POSITIVE REINFORCEMENT

How does real-time monitoring of driver behaviour work, and does it produce good fuel economy? Kevin Swallow reports

Rewarding good behaviour across road transport is often a monthly financial bonus tacked on to wages, or a 'well done' at the end of a shift. Between these acknowledgments a driver's concentration can wander. However, the arrival of Euro VI drivelines with their associated CAN-Bus technology and numerous ECUs (engine control units) has put positive reinforcement front and central, namely on the dashboard.

The pioneer in real-time driver feedback is Scania. Using ECUs attached to various components like the gearbox, ABS, EBS and digital tachographs, it generated a driver assessment system designed to make the driver 'save fuel and do a better job' by assessing anticipation and time in the green zone. That was in 2009 on selected gearboxes. Two years later it became part of Scania's Fleet Management Services, and in 2013 was made available across the entire product range.

The 2013 version measured anticipation, hill cresting and time in the green band. Phil Rootham, pre-sales technical manager at Scania (GB), says since then it has been developed to include a fourth discipline, 'braking', which requires the driver to use the engine brake and/or retarder to slow the vehicle as much as is possible before using the foot brake to bring the truck to a halt. Each activity is rated by a nought-to-five stars system and transferred to a rolling percentage score, both of which are on the dashboard. A good result produces a 'well done' and a bad performance generates a tip on how to improve next time (pictured, p50).

The system employed by DAF Trucks began in 2013 with the arrival of Euro VI. Like Scania, it uses CAN-Bus to draw information from various ECUs. Product marketing manager James Turner says: "The ECO Score Card for the driver is part of DAF Connected Services, our fleet management system that collects real-time information. It displays the ECO Score Card measuring anticipation, braking and use of the cruise control."

Although many OEMs offer them, operators of mixed fleets might find a third party system easier to manage.

For example, Microlise fits a telematics unit into the vehicle, which connects to the vehicle's diagnostic CAN-Bus to collect engine and component data, and an accelerometer that measures in G (gravitational force) any harsh braking, cornering and rate of change in acceleration. A GPS system provides context. "We then build a hot-spot matrix to create visibility of where these harsh events occur," says Stephen Watson, director of product. Raising the general standard of driving has the fringe benefits of improving fuel economy, reducing vehicle maintenance and the number of accidents, and cheaper insurance, he adds.

And the element of competition helps. "A driver can look at their performance at the end of a journey, shift, or a week, and see how they are scoring."

For example, Cheshire-based Roberts Bakery (pictured above) brought Microlise in to help improve fuel consumption. Employing more than 160 drivers, the operator wanted real-time oversight of the fleet and flexibility to meet demand. Microlise

supplied its Fleet Performance and Driver Performance Management smartphone app for the drivers, giving them access to their own scores and introducing an element of competition among colleagues. The company reported that it helped reduce engine idling by 44%, and promoted a better, safer, more efficient driving culture among the drivers.

Since 2013, WABCO, through its Belgian-based subsidiary Transics, has offered operators its version of a fuel-economy system that 'evaluates and stimulates' driver performance. To generate data, the TX-ECO system uses the vehicle's CAN-Bus and on-board computers to create in-cab driver tools, key performance indicators, driver scores and trend reporting. Part of the offering is ECO-Assistant, which gives the driver a live overview and daily score on the driving style based on four parameters: speed, number of revolutions, anticipation and idling. This is complemented by back-office software that takes the same data and converts it into driver behaviour reports for the transport management team.

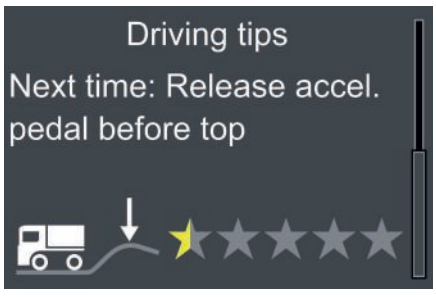
Some of these systems integrate another kind of data: video. Last year, TrakM8 launched its RH600 4G two-camera system into its fleet management telematics systems. Plugged into the vehicle's CAN-Bus, it has a forward-facing camera and a second camera trained on the driver. If harsh braking, acceleration or cornering occurs, it automatically videos the event and sends it back to the transport office. TrakM8 also provides the EcoN Lightbar mounted to the dashboard for real-time driver feedback.

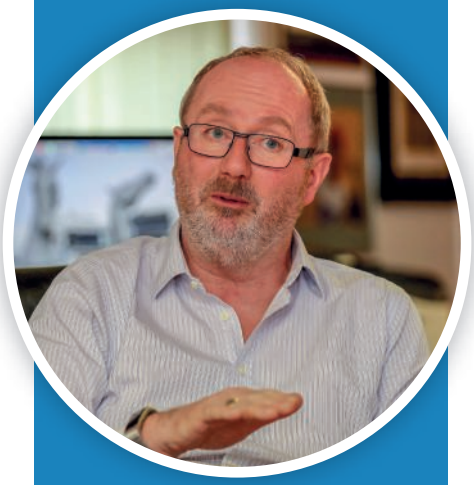
John Watkins, executive chairman of TrakM8, says: "We strongly believe that the future lies with integrated devices such as our RH600, which combines the benefits of in-cab driver coaching with video or photographic evidence."

Finally, vehicle tracking company Masternaut also offers in-cab coaching services. Product manager Franc Nicoletti says Masternaut utilises the vehicles' ECUs, not GPS or accelerometer readings. He adds: "Masternaut has developed a non-intrusive CAN-Bus clip, a patented connector that clips on to two wires behind the dashboard that 'listens' to information from the vehicle's ECU."

Data from the clip, pertaining to driving behaviour, can also be fed back to the driver in real time, via Masternaut's in-cab coaching device. Alerts indicate the severity of harsh manoeuvres to help improve awareness, economy and safety.

For example, car parts supplier Andrew Page has more than 75 dealerships delivering vehicle parts, and it experienced a 97% reduction in speeding events after the first six months using Masternaut's driving behaviour tool. Stuart Wiseman, group fleet manager at Andrew Page, says: "We've now got 98% of our drivers rated as being safe drivers, and this improvement in driving style is ensuring that we're helping our staff get home safely." TE





CUSTOMER'S POINT OF VIEW

With a fleet of 140 trucks, John Mitchell (Grangemouth) moves containers across Scotland and the north of England with a mix of MAN and Scania tractor units. Managing director Iain Mitchell (pictured) says: "We use the two manufacturers' systems, MAN's Fleet Management, which uses Microlise software, and Scania Fleet Management Services."

Of the two, only Scania has driver support functions in the cab. Using that, the company has built 'trend charts' of acceptable and unacceptable driver behaviour. He says: "We use that to support, reward and train the drivers, and the results tend to be consistently good, month to month. For our insurance, we must have telematics. We have to use the information it provides, and demonstrate that we use the information to get a competitive insurance rate."

While adhering to economic driving techniques may well add a little journey time, he says he wouldn't want anyone driving any faster by jumping on the brakes at the last minute to maintain a high average speed. "There is a parallel between good driving and reduced road traffic collisions, and that is a fact," he says.

Monitoring the data from the two systems is assigned to the administration team. The company is looking at a potential third party solution with a single system across the entire fleet, but nothing has yet come up to the mark of the two manufacturers' systems, he says.