "blood testing" is a service offered by some motor oil manufacturers, such as Valvoline, to fleet customers. In addition, oil analysis kits have sprung up in some retail outlets across the country.

Regular sampling intervals greatly aid in detecting the deterioration rates of engine parts, and it can increase the chance of catching an engine failure before it causes expensive and time-consuming repairs.

Ideally, the best time for "blood testing" an engine is every time the oil is changed. A used oil analysis is also recommended 10 to 15 hours after any major repairs or transmission overhauls.

Over the years, used oil analysis has been adapted to all facets of equipment operation, and its reputation as a reliable diagnostic tool has been established. Here's how the test works:

As an engine operates, microscopic particles of metal are worn from each of the surfaces that rub against each other. These particles become suspended in the lubricating oil.

Abnormal wear creates more particles than usual. An analysis of the lubricant will reveal this abnormal rate of wear particles and a determination can be made of which surfaces are wearing.

The presence of metal traces in engine oil samples indicates wear at specific points in various engines. How serious this wear is can only be evaluated on a case-by-case basis, depending upon the engine model from which the sample comes.

But the detection and defections of metals are not the only data generated by used oil analysis.

These tests can also measure viscosity usage and readings. For example, an analysis which gives a high motor oil viscosity reading generally indicates too long of an interval between oil changes.

Such readings may be caused by the presence of lead salts in the gasoline, soot from the diesel engine, or possibly a high engine operating temperature.

Low viscosity readings may be a result of oil contamination by unburned fuel or the addition of a quantity of lower SAE grade oil to the original oil fill.

Other things these tests can tell is whether one may have an intake manifold leak, a dirty air cleaner, improper ignition or a leak in the cooling system, i.e., a cracked cylinder block or a poor head gasket seal.

The full benefit of a used oil program is dependent upon two interpretations — the analyst's and the customer's.

The analyst can make recommendations based on his experience and the lab tests. The customer, on the other hand, is more familiar with the "tested" vehicle and its daily use.

Weighing the analyst's recommendations with one's knowledge of the vehicle and operating conditions makes the "blood testing" of one's car much more meaningful and effective.

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