



Photograph: Simon Jones

“Use alloy in a 3.5-tonner’s dropline body, rather than a timber floor, and you can reduce the weight by 50kg”

Justin Gallen, managing director of bodybuilder Ingimex

Body of evidence

New materials, bright ideas and downsized engines are all helping to cut the weight and increase the carrying capacity of today’s LCVs. Steve Banner explains

Taking weight out of light commercial vehicles requires detailed consideration. Joseph Fieldstaff-Hughes, project manager at Doyles Commercial Body Building, gives the example of reducing fixings around body exteriors and using adhesives instead. “We’re also turning away from alloy frames to reinforced plastic, while on rear closures we’re moving from steel and ply to composite materials.”

The Thurmaston, Leicester-based bodybuilder states that even changing to reinforced plastic drums in place of steel drum for roller shutter doors will reduce weight. That modification alone saves 25kg. In fact, Fieldstaff-Hughes reckons these measures and others can reduce the weight of a 3.5-tonne box van by 70–80kg, which is good news for both payload capacity and fuel efficiency. And even more savings can be made by switching to aluminium

core body panels. “We’re talking about 1kg/m². At 10m² for each side and the same for the floor, that’s 30kg.”

MATERIAL EVIDENCE

West Midlands-based Bevan Group is making savings with its 3.5-tonne box vans by using a one-piece floor panel that does not require bearer supports. “It’s got a barley-seed skin on top, a GRP skin underneath and a plastic core,” explains managing director Anthony Bevan. “It gives you a 50kg weight saving, but attracts a £500 price premium. However, I’m sure the premium will come down as sales volumes increase.” Using lightweight foam core body panels delivers an 80kg saving, compared with GRP at 3.5 tonnes, while alloy rear frames reduce weight by a further 35–40kg, he adds.

However, entrenched attitudes among operators can get in the way of materials advances. Alloy floors, for

example, are not widely accepted among operators buying 3.5-tonne tippers – even though a 100kg saving can be achieved over steel on a 3.2m body, according to Justin Gallen, managing director of bodybuilder Ingimex, of Telford. They fear that alloy will not stand up to the hammering that tipper floors often suffer. “That is despite the fact that extruded alloys are available offering a greater resistance to impact than steel,” he observes.

Something else making alloy floors hard to sell is the price. “Alloy is three times the price of steel, but one-third of the weight and doesn’t rust,” remarks Gallen. It is worth noting, though, that many light tippers with steel floors are equipped with alloy sides and tailboards, for weight saving. “It’s hard to achieve a 1,000kg payload on a tipper these days – and on box vans and Lutons, too, especially given that customers increasingly specify steps,



The EOLAB concept car exhibited by Renault at the Paris Motor Show last October. Features include ultra-thin 3mm windscreen glass, offering a 2.6kg weight saving as part of a package of measures that make EOLAB 400kg lighter than the equivalent Clio. It's only a matter of time...

safety rails and grab handles," he observes. Their presence makes it less likely that employees will be injured if they have to climb in and out of the load area – although they do pile on the kilos.

But alloy floors can bring savings to dropsides as well as tippers. "Use one in a 3.5-tonner's dropside body, rather than a timber floor, and you can reduce the weight by 50kg," asserts Gallen. However, he cautions against being too eager to move towards exotic materials. "If you go that route, you should ensure you can get them in the volume you will need and that there is more than one supplier," he observes. "You should also find out how easy they are to repair."

On the face of it, magnesium – lighter than steel and aluminium – might fall into the exotic category. Yet magnesium parts, formed by high-pressure die-casting, are already used extensively in vehicles worldwide. Renault, for example, is among those now considering employing magnesium sheet to construct light commercial body panels. "A magnesium roof on a van will save you 0.5–1.5kg and is about four years away," says Dominique Roinsard, light commercial vehicle upstream engineering manager.

Such a saving might be viewed as a tad modest given that magnesium is three to four times the price of aluminium, but every little bit helps. "And we are quite confident that the price gap between magnesium and other metals will reduce over the next few years," Roinsard comments.

Meanwhile, Fiat Professional has fitted composite leaf springs to the rear of its current Ducato, rather than steels, saving up to 15kg and emulating an approach pursued at various times by Iveco (Daily) and even long-gone Freight Rover (Sherpa). Detailed changes to the design of Ducato's bonnet and other components, such as the front suspension top mounts, have also cut weight by up to 20kg.

ENGINE DOWNSIZING

Incidentally, Roinsard and his colleagues are also contemplating the use of plastic seat springs, which, he says, should save 4.5–5kg per seat. "They, too, are about four years away," he comments. And also being investigated is the use of three- rather than four-cylinder engines, which, he says, will deliver a further 30kg saving. Ford is already deploying the three-cylinder 1.0-litre EcoBoost engine in Transit Courier and Transit Connect.

Such a development would be in line with a long-term trend in favour of van engine downsizing, Roinsard contends. "These days, a 1.5-litre engine is doing the job a 1.8-litre did 10–15 years ago, so going down to 1.2 or 1.3 litres might be the next logical step."

Nor need this mean a loss of power or performance. Two of the 1.6-litre diesels fitted to the latest Renault Trafic and Vauxhall Vivaro deliver 120bhp and 140bhp, thanks in part to sequential twin-turbo technology. Single-turbo versions generate either 90bhp or 115bhp. And note, the 1.6-litre diesels

succeed 2.0- and earlier 2.5-litre diesels with similar outputs used in previous Trafics and Vivaros. Cautious used van buyers may, however, wonder about the long-term durability of smaller engines if the application is arduous.

That said, many of Roinsard's proposals are encapsulated in the EOLAB concept car exhibited by Renault at the Paris Motor Show last October. Features include ultra-thin 3mm windscreen glass, offering a 2.6kg weight saving as part of a package of measures that make EOLAB 400kg lighter than the equivalent Clio.

Van performance is not necessarily being delivered at the expense of fuel economy or a bigger carbon footprint. Trafic's average fuel economy has improved by more than 5 mpg across the range, compared with its immediate predecessor, says Renault.

Nor is it the only model to show improvement. Restyled and boasting a higher payload capacity, Vauxhall's latest Euro 6 Corsavan comes with fuel economy figures of up to 85.6mpg and CO₂ emissions as low as 87g/km.

Euro 6 will be mandatory for any diesel van entering the planned central London 24/7 ULEZ (Ultra Low Emission Zone) due to be introduced on 7 September 2020, unless the owner wishes to pay a daily charge. Petrol vans will only have to meet Euro 4, however – a concession that may prompt increased interest in the use of petrol-powered light commercials on urban delivery routes. [TE](#)