

BIGGER is better

When it comes to efficiency and the environment, size matters in road transport, as the DfT's longer semi-trailer trial is proving. But technology and public opinion have big parts to play. Brian Weatherley reports

“There is a serious public relations problem in the road freight industry. It's possibly the biggest issue this industry faces.” So said David Cebon, professor of mechanical engineering at Cambridge University, bringing Gaydon delegates down to earth with an inconvenient truth. Truck manufacturers, operators and hands-on academics like Cebon – through his work with CVDC (Cambridge Vehicle Dynamics Consortium) and now the Centre for Sustainable Road Freight – can come up with solutions for boosting HGV efficiency. However, they face a major struggle getting them adopted by politicians and, above all, the great British public.

“So what is the problem?”, asked Cebon, showing a screen-grab of the NoMegaTrucks Alliance's web-based campaign. “Here's an example. When there is any public discussion about vehicle regulation, out comes the anti-truck lobby, fighting changes – even those that would improve the sustainability of the freight transportation system. The road freight industry Europe-wide has to do a whole lot better at public relations, if it wants to compete with this anti-truck lobby.”

That should start by telling the story of truck improvements, in terms that matter to the public. Cebon and CVDC have been working on quicker ways to rein in trucks, for example – with a new slip-controlled truck braking system that's already proven to cut the stopping distance of an artic by up to 16%. “The result is substantial... We think we can get it better, to a 20% reduction... That would make trucks stop almost like cars,” stated Cebon.

“That's a big safety benefit, which can be explained to the public. So when the transport industry talks about wanting larger, higher-capacity



vehicles, it should lead with 'these are going to be safer' – not just the productivity benefits,” he insisted. Indeed, whatever size vehicles operators run in the future, and however much they mitigate their operations, Cebon told delegates: “There can't be improvements to vehicle technology unless the public and politicians accept them. The discussion has to be about improving safety – dealing with the things that make the public scared of big trucks.”

Another example: on the subject of cycle and HGV collisions, Cebon presented a computer simulation of the classic large truck turning left scenario, involving a collision with a cyclist coming up the inside and attempting to cycle straight ahead. Cebon and his colleagues are investigating a collision-avoidance system, he told delegates, which would automatically brake a turning truck, when sensors detect cyclists trying to undertake.

Fuel consumption

In a similar vein, Cebon made the point that where LHVs (longer heavier vehicles) have been sensibly introduced, they've delivered not only operational, but also environmental and safety benefits. “Where these vehicles are used properly, for example in Australia, they're far more productive, use far less fuel and they have a considerably better safety record than conventional articulated vehicles.”

We need to focus on what really matters around fuel saving, argued Cebon. “There's a lot of bad thinking in the world of fuel consumption,” he said. “Let's at least make sure we understand what factors are most important. For example, coming home empty uses a lot of additional fuel.” And he explained that a vehicle returning empty could see its fuel consumption per freight task rise by 70%. “If



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has already built prototype twin-trailer LHVs that can negotiate a typical UK roundabout just as well as a conventional artic. “If you use the steering technology we’ve been developing, it changes everything,” he insisted. “You can now use a B-double [two trailers linked by a fifth wheel]; you could theoretically even use a triple-trailer combination on UK roads.”

In fact, Cebon has already demonstrated such a system to the DfT (Department for Transport). “You drive it like a car: the two trailers just follow where you go. That’s how you can get longer vehicles on to trunk roads in the UK.” Smart steering systems would also enable LHVs to access city centres. “Active trailer steering is an enabling technology for larger vehicles,” he stressed. And closer to the here and now, CVDC is also developing steering systems for the DfT’s longer semi-trailers trial. “We’re working on this with a group of partners, including Tridac and Wincanton. Our demonstrator vehicle hasn’t hit the road yet: it’s still being finished off,” he said.

What goes forward must also be able to go backwards, and Chris Grime, of Lancashire County Council, asked: “Have you considered how you’re going to reverse these things [into] delivery bays?” The answer was definitely in the affirmative: “We’ve got a bunch of work going on. The steered-trucks you can drive backwards just as easily as forwards. All you need is a camera and a joystick for the driver.”

Beyond steering, though, fuel-saving ideas being worked on by Cebon and CVDC include harnessing regenerative braking units in trailer wheel-hubs. “We’re building a prototype and we reckon you can probably get 15–20% fuel back under some circumstances,” asserted Cebon. “If you want to have a highly-efficient urban delivery vehicle, it could be a tractor semi-trailer with steered axles and regenerative braking on the trailer axles – not the conventional choice of a much smaller rigid vehicle. This is the experimental system we’re building and will be testing in the next month or two.”

While offering hope for the future, Cebon closed by reiterating the problems facing cash-strapped companies. “There can’t be changes to vehicle technology unless it’s profitable for the operators.” And that means tackling the road safety lobbies head on, with technology-led solutions. **TE**

you can collaborate with another operator to make sure you come home full, you can win that 70% of fuel right back.”

Traffic congestion is another big issue for fuel, but so is emissions. “Every time a truck starts and stops, energy goes into accelerating the vehicle, only to be dumped again into the brakes,” commented Cebon, indicating the impact of inadequate capacity on the roads, due, for example, to the morning school-run. “We have to think about the whole system. Congestion has a dominant effect on everybody’s fuel consumption,” he reasoned – also pointing the finger at night-time HGV curfews in city centres.

“Those ensure that trucks hit the city streets in the morning rush hour, exacerbating traffic congestion, wasting fuel, increasing pollution – and increasing trucks’ interaction with vulnerable road-users, which, in turn, worsens the safety problem... It is not beyond the industry to do quiet truck deliveries [at night] universally around the country. And that’s a challenge I’ll throw out to everybody... It’s clearly a straightforward thing to do, with good technology, driver training and best practice. But it has to be done carefully and the public has to be on-board with the benefits, in terms of safety, congestion and CO₂ emissions,” insisted Cebon.

For him, LHVs are an obvious way to combat many of the challenges currently facing transport. “Bigger trucks mean more efficient trucks, fewer trucks, and less congestion. The size of the vehicle really matters... It’s very inefficient to take your freight off a big truck and put it on a bunch of little trucks.”

But can such LHVs ever be traffic-compatible? Drawing on work done through CVDC, Cebon explained how ‘active’ trailer steering systems can ensure that they are. Using such equipment, CVDC