Oil to burn

There may be a welcome respite with the last few months of falling diesel prices, but don't be fooled: it won't last. Ian Norwell looks at some fundamentals of keeping fuel costs under control

It's the geopolitical energy landscape that's behind currently reduced prices at the diesel pumps. The rush for fracking (hydraulic fracturing) in North America, for example, is about attempting to assert its independence from traditional oil suppliers in the Middle East. But this may yet turn around and bite the US, with OPEC (the Organisation of Petroleum Exporting Countries) deciding not to constrict supply – its traditional device for keeping prices up.

It's a game for high rollers, where the stakes couldn't be much bigger. Indeed, some companies that joined the fracking bonanza, specifically in Texas, are now staring at bankruptcy because their fiscal mapping was not based on $50 a barrel, or even close. Indeed, at the time of writing, diesel prices in the UK have dropped 30.8% in 12 months. That's great news for fleets, but not so good for producers or retailers (see panel overleaf).

As for truck fuel efficiency, a lot of work is done long before fleet managers get involved. Truck, trailer and component manufacturers don't need legislation to drive CO_2 reduction. Bonded by chemistry to diesel consumption, it's also welded to competitive advantage.

ENGINEERING INNOVATIONS

So nowadays you can pick up a composite camshaft on a production line – just a tube with shrunk-fit lobes, not a cast and milled solid – and marvel at how light it is. And it's a similar story with rock-hard cgi (compacted graphite iron) engine blocks, and part-time energy-saving alternators and compressors. Fuel-saving engineering innovations are everywhere.

So where exactly can fleet managers make a difference? Many make their own choices on lubes – but for Euro 6, a fully-synthetic, low-viscosity oil is the recommended route for longevity and maximised service intervals, but also reducing churning losses. That being the case, the advent of a 0W-20 lube from Petronas makes sound engineering sense, certainly to Iveco, where it is now standard factory fill. But others have yet to limbo this low.

Martin Flach, product director at Iveco, explains that current methods of engine construction have opened the door for it. "While Iveco has been developing Euro 6 engine ranges, we've also been refining tolerances, too. The manufacturing criteria of piston rings, valve seats and seals, and all the major moving internals, are now a lot tighter than they were 10 years ago," he says. "The 0W-20 Petronas oil we now use would have spelled problems for engines a few years ago, but today it's an energy saver," he adds.

The only caveat: 0W-20 may not be a suitable grade for operators of trucks that habitually work in temperatures of 50°C ambient. That said, it does make sense that lower viscosity oils offer less resistance to moving parts, and so waste less fuel energy. There's a spin-off benefit for other components, too. Starter motors and batteries – well up the top-of-the-pops list for roadside assistance crews – will also benefit from

not having to expend as much energy turning over cold, viscous fills on frosty Monday mornings.

But there's more to fuel saving than correct oils. We all know the value of good tyre husbandry. Pressure monitoring and axle alignment are de rigueur for any efficient fleet workshop, and there's plenty of advice from the big tyre brands. But in the hunt to give customers added value, Michelin Solutions is one going the extra mile and including a service that guarantees to improve fuel performance.

"We're moving ahead with 22 UK fleets and are about eight months into the process," states Paul Davey, commercial director for Michelin Solutions. He concedes that accurately establishing a fleet's operating baseline is essential before promises can be made. However, he also explains that this is about looking at far more than tyres – including, for example, driver behaviour, using its own (Atos Worldline) telematics. Acknowledging the complexity of fleet operations, the initial audit period is three months, with trends pored over by Michelin's fuel analysts, but then follows the fuel guarantee contract.

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SMART SERVICES

This programme is called Effifuel and Davey says Michelin Solutions will absorb more areas of influence as time goes on, with aerodynamics on the hit list. Positioning itself as more than a tyre provider, Michelin Solutions may be cleverly taking little risk here. For operators who look with bewilderment at the array of services and promises on the market, such a multi-faceted, win-win consultancy service may well be attractive.

What about aerodynamics and wind-cheating bodywork? It is surprising that so many poorly adjusted and/or specified air management kits are still plying the motorways. Aerodynamicists calculate that a honed air management policy on combinations covering 150,000km a year can be worth up to £50,000. And that's per truck, so fleet managers could be missing a trick by only adding aerodynamic interventions to their standard trailers.

That said, you need to consider fuel efficiency with intelligence. Simply striving to push your fleet into the 10-miles-per-gallon club may be a great objective, but that success could be fool's gold if the litres per tonne/kilometre are under par. Buffaload Logistics carries a significant proportion of the Co-operative's fresh inbound product, and delivers to nine UK distribution centres. Using Gray & Adams' temperature-controlled double-

Smart components

There are several fuel-saving developments in the pipeline from truck and component makers. Engineers are bent on increasing the relatively few ergs converted from diesel burning into kinetic energy, currently 11%. Dr Christian Wiehen, chief technology officer at Wabco, sees enormous potential still untapped. "Component weight reduction gives a direct payload benefit, and the savings we are making are not trivial," he says. And he points to the firm's next-generation 'h-comp' high-output compressor, which is fabricated from aluminium and weighs half that of conventional units.

Beyond this, its new wheel end system combines less weight with reduced complexity for truck and trailer makers. An integrated system, it includes a light, high-performance, single-piston air disc brake, actuator, disc and hub. Wiehen describes it as a simplified blend of vehicle safety and efficiency, with a weight saving of "up to 10%".

As for energy saving, Wiehen says: "Auxiliaries like our air compressors can be controlled per demand profile, which saves the idling losses of fixed ratio/constant drives." He cites Wabco's c-comp, an air compressor that's disconnected from the engine by a friction clutch when air delivery is not required. Similar concepts exist for steering pumps and fan drives.

Wabco's other major research avenue is energy recuperation, and Wiehen sees big prizes lurking in cooling and exhaust systems. He's leading developments to convert waste heat into electrical or mechanical energy.

"This includes thermoelectric elements, which are still low in efficiency and costly, but also thermodynamic WHR [waste heat recovery] systems," he explains. "In WHR, for example, a medium is vaporised in a heat exchanger, driving a turbine or piston expander, which delivers power either directly back to the crankshaft, or to an electrical generator."

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deck trailers, with properly matched tractor-trailer airflow, fuel figures are only a little increased compared to conventional reefers.

So the big payoff is fuel productivity. With 44-pallet capacity, the double-deckers provide up to 66% more volume than conventional temperature-controlled trailers, cutting handling times, as well as reducing road miles and thus the fleet's fuel bill. "The Buffaload double-deckers ensure that best fleet utilisation and vehicle fill are achieved," says John Sabey, responsible for the Co-operative's third party primary contracts.

The litres per tonne-kilometre measure is where the 24 carat gold lies. But smoother shapes help everywhere. Some innovations like tail spoilers to control turbulence may need more legislative help, but with CFD (computational fluid dynamics) usurping the slow and expensive wind tunnel, aerodynamic technology is moving fast.

Next up on the quest for fuel savings, though, must be driver management and training. All the major truck manufacturers have their own telematics provision, be it home-grown – like Volvo's Dynafleet and FleetBoard from Mercedes-Benz – or contracted-in. DAF, Iveco and MAN have taken telematics from Microlise. But there's a plethora of small-name telematics providers that may be attractive for their sheer simplicity.

SIMPLE TELEMATICS

Les Smith Haulage, which runs a 30-strong Iveco and Mercedes fleet on UK-wide operations from Swindon, has taken such a view, eschewing the truck manufacturers' offerings. Fleet manager Nick Smith took a trial system from CMS SupaTrak and he's very happy. "We wanted a simple system that wasn't too expensive and not complicated. I'm not an analyst," he explains.

SupaTrak tailored a system for him that took in tacho data, tracking and driver performance. "I immediately saved money, and we can add to the system as and when we want to," says Smith. But there's no magic, as CMS SupaTrak marketing manager Kate Lloyd says: "The trial process is vital."

So where do the key elements lie? Telematics, tyre management and driver performance monitoring must be the top three. But have another look at your trailer aerodynamics – often the Cinderella of any business. Whatever the savings, all your efforts will come together for your bottom line. TE

Stand and deliver

Even with a temporary respite in fuel prices, it's still worth reminding ourselves who gets what. Large fleets with bunkering will blunt these figures, but the proportions remain the same.

When the Anytown Logistics driver pulled up at an average UK fuel station in mid-February to fill his **500-litre tank (115.1ppl**, variable**),** he paid **£575.50.**

Where did it all go?

£25.00 went to the fuel station for storing it safely, providing accurate, and near idiot-proof dispensing equipment, and retailing it.

£164.83 went to the oil company for finding it, digging it up, and transporting it to the retailer.

£289.75 went to the chancellor as fuel duty. He also received **£37.97** in VAT on the fuel, and (cute move) **£57.95** additional VAT on the fuel duty. **£385.67** is the total tax take.

Expressed as percentages, that's **4.3%** to the retailer, **28.6%** to the oil company and **67%** in tax. So who's wearing the comedy mask and pointing the flintlock?