



Hello RCAR members.

In this difficult time of COVID-19 isolation and lockdown, it is very pleasing to see that we have contributions from 14 RCAR research centres to the June 2020 newsletter.

Despite many centres being at least partially closed over in the first half of this year, The June 2020 newsletter includes a good mixture of articles on damageability and repairability, safety, ADAS and other activities.

There are also very timely articles from Centro Zaragoza and Cesvi Colombia on promoting healthy practices and preventing virus spread in repair workshops, and two other articles Argentina and Mexico on online training.

In addition, I'd like to take the opportunity remind members to participate in the online Working group meetings that will be taking place in the second half of the year.

As usual, my contact for any feedback or questions is rmcdonald@rcar.org

Stay safe.

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RCAR 2022 Winterthur

Due to the Corona-crisis the Steering Committee of RCAR decided to postpone the conference in Winterthur to 2022. AXA's event team already booked the hotel "Banana City" in Winterthur for the following week:

Sunday, September 25th 2022 – Saturday, October 1st 2022

We are looking forward to welcome you in autumn 2022.

AXA Accident Research

AXA Crashtests 2020 – focus on SUVs and e-scooters

The focus of this year's AXA crash tests is on SUVs and e-scooters. SUVs enjoy great popularity. While the first crash tests on SUVs 20 years ago focused on off-road vehicles with rigid ladder frames, this year we will focus on the popular SUVs with self-supporting bodies. These are much less aggressive for collision partners. But our figures show that large SUVs in particular actually cause more accidents.

The second topic we want to take up is e-scooters. Rental e-scooters in particular are also booming in Swiss cities. The number of accidents is increasing. An Austrian study concluded that only 1% of e-scooter drivers give a hand signal when turning. This is certainly also due to the difficult handling of e-scooters. The consequences of this behaviour will be illustrated with a crash test. Prevention tips and measures will also be discussed. The media will be informed about the results of the AXA study on August 20th 2020.



Image 1: The e-Scooter-driver wants to turn left. She gives no hand signal. The driver of the SUV is not able to brake the car in time.

Resolution Driver Assistance Systems

Modern vehicles of all vehicle classes are increasingly being equipped with a large number of driver assistance systems. Especially in the last few years the market penetration of these driver assistance systems has risen significantly. The assessment and repair of damages is more complex as the additional technology is installed in these vehicles.

Under the lead of the AZT, a joint resolution on damage repair for vehicles with driver assistance systems was therefore elaborated together with representatives of vehicle manufacturers, body and paint associations, assessors and insurance companies. The aim of this resolution is to establish a common understanding for all parties involved in the claims process with regard to a technically correct approach to the assessment and repair of driver assistance systems. The annual meeting of the German Committee for Standards in Paint and Bodywork (German name of the committee: Deutsche Kommission für Lack und Karosserieinstandsetzung) took place at the AZT on March 3rd 2020. One of the outcomes was the adoption of "the resolution on damage repair for vehicles with driver assistance systems". A free copy of the original resolution in German language can be downloaded [here](#). An English translation of this document is available [here](#).



Example of a tool for front radar calibration

AIWAYS @ AZT: Crash test with a Chinese electric vehicle

The new Chinese manufacturer "AIWAYS" is building electric vehicles and founded a subsidiary in Europe in 2019. In order to be able to offer its first vehicle, the AIWAYS U5, in Germany, the manufacturer turned to the AZT for support regards the insurance group rating process in Germany¹. The AZT is the ideal partner due to its many years of experience in this field. AZT provides consultancy and tests as a service for OEMs. Customers like e.g. VW, Porsche, Tesla, and also other US-OEMs have been supported either with crash testing only or with additional consultancy services in the last decades. AIWAYS is the very first Chinese OEM to have a vehicle available for this rating process and the cooperation with a Chinese producer was a new experience for the AZT. A consulting service was requested for the initial rating, including the necessary RCAR bumper and structure tests. Since the project went into execution phase at the beginning of the Corona pandemic, it was not easy for either side to complete the project as planned. At the end of 2019, when the cooperation began, there were already considerable restrictions in China and subsequently AIWAYS engineers started working in home offices. This affected the planning of the tests, which were scheduled for February 2020. Nevertheless, with the help of numerous video conferences, telephone calls and e-mails, it was not only possible to keep to the schedule, but also to achieve a very satisfactory result for both sides. As the timeline was quite tight, it was important to keep the manufacturer up to date without delay. To this end, some of the crash tests were transmitted live to China via video conference and discussed immediately

¹ https://www.rcar.org/images/papers/procedures/German_Rating_System_05_2019_V2.pdf

afterwards. This was not always easy due to the different time zones, but nevertheless all specifications were met and ALWAYS could present the results to the German Insurers Association GDV in due time. The vehicle achieved MOD type class 23, which is an impressive result for a new manufacturer and within the range of other small SUVs like e.g. Mazda CX3 (22 – 24) or Hyundai Kona EV (22). Overall it can be said that this international project has been very successful despite the exceptional limitations due to the Corona pandemic.



ALWAYS U5 after arrival at AZT



Bumper test (front) with ALWAYS U5



Reinventing yourself in the time of a pandemic

Due to the social and preventive isolation provided by the Argentine National Government to avoid the advance of COVID-19 on March 20 of this current year and without an expected end date, from CESVI ARGENTINA we believe it important to take this opportunity to deepen and innovate on issues that we have been analyzing and developing for a long time.

When everything comes back to normal, accident rates will regain its prominence, the repairability of vehicles will continue to be updated and the automotive industry will continue its relentless technological advance.

It is for all this, and to respond to a new and complex reality in the insurance market, and of course from a corporate point of view, that we have been able to develop- from isolation- the following new products and services by applying the use of new technologies :

- The audits and evaluations of AVL (Automatic Vehicle Location) companies were transformed into virtual format, managing to certify and provide services to two companies.

- The Insurance Company Expert course has been transformed to a 100% virtual format.

- Training for workshops were carried out in a 100% online format on windshield installation and workshop management.

- The courses "Introduction to body repair", "Polishing and masking techniques" and "Optical or Lighting system Restoration" have been developed for the repair market in 100% digital format.

- In the same way, the training course on "Mechanics" as well as "Expertise" was developed for crane or tow truck operators.

- We are in advanced negotiations with a major global brand of sealing adhesives, to jointly carry out the certification of premises for the installation of safety glasses.

- Our first two remote certifications of glass installation centers were completed, and also the first body shop was tested with the intention of being certified.

We held free talks by the Zoom and YouTube platforms, where more than 2000 people from Argentina and from different parts of the world took part and were able to receive recommendations on road safety, advice on the management of workshops and the latest news in terms of technical issues and safe repair.

- Returning to activity after isolation is a challenge that vehicle repair shops must face anywhere in the world with responsibility and efficiency. To do this, CESVI ARGENTINA and CESVI Colombia have developed a work plan to accompany the repair sector whose objective is to guarantee the health and safety of the people who work around the performance of the workshop in a controlled, efficient and safe way.

This plan is based on work axes or major working areas in which the context is evaluated, protocols of general and specific application are developed and disclosed through a training plan that includes training, digital reference guides, support videos and help desk .

In this way we reaffirm our commitment to accompany the area to face, in a reliable way, the opening and transition of the operation coming after the state of emergency that has hit or struck much of the planet.

Under the premise of protecting the health of our society, at CESVI ARGENTINA we continue to bet on the development of the insurance and repair market.



Online training

Car group Study Volks Wagen Nivus

Recently launched the VW Nivus vehicle, featuring a differentiated designer with what we are used to in Brazil, bringing an intermediate body between Hatch and SUV. The vehicle optionally features technologies such as ACC - adaptive speed control and City emergency brake - autonomous braking.

And in May and June, CESVI Brasil carried out the CAR GROUP study of this new VW Nivus vehicle. CAR GROUP is the study that compares vehicles of the same category in terms of the ease and cost of repairing them in low speed collisions. For this, a frontal impact at 15 km / h is performed at 40% on the left side of the vehicle and a rear impact at the same speed at 40% on the right side, the CESVI impact test provides information for those most common collisions, which represent 75% of impacts in large urban centers. Thus, a vehicle is classified according to its repair costs, and thus obtain the corresponding reparability indexes.

VW Nivus, repair analysis:

Forward:

The vehicle features a propylene shock absorber assembly, a front crash-box crossbar and a lower crossbar for pedestrian protection. Items that helped to absorb the impact energy, and worked to reduce damage to structural components, such as the front stringer that was not reached.

The front-end was replaced, however, as it is a single piece aligned with the absorption set, it helped that the pre-mechanic set (radiator / condenser / electric fan) was not damaged on impact.

Rear: The rear also has a crosspiece with cras-box and impact absorber, which provided a light repair, with few damaged parts.

The structural part, such as the rear panel, floor and side members, was not damaged, and the upper part of the bumper suffered only rapid repair techniques (RSP). There is no need for painting in the rear region.

The vehicle has a Car Group 16 rating, which leads to first place in the compact SUV category.



Volks Wagen Nivus

Baremo comparison of Hyundai Mechanical parts replacement times

The main objective of the study was to map and develop a technical comparison of the times recommended by the automaker with the real times performed by the professionals responsible for repairs within Hyundai dealerships. Thus, it is possible to validate and assess the process carried out with the final unavailability of a technical report on the difference or not of the collected times.

We used BAREMO as the study methodology to carry out this work, which consists of collecting the time to perform the replacement of parts and, thus, identify the differences in times when performing the services.

There were 32 days analyzing the procedure performed by the dealers, where all the replaced parts followed specific technical standards and tools indicated by the automaker itself.

As a conclusion of the study considering only the times when there is reference to the automaker's times, the lowest difference value found was 10% and the highest value 390%.

The average value found for the difference between Baremo's time and the automaker was 62%.

Thus, with a general conclusion, the study demonstrates that the times indicated by the automaker in administrative activities need to be reviewed, as they do not portray the scenario of actual execution of the processes followed in the mechanical workshops.



Car dealer Sheep Hyundai

Digital Training - Distance training program – CESVI Brasil

Due to the moment of social isolation caused by COVID 19 and with the knowledge and studies generated by the CESVI Brasil research center, in addition to providing training via its distance learning platform, it developed a new distance training format using video conference platforms.

The model became prominent among customers due to the possibility of interaction and exchange of experiences between student and teacher. For the inauguration of this new modal, 9 solutions were developed that cover the essence of the need of insurance customers and workshops for the future that is still unknown to the market, they are:

1. Introduction to electric and hybrid vehicles: The impact on the insurance market
2. Negotiation techniques and strategies in claims regulation
3. Image regulation: quality and productivity
4. Automotive electronics applied to claims regulation. Introductory level.
5. Parts recovery processes and techniques
6. Painting processes and techniques
7. Plastic parts repair process and techniques
8. Waste management in repair shops
9. Fast and ultra fast repair techniques.

This new modality allowed us to maintain the quality of theoretical training, maintaining the mission of sharing knowledge generated by the research center, keeping the markets we serve updated and offering yet another business model that adapts to the atypical moment we are experiencing.



Digital Training

BIOHAZARDS AROUND THE WORKSHOP AND THE IMPACTS TO OPENING TO CUSTOMERS.

The appearance and soon spread of the virus (COVID 19) in Asia and Europe, also the declaration of a pandemic virus by the OMS, turn on the alarms and gave rise to speculation of scenarios regarding and the impact of virus arrival in Latin America and the Caribbean, this one was materialized for the confirmation of the first case, and the next step was the mandatory confinement decreed by central governments who left critical economic effects.

The perspective to after sales of the automotive industry and their impacts should go more there of establish biosafety protocols. Also the society widespread economic uncertainty, was impact on a change in the consumption habits, in the same way the redefinition of priorities to spending and its reduction to search on substitute products and services, negative impact of the demand services and the unquestionable economic slowdown. With an optimistic vision, is also a pertinent to identify the opportunities that the pandemic give implemented within the locations. In this first step, we come to 512 customers in Colombia, of these ones 91% are workshops in the country and the remaining insurance companies and service providers.



Given the reception whit this first guide in the market, these was complemented with a second guide called **“Self-regulation to automobile dealer to confront the covid-19”**, this one was built in conjunction with an association of the Colombian automotive industry. These documents contain everything related to locative measures, human capital, prevention and management of contagion risk situations, a communications plan and a series of recommendations for the organization to adopt in the workshop gradually and safely, without prejudice to the Compliance with national and local government regulations, whit this second guide we obtain 1.100 views and downloads by

us and that we can take advantage and directing our efforts to the client, innovating in service models through the virtualization of processes, identifying new needs based on communication assertive actions that result in the optimization and measured use of the workshop resources. These strategic definitions should demand full attention of policies to establish new metrics and redirect business.

In this way Cesvi Colombia is proposed like an object, contribute to the sector who is influence of Latin America and the Caribbean, develop an exclusive protocol to implement on automotive industry.

The development was the first guide called **“Good practices in the workshop to prevent risks to COVID 19”** was launched the first week on May in the Colombian market, this one is an easy and simple way sensitizes the workshop of the risks and measures to be

the end of May in ours websites.

Those development was supported with educational materials such as videos, posters, conferences and Webinars dedicated to the sector to reduction of risk on workshop, containment and mitigation to make way for a safety opening of economic activity on the workshop business.



The implementation of the biosafety protocols implies additional investment and operating expenses which were not considered in the cost structure of the business, somehow hitting the operating margin and net, in addition, there is the reduction of income due to operating restrictions and the hours of attention demanded by the biosafety protocols, for which it is pertinent to identify the costs associated with their implementation and define actions that mitigate the impact in the cost.

Understanding this problem and the goal to contribute at the joint construction of solutions in automobile Industry, in Cesvi Colombia we will the task to estimate the average cost of

disinfecting to vehicle. The steps to build the protocol has the next points, the first one was identified the activities of the process to design a standard that guarantees the disinfection in whole vehicle, the next was identified the supplies and materials required to the disinfection, finally was identified lot personal protection elements PPE to use the technical person.

The study to build the Self-regulation to automobile dealer to confront the covid-19, considered the costs to implementing biohazard protocols, and all activities related with the process into the workshop like customers, attention of clients, visitors and suppliers, that need a disinfection of general and operational areas, also this protocol implement the PPE (personal protection elements) of the administrative and operational team of the workshop.



The announcements of the controlled reopening on some productive sectors in the Colombian industry it allows a new way to work called “**NEW NORMALITY**”, this ones implies the adjusted to rigorous biohazard protocols, whose goal is to avoid an uncontrolled spread of the virus and their consequently a hospital crisis, those consequences is a new phase of quarantine a fact that if materialized, implies the a new phase of confinement which consequence that increasing the economic crisis.

To CESVI COLOMBIA we have showing how this work delivered to the automotive industry has contributed to the adoption and implementation of the protocols to workshops, which results is to reduce risk of biohazard of contamination the COVID 19.



• **Online training during the Covid-19 pandemic**

- *Cesvi México has taught 102 distance courses from January to May 2020 (technical topics, sessions for partner insurers and third parties, road safety conferences, webinars for appraisers, managers and workshop owners) with a total of 5,018 attendees.*

At the end of last year, virtual training began for the NISSAN brand, which helped us a lot to identify the necessary requirements for distance training.

In addition, training sessions were held on the videoconferencing platforms with the instructors, work was done on structuring the outline of the sessions, ensuring that in the practical courses, demonstration sessions could be held with the equipment, tools and materials.



Of course, this way of impatience training brought with it several challenges that we have faced. To start we had to learn how to use the software for video conferencing, get used to talking to a video camera, interacting with the participants, and anticipating failures in the internet service.

We solve this problem with training on the use of applications, we share experiences of staff who had already interacted under these schemes. Likewise, support personnel were assigned in the sessions so that in case of connection failures, they could continue with them.

Of course, video and systems staff have also been instrumental in broadcasting the courses.

Distance training is reality now. At Cesvi México we saw it a couple of years ago as an additional service that we would eventually adopt and that we implemented as we discussed more than a year ago.

Of course, the issue of sanitary confinement due to the contagion of COVID-19 has potentiated video calls, videoconferences, virtual seminars, distance courses, teleducation, teleworking and gradually we will be migrating to augmented reality, virtual reality, 3D modeling schemes ; go all training from now must necessarily have an online mode if you want to stay current.



Parts recovery tab

Cesvi México has developed a tool that allows the repair times to be established for external parts of the body-car that have initially been assigned as a replacement and for some reason, it is convenient to repair them.

The development of the Tabulator was carried out in approximately two months, due to a request from Cesvi Mexico's partner insurance companies anticipating possible complications for the purchase of spare parts derived from the contingency, in which marketing was limited or there would be a shortage of same and it would be necessary to repair parts that in the first valuation had been assigned in exchange.

This tool is in an electronic file that needs to be reviewed to determine the times that will be assigned to the pieces subject to being evaluated with this tabulator. Of course in a next stage of the project, it is possible that it could be implemented in some computer platform.

The development of this tabulator allows the establishment of mitigation strategies for waiting times due to the shortage of spare parts and the containment of costs in the claims of the insurance sector due to the fact that it promotes repair due to the increase in spare parts costs that appear in the market. .

Once the insurance companies validate it, it will be available to the valuation staff of the partner insurers.

1	Marca	Volkswagen	4	Técnico	Marco Cruz	7	Tamaño de la pieza	Mediana	10	Superficie de la zona dañada en Dm ²	30
2	Modelo	Golf	5	Medio	Fotografía	8	Intensidad del daño	Severo			
3	Carrocería	5 P	6	Pieza	Puerta	9	Superficie de la pieza en Dm ²	85			

NO.	DESCRIPCION DE OPERACIONES	TIEMPO (hrs)
1	Estiraje	
2	Retirar adhesivo (cortar)	0.50
3	Soldadura	
4	Ajuste o cuadraje	
5	Recuperación de líneas estéticas	2.00
6	Conformado del daño	6.00
7	Conformado de refuerzos	
8	Retirar anticorrosivos (placas antisonoras) sellador	0.30
9	Aplicar material de acabado	2.50
10	Restaurar adhesivo	0.30
11	Restaurar placa antisonora	0.30
15	Tiempo	11.70



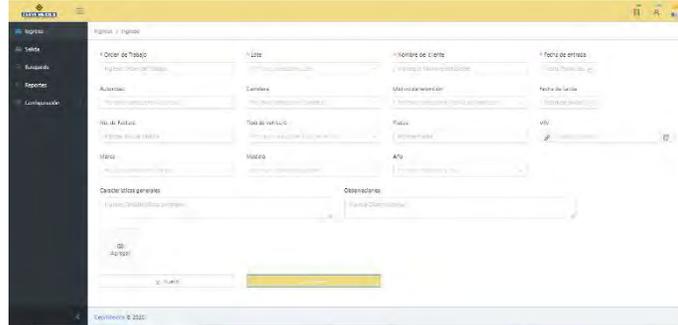
PIEZA	TIPO DE DAÑO	Porcentaje del daño	FOTOGRAFIA	TIEMPO SALVAMENTO	TIEMPO DE DESVIACIÓN +/-
COFRE	SALVAMENTO 1	< 20%		10.7	1.0
	SALVAMENTO 2	20-40 %		14.2	
	SALVAMENTO 3	> 40%		17.8	
SALPICADERA	SALVAMENTO 1	< 20%		7.0	0.8
	SALVAMENTO 2	20-40 %		9.4	
	SALVAMENTO 3	> 40%		11.7	
PUERTA DELANTERA	SALVAMENTO 1	< 20%		8.8	1.0
	SALVAMENTO 2	20-40 %		11.7	
	SALVAMENTO 3	> 40%		14.7	

Car yard management system

- About 4500 registrations have been made in the system.

This system is a support tool for the control of vehicles in the car yard of the permitting companies of the towage and rescue services, was developed in the second half of 2018 and was implemented at the end of that year.

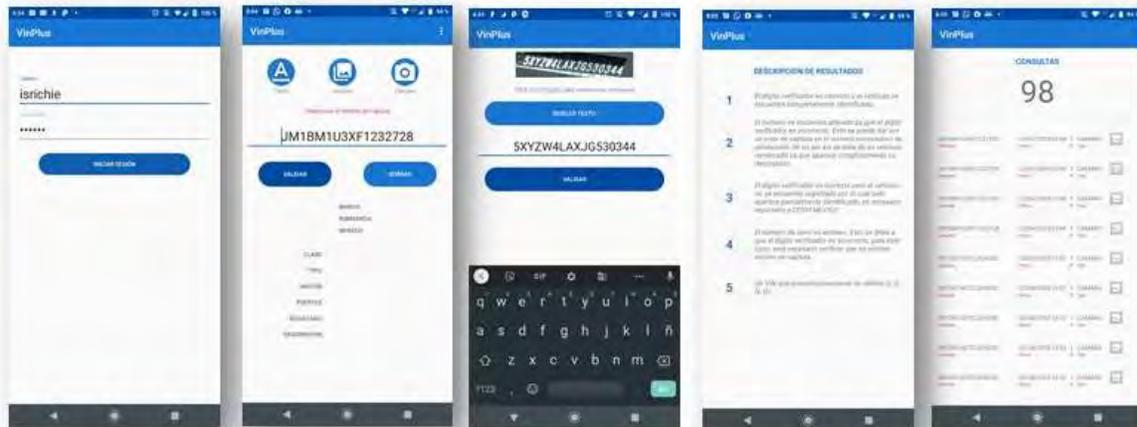
The software was developed at the request of a permit holder who required to keep track of the vehicles entering and leaving their car yard, identifying them and maintaining evidence of their conditions. In addition, it is available to tow-truck companies who have vehicle depots mainly, although it can apply to any company that has a vehicle depot and requires keeping track of vehicle inventory.



Currently there are two versions, the last one configured this year, which has been adapted to be commercialized in the market. We can say that after these years, it has been well received by the sector as we have had several presentations of the system in some forums and the comments have been good.

Regarding the evolution and improvements of the system, some have been made in the latest version, among which we can mention that the catalogs included in the system will be configurable by each user, the reporting module has been restructured, a tool is planned to be implemented to reading the VIN number with the use of a cell phone camera.

ANDROID APP





CENTRO ZARAGOZA launches his new certification brand:
“Responsible Workshop against SARS-CoV-2”

With the declaration of the state of alarm by the Government on March 14th, Spain began to experience an exceptional situation caused by the expansion, on a global level, of a new type of coronavirus called SARS-CoV-2, with a high capacity of propagation, and with important consequences for the population both, humanly and economically perspectives.

However, once the most critical phase of the pandemic has passed, and the process of transition towards the "new normality" has begun, it is time to recover the economic and industrial activity, which has been seriously affected during this period. To do this, the consumer must recover the same degree of confidence that he had prior to the crisis, especially with regard to feeling secure against contact with virus, such as SARS-CoV-2.

When a vehicle arrives at the workshop for repair, vehicle and customer history is unknown. The number of people who have previously driven or occupied the vehicle is unknown, and whether or not they were holder of the virus. Even in the case of the habitual driver, neither the contacts that he may have had in the previous days are known, nor if he could be a infected who has not manifested symptoms. Similarly, it cannot be ensured that employees of the workshop are asymptomatic ill, and that during the incubation period they act as transmitters of the virus.

So, it is clear that the risk of contagion in the reparation process of a vehicle can occur as from the customer to the workshop as well as from the workshop to the customer. In this regard, the minimization of these risks requires the adoption of adequate prevention and protection measures to safeguard the health of both, the workers who carry out the interventions in the vehicles and the clients. The adoption of these measures by the workshops, and the verification of their implantation by independent entities of recognized prestige in the sector, will contribute to generating the climate of necessary confidence for the development of this activity in the new context.



Vehicle disinfection

According to this situation, CENTRO ZARAGOZA, based on its experience in the field of automotive research, and on the development of certification schemes for products and services related to its repair, has developed a new certification mark whose main objective is to contribute to improving the confidence existing between the repair shop and its client, relating to the management of SARS-CoV-2 risk.

Thus, CENTRO ZARAGOZA complements its "CZ Workshop Certification" system with a new procedure developed to identify the "Responsible Workshop against SARS-CoV-2". This mark will be granted to workshops that have the appropriate means of response, and that demonstrate that they put the necessary caution and attention for the correct management of vehicles, during the process of repairing an accident, in order to minimize the risk of contagion of workers and customers with the SARS-CoV-2 virus.

The certification as "Workshop responsible against SARS-CoV-2" is configured as an additional scope to the standard CZ workshop certification. However, this certification may also be requested by any workshop, independently of the CZ certification.

The process is based on its current online model, available on the CENTRO ZARAGOZA website; www.centro-zaragoza.com, through which the workshop will find all the necessary tools to demonstrate the management the workshop

is carrying out against SARS-CoV-2. Among this tools an online training course, with practical recommendations to help the workshop identify and implement the necessary measures to minimize the risk against the virus, or a questionnaire to assess their situation, are included.

Through these solutions, CENTRO ZARAGOZA will verify the conformity of workshop procedures with different requirements related to protocols and guidelines for the disinfection of vehicles that the workshop has implemented in relation to SARS-CoV-2. It will also check if the workshop has the appropriate equipments and products, if its personnel are trained in this regard, if it performs environmental management in accordance with the typology of the products used, if its distribution in plant is adequate, or if it has softwear that allow them to manage digitally the claims.



Certification mark

The workshops that meet the requirements defined in this certification scheme will be included in the "CZ certified workshops" database, freely accessible through the CENTRO ZARAGOZA website, and may use the "Responsible Workshop for the SARS-CoV-2 " mark, exclusive to this scheme, thus helping to renew the customer's confidence in " their "repair shop.

64 vehicles earn 2020 IIHS awards

Sixty-four cars and SUVs qualify for an award from the Insurance Institute for Highway Safety (IIHS) under new criteria that prioritize the protection of pedestrians in addition to vehicle occupants.

To qualify for a 2020 *TOP SAFETY PICK* or *TOP SAFETY PICK+* award, vehicles must have good ratings in each of the Institute's six crashworthiness evaluations. They must also have good or acceptable headlights and available front crash prevention that earns advanced or superior ratings in both vehicle-to-vehicle and vehicle-to-pedestrian evaluations.



The “plus” is awarded to models that come exclusively with good or acceptable headlights, making it easier for consumers to find properly equipped vehicles. Of the 64 award winners, 23 qualify for *TOP SAFETY PICK+*.

“The headlight ratings that have been part of our awards criteria in recent years have pushed automakers to pay more attention to this essential equipment,” says IIHS President David Harkey. “However, finding vehicles with the right headlights can be a challenge for consumers. We wanted to reward automakers that have removed this obstacle.”

Vehicles can meet the front crash prevention requirements for either award with optional equipment.

However, 20 *TOP SAFETY PICK+* winners and 26 *TOP SAFETY PICK* winners come with standard systems, as automakers move to meet their voluntary commitment on automatic emergency braking (AEB). The commitment calls for front AEB to be standard on all but the heaviest passenger vehicles by 2022.

The voluntary commitment calls only for systems that avoid crashes with other vehicles, but many automakers are incorporating vehicle-to-pedestrian functionality.

IIHS launched pedestrian crash prevention ratings about a year ago.

For more information, visit <https://www.iihs.org/news>.

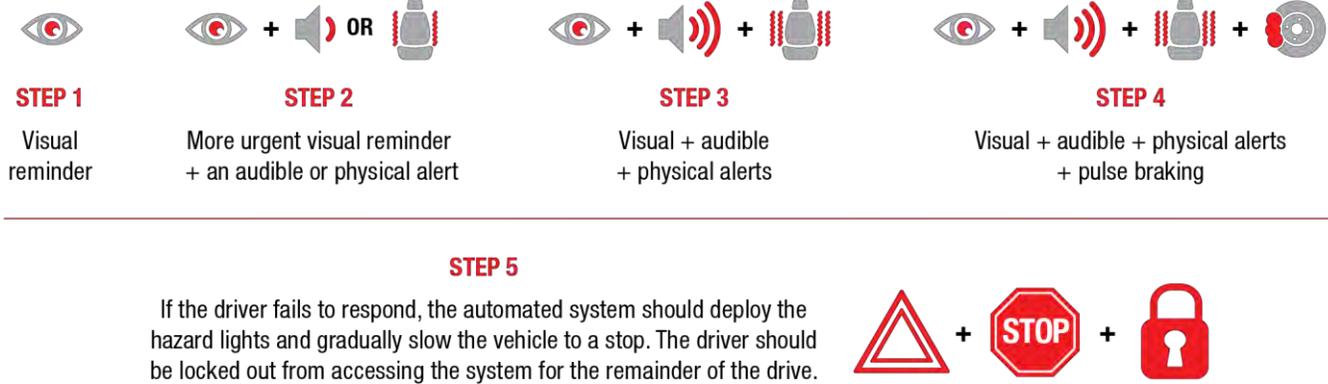
IIHS recommends new safeguards for partially automated driving systems

IIHS has issued a set of research-based safety recommendations on the design of partially automated driving systems. The guidelines emphasize how to keep drivers focused on the road even as the vehicle does more of the work.

Today's partially automated systems still need the driver to be involved at all times. That means they need robust methods of monitoring driver engagement and more effective ways of regaining the driver's attention when it wanders. Designs should also be based on a principle of shared



Recommended escalating attention reminders for Level 2 automation



control, and they should have built-in limits that prevent them from being used on roads and under conditions where it isn't safe to do so, IIHS researchers say.

As part of that philosophy of shared control, partially automated systems shouldn't change lanes or overtake other vehicles without driver input. They should also be responsive to driver steering input even when automatic lane centering is engaged.

Under the classification system developed by SAE International, there are five levels of automation, ranging from 0 (no automation) to 5 (fully self-driving). The highest level available in production vehicles today is Level 2. These systems continuously control acceleration, braking and steering to keep the vehicle traveling at a set speed in the center of its lane while maintaining a selected following distance from the vehicle ahead. They require the human driver to remain vigilant and ready to intervene in the event that the system encounters a situation it cannot handle.

Despite these limitations, some designs make it too easy for the driver to rely heavily on the system and lack robust methods to make sure he or she remains actively engaged in the driving.

One key recommendation is for more robust methods of monitoring whether the driver is paying attention and re-engaging the driver when that focus wanders. The recommended series of attention reminders is outlined in the graphic above.

For more information, visit <https://www.iihs.org/news>.

Benefits from advanced driver assistance systems are growing, new HLDI study finds

Collision avoidance systems are eliminating more crashes as the technology improves, according to a new study of insurance claims data from various BMW models. However, the impact of partially automated driving remains murky.



In its latest study, the Highway Loss Data Institute (HLDI) compared insurance claims data from BMW vehicles for model years 2013-17. The analysis showed that the combination of improvements in front crash prevention and the addition of adaptive cruise control resulted in large reductions in the frequency of property damage liability and bodily injury liability claims. However, the further addition of lane centering as part of the company's partially automated driving package had little impact.

“The crash claim frequency reductions for BMW’s Driving Assistance package are the largest we’ve seen from advanced driver assistance systems, which suggests crash avoidance may be delivering bigger benefits as the technology improves,” says Matt Moore, senior vice president of HLDI. “The lane centering that comes in the ‘plus’ package doesn’t seem to augment these benefits. That may be because the system is only intended for use on freeways, which are comparatively safer than other roads, and only works when the driver switches it on.”

For this study, HLDI analysts compared the claims data associated with four different BMW crash avoidance packages. The first one combined forward collision warning and lane departure warning. A second included those features as well as front automatic emergency braking (AEB). The Driving Assistance package added adaptive cruise control. Driving Assistance Plus includes all those features as well as lane centering and front cross-traffic alert, pushing it further along the continuum of automated driving into Level 2 automation.

For each package, HLDI looked at the impact on the rate of collision, property damage liability and bodily injury liability claims per insured vehicle year. Three of the four crash avoidance packages were associated with reductions in claim rates under the three coverages (see chart).

This study is by far the broadest examination of the impact of systems that combine speed control with lane centering on insurance losses. HLDI also recently studied a similar system from Nissan — ProPilot Assist — but that study was based on much smaller exposure.

For more information, visit <https://www.iihs.org/news>.

Impact of BMW advanced driver assistance features on insurance claim frequency



Renewal of ceiling lighting system in our crash test facility

High-brightness ceiling lighting system is indispensable for taking high-speed images of crash tests. JKC installed halogen ceiling lighting in 1988 when our indoor crash test facility was first opened. 16 years later in 2004, the lighting equipment was replaced with metal halide lighting.

Over a decade later, to improve quality of the crash test video/image, we renewed the lighting system last year. The following are the improvements we made in updating the system.

1) LED lighting

It extended the lifetime of the lighting equipment and reduced the electricity consumption.

2) Dual-partitioning and movable lightings

By dividing the ceiling lighting equipment into two parts and making them movable in longitudinal directions, it has made possible to brighten wider areas for multiple crash tests and has led to improved quality of the test videos.

3) Remote-controlled ceiling camera

This remote-controlled camera has made it possible to capture much clearer image taken from the ceiling position.

If the lightings are not movable and installed at fixed positions, it will be difficult for the lights to reach the second (crashing) vehicle in the multiple crash test.



With the new lighting system, lightings can be divided into two parts, front and rear. Therefore, in the multiple crash test, sufficient illumination can be provided to the second (crashing) vehicle.



Reducing the repair costs for damaged headlamps

In recent years, headlamps equipped with advanced electronic devices and/or electric power saving lights are increasing. Repair costs of damaged headlamps are becoming much higher than before because replacing a broken headlamp assembly can be very expensive.

As shown in the attached photos, TOYOTA MOTOR (Hereinafter called "TOYOTA") has developed a way to seal the lens to the headlamp housing by using special string-like gaskets. This sealing technique allowed to replace only the individual damaged parts instead of replacing entire headlamp assembly.

Several years ago in the Japanese market, TOYOTA started supplying lenses separately for the headlamp applicable for certain car models and JKC made a recommendation to TOYOTA to supply not only the lenses but also the headlamp housings. Later, Toyota started supplying the headlamp housings for "Prius" and has gradually increased the number of car models with such kind of availability.

JKC felt that the economic effects of cost reduction achieved by supplying the lenses and headlamp housings individually were so large. It could be roughly 90% reduction in parts costs with only about an hour of additional repair time required when compared with making repairs by replacing the entire headlamp assembly. Thus, the total repair costs could be significantly reduced.

We introduced and recommended the above efforts taken by TOYOTA to other Japanese OEMs and received positive responses. We recently received a good news that a few Japanese OEMs started supplying the lenses in the same way as TOYOTA.



String-like gasket



Individual parts supplied by OEMs

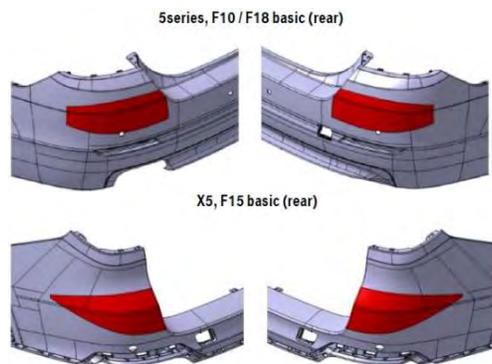


BMW repair manual revision for refinishing

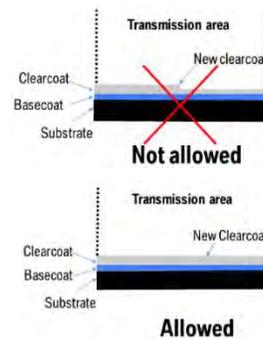
bumper covers for vehicles with radar sensors

In the event of minor damage to the bumper cover of the car, the minor damage repair standard, which recommends repair, not replacement, in the case of a repairable type, has been reflected in the auto insurance policy from July 2016. However, in the case of vehicles equipped with radar sensors for Blind Spot Detection (BSD), Lane Change Assistance (LCA), etc., there were disputes between automakers and insurers when applying this standard. In the BMW repair manual, any painting for bumper repair was banned because an additional paint layer may affect vehicle safety since the radar signal strength can be reduced in the case of LCA system equipped. In 2018, KART confirmed the possibility of repair of minor damage through static tests by measuring radar sensor signals for various repair methods. In 2019, based on the static test results, various painting methods for the radar beam area were compared with new vehicle state through the actual vehicle dynamic tests. KART has continuously discussed with BMW Korea and raised this issue through RCAR with these test results.

As a result, in May 2020, BMW Germany revised the global repair manual based on its own research results. The new manual explains the area of radar beam transmission and adequate repair method for each model. In brief, it is possible to repair with filler outside the radar beam area and to paint most of the colors within the area upto 3 re-paintings. Therefore it presents which colors can be painted and which repair methods can be applied to each radar sensor model. For more information, please check 'Standards for refinishing using sensor technology' released by BMW.



Radar beam area for each model



Clear-coat refinishing method

300	Alpine white
U21	Brilliant white metallic
A96	Mineral white metallic
W93/X16	Frozen Brilliant White (BC Brilliant white)
C3E	Bernina grey amber Effect
X06	Champagne Quartz metallic
C46	Alvrit grey metallic
C3E	Dravit grey metallic
B39	Mineral grey
B41	Singapur grey metallic
P6N	Frozen Dark Grey metallic (BC Mineral grey)
P6X	Frozen Arctic Grey (BC Arktik grey)
A90	Sophisto grey Brilliant Effect
475	Black Sapphire metallic
416	Carbon black metallic
C49	Citrine black
668	Black II
X03	Ruby black metallic
S34	Azurite black metallic
C3N	Storm Bay metallic
C1D	Misano blue metallic
C10	Mediterran blue metallic
C1M	Phytonic blue
C31	Portimao blue

C1K	Marina Bay blue metallic
P5T	Frozen Marina Bay blue (BC Marina Bay blue)
667	Alpina blue II
A89	Imperial Blue Brilliant Effect metallic
C3Z	Tansanit blue
U08	Alpina green II
B21	Atacama yellow
A75	Melbourne red metallic
C54	San Francisco red metallic
A61	Crimson red
X15	Aventurine red
C08	Flamenco red metallic
911 / 912	Piemont red metallic
X1B	Amelina metallic
C25	Royal Burgundy Red metallic
C07	Sparkling Storm Brilliant Effect
X13	Pyrite brown metallic
B65	Jatoba metallic
C1L	Terra brown
P6A	Frozen Dark Brown metallic (BC Jatoba)
X14	Almandin brown metallic

Colors approved for re-painting

Maintaining performance of driver assistance systems and automated driving functions over the life cycle

At Advanced Driver Assist Systems (ADAS) the reliable functioning of sensors is absolutely prerequisite to safe mobility, and must be maintained throughout the life of the vehicle. ADAS system functions are dependent on complex sensors systems. But, for various reasons, sensor abilities to sense and interpret the surroundings can get lost about the lifetime of cars. Possible causes are ageing, fault, disassembly respectively assembly of sensors without adjustment, subsequently bonded wrap film, collisions and repairs. As technologies such as ADAS are becoming standard in modern cars, the need for testing of typical repair methods has been important. The tested system was the lane change Assistants.

Tested vehicle and examined ADAS

In all tests used two experimental vehicle of the Technical University Braunschweig. Object of investigation was the lane change assist on TEASY III („Ego“). TEASY III based on a VW Passat Alltrack (Type B8) and is equipped with supplementary laserscanners for reference distance measurement. The lane change assist monitors the space next to and behind the vehicle with the aid of two radar sensors. The radar sensors (Type: Bosch MRR rear), are mounted left and right behind rear bumper, angled outward at approximately 45 degrees. The detection area reaches from the B-pillar to approximately 80 m to the rear of the vehicle. Both radar sensors are linked to each other for data ex-change via their own lane change assist CAN data bus. During tests, all CAN data bus messages are have been recorded.

Repair scenarios

The following Table 1 gives an overview of all test pieces (Figure 1).

Table 1. Overview of all test pieces.

<i>Number</i>	<i>Modification</i>	<i>Radar calibrated & adjusted</i>
0	<i>no modification - reference</i>	<i>yes</i>
1	<i>undamaged, bonded wrap film</i>	<i>yes</i>
2	<i>repainted</i>	<i>yes</i>
3	<i>primed and repainted</i>	<i>yes</i>
4	<i>bumper crack repaired with stainless-steel mesh</i>	<i>yes</i>
5	<i>bumper crack repaired with stainless-steel clips</i>	<i>yes</i>
6	<i>bumper crack repaired with instant plastic patch</i>	<i>yes</i>
7	<i>remove and install undamaged bumper</i>	<i>no</i>

All repair scenarios based on genuine bumpers. A bumper in original condition and paint served as a reference.



Fig. 1. Six bumper for seven test scenarios

According to Volkswagen guideline [2], the lane change assist needs to be calibrated after body repairs are performed at the rear and if removal or repositioning of the rear bumper. VW's Guide instructions direct repairers to run to watch coating thickness and keep plastic repairs and body filler away from the blind spot monitors behind the rear bumper fascia. Information on bumper cover repair are described in the Paint General Information manual. The restrictions for repair are as follows

- Do not exceeded the maximum paint coat thickness of 150 μm in the area of the control modules
- A repair of the plastic must not be carried out within 25 cm of this area
- Smoothing work may not be performed within 25 cm of this area
- Triple painting is not permitted on the bumper cover.
- Spot repair of the area of the control modules is not permitted.
- Before beginning painting check using a grinding pattern in the adjacent area if the bumper cover was already repainted.

Traffic scenarios

The performance of the lane change assist has been examined in two different traffic scenarios. At "traffic scenario 1", the object ("TIAMO") approached from behind on the same lane (Figure 2). At this manoeuvre, a strong deceleration at the last moment, reduced following distance to a minimum. The object detection occurred equally with both rear sensors. In "traffic scenario 2", the object ("TIAMO") approached from behind on the rear left side followed by overtaking (Figure 3). The object detection occurred mainly with left sensor. The speed for "ego" and "object" vehicle were in this scenario constant.

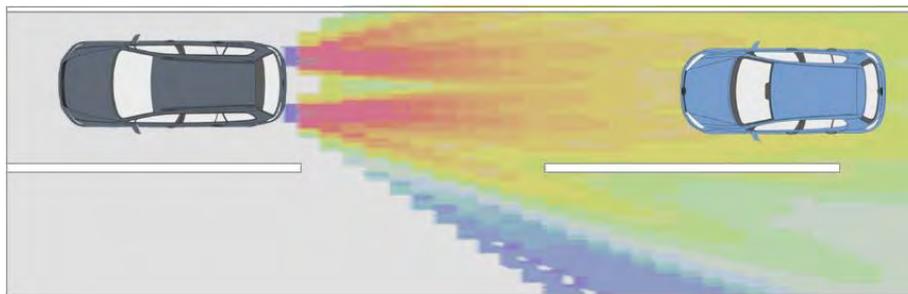


Fig. 2. Traffic scenarios 1

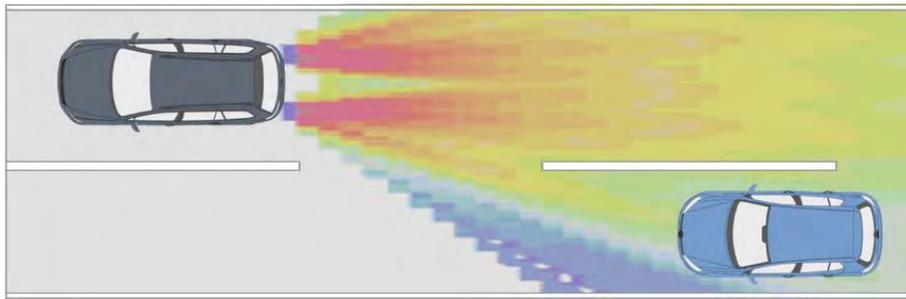


Fig. 3. Traffic scenarios 2

Vehicle speed

The tests were performed with the speed ranges shown in the table below.

Table 2. Test vehicle speed.

<i>Scenario</i>	V_{Ego} [km/h]	V_{Obj} [km/h]	V_{Diff} [km/h]
<i>Urban traffic speed</i>	50	60	10
<i>Rural road speed</i>	80	100	20
<i>Highway cruising</i>	120	160	40

Test results

Follow parameters were analysed:

- Maximum detection range.
- Sporadic failures of the lane change assistance or blind spot warning.
- Detection of non-existent objects.

Regarding maximum detection range follow repair scenarios was conspicuous:

- no. 3 "primed and repainted"
- no. 6 "bumper crack repaired with instant plastic patch" and
 - no. 7 "undamaged bumper removed and installed, but not calibrated"

Regarding "object losses" follow repair scenarios was conspicuous:

- no. 2 "repainted"
- no. 6 "bumper crack repaired with instant plastic patch" and
- no. 7 "undamaged bumper removed and installed, but not calibrated"

Regarding sporadic failures of the lane change assistance or blind spot warning follow repair scenarios was conspicuous:

- no. 4 "bumper crack repaired with stainless-steel mesh"
- no. 7 "undamaged bumper removed and installed, but not calibrated"

Another important finding to be noted is, that the radar sensor self-calibration function results in different measured data. Furthermore, it became obvious that a reduced performance of the lane change assistance not in all cases is detected or displayed by the lane change assist.

Summary

Many Lane Change Systems use radar in the rear quarters, mounted behind the bumper cover. After a minor crash that requires a bumper cover repair, care must be taken to not impede the performance of this radar – for example repairs can commonly add strengthening material behind the bumper cover as an integral part of a repair – but this could

compromise the radars performance. Therefore, KTI (in cooperation with expert organization DEKRA and Technical University Braunschweig) has investigated the impact of body repair on radar sensors.

The results of the study show, that body repairs can have an impact on sensor performance. This is proven, – depending on repair scenario – in reduced detection range, object loss and detection of non-existent objects „ghost objects“. Therefore, at modern cars, equipped with ADAS, are adequate repair methods and whose professional realization extremely important. In order to implement a professional repair clearly instructing in OEM repair manuals are extremely important.

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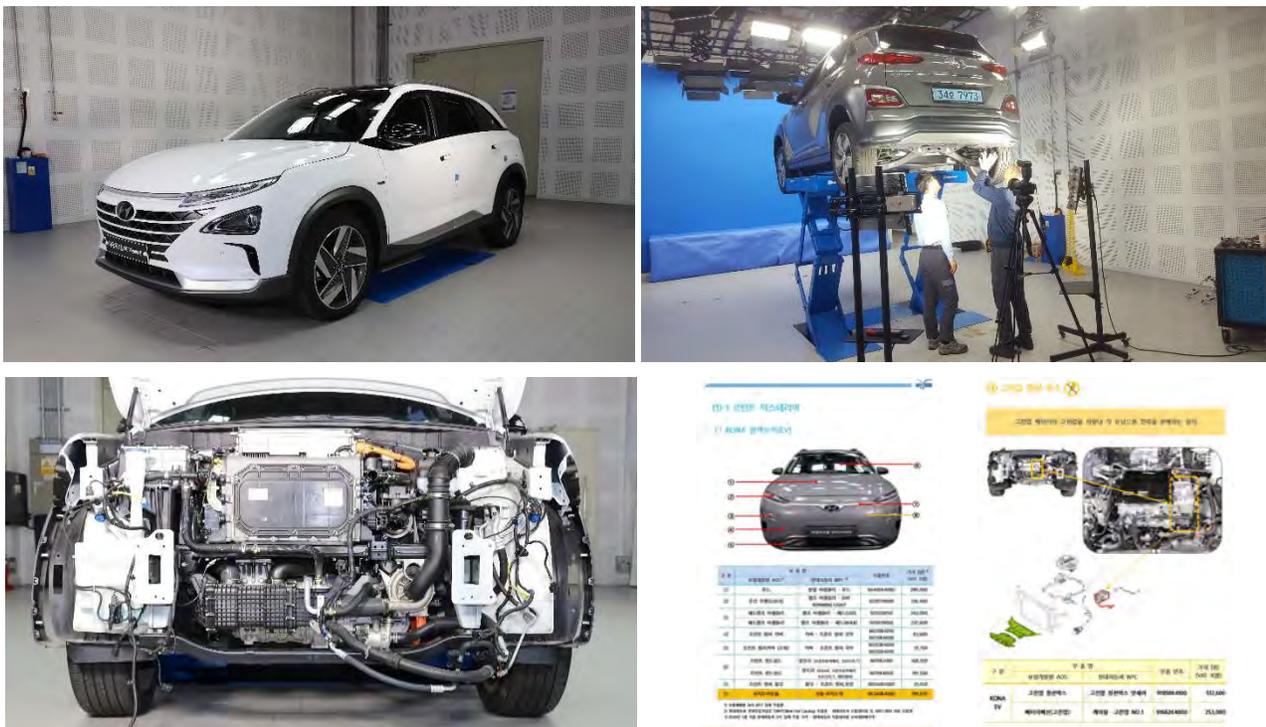


Development and Distribution of Structural Manuals and Claim Adjustment Guides on EV and FCEV

Samsung Traffic Safety Research Institute (STMRI) has developed the structural manuals and claim adjustment guides on the EV and FCEV and distributed them for the claim adjusters of Samsung Fire & Marine Insurance. They includes five EV models (Hyundai Kona and Ioniq, Kia Niro, Chevrolet Bolt, and Tesla Model S) and one Fuel-Cell EV model (Hyundai Nexo), which are recently popular in South Korea market for the first half of 2020.

The number of registered EVs and FCEVs has exceeded 113,000 in the 1st quarter of 2020 as Hyundai Motors has mainly mass-produced EVs since 2018. Hyundai Kona EV is the largest registered EV model in South Korea, with approximately 26,000 vehicles in the 1st quarter (27.5% of all electric vehicles). On the other hand, Tesla Model S got the highest rate of increase in the number of registered EVs, which increased more than 14 times (520 in the 2nd quarter of 2018, 7,397 in the 1st quarter of 2020). As for the FCEV, Hyundai Nexo (released at the end of 2018) is only on sale currently and 5,928 EVs were registered by the 1st quarter of 2020, and it is expected to supply 15,000 by the end of this year.

Even though the registered EVs are increasing rapidly, the number of registered EV and FCEV in South Korea is less than 0.5% of the total number of registered vehicles. Consequently, the number of accidents involving EV and FCEV is still small but some claim adjusters and repair shops have some difficulties for the proper claim compensations because of the complexity and short information as well as high-priced exclusive parts. As an effort to support the effective and efficient claim adjustments of EVs, the STMRI has continuously provided the vehicle structure manuals and claim adjustment guides to enhance job capabilities of EV and FCEV.



Development of the structural manuals and claim adjustment guides on EVs

Consumer Grading of Assisted Driving

Assisted Driving (AD), where the vehicle provides speed and steering control support, is an important step on the journey towards the future safe adoption of vehicle automation. Systems coming to market must introduce the technology in a safe way that drivers can readily interpret without ambiguity regarding who remains responsible for the safe driving of the vehicle. A grading scheme has been engineered that provides information to support consumer understanding of the performance of different systems. It's important for road safety that the consumer is educated about the level of available technology and that it "Is not automated, yet!".

The definition of AD is based on SAE(J3016) Automation Level 2. A safe system must comply with the following:

- The driver retains full responsibility and shares control with the vehicle
- The vehicle and driver share Object and Event Detection and Response (OEDR)
- The driver may not perform secondary tasks beyond those permitted during normal driving

Since 2018 Thattham Research has been developing an assessment for AD systems focusing on the concept of under and over-reliance. Figure 1 illustrates the Yerkes-Dodson law relating arousal to performance. Research was conducted on the basis that the driver should remain in the 'optimal performance' state, in other words the ideal AD system should provide sufficient support to mitigate high pressure on the driver but shouldn't over-assist to the extent that the driver has the potential to become disengaged and develops the perception the system is driving the vehicle for them i.e. automation.

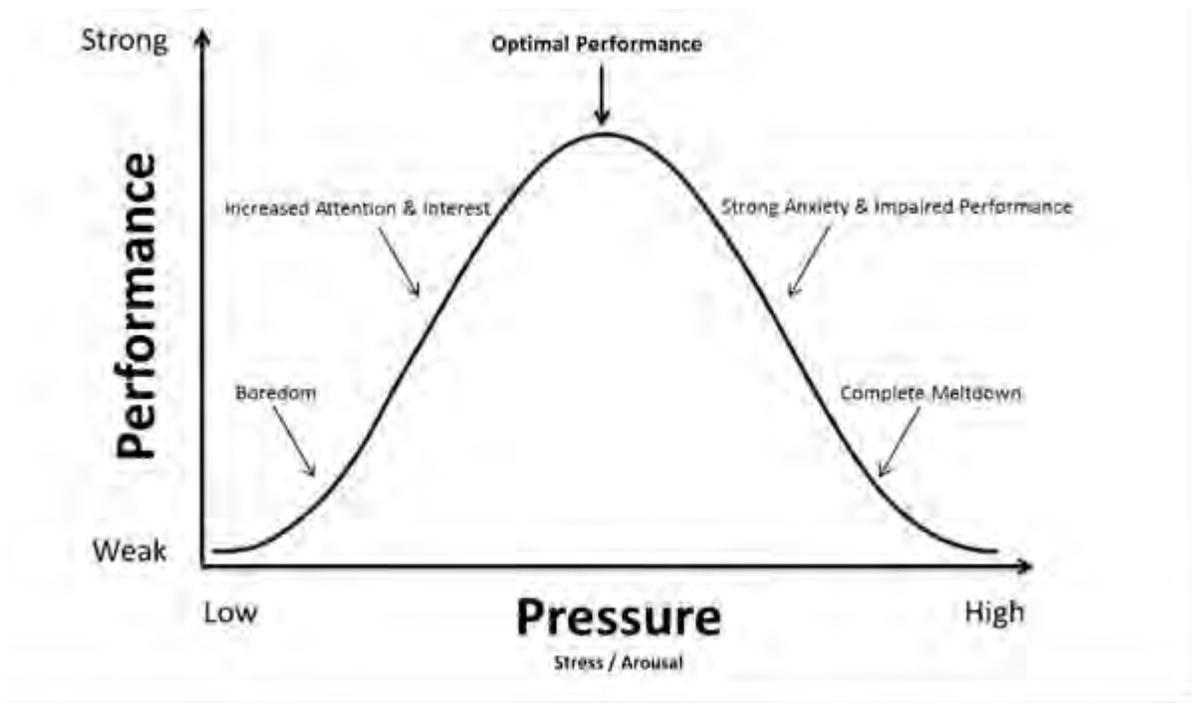


Figure 1 – Yerkes-Dodson law

Based on this concept Thatcham Research identified three key areas for assessment:

- Vehicle Assistance – the competency of the system to support the driving task
- Driver Engagement – how the driver is kept in the loop
- Safety Backup – what happens when something goes wrong or the system limits are reached

A suite of 12 tests was developed to objectively measure the performance in these three key areas (see table 1). The grading scheme was devised to encourage vehicle manufacturers to achieve an appropriate balance between Vehicle Assistance and Driver Engagement by limiting overall scoring as shown in figure 2 in case of imbalance to ensure the driver remains in-the-loop and fully aware of their responsibility for safe driving.

Euro NCAP Assisted Driving Assessment – Test Overview			
Category	Test Name	Weight	Description
Driver Engagement	Consumer Information	25%	Marketing, naming and description of the system provided
	System Status	25%	HMI assessment, clear and obvious messaging
	Driver Monitoring	25%	Currently limited by base level of tech, scope to develop with new to market technology
	Driver Input Response	25%	Resistance of vehicle/system to allow intervention by driver (e.g. to avoid a pothole in the road)
Vehicle Assistance	ACC Performance Road	25%	Recognition of and reaction to speed limits and upcoming road features
	ACC Performance Vehicle	30%	AEB like tests performed at highway speeds assessing ACC only
	ACC Auto-Resume	10%	Safe resumption from a standstill (traffic jam), can use peripheral sensing
	Lane Change Assist	5%	Function to perform lateral movement following request or acceptance of the driver
	Steering Assist	30%	Keeping the vehicle in lane on an S-Bend curve section
Safety Backup	Loss of Sensor Input	25%	Information relayed to driver and system availability/functionality if sensor input is reduced
	Emergency Assist	25%	Response to unresponsive driver
	Collision Avoidance	50%	Additional AEB tests using AEB in addition to ACC and lateral tests repeated with the use of LKA/ELK

Table 1 – Suite of 12 AD tests

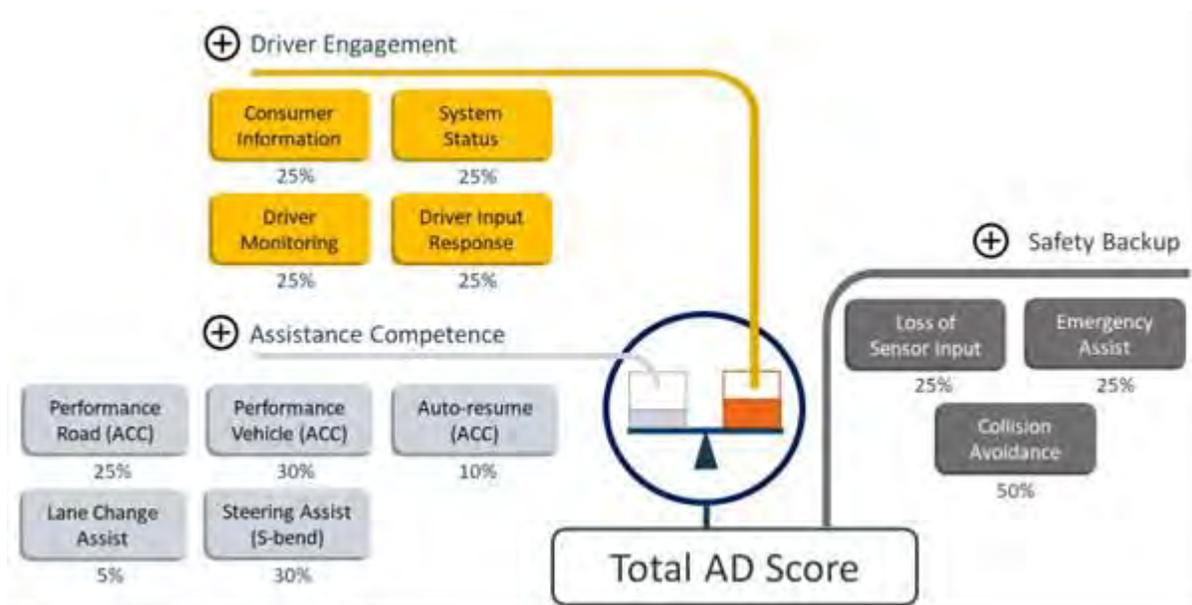


Figure 2 – Grading scheme featuring balance concept between Vehicle Assistance and Driver Engagement

The AD testing and grading scheme has been adopted by EuroNCAP and will be launched late 2020 including an assessment of the following vehicles across a range of price points and technologies to illustrate the breadth of the scheme:

- BMW 3 Series
- Tesla Model 3
- VW Passat
- Ford Kuga
- Volvo V60
- Renault Clio
- Peugeot 2008
- Mercedes GLE
- Audi Q8
- Nissan Juke

From 2021 EuroNCAP's ambition is to have AD grading sit alongside the publication of the 5-star safety rating results for new vehicles equipped with the technology. This research represents the first step in grading highway assistance, future steps will include grading automation in the highway, city and inter-urban driving domains and the parking domain. Thatcham, EuroNCAP, its members, and car manufacturers eagerly anticipate the reaction to the results from consumers and welcome feedback in order to further refine and improve AD assessments.

e-scooters, a micromobility solution for the UK roads?

The UK will trial e-scooters as a potential enabler of micromobility. Currently e-scooters can be legally bought and sold in this country, but not legally ridden on public roads. Trials are planned in key areas, with 4 locations initially identified as Future Transport Zones. The Department for Transport is reviewing the regulations that apply to e-scooters as part of its Future of Transport programme.



For the trials, participating e-scooters will be classed as motor vehicles, with requirements of motor insurance and licencing applying. During the trials, e-scooters will be accessible via pay on use hire schemes, via mobile apps .

Pilot scheme users have the same preference as cyclists: riding on low-speed streets and segregated lanes and tracks, but not pedestrian designated areas such as pavements. e-scooters should also be limited to 20 km/h to allow safe use of cycle lanes without fast overtaking.

Specifications of trial e-scooters include, apart from the classic scooter design:

- Electric motor up to 350 Watts propulsion exclusively and power control to default to 'off' position
- Maximum weight of 35kg
- Directional control via handlebars and speed via hand control.

While training won't be required, use of the trial e-scooters is restricted to full or provisional motor licence holders categories AM, A1, A2, A and B.

The interest in micromobility is growing globally, and in the Covid-19 push for increased social distance, the appeal for an increased availability and range of options for personal micro-transport may be gaining momentum. e-scooters are not a new addition on the roads, being already a feature in several European countries and in the USA. There are a number of global e-scooter rental operators, increasing the availability of a flexible means of transport that can appeal to a range of users, from short distance commuters, last-mile deliveries, urban tourists and those looking for an alternative, low-emission urban personal transport solution.

Trials are preceded by consultation with the British insurer market, as e-scooter additions to public roads, either as motor vehicles or with a different approach, would still mean additional road users. Implications are far wider than insurance requirements, with regulation considerations and possible implications longer term for street design and need for parking.



The first step in e-scooter standardisation are specifications outlined in the trial. Further aspects include technical functionality such as wheels, signaling, steering, brakes, battery, lights and reflectors. Ultimately, if e-scooters follow the requirements of motor insurance, registration plates, usage agreements and age limitations may be decided as mandatory. Thatcham Research is working alongside the British Government, Insurer Association and its members to help understand the risks and opportunities the use of e-scooters brings. Particular focus is given to user head injuries reported in countries where e-scooters are already in use, and insurer requirements on use of helmets, user training and licencing, age restrictions, vehicle specification and registration plates.



Windscreen Mounted Bracket Materials Testing

As there has been many questions raised around the quality of non-OEM windscreens and subsequent sensor bracketry mounted to the windscreens, it was decided that the IAG Research Centre would conduct a study in collaboration with a globally operating glazing company to compare an OEM windscreen to a non-OEM windscreen. The main concern being whether or not non-OEM windscreens are of a high enough standard to be fitted to a vehicle as a replacement in place of an original equipment (OEM) windscreen but more so for our investigations, the accessories attached to it.

We were supplied with three OEM windscreens and three non-OEM windscreens all from the same vehicle, that vehicle being a Range Rover Evoque and then set out to create a list of questions to answer concentrating on the camera mounting brackets that are fitted to the windscreens only and not the clarity or quality of the glass itself.

What we set out to investigate is as follows:

- Dimensions of the painted section surrounding the camera mounting brackets, comparing OEM to non-OEM
- Lateral, vertical and angular displacement of cameras within camera mounting brackets of OEM relative to non-OEM
- Measure dynamic loadings to see whether it affects the position of cameras within the bracket (Force required to move the camera within the bracket)
- Grip Strength of sprung tabs
- Effects of heat – checking grip strength, camera movement and force to move camera within its bracket (Tested after a prolonged period of heat, then while still warm and again after cooled)

It was discovered that neither the OEM nor non-OEM camera mounting brackets that were mounted to the windscreens held the camera sensor completely firm with no movement. The allowable movement also increased as temperature in the camera mounting bracket increased as would be the case with a vehicle that has been out in the summer sun.

When comparing OEM and non-OEM camera mounting brackets, the directions in which the camera was allowed to move, was different. For example, for the OEM bracket, the camera sensor was more stable in the Z direction, whereas for the non-OEM bracket, the camera sensor was more stable in the X direction.

Also, a reduction in grip strength was found for the sprung mounting tabs within the camera mounting bracket after a prolonged heat cycle.

Through the properties that we investigated it was found that both the OEM and the non-OEM camera mounting brackets performed similarly and neither held the camera sensor completely firm with no movement.

Tighter tolerances of the mounting brackets would ensure less movement of the camera sensor.

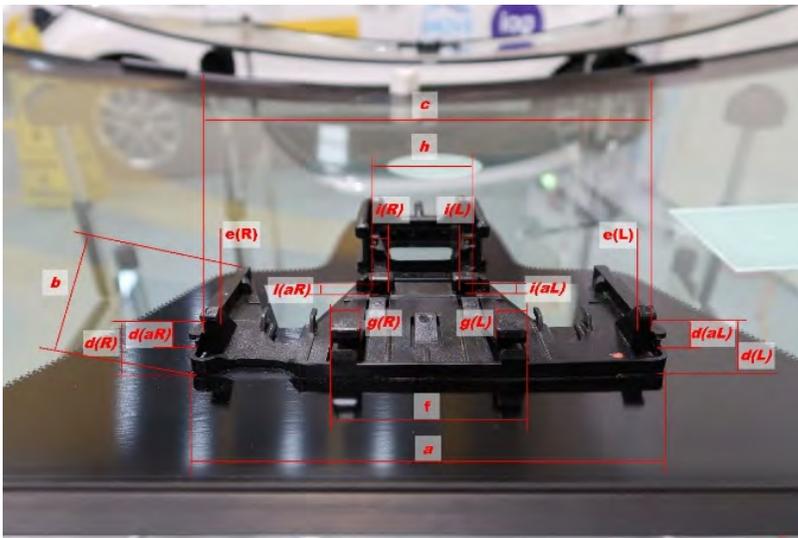


Image: Dimension labels for overall camera mounting bracket dimensions



Image: Windscreen controlled heating arrangement

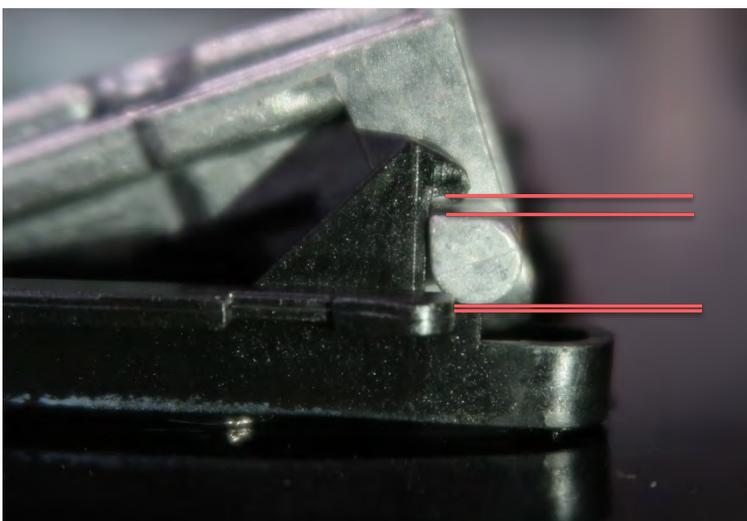


Image: Visual Example of Large Tolerance in Z Direction



Free access to cesvimap's documentary collection on-line

CESVITECA, acceso libre documental" is MAPFRE's initiative to help aftersales technicians and students have free access during 6 months to the vast collection of technical documents, studies and videos in CESVIMAP's website.

CESVIMAP wants to support Spanish-speaking professionals and students struggling against the consequences of COVID-19, by giving unlimited access to this valuable asset of the company.

Aftersales technicians and students in vocational schools linked to Automotive will be able to read and use the documents showing the results of the research performed in CESVIMAP in recent years: repair methods, new technologies, hybrid and electric cars, mobility contents, environmental care, etc.



Current restrictions for classroom-based training and the foreseeable decline of labour and training hours might cause a technological gap among teachers, STEM students and workshop technicians. For this reason, MAPFRE offers CESVIMAP's resources for free during 6 months.

Within the website content, you shall find different useful contents:

- a) Vehicles: Models recently launched in the market, with easy queries by make, model, etc. combined with state of the art information on crash-tests performed at CESVIMAP, parts injured, safety and security issues, data sheets, etc.
- b) Workshop: repair methods with special focus on calibration of sensors, radars, cameras and other ADAS systems, safety protocols to handle Battery Electric Vehicles and Hybrid cars, painting techniques and many other research studies performed in CESVIMAP's workshop.
- c) Videos: Interesting proprietary films useful for self-training, covering a wide range of the trending topics in vehicle aftersales.

This effort to improve knowledge and employability in vehicle aftersales is part of the different supportive initiatives taken by MAPFRE in the actual scenario.

To access, visit www.cesvimap.com

23rd CESVIMAP University Course in Appraisal

The CESVIMAP Chair at the *Universidad Católica de Ávila*, in conjunction with APCAS, the *Asociación de Peritos de España* (Spanish Association of Appraisers), has presented its 23rd Higher University Course in Automotive Appraisal.

This training course will take place from October 2020 to May 2021. Employment rate is 48%, and this year's course includes the new "you choose!" option: 100% on-line training, or 80% on-line training + 20% face to face.

Appraisal bureaux, insurance companies and repair shops need to have an automobile appraiser or a receptionist with capacity to carry out delegated valuations. These professionals have to have mastery of the methodology of appraisals, computerised valuation systems, the preparation of appraisal reports, repair techniques and methods for vehicles and other damage which may arise in an accident: pre-tensioners, airbags, fires, and so on.

The CESVIMAP Higher University Course in Automotive Appraisal provides, with no need for prior specific qualifications, the technical and theoretical valuation methods. This year's course, the 23rd, allows students to choose between following the course 100% on-line, or 80% on-line + 20% face to face (2 weeks in Avila).

As a course graduate states "*CESVIMAP training brings together the need for qualification with the theoretical and practical content called for nowadays: learning alongside repair shop, dealership and engineering staff and etc is enormously valuable. This range means we have practical sessions with the different points of view of the people involved in an appraisal, which gives us a headstart and prepares us for the reality of our working sphere*".

Live CESVIMAP webinars

CESVIMAP presents webinars on various topics, for professionals and students to receive training.

One of the webinars which has proved most popular deals with how to carry out work safely in the repair shop: establishing policies for action by activity, producing a protocol for cleaning guidelines, and giving consideration to critical points (steering wheel, handles, doors, touch screen...) and zones (entrance, changing rooms...), as part of our new habits in the repair shop.

In addition, Cesvi Recambios and its contribution to sustainability and Industry 4.0 More than 1,500,000 parts dismantled, providing private individuals and repair shops with the chance of quality replacement part supply at a good price and with a guarantee. This is Cesvi Recambios' contribution to sustainability.



Yet another example of our position as forerunners in industry 4.0, where artificial intelligence is the key, alongside cutting edge technology.

How to be more cost-effective and avoid wasting money in the Paintwork Area. Road traffic accident reconstruction, or the display of all CESVIMAP's research into ADAS *Advanced Driver Assistance Systems*, are part of the list of topics that CESVIMAP has presented on-line, with great success, according to the opinions of those attending on-line training sessions.