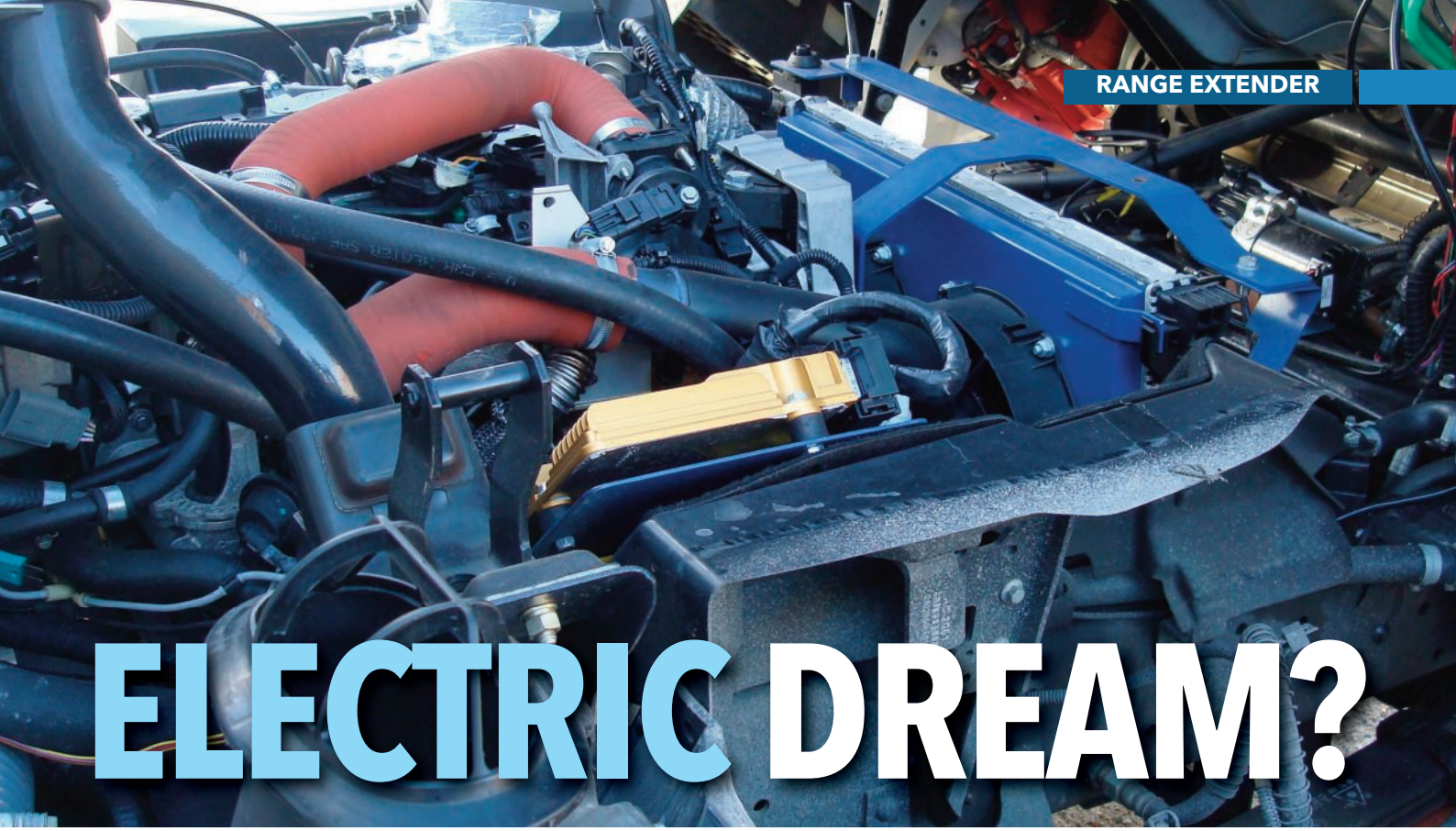

ELECTRIC DREAM?

With the arrival of a range extender said to be suitable for 7.5–18 tonners, serious electric trucks look set to move from dream to reality very soon. Steve Banner reports

An electric range-extended 7.5-tonner developed by Brentwood-based Tevva Motors, but using a Chinese-built JAC N Series chassis cab, is now undergoing trials.

Power comes courtesy of a 120kW, 1,800Nm electric motor married to a reduction gearbox that takes the drive to the back axle via a cut-down prop shaft. The motor relies on lithium-ion phosphate batteries mounted under the cargo bed. Then, acting as a generator and with no link to the transmission, the range extender is a 100bhp 1.6-litre Ford diesel engine sitting beneath the truck's tilt cab.

Twin 66kWh 350V battery packs can be charged from a three-phase 32A mains supply in under three hours, says Tevva. These give the N Series a battery-only range of up to 100 zero-emission miles, although more realistically 50–70 miles fully laden. However, using the diesel to boost the battery every so often pushes the range out to 370 miles.

One problem: given the requirement to reduce NOx emissions in urban areas, the last thing anybody wants is for the engine to fire up while the truck runs down the high street. Tevva knows that, so has come up with a system dubbed PREMS (predictive range extender management system). Operators send PREMS the vehicle's route for the day, and it calculates the energy requirement and programs the range extender, which then cuts in and out accordingly.

URBAN FRIENDLY

Tevva business project manager Richard Lidstone-Scott explains that, typically, the motor cuts in while the truck is travelling along rural dual carriageways at its speed-limited maximum of 50mph. It then cuts out once the driver gets among the chimney pots. He contends that CO_2 emissions from the range-extender are 80% down compared to a 7.5-tonne diesel, with NOx also reduced more than 50% even against a Euro 6 model.

Telematics also enables the vehicle to be monitored remotely via a web portal – so transport managers can see battery charge and usage as well as key truck temperatures, speed and location. Meanwhile, analytical tools reveal how much CO_2 and NOx have been saved.

The DfT (Department for Transport) and DECC (Department of Energy and Climate Change) helped fund the project and Tevva's technology is currently being assessed by UPS in a Mercedes-Benz Vario in the London area. And note: Lidstone-Scott says the system is suitable for trucks grossing at up to 18 tonnes, although a larger battery pack would be necessary.

So how much will a 7.5-tonne chassis cab cost? "You'll be talking £40,000 to £60,000," says Lidstone-Scott. Against that are claimed total cost of ownership savings of up to 27%, compared with a diesel. And there are congestion charge savings and government grants.

Batteries plus an electric motor spell minimal maintenance costs, but the 1.6-litre diesel requires periodic servicing. Meanwhile, the batteries should last seven to 10 years, says Lidstone-Scott – so will probably be leased.

"If we sell the vehicle as a Tevva using a JAC platform, we'll probably be able to get it homologated and into production in three to four years," predicts Lidstone-Scott. "A retrofit package suitable for other trucks will hopefully be available within the next two to three years." TE