

# Electric drives

Are electric vans really a threat to traditional diesel-powered units? As two manufacturers reveal more about their plans for battery-driven vehicles, John Challen samples the potential competition

Since the March issue of *Transport Engineer*, which featured an in-depth look into future, as well as current, electric commercial vehicles, two manufacturers have put forward their models for evaluation. Not only that, but they have also revealed more technical and operational details of their battery-powered products. The manufacturers in question, offering quite different solutions and powertrain set-ups, are Mercedes-Benz and Iveco.

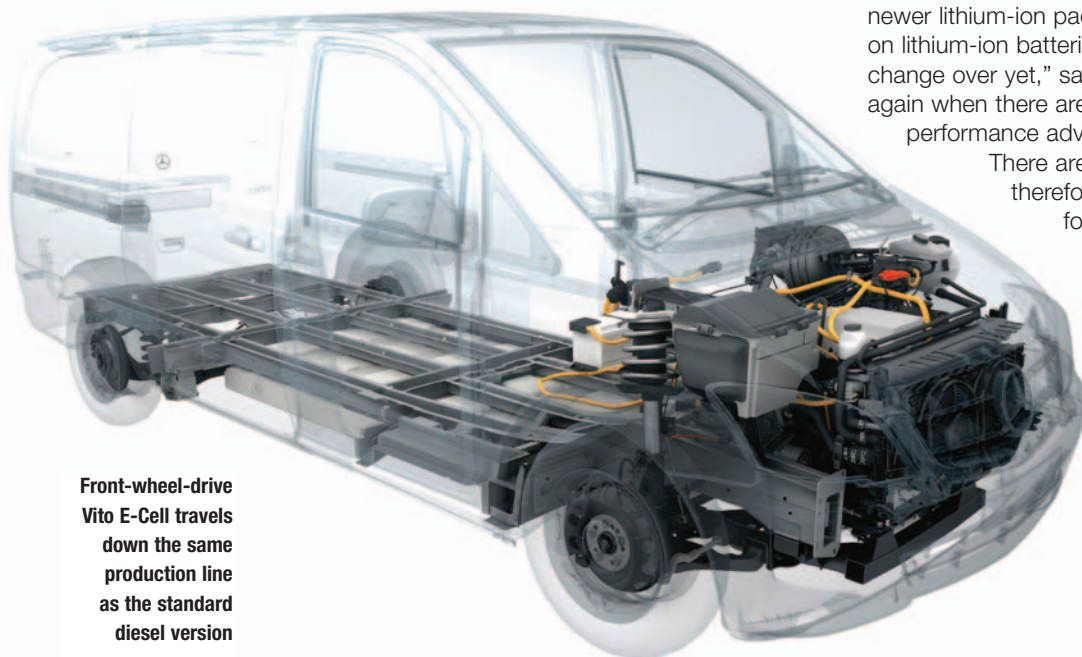
Mercedes claims its Vito E-Cell is the first electrically powered van in series production, designed specifically for town and city. According to Andreas Pöhl, project leader for the E-Cell, there will be one million electric vehicles on German roads by 2020. The German manufacturer itself says it is planning to operate 50,000 charging stations throughout Europe by that time, dependent on customer demands.

Rolling down the same production line as the standard ICE-powered van, the electric Vito is

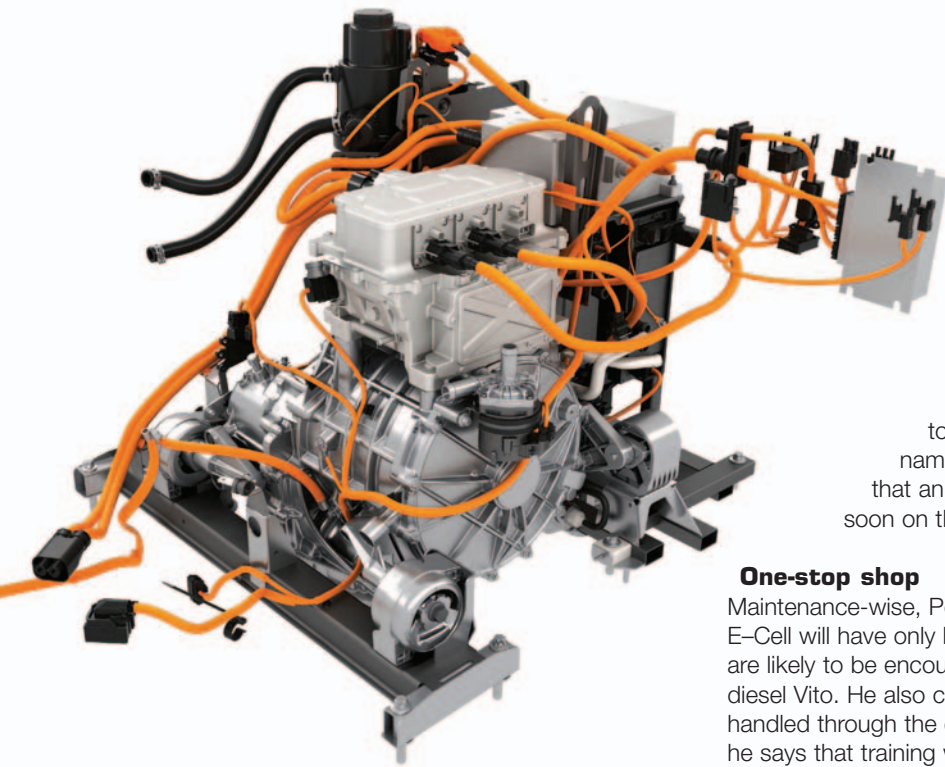
powered by a 36kW/h lithium-ion battery pack, which offers a maximum range of 81 miles (130km). The vehicle's payload is 900kg, but Pöhl says this is set to increase within the next 12 months. "From launch, the vehicles' high-voltage batteries will be water-cooled, but our intent is to implement an air cooling system," he reveals, adding that, after eliminating the van's water reservoirs, brackets, connectors and other associated items, a total of 60kg will be shaved off the vehicle weight and, accordingly, added to the payload capacity.

Meanwhile, with its EcoDaily Electric, the Iveco camp is majoring on the fact that it claims to be the only full range manufacturer to offer alternative fuel and traction solutions across all product lines. Martin Flach, the Italian company's product director in the UK, believes that the vehicle makes driving through town "a breeze, not to mention a comfortable, quiet and eco-friendly experience". Unlike Mercedes-Benz, the electric version of the Daily is powered by proven Zebra batteries, preferred for now by this manufacturer to the newer lithium-ion packs. "For us, the jury is still out on lithium-ion batteries, and we are not ready to change over yet," says Flach. "We will look at it again when there are production and comparable performance advantages."

There are a number of power, and therefore all-important range, options for operators to consider for the EcoDaily Electric. Two models are available, the 35S and 50C. The former is available with a two- or three-battery set-up, offering ranges of 55 and 75 miles respectively. The electric version of the Daily 50C is offered with three or four batteries, providing maximum ranges of 65 and 80 miles. Iveco says that the maximum speed available is 45mph, while



Front-wheel-drive Vito E-Cell travels down the same production line as the standard diesel version



“It makes no sense to produce all of the electrical components [used in the van],” believes Pöhl. “When we cannot make the E-Cell more attractive cost-wise, we will build our own components, which will be used in a variety of products throughout our company, from a bus down to a Smart city car.” Despite not naming any parts, he suggests that an announcement will be coming soon on the initial chosen items.

#### One-stop shop

Maintenance-wise, Pöhl estimates that Mercedes’ E-Cell will have only half of the servicing issues that are likely to be encountered on a conventional diesel Vito. He also confirms that servicing will be handled through the existing dealer network. And he says that training will take place at major metropolitan centres from the end of this year, ahead of launch in the UK, and then afterwards throughout 2011.

“It makes no sense whatsoever to operate in the highlands,” he correctly points out. “So we will train our technicians in the south of the UK, for example, and elsewhere, depending on the specific locations where [our E-Cell] customers are. Like the diesel Vito, technicians will be using our Star Diagnostics system, using our handheld device for the analysis.”

Sounds fairly straightforward then – in fact, from a process perspective, much like working on the standard diesel van? Not quite. Pöhl explains that data on all high-voltage components, for example, will have to be checked and recorded – although that’s not a million miles from technicians’

the highest gradient possible from start is 16%. Maximum payload for the 35S van will be 1,185kg (two batteries) and 810kg (three batteries). Unlike the Vito, EcoDaily Electric will also be available in a chassis cab version, offering a maximum payload of 2,370kg.

#### Power of choice

Pöhl dismisses the Iveco approach and confirms that development of a stand-alone Mercedes battery is underway. “Our target is to keep the mileage that we have today and then further reduce the size of the battery that we offer,” he says, also confirming that the company is looking at production of other electrical components, but only when there is good economic reasoning.



Iveco's EcoDaily Electric can be powered by a choice of two, three or four Zebra battery packs

recording of diesel engine characteristics. "We have to inform the mechanics how an electric version works and how it is different from a diesel van," he cautions.

"At some point in the future, we will have competence centres in every country where we have electric vans, but that depends on where they are sold. It makes no sense to have this capability at the beginning. All of our dealerships will be involved, though, and they will take care of the customer. If [a customer] has to drive a hundred miles to another dealership, we will take care of that for them."

**Fleet management**

So what ownership options exist for the battery duo? Fleet managers will be interested to learn of two quite different approaches. Mercedes is offering a lease scheme, where operators pay a monthly fee, which includes a full R&M package. Cost-wise, the company says that the equivalent diesel version would cost around €800 to €1,000 a month, while the E-Cell is likely to be "higher by a factor of between 1.4 and two".

Iveco, planning far fewer electric EcoDaily sales in the early days – in the region of 100 a year for the next five years, compared with 1,000 E-Cells per annum for Mercedes – is looking for straightforward sales. However, the company admits the costs involved are high. The price of the 35S model is £63,000, or £40,000 without batteries. Those taking the latter option can choose to lease the batteries on a pence per kilometre basis. Flach says that Iveco has calculated the payback time to be around six years, although some may take issue with that, especially because the batteries are only viable for five years before they need to be replaced, at a cost of £10,000 each.

**Charging can be done at bespoke stations or through the domestic mains supply**



**On the road**

Both Mercedes and Iveco provided vans in environments entirely suited to their needs: the city centres of Stuttgart and London, respectively. Both vehicles are eerily quiet and indeed the two manufacturers admit they are working on engineering in some kind of audible warning to alert other road users, as well as passengers, that they are approaching.

Acceleration is brisk, as you would expect from the electric motors, which provide, in the case of the EcoDaily, 230Nm of torque from its 60kW power pack. Here, there is the potential for driver training, says Mercedes-Benz' Andreas Pöhl, who warns that breaking speed limits is easily done, especially when drivers are more used to the slower response from a diesel-engined van's throttle.

As in most hybrid models, you can feel the energy being recuperated under braking, the system being programed to eke out as much range as possible. But this process is relatively smooth and does not feel too intrusive.

Will the industry be convinced? Probably not initially – and especially not without incentives. However, on the evidence of a decent amount of time spent with each model, when the electric van revolution does come, Mercedes and Iveco will be well prepared, with their products ready for market.

However, Mercedes says that, for the UK specifically, it has been in talks with a major supermarket chain, and is also working with other major retailers, courier/delivery companies and construction firms.

That said, as both Mercedes-Benz and Iveco suggest, major hurdles remain for electric vehicles to succeed. The price difference alone between the newcomers and their diesel equivalents is extremely high – and the chances of much in the way of government subsidy, at a time when the coalition is conducting a major spending review, are slim.

Both these vehicle manufacturers concede that the decision to go electric will not, for the foreseeable future, be based on finances and economics. What they want is for major operators to take the plunge and prove to themselves that the technology works for them. Form an orderly queue, please... **TE**

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