Oil Analysis Tests

Oil analysis tests were first used by the military to help predict and prevent unexpected equipment failures. Equipment reliability is especially important in a combat situation. You don't get to call a time out when the tank you're riding in spins a bearing.

It didn't take long for large civilian fleet operators to see the value of these tests. They found oil analysis to be a convenient way to extend their equipment maintenance intervals, while keeping an eye on internal engine wear. During the oil embargoes of the 1970's, some fleet operators were able to stretch the oil change intervals on their over-the-road equipment to

as much as 100,000 miles. Cutting down on the number of 40-quart oil changes kept the accountants happy.

The price of oil seems to have stabilized in recent years, but there are still good reasons for using oil analysis. Testing is now being used in all areas of equipment maintenance, including passenger cars. The cost of individual testing has come down, and some firms are now offering convenient mail order testing services. Oil analysis could be useful to you and your customers in several ways. Here are a few examples:

• Determining Correct Oil Change Intervals

Most manufacturers have extended their recommended oil change intervals. As a result, many people are convinced that they don't have to do anything besides put gas in their cars. Even owners who do follow the recommended maintenance schedule are probably waiting too long between oil changes. An oil analysis test will give your customers a better idea of what's floating around in their oil and should help convince them to change it more frequently.

• As A Maintenance Follow-up

If you were able to convince one of your customers to start changing his oil on a regular basis, run a follow-up analysis test to show him that the oil changes are really doing his engine some good. After that, a test done once a year as part of a major maintenance service gives the customer a written report on his engine's internal condition.

• As An Early Warning System

Oil analysis can detect small problems before they have a chance to become bigger problems. Above average amounts of metal; or the presence of any water, antifreeze, or unburned fuel in the oil can be detected before they have a chance to do any serious damage. Catching a problem before it strands the owner or destroys his engine makes you the hero.

• As A Diagnostic Aid

Mr. Deferred Maintenance waited until his engine was clanging and banging before he darkened your shop door. You know that his engine is going to have to come apart, but you're not sure what internal parts might be damaged. An oil analysis test will identify the metal particles in the oil, giving you and your customer a good idea of the extent of the damage before the engine is torn down.

• As An Engine Repair Follow-up

Oil analysis can also be used after a major engine overhaul to verify proper engine break-in. A sample should be taken after about 10 to 15 hours of engine operation. If proper clearances were maintained during assembly, the oil sample should be clean as a whistle.

• Settling Warranty Claim Disputes

The fine print in many extended warranty contracts requires that the owner provide proof of regular maintenance when making a claim. The owner in the previous situation claims he has an extended warranty contract, but can't seem to find the receipts to prove that he's changed his oil regularly. Some extended warranty companies are now using oil analysis tests to settle that old argument: Who pays, and who doesn't.

• Before Buying Or Selling A Car

Your customers are probably already asking you to check over used cars that they are thinking about buying. Oil analysis is just another tool to help give your customers a fair appraisal. A customer who is getting ready to sell his car might also consider having his engine oil analyzed as proof of his conscientious maintenance.

Testing Procedure

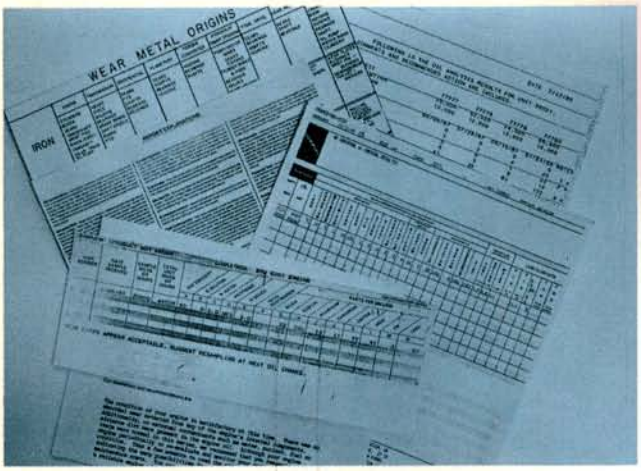
The testing labs provide a questionnaire with each oil sample kit. They need the following information from you to help interpret the test results:

- Total odometer miles
- Miles driven since last oil change
- Make, Model, and Year
- V.I.N.
- Oil Brand and Grade used during last oil change
- Average oil consumption per 1000 miles
- Type of fuel used

As an engine operates, microscopic particles are worn off its metallic parts due to friction, heat, and normal wear. The particles become suspended in the engine oil and most are trapped by the engine oil filter. The rest of the particles keep circulating in the contaminated engine oil. A sample of this contaminated oil is collected, either through the dipstick tube, or when the oil is drained during an oil change.

The suspended metal particles in the sample are identified by the testing lab using an instrument called a spectrometer. A small amount of the oil sample is burned by exposing it to an electric arc. Each of the elements present in the sample burns at a different characteristic frequency. The spectrometer is able to identify up to 19 different metals using this method. Further tests determine the quantities of each element measured; either in parts per million, or as a percentage reading.

Other tests are used to measure the presence of non-metallic contaminants such as water, fuel, solids, or potassium. Some metallic particles and other contaminants will always be present in used oil. The testing lab's job is to determine what they consider normal or abnormal for the tested vehicle.



We mailed used oil samples to several analysis programs for testing. Each lab's questionnaire required nearly the same basic information on the tested vehicle. In return, the labs gave a detailed explanation of what the oil was tested for and what their tests revealed. All testing programs stated that the owner (or you) would be contacted if a serious problem were detected during testing. Test results were received from all the analysis programs within ten days by return mail.

If you plan on doing a lot of testing, an oil siphon pump is a convenient tool. The oil sample can be drawn directly into the sample bottle, ready for mailing. The pump also lets you take test samples between oil changes. Be sure to warm the engine first. If the sample is taken during an oil change, allow about half the oil to drain before collecting your sample. The heavier sludge that normally collects at the bottom of the oil pan won't provide an accurate sample.