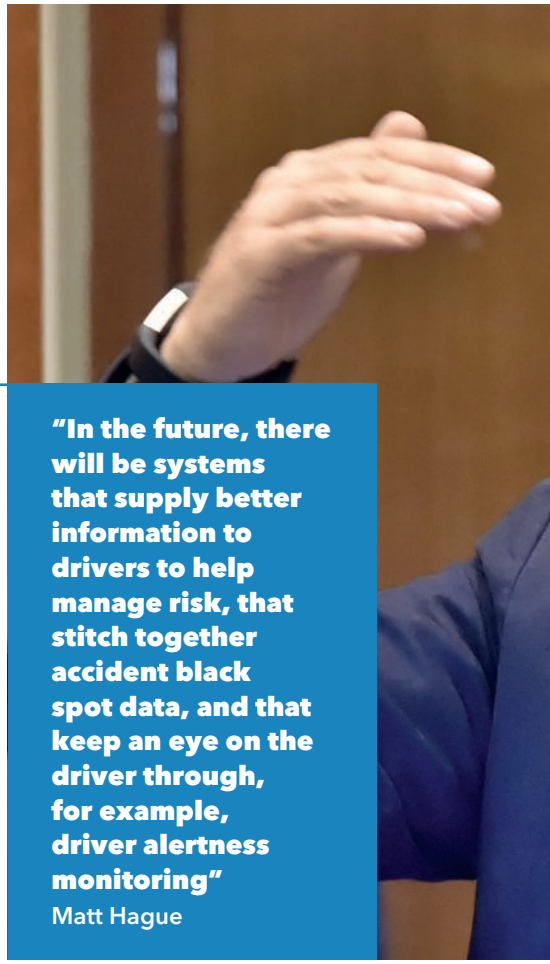
Fast *forward*

The IRTE Conference afternoon technology stream sessions covered telematics, advanced safety systems, such as autonomous braking, and low-carbon accreditation of HGVs. Will Dalrymple reports



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TELEMATICS TO TRANSFORM

Telematics systems protect drivers and the public through high-definition tracking and incident data recording, according to Microlise executive director for product strategy Matt Hague (pictured, main image) – and that reduces the number of incidents and speeding, too. In the future, there will be systems that supply better information to drivers to help manage risk, that stitch together accident black spot data, and that keep an eye on the driver through, for example, driver alertness monitoring.

A second benefit of telematics is in promoting professional driving, producing reports for drivers that help improve fuel efficiency and provide driver aids, such as a break countdown on Microlise's in-cab tablet, Drivetab. In future, these services will involve less management intervention, but become self-service.

A third benefit is logistics efficiency. Journey-planning functions help reduce wasted miles by 10%, and increase visibility of empty running. What's coming is what Hague calls 'horizontal collaborative optimisation' – load sharing systems to help increase the filling of UK trucks, half of which are estimated to be running less than 30% full. Test results show that smaller operators have 27% better yield.

Telematics systems also provide maintenance benefits. Remote diagnostics data increasingly supports proactive servicing regimes – that is, targeted servicing, rather than servicing for servicing's sake; the benefit being increased uptime, reduced costs, increased attachment rates and lower warranty costs. JCB has been running remote health monitoring for eight years, and has found that it reduces warranty claims.

Next steps for maintenance include enhanced fuel and driving style performance reporting, combining remote diagnostics with fault histories. This offering, which involves a lot of complicated processes, aims to target the top failure modes. Early data suggests that batteries are possibly the weakest point of a truck.

Many of these systems depend on what's called big data: sifting through large quantities of information generated by sensors on operational systems. Hague said: "How to glean useful information from an ocean of data is a challenge, but new technologies and techniques are enabling us to scale up and process large data sets in a quick and agile way." In one government-funded project (VEDAT), it worked with the University of Nottingham on telematics data mining research.

Tony Owen, transport solutions manager for Renault Trucks, points out that the market doesn't need more data: what it needs is guidance on what actions to take based on data to save money and improve safety, such as a servicing plan from a garage. "We're moving from data to action," he said.

This results-focused approach has evolved from the early days of telematics, he recalls, when the customer had to be an expert, and in charge of using the data. What they actually need is a system to do that job. Truck OEMs are well-placed for this, he argues, as their strength lies in the interpretation of vehicle data.

Another interesting coming development is the eCall system for trucks. In the event of an accident, it provides, automatically, precise coordinates of the accident to local emergency services. Doing so will require the installation of a GPS tracker and a means of GSM data and voice communication. (According to the EC report, *https://is.gd/afobin*, it will be fitted in N1 vehicles – goods vehicles under 3.5 tonnes – as standard from 31 March 2018.)

ADVANCED SAFETY SYSTEMS

Developments continue apace in another kind of on-vehicle technology, advanced safety systems, according to speakers from Mercedes-Benz, Vision Techniques and Brigade Electronics.

Accident data show the need for active safety systems in trucks, argues Ross Paterson, head of product and marketing at Mercedes-Benz. In research based on data from continental Europe, 33% of serious accidents involving trucks were caused by the truck crashing into the vehicle in

FACT

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front (39% involved 'track guidance' – steering issues). Of the rear-end collisions, 39% had no brake application at all, because the driver did not see the obstruction (one assumes); 38% had emergency braking, but were too late; 20% had partial braking.

One technological mitigation has been AEBS, autonomous emergency braking systems. Level 1, which came into effect in November 2015, requires reduced speeds before impact. Slightly increased performance levels are due to be enforced starting in November 2018.

On top of this, Mercedes-Benz offers two optional emergency braking safety systems: Active Brake Assist (ABA)3 and ABA4. Both systems can stop a truck from 80kph when approaching slowing or stationary vehicles. They use a long-range (250m) and short-range (70m) radar scan of the road ahead, initially providing a warning; if no response from the driver is forthcoming, they intervene to apply the brakes. ABA4, launched 12 months ago, can also detect pedestrians at truck speeds up to 50kph by scanning under obstacles such as parked cars; this feature is said to be unique.

Without careful integration, multiple safety systems can become a nuisance to drivers, who start to tune them out, argued Steve Smith, BrakeSafe manager at Vision Techniques. To avoid that risk, his company favours a streamlined, single-screen approach. Video analysis is a key technology development, as it is used in its VT TurnSafe cyclist safety system, and in its driver fatigue monitoring system. (In contrast, its BrakeSafe system is an automated failsafe to prevent vehicle runaway when the driver leaves the cab.) Like at Mercedes-Benz, a company focus is on developing automated engineering solutions that do not so much reduce risk as eliminate it completely. Such systems also have the benefit of requiring little driver training, he said.

Both Vision Techniques and Brigade Electronics offer 360° vision systems that stitch together multiple camera views into a single bird's eye view of the vehicle. Bernd John (pictured, inset), Brigade's product development manager, contends that these systems overcome an inevitable limitation of even Direct Vision-compliant truck cabs: blind spots. He wonders whether the time it takes for the driver to check all of the windows and mirrors – several seconds – may be greater than the time it takes for the traffic situation outside to change.

John went on to say that automated electronic braking systems will continue to be developed; Brigade is currently doing research with Cambridge University on predicting pedestrian-truck collisions a second or two in advance. According to TRL (Transport Research Laboratory), city turning braking assist systems are also coming: that development indicates that in the future more control will be given from the driver to technology, John points out.

Also, these systems are not foolproof; autonomous braking systems should still be taught to drivers, John argues. First, they need to understand their benefits, so they don't switch the systems off. Second, they need to understand the systems' limitations, so they are aware of the risk of misleading situations leading to false positive actuations.

LOW-CARBON ACCREDITATION

Technology and systems used to reduce carbon emissions was the subject of the next session, which featured presentations by Cenex, LowCVP and the Freight Transport Association (FTA).

In general, the process of a company adopting low-carbon vehicles goes through four stages: research phase, trial phase, depot pilot and then larger fleet roll-out, according to Steve Carroll, head of transport at low-carbon consultancy Cenex.

He then focused on trials in more detail. Mostly, they are self-funded, though public money is sometimes available. The benefits to the company in getting involved include shared learning, and reduced risk; particularly in large consortia, companies can gain lots of support for only the cost of a single truck. The application process involves joining a project consortium, for example with a university (as they are able to access higher levels of funding), putting together an application, and submitting to a Dragons' Den-style interview.

Once approved, there are data submission requirements as well as quarterly meetings. Funding is generally 50% of the premium of the test product charged over run-of-the-mill material goods, plus there's compensation for time, maintenance and infrastructure investments.

Fleets looking for diesel alternatives need not buy only new. Brian Robinson, commercial vehicle programme manager, Low Carbon Vehicle Partnership, described two tests developed recently to prove the benefits of low-carbon retrofit technologies.

First is LowCVP's year-old Certification Scheme for Aftermarket Technologies, for modifications such as aerodynamic improvements and tyres. It measures the performance improvement over baseline vehicles in tests that are either track-based or conducted with PEMS (portable emissions measurement systems). The test provides a way for manufacturers and vendors of carbon-saving components to generate evidence of their products' performance benefits.

The other, the Clean Vehicle Retrofit Accreditation Scheme, was developed jointly by LowCVP and the Energy Saving Trust and launched earlier this year. Its purpose is to test upgrades of Euro III-V engines in buses, coaches and trucks to reach the emissions requirements of Euro VI, particularly with an eye to the requirements of clean air zones. It consists of dynamometer-based testing, and track tests for vehicles over 26 tonnes. It includes four operating cycles, including a stop-start city-type cycle, and the initial focus is buses.

FACT

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Those fleet engineers looking to reduce the carbon footprint of fleet operations, regardless of engine technology, might benefit from joining the Logistics Carbon Reduction Scheme. Rebecca Kite (pictured above), environment policy manager at the FTA, which audits the scheme, outlined the programme that, eight years after launch, now includes 131 operators and captures data from more than 88,000 vehicles. It is free to join (*https://is.gd/ukujin*), does not require FTA membership, and is open to any operator with one commercial vehicle; members can use the scheme's logo and can compete in an annual awards programme.

Data reporting is relatively simple; members report simply their trucks' fuel usage and distances travelled (that data is confidential). From 2010-2015, members of the group had achieved a 7% carbon reduction to reach an overall average of 715g CO_2e/km. They are also outperforming industry in general, which at that time stood at about 850g CO_2e/km. About a third (35%) of the group's heavy trucks, and a twelfth (8%) of vans are Euro VI/6-compliant. A variety of carbon-reducing techniques are being used by members: tyre management, periodic driver training and telematics systems have proved the most effective, Kite reports.

Later this year, the scheme will be rebranded, to the Logistics Emissions Reduction Scheme, and will feature a new reduction target, a new portal to upload data, provide reports and perform benchmarking studies. ■