



BRAKING with tradition

Braking and stability system builders continue to add technology to keep drivers and vehicles out of trouble – and, by the close of this year, trucks look set to overtake cars in the safety league, writes Ian Norwell

When disc brakes and electronic actuation were introduced on heavy trucks in 1996, some observers felt that they could lead to safety hazards – because trucks would stop too quickly for following traffic. As Luddite as that may sound now, test track demonstrations at the time were dramatic. So it's worth reminding ourselves just what an improvement those two technologies brought to transport.

Picture a pair of 44-tonne tractor and semi-trailer combinations, under full emergency braking on a test track, from 90kph. The vehicle with conventional non-electronic, drums and shoes assemblies took a full 18 metres further to stop than the EPB (electro-pneumatic braking) and disc pad-shod newcomer. That was nearly 20 years ago, and obviously the big gain was from the fast response to the braking request at the hubs. But C&U (Construction and Use) regulations still require full air plumbing from footbrake to hub, overlain by electronics, as a failsafe.

The European Commission's law makers have an interesting variation of approach to environmental and

safety regulation. While successive Euro emissions limits have been pushed upon the industry (not to say that engines wouldn't have become somewhat cleaner anyway), safety legislation has seen more of a pull, with the EC reacting to the emergence of technologies such as lane departure warning (LDW). That 'lane assist' device is to become mandatory on new vehicles from 1 November 2015, as is advanced emergency braking (AEBS).

Reactive regulation

If these devices had not been invented by truck makers and their suppliers – with Bosch probably the lead innovator – they would almost certainly not be the subject of impending legislation now. It's a similar story with vehicle stability control (VSC), the commercial vehicle equivalent of ESP (electronic stability program), which became mandatory in November 2014. And remember, when ABS (anti-lock-braking) became mandatory for new cars in 2007, it had already been in limited production for well over 30 years.

"The elevation from being on a manufacturer's

option list, to being a mandatory fitment, is down to good lobbying by the system manufacturers,” insists Nick Blake, head of engineering at Mercedes-Benz trucks in the UK. And he explains: “They only recoup their significant development expenditure when the legal deadline arrives.”

He’s right: typical take up of such new, and inevitably expensive systems, runs at around 5%. That gets boosted to 100% when the law steps in. Normally a word with a pejorative slant, lobbying here saves lives. Typically, vehicle manufacturers and tier one suppliers identify a safety device, and there it starts its journey as an option on higher-spec vehicles, with the target of becoming mandatory in the longer term.

Fast-forward to today. AEBS has been an option for only a couple of years, but the fact that it will be mandatory on new trucks from November this year, is an interesting illustration of how short a time it is now taking the EC to wake up to safety innovations.

So what will you get with AEBS? It is not, as widely perceived, a device that prevents impacts. It is



designed for collision mitigation, and in much the same way as Euro 6 has a phase-in period with progressive OBD (on-board diagnostics) thresholds for NOx detection, so AEBS has a bi-level introduction schedule. From 1 November 2015, Level 1 AEBS will provide braking intervention from 80kph to a guaranteed 30kph before impact, without driver input. Level 2 criteria, due to become mandatory from 1 November 2018, has the lower terminal threshold of 10kph. Neither level guarantees a full halt before impact: that is another level again, and there are no current legislative plans to bring it in.

The introduction of mandatory AEBS in November will break a mould. Trucks have traditionally been the beneficiaries of ‘trickle-down’ technology from the volume car industry. AEBS marks the point where commercial vehicles overtake cars.

Will there be a price implication? The short answer is yes. Volvo reckons there will be a cost for its version of AEBS, but a figure has yet to be confirmed. DAF is in the same boat, and marketing manager Phil Moon says development and equipment costs will need to be recouped, with the

radar detectors in particular not being cheap. But while he is unable to quote a figure, he warns against taking the current option price as a guide. “Pre-mandatory volumes of this kind of equipment are obviously very low, and it must be priced accordingly. When AEBS becomes standard fitment, the volumes not only rise dramatically, but they also become more predictable.”

The message is clear: don’t expect to get it for nothing, but it should be a good deal less than the current price. As ever, forecasting the price with desperate sales forces and disparate buyers is akin to knitting fog. A hard bargain driver may get it for nothing. That said, Mercedes-Benz’ version of AEBS, active brake assist (ABA) has a declared price tag of £500, but the German giant will not have a Level 1 system, instead going straight to Level 2 in November, offering the enhanced performance not then required by law.

Collision avoidance

For fleet managers wanting to go the whole nine yards, Mercedes is also able to offer its ABA3. This is a genuine collision avoidance system that will stop a truck from 80kph, when presented with stationary obstacles. Although it has a beefier ticket price of £3,000, it’s still a figure easily saved with a single accident. If a fleet manager decides to equip just a few tractors with this, as an experiment, I’d be intrigued to see their accident statistics five years hence.

Volvo’s ‘full-fat’ AEBS, its forward collision warning (FCW), does the same job and carries a premium of around £2,500. Fleet managers going for the top-spec system may like to contact their insurers. For so long having sat on their hands as fleets invest in safety equipment (mandatory or otherwise), insurers finally reacted to the fitment of forward-facing cameras by reducing premiums. Will AEBS have a similar effect?

With Euro 6 emissions, most chief engineers say that the job is done. But with braking and safety systems, the boilers continue to be stoked. Sitting in the same safety-critical category as braking is steering, and many engineers see that as next on the list for attention. Cars already have parallel park assistance, but a change in legislation will be needed for commercial vehicles to absorb the same style of intervention.

As more stepping stones are dropped in the river, it becomes progressively easier to see where they are going. Mercedes-Benz’s pre-IAA demonstration of its autonomous truck ‘Highway Pilot’ last July, on the A14 motorway near Magdeburg, (*Transport Engineer*, September 2014, p16) seems the inescapable conclusion. A truck that operates independently, and is electronically aware of all other vehicles and its surroundings, it does look like the shape of things to come. **TE**

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