Practice makes PERFECT

Real-world trials of distribution trucks with electric powertrains are taking place all over Europe. While series production remains some way off, many fleets are already benefiting from the zero-emission technology, reports Steve Banner

Switzerland is in the process of becoming an even cleaner, greener place with the arrival of two zero-emission battery-powered Mercedes-Benz eActros rigids. An 18-tonner has joined Camion Transport to haul general cargo in and around St Gallen, while a 25-tonner is being deployed by retailer Migros to deliver goods to supermarket branches in the Zurich area.

Each of the trucks under test will be expected to cover up to 150km (94 mi) a day. Their claimed range of up to 200km (125 mi) between recharges at their respective operators' depots means that they should be well on top of the job, says Mercedes. It can take as little as two hours to recharge their lithium-ion battery packs, adds the manufacturer. The batteries drive a pair of 126kW electric motors mounted close to the rear wheel hubs, with an output of 485Nm apiece.

The two trucks form part of what Mercedes describes as its Innovation Fleet; an initiative which involves the real-world testing of eActros with customers engaged in short-haul local distribution. Not surprisingly, most of the testing is being conducted with operators in Germany, with the vehicles in service with Camion and Migros the first to be delivered to Swiss customers.

Aware of growing pressure on their customers by city authorities to reduce or eliminate exhaust emissions on pain of facing a daily charge to enter their environs if they don't, all truck manufacturers have embraced battery technology to a greater or lesser extent. "Electromobility is the obvious response to issues surrounding urban air quality and noise," observes Renault Trucks' UK managing director Carlos Rodrigues.

Renault aims to have electric Range D and D Wide rigids available on this side of the Channel next year, at 16 and 26 tonnes, respectively. Sister brand Volvo has come up with an electric FL and FE at 16 and 27 tonnes, respectively.

THE FRENCH CONNECTION

Much of what Renault has learned about electric trucks has come from trials in France involving fleets such as the Delanchy Group. While a range of up to 300km (190 mi) is available, the sheer cost of batteries and feedback from prospective customers has prompted the company to tailor ranges and the size of battery packs to individual customer needs. Not everybody needs to be able to travel up to 200 miles between plug-ins.

In London, DPD has been trialling two electric Fuso eCanter 7.5-tonners (pictured above). During their first six months of operation, they have suffered no reliability problems whatsoever, the parcels delivery giant reports, and the range of 100km (62 mi) between recharges is more than adequate. Traffic congestion in the capital means that a driver may struggle to cover half of that distance in a full day's shift, says DPD.

Set to go on general sale next year, Fuso eCanter is also in service with Hovis and Wincanton in and around London – the three fleets are running nine between them – with Wincanton achieving a payload capacity of 3.0 tonnes. That is a perfectly respectable figure for a 7.5-tonner, and should address any worries that the presence of a battery pack still equates to a modest payload.

Meanwhile, van manufacturer Renault is planning to set up a centre in Wolverhampton that will repair or replace any individual cells that fail in the batteries that power its Kangoo ZE and Master ZE vans. Both models are on sale in the UK.

As Renault points out from its experience with fleets, the maximum range theoretically achievable isn't always what matters. Nor is speed of charging; slow charging overnight may be preferable to fast charging during the day because off-peak electricity is cheaper. Powering an electric 7.5-tonner

"Electromobility is the obvious response to issues surrounding urban air quality and noise"
Carlos Rodrigues

costs no more than from 10p to 17p per mile, according to BP-owned electric vehicle charging specialist Chargemaster.

TRACTORS

Battery-powered tractor units are appearing alongside rigids. DAF has recently delivered two electric 4x2 units based on CFs using technology sourced from VDL to Germany's Contargo. Based in Duisburg, and operating at up to 37 tonnes, they are being deployed locally on container delivery work. With a claimed range of up to 100km, they are equipped with a 210kW/2,000Nm electric motor powered by a lithium-ion battery capable of being fully recharged in an hour and a half.

Which is not to say that electric trucks don't have their drawbacks. "They still command a high upfront acquisition cost, equating to more than twice the price of a diesel truck," reports consultancy Frost and Sullivan. That is despite an 80%-plus fall in the cost of batteries since 2010.

Public subsidies to help offset this premium are available, but they are not always generous. In October 2016, the UK government decided to extend the plug-in van grant to electric heavy trucks. The initial 200 to enter service qualify for a healthy grant of up to £20,000 each; an offer that has yet to be exhausted. Once that happens, however, the grant will fall to a more meagre 20% of the price up to a £8,000 maximum; which is what owners of battery vans receive, but they are far cheaper.

ACEA, the European Automobile Manufacturers' Association, highlights the lack of publicly accessible charging points for trucks, and points out that at least 6,000 will be required along the European Union's motorways by 2025/30. So as things stand, operators have to install their own – something that fleets running trucks on local distribution work that return to the depot each night would wish to do anyway.

The necessary infrastructure does impose a cost burden. If you operate a pair of eCanters and you want to charge them up overnight, then you will require a charging post with a pair of sockets, says Chargemaster. That will cost from £2,000 to approaching £4,000, depending on how much fleet management data you want it to generate. Looking for a post that will deliver a rapid charge? Think in terms of roughly £20,000, Chargemaster says.

If the depot's power supply has to be upgraded, then that could cost a further £5,000 to £10,000, it adds. If you are proposing to run 50 or more electric trucks from a single location then a more substantial upgrade is likely to be needed – and that will be expensive. Putting in facilities to deliver a megawatt of power could cost up to £1m, Chargemaster points out.

DESIGN CHANGES

The change in chassis layout prompted by the elimination of a diesel engine, a conventional gearbox and fuel tanks, and the arrival of a battery pack and electric motors instead, is prompting some manufacturers to rethink the entire design of their trucks.

With an electric eTGM 32-tonner already in service with Porsche's logistics operation, and nine eTGM 26-tonners on trial in Austria, MAN has come up with the CitE, an ultra-low-access 15-tonner with a flat cab floor.

Could Scania's concept NXT (left) point the way to more radical changes? An electric autonomous rigid designed for urban use from 2030, it features front- and rear-drive modules that can be fitted to a bus body, a distribution body or a refuse collection body.

The 8m-long bus module weighs less than 8 tonnes; the batteries sit under the floor and the range between recharges is estimated at 245km using present-day battery technology, says Scania.

"This vehicle will provide invaluable tangible data in our continued development of electrified autonomous vehicles," says NXT project manager, Robert Sjodin. "We're now taking a giant leap into the future." TE