# Diesel-Electric

**Operators with diesel-electric hybrids on their fleets – mostly PSVs, but some HGVs – are generally reporting success. John Challen looks at their experiences, and operating and maintenance choices for new vehicles**


**Above: Textile rental firm Clean Linen Services reckons it's making big savings on fuel, with a Fuso Canter Eco Hybrid 7.5-tonne box van Right: Arriva moves into technician training for its growing fleet of Volvo hybrids**

Now a familiar site on UK roads, especially on bus routes, hybrids appear to be fitting in well for those that have taken the plunge. Certainly, most PSV (public service vehicle) operators say the switch from diesels has been relatively straightforward. Even some in the lighter end of freight are reporting success. But with experience, some are also now reassessing operations, with an eye on efficiency and sustainability, and piloting alternative approaches to maintenance and support.

Most of the action has been around urban stop-start, back-to-base drive cycles, which suit the diesel-electric set-up very nicely. Hence the favourable verdict from bus operators, with increasing investment driven by funding from Transport for London, the Green Bus Fund and Bus Service Operator Grants (BSOG) – as well as local authorities' green agendas.

Arriva Bus UK currently runs the largest number of hybrid buses of any fleet in the UK, with 150 in London alone, as well as the 34 running in Birkenhead and 10 in Bolton. While its London vehicles have always been covered by a full manufacturer R&M contract, Lloyd Mason, engineering development manager at Arriva UK Bus, explains that the operator is now taking a different approach in the North West.

"In a departure from how we have looked after our hybrid buses to date, Arriva engineers at the Birkenhead depot will be responsible for carrying out servicing and maintenance," he says. "We see the time coming where our own technicians will need to engage with the hybrid system. So having the new vehicles in Birkenhead seemed the ideal time to bite the bullet."

### Energy intensive

Mason states that most of the training focuses on how to deal safely with the much higher voltages from the system – with course material coming from Volvo and accredited by the IMI (Institute of Motor Industry). "Our technicians are not required to work directly on the electric motors or the hybrid system itself, because that is still under warranty," he says . "But they are, for example, responsible for the interface between the hybrid system and Volvo's I-Shift transmission."

Hence, training has covered everything from dashboard warning lights – and their implications, in terms of fault modes and technician interventions – to diagnostic equipment. "We are anticipating that, if this programme works well and we don't have any

## Clean machine: Fuso Canter Eco Hybrid takes on diesel Atego

While buses have taken the lion's share of hybrid production, some operators – particularly in urban distribution – are claiming commercial, not just green, viability. One is textile rental firm Clean Linen Services, which reckons it's making big savings on fuel, using a Fuso Canter Eco Hybrid 7.5-tonne box van.

Clean financial director Martin Oxley says the vehicle, which handles collection and delivery work in London, is achieving 26–31 mpg, compared with 15–18 mpg on similar work by the operator's Mercedes-Benz Atego 7.5-tonners. As a result, the firm – which acquired the hybrid, with a box body by Wessex Vehicle Services, under CharterWay contract hire for 50,000km a year – has now ordered a second, identical unit from Rygor, in Reading.

Oxley says that the firm strives to be green but operates in a very competitive environment so has to be conscious of costs. "The fact that the vehicle also adds up from a business point of view is crucial," he comments. And he adds that the Canter's compact dimensions, manoeuvrability and five-tonne payload make it ideal for urban operations.

That payload is thanks to the light weight of its electric motor and lithium-ion batteries (which have a 10-year, unlimited mileage warranty), as well as the Fuso chassis. Mercedes-Benz also argues that these contribute to reduced wear and tear on the driveline and braking system than other, heavier vehicles in its gross weight class.

Clean operates some 40 rigid trucks with gross weights between 7.5 and 18 tonnes, the vast majority of which are Mercedes-Benz. "Of course, at 7.5 tonnes gvw, an Atego doesn't offer the same fuel efficiency or payload as the Canter Eco Hybrid, but it's a different type of vehicle," states Oxley. "While the Canter is spot on for city centre work, the Atego's higher specification and comfort make it better suited to medium-range operations."

unforeseen problems, it might be a model that we spread throughout the network as hybrids become more popular," says Mason. "As the pilot, Birkenhead will also allow us to compare efficiencies and costs with those in London, so we can make informed decisions on the best approach for the future."

**Hybrid developments**

What about the buses themselves? Arriva's supplier Volvo, which is currently responsible for 452 hybrid vehicles around the UK – also with Go-Ahead and First Group – has big plans for the sector, which include bringing on smaller operators. Volvo marketing and communications manager Adrian Wickens points to companies such as Preston Bus, which runs eight hybrids, Manchester's Bullocks, with four, and Lothian Bus in Scotland, which recently placed an order for 20 Volvo 7900 hybrids.

He says that developing hybrid buses to appeal to this wider market is more than merely about moving up to the Euro 6 emissions regime – as with its latest 7900. It's also more than pointing to reliability figures from the likes of TfL, which suggest 99% fleet availability. And it's more than stating that hybrids have come a long way since their introduction to the UK back in 2009.

Wickens explains that Volvo's Swedish R&D department is currently working to improve everything from battery life to system performance and efficiency. "For example, as ours is a parallel hybrid, we have mechanical driveline that uses the I-Shift gearbox. That's generally very good, but there are one or two gear changes where it combines a range change and a conventional gearshift, especially on deceleration. Operators and drivers initially commented that [it was noisy], but we have been working to improve that over the years and the new Euro 6 hybrid drives very well."

He also says that Volvo is now targeting plug-in buses, which are being trialled in Sweden – although talks with an unnamed UK operator look likely to lead to a similar project here. Having the ability to charge wirelessly at various points along a bus route will, he suggests, improve these buses' range, making the technology more attractive to a wider range of operators and routes. This technology may be a couple of years away, but Wickens suggests that, when it comes, it will take hybrid transportation to the next level. TE