There's certainly no shortage of green vehicles available to fleet buyers today. What matters, however, is knowing which alternatives might be right for your operation. Brian Weatherley investigates

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While there's no denying the growing demand for greener trucks and vans, all the manufacturers insist that the diesel engine will remain the primary source of motive power for years to come. Thus, the search is on for cheaper and cleaner ways to fuel those traditional power units – and dual-fuel trucks are among the options attracting increasing attention from both manufacturers and operators.

In October 2010, Eddie Stobart (ESL) took delivery of five pre-production Euro 5 Volvo FM13 dual-fuel (diesel/LNG – liquefied natural gas) tractor units for evaluation, from a batch of 22 for a Europe-wide trial. Phil Spittle, general manager compliance fleet for ESL, reports: "The evaluation enabled Volvo, ESL and Clean Air Power [CAP, the technology partner providing the factory-fitted conversion equipment] to assess the operational capabilities of the technology. Volvo then commenced supply of production dual-fuel FM13s for delivery in the second-half of 2012 and ESL ordered 20."

Spittle likes the fact that the dual-fuel Volvos are covered by a single factory warranty. However, he cautions common sense in their application. "The work done by our trucks varies," he adds, "but obviously it has to be planned around LNG availability. The motive for trialling dual-fuel is our wish to reduce carbon emissions and also to meet the carbon-reduction policies of our customers."

Following the announcement by the government-funded Technology Strategy Board early in 2012 of a competition for Low Carbon Truck Demonstration Trial funding, ESL, with BOC, successfully applied for infrastructure funding for its Appleton, Warrington, site. Under the scheme, the TSB funds up to 50% of projects aimed at building an LNG/CNG (compressed natural gas) infrastructure – the point being to promote take-up of LNG/CNG powered vehicles. "The project is currently in the final planning consent stage," says Spittle, who expects the move to have the desired effect.

Eddie Stobart has been successfully running five pre-production Euro 5 Volvo FM13 dual-fuel (diesel/LNG) tractor units

Cost of going green

As for which dual-fuel is best, Spittle reckons: "CNG lends itself to rigid vehicles, because there's space for larger tanks, whereas LNG is more suitable for tractors where chassis space is at a premium." And there are, of course, other choices – such as diesel-LPG (liquefied petroleum gas). But he continues: "Currently, the commercial case doesn't work [for us], as the premium for a new dual-fuel tractor unit is not offset by the lower price of LNG versus diesel. Unlike own-account operators, namely large retail groups, we can't simply buy carbon reductions."

That assessment is not universally accepted, though. For example, Howard Tenens' Catherine Crouch, group CRS director, has been working with Mercedes-Benz and Hardstaff (developer of the OIGI 'oil ignition, gas injection system') for the last three years on CNG-diesel. She explains that the company has now been

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running 12 of its latest dual-fuel Axors (tractor-mounted tanks) for several months, as well as 10 earlier conversions (trailer-mounted tanks). "CNG is 40% cheaper than diesel. So a realistic payback at today's conversion and fuel costs is three to five years, based on our mileage." And she adds: "On the environmental side, CNG substitution results in a 15% carbon saving and biomethane takes that up to 50% – as well as the improvements, in terms of NOx and particulates."

That said, Spittle believes there is still room for efficiency improvements and not just with the engines. "Operationally, LNG consumption, by displacement, is 70%. However, due to old technology, anything between 5 and 8% of LNG may be vented to atmosphere during refuelling."

That's where BOC's equipment and expertise comes in – the goal being zero losses at the new ESL/BOC filling stations, when they are complete.

As for operational issues with his dual-fuel Volvos, Spittle reports no technical problems, commenting only that R&M costs are higher, as services require diesel and LNG technical support, know-how and parts. And the only observation from drivers is that engine noise is lower. His view: this is going places. "With many other major names also trialling LNG conversions and OEM trucks, and installing LNG/CNG infrastructure, by the end of 2013 we'll have an informal network of refuelling points," he asserts.

He's probably right. In a separate development, Volvo and Shell have agreed to co-operate globally on introducing LNG for heavy-duty trucks. Based on Volvo/CAP Methane-Diesel technology and Shell's LNG expertise and infrastructure investments, the two companies say they will co-ordinate their activities aimed at growing the uptake of LNG in transport. Work has already begun, with the first stage focused on central Europe and the US. Watch this space.

Stepping up to a 100% gas power presents more challenges. But, for fleets with daily return-to-base routes, it's perfectly possible to remain within an operational comfort zone. Last year, for example, Coca-Cola Enterprises took on 13 gas-powered Iveco Stralis 6x2 rigids, delivering soft drinks in and around London. That move followed a successful year-long trial, during which CCE compared the performance of two Stralis 21-tonners, one running on CBM (compressed bio-methane), the other conventional diesel.

Cenex trails

The trial was organised in conjunction with Cenex, the government-funded Centre of Excellence for low-carbon and fuel-cell technologies. It proved that the CBM-powered Stralis was capable of delivering 60% savings in 'well-to-wheel' greenhouse gas emissions, compared to a normal Stralis, even with an EEV-compliant engine. Similarly, NOx and PM (particulate matter) emissions can be cut by 85% and 97% respectively. Equally important, during the trials, the gas vehicle's availability was an impressive 99.2%. CCE says its decision to invest in the 13 gas-trucks and a permanent CBM refuelling station at its Enfield

Volvo and Shell are co-operating on LNG for heavy-duty trucks, based on Volvo/CAP Methane-Diesel and Shell's LNG infrastructure

Scania and Siemens to pioneer electrified heavy trucks

Scania and Siemens have joined forces for a futuristic project that could see Sweden becoming the world's first country with electrically-powered heavy trucks and 'electrified' roads specifically for commercial vehicles. The concept is based around a diesel-electric hybrid, drawing power from either overhead wires or an induction system built into the road surface.

The goal is enabling trucks to run in a fully zero-emission mode while connected to the power supply. Nils-Gunnar Vågstedt, Scania's head of hybrid system development at the manufacturer's R&D centre, says end users will be "operators frequently running on certain routes, carrying heavy loads".

His view: "When, not if, electrification is a reality, systems for transferring high-power electricity to commercial hybrid vehicles will be seen mainly on the highways. Our future scenario is where urban [freight] transportation is made by electric hybrid plug-in commercial vehicles. When connected to the power wires, they will run purely electric. When off the power grid, they'll run in hybrid mode or using the battery."

But he adds: "Heavy commercial vehicles running on long distances will not be fully electric, as these vehicles need to be driven outside the power grid for parts of their operation. Moreover, the road network down to local streets will probably not be electrified in the foreseeable future."

While overhead cables have long been used to provide electrical power to urban passenger transport systems, an induction system built into the road surface could offer greater flexibility.

However, Scania has revealed photographs showing a Scania truck equipped with a rising pantograph. Vågstedt insists: "We do not favour any particular solution." And he continues: "We believe that all the techniques for electric power transfer should be competing to prove which of them, or all, will qualify.

"For us, it's important to establish standard interfaces, including installation, electric power levels and information protocols between the vehicle and the road system – no matter which technology is used."

Trials of the system are expected to begin in Germany sometime next year.

depot, "is testament to our confidence in this technology and our commitment to reducing the carbon footprint of our fleet".

Meanwhile, diesel-electric hybrids have also been attracting the attention of fleets running into inner cities. That's partly because the hybrid's electric traction motor provides the initial impetus during the launch phase, when the vehicle pulls away from rest – so saving fuel and cutting emissions before the conventional diesel takes over.

Eighteen months ago, Kent-based distribution specialist Lenham Storage purchased a 12-tonne Mercedes-Benz Atego diesel-electric hybrid for use on deliveries to Waitrose stores in central London. Operations director Andrew Fulcher reports general satisfaction with its fuel reduction to date. "We're saving between four and five litres a day and that's not bad," he says. However, the not insignificant additional cost of the Atego's hybrid drive means it will probably take longer than the usual five years for which Lenham keeps its trucks before it recoups the additional cost through fuel savings.

Nevertheless, Fulcher has no regrets: "Apart from the obvious green credentials, the prime driver for trying it was because it was the first hybrid available from Mercedes (Lenham runs an all-Mercedes-Benz fleet) and we wanted to dip our toe in the water."

Good experience

Maintenance is provided by local Mercedes dealer Sparshatts. "We've not had any issues with it at all," reports Fulcher. Indeed, so good was the experience that Lenham has now ordered three more Canter 7.5-tonne diesel-electrics, having run three diesel Canters since 2011. "We're looking to replace those with the hybrids, not least because the places they deliver to, in Central London, are very similar to those with the Atego," he explains.

Moreover, he reckons the Canter's already light chassis provides a better platform for a hybrid. "Putting the hybrid drive on it is not going to cause a great degradation in payload. Even with a curtain-sider body and tuck-away tail-lift, it still looks good. One of our customers is an organic food supplier and they're very interested in running one in their livery, because it goes into central London. It's a natural tie-in with their ethos."

While Fulcher acknowledges there are some unknowns with hybrids – including residuals and battery life – he remains happy. "The overriding direction for us has been to go greener, and reduce our CO_2 footprint." And, as if to prove the point, Lenham has also now won part-funding for a dual-fuel tractor trial in partnership with Waitrose and Howard Tenens.

What about electric commercial vehicles? The loss of Modec in 2011 meant that the choice of all-electric light trucks remains limited. Best known are Smith Electric's Newton and the Zeroed, from

Paneltex, both of which are based on modified conventional truck chassis, and have quoted ranges of 150 and 130 miles respectively. The Newton, equipped with a 120kW traction motor, is based on the Avia D chassis, rated at 7.5, 10 or 12 tonnes gvw. Meanwhile, the Zeroed is derived from a 7.5-tonne Isuzu N75.190 Forward, equipped with a 150kW motor. Both have lithium-ion battery packs, which can be recharged from flat in typically eight to 10 hours. UK operators that have so far trialled these all-electric alternatives include TNT and Orcado.

In parallel with the Green Bus Fund scheme, the government's Plug-In grant is providing van fleets with a fiscal incentive to run electric commercials. And there's the added bonus of exemption from VED and the London Congestion Charge.

Electric vans also got an unexpected boost when Renault's Kangoo ZE electric van was voted International Van of the Year 2012, beating off stiff competition from conventional models. And, although the latest crop of low CO_2 vans, based on conventional petrol or diesel engines, makes the higher price tag of electric vans harder to justify, even with grant aid, major van players still see a market niche for electric vans.

Iveco, Mercedes-Benz, Renault, Citroen, VW and Peugeot all have (or are planning) all-electric vans in their LCV portfolios. Nissan is the latest with its 100% electric van, the eNV200. And interestingly, based on a study by the firm, the electric van market may not be quite as niche as imagined. "Our Nissan Van Report surveyed 252 fleet managers and found that nearly half of drivers questioned [48%] are driving 100 miles or less per day," says a spokesperson. "[So] nearly half of drivers could happily use a Nissan eNV200, without having to compromise their daily routines. We see demand from operators being strong from day one."

Ultimately, the biggest barrier to greener vehicles – whether all-electric, hybrid, or alternative or dual-fuel – remains their additional cost. And, while there may be a growing desire among fleets to buy them, for the average operator it's the lack of folding-green that's the issue. As Martin Flach, product director at Iveco UK, says succinctly: "As always, the role of government and subsidies should be to kick-start change. But, if a subsidy only succeeds in creating a small pool of vehicles which, when they are life-expired, are replaced by diesel vehicles, it has failed. Subsidy needs to leave legacy." TE