



# NO LIGHTWEIGHT

**Vans may be shedding the pounds, but thanks to judicious design engineering, new materials and alternative thinking, they're punching well above their weight, reports Steve Banner**

**T**aking weight out of van structures, to maintain a competitive payload and reduce fuel costs, remains a challenge for manufacturers. It requires detailed attention not only to how vehicles are engineered but also to the use of stronger, lighter materials - as evidenced by PSA Group's approaches in developing replacements for Citroen's Dispatch and Peugeot's Expert.

"We've been able to reduce unladen weight by up to 150kg," comments chief engineer for LCVs Remi Seimpere.

"We've introduced a new subframe made from ultra-high-strength steel that's cut the weight by 20kg. And we've engineered a more robust rear axle and a new front axle - and they've saved us 15kg and 10kg respectively.

"We've used high-strength steel in the body structure and we've analysed the thickness of each component, and made it thinner wherever possible," he

adds. "We've also started stamping panels while they are hot, which gives us the same strength with a thinner sheet."

With power outputs of from 95-180bhp, the 1.6-litre and 2.0-litre BlueHDi diesels fitted have also helped cut kilos. "They're more frugal, which means we've been able to fit smaller, lighter, fuel tanks," explains Seimpere. In truth, that helps counteract the 22.4-litre AdBlue reservoir and related equipment that PSA installed to meet Euro 6.

#### **PLASTIC FRONT END**

Dispatch and Expert rely heavily on the Efficient Modular Platform 2 (EMP2) used in Citroen C4 Picasso and Peugeot 308 cars. Rather than use metal for the vehicle front, PSA opted for a soft nose - a plastic surround for the grille and headlights, which ties in with the front bumper. As well as saving weight, that means PSA can use different mouldings to distinguish the two van marques.

The result: maximum payload capacity is now 1.4 tonnes, up from 1.2 tonnes and accompanied by an increase in gross weights for some models. Customers can also choose three body lengths with up to 6.6m<sup>3</sup> of space.

However, there is little point in LCV manufacturers putting their products on a diet if the techniques used by converters pile the kilos back on when they body chassis-cab variants. That's why Advanced KFS Special Vehicles makes extensive use of aluminium, says sales and marketing director Steve Elwell. "We fit floors made out of extruded aluminium planking and that saves us 80-90kg on a 3.5-tonner, compared with the weight of ply," he says, although adding that it comes at a £350-£400 price premium.

Nevertheless, Advanced KFS also builds its box bodies out of lightweight alloy-skinned composite sandwich panels, and can achieve a 1.3-tonne payload on a 3.5-tonner. "We can also fit a loading ramp that doubles as the rear closure," adds Elwell, noting that this option saves the weight of the back door and potentially a tail-lift.

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*Remi Seimpere*

Choosing the right body panels can cut weight significantly, agrees Mike Bragg, managing director of Alloy Bodies, explaining that his firm makes extensive use of plastic honeycomb panels. “They weigh 4.2–4.6kg per square metre, compared with 8.5–9.0kg for grp,” he says. On a box body for a 3.5-tonner that adds up to a 60kg weight reduction. “Use an alloy sub-frame rather than one made from galvanised steel and you’ve saved a further 35–40kg,”

However, some weight cutting measures should be approached with caution, he warns. “You can save some kilos by specifying six, rather than eight, cross-bearers,” he says. “But if you are a

been building Luton bodies on platform cabs for 20 years. “Go this route and you can typically save 260kg off the weight of a rear-wheel-drive chassis cab and 106kg off the weight of a front-wheel-drive one,” he contends.

Trucksmith constructs its bodies from



Clockwise from main pic: Peugeot’s latest Expert van; a low-height traffic management vehicle from Advanced KFS, built on a 3.5-tonne chassis; and the re-engineered underside of Citroen’s Dispatch van

falling over themselves to launch battery-powered or diesel-electric hybrids. While fleets may applaud their availability, that rarely translates into orders – although British Gas is leading the charge.

Safety is however being stressed across the market, with many manufacturers installing systems that exceed legal requirements or offering them as options. Lane Departure Warning and Blind Spot Assist are good examples. Another is Crosswind Assist. Fitted to Mercedes-Benz Sprinters, the latter prevents the vehicle from being blown into an adjacent lane if the driver encounters a gale on the motorway.

The new Expert and Dispatch are also being offered with Active Safety Brake, which will automatically slam on the brakes if the driver is in danger of hitting something and fails to react. Active Cruise Control, which regulates the distance to the vehicle ahead, is also included in that option pack.

And increasingly there are driver information systems. Expert and Dispatch, for instance, can be ordered with a package that includes TomTom real-time traffic information and tells you where to find car parks and fuel stations. You can also use smartphone apps on the vans’ seven-inch touchscreens.

Finally, service intervals have been stretched over the years, with most Dispatches and Experts now at two years/40,000km. However, many operators will want to put vans into workshops more frequently, given the daily drubbing they get. **TE**



rental company hiring a 3.5-tonner to someone who takes it on a booze cruise and puts a couple of tonnes in the back, that might not be such a good idea.”

Savings can also be garnered by doing away with the manufacturer’s chassis entirely. “We save 85–90kg by sourcing lightweight, low-height chassis from AL-KO, and fitting them to front-wheel-drive cabs and running gear delivered in pairs on a back-to-back basis,” says Elwell. “Fiat Professional’s Ducato 3.5-tonner is the most popular.”

Why not forget about the chassis and opt for a low-loading height 3.5-tonne front-wheel-drive platform cab instead, suggests Simon Partridge, executive sales manager at Trucksmith, which has

alloy panels hung on an alloy frame. “We can offer a 28m<sup>3</sup> body that will cope with 1,000kg payloads but the 19m<sup>3</sup> model, which carries 1.3 tonnes, accounts for 80% of our business,” says Partridge.

Partridge also advises operators to take a close look at their vans and remove anything they do not need. “Ask yourself if you really want your driver to be changing a wheel at the roadside when you could call out ATS Euromaster,” he explains. “Get rid of the spare wheel, carrier and tool kit, and you save yourself 20kg... Specify a single passenger seat rather than a double and you save yourself 7–8kg.”

#### **FUEL AND EMISSIONS**

But developments are not only about weight: van makers are also concentrating on cutting fuel usage and thus CO<sub>2</sub> emissions. All the latest Volkswagen Transporter T6 vans, for example, come with BlueMotion Technology, which includes Stop/Start, regenerative braking and low-rolling-resistance tyres.

Few LCV producers (Nissan and Renault are among exceptions) are