

LUBRICANTS AND BIOFUEL

The search for renewable energies has been going on for some time. We have seen the use of ethanol and “non-mineral” diesel being used in conjunction with traditional fuels for a few years but without really looking at what the impact may be on the lubricant.

Looking quickly at ethanol.

Blends such as E5 and E10 (5% and 10% ethanol in fuel) petrols are readily available. These do not put any strain on the lubricant although the lubricant needs to have good anti-rust properties to handle any increase in water generated in the combustion process. Fuel dilution is not much of a problem except that water is soluble in ethanol so more may be carried through to the sump. There have been E5 and E10 diesel fuels as well but they are rare.

Biodiesel however is more of an issue.

B5 and B10 are common overseas with some B20 and very occasionally, B100.

The “bio” is the ester part. These esters are made from a chemical process where vegetable oils or animal fats are reacted with an alcohol to form a fatty acid methyl ester (or FAME). The common vegetable type oils are canola oil, palm oil and soybean. And you can also make it from corn, olive and sunflower oil. Even used cooking oil is a good source once refined.

Biodiesel has some issues that mineral diesel does not have.

Fuel dilution is always a problem with diesels. But biodiesel is less volatile. Hence, while the mineral component may evaporate, the “bio” part does not. This of course lowers the viscosity of the oil. However, to counter that, the “bios” are not as oxidatively stable so the oil thickens again – but with the usual oxidation by-products occurring (but worse) such as sludge and increased piston deposits. So the combination of the two factors can impact engine wear. Poor quality biodiesel may also lead to ash build up in diesel particulate filters and work is continuing on that factor. In Europe and the USA, there are tight specifications for the “bio” component to ensure that overall fuel quality is not compromised. So simply blending your old cooking oil with your fuel is not a wise option.

While many OEMs accept B5 diesel, recent work has found that even that 5% dilution can have a major impact on oil life and that lubricant selection will be critical. In modern engines that require low SAPS oils, the low SAPS oils seem to be able to handle B5/B10 blends better than other grades (so *Enviro+* Engine Oils and Diesel SP are favoured). In older engines, little work has yet been done, but products such as HPR Diesel 5, Diesel GS and Diesel LA would be favoured here.

Current practice recommends standard oil drain intervals be halved when using biodiesel regardless of the oil type and that is certainly the stand that Penrite will be taking while research continues.