

The brake used to be the middle pedal, but with the clutch gone the way of so much driver control, there are now only two. And with the accelerator already working part time, automation may yet challenge even these in the driver's footwell.

It's a moot point whether AEBS (advanced emergency braking systems) legislation would have arrived as early as last November had the technologies not been pushed by OEMs and system suppliers. Either way, that November deadline marked the point when new trucks became better equipped with safety systems than the average car.

In fact, the EU's drive to mandate such safety systems was spurred on by a white paper on European transport policy in 2011. Its target was to halve the number of fatalities on EU roads by 2020, and move close to zero fatalities by 2050. Advanced driver assistance systems (ADAS) were seen as the route, so Regulation 661/2009/EC mandated a phased approach. Electronic stability control (ESC) arrived in November 2011, and lane departure warning (LDW) and AEBS in 2013 for new type approvals.

Step back a moment: system designers, such as Wabco and Bosch, have had to live with very slow uptake. A lifetime ago, when ABS (anti-lock braking system) was developed, take-up rose gradually to 4% of registrations. When it became mandatory (for commercial vehicles in October 1991), ABS had already been in production for well over 30 years.

That was a slow burn, but the fuse is getting shorter. Yes, AEBS arrived in commercial vehicles as a mandatory fitment last November, but it's only been available for a few short years.

That said, some industry pundits worry about a perception that the equipment in a newly registered truck is a full emergency brake stop. That's not

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# COLLISION

**Braking and stability systems have been influenced as much by legislation as engineering innovation, but the new technology comes in several different strengths. Ian Norwell explains**

the case. As DAF Trucks demonstration driver and trainer Mandy Wannerton says: "Spectacular video clips that show full-pressure automated stops have been circulating for a while, and many drivers mistakenly assume that it's what they will have."

## **ACCIDENT AVOIDANCE**

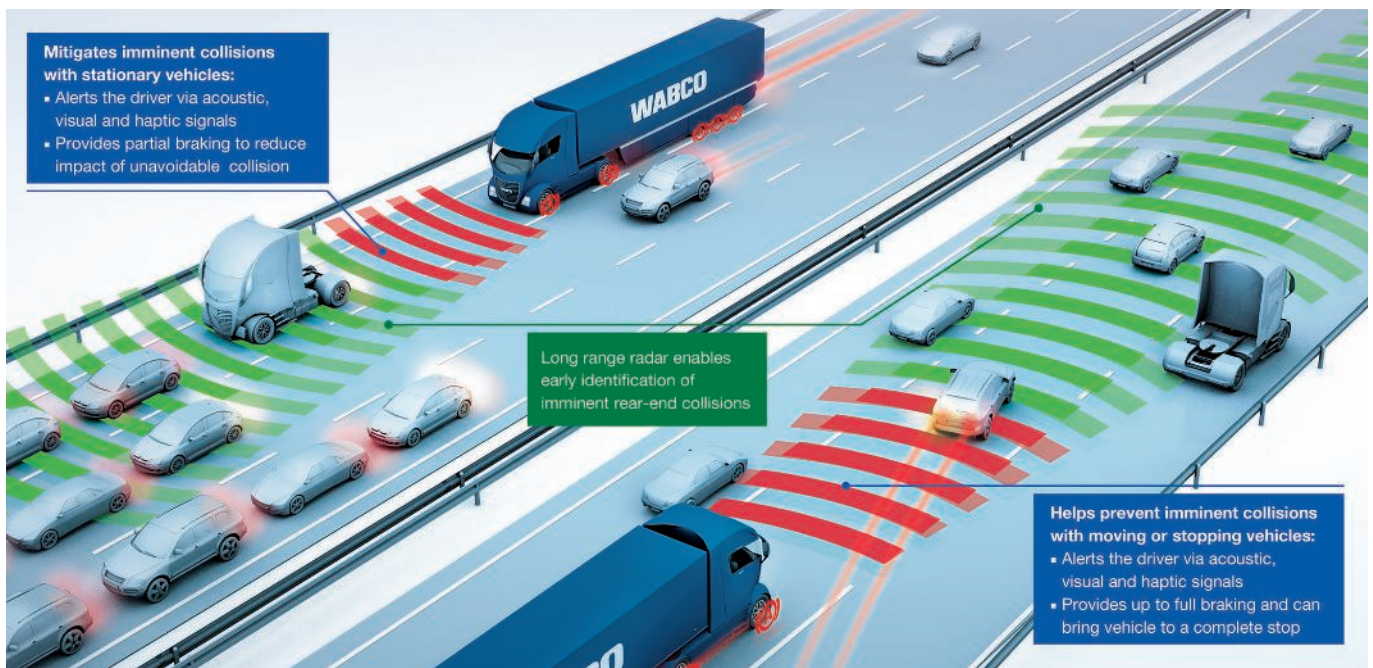
Wannerton concedes that some trucks may be fitted with full collision avoidance, but insists they will be a rarity. "The vast bulk of systems in trucks registered from November 2015 are better described as collision mitigation. They do not provide that complete halt." Clearly, drivers shouldn't be modifying safe driving styles simply because AEBS is fitted, but this distinction matters.

Among suppliers leading the charge

for AEBS is Wabco. Its accountants must now be looking forward to a return on substantial R&D investments, given the firm launched its EBS for CVs back in 1996. At the time, it represented an exceptional advance, resulting in some of the most dramatic test track brake demonstrations on the planet.

But that led to ESC attracting more legislation. "Now, to meet the European Commission's requirements for AEBS, a haptic or acoustic warning needs to be initiated no later than 1.4 seconds before the start of emergency braking," says Wabco chief technology officer Dr Christian Wiehen.

That's the precursor. Current AEBS legislation is then framed as a two-step process, both based on collision mitigation, not avoidance. Step one



# MITIGATION

(November 2015 registrations onwards) has two performance expectations to limit an impact, firstly on slow-moving vehicles, and secondly on stationary traffic. It applies to vehicles over eight tonnes with air brakes and air suspension. Step two AEBS (November 2018) increases the performance requirements, but also brings down the weight class to 3.5 tonnes.

Step three has yet to be framed, but this is likely to deliver full-fat collision avoidance. "For now, AEBS step two will mean a vehicle driving at 80kph should not impact a vehicle driving at 12kph," explains Wiehen. Clearly, though, that's mitigation - not the star of YouTube's show, which is full collision avoidance. So, in the absence of legislation, unless you've paid for the full-fat AEBS option, it won't be on your truck.

And there are two technical and commercial challenges here. First, truck makers need to integrate expensive kit with the lowest possible price impact.

New model ranges offer a good opportunity to soften the blow. But, secondly, system developers need to get full AEBS on to the statute books to drive financially viable uptake.

## FULL-FAT SYSTEMS

It's not that truck makers are standing in the way. Some who actively promote safety already offer full-fat systems. No surprises: you can order them on a Volvo FH and a Mercedes-Benz Actros, for example. Meanwhile, other truck makers are ahead of the game, too - among them DAF and Iveco, which have gone straight to the 2018 AEBS levels, bypassing step one.

"Our latest AEBS - OnGuardActive - is capable of delivering full braking on moving and stopping vehicles, as well as partial braking on stationary vehicles, and it can bring the vehicle to a complete stop," asserts Wiehen. "Its 77GHz radar sensor offers up to five times the bandwidth of 24GHz systems

already on the market." And he adds that the system's dual-mode function addresses both long range and adjacent lane views. In fact, it analyses traffic up to 200 metres ahead, recognising critical driving situations earlier than in the past.

But how much extra will fleet managers pay for top level protection? Mercedes ABA3 (active brake assist) costs £3,000 and the Volvo equivalent, FCW (forward collision warning), is £2,500. It's not difficult to see both as reasonable, but the creep of legislation suggests it will take time to make even step-one systems commonplace.

The result: "As a truck is maybe five years in first ownership and then often sold to eastern countries that also operate in the EU, it will take 10 years until ADAS has been fitted in every CV on European roads," opines Wiehen.

During this period, differentials in braking capability will widen, with older non-AEBS and ABA3-equipped fleets sharing road space. If these are driving in the same lane, then less-advanced following vehicles could be at risk. That's certainly no argument for non-fitment, but it could make sense to mandate pulsing LED brake lights on trailers pulled by advanced trucks - giving their poor relations a sporting chance. [TE](#)