As the push for cuts in CO₂ continues unabated and cities increasingly legislate against diesel vehicles, Daimler has gone public on full-electric heavyweight trucks. Ian Norwell reports from Stuttgart

26-TONNE ELECTRIC

nner cities' appetite for goods is insatiable, which means that delivering them is inescapable. So making trucks cleaner and quieter through Euro 6 has broadly been well received. However, the announcement by Daimler a few weeks ago that it is now running a fully electric prototype 26-tonne rigid chassis is exciting. At long last electric power is moving up from vans and light trucks.

Daimler's foray into electric power for light commercials is well known. Its Fuso brand has been the standard bearer in the shape of the Canter Eco Hybrid, which has now been in production for several years. An all-electric version (Canter E-Cell) was unveiled at the 2010 Hanover show, and trials in Portugal (where it is built), and later Stuttgart, have progressed ever since. These vehicles are now in third-generation, pre-production trials – including with parcels and logistics giant Hermes – so inevitably closer to series production, now promised at the end of 2017.

Battery technology has improved the while and, based on a six-tonne chassis, Daimler reckons that a three-tonne body/ payload allowance can be expected. But in the grand scheme of getting goods delivered into cities, such weights remain small beer. Stand on any central London street corner in the small hours and you'll see that the trucks doing the heavy lifting are 18- and 26-tonne rigids. So July's news of heavier weight electrics was always going to grab attention.

Step back a moment: at Hanover 12 years ago, a concept truck in the shape of an Axor hybrid 44-tonne tractor was on show. It was a half-hearted affair, with too many unanswered questions and it slipped into obscurity. But it's now apparent that Mercedes' development engineers had not given up hope of bringing full electric to heavy trucks.

Why now? At Daimler's Untertürkheim test track, Dr Wolfgang Bernhard (who heads up Mercedes' truck and bus division) conceded that when, a decade ago, the battery of a 25-tonner consumed a third of its tare weight, he was sceptical. But that was then and this is now. "The time is now right for electric trucks, because two factors have come together. Technology has made great progress and the market is emerging."

So, while electric power is still not a serious prospect for long-haul, an allelectric 26 tonner is entirely realistic, he said, stepping aside to allow a three-axle electric Antos to sweep silently onto the podium. And behind the wheel of this Urban eTruck was Sven Ennerst, head of truck product engineering and global



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procurement. It was pure theatre.

So how has Mercedes done it? Full details are to be revealed at the IAA Hanover show, in September, but the basics are clear. The development vehicle is a 6x2 rear-steer Antos 26-tonne chassis. Most of what you would expect between and beside the chassis rails has gone. No diesel engine, no radiator, no gearbox, no prop shaft, no differential, no after-treatment, exhaust or AdBlue. No diesel tanks. So the tare weight has already been considerably reduced.

1,080 HIGH-ENERGY CELLS

"The standard truck components that remain are proven designs and we have added the latest battery technology, based on developments in our passenger car division," said Ennerst. That still means lithium-ion cells, but plenty of them. With a design referred to as crash-proof, three packs of batteries - comprising 90 modules and 1,080 high-energy cells - lie neatly between the rails. At 2.5 tonnes, they give the vehicle a very stable centre of gravity, but the scales remain tipped against it - because this is all 1.7 tonnes more than a diesel equivalent drivetrain.

However, Daimler designers claim a

margin of just 700kg, leaving a 12,800kg payload. How? Because they factor in a one-tonne allowance in light of EC proposals to allow an increase in gvw for trucks with alternative drives. Time will tell, particularly when Brexit gets into gear. It might not be wise to count on that for UK fleets - although any UK government must have a similar agenda.

Either way, this is impressive - with a 212kWh pack having a claimed range of 200km. The electrically-powered rear axle is based on ZF's AVE 130 11.5-tonne portal axle, as used in Mercedes hybrid and fuel-cell buses, and has its motors close to the wheel hubs to minimise weight. That axle has been reconfigured for the Urban eTruck with the housing raised for a ground clearance of more than 200mm. Super single tyres are also used because of the frame width and positioning of the drive motors.

Thereafter there's a list of unfamiliar components, including an HV (high voltage) control unit, HV junction box and fuses, HV distribution unit, three inverters and an HV air compressor and steering pumps. Braking is regenerative and efforts to provide intelligent battery management are claimed to have contributed to the extended range.

Why an all-electric 26-tonner now?

Mercedes trucks' chief Dr Wolfgang Bernhard responsible for 20% of deliveries, with most of those in cities. Secondly, regulations on cleaner and quieter trucks will only get more stringent. And thirdly, fleets are becoming increasingly image conscious, so their need to brandish green credentials can't be ignored. All true, but while this truck's silent

That however, will not be difficult to witnessing the arrival of the first fully-electric proper heavy truck. What about a production

