

Hello RCAR members.

Welcome to the June 2023 RCAR newsletter. I am very pleased to see that we have 24 contributions from 13 RCAR research centres on a wide range of insurance relevant topics..

As usual, my contact for any feedback or questions is [rmcdonald@rcar.org](mailto:rmcdonald@rcar.org)



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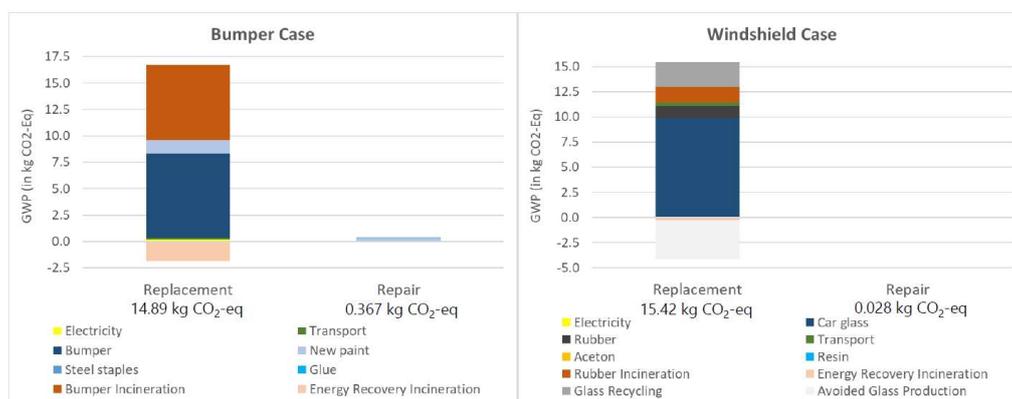
## A carbon Footprint study shows: Car repairs are better for the environment

The trend of repairing instead of replacing is also gaining traction in the automotive industry in Switzerland. According to an Empa analysis commissioned by AXA, replacing a single windshield results in the emission of an additional 15.3 kilograms of greenhouse gases (in CO<sub>2</sub> equivalents) compared to repairing it. In total, an estimated 40,000 windshields in Switzerland are immediately replaced. Consistent repair could thus save more than 600 tons of CO<sub>2</sub> equivalents annually, as AXA's calculations show.

The situation is similar for bumpers: Across Switzerland, around 30,000 bumpers per year are likely to be directly replaced instead of repaired. According to Empa's analysis, replacing a bumper instead of repairing it has an additional environmental impact of 14.5 kilograms of CO<sub>2</sub> equivalents. As a result, repairs could save over 400 tons of CO<sub>2</sub> equivalents.

To increase the repair rate, AXA Switzerland recently developed a self-assessment for Swiss repair shops. AXA is also a co-initiator of a nationwide industry label for those businesses that operate according to environmentally friendly standards and favor repair over replacement whenever possible. The green car repair label will be launched this year under the leadership of carrosserie suisse.

### 4.1 GWP comparison





## **New AZT Road Safety Report on Driver Distraction**

Following 2011, and 2016, in March 2023, Allianz Center for Technology (AZT), released the third study on car driver distraction – focusing on drivers' use of modern in-vehicle technology and mobile electronic comfort devices. Special attention was paid to international regulations, standardizations, and laws, as to testing and warning. Updates on international prevalences (frequencies of behaviours) and accident figures are given. A representative telephone survey in 1202 drivers included device penetration rates, prevalences, car accidents, knowledge on law, and acceptance of countermeasures.

Device use while car driving is a subject to rise. Conform to international figures AZT could proof this for Germany. Comparing AZT 2016 with 2022 data, all major comfort devices (smartphone, navigation options, on-board computer with display, ADAS, hands-free options, etc.) showed increase in penetration. All device use prevalences, except hand held phoning, were subject to rise, namely texting and the variety of app-driven smartphone functionalities. Various correlations to accident figures were of significance. A tremendous lack in law knowledge is to lament (90 % not knowing the hand held ban fine amount, 29 % believing, a glance toward on-board comfort devices may take as long as necessary). Future expectation regarding Level 3–5 driving were overgeneralized and projected on Level 2. Two in three drivers had low sympathy with new distraction identification by in-cabin camera driver monitoring – standard to fulfill the European General Safety Regulation requirement for a distraction warning system –, but two in three agreed with mandatory training and instruction measures.

The full report in German language is available for download on: [Allianz Studie Ablenkung und moderne Technik.pdf \(azt-automotive.com\)](#)



*Touch-slider-driven regulation of radio or climate, and smartphone-app-driven navigation – one of our popular “one-hand-double-device”-juggling while driving, and both proven to heighten crash-risks (Photo: AZT/ Grimme)*

## **Repair or Replace - Joint Study by Allianz Center for Technology, Allianz SE and Other Partners.**

At the 10<sup>th</sup> Allianz Motor Day last October, Allianz presented the potential savings associated with green repair methods in terms of money and CO<sub>2</sub> equivalent.

The underlying approach was to compare a repair with a spare parts replacement in vehicle repair. In the case of the VW ID.3, repairing the headlight versus installing a new part reduces costs by almost 1,000 euros, and CO<sub>2</sub> equivalent emissions are reduced by 98 percent - and that is just one of various examples. "If the repair rate in Germany were to be increased by just two percentage points, around 5,000 tons of CO<sub>2</sub> could be saved, equivalent to the annual energy consumption of 860 German households," said Christoph Lauterwasser, Managing Director of AZT Automotive GmbH at the press event.

The international study "Repair or Replace", on which the event is based and which was prepared by AZT together with Allianz SE and partners Metsims Sustainability Consulting and Oakdene Hollins, has now been published. The examples already presented at Allianz Motor Day are supplemented in the comprehensive report by the investigation for further components of the VW ID.3 as well as by a country comparison. These analyses prove once again that repairing a damaged vehicle part is the more climate-friendly option compared to a spare parts replacement - in all the countries considered and also if the body shop carrying out the repair is already working sustainably.

The full text of the study is available for download on: [AZT-Report\\_Repair or Replace\\_Final Version.pdf \(azt-automotive.com\)](#)

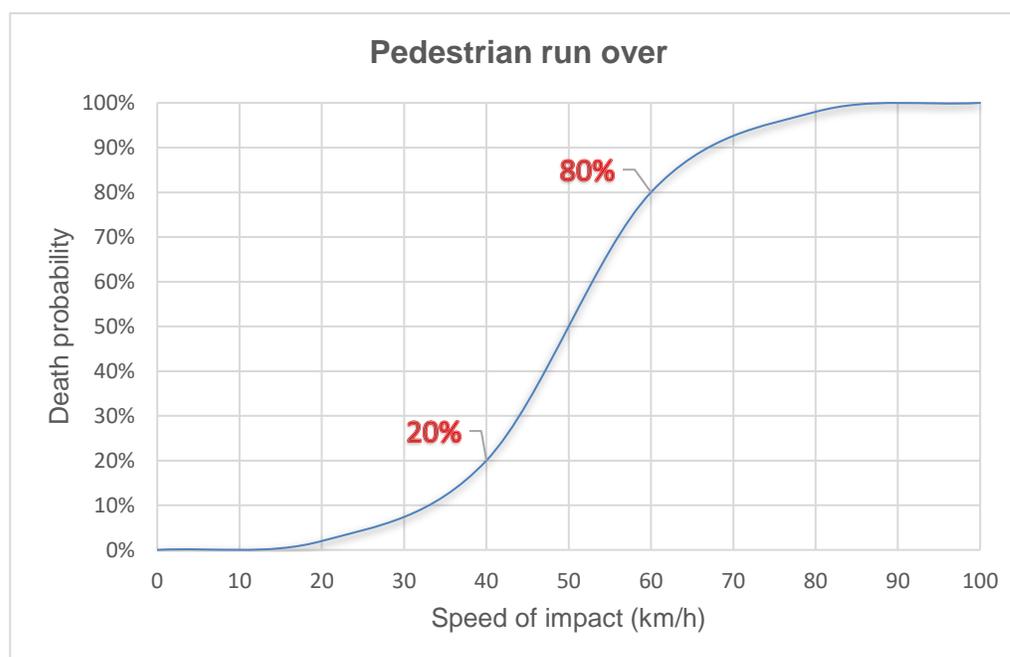


*New report on sustainability in vehicle repair* ([AZT-Report\\_Repair or Replace\\_Final Version.pdf \(azt-automotive.com\)](#))

## PROJECT: SPEED MANAGEMENT IN ARGENTINA

During 2022, CESVI ARGENTINA worked together with Fundación **MAPFRE** and the **Ibero-American Council for Safe Mobility (REDUX)** on a demonstration project on speeds and braking reaction in the event of a surprise event, with the aim of contributing to improving safety urban road through social awareness and practical demonstrations in different locations in the province of Buenos Aires.

The key point: show the importance of respecting speed limits, particularly in environments with vulnerable pedestrians (schools, parks, nursing homes and pedestrian concentration areas). Exceeding a speed limit is directly related to a greater probability of a traffic accident occurring and more serious consequences, as indicated by the **World Health Organization (WHO)**.



Source: WHO

As speed increases, the reaction and braking distances required to stop the vehicle before a collision are directly increased.

\*Distance of reaction: Distance the vehicle runs while the driver analyzes the environment, identifies the risk and finally applies the brakes.

\*Braking distance: Distance traveled by the vehicle from the moment the driver applies the brakes until it comes to a complete stop.



Source: Fundación MAPFRE

As an experimental center, CESVI ARGENTINA was in charge of developing the device to carry out the tests and participated as the performer of them.

The trials required the participation of random drivers and consisted of two stages.

1. The participant drives a vehicle at a speed of 40 km/h with the surprise appearance of a pedestrian dummy, visually obstructed by a parked van.
2. The test is repeated with the same participant, but this time at a speed of 30 km/h.

In this way, the objective of dissuading drivers about the important need to respect the speed limits established in traffic signs was met. The participants clearly noted the considerable difference in reaction-braking perceived at both speeds. As a result of the demonstration, we could observe that most of the participants had trouble stopping the vehicle unexpectedly while driving at the speed of 40 km/h. Many of them ended up hitting the dummy, which would mean serious injuries with the probability of death for the pedestrian.

The demonstrations were filmed and shared by the entities involved as well as by different media through a road awareness campaign.

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***CESVI MÉXICO received the visit of the #StopTheCrash Campaign for the safety of cars and motorcycles to encourage the government and the private sector to incorporate technologies to save lives***

At the Hermanos Rodríguez Racetrack in Mexico City with the support of the New Vehicle Assessment Program for Latin America and the Caribbean (Latin NCAP), CESVI MÉXICO, the Mexican Red Cross, the Mexican Organization of International Automobile Sports (OMDAI) and El Consumer Power; The #StopTheCrash event was held with a special focus on the benefits provided by Electronic Stability Control (ESC), Autonomous Emergency Braking (AEB) for cars and vulnerable road users, and Anti-lock Braking Systems (ABS) for motorcycles.

In an exclusive program to which special guests from the government, transport companies, insurance companies and the media had access, the attendees experienced firsthand the benefits of automobiles having the technological advances for accident prevention available in the most equipped versions of automobiles, but which are not yet mandatory in the country or in the region.

In this sense, CESVI MÉXICO continues to work together with Latin NCAP and #StopTheCrash to encourage the Mexican government to assume a leadership role in the continent for the incorporation of these vehicle safety technologies.

Likewise, fleets in Mexico have the potential to accelerate the incorporation of safer vehicles on the streets and highways through voluntary improvements in their purchase or lease policies for the units they use in their operations.

*Alejandro Furas, Secretary General of Latin NCAP, said: "Latin American countries, and in particular Mexico, are far behind in regulations and regulations on vehicle safety, despite Mexico being the most prepared to comply with them. Knowing the great potential of technologies to save lives, it is necessary for the government to include the demand for these technologies and others on the agenda, along with independent information for consumers, with clear deadlines, and to accompany the process with incentives that cause voluntary adoption as soon as possible. as early as possible."*

For his part, Augusto Bagase Rejón, general director of CESVI MÉXICO, pointed out that from the technical field, the best repair practices continue to be promoted to have safe vehicles, even if they suffered a road accident, "eventually they will return to the street, and we all want cars to be in the best possible condition so they can continue to serve their purpose safely."



## ***CESVI ORGANIZED THE TWENTIETH EDITION OF EXPO CESVI AND PRESENTED ITS NEW CORPORATE IMAGE***

*CESVI MÉXICO organized the 20th edition of its EXPO CESVI commercial technical show, which brings together the most prestigious brands of automotive paint, equipment, tools, supplies, and systems for vehicle accident management.*

*This year, it managed to add more than 7,300 visitors, of which 84% work in a workshop or distributor, 44% decide to purchase, 31% evaluated the purchase and 25% recommended it. What translates as an event of professionals for professionals.*

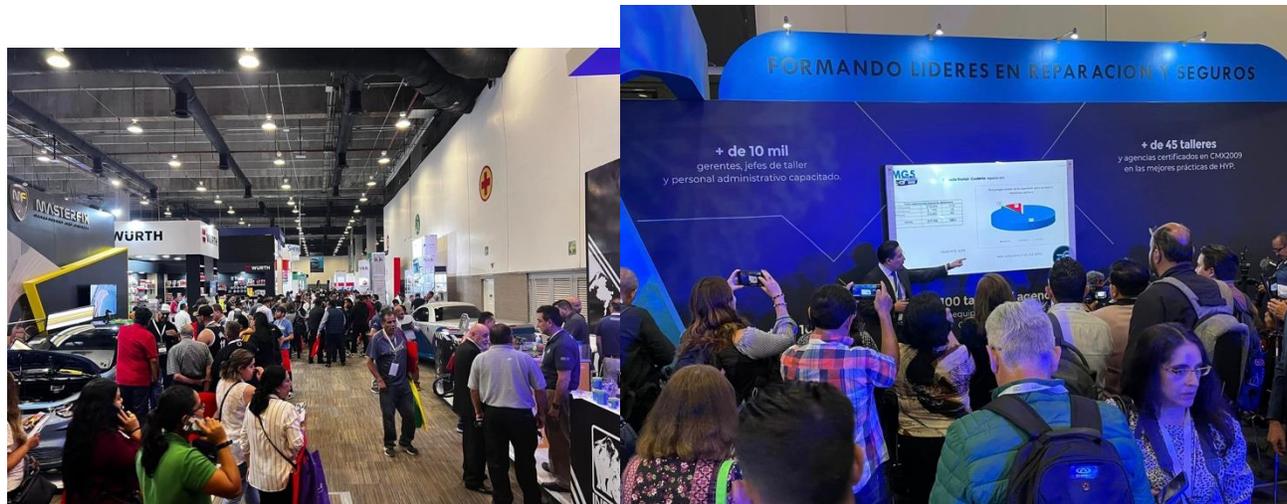
*Regarding the training item, there were 63 technical demonstrations and 18 administrative conferences, in addition to the micro presentations that were made in various stands.*

*Augusto Bagase Rejón, CEO of CESVI MÉXICO, pointed out that the automotive repair industry has been recovering strongly after the contraction caused by the pandemic and both CESVI and the insurance and repair sectors have gotten ready to usher in the era of digitization, interactivity, and virtual reality, which was fully shown in the general theme of the show.*

*He added that the companies in the sector welcome a generational change in automotive collision repair, with well-prepared young people who know the new manufacturing materials and new technologies that modern vehicles have, such as hybrid and electric motors and devices. help to the driver.*

*In addition to carrying out the EXPO as such, CESVI took advantage of the moment to present its new corporate image and in this regard, Augusto Bagase said: “change is the usual thing in human beings and just over a year ago, CESVI MÉXICO leadership changed, and the evolution of the Center for Experimentation and Road Safety is reflected with a new brand identity, aligned with our strategic business plan that expresses modernity, dynamism, technology, commitment and generation of innovative solutions for the insurance and automotive sectors”. (Youtube link: <https://www.youtube.com/watch?v=mSOboBoj5e8>)*





## **CESVI MEXICO PRESENTED THE ROAD SAFETY SENSORY ROOM AT EXPO CESVI 2023**

*A mobile movie theater, light games, mobile seats, and an audiovisual production were the factors that were combined to integrate an educational technological tool, whose purpose was to motivate viewers to become aware of the issue of traffic accident prevention.*

*The documentary: “The 7 minutes that will change your life” (YouTube link: <https://youtu.be/ZnXRRvbM6wQ> ), invited reflection on distractions while driving and their consequences as a factor in accidents.*

*“The pandemic has made us even more dependent on mobile devices, added Eng. Bagase, and we have gotten used to paying more attention to the device than to the road. For this reason, we produced this short film to reduce the risk of participating in an accident”, stated Augusto Bagase Rejón, general director of CESVI MÉXICO*

*For his part, Lieto Morales Alvares, under director of marketing at CESVI, pointed out that the mobile movie theater was equipped with the best technology and that the video took great care so as not to be violent but rather emotional and a trigger to raise awareness.*

*The manager reported that during the 3 days of exhibitions during EXPO CESVI INTERACTIVE*

2023, two thousand people witnessed the 7-minute video.



### **MAPFRE certifies its sustainable workshops through the Move2Green green seal**

CESVIMAP and MAPFRE contribute to the training and environmental certification of their partner workshops through the [Move2Green](#) 'green' seal. MAPFRE will help its Distinguished Workshops to be certified as sustainability-conscious with the Move2Green environmental certificate, from CESVIMAP. This certification measures the workshop's commitment to sustainability. To obtain the Move2Green certificate, factors such as the management of water resources, the minimization of the carbon footprint, the responsible consumption of materials or waste management are evaluated. Repairing damaged parts instead of replacing them is also an excellent measure to avoid not only having to recycle them, but also the energy and material costs of their production.



Together with the environmental certificate, the workshop receives a report with some recommended following steps to continue growing in terms of sustainability, while preserving its profitability. Move2Green provides visibility to repair shops that stand out for their actions to help the environment in the framework of their daily activity.

MAPFRE has always considered workshops an essential part of its value chain, and maintains relationships of collaboration and mutual respect with them. In Spain MAPFRE works with more than 18,000 repair shops, to which it provides approximately 800,000 repairs per year.



### **CESVIMAP studies autonomous delivery robots**

In Spain there are already autonomous delivery robots that move completely autonomously on the sidewalks of cities making last-mile deliveries of supermarket and restaurant orders in the cities of Zaragoza and Alcobendas. These are Level 4 autonomous vehicles designed to move autonomously, although they can also be controlled remotely by a human operator if necessary, for example, when crossing the road at a zebra crossing. They are used by Goggo Network company, and at CESVIMAP we have had the opportunity to find out how they work after having gone with them through a series of tests.



They work with several models. The first one we tested was the DeliverBot model from Delivers AI. It is electric and the battery it incorporates is a 0.8 kWh lithium-ion battery, with a range of 3 hours. This robot is equipped with a series of sensors to scan the environment and make decisions. These are devices such as cameras, ultrasonic sensors or GNSS, a term that encompasses the different global satellite positioning correction systems.

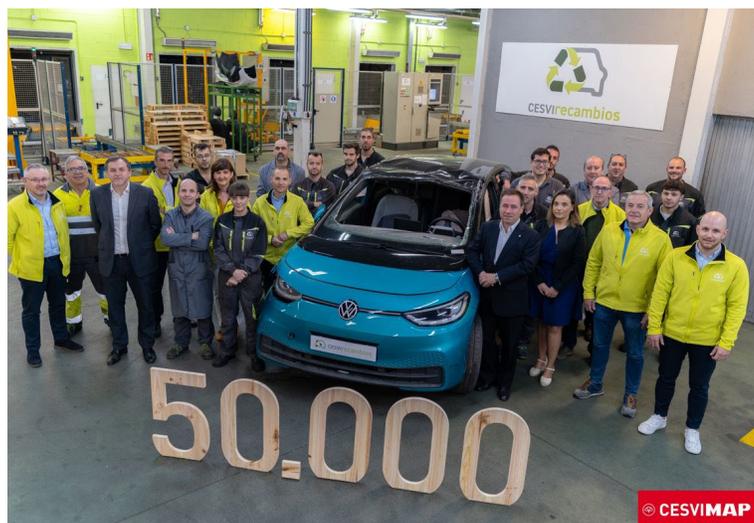
The last robot that we have tested has been the Ottobot from Ottonomy.IO, with an LFP battery of twice the capacity of the other model (1.6 kWh). This model is greatly improved in terms of perception of the environment, as it incorporates a LIDAR (360°) and a greater number of cameras and ultrasonic sensors. In addition, it is prepared to do a battery exchange in less than 2 minutes thus avoiding downtime during recharging.

They are designed to provide their service in a perimeter of approximately 1 km, very useful for making deliveries in city centers (Low Emission Zones) and in residential neighborhoods, minimizing costs as the need for a driver disappears, and contributing to the transition to a decarbonised mobility. Its performance is good, anticipatory and not at all aggressive. The delivery robot is yet another alternative to driving automation and CESVIMAP, as MAPFRE's innovation laboratory, could not be left behind in learning about its operation and the new risks it poses for insurance companies.

### **50,000 vehicles decontaminated at CESVirecambios**

[CESVirecambios](#) is an international reference in closing the life cycle of vehicles in a sustainable way. In the last year, 1,720 vehicles have been decontaminated, recovered and 54,485 parts sold, including more than 1,600 engines, more than 4,000 doors and hoods and more than 1,700 rear-view mirrors. In addition, almost 1,400 tons of scrap have been treated, close to 24 tons of aluminum and more than 27 tons of used tires.

CESVIMAP's end-of-life vehicle treatment dates back to 1997, creating the current CESVirecambios site in 2004. This center neutralizes any possible environmental impact of the vehicles declared a total loss by the insurer and delivered to be deregistered. Since its inception, 50,000 vehicles have been decontaminated, their dangerous components neutralized and almost a million and a half parts put back on the market, offering them a second life and avoiding producing new ones.



In addition, since 2021, the batteries of electric vehicles insured by MAPFRE that have suffered a total loss, have also been recovered, reused and recycled. Installing them combined with solar cells for self-consumption is one of the best uses given to them. The energy produced in excess is collected in battery packs built from these electric vehicle batteries. In order to make our really best, the hut that houses the batteries itself is painted with a paint that absorbs CO<sub>2</sub> even if a really small amount. This is possible thanks to a state-of-the-art nanotechnological material that eliminates toxic contaminants, purifying the environment.



### **Centro Zaragoza in the Workshop 'HyResponder', training firefighters in Spain**

The conclusions obtained in the HyResponder project were presented at the workshop, held in Zaragoza on May 16 and 17. The first session, with theoretical content, was held at the headquarters of the Fire Museum of the City of Zaragoza, and the second, with practices of action on electric and hydrogen vehicles on fire, in the fire station located outside the city, in La Cartuja.

Both days aimed to train professionals from different Spanish fire departments, know their concerns and present the best practices of emergency response in lithium battery and hydrogen cell electric vehicles, as a culmination of the execution of the HyResponder project, which has been coordinated by the University of Ulster and funded by the Clean Hydrogen Partnership (CHE).

The workshop was attended by companies such as ARPA, which presented its mobile hydrogen station; CAF, which showed its H2 train prototype; CASTROSUA, with its H2 coach; Centro Zaragoza, which made a presentation on safety measures when handling damaged Electric Vehicles, on the first day, and a practice of using fireproof blanket, as a quarantine system for fire containment in a damaged EV, on the second day; Zoilo Ríos, who showed his hydro-charger project; in addition to the Universities of Zaragoza, La Sapienza of Rome, and of Ulster.

The event contributed to make our security forces be better prepared to act in accidents with high-pressure hydrogen and electric vehicles with lithium batteries.

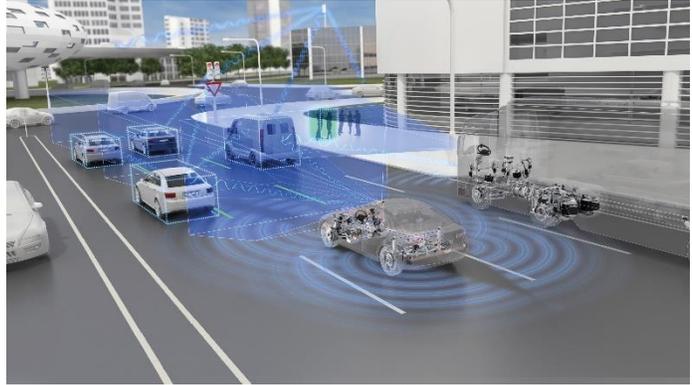


## **Centro Zaragoza train the Spanish Traffic Administration on ADAS**

Centro Zaragoza has trained 23 directors and technicians from the Spanish Traffic Administration on this technology, Advanced Driving Assistance Systems (ADAS). The goal has been to transmit them the necessary knowledge to understand their operation, technologies on which these systems are based and situations in which they can help avoid accidents, improving safety on vehicle occupants and other road users, such as vulnerable road users.

Forecasts in our market indicate that the decrease in accidents will be progressive, since, although some of these systems are already mandatory, this decrease depends on the popularization of this technology in the vehicle fleet and the knowledge that drivers have of them, given that one of the greatest challenges faced by ADAS dissemination is the low level of knowledge by users.

The course has been very well valued, allowing students to become familiar with this technology that will gradually become global, in the coming years, which motivates us to continue advancing in the field of technological research aimed at road safety and to translate our study into training aimed at the different automotive and mobility professionals who demand this need for knowledge, among them, the Spanish Road Traffic Administration.



## Consumer tests of bicycle helmets

Since 2012 Folksam has tested bicycle helmets to guide consumers to choose among the safest helmets available. In June 2023 Folksam presented a new series of tests including 16 helmets for adults.

All helmets included were approved according to the CE standard, which means that the energy absorption of the helmets has been tested with a perpendicular impact to the helmet (EN1078 2012). This does not fully reflect the scenario in a bike accident. In a fall or collision, the impact to the head will be oblique causing rotation of the head in the impact phase. This rotation is the main cause of concussion or other brain injuries. And already in 2012 Folksam was the first one to introduce oblique impacts in the consumer tests, and since 2012 the test method has been further developed to harmonise with the proposed new CE test standard.

To mirror a larger part of real life scenarios five physical tests were conducted, two shock absorption tests with straight perpendicular impact and three oblique impact tests. The tests were performed by the test institute RISE in Sweden, which is accredited for testing and certification in accordance with the European standards. Computer simulations based on the three oblique tests and using the KTH brain model were subsequently carried out to evaluate the risk of concussion. These were done by the Royal Institute of Technology in Stockholm (KTH). The safety level of each helmet was rated relative to the median value for the test results of all the helmets included in test runs conducted in 2020, 2021 and 2023. Since the most common brain injuries often occur in oblique impacts, the three oblique tests influenced the rating to a greater extent (oblique tests 2/3 and the shock absorption tests 1/3). To obtain the best overall result and thereby be awarded our "Recommended" label, the helmet needs to perform better than the median in both the shock absorption test and the oblique impact test. A complete test report is available.

The table below shows the test results for the included helmets. Three of them awarded the Recommended label.

### Helmets tested 2023

Abus Macator MIPS	21%*	
Abus Modrop Mips	-15%	
Bell Tracker	-86%	
Bell XR Spherical	36%	Recommended
Everest U Trail Nfc	3%	
Giro Fixture MIPS II	-38%	
Lazer One	21%*	
Lazer Tonic Kineticore	-73%	
Livall C20	-49%	
Occano U COMMUTE MIPS HLM	9%	
POC Pocito Crane MIPS	-11%	
POC Ventral Air Mips	-12%	
Scott Supra	-38%	
Scott Tago Plus	15%	Recommended
Specialized Mode	16%*	
Specialized S-Works Prevail 3	16%	Recommended



*Table of results for the tested helmet and the three recommended helmets to the right*

## Car-to-bicyclist crash tests

In the spring of 2022 Folksam together with Autoliv carried out a series of crash tests and impact simulations (using SAFER HBM) covering car-to-bicyclist crashes. Based on a dataset for a previous study (Kullgren et al. 2021) of fatally injured bicyclists in Sweden, the two most common crash scenarios were selected, Figure 1.

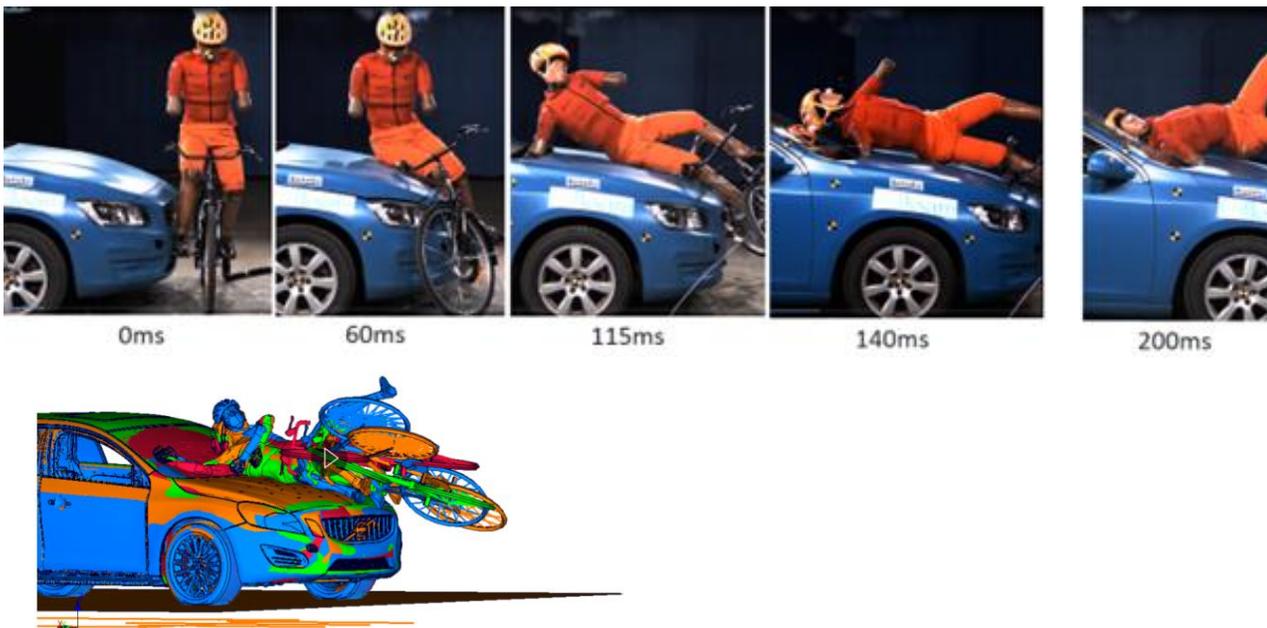
- Rural areas on two-lane roads with a speed limit of 70 km/h, bicyclist hit from the rear and where the bicyclist had a speed of 20 km/h resulting in an impact speed of 50 km/h.
- Urban areas in intersections with a speed limit of 30-50 km/h, the bicyclist hit in the side (at 40km/h).



Figure 1. Side impacts (two configurations) in 40 km/h and a rear-end at 50 km/h.

In Sweden there is a discussion to set 40 km/h as the speed limit in cities and areas where cars and vulnerable road users are mixed. The aims with these simulations and crash test were to evaluate if bicyclist could be protected in these severe crash scenarios and if there is a need for additional protection of bicyclist.

The results from both the physical tests and the simulations by Autoliv showed that the dummy measurements were too high and that the bicyclist would sustain serious injuries in these crash scenarios. It was found that a basic speed of 40 km/h in cities is too high, which is in accordance with the recommendations in the UN General Assembly 74/299 of a speed limit of maximum 30 km/h in areas with mixed road users. If speed limit can not be reduced additional protection is needed. Furthermore, studies have shown that Autobrakes with detection of bicyclists only reduces 25-30% of the car-to-bicyclist crashes. From a systems perspective the effectiveness of these AEB systems is important to increase.



Autoliv

Figure 2. At the top a time series of a physical test, a side impact at 40 km/h using a EuroSID 2 dummy. The lower shows an impact simulation of the same crash scenario using a SAFER HBM (human model) and with 4 different initial leg positions.

#### References:

- Kullgren, A.; Stigson, H.; Ydenius, A.; Axelsson, A.; Engström, E.; Rizzi, M. (2019). "The potential of vehicle and road infrastructure interventions in fatal bicyclist accidents on Swedish roads-What can in-depth studies tell us?" *Traffic Inj Prev* 20(sup1): S7-S12.
- Kullgren, A.; Amin, K.; Tingvall C. (2023). "Effects on crash risk of automatic emergency braking systems for pedestrians and bicyclists." *Traffic Injury Prevention* 24(sup1): S111-S115.

### **Explore the Future of Smart Homes and IoT at Generali Jeniot's Experience Lab**

The new frontier of safety and security in homes is undoubtedly the Internet of Things (IoT), which connects domestic life and enables full control over what happens inside, with significant insurance benefits as well.

Until now, issues related to household accidents were primarily addressed ex post, focusing on repair or reimbursement for the damage suffered. However, it is now possible to approach them from a preventive perspective, allowing us to live with greater peace of mind and have control over what happens within our homes. Just think of smoke detection sensors in case of fire or identifying water leaks from pipes, which promptly alert us to anomalies and help drastically contain the extent of the damage.

For these reasons, Generali jeniot has built *Jeniot Home*, a *smart* home experience lab similar to a studio apartment, located in its Innovation and Testing Center in Milan, Italy.



Exterior of the experience lab at the Innovation and Testing Center of Generali Jeniot

This experience lab showcases and allows a hand on experience on connected devices from the world of smart homes and IoT. Jeniot Home is used for:

- Showcasing technologies branded by Jeniot, such as smart home kit (including sensors for detecting potential theft, floods, fires, and gas leaks), the Airsafe device for monitoring air quality, and connected Pet tracker.
- Defining and analyzing use cases for IoT devices.
- Testing new solutions and integration between Smart Home and Smart Living ecosystems.
- Training through experiential demonstrations to agents, inspectors, experts, and insurance sales personnel associated with Jeniot's IoT devices.



Interior of Jeniot Home experience lab



The innovative approach to home safety and security presented in Jeniot home allows creation of experiences and scenarios that demonstrate the effectiveness of technologically advanced devices and sensors in reducing risks. Since Q4 of 2022, several training modules have been conducted at Jeniot Home, involving agents and sales staff, with a total of 25 courses conducted with more than 350 participants with measurable impact on sales performance.

Details during a training experience in Jeniot Home



## **Driving behaviour's impact on CO<sub>2</sub> emissions**

At Generali Jeniot, we are committed to providing innovative solutions that enhance safety, security, and sustainability. That's why we have developed real-time coaching, a cutting-edge feedback system that provides drivers with immediate guidance on their driving behaviour. This system, integrated with satellite devices like windshield black boxes, enables the tracking of accelerations, braking, sudden steering movements, and other abnormal behaviors, providing instantaneous feedback to drivers through colored LEDs.

Real-time coaching from Generali Jeniot utilizes different colored lights to communicate with drivers without causing any disturbance while on the road. When the vehicle is started, a LED on the device lights up, indicating the driver's average driving style. For instance, red signifies aggressive driving, yellow represents balanced driving, and green indicates cautious driving. Additionally, sudden events like harsh braking or acceleration are signaled in real time with a purple LED.



*Aggressive driving style reported by a black box Live*

The adoption of real-time coaching has proven to significantly improve drivers' driving styles, ultimately reducing accidents. In addition to the traditional assistance provided in the event of an accident, this preventive tool offers customers the opportunity to enhance their driving habits and get a discount on renewal of the insurance policy. Thanks to real-time coaching, every year about 20% of aggressive drivers improve their driving style, reducing the risk of accidents.

To further explore the benefits of this system, Generali collaborated with Politecnico di Milano to investigate whether the use of Real-Time Coaching also led to environmental improvements by reducing CO<sub>2</sub> emissions.

The analysis involved the use of data recorded from about 700,000 vehicles in Generali's portfolio. The study selected the most representative models from different segments and powertrains, including diesel, petrol, and full electric models. A model was then created to simulate their movement on speed profiles derived from standard WLTP cycles, covering an annual distance of 10,000 km. Three WLTC cycles were designed, each characterized by the different acceleration levels typical of the three driving styles. The simulated movement of each model on these cycles allowed for the identification of fuel consumption associated with each driving style. By observing the differences in fuel consumption and considering the carbon content of different energy sources, it was possible to calculate the amount of CO<sub>2</sub> emissions saved by transitioning from one driving style to another.

The results demonstrated not only economic savings, equivalent to approximately one full tank of fuel per

year, but also increased discounts on liability insurance. Moreover, the environmental benefits were remarkable. Applying the model to the entire fleet and considering drivers who improved their driving style between 2021 and 2022, a reduction of 1,800 tonnes of CO2 emissions was calculated. The impact of a change in driving style was most pronounced in urban environments, where acceleration-related resistances play a significant role. It was found that an aggressive driving style compared to a cautious driving style, resulted in fuel consumption and CO2 emissions that were more than 10% higher in urban scenarios, and only 0.6% higher on highways.

Real-Time Coaching from Generali Jeniot not only promotes safer driving but also contributes to a more sustainable future. By empowering drivers to improve their driving styles, we can collectively reduce accidents, save fuel, and significantly decrease CO2 emissions.



## **Electric Vehicle Repair Costs**

With the uptake of EVs in Australia and New Zealand, we wanted to know what the

impact of these vehicles would be to repair costs. We have compared average cost of repairs to EVs and ICE vehicles.

Using crash severity and vehicle comparisons we have examined the repair methods and parts usage' as well as looking for cost outliers to find any variations in repair costs. To assist in breaking down the differences we asked ourselves the following 6 questions to get an overview.

1. **Do EVs create new repair complexity?**
2. **Is expensive EV battery replacement necessary after non-structural accidents?**
3. **Does the EV battery create new complexities to standard repairs?**
4. **Are parts more complex or more expensive for an EV?**
5. **Are repair centres limited and/or charging higher hourly rates to repair EVs?**
6. **Is there an increased risk of fire with EVs?**

Our initial research has been for low-speed accidents only.

Our research so far has found body repair methods for electric vehicles to be quite reasonable. Parts prices fall within the average price range, however, the total accident repair cost of certain EVs is far higher than the average repair cost of comparable ICE vehicles.

### **Parts.**

Comparing overall EVs to ICE vehicles is difficult. Most EVs are unique vehicle models with no comparison available. The OEMs that supply vehicles to Australia in both EV and ICE variants only supply the EV in the premium equipment level. This makes parts pricing comparison difficult, as expensive headlamps, and more safety features are fitted to the premium models, which are affected in an average impact.

Location of the charging port is a factor. Having charging ports located in the front bumper bar or grill area, which is a commonly damaged area, increased the average costs compared to vehicles with the charging port on the side of the vehicle.



+

With EVs at the lower price range, such as a KIA Niro, Nissan Leaf, etc., the noticeable pricing outliers is for the disarming of the EV battery. Due to panel shops in Australia being reluctant to become qualified in EV disarming. This task is often sublet to auto electricians or to dealerships who inflate the cost of this operation. Towing of the vehicle is then also required, adding to the repair cost.

### **Repair networks.**

Repairers are attempting to maximise revenue in preparing a vehicle and workspace for a repair.

IAG's Research Centre has conducted time studies on a variety of EVs to disarm the battery, place bollards around vehicle and put safety signage on the vehicle. This took an average of approximately 30 minutes in total. However, repairers are consistently submitting quotes of between 6-8 hours to complete this procedure.

As safety requirements to work on EV vehicles are relatively new, there is some price gouging occurring. Some repairers are intimidating loss assessors with safety threats and with assessing departments still catching up with procedures, caution is used, thus driving costs up. With the "prestige brands" we have found inflation of quotes occurs far more frequently. Many operations quoted for that are either not required or are at a highly inflated price. We have also found other technologies, not related to electric power plants in these vehicles increase repair costs.

### **Methods and Technology.**

With advancements in vehicle technology and construction, the materials being used to reduce weight, required to counter act the weight of the battery include, large castings of structural components are causing replacement due to minor damage now required over a repair. Technologies such as radars and sensors also reduces the ability to repair items such as bumper bars.

### **Tesla.**

Tesla vehicles are an abnormality. We have found that Tesla repair methods are quite reasonable. The parts pricing is very competitive often cheapest in class; however, the average repair cost for Tesla is well above the average. Due to Tesla only supplying repair methods and parts to approved Tesla repairers we have found a lack of competition producing higher repair costs. The average hourly rate of Tesla repairs is the highest in the market. Notably miscellaneous costs on Tesla repair quotes are substantially above the average (this requires further investigation).

It is not only Tesla that are using this model. BYD, a new player in the Australian market but has many vehicles already in the car park, although have a very limited repair network. BYD do not supply parts pricing nor supply parts to the general repairer. The limited exposure we have had to these vehicles shows an abnormally high repair cost.

### **Battery**

Total loss numbers of EVs are increasing due to the cost of the battery. It is rare that a battery is replaced in Australia due to the high cost of the battery, as well as supply delays pushing up hire car expenses.

## Summary of what we learnt from local research & international investigation.

- **Tesla issues**

Claims costs to date skewed by Tesla.

Limited repair network & excessive labour charges for Tesla.

- **Repair Complexity**

EVs generally have less complexity in repair.

BUT new brands & new models need investigation & caution.

- **Battery issues**

For majority of accidents, EV batteries present no large cost risk.

BUT battery concussion & underfloor damage create unknown risks.

- **Parts pricing**

EV parts are generally no more expensive.

BUT charging port location can be in a vulnerable position.

BUT lightweight construction materials could add cost complexity.

- **Fire risk**

Limited data to date suggests low fire occurrence risk.

BUT severity of EV fire could be significant.

We at IAG intend to continue to research the effects of EVs on repair costs. Above are our findings so far to an issue that will affect the repair industry not only in Australia but globally. We look forward to working with the RCAR group to better understand the global affects EVs have on the repair industry.

Kind Regards

John Farrugia

Team Leader, Repair Innovation

IAG Research Centre

Phone +61 411 010 529

Email [john.farrugia@iag.com.au](mailto:john.farrugia@iag.com.au)

Address unit 1, 2 Holker Street Newington NSW 2127

## **IIHS strengthens requirements for vehicle safety awards**

The Insurance Institute for Highway Safety (IIHS) has strengthened the requirements for its *TOP SAFETY PICK* and *TOP SAFETY PICK+* awards in 2023.

The biggest change to the criteria is the replacement of the original IIHS side crash test with a tougher evaluation launched in 2021. Vehicles must earn an acceptable or good rating to qualify for *TOP SAFETY PICK*, while a good rating is required for the “plus.”



The *TOP SAFETY PICK+* criteria include another new evaluation, the nighttime vehicle-to-pedestrian front crash prevention test. Advanced or superior performance is required in both the nighttime and daytime pedestrian tests for the higher award. For *TOP SAFETY PICK*, only a daytime rating of advanced or superior is required.

When it comes to headlights, requirements for the base award have gotten more stringent. Previously, a vehicle could qualify by offering at least one trim level with available acceptable or good headlights, while winners of the “plus” award needed to have them standard across all trims. For 2023, both awards require standard acceptable or good headlights.

As before, to earn either award, a vehicle must earn good ratings in the driver-side small overlap front, passenger-side small overlap front and original moderate overlap front tests.

The roof strength, head restraint and vehicle-to-vehicle front crash prevention evaluations are no longer part of the award criteria. Industry progress has made these tests less relevant in their current form.

Further changes to the award criteria are coming in 2024. A good, rather than good or acceptable, rating in the updated side evaluation will be required for *TOP SAFETY PICK* as well as the higher-tier award. In addition, a good or acceptable rating in the updated moderate overlap front test launched last year will be required for the higher-tier *TOP SAFETY PICK+* award, while a good rating in the original moderate overlap front test will continue to qualify vehicles for *TOP SAFETY PICK*. The updated test, which incorporates an additional dummy positioned in the second row, is designed to encourage automakers to extend the high level of protection now commonly provided for the driver and front seat passenger to rear seat occupants.

The full list of 2023 *TOP SAFETY PICK* and *TOP SAFETY PICK+* winners can be found at <https://www.iihs.org/ratings/top-safety-picks>.

## **Small overlap front crash rating program delivers real-world benefits**

Driving a vehicle that earns a good rating in the IIHS driver-side small overlap front crash test reduces your risk of dying in a real-world crash, a recent study shows.

A driver in a good-rated vehicle is 12 percent less likely than a driver in a poor-rated one to be killed in a frontal crash.

IIHS launched the small overlap front crash test in 2012. It is designed to replicate what happens when the front corner of a vehicle collides with another vehicle or with an object like a tree or utility pole. This type of test is especially challenging because there is often no direct impact with the vehicle's frame rail and therefore the occupant compartment and other structures must manage the bulk of the energy of the crash.

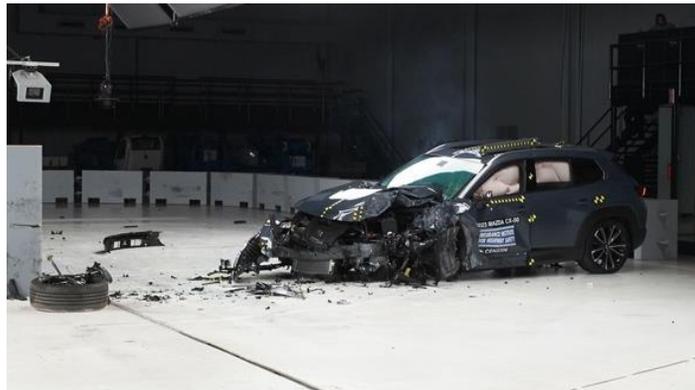
In the small overlap tests, just 25 percent of the vehicle's width collides with the barrier. The test vehicle travels at 40 mph toward a rigid barrier. A dummy representing an average-size man is positioned in the driver seat.

When the small overlap program began, with the driver-side test, only about 10 percent of the vehicles IIHS tested earned a good rating, while 40 percent were rated poor. Today, virtually every vehicle tested earns a good rating in both the driver- and passenger-side tests.

To determine how that progress is affecting crash risk in the real world, IIHS researchers used proprietary VIN-decoding software maintained by the Highway Loss Data Institute to identify the vehicles involved in frontal crashes between 2012 and 2020 and cross-referenced that information with IIHS driver-side small overlap front crash ratings.

The researchers calculated the number of driver deaths per total police-reported frontal crash involvements for each rating and adjusted the results for vehicle type, curb weight and driver demographics. They determined that a driver in a good-rated vehicle is 12 percent less likely to be killed in a frontal crash than a driver in a poor-rated one. An acceptable rating was associated with an 11 percent lower risk of dying, while a marginal rating was associated with a 5 percent lower risk, compared with a poor one.

U.S. crash databases do not provide enough information to identify small overlap crashes, so the sample was not limited to the crashes that the test is designed to address. The effect of a good rating is likely much larger among those specific crashes.



### **Low caps on e-scooter speeds encourage sidewalk riding**

Many cities are turning to speed limiters for electric scooters to address concerns about rider safety and conflicts with pedestrians. But mandating low travel speeds may mean more e-scooters on the sidewalks, new IIHS research suggests.

“Our results show that restricting scooters to low speeds offers a trade-off,” said Jessica Cicchino, IIHS vice president of research and the study’s lead author. “At slow speeds, riders are more likely to choose the sidewalk over the road. That puts them in less danger from cars but could mean more conflicts with people on foot.”

The first shared e-scooter program in the United States was launched in 2017. But as ridership has bloomed, so have injuries and citizen complaints. In response, many towns and cities have required speed limiters for shared e-scooters. A 15 mph maximum is common. Some companies also restrict their e-scooters to that speed even where it is not required.

To help understand the effect of different maximum speeds, IIHS researchers compared rider behavior in Austin, Texas, and Washington, D.C. Austin caps shared e-scooter speeds at 20 mph. In D.C., the maximum is 10 mph.

In both cities, e-scooter riders overwhelmingly rode in bike lanes where they were available. Where there were no bike lanes, however, D.C. riders were 44 percent more likely than Austin riders to choose to ride on the sidewalk.

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



## Introduction of Automobile Insurance Correspondence Courses

On behalf of The General Insurance Association of Japan, JKC provides "Automobile Insurance Correspondence Courses (A and B)", with the aim of enhancing the knowledge and skills of claims representatives responsible for automobile damage investigations. These courses have been running for more than 20 years since 2002.

To increase convenience for the participants, we have incorporated online learning in addition to the traditional class learning using printed materials. Online courses use animations and videos to promote better understanding. The number of participants is more than 1,000 people every year for both types of courses combined, and they are attended by a wide range of participants, including not only insurance employees but also lawyers and staff members from other organizations.

Below are the overviews of each course:

### (1) Correspondence Course A (Advanced Level)

The purpose of this learning course is to improve the evaluation skills of auto repair estimates through understanding the names and functions of body structure and component parts, as well as the knowledge of repairs and auto body painting. It is primarily targeted towards insurance claims employees. (Period of study: Approximately five months)

### (2) Correspondence Course B (Introductory Level)

The purpose of this course is to acquire a broad basic knowledge regarding the vehicle structure and auto repair for new insurance recruits joining the auto claims department. (Period of study: Approximately four months)



Online learning website:

<https://lms.emanabi.jp/shabutsu/>

## **JKC celebrated its 50th anniversary on July 2, 2023**

We owe this milestone to the tremendous support and collaboration we received from all stakeholders, including insurance and auto companies and RCAR members. We express our deep gratitude for RCAR members' unwavering assistance.

In this significant year, we have initiated multiple initiatives to continue contributing to the future development of insurance and auto industries. One of our main initiatives is to revise our information delivery scheme by leveraging the feedback we received through stakeholders surveys and other sources.

Regarding our information offerings such as publications and website content, we actively incorporate advanced information including ADAS and other related topics. Furthermore, we have held multiple exhibitions where we disassemble and showcase BEVs, which are of great interest to insurance companies.

We will also enhance the usability and IT security by renewing our information delivery website.

As we strive for the next 50 years, we will continue to dedicate ourselves alongside with RCAR members. We kindly ask for your ongoing support and cooperation for JKC's future challenges.



### **MRC Academy's New EV/HEV Training Facilities.**

Aligned with the development of Electric Vehicle (EV) and Hybrid Electric Vehicle (HEV) technology in Malaysia, MRC Academy is providing training courses which are Level 1 and Level 2: Award in Electric and Hybrid Vehicle Awareness and Hazard Management for Emergency and Recovery Personnel. For advanced course, there is Level 3 : Award In Electric and Hybrid System Repair and Replacement offered to candidates who have completed the Level 1 and Level 2 courses.

The Level 1 and Level 2 courses are designed to provide candidates such as repairers and vehicle recovery personnel with an introduction to the knowledge of safe working practices, the dangers surrounding them and the precautions required to avoid potential injury when near electric or hybrid vehicles. Additionally, it also provides value-added knowledge such as types of EV and HEV, hazards associated with EV and HEV, types of charging, high-voltage system isolation, and reinstating the vehicle, reducing risk and handling components of EV and HEV.

The Level 3 advanced course, provides the upskill knowledge to carry out the repair activities on EV and HEV. It is designed for those who may encounter EV or HEV within routine maintenance situations and who need the skills to work safely around a vehicle that may have damage to its high-potential energy or electrical systems. It is also includes practical and hands-on learning to educate the participants with the necessary skills and experience whilst carrying out diagnostic, testing and repair activities.

Upon completing these training courses, MRC certificate together with IMI International Qualification accredited by the Institute of the Motor Industry (IMI International, UK) will be awarded to the participants.



*MRC Academy's new training room and training facilities dedicated specifically for EV/HEV training courses..*

In accommodating this new training courses, a newly dedicated and specialized training room and training facilities for EV/HEV training courses were completed in March 2023 and complies with the IMI International Certification requirement. MRC Academy has also purchased a new electric vehicle, BYD Atto 3 to be used as training material together with the existing Toyota Prius C and Honda Jazz Hybrid.



*Participants of EV/HEV Awareness & Hazard Management for Emergency & Recovery Personnel.*

There has been a few EV/HEV training courses conducted recently to various organisations including insurers, loss adjusters, repairers, government agencies, education institutions and authorities. In December 2022 and January 2023, there were trainings on EV/HEV Awareness & Hazard Management for Emergency & Recovery Personnel attended by the AmGeneral Insurance, Etiqa General Insurance and Takaful personnel. Besides, MRC Academy has conducted training program for First Responders i.e. Royal Malaysia Police, Road Transport Department, Fire and Rescue Department and Vehicle Theft Reduction Council in educating them with the necessary skills and knowledge to handle emergencies involving EV/HEV in September 2022.



## Toyota/Lexus CAN Injection Attack

The Controller Area Network (CAN bus) is an electronic communications network that allows different modules of a vehicle to communicate with each other. Unfortunately, when access can be gained to the network, CAN bus can be susceptible to attack due a lack of fundamental security – such as: authentication, confidentiality, and encryption.

During 2022, UK theft data highlighted a security risk to Toyota and Lexus models, focused primarily on the Toyota RAV-4 and Lexus RX/NX SUV models. During further investigation, the Metropolitan Police seized a device capable of manipulating the CAN bus of these models and more significantly cleverly disguised as a Bluetooth speaker.

It was discovered that the device can be connected to the CAN bus network via the headlight plug by partially removing the front bumper. Once connected, the attacker will then press 'play' on the device which wakes up the network and unlocks the doors. Once inside, the attacker presses the vehicle start button, and the device can then be removed from the headlight connectors.

Using this device, attackers can override the engine immobiliser without using the keys and drive away. The device is available from various online platforms for relatively small cost and advertised as compatible with most of the Toyota Lexus model range.

In practice, there are only two ways to defend against CAN injection device:

1. Partition the CAN network into trusted and untrusted segments with a security gateway between them.

Or

2. Use cryptographic protection for CAN frames.



Thatcham Research have highlighted research output to UK insurer members and to both Toyota GB and Toyota Motor Europe. Whilst we wait to hear of suitable countermeasures for current models on the roads today, we are pleased to understand new model launches are no longer at risk to this device.

## **Ultra-Wideband Technology**

UWB has evolved to become a security centric technology with much of the recent momentum for UWB introducing new security enhancements from the automotive industry. Preventing advanced spoofing or relay attacks that other technologies have been susceptible to.

An important feature of UWB, namely Scrambled Timestamp Sequence (STS) uses a random number generation and cryptography to protect the transmitted timestamp data that measures the distance between two devices. This makes it extremely difficult for a third party to intercept or edit UWB timestamps, resulting in known relay attacks virtually impossible, and safely retaining all information.

As an added advantage, UWB is extremely low power, but the high bandwidth (500MHz) is ideal for relaying a great amount of data from a host device to other devices between 1-50 metres. An UWB transmitter works by sending billions of pulses across the wide spectrum frequency. A corresponding receiver then translates those pulses into data by searching for a familiar pulse sent at approximately every 2ns. Due to the short duration of these pulses, UWB achieves real-time accuracy distance measurement. This enables UWB positioning, instantaneously tracking the devices movements in real-time, allowing UWB-enabled devices to understand both motion, and relative position.

Vehicle manufacturers, including BMW, Audi and Honda, are already working alongside technology companies including, Apple and Google, to allow vehicle owners to securely lock and unlock their vehicle using their UWB equipped mobile device.

It is predicted that the application of UWB technology in the automotive industry will significantly increase in the coming years, expected to become the major mobile car access technology in the future.

## Ford Blue Cruise

Ford has received approval from the UK's Vehicle Certification Agency (VCA) for a *hands-off, eyes-on-road* Level 2 assisted driving system, known as Dynamic Controlled Assistance Systems (DCAS). The system is currently only available on Ford Mustang Mach-E models produced from November 2022 onwards. It was approved by the VCA under Article 39 "New Technology or Concept Approval" as there is currently no specific European regulation for these *hands-off, eyes-on-road* Level 2 assisted systems.



The Ford Blue Cruise system is still a driver assistance system and therefore the driver is still responsible and liable for the driving task, and crucially is liable from an insurance point of view. The system is geo-fenced to UK motorways only, where it allows the driver to remove their hands from the steering wheel, with the vehicle using its Adaptive Cruise Control (ACC) and Lane Guidance to adjust its speed and direction to the traffic and lane markings. The vehicle utilises a Driver Monitoring Camera (DMS) mounted on the steering column to track the drivers eye gaze and determine if they are watching the road ahead, with a visual and audible warning if the driver looks away from the front windscreen for more than six seconds. These systems have been available across several manufacturers in the United States for a few years already.



Thatcham Research is already in the process of evaluating the Ford Blue Cruise system with both on-road and track testing to achieve a greater understanding of these types of systems and the potential impact on insurers. Whilst this system is currently limited to a single vehicle model in Europe, *hands-off, eyes-on-road* Level 2 assisted systems will be available on more vehicle makes across Europe, especially with the planned implementation of a DCAS UNECE regulation in 2025.