

Power recycling

BAE Systems launched its parallel hybrid truck with Denis Eagle at the RWM exhibition. Brian Tinham talks to the developers

RCV (refuse collection vehicles) specialist Dennis Eagle is shipping its first diesel-electric hybrid truck, powered by BAE Systems' parallel hybrid powertrain. The truck, seen for the first time at October's RWM (Recycling Waste Management) show at the NEC, is going to an unnamed local authority – one of Dennis Eagle's existing customers – on full fleet trials.

This vehicle is based on a Dennis Eagle Elite 2 chassis, with a 6x2 rear steer configuration and Olympus 21 smooth body. It is powered by a 300bhp Volvo D7F Euro 5 engine, with BAE Systems' new clutch and 'electric machine' (motor, electronic controls and batteries) inline, and matched to a Caterpillar fully automatic transmission.

Andy Graves, technical sales engineer with Dennis Eagle, makes the point that the new hybrid power plant does not impact its chassis design – merely requiring movement of front cross members to accommodate its slightly greater length. He also explains that the entire unit, including Li-Ion batteries, adds just 350kg to the vehicle weight – which, although a factor on the 26-tonner, he sees as more than acceptable for RCV duty cycles.

Cost effective

Most important, Graves insists that, with a price tag for the truck up some £30,000–40,000 (around 20%), compared to Dennis Eagle's conventional equivalent truck, payback for local authorities should be within four to five years. That estimate is based on claimed 20–30% fuel savings on the urban cycle – in line with development work carried out by Dennis Eagle with Warwick University.

Given a typical seven- to nine-year fleet replacement cycle, that timeframe sounds feasible and it appears significantly better than many other parallel hybrid truck manufacturers have so far been predicting. Further, assuming success and rising production volumes, this current additional capital



cost should fall markedly.

In fairness, it needs to: Dennis Eagle's existing Fuel Saver pack – which involves diesel RCVs with transmission software

changes, better hydraulics and re-optimised engine management – are already just £5,000 more than the standard Olympus. And, with compelling claims for fuel economy from this package, payback would be much faster than currently with the hybrid.

That said, Dr Mike Mekhiche, BAE Systems director of programmes, power and energy management systems, confirms that the on-cost of the hybrid powertrain will quickly result in "no more than a few per cent rise in the vehicle price". In explanation, he cites significant work on the supply chain and co-operation with its partner network.

So far, Caterpillar has been named on the transmission side, while the electric motor manufacturer and traction battery developer are as yet unnamed. BAE Systems is talking off the record of significant global partnership deals. Meanwhile, Mekhiche also nods to the 3,500 series hybrid buses already operating successfully around the world – indicating that experience has shaped development.

Crucially, he also observes that BAE's parallel diesel-electric hybrid offers three times the power and torque of the competing Eaton unit, which drives most other truck manufacturers' hybrids to date. And Mekhiche states that it still provides "at least 30% better fuel economy at the same price".

Further, he asserts that the new electric machine will support anything from a 350bhp to a 650bhp diesel engine, with its 70–100kW variants – making its use in the truck sector even more convincing and opening the door way beyond RCV operations, certainly into heavy-duty, multi-drop applications.

Incidentally, expect to see BAE Systems' hybrid technology on offer from Crane Carrier next. **TE**

Dennis Eagle and BAE Systems have high hopes for the hybrid RCV that the duo have developed