Sample **sense**

The chemical contents of engine lubricant can reveal a lot about the health of an engine. Oil sampling should help ensure that minor problems do not become major – and potentially expensive – ones. Steve Banner reports

Oil sampling has to be carried out correctly, or the results are likely to be misleading, warns Exol Lubricants technical services manager, Robert Lundie. "It should only be done once the engine has been warmed up," he says. "That way, the lubricant will have been agitated and you will get a proper mix and a representative sample. Do not take your sample when the engine is cold," he explains.

His is a view shared by Andy Brown, automotive technical manager at Fuchs Lubricants. He adds: "I remember an occasion when a bus company was extremely concerned that its vehicles were generating excess soot. The samples it produced were analysed, a lot of soot was indeed present, and the bus, engine and filter manufacturers were plunged into a major investigation into the supposed problem. It turned out, however, that the samples had been taken after a weekend during which the buses concerned had stood idle. The engineer had simply opened all the sumps and taken the first bit of oil that trickled out. That was the worst-case scenario, as when oil has sat for two or three days, a lot of particulates will drop out and go to the bottom," Brown says.

When the bus company took samples from a warm engine, no soot was found. He concludes: "Whatever had caused the problem this operator was worried about, it was nothing to do with soot in the oil."

Lundie goes on to challenge a few myths about oil sampling, and what it can, and cannot, accomplish. He says: "Something it cannot do is differentiate between oils of the same type and specification from different suppliers. In other words, it cannot tell you if somebody has put our oil into your engine rather than oil from one of our competitors.

"Nor will it necessarily tell you if someone has made a mistake and topped the engine up with a small amount of gearbox oil – that won't be easy to spot. Although it will certainly tell you if gearbox oil has completely replaced the engine's usual lubricant," he continues.

"Sampling will, however, identify the presence of water, anti-freeze and fuel, as well as telling you if the viscosity of the oil is correct," states Lundie. AdBlue can be spotted, too. So, as Brown points out, can soot.

Lundie says that operators will often instruct the lab about what to look for. None of this will tell a fleet engineer how

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the contaminant got into the lubricant to begin with, but it will offer some significant clues. "Depending on what is found, it could indicate a looming problem with a bearing or maybe a leaking gasket," he says.

Adds Chris Wall, Total Lubricants UK marketing manager: "If you are picking up a lot of iron in the sample, then that could suggest that there is a cylinder lining, piston ring or camshaft problem." Its ANAC – ANAlysis Compared – oil sampling service uses a laboratory in Ertvelde, Belgium.

Sampling enables a fleet operator to catch a potential problem early; earlier even than the truck's own sensitive diagnosis systems. By the time the latter flags up an issue, the truck could have lost coolant or even be damaged by low oil pressure, Lundie points out.

But while a one-off test can help investigate a suspected fault, incorporating regular sampling into the standard maintenance programme provides other benefits. Brian Humphrey, OEM technical liaison, Petro-Canada Lubricants, says: "Testing is most effective when performed at regular intervals, as it will enable owner-operators to generate a performance database, and measure trends over time. If you have a detailed breakdown as to performance levels of your fleet, you can adjust as necessary and plan maintenance in advance."

But how regular is regular? Generalisations are difficult to make; the right frequency depends on the fleet and its duty cycle, Lundie replies.

"One approach may be to take a sample in advance of every service," he suggests. "Send it away and get the verdict back in time so that the technicians will know if there are any problems likely to need attention when the vehicle rolls into the workshop." Results can be returned by Exol in as little as three working days. A one-off sample tested under the Fluid Check banner costs around £20, but the price will fall depending on the number and regularity of the samples taken.

If a truck is on extended oil drain intervals, then it could make sense to extract a sample halfway through the drain period to ensure that the lubricant is performing as promised and will not need replacing prematurely.

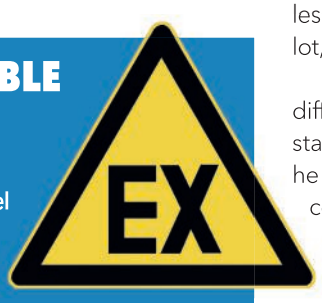
Analysis will tell you how long any lubricant will last, according to oil supplier Total, and that includes axle and hydraulic oil. It can also be used to predict how long certain components, such as head gaskets and air filters, will last. In so doing, it can call on comparative data from the results of over five million samples.

Belgian operators have certainly embraced the concept, Total reports. Among them is heavy haulier Martlé. Based in Knesselare, East Flanders, just 20 miles away from the ANAC laboratory, it runs some 30 Volvos and MANs along with a mixture of Nooteboom and Faymonville special transport trailers, and uses oil sampling.

Jean-Pierre Martlé explains: "Loads of more than 100 tonnes are not uncommon and the working conditions can be very varied. The distances can be short or long, the loads can be heavy or less heavy and the PTO may be in use a lot, or not at all."

This mixed duty cycle makes it difficult for the fleet to come up with a standardised maintenance schedule, he concludes. "By monitoring the wear coefficient displayed on every ANAC report, however, I can fine-tune the oil drain intervals to the operating conditions, which means the oil can be changed at just the right moment," he concludes. TE

DIESEL: NOW OFFICIALLY FLAMMABLE



Recent changes in legislation have raised the threshold of materials considered to be flammable to those having a flash point of up to 60°C. By raising the bar by five degrees, that designation now applies to diesel fuel, reports fuel storage system supplier Merridale.

This means that diesel is now covered by the Dangerous Substances and Explosives Atmospheres Regulations (*https://is.gd/ibakig*). Fleet operators with depot fuelling will need to carry out a risk assessment for explosion hazards, using the principles of hazard area classification (basically, they are organised by explosion risk). The site owner/operator must ensure that an explosion protection document is drawn up and kept up to date.

In particular, the standards require that electrical equipment in zones deemed to be hazardous must be suitably rated and certified. The basic protection methodology is set out in BS EN 1127.

FURTHER INFORMATION

'Liquid gold' – https://is.gd/huquxe
'Drop of the good stuff' – https://is.gd/ozemuq
'Reaching the parts' – https://is.gd/egoqum