



X-1R Global Ltd

To: All X-1R distributors From: Nigel (Mac) McKenzie

Cc: Date 1st December 2015

Subject: Impact of X-1R on Euro 5/6 Diesel Particulate Filters (DPF's)

Governments around the world have recognized the health threatening and harmful effect of diesel powered vehicles exhaust fumes and as a result have mandated the use of fuels with ever lower polluting properties, you may know this as Euro 5 or even Euro 6. The battle goes as far as the engine oil where and as you may already know, LOW ASH or LOW SAPS engine oil is designed to prevent certain oxides reaching Diesel Particulate Filter or DPF (which handles particulate matter/soot). (SAPS stands for Sulfated Ash, Phosphorous and Sulphur).

When engine oil contains certain metals, phosphorus and sulfur, these elements burn to create solid metal oxides, ash etc. which gets into fuel (certain amount always gets into fuel) and thereafter the exhaust gases. These metal oxides, ash increases load on DPF which now needs to filter out additional material. That decrease life of DPF or reduces its regeneration and maintenance interval. In addition to that additional SOx gases (Sulfur Oxides) are produced which gets into environment creating more pollution (emissions).

So reducing metallic compounds, sulfur and phosphorus in engine oil helps in complying with emissions and load on DPF is also reduced to filter sulfated ash/metal oxides. Replacing of a clogged DFP on some of the larger SUVs can be a very expensive prospect by the way.

One of the major contributor to sulfated ash is a class of compounds called, ZDDP (Zinc dialkyldithiophosphates) which acts as an Extreme Pressure and Anti-Wear agent. There are other anti-wear/EP agents which contain sulphur, phosphorus or metallic compounds. In making low SAPS engine oil, the amount of these compounds in engine oil is reduced which makes oil more environment friendly (and DPF friendly), however downside is loss of anti-wear/EP properties. So these low SAPS oils need to have alternate Anti-Wear agents which would not contribute to ash.

X-1R Engine Treatment does not contain ZDDP or any other metallic compound. Even the antioxidant, rust, corrosion inhibitor in our formulation is ASHLESS. So adding X-1R engine treatment in low SAPS engines oil will not contribute to formation of any sulfate ash and hence will not increase load on DPF. In fact the use of X-1R has been demonstrated to dramatically reduce the amount of pollution and in particular the particulate contamination and thus will actually extend the life of the DPF and will certainly not contribute to sulfated ash, Particulate Matter (PM), SOx and NOx. So we are good with the use in low SAPS engine oil and maintain its environment (and DPF) friendly profile.

Further to this we have demonstrated in previous reports how the use of X-1R Diesel Treatment as diesel fuel additive, it will actually reduce Particulate Matter/Soot to >64% (while idling). So this will also increase DPF life by reducing load on it or increase its regenerative interval because DPF needs to handle less soot/PM. Diesel Treatment is again ashless (contains no metal). (ref: the SDGE report on AUTOMOLOGY)

In near future, we will come-up with a tech bulletin showing benefits of engine treatment in newer/modern engine oils and extending life of pre-exhaust devices such as DPFs.

Nigel McKenzie
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