

Like the death of Mark Twain, the demise of the driver in autonomous trucks has been greatly exaggerated. Ian Norwell reports from Las Vegas

The fact that I am writing here about a Freightliner Cascadia developed to drive autonomously, and not a Mercedes-Benz Actros truck, is simply a point of law. The Road Pilot AD (autonomous driving) demonstration prior to last year's Hanover IAA (*Transport Engineer*, September 2014) did involve a European Actros, but on a section of the A14 near Magdeberg not yet open to the public.

And there's the rub. While the technology seems to work, there are legislative impediments that prevent the control of a vehicle's steering being removed from the driver. Transport engineers are also naturally cautious folk, and that's why safety levels are so good. However, in the US, a little daring has brought rewards.

Hence, Nevada as the chosen venue for this 'first' - it was the leader of five (current count) US states that have been agile in adapting legislation to meet AD technology. At the Las Vegas Motor Speedway (NASCAR circuit) launch, the hyperbole was shipped in with the chilled water, and iconic lines from no less than JFK and Neil Armstrong were hammered to fit, with a whiff of James T Kirk. But Nevada state governor Brian Sandoval was justifiably delighted to screw the first official red AV (autonomous vehicle) licence plate to the front bumper of a Freightliner Cascadia tractor.

In point of fact, it is the raft of driver assistance systems already available for heavy trucks that has paved the way for

# DRIVING

this AD. Legislators in Europe like these safety benefits, with the EU making lane departure warning (LDW) and advanced emergency braking systems (AEBS) mandatory on new trucks from November this year. The shelves in Daimler's safety systems department are groaning under the weight of devices

like these, and all have been spooned into the Freightliner Cascadia, with that vital added steering intervention, to produce an AD truck.

It's a pile of acronyms on the move. An AMT (automated manual transmission), cruise control that is both predictive and adaptive (PCC and ACC),



A Daimler Freightliner Inspiration truck, equipped with the intelligent Highway Pilot system, became the world's first autonomous truck to be licensed for operation on public roads - in Nevada, USA

# SEAT

brake assist (BA), AEBS and LDW have all joined hands in a virtuous circle to control the safe progress of this truck. The necessary cherry on this cake is the electronic steering control directed by the LDW video and radar sensors.

As with many breakthroughs, the demonstration was undramatic in that not much happened. The truck drove itself over sections of a route, while the driver told us what was going on, looking at us in the rear of the cab, with his eyes confidently not on the road. While we were only in AD mode on sections of freeway, further developments will soon enable a yard-to-yard AD route, handling traffic lights, roundabouts, pedestrian crossings and all the other paraphernalia.

That said, president and CEO of Daimler Trucks North America Martin Daum is emphatic that the role of driver is not over. "The advent of AD marks a new chapter in the relationship between drivers and their trucks. We are certainly not entering the era of driverless trucks." And he makes the point that, even with all the assistance systems, unexpected events that require driver intervention may happen.

So the driver will stay in his seat while the truck is on the move. But in AD mode, he or she will be engaged in other tasks, probably work carried out by traffic offices today. Arranging scheduled servicing, booking backloads and ferry crossings, email administration, etc, are likely fare. Quite how the average driver will view this mission creep remains to be seen, but it could also be viewed as up-skilling of a job that struggles to rid itself of a deep blue collar label.

## INTEGRATED DRIVETRAIN

Nevertheless, although the truck industry is conservative - and nowhere more so than heartland US - big changes are afoot. To date, the archetypal component truck buyer has stuck, at least in perception. Fleet owners and owner-drivers have been used to specifying their own choice of engines, gearboxes and rear axles. And the result: compromises in design by truck makers forced to accommodate a wide range of heavy componentry.

But, says Daimler Trucks North America marketing director Diane Hames, that age is officially dead. For

the future, we're looking at an integrated drive train approach. "In the last decade, there has been a dramatic shift away from the old, and frankly inefficient, way of ordering trucks," she explains. "The latest move has been led by the big fleet buyers, who were quickly convinced when they saw the fuel economy gains on offer."

And asked if dyed in the wool owner-drivers are proving as easy to win over, she responds: "You'd be surprised." As market leader in the US class eight (over 16 tonnes gww), her view counts. The image of the hard-bitten, gear-jamming US trucker persists, but, according to Hames at least, 40% of current Freightliner Cascadia production has an AMT fitted.

Why the remarkable change? Because as soon as the depth of the 2009 recession became clear, the US Department of Energy challenged industry to go on an unprecedented efficiency drive, via its so-called Stimulus Act, backed by federal funds. As part of that, the transport sector was given the Supertruck project, which demanded a 50% efficiency uplift measured in tonnes moved per litre/kilometre.

***“The advent of autonomous driving marks a new chapter in the relationship between drivers and their trucks. We are certainly not entering the era of driverless trucks though”***

*Martin Daum*

Freightliner used a 2009 Cascadia tractor unit as the baseline and wisely dragged a trailer into the project. Then, using radical aerodynamics, waste heat recovery, a down-speeded engine, extensive aluminium (cutting 1,270kg off a tractor-trailer combination tare weight) – and spreading development across four continents and eight Daimler subsidiaries – the result was a 115% efficiency improvement.

“There’s so much more that can be done, if legislators would work with the industry better,” insists TJ Reed, Daimler Trucks North America director of product strategy. He cites, for example, the removal of large mirrors, and their replacement by small cameras, with in-cab screens on the ‘A’ pillars. He claims an instant 1.5% fuel efficiency gain, but



that proposal meets legal barriers. And much the same is true of other vehicle enhancements.

So, the US is modernising quickly, but did I ‘feel the future’ in the AD Cascadia?

Yes. I certainly got the impression that legislators need to sharpen up their act and buy themselves a telescope. There’s a lot of exciting technology on the way that escapes the naked eye. [TE](#)



# ALPHA

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