



Added value

With a range of fuel additives and lubricants available for the spread of vehicles on a transport engineer's fleet, it is sometimes difficult deciding which to use. Steve Banner seeks clarification

Given the number of so-called miracle products that have sprung up over the years, promising major reductions in fuel consumption, but actually falling short of the publicity blurb, it is scarcely surprising that fleet engineers tend to be wary of aftermarket additives and gizmos.

A minority of products do appear to deliver what they say on the tin, however. Stagecoach, for example, has been employing an additive called Envirox, sourced from Energenics in its UK buses for over six years, and reports a fleet-wide reduction in fuel consumption of 5%. And, in the first five years of Envirox being used, the operator estimates that this improvement equates to a CO₂ emissions reduction of more than 100,000 tonnes.

That is impressive. So it should be no surprise that, last year, a new three-year supply deal was signed between the two companies – which is welcome news for Energenics, given that Stagecoach runs more than 7,000 buses in Britain alone. And Envirox has also been rolled out to Stagecoach's operations in North America, too.

All in the detail

How does it work? Used to dose the diesel delivered in bulk to the operator's depots, Envirox contains cerium oxide, a rare earth metal widely used in catalytic converters as an oxidation catalyst. This has been re-engineered, according to Energenics, using nanotechnology, to allow it to be delivered as a fuel-borne catalyst.

The result: it ensures a cleaner burn within the combustion chamber, says Stagecoach. "Using it adds to the cost of your fuel by up to 1%, but that has to be balanced against the improvement in fuel economy," states Energenics Europe chief

executive officer Mike Attfield. "It has no impact on NOx, but it does on certain other emissions. Particulates, for example, are down by 15%, as are unburnt hydrocarbons."

Attfield also insists that using Envirox will not place a vehicle's warranty in jeopardy. "There is no evidence whatsoever that it damages the engine," he states. "Stagecoach buses have covered an enormous mileage, without suffering any harm. The particles it contains are about one hundredth of the size of the peaks and troughs you see on a metallic surface under powerful magnification," he adds, pointing out that the Eolys additive, used by Peugeot in its vehicles, is similar to Envirox.

So why aren't the oil companies using Envirox in diesel already? Because they are innately conservative, suggests Attfield. Additionally, perhaps, because they may find it difficult to get to grips with the idea of adding a rare earth metal to fuel. That said, another major bus fleet, whose identity has yet to be revealed, is also running a year-long trial of Envirox in four of its depots, says Attfield. Further, it has already been adopted by Bath and North East Somerset Council.

Buses and council vehicles almost always return to the same depot at night, of course, which is an obvious advantage, if you are using a bulk tank additive. "We offer Envirox in a bottle for drivers to pour into their vehicles when they're away from home base," contends Attfield. "But getting them to do so isn't always easy," he agrees.

Other alternatives

Two different products that could be worth investigating are Eclipse, an additive from Millers Oils, and the Fitch fuel catalyst from Fuel Harmonics. Tested at Millbrook Proving Ground, the

former is a cetane booster and detergent, capable of improving mpg by up to 5% through enhanced combustion efficiency, according to Millers.

“What we’ve done is provide operators with some of the benefits of a premium diesel fuel that might retail at 5p to 10p a litre more than the standard products,” reveals technical director Martyn Mann. “However, our package will, in effect, only cost them 2p to 2.5p a litre more.”

Meanwhile, the Fitch catalyst is a polymetallic amalgam catalyst that can be dropped into the vehicle’s fuel tank or fitted in-line as a pre-filter, working on the aromatic hydrocarbon content of the fuel. “It gives you a higher cetane rating, better fuel lubricity and reduced benzene emissions,” insists Tim Rhodes, Fuel Harmonics’ MD.

Rhodes states that tests, also carried out at Millbrook Proving Ground, show that the catalyst can achieve improvements of 1.8%, if a vehicle is undertaking motorway work, rising to 3.8%, if it is trundling around the suburbs, and peaking at up to 5.8%, if the vehicle spends most of its time grinding through congested city centre traffic.

Costs for this fuel catalyst – which should last for 800,000km – are around £400 to £1,000, depending on the size of the engine. So why don’t truck manufacturers install it as original equipment? “Because we’re trying to sell a chemical product into an engineering environment,” believes Rhodes. Both Mann and Rhodes stress that what their companies have to offer will, again, not nullify vehicle OEM warranties. “We’ve never had an engine failure,” the latter states.

Meanwhile, Chevron is about to introduce a fuel additive that will clean the engine’s injectors and improve combustion, says European marketing manager David Spence. He

believes that internal injector fouling may be becoming more of a problem for operators, possibly partly as a consequence of tighter build tolerances, meaning less play between moving parts – although truck manufacturers active in the UK say they have yet to see any solid evidence that this is the case.

However, while contemplating the various fuel additives and catalysts on offer, fleet operators will also have to determine which lubricants are likely to be most effective, once the Euro 6 emissions regulations begin to make an impact. Most truck, bus and coach manufacturers appear to be favouring a combination of SCR (selective catalytic reduction), EGR (exhaust gas recirculation) and an advanced particulate filter to reach the required standard.

“Under those circumstances, what you’ll probably be looking at, in the majority of cases, are highly-refined Group 2 and Group 3 mineral oils,” says Spence. “They are less expensive than pricy full synthetics and, unlike Group 1 oils, they are low-SAPS.”

In other words, they are low in sulphated ash, phosphorus and sulphur. Fail to use a low-SAPS lubricant in a vehicle with a particulate filter and the filter will become clogged.

“It’s likely that you’ll end up using a low-SAPS 10W-40: maybe a 15W-40, in some cases,” suggests John Cranshaw, technical manager at Fuchs Lubricants. “But the reality is that the changes will be slight,” says Robert Mainwaring, technology manager, industry liaison and OEMs at Shell. “Lubricants have been designed with particulate traps in mind for the last 10 years.”

Nevertheless, concerns that Euro 6 could result in a rise in fuel consumption may lead to more widespread use of low-viscosity lubricants, such as Shell’s 5W-30 Rimula R6 LME, to combat any increase. “5W-30s tend to be more expensive to make than 15W-30s and 15W-40s, though, because of the base oil mix used,” advises Spence.

“We could even see a move towards 0W-30 oils,” adds Mann, who suggests that a medium-SAPS lubricant could be acceptable for some commercial vehicle applications.

“We’re already seeing 0W-30s in the passenger car market and it’s likely that heavier vehicles will follow the same route.”

Be warned: that could result in reduced drainage intervals – a potentially worthwhile trade-off, if the fuel economy figures stack up, maybe? **TE**

Stagecoach has reported a fleet-wide reduction in fuel consumption of 5%, thanks to the additive Envitrox

