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Oil analysis

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Dan Lazin, owner of Advanced Automotive in Cambridge, Ont., checks the report on an oil sample for a troublesome 2001 Ford F550 Super Duty truck. The answer he was looking for was in the analysis.

Analyze *this*

Oil analysis tells 'the real story' of what's going on inside an engine... and now you can test it in your own shop and get a report in a matter of minutes.

By Allan Janssen

Oil analysis has been used as a predictive maintenance and diagnostic tool by heavy industries for decades.

But as the average age of North American vehicles continues to climb, and as analyzers become even more powerful and compact, it's becoming a valuable tool for auto repair shops as well.

It's not the kind of service you would recommend at every oil change. But for vehicles nearing the end of their useful life or facing ailments that are hard to pin down, oil analysis could be just the thing to build customer trust and solve difficult problems.

"Once in a while it makes sense to take a really close look at the oil," says Dan Lazin, owner of Advanced Automotive in Cambridge, Ont. "It will tell you the truth every time. And it won't sugar coat it either."

He says an oil report had some hard truth for one of his customers, recently. The vehicle, a Ford F550 Super Duty truck, had experienced problem after

problem after a new motor was installed at another shop. An analysis showed that when the new motor was put in, it was filled with 80-weight gear oil.

"That's like maple syrup!" says Lazin. "No wonder it had problems! That oil was so thick it couldn't circulate properly, which wouldn't let the fuel pump run, which led to a ton of issues."

The analysis, by WearCheck Canada, also revealed fuel and coolant in the oil, and a wide assortment of metallic debris.

"That analysis gave us a more accurate picture of what was going on," he says. "If they had continued to drive that truck, they would have destroyed it!"

Oil analysis can consist of a number of tests, including spectrometry, viscosity analysis, dilution analysis, water detection, acid number assessment, base number assessment, particle counting, and microscopy.

Whatever the test, the critical factor

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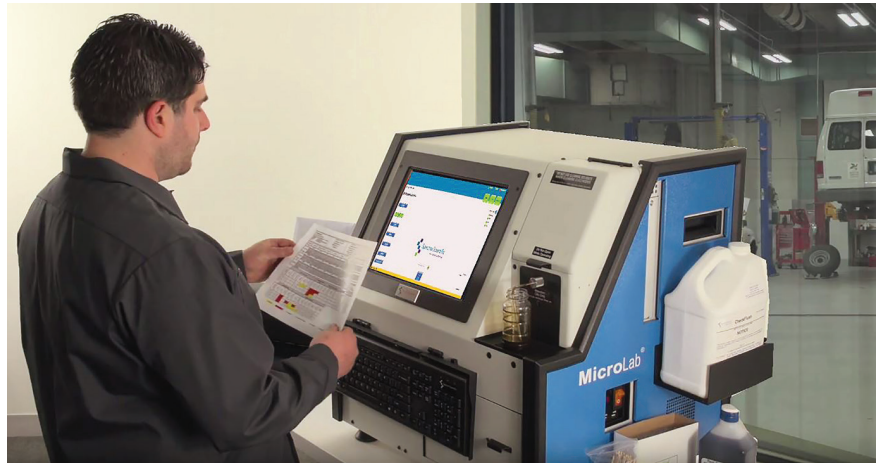
Harleen Sharma, chemical lab technician at WearCheck Canada, begins testing on samples sent in by clients.

is the interpretation which involves an assessment of the vehicle's wear state, level of oil contamination, oil condition, and recommendations on corrective maintenance actions.

Although many testing units were designed for heavy truck fleets, at least one, by Massachusetts-based Spectro Scientific, is designed specifically for auto repair shops, quick oil change facilities, and fleet repair shops. Its fully enclosed MicroLab tabletop unit is about as easy to use as an ATM, and offers a full analysis within 15 minutes.

The company leases the machines out on two- to five-year contracts, setting it up, maintaining it, and supplying all the consumables. Its repair shop customers must hit a minimum number of tests per month, and they pay a set amount per test (anywhere from \$25 to \$35 depending on volume).

Bob Wopperer, the company's vice president of business development,



The MicroLab unit from Spectro Scientific, offers instant on-site oil analysis for automotive repair shops and fast-lube facilities.

says instant oil analysis could be a boon for independent repair shops.

"This becomes a fairly straightforward purchase for someone who has a very old vehicle," he says. "I would liken it to selling alignments. If you're going to invest in a new set of tires it's

a good idea to do an alignment so you don't burn through them. This is a similar type of sell."

One of the first MicroLab users – a seven bay shop in Bloomington, Ind. – sells the oil test for \$90 each. Shop owner Mike Phillips calculated the

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price as an attractive alternative to pulling the head off and doing a top-end inspection.

“He figures an engine or transmission oil analysis is worth about an hour’s shop labor,” says Wopperer.

Typically failures fall into three categories: the oil itself is exhausted to the point where it is no longer protecting the engine, there’s an unacceptable amount of dirt in the oil, or there are bits of worn engine components and other fluids in the oil.

“That’s where the real diagnosis comes in,” says Wopperer. “If the unit detects elevated levels of iron and aluminum and it knows what kind of vehicle it is, it can figure out what engine part may be wearing down. You might have piston material in the oil. Or bearing material. The machine takes all the data, analyzes it, and makes suggestions for action.”

He says the most popular use for analysis is in determining if an aging vehicle is on its last legs or if it will last a few more years.

“A good mechanic can look at the brakes or suspension and test the electrical system but the two things that are the most difficult to assess are the engine and the transmission,” he explains. “That’s where the oil analysis comes in and becomes very useful. You can quickly assess if that component is in good working order or if it has some serious problems.”

That’s exactly what happened to one of Lazin’s customers.

“It was shifting a little funny so we checked both the engine and the transmission. The engine came back fine. But the transmission was flagged for a bunch of things,” he says. “The copper, lead, and tin contamination were severe, and there was also severe clutch disk wear and oil cooler leaching due to corrosion. That transmission was gone and the vehicle wasn’t worth fixing.”

Gloria Gonzalez, sales and customer support manager for Burlington, Ont.-based WearCheck Canada, says coolant contamination is one of the biggest red flags an analysis will produce.

“When you find coolant where it’s not supposed to be, that’s a very big concern,” she says. “As soon as you have coolant, you know you’ve got a leak somewhere. Usually it’s in the head gasket, and that’s not an easy fix. You have to take the engine apart, and that’s a lot of work.”

She says oil analysis is an option for forward-thinking shops that want to offer an extra level of service to their customers.

Lazin believes that even if the analysis suggests the vehicle is beyond repair, the process still builds customer trust.

“If they’re driving an older car, they’re likely to replace it with a used car. They’ll need someone to maintain it, and now they know they can trust me. I’ve got a customer for life,” he says. “And even if they buy new, I know that eventually they’ll be back. I’ll be here for them when they need me.” 🇨🇦



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