

Over the horizon

If the past is a guide to the future, then where trucks are concerned several themes are likely to dominate – among them, legislation. In the wake of Euro 6, truck makers had hoped to be finally rid of the hair shirt they've been wearing since Euro 1. They were looking forward to spending R&D cash on customer innovations rather than yet more compliance.

Sadly, comments from Ricardo's Andy Noble (*Transport Engineer*, March 2016 page 10) reveal such excitement to be premature. And whether further regulation comes from the EU, the DfT (Department for Transport), or TfL (Transport for London), the effect will likely be the same: higher prices and greater demands on engineering.

Operators running fleets around the capital have learned to live with CLOCS (Construction Logistics and Cyclist Safety) and FORS (Freight Operators Recognition Scheme). They know what compliance requires – and they know that TfL's efforts will soon be influential elsewhere. Latest proposals call for a peak time delivery ban as well as extra glazing to nearside cab doors on HGVs. No wonder fleets feel unloved.

But attitudes are changing. Fleet managers I've spoken to are adopting a pragmatic-cum-commercial approach, and revelling in compliance. Why? They see it as a commercial advantage that differentiates them from the rest.

Back on emissions compliance,

though, truck OEMs are not alone in driving advances. Equipment suppliers are busy, too – and Steve Caddy, director of advanced engineering at Cummins, says that includes turbocharger manufacturers. "As reducing fuel consumption and emissions become more critical, different turbochargers are key for different engine ratings," he says, adding that wastegate, two-stage, and VGT (variable geometry turbine) turbochargers are being revisited.

DRIVEN BY INNOVATION

Why? Not least due to truck innovations elsewhere. "Better truck aerodynamics and tyre technology reduce the power required under cruise conditions, so reducing energy available in the exhaust to drive the turbine," he explains. So Cummins Turbo Technologies is developing new turbine profiles to extract more energy and hence further improve fuel efficiency.

Name almost any part of a truck, from tyres to telematics, and comparable improvements are coming. However, developments relating to

vehicle connectivity are among the most interesting. According to Dr Wolfgang Bernhard, director of trucks and buses at Daimler, almost every aspect of future trucks will be connected to the internet. Everything from components to subassemblies, vehicles, shippers, container ports, fleet workshops – even other vehicles – will be open for data traffic over the web, he says.

Indeed, speaking in Düsseldorf at a recent Mercedes-Benz technology conference, he insisted that anything not connected will in the future be viewed as people today without mobile phones. As for applications, how about autonomous driving (AD) in concert with currently topical truck platoons?

At the event, Bernhard pointed to an on-highway demo of automatically managed trucks on the A52 motorway near Düsseldorf, using the firm's latest AD upgrade, dubbed Highway Pilot Connect. Three Actros trucks were shown running in platoon formation.

All drivers were in hands-free mode and other traffic was seen comfortably interacting with the platoon. A 15 metre truck gap was enough to allow other vehicles to cut in and leave or join the motorway – with the gap automatically enlarging and closing as appropriate.

It's important to squash the term 'driverless trucks', because that's not what this was about. Nor is it proposed anytime soon. The combination of AD and platooning gives three straight

"As reducing fuel consumption and emissions become more critical, different turbochargers will be key for different engine ratings"

Steve Caddy

Trucks are changing, but what should fleet engineers expect? Will the future be better, or just different and more expensive? Ian Norwell dusts off his crystal ball



Lighter matters

The heavy truck industry is making its own moves towards a more efficient future, and usually steals the limelight, but burgeoning numbers of vans on UK roads also justify a glance at the future. A concept vehicle execution of Iveco's Daily looks at what drivers and fleet operators might expect from future generations.

"Its creation is centred, above all, on low environmental impact, mobility and safety," comments Stuart Webster, managing director of Iveco. Obvious changes are a hybrid power unit with a significant full-electric range for urban work. More unusual are see-through 'A' pillars, a photovoltaic roof, tyre pressures that are adjustable on the move, and novel cargo-protection airbags.

More than 15 companies partnered the Iveco exercise, including Bosch, Dainese, Brembo, Streparava and Arcelor Mittal. Its regular Daily has green alternatives, too. They'll get harder to ignore as legislation creeps.

wins: trucks running at top efficiency; best use of available road capacity; and fuel economy improved through better aerodynamics. Looks like a win-win-win. And legislators, known for dragging their heels, seem to be waking up.

BODY BEAUTIFUL

But trailer and bodybuilders are looking to the future, too. Don-Bur - well known for ensuring that trailers complement increasingly slippery cab designs - is one such. Richard Owens, group marketing manager, says the obsession is always around aerodynamic drag and vehicle weight.

"For rigid truck bodies, weight is more critical as their natural habitat is on stop-start duty cycles, which are already fuel-hungry," he asserts. "But weight takes a back seat for semi-trailers on 44-tonne work, where aerodynamics become crucial."

Don-Bur's Mk1 teardrop design is now a decade in service and the firm is currently exploring a variety of innovations. "It's a pragmatic exercise,"

says Owens, "Weight, strength, cost and serviceability are the main forces at work." Aerodynamic drag is split into thirds between front bumper, rear doors and other parasitic losses. These latter include axles and structural members along the trailer length.

Creative use of encapsulation is one thing, but - as with the undersides of tractors - overheating is an issue surrounding trailer wheels. And Owens says he's unconvinced by rear-end 'boat-tail' designs, simply because they are vulnerable - and one damage event can wipe out several years' savings.

So Don-Bur is investing in 'plasma actuator' technology, designed to modify airflow without the need for physical structures. Research is also underway to cut weight by using lighter base materials, and spraying them with carbon fibre for additional strength.

Meanwhile, sources at Wabco tell me that trailers will soon get more intelligent, too. Trailer-related data reporting - including location, axle load, tyre pressure, reefer temperature and

door status - should become the norm, says the spokesperson. So far, uptake of such technologies remains lacking. Indeed, only around 6% of trailers are equipped with a telematics-based fleet management system. And just 3% of fleets are using remote diagnostics, like tyre pressure monitoring. [TE](#)