

Seeing around the corner

In 30 years' time, when London and others have restricted city centre roads to only low- or zero-emissions trucks to improve air quality, advances in IT connectivity and automation will have transformed trucks anyway, according to predictions by truck OEMs and component providers. Operational efficiency gains are the main benefit. Will Dalrymple reports

Lawmakers at all levels from the EU, to the UK Department for Transport to the Greater London Authority have all recently published long-term plans that will affect what kind of trucks can be run in cities and elsewhere. National and international demands to reduce the carbon footprint of transport, and problems with air quality in cities, are encouraging the development of e-mobility – electric-powered vehicles in place of the traditional internal combustion engine.

At the same time, truck OEMs and component manufacturers Mercedes-Benz, Volvo, Cummins, Knorr-Bremse, ZF and Shell have been doing some crystal ball gazing, too; and rather remarkably, their visions overlap. First, most recognise the growing importance of e-mobility, in the city at least. Two other common factors stand out. One is connectivity – a world of digital devices that communicate with each other, including systems that collect large amounts of sensor data that can be analysed for trends and intelligence. The other is automation – how on-board computers are taking on some of the driver's tasks, ranging from cruise control to lane departure warning systems to

ever-more active interventions.

At the Volvo Smart Cities event in May, Lars Stenqvist, Volvo chief technology officer, outlined his view about how those three factors might interact: "Our vision of the transport system of the future is a highly efficient, integrated system with connected infrastructure and really intelligent vehicles. We will view it as a transport system as a whole rather than individual vehicles or small systems. Emission quiet, emission free, vehicles communicating with each other and with infrastructure,



creating a transport flow, more of a flow and not so much of a system, a flow without congestion and without accidents." At that event, it showed off a fully-electric bus, the Volvo 7900E, and demonstrated an automated refuse collection vehicle that uses GPS to steer down a road, following an operator who walks ahead.

The EU predicts that cooperative intelligent transport systems would include reducing fuel consumption and CO₂ emissions by 1.2% annually by 2030; 2.6 billion fewer hours spent in





form a small part of a much bigger picture of the future, of a zero-emission transport network by 2050 that includes new low emission zones starting from 2025.

Emissions controls are also coming from Brussels. The EU Strategy proposes the monitoring and reporting of CO₂ emissions from HGVs, "increasing transparency and stimulating uptake of the most fuel-efficient vehicles". It also proposes a system of smart road charging based on emissions. And it hints that CO₂ targets for heavy vehicles, its first ever, are not far away. These sticks are being accompanied by an e-mobility carrot, in the form of encouragement of electric charging points; the EU will have supported installation of 1,200 of them by 2020, it says.

The effect of emission restrictions on delivery was examined in a November 2016 study by German research institute IFM. 'The Last Mile' (in German, <https://is.gd/cahucu>) found two conflicting trends: the rise of online shopping, on one hand, is increasing van traffic particularly, while city centre congestion and air quality problems are forcing government to act. It says: "Even today, delivery traffic is already increasingly restricted, regulations for driveline technology are being tightened and access to certain inner-city areas is subject to fees. Therefore, there is an urgent need for an efficient, clean logistics concept for towns and major cities."

It suggests that autonomous vehicle technology – a major growing trend that it has identified – might be able to help, if safety and infrastructure issues can be overcome. A more concrete solution is bricks and mortar: local distribution centres, again, feeding electric vehicles that are quiet and zero emission in use, for the last-mile delivery. Linking them together would be software

traffic; and an (unquantified) reduction of the human factor responsible for 90% of fatal crashes. These predictions were published in a June launch of a wide-ranging package of transport legislation proposals, the EU Road Transport Strategy (<https://is.gd/atilev>).

By the way, these changes are coming in a context of demand; the EU predicts that freight transport will grow by 60% in 2050 compared to 2010. (Road transport currently makes up half of overall freight transport). In the same period, passenger transport will grow by 42% – so probably buses won't disappear either.

Mercedes-Benz offered a similar "seamless transportation" vision of the future at a May press launch. Its new product was the Truck Data Center, for Actros, Arocs and Antos trucks. The manufacturer calls this the "brain of the connected truck". It continuously monitors the status of vehicle systems, sends and receives data in real time. Also in June, ZF launched its 'Openmatics' manufacturer-independent telematics system for electric vehicles. (Also, brake supplier Knorr-Bremse has partnered with Microlise to roll out ProFleet Connect, a modular telematics system.)

What these connected systems

can do for hauliers transcends tracking trucks, according to engine manufacturer Cummins. In June, it announced that it has launched a new internal business, called Digital Accelerator. It says that the new business will respond to customer demand for "convenient and responsive interactions, real-time updates, and information that makes products safer, more productive, and easier to use".

EFFICIENCY, OR ELSE

Hauliers' productivity and efficiency is being pushed by the Greater London Assembly in its own vision of the future, in the form of its draft Transport Strategy released in June (<https://is.gd/osiyej>). It argues that if freight operators were more efficient, they would take fewer journeys, and so reduce traffic congestion. Hauliers should, it says, build regional distribution centres at the edges of London to better consolidate freight to improve efficiency.

These "recommendations" are backed up by harder-edged numbers: in the document, it states an intention to reduce morning rush hour freight traffic in central London by 10% over the next decade, and construction traffic there at all times of day by 5% by 2020. They

able to anticipate orders and transport requirements.

Last month, Knorr-Bremse demonstrated its autonomous yard manoeuvring system that drives trucks in a depot environment, without the need of a driver (shown on p10). That technology, launched at the 2016 IAA show in Munich, is made possible by the interaction of powertrain, iHSA steering gear [acquired in the takeover of tedrive Steering Systems last year] and the braking system, supported by radar, ultrasonic camera and GPS-based position sensing systems.

In June, in a future-looking press event, ZF presented 'Vision Zero - a world with zero accidents and zero emissions' that it says can only become reality "when all vehicles are electric, autonomous and connected". To that end, it previewed not only its 150kW car electric drivetrain mSTARS (shown below), but also demonstrated several advanced driver assistance systems, 'Driver Distraction Assist' (shown circled, p11) and 'Wrong Way Inhibit', both steps toward automation. Although both were shown in a production VW passenger car, they may well be adapted to trucks.



DIGITAL FREIGHT EXCHANGES: THE FUTURE OF LOGISTICS?

- Telematics provider Microlise is trialling "horizontal collaboration optimisation software" that allows a courier for example to pick up extra work from third parties to fill a truck or van. It works based on constraints such as the type of vehicle, time windows, drivers' hours, and other factors, according to Matthew Hague, executive director, product strategy, in a press conference at the Microlise Transport Conference in May.
- Mercedes-Benz's Fleetboard telematics system is trialling new software, nxlload Freight, that scans multiple digital freight exchanges, following agreements with trans.eu and Teleroute; it also exchanges data with others. A six-month pilot programme in Germany, France, Poland and Spain began in May, with plans to launch the service in 2018.
- Total Energy Ventures announced in June that it has acquired an interest in Spanish start-up OnTruck, another freight exchange, which has launched a service in London and the South East (<https://is.gd/putano>). Philippe Sauquet, executive vice president, strategy & innovation at Total, says that the move represents "another way for Total to go further in terms of energy efficiency and explore the potential of new forms of connected mobility".

The company's recent corporate partnerships - a 40% stake in laser developer Ibeo; partnership with NVidia on an AI control; 45% stake in radar maker Astyx - demonstrate how the transmission maker is diversifying to compete in a brave new world.

This is just one way that truck component OEMs continue to adapt to keep up in this new world. Engine supplier Cummins, for example, announced in June that it would be launching electrified powertrains - battery electric and plug-in hybrids - for commercial use starting in 2019. CEO and chairman of Cummins Tom Linebarger said: "Over the past 100 years, our ability to innovate and adapt has fuelled

our success and we are confident we are on the right path to do it again at this critical juncture."

Van makers are pivoting, too. At the CV Show in April, Ford announced the first five trialists, of 20, for a Transit Custom plug-in hybrid van due to enter commercial production in 2019. Participants in a year-long trial with Transport for London (pictured p10-11), include Clancy Plant and British Gas. The launch is part of a large e-mobility investment by the carmaker; others, including Volkswagen, are ramping up in a similar way.

For fuel supplier Shell, an organisation that emphasises corporate collaborations, the future requires all kinds of energy - not just renewables, and definitely including fossil fuels - it stressed at its Make the Future day at the Olympic park, London, in May. It promoted its work to develop a hydrogen fuelling network; is setting up LNG fuelling points in the UK; and is also developing electric car charging under the 'Recharge' brand.

Shell Commercial Fleet business development general manager Parminder Kohli says, of fleet managers: "If they think that the technology from 10 years ago is going to persist in future, they will be completely out of the game. The efficiency being generated by [new] technology is going to transform their lives. This could be a big threat or a big opportunity." **TE**