



T H E B U S I N E S S O F . . . ADAS CALIBRATION

Properly aligned screen-mounted cameras can contribute significantly to road safety

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Windscreens

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MORE ADAS SYSTEMS NEED TO BE STANDARD

Fleet and insurance bodies campaign for additional safety technologies to be part of the car's spec. They may cost more, but are worth the extra

Fleet replacement cycles often mean the company car market is at the forefront when it comes to experiencing the latest safety systems available. These advanced driver assistance systems (ADAS) are a stepping stone on the way to fully autonomous vehicles and fleets are using the technology to cut incident rates and protect their drivers behind the wheel.

The first ADAS widely offered on the market was electronic stability control (ESC) in the early 2000s, before it was made mandatory in 2012.

New models on sale today feature a wide range of technologies like autonomous emergency braking (AEB), adaptive cruise control (ACC), lane departure warning (LDW) and lane-keeping assist systems (LKAS).

All are supported by a range of sophisticated sensors, cameras, radars and lidars (systems that use light to measure things like distance).

These ADAS systems are already having a tangible impact with a 38% reduction in rear-end collisions, according to safety assessors Euro NCAP (the European New Car Assessment Programme).

The Volvo XC90, which featured blind-spot detection on the first generation model and AEB as standard on the second generation vehicle, stands out for its safety record, according to insurance research centre Thatcham. Of the 50,000-plus XC90s on the road in the UK not one has been involved in a recorded fatality (at the time of writing).

Volvo now has 100% of its models with AEB as standard and is pushing towards having no fatalities or serious injuries in one of its vehicles by 2020.

Two-thirds of new vehicles (66.8%) now come with at least one form of self-activating safety system, as standard or as an optional extra, according to the Society of Motor Manufacturers and Traders (SMMT) and Jato Dynamics.

The SMMT report says a range of new technologies is optionally available on 53.1% of cars. These technologies include AEB, which avoids



and reduces the effects of vehicle impact by automatically applying the brakes.

Then there are overtaking sensors and ACC, which automatically speeds or slows a vehicle to safely match the speed of vehicles in front. These are available on 42.1% and 36.2% of new cars respectively.

The number of vehicles available with collision warning systems is also up 20% on the previous year.

Matthew Avery, Thatcham director of insurance research, says forward-facing collision detection is generally available with either radar-based or camera-based technology.

Thatcham's view is that a combination of the two is the best way forward and that is being reflected by manufacturers' latest approach to safety systems.

John Pryor, ACFO chairman, says his organisation and fleet operators have always welcomed the new breed of active safety systems, with many fleets mandating safety features and Euro NCAP ratings as part of company car choice lists.

However, he says, whole-life costs and a vehicle's fitness for purpose continue to underpin how vehicles are chosen.

Pryor says: "The increasing sophistication of today's range of company cars means the vehicle handover process is critical and drivers should be shown how the technology functions and be comfortable in their use."

43.2 m

"A culture should exist within organisations that, if drivers require additional advice or training with regards to an ADAS feature, they should feel comfortable in making that request."

Crashes involving vehicles potentially result in death or injury to occupants and other road users.

In addition, they are costly in terms of 'bent metal' and can have a major impact on business efficiency and administration for fleets.

Additionally, reducing expensive vehicle off-road time is a continual focus for fleets.

Pryor says: "ADAS have a key role to play in not only keeping vehicles on the road and all road users – including employees – safe, but in fleet cost reduction in numerous areas."

"Nevertheless, vehicle repair costs are accelerating due, in part, to vehicles increasingly being fitted with sophisticated features used for a range of ADAS technology. The cost of more sophisticated replacement parts and more complex repair methodology is driving the increase."

Insurer Aviva says that while there is increased windscreen repair costs involved with ADAS,

particularly as systems have to be recalibrated (see page 6), its view is that the benefits from reduced collisions outweigh the costs.

Aviva is working to establish the benefits of other ADAS, but currently AEB is the stand-out feature which reduces collisions.

The Aviva spokesperson says: "Our experience shows ADAS (and other aftermarket fit safety solutions) are most beneficial when fleet managers and drivers are engaged with the technology and understand the uses and parameters; this can then lead to improved driver behaviour and reduced claims incidents."

National Windscreens managing director Jan Teo advises fleet managers to put an ADAS strategy in place to best realise the full benefits of the technology and the impact it has on areas like repair costs and windscreens.

She says: "This requires a partner with the proven capability to deliver best practice in all aspects of glass repair, replacement and calibration."

National Windscreens has a network of 108 locations able to fit glass and perform recalibra-

tions at the same appointment.

Teo says: "Our network sits at the centre of a partner programme that includes preventative maintenance to identify glass damage early, often allowing repair to be undertaken rather than replacement and calibration."

"Our Partscheck process identifies the glass type required right first time, with more than 99.5% accuracy and the service is provided throughout Europe."

Around 15-18% of all National Windscreens' fleet customers have some kind of ADAS technology fitted and that has doubled in the past 12 months. It is expecting that pace of change to continue in 2019.

Pryor says it is important for fleets to strike the right balance between specifying new technology to reduce the risk of an incident and the cost of repair if that system is involved in a collision.

He says fleets must always ensure that repairs are carried out correctly in accordance with manufacturer recommendations and corners are not cut to save money.

AEB FITMENT VARIES

ACFO supports AEB installation in all vehicles, across all ranges. There are wide variations between manufacturers and models that have it as standard.

Corporate fleet big hitters like Ford and Vauxhall have the lowest standard fitment percentage out of all manufacturers in the UK (7% and 14% of all models respectively), according to research by Thatcham.

All Volvo and Land Rover models have AEB as standard, Toyota (53%) and Mercedes-Benz (88%) are the only two manufacturers in the UK top 10 by registration volume to have more than half of their range with AEB.

Pryor says: "All available evidence points to its life- and injury-saving potential and whether occupying an executive car or a city car there should be no discrimination in terms of the value of an individual's life."

A spokesperson for insurance provider Aviva says Euro NCAP research showing systems like AEB can reduce rear-end crashes by 38% are supported by its own findings.

The Aviva spokesperson says: "We want to support the uptake of this technology, so Aviva provides discounts to vehicles where AEB is fitted."

"Customers will also see premiums benefits as they see their claims incidents reduce."

Thatcham is also pushing for AEB to be standard on every make and model. The technology is now required in order to get a five star Euro NCAP rating and it has to be a sophisticated system that works at speeds of up to 60-70kph (37-43mph).

WHAT'S NEXT?

ADAS is closely linked to a vehicle's Euro NCAP star rating and as new technology is developed, Thatcham looks for these systems on the latest models to help secure that important five star rating.

The next thing Matthew Avery wants to see is the increased sophistication with which the latest ADAS can sense obstacles coming from a junction. For example, if a car is at a T-junction, the driver is looking one way and a car is coming from the opposite direction, the "turn across path" technology would stop the car from pulling out into a potential T-bone collision.

This technology will be worked into the Euro NCAP testing and will need to be present by 2020 to secure a five star rating.

Avery says these new technologies are all working towards vehicles having 360 sensors to be aware of their entire surroundings at all times.

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ADAS TECHNOLOGY EXPLAINED

A guide to how some of the latest safety systems work and their impact



LANE DEPARTURE/KEEPING

Most lane departure warning (LDW) and lane-keep assist systems (LKAS) use a forward-facing camera mounted inside the windscreen by the rear view mirror to identify road lane markings and whether they are being crossed.

When a LDW system is activated typical warnings include a flashing symbol on the dashboard display or audible alert. If the indicators are used before changing lanes, the warnings are deactivated.

LKAS builds on the LDW system and steers the vehicle to keep a central position between lane markings.

If the car starts to unintentionally cross lanes, steering and/or braking is automatically applied to return the car to the centre of the lane and a warning is sounded.

On tighter bends, if lane markings are poor or the driver takes their hand off the steering wheel, LKAS automatically suspends itself.

Latest iterations of the technology include Tesla's Enhanced Autopilot. It uses LDW and LKAS to help vehicles keep within a lane and automatically change lanes without requiring driver input. It can also transition from one motorway to another, exiting onto a slip road.

Volvo's Pilot Assist system can provide steering assistance and help drivers maintain the distance to the vehicle in front of them. The steering assistance is still limited though, so drivers need to use the steering wheel to execute sharper turns.

AEB

Automatic Emergency Braking (AEB) has now been available for more than 10 years. It works to consider traffic conditions ahead and will automatically brake a vehicle if the driver fails to respond to the conditions.

AEB systems can use lidar (sensors that use light), radar, camera or a fusion of all three technologies and this affects the speed range over which the system can effectively operate, as well as the types of hazard that the vehicle is able to identify and avoid.

Low speed systems are often named 'city', there are also higher speed 'inter urban' AEB systems, as well as more sophisticated systems that can detect pedestrians and cyclists.

The latest AEB systems also work when the car is reversing. AEB can apply the brakes to avoid reversing into objects or people and other AEB systems can detect vulnerable road users like pedestrians and cyclists.

Having standard-fit AEB on your car can reduce insurance group ratings by three to five groups (the higher the group rating – up to 50 – the greater the likelihood of a higher insurance premium).

Different manufacturers use a range of terms and specific trade names to describe their AEB systems. These include City Safety (Volvo), Smart City Brake Support (Mazda), Active City Stop (Ford) and City Emergency Braking (Volkswagen).

TRAFFIC SIGN RECOGNITION

These systems use forward-facing cameras that scan the road ahead for traffic signs, in effect offering drivers a second pair of eyes.

The camera can detect speed limits, overtaking restrictions and road works before drivers encounter them. Some systems will even suggest optimum speeds for wet weather driving.

The system works by connecting the forward-facing camera to the vehicle's recognition software and this matches the traffic sign the camera is seeing to a library to cross reference, match and then display to the driver on their dash display or instrument panel.

The information stays there until any change occurs, so if a driver is unsure of the current speed limit all they have to do is check the information that the car has noted. The display will change automatically as the vehicle moves between new speed limit areas or if there is a new sign the camera has detected.

The system will recognise traffic signs whether they are at the side of the road, or above it and it will also be able to recognise temporary signs that have been put up, as well as any permanent ones.

Traffic sign recognition can also work in tandem with a vehicle's speed limiter to keep vehicles within legal limits.

The system is common on German-made executive cars, but others make it optional.

THE IMPORTANCE OF ACCURATE WINDSCREEN CALIBRATION

Many safety features rely on accurate information from screen-mounted cameras which must be properly aligned

As vehicle safety technology continues to develop rapidly, a well maintained windscreen has become a vital part of keeping ADAS (advanced driver assistance systems) functioning.

The latest vehicles come with sensors, cameras and radars and these are all set up to work in cooperation with the windscreen.

If a vehicle has been involved in an incident, whether that's a minor bump, alloy damage from a pothole or something more major, these systems can be knocked out of alignment.

Smaller stone chip glass repairs can be done without recalibration as long as the chip isn't in a camera's field of view.

According to the National Body Repair Association (NBRA), close to a quarter (24%) of new vehicle windscreens have ADAS capability. This has gone up from 4% just two years ago.

When a windscreen is replaced, ADAS has to be recalibrated to restore 100% functionality.

However, there is disagreement across the industry about the best way to do this. One party believes manufacturer-approved glass needs to be used and only a franchised dealership can restore ADAS systems the way the manufacturer intended. Not everyone agrees.

There are also aftermarket solutions offered by companies like National Windscreens and Autoglass, who contend that their systems are also capable of restoring the majority of ADAS systems on the market to 100% functionality.

The aftermarket method means there is only one appointment that takes around two hours, rather than having to make separate visits to fit the glass and another appointment to go to the dealership for recalibration.

Thatcham, the automotive insurance research centre, is supportive of both methods.

Alistair Carlton, National Windscreens technical manager, says: "The aftermarket solution is just as good and will do the same job as any dealer tools. This will recalibrate to 100% functionality and will do exactly the same job as a dealer recalibration."

Carlton says the insurers his company works with are on-board with an aftermarket approach. He also says warranty for the windscreen transfers to National Windscreens' responsibility after it has carried out a replacement. The company has 108 centres able to fit glass and recalibrate.

The price National Windscreens charges for windscreens will vary from model to model, but there is a flat rate charged for recalibration, regardless of manufacturer or model.

Carlton says: "If you take your car in for a recalibration at a dealership, the cost is going to be different between Audi or BMW. A flat rate helps fleet managers with budgeting if they know the fixed costs involved."

"Being able to fit glass and recalibrate at the same appointment also means we can limit any downtime and that's really important for fleets."

Autoglass parent company Belron has now carried out more than 700,000 ADAS calibrations globally and it will do in excess of 70,000 calibrations this year in the UK.

Neil Atherton, Autoglass sales and marketing director, says: "We can calibrate around 90% of makes and models on the road today."

"For those few we can't, we will make an appointment for the customer somewhere that can."

ADAS recalibrations were done on 14% of all windscreens in 2018 and Atherton believes this will increase to 20% in 2019 and then to 30% by 2020.

STATIC VS DYNAMIC CALIBRATION

There are two methods for windscreen recalibration, static and dynamic. Static accounts for around 65% of all the recalibrations National Windscreens carries out.

The difference between the two is that the dynamic calibration involves taking a car out for a drive for a specific amount of time, usually up to 40mph to check systems. Static tests can be done on the spot.

Carlton says: "The split has been pretty similar since ADAS systems started coming out and there's no relation to them being static or dynamic based on how recent the technology is."

"It just depends on what method each manufacturer takes for each model. We have seen a slight shift towards static recalibrations, but it's remained pretty similar over the past few years."

UPDATED GUIDANCE

Richard Billyeald, Thatcham chief technical officer, says the position around aftermarket methods versus manufacturer-approved comes down to what is safe.

Thatcham is currently putting together detailed

Recalibration is required when the windscreen on an ADAS-assisted car is replaced. But the screen does not have to be damaged for realignment to be necessary. Just going through a big pothole could adversely affect cameras

"If you take your car in for a recalibration at a dealership, the cost is going to be different between Audi or BMW. A flat rate helps fleet managers with budgeting if they know the fixed costs involved"

ALISTAIR CARLTON,
NATIONAL WINDSCREENS

research on the subject to be released next year.

Billyeald says: "We're working to update what was the code of practice to try to agree some guidance across the industry for ADAS repair and calibration."

"As you can imagine, trying to get the whole industry to agree is easier said than done."

"There are a lot of agendas out there. There are aftermarket systems that can in most cases restore 100% capability, but there will be situations where it can't. In those situations, they can subscribe to a manufacturer's method, or they can be referred to the franchised network."

"Our stance also isn't to ignore what the manufacturers are saying. But we want to look at the evidence and present the facts."

Darren Bedford, Covea Insurance claims motor engineer manager, says his company supports both aftermarket and manufacturer-approved methods of repair.

He says the business has not had any problems on repairs done with an aftermarket method.

Bedford says: "At the moment, I don't see the evidence from the manufacturer side that an aftermarket approach is detrimental to ADAS functionality."

Rupert Armitage, Auto Windscreens managing

director, is passionate about educating fleet managers and drivers about how important approved repairs are when it comes to ADAS.

He wants the industry to be regulated as he believes non-genuine parts and non-approved methods of repair are a threat to safety.

Auto Windscreens only offers repairs to windscreens and recalibrations using the vehicle manufacturer's approved parts and approved method through franchised dealers.

Aftermarket solutions are available and fleets are using them, but Armitage says they are inferior as they are not to a manufacturer's standard.

Armitage says that of Auto Windscreens total work, ADAS recalibration has gone from 1% of total work in January 2017 to 12% today.

He estimates this will increase to 20% of all jobs in the next 12 months.

Armitage acknowledges that aftermarket solutions can recalibrate "some ADAS elements" but he says: "The fact remains that you would be getting a recalibration that is not manufacturer approved."

"For me, it's irresponsible not to offer an approved method with OEM glass. The buck has to stop somewhere."

Armitage says the view from insurers on the

debate of approved versus aftermarket solution depends on the individual stance of the insurer.

Armitage says price isn't the main sticking point for fleets or insurers to choose the approved option versus aftermarket, it's the amount of downtime.

He says: "Fleets and insurers want to limit the downtime of the vehicle so they want a one-stop shop approach."

"We have lost business over the past two years as a result of only doing manufacturer-approved recalibrations, but we are sticking to our guns because we think getting that manufacturer stamp of approval is the right way to do things."

Armitage says awareness of the issue will vary from fleet to fleet. Those that outsource management of their fleet may have no idea, while those with transport managers who are very close to the vehicles that are operating on the ground may know more detail.

One thing Auto Windscreens will be doing to help awareness is to launch an online portal in February that will help identify what ADAS technology is fitted to each vehicle.

Fleet managers and drivers will be able to use the portal to look up specific models and learn about which ADAS systems it has and how this plays in to the repair process.



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