

# SPEAK UP

Quiet vehicles, including battery-powered ones, are often too quiet to be noticed by pedestrians, particularly distracted ones. That means they pose a risk in urban environments; but a solution is on the way, reports Will Dalrymple

From July, new models of alternatively fuelled vehicles, including battery-powered cars, vans and trucks are required to fit a so-called 'acoustic vehicle alerting system' to warn vulnerable road users of their presence. In two years' time, all vehicles will need to have them, according to UNECE Regulation 138.

Lacking the growl of an internal combustion engine, quiet vehicles pose the greatest risk to other road users when they are about to move off. A bus driver, for example, cannot move away from the kerb until the road is clear; and without some kind of alarm, those who are not paying attention will not know to get out of the way.

So Brigade's Quiet Vehicle Sounder product, which adapts the directional, white noise technology used in its bbs-tek reversing device, starts emitting an alarm as soon as the vehicle's driver releases the handbrake, and it continues to emit the sound until the vehicle reaches 20mph, when it switches off. At that speed, the crunch of tyres on the tarmac and whoosh of the air it displaces will be loud enough to warn other road users of its approach.

Of course, the faster the vehicle goes, the less time there is to get out of its way. The regulation recognises this inevitable fact by requiring the sounder volume to ramp up with velocity. And that's not all; the sound also must change frequency with increasing speed, helping provide another auditory clue about how fast

it's going, just as a labouring engine would.

Brigade's QVS emitter produces a sound that includes four frequencies: two that move and two that are fixed, for blending. And while the reversing alarm differs by being interrupted - it contains pauses of a fraction of a second - the forward-facing alarm sounds continuously.

In developing the QVS product, Brigade tested some 80 sound profiles, all of which met the minimum criteria of the regulations, with a panel of testers chosen to be diverse in ethnicity, age and sex, to make sure it would work for any pedestrian in an urban environment.

Real-world trials started in late 2017. They include on vans at Portsmouth Docks, where the Navy was concerned about the welfare of sailors who, having returned after long tours of duty, take little notice of vehicles around them. BAE Systems, via Lex Autolease, fitted the sounders to Nissan e-NV200 vans. Other triallists include Birmingham University, road construction firm Conway and parcel delivery firm Hermes.

The sounders - which are being fitted as standard to Jaguar Land Rover's I-Pace sport utility vehicle - are also relevant to electric pallet trucks, small diggers, local delivery vehicles and buses and coaches. European vehicle brands Renault and IVECO



have elected to design their own systems. But in more niche markets, such as bus and coach, the electric vehicle

market is so new that volumes are too low to make the development costs worthwhile, argues Brigade.

The device itself consists of a 120mm by 115mm by 130mm speaker inside a waterproof (IP68) housing to be mounted at the front left-hand (offside) of the vehicle, ideally behind a front grille that allows the sound to pass. Aiming the speaker at the target audience helps to maximise the chances of it being heard, while reducing its effect in generating noise pollution. The speaker is controlled by an electronic control unit, to be mounted inside, which takes an input from the vehicle's tachograph (if a commercial vehicle) or its CAN-Bus electronic control system. Installation takes about a day, and Brigade fitters usually train the trainers.

Now that it is here, large fleet operators mindful of health and safety, and transport authorities with a strong safety agenda, such as Transport for London, will take the lead, according to Brigade. In fact, TfL has awarded a tender to develop a unique London bus sound: but to AECOM, not Brigade. **TE**