



Weighing



Inadvertent overloading is a perennial worry. Steve Banner talks to equipment manufacturers and specialists about solutions, costs, technologies and appropriate actions

Onboard axle weight systems are useful, but don't expect pinpoint accuracy

Executing a chassis conversion can be a bit like three-dimensional chess. The overall length must not be breached; turning circle restrictions must be obeyed; and rear swing-out must be within bounds.

Furthermore, the truck must be designed to minimise any danger of gross or axle overload and, if the work is conducted pre-registration, everything must comply with EC Whole Vehicle Type Approval. And these days, that includes staying within the electronic stability programme envelope.

Addressing axle overloading is almost the easy bit, despite the threat of prosecution if axle weights are exceeded. Trucks are often constructed with a theoretical risk of axle overload, but in practice it doesn't happen, because of the nature of their work. As Brent Carmichael, operations manager at Britcom

International (which handles 150–200 conversions annually, including changing wheelbases, fitting mid-lift and tag axles, and turning tractors into rigids), says: "We've constructed chassis for removal vans that would suffer a drive-axle overload if they were evenly loaded to maximum gross." But on removal work, that situation is highly unlikely.

What about others on, say, multi-drop work, where vehicles unloaded from the rear experience weight transfer that might lead to the front axle being overburdened? To combat this, the driver would have to stop and move the load backwards: not always practical if there is no ready access to a forklift or a pallet truck – or if the load is not palletised.

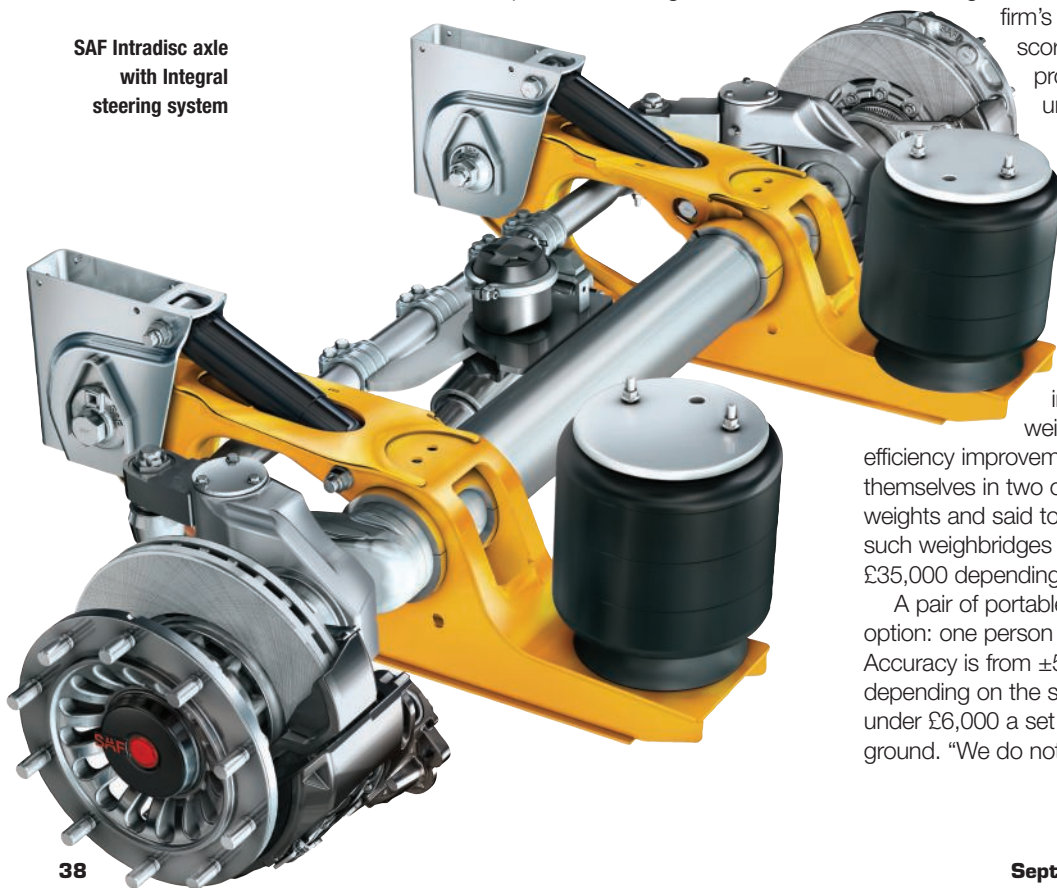
A difficulty is knowing whether an axle is overloaded or still has spare capacity. Fear of overloading and the impact that would have on a firm's OCRS (operator compliance risk score) if they were caught is prompting some to send trucks out underloaded, with all the costs and inefficiencies that implies, according to Derek Hack, sales manager at Axle Weight Technology (Axtec).

"That was the situation at Hanson Building Products, which uses drawbars to deliver bricks and blocks to builders' merchants," he explains. "We installed dynamic drive-over axle weighbridges at their sites and the

efficiency improvements mean they've paid for themselves in two or three months." Also giving gross weights and said to be capable of $\pm 0.25\%$ accuracy, such weighbridges cost anywhere from £12,000 to £35,000 depending on the ground works needed.

A pair of portable axle weigh pads is another option: one person can easily carry both unaided. Accuracy is from $\pm 50\text{kg}$ to $\pm 100\text{kg}$, says Hack, depending on the size of the truck. They cost just under £6,000 a set and should only be used on level ground. "We do not, however, recommend their use

SAF Intradisc axle with Integral steering system





up the odds

with anything heavier than an 18-tonner,” warns Hack.

Not everybody has access to a weighbridge or weigh pads. Hence the proliferation of onboard systems that display individual axle loading and gross weight on a screen in the driver’s cab. The data can be stored in the unit’s memory and the device connected to a tracker so that the depot traffic office is instantly alerted to any overloading incident.

But onboard weighing equipment specialist Barry Napper warns that such equipment may not be quite as accurate as operators think – at least as far as individual axles are concerned. “Load cells can help, but all they do is weigh the load in the body and tell you how much is at the front and the back,” he observes. In other words, you get load distribution, not the precise weight, and anything from tight bushes to worn springs prevents improvement.

Degrees of accuracy

“You can install an onboard weighing system that relies on spring deflection,” he agrees. “But while that’s fine for light vehicles, it won’t stay in calibration for any length of time, particularly on, say, eight-wheelers that are in and out of quarries.”

With prices starting at £1,500 for a two-axle chassis, Axtec offers onboard axle and gross weighers that use a mini load cell measuring spring deflection on axles with steel suspension, or a pressure transducer for air. “We’ve written software so that operators can adjust our equipment to take wear and tear into account,” advises Hack. However he does not claim pinpoint accuracy. “What we offer works to $\pm 2.5\%$ on a two-axle rigid, increasing to $\pm 5\%$ on a three- or four-axle truck,” he says.

Bowmonk offers a similar system designed to tell the driver of an artic the vehicle’s gross weight, how much is on the trailer bogie and how much on the tractor’s fifth wheel – and if weights are being exceeded. It taps into the air suspension to obtain the data and there is an overload alarm in the cab.

Costing £1,475 and with an installation time of four to five hours, it can be linked to in-vehicle telematics so that data can be transmitted to home base. It can also be linked by Bluetooth to an Android phone, too. Claimed accuracy is $\pm 0.5\%$.

While such systems may not work to the nearest kilo, and are not at present available for trailers, they

can indicate an overload problem to the driver. And that should prompt him or her to visit the nearest dynamic weighbridge.

Much the same is true of any such system – including Wabco’s TEBS E trailer braking system. “Every EBS has a pneumatic or electrical connection to the air-suspension bellows,” explains field service engineer Andy Chapman. “The data from this is used by the ECU to calculate the appropriate braking for a given axle or bogie load and, as a spin-off, we are able to give the operator axle load information.”

This can be done in three ways. “Data transmitted to the towing vehicle, via the CAN network, can be viewed by the driver on a dashboard display, if the truck is suitably enabled,” he explains. “The second and more common option is to show it on the Wabco Smartboard, attached to the trailer, while the third option is to make it available to the traffic office via a telematic link.”

Again, what it indicates is the degree to which the bogie is overloaded. It does not reveal loading on individual axles and Wabco makes no guarantees as to precision. “It’s within a couple of per cent either way, and the Smartboard offers the ability to calibrate the pressure sensor,” states Chapman. And a Smartboard will only cost you £150. **TE**

Hanson Building Products’ dynamic drive-over weighbridge

