

AUTOMOTIVE ENGINEER

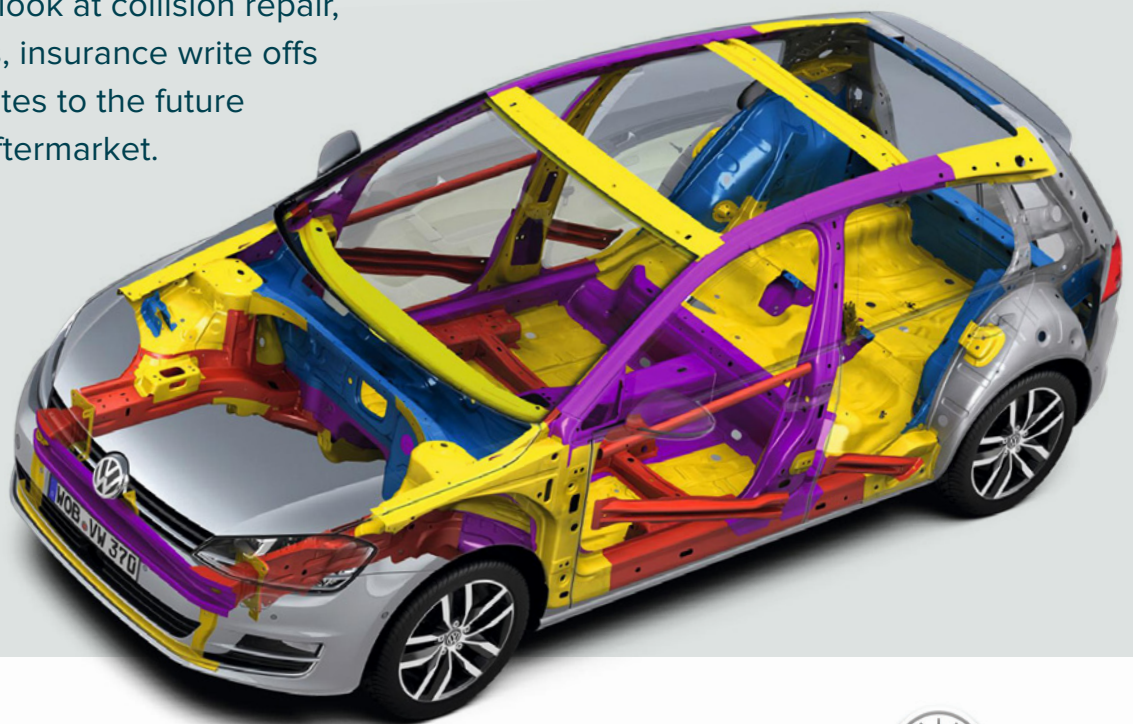
TECHNICAL UPDATE 8

MARCH 2015

*Welcome to the March 2015 issue of the Automotive Engineer
Technical update for IMI Certificated Automotive Engineers (CAE)
and Advanced Automotive Engineers (AAE)*

COLLISION REPAIR AND THE AFTERMARKET

In this issue we will look at collision repair, NCAP safety ratings, insurance write offs and how this all relates to the future of the automotive aftermarket.



INSTITUTE OF THE
MOTOR INDUSTRY



WALLOP! WHAT'S IN COLLISION REPAIR FOR THE AFTERMARKET?

Vehicle manufacturers and their retail partners are rightly preoccupied by the service support requirements for the vehicles they sell – along with the independent service support sector. After all, the vast majority of vehicle repairs are related to routine service schedule items.

However, this does not reflect the full aftermarket activity, nor does it reflect the changes that have taken place in the market, as traditional 'mechanical only' repair outlets are challenged by collision repairers. This is a big and complex story, so let's start at the beginning.



Saab 9-5 (Epsilon II) impacted corner to corner at 60 km/h on a test track, to prove the occupant protection systems really do work.

OPTIONAL EXTRAS

As recently as the 1990s, dealers and specialist retailers made a good living by offering options that were not built into the vehicle during the manufacturing process. This ranged from the dubious high fashion of add-on body kits, additional lights, decals, wheels / tyres and in-car entertainment. Indeed back in the 1960s there were a gaggle of tuning companies offering complete transformation of otherwise mass-produced vehicles. Manufacturers also offered a range of options too, but there was always the allure of the specialist, especially if they offered something that delivered more power / better brakes / more luxury.

At the time vehicle retail was firmly established along lines of class, aspiration and tribal affiliation –entire families would grow up with and in turn buy vehicles mainly from a handful of manufacturers based in the UK. Back in the 1950s it was not uncommon to find major dealers who could take a vehicle and do anything to it – they would have trim shops, panel shops, paints shops as well as mechanical shops. Provided the customer had enough cash, a wreck could be delivered and after passing through all the relevant departments, a gleaming restored vehicle collected later on.

SOME MAJOR EVENTS HAVE SHAPED OUR VEHICLE MARKET:

- The rise of vehicles built outside the UK, along with an increased number of brands.
- A revolution in manufacturing.
- ... and Mini, BMW style.



The rise of imports was inevitable, and well documented. The automotive industry that remained competitive always thought of markets in global terms, developing product to reach as many markets as possible as the lowest additional cost. Quite simply there is no such thing as a vehicle engineered purely for the UK market.

The increased competition not only undercut on price, but offered increased content and – the icing on the cake – better reliability. To find any new vehicle road test that is truly terrible is a rare event these days, and yet certain long-deceased manufacturers submitted products that would not drive (broken drive line), handled poorly (leaving the top lane of the MIRA banked circuit at speed - backwards) and even managed to fall to bits whilst new.

Painful as it has been for the UK automotive manufacturing industry, it had to be guided by global vehicle manufacturing companies to drag it kicking and screaming into the 21st century. Part of that process was the manufacturing revolution that allowed:

- Sequenced supply of vehicle build specific parts to be delivered track side within 30 minutes of assembly. This 'just in time' sequenced delivery system allows internal and external trim parts as well as many other sub-assemblies to be assembled off site and delivered on line, reducing assembly line side storage issues. Typically the manufacturer can operate for no more than half a day if the sequenced delivery system stops. In the past, it was not unusual to hold enough parts on site for anywhere between three days to two weeks of production – much more 'dead' cash.
- Simulation of new assembly processes, which allows 3D graphics to develop the access, processes and tooling required for new products in a fraction of the time.
- New joining capabilities, which moved body assembly areas from 'one grade of steel' towards multi-material assembly – including non-ferrous materials. This was also greatly enhanced by the sequenced delivery system.

THE MINI EFFECT



©BMW AG

The BMW first generation Mini R50 / R52 / R53 was largely engineered by Rover except the petrol engine, which was designed and built by Chrysler. Before the vehicle programme was completed, BMW sold off Rover and the mainly ex-Rover personnel were housed in local engineering consultancies under the direct control of BMW. What really made lots of people sit up was the roll out to the market by the Meister of brand, BMW.

Until the advent of the R50, BMW had a long-established practice of offering all kinds of options as line fit items – from things that many other ‘cheaper’ brands offered as standard through to the exotic (double glazing, night time vision and more). Many thought that the R50 would be simply too cheap to get away with the same strategy, but this did not take into account how dealers would sell Mini in exactly the same way with exactly the same customer care as BMW. A customer arriving to purchase a standard Mini was in for a long, long conversation about the right combination of colours and options to ensure maximum residual value and hence reduced cost of ownership.

The strategy worked – very few R50s left the BMW Oxford plant without options. Indeed the average option fitment value to each Mini was around £2500, or close to 20% of the base vehicle cost including taxes. No one in the automotive world got even close to this type of uptake, and it made many vehicle manufacturers sit up.

Why? The traditional model progression from the smallest (cheapest, lowest margin) to the largest (most expensive, biggest margin) left most vehicle manufacturers without much opportunity to make additional profit apart from list price – a strategy that had ruinous effects when those prices were discounted. The Mini clearly demonstrated that a small vehicle needn’t be the least expensive nor the least profitable – customers were not buying a small car, they were buying a Mini. There was a huge push back on the traditional model range progression to the point that the ‘mass market’ manufacturers were forced to leave their upper segments, as ‘luxury brands’ not only became bigger but also pushed down market.

Up to this point, range progression within a single vehicle type relied on adding relatively modest things – better carpet, better seat facings – and making a huge fuss about bigger engines. The idea of having a stripped out car with a huge engine or an ultra-luxurious car with the smallest engine had been played with to the point that the manufacturing process of ‘anything with anything’ was a reality. Yet it remained largely untapped.

At the same time as BMW R50 was carving out success, Renault built Clio II RS 172 in Dieppe largely by hand – a fluke of the employment deal for the region. The R50, was in comparison, a full-blown mass produced item – yet the customer perception was the opposite. Why? Because whilst the Clio II RS 172 had special parts all over it, outwardly it was constrained by corporate values which meant that it looked almost like any other Clio II. Even better, the corporate thinking failed to tell anyone interested in the Clio II RS 172 how it was built. The bottom line? Renault still did not understand how it could equal the profit margin for R50...

This story was reflected not only right across Europe but indeed the whole world. Customers for new and used vehicles broke free of the corporate vision of vehicle progression as competition increased and vehicle manufacturers offered more and more 'niche' products. We now have things like the Vauxhall Adam based on a short wheel base version of Corsa D with 17000 – yes, 17000 – distinct options. It seems some vehicle manufacturers are still trying to understand what BMW did more than 14 years ago. Lots of options without canny sales equals a non-event.



Image source: netcarshow.com

LOVELY, BUT WHAT HAPPENED TO THE AFTERMARKET?

Quite simply vehicle manufacturers were happy to allow some options to be offered direct to the public because they were not able to handle them internally. However, as some of the internal constraints were eliminated, mainly centred on increased manufacturing flexibility, a new mantra was developed. Why offer anything via a third party when the profit from that aftermarket thing could be retained by the vehicle manufacturer?

THAT MEANT OFFERING MORE OPTIONS AT POINT OF BUILD.

The result? A drastic reduction in the range of options a dealer could offer. Dealers were left selling cars and associated option packs, whilst the direct work to fit those packs took place at the point of manufacture. The rise of specialists had already eaten into dealer owned body repair shops, deleted the trim shops and put pressure on the service bays.

MEANWHILE THE COLLISION REPAIR MARKET HAS REALLY CHANGED:

- The advent of ultra-high strength steel alloys from 2001 onwards.
- The introduction of mass market multi-material bodies from 2004 onwards.
- The rise of hybrid drive and pure electric drive systems into mass market from 2004 onwards.
- The introduction of a business operation standard PAS 125 in 2007, followed by a full blown British Standard BS1025 in 2014.

- Expansion of the skills set to cover the entire vehicle.
- Increased routing of suspension / steering / brake repairs through collision repairers.
- The change from insurance funded repairs towards more direct retail repairs.

In other words, the collision repair section with its lower cost base than most vehicle manufacturer franchised mechanical repair shops is now getting more and more work.



WHAT HAPPENS AFTER A COLLISION?

The long established view is that once an accident has happened the insurance company takes care of everything. The process as understood by the general public is:

ACCIDENT

- > CONTACT INSURER
- > REPAIR UNDERTAKEN
- > REPAIRED VEHICLE RETURNED

However commercial pressure on insurance companies to deliver better share holder value has led directly to significantly increased policy prices. To mitigate the effects of this rapid increase in cost, customers can opt to increase the amount of cash they pay in the event of a claim as well as reducing the level of support services like a replacement vehicle. The straight forward process really looks like this:

ACCIDENT

- > CONTACT INSURER
- > PASS TO APPROVED REPAIR NETWORK
- > REPAIR ASSESSED
- > REPAIR APPROVED
- > REPAIR UNDERTAKEN
- > REPAIRED VEHICLE RETURNED

Depending on the nature of the accident (was the driver at fault or not at fault) and the potential objection to the insurance approved repairer not being an approved repairer for the vehicle, this process can be much, much bigger. To address this, there has been real growth in accident management companies which mainly deal with non-fault claims. The companies organise everything including the replacement vehicle, and then bill the whole lot to the at-fault driver's insurance company. The result is a lot more of administrative and commercial ping-pong, but the customer gets things to happen faster whilst the commercial discussion continue. One by-product is the insurance company costs can increase with the use of accident management companies.

EURO NCAP AND ALL THAT

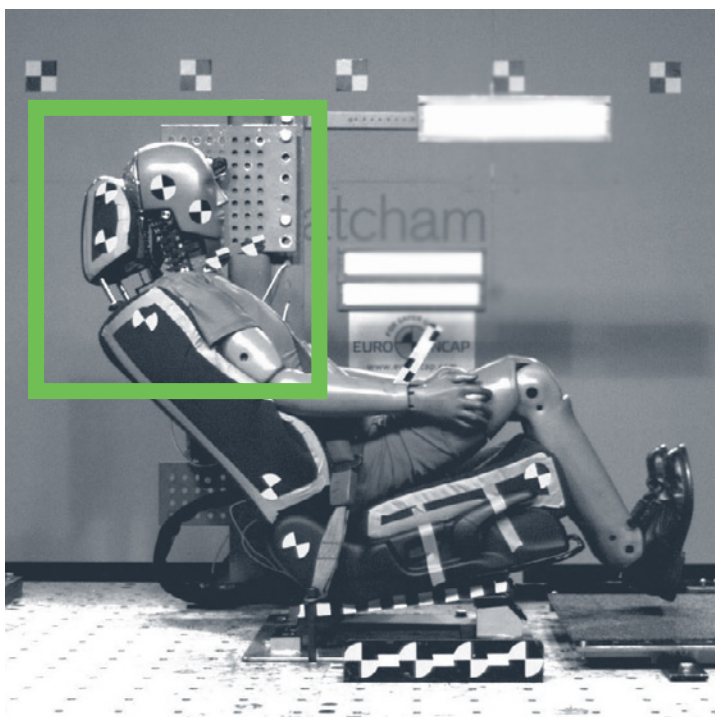
The new car assessment programme (NCAP) was launched in the USA by the National Highway Traffic Safety Administration (NHTSA), and was adapted for Europe by some very progressive safety experts based mainly in the UK. The result – Euro NCAP – has a membership drawn from most of the major European Governments, consumer interest lobby groups, insurer funded research organisations and some road side assistance companies too.

Whilst individual automotive companies researched and put into production vehicles which offered significantly improved occupant protection, the legal requirement for whole vehicle type approval centred around a full width barrier impact at 56 km/h (34.76 mph). Euro NCAP raised the impact speed to 64 km/h (39.76 mph) and required that only one side of the vehicle would impact the barrier head-on. In addition it added a side impact barrier test (50 km/h), an optional pole side impact test (29 km/h) and an assessment of pedestrian impact on the nose of the vehicle. Each of the tests reflected the pattern of real world accidents seen all over Europe.

Euro NCAP is not a legally binding test programme. The data is made available to the general public as a means of comparing similar sized vehicle crash performance, but critically, results from other categories are not comparable. The test processes and criteria are constantly under revision, so that a '5 star' car from 2005 is not as good as a '5 star' car from 2011 or 2015. Further, additional aspects have been added such as an assessment of electronic stability control (ESC) along with driver assistance system fitment / option availability.

Confused? Check out the test methods (called 'protocols') on the Euro NCAP website.

The real world effect of this voluntary programme has been immense. Take Ford Focus over three generations – at no point at the time of manufacture were these vehicles considered to be in anyway unsafe. The progression is typical of the majority of automotive companies in developing real world safety for all.





Focus C170, 1999



Focus C307, 2004



Focus C346, 2012

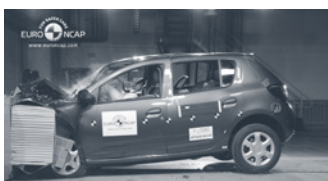
The 1999 C170 shows the cant rail above the front door has just started to collapse, whilst the 2004 C307 shows no deformation, and the 2012 C346 looks rather un-dramatic under the same test conditions. This dramatic performance improvement has been carried into occupant side impact protection as well as pedestrian impact protection.

To achieve this performance, many more airbags are built into a vehicle as standard now than even 10 years ago (usually 6, can be as many as 13 modules). Additionally steel alloys with a yield strength of 590 MPa (nearly three times as strong as mild steel) are common place in structural members, and in key structural locations steel alloys five times or more stronger than mild steel are used. The mantra, fully enabled by the production revolution is 'the right material for the right job' which leads to very specific applications of a given material strength throughout the body shell.

INSURANCE COMPANY ECONOMIC WRITE OFF

The Association of British Insurers (ABI) represents most but not all UK motor insurers. The ABI in conjunction with the insurer funded Motor Insurance Repair Research Centre (MIRRC, commonly known by its location which is Thatcham) developed the following classification of accident damage in 2007:

	Category A	Category B	Category C	Category D
DEFINITION	SCRAP only (i.e. with few or no economically salvageable part and which is of value only for scrap metal) e.g. total burnouts	BREAK for spare parts if economically viable (excluding any residual scrap value).	REPAIRABLE total loss vehicles where repair costs including VAT exceed the vehicle's pre-accident value (PAV).	REPAIRABLE total loss vehicles where repair costs including VAT do not exceed the vehicle's PAV.
	Salvage disposers should use best endeavours to ensure that Category A and B vehicles do not reappear on the road.			



This is a voluntary code of practice and has limited legal basis – the full document is available online via the ABI website. There is no other ‘code’ used by motor insurers or salvage agents.

It is also under revision, with new guidelines due to be revealed during 2015.

Pre-accident value is an Insurer term, based on the market valuation of the vehicle less their own internal criteria for valuation. That means if the commercial price of an identical vehicle of similar age is £5000, the insurer will use between 60% and 30% of that value as the ‘pre-accident value’ to if the vehicle can be repaired. Each insurer has their own view on that discount rate – there is no standard.

The upshot of the transformed vehicle safety system performance combined with the historic vehicle valuation system has produced a perfect storm. There is a steady supply of category D vehicles where the direct damage caused by the accident is under the ‘pre-accident value’ but the airbag system replacement cost pushes the vehicle into category C. Motor insurers have found that, thanks to a combination of rather high steel scrap values and demand for young damaged cars, it can be substantially more profitable (i.e. reduces the size of the claim) to scrap a vehicle rather than get it repaired.

Once a vehicle is offered for sale as salvage, anyone can buy it. With some irony we have about one third of collision repairers inside the British Standard scheme which represents around two thirds of the total repair business capacity, and yet increasing amounts of salvage end up anywhere, repaired by anyone. There are known ‘routes’ to export such salvage to other EU states, repair them, export to another EU state and then either re-import the vehicle to the UK or send them to other right-hand drive markets. In this process a vehicle may have its category cleansed from the DVLC record, which means a buyer of the vehicle will not be aware of the full history.

No one thinks this is a good situation. There is a requirement to use IMI Accredited Technicians if a collision repairer is part of the BSi PAS 125 / BS 1025 scheme for category D vehicles, but thereafter it is down to luck if the vehicle is repaired robustly.

THE FRANCHISED DEALER ROLE

There are very few collision repairers located as an integral part of franchise dealers, and fewer yet that are part of a franchise dealer network. Quite a few collision repairers do have approvals from a variety of vehicle manufacturers but this can leave them at a sub-supplier level compared to dealers.

The type of components ordered by collision repairers can be 'slow moving parts', but the frequency is far higher than for a service operation.

There is a real partnership to be made here. The collision repairer has to meet the requirements of the vehicle manufacturer, and has to place most, if not all, associated component business for that brand with the franchise dealer of their choice. However getting bits is only part of the story. The repair process relies on a considerable number of repair instructions at component level along with access to diagnostics equipment. The franchise dealer has all of this, but the approved collision repairer may not have the same level of equipment. The franchise dealer thus can help the same brand approved repairer knowing the commerce is in the volume of parts orders.

THE NON- FRANCHISED AFTERMARKET ROLE

The right to repair was a hard-fought campaign, to ensure all professionals in the automotive aftermarket have the right to access data for the safe repair of vehicles. This does not mean free of charge access. Motor insurers and indeed the general public love to have options when purchasing replacement parts, and this is where the non-franchise network comes in. By offering components made by the very same suppliers to the vehicle manufacturers, customers can buy in confidence.

Sadly all too often major suppliers of service items offer very little in the way of suspension, steering or body components. Given the scale of motor insurance spend on parts – the biggest purchaser of automotive aftermarket components in the UK – this would seem to be slightly off the pace.

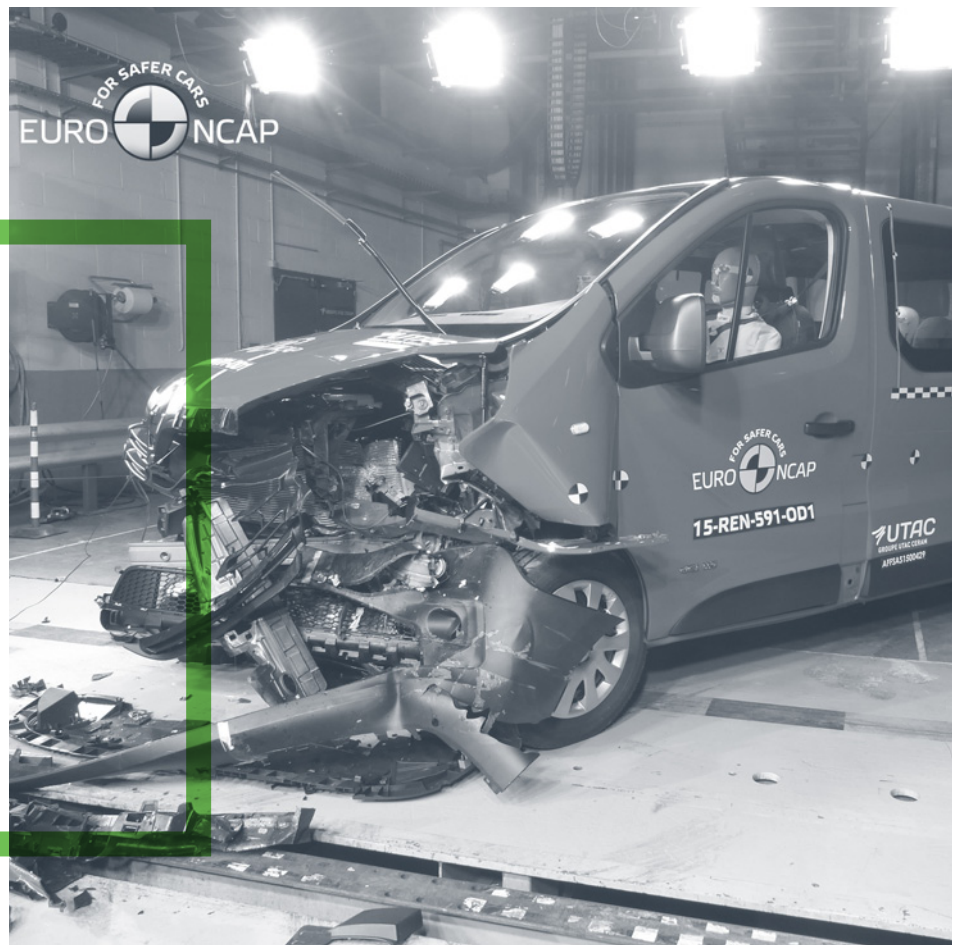
HOW DOES ALL OF THIS RELATE TO THE FUTURE OF THE AUTOMOTIVE AFTERMARKET?

Overall the story of motoring from the 1950s where the aftermarket had moved from being an integral part of the automotive industry to a provider of all motoring support, illustrates how this entire sector can evolve. More recently we have seen the traditional way of selling cars challenged as never before, and the body shops which were sold off decades ago now represent significant steady commercial


revenue as well as a potential competitor for service workshop related business.

As long as the automotive aftermarket adapts to customer needs by collaboration, there will be a bright commercial future for all.

**CAT C
OR
CAT D?
WHO
KNOWS?!**



QUESTIONS

- 
- 01 What is just in time sequenced delivery?
 - 02 What did the BMW Mini demonstrate in terms of profitability?
 - 03 How many option combinations does the Vauxhall Adam offer?
 - 04 What was the effect on aftermarket equipment fitment?
 - 05 What is Euro NCAP?
 - 06 Can a Euro NCAP test result for a super mini be compared with any other size test results?
 - 07 What is frontal impact test speed for Euro NCAP, and what is the whole vehicle type approval test speed?
 - 08 Is the ABI salvage code of practice legally binding?
 - 09 Can a category A or B vehicle be put back onto the road?
 - 10 Who can repair salvaged vehicles?

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