

## REAL-WORLD VALIDATION TESTING: CMD\* OUTPERFORMED OEM SOLUTIONS

CMD actively and sustainably protects headlamps from condensation.

\* AML's Condensation Management Device (CMD), enabled by GORE Condensation Management Products



Dear valued DVN Community member, could you do me a favor? Yes, I mean you! Please answer our DVN marketing survey you will receive tomorrow. We want to update and modernize our DVN communications, and your considerate input is absolutely essential. We thank you kindly.

*Wolfgang Huhn*

# Editorial

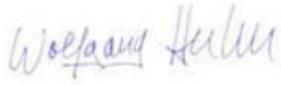
## TUD: What A Year!

Some days ago, I had an appointment with Professor Khanh, of my alma mater TU Darmstadt, under strict Covid rules. What a difference to pre-pandemic normal times! The whole university was very quiet. No groups of young people all around, no chatting, no one having a coffee together in the sunny park close by, all restaurants closed. The doors to the University buildings were locked up. To enter you have to ring a remote bell and hope someone hears you to let you inside the institute and of course you have to wear a medical mask.

Professor Khan has a little video studio on his working desk with a huge high-quality microphone. This is the place where he records all his lessons. The students get information about new lessons in the University system and hear them whenever they want. All examinations are oral ones in a direct video connection. Prof. Khanh offers two lighting lessons, basics and solid-state lighting (SSL). The electrical engineering department in total has a bit more than 400 students in the beginning of the studies and about 200 to 250 persons who finish with a bachelor's or master's degree. The number of beginners is decreasing year by year in the classical engineering disciplines, like mechanical and electrical engineering. Major increases are happening in informatics and especially artificial intelligence. The universities have to adapt and to change their structures and resources. You can imagine how this is a painful process.

I personally think the automotive industry needs to take a clear position as to which engineering qualifications are needed in future. Yes, of course we need a lot of AI experts, but we could be short of young academics in the medium-term in the classical fields. The field of

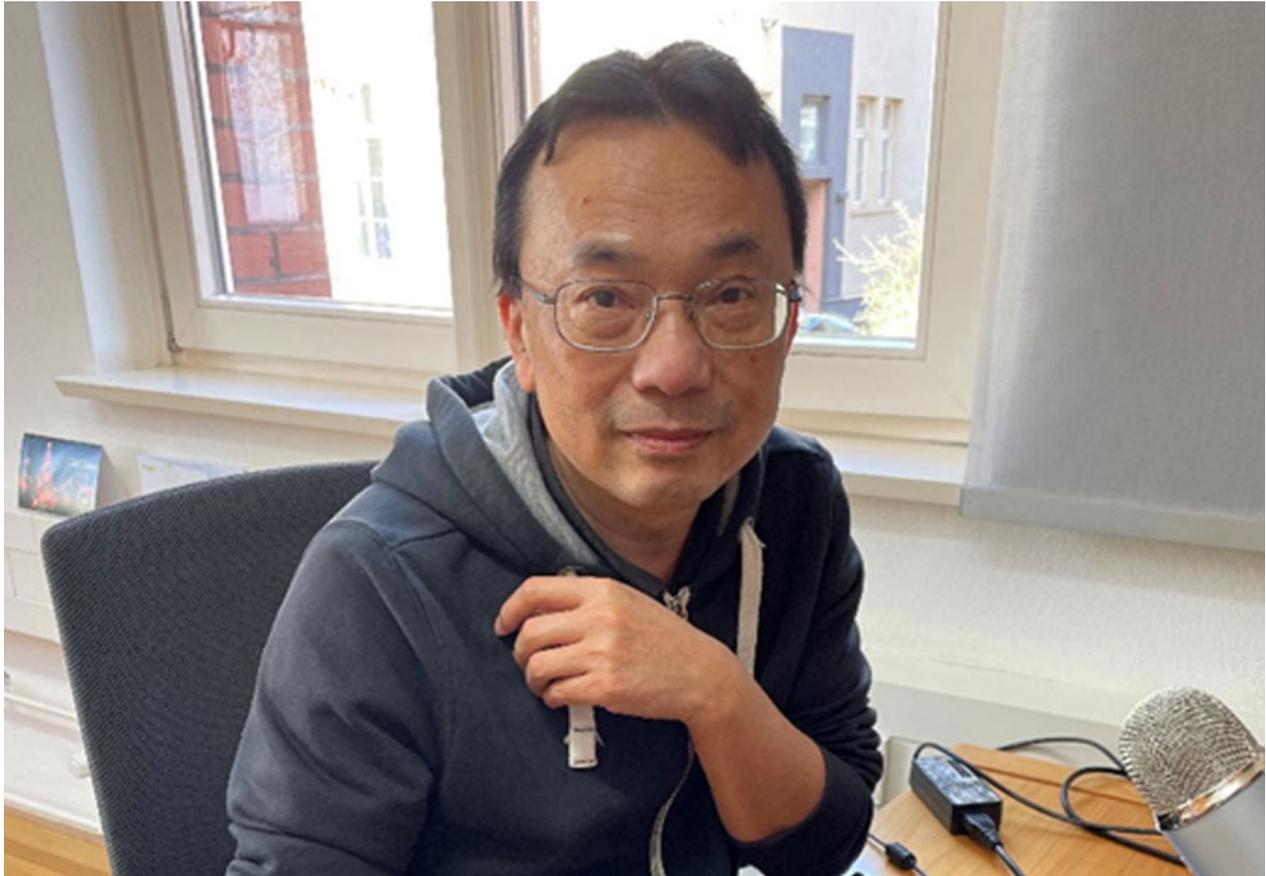
lighting itself seems to be very attractive. 40 students, mainly from electrical engineering and physics, have chosen professor Khanh's lectures this year. The importance of lighting technology in Darmstadt is gratifyingly high.



Wolfgang Huhn  
DVN Senior Adviser

# In Depth Lighting Technology

## AI Is Now an Essential Technology: Professor Khanh



**DVN: The TU Darmstadt Lighting Institute (FGLT) is well known in the world of vehicle lighting. How many researchers are working in that field today at Darmstadt, and in which programs?**

**Prof. Khanh:** This year we have in total 16 PhD students at the institute. Five of them belong to the automotive group. One major automotive topic is an infrastructure analysis of lighting-relevant parameters, with the help of AI (artificial intelligence). The idea is to find a number of categories of road parameters and define the ideal lighting situation under the influence of other road users etc. If this project is successful, and it will be, the low beam / high beam classification of car lighting is history. Other topics are displays, also with a lot of AI contribution, and the upcoming project of the European Union called “Project Auto – AI twilight” dealing, e.g., with the degradation of the whole vehicle. AI is now an essential technology for our research work. We work closely together with AI start-ups which were founded as spinoffs mainly from the Informatics and Mathematics Institutes of our University.

**DVN: What is the most exciting non-automotive research project in your department?**

**Prof. Khanh:** Here I want to mention two topics: lighting for vertical farming and light for healthcare. In the vertical farming group, three PhD students are finding out how the growth and the amount of different ingredients of plants can be controlled by irradiation, not only for food plants, but also for the extraction of basic elements for drugs and medical devices. In the

health lighting group, five PhD students are caring for the improvement of different diseases with the help of light. Both are really exciting and fascinating fields of lighting research.

**DVN: How do you manage the weekly lighting lessons?**



**Prof. Khanh:** I record 12 lessons on video, each one 90 minutes long. The students can watch these videos on a university platform in which they have to log in with an individual password. The laboratory lessons are done by one student and one assistant as a hybrid in the lighting lab. All other students can watch the practical courses on video. The examinations are oral on a video platform. The whole University runs under the same process.

**DVN: How about ISAL? Are the preparations running well?**

**Prof. Khanh:** We sincerely hope that the Covid pandemic allows a live ISAL conference. We have to consider that the number of people in the Darmstadt conference centre will be restricted to about 450 from the over 1,000 of 2019's ISAL conference. Parallel sessions have to disappear probably. We are planning a hybrid conference with a live stream for all the interested people worldwide who want to follow ISAL. Today there are so many uncertainties that precise planning is impossible; we have to adapt week by week. A lot of things can happen before September 13<sup>th</sup>.



PROF KHANH AND HIS ASSISTANT, KATHARINE ANNE CHATZIANNIDOU

# Lighting News

## Geoff Draper Joins DVN Team

LIGHTING NEWS



"MY WIFE, ANN, IS HAPPY THAT I HAVE A NEW HOBBY. SO WE HAVE A WIN/WIN/WIN/WIN SITUATION FOR ANN, DVN, GTB AND ME!"

### ***A Message from Geoff Draper, special to DVN***

"Dear friends,

I am sure that when you opened this edition of the DVNewsletter the last thing you expected to read was the announcement from Hector that I have accepted his invitation to join the DVN team as Regulatory Advisor. To be honest, a few days ago, the last thing on my mind was the likelihood of a phone call from Hector to discuss his proposed invitation. However, I am delighted to have this opportunity to re-enter the unique and wonderful global lighting family with a completely new mission, although I expect that you will find my passion for global harmonisation will be as boring as ever!

I reached my decision to retire in January 2020, when the world was a very different place, without concerns of the pandemic, but my expectations and plans for a new personal life with my wife and family were seriously disrupted as we all found ourselves putting our lives on hold. This certainly has made me realise that I am not ready to enter into a life of immediate full withdrawal from the world of lighting, that had engaged my attention and given me much intellectual stimulation over many years.

I see my new role and mission as a great opportunity to engage with the global lighting family by acting as a facilitator in the field of regulations, to aid understanding and encourage communication. This is not in conflict with the work of GTB, the vehicle manufacturers' or lighting manufacturers' associations, standards organisations, et al. I also don't foresee any conflict with the interests of the governments working to harmonise vehicle regulations,

mostly under the umbrella of the UNECE World Forum (WP29). In particular, both GTB and DVN are unique organisations with a common interest but with different roles.

GTB is one of a few NGOs with special consultative status at the United Nations ECOSOC and it is unique as an international expert group entitled to contribute to the work of WP29 and GRE in Geneva. Of course, this means GTB is obliged to work according to its statute and by-laws that require democratic decisions, and it has strict membership rules based upon national delegations. The work of GTB is primarily technical as a drafter of proposals for the legal text of the regulations with the emphasis on safety.

DVN is truly unique because it provides a communication platform that accommodates a huge global participation from top level company executives to expert engineers interested in market and technology trends.

We already see that GTB and DVN are the two important pillars supporting the interests of the global lighting family.

Over the coming months I will explain how I will carry out my new role and how I intend to facilitate effective and efficient communication through the creation of regional interest groups (initially, Asia, Europe, and North America).

I would like to emphasise that these interest groups will not develop detailed proposals for the text of regulations and standards; that is the work of GTB and other contributors to the UN World Forum (WP29 and GRE). As I explained in my presentation to the December 2020 DVN regulatory session, my interest is to find a way to synchronise and harmonise global technical requirements to remove barriers to innovation.

So, my great friends, I am motivated by this new role in DVN, and I look forward to working with you as a facilitator and advisor!

# Udo Hornfeck is New ZKW CTO

LIGHTING NEWS



Udo Hornfeck became CTO of the ZKW Group this month, succeeding Jürgen Antonitsch. Hornfeck served most recently as Chief Technology Officer of the Wiring Systems Division of Leoni. He is a well-versed technology expert with many years of international expertise in the automotive and engineering fields.

Hornfeck will focus on further expanding the development network of ZKW sites and supporting the departments of technology and innovation. CEO Oliver Schubert said “Udo Hornfeck has a deep understanding of client needs and how these can be implemented in new products and system services. We are glad to be elevating the future of our mobility concepts to a new level together with [him]”.

Mr. Hornfeck has over 20 years of professional experience in the automotive electronics industry, including as the Director of Technology and Innovation Management and as the Director of Series Development for electrical/electronic components at Dräxlmaier. And as Head of Infotainment and Cockpit Electronics, he successfully established IAV as a strategic partner to major vehicle manufacturers.

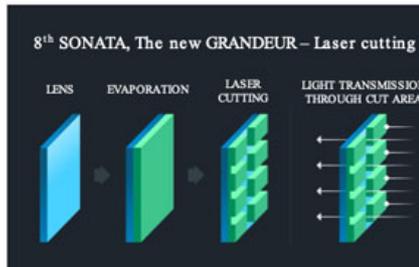
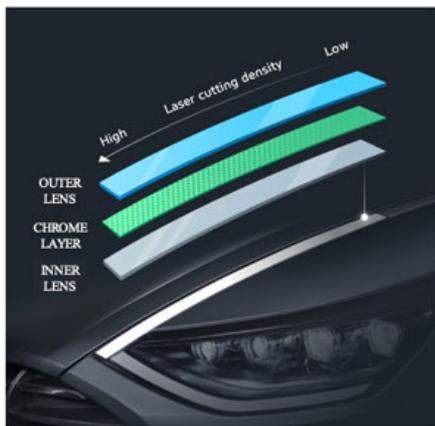
He is a trained electrical engineer and holds an MBA; over the course of his career he has established a thorough foundation of expertise in technology and innovation management, and in the development of active and passive electrical and electronic components for a variety of automotive applications.

# Hyundai's "Hidden Light" Lamps

LIGHTING NEWS



The new Hyundai Sonata's hidden lighting looks like an ordinary chrome molding, but it's actually a lighting element configured to provide the DRL function. It's a novel way of hiding the LED lamp in a chrome garnish. It works a bit like the Philips Silver Vision signal bulbs (chrome when off, amber when on): the inside of the DRL lens is treated to make it look like chrome when the LEDs behind it aren't lit.



A gradient effect was added by varying the laser cutting density for each area. Because of the laser cutting method, the light radiates through the apparent chrome finish. The trick: fine holes in the chrome coating layer, made with a laser. The graduated effect, which darkens with distance from the headlamp, was implemented by adjusting the hole density. With this new technique, Hyundai designers were able to connect the side chrome garnish and the headlamp, for a distinct, integral, tidy design signature.



And the new Hyundai Tucson evinces the exterior design of last year's Vision T concept almost exactly. The key to completing this unconventional design is the hidden-jewel front lights, which achieve an organic connection between the radiator grill and the lights.



Here again, the secret is "hidden lighting". Sometimes it's a radiator grille...sometimes it's a lamp!

# Hella's New Development Centre in Romania

## LIGHTING NEWS



Hella are expanding their software and electronics activities with a new test and development centre newly opened at the Craiova site in Romania. With this step, Hella are creating space for further expansion. The company currently employ around 350 people in Craiova, mainly focusing on the development of control units and software. These competencies are to be further expanded and supplemented by others; Hella plan to create around 250 additional jobs in Craiova over the next few years.

On the occasion of the new centre's opening, Björn Twiehaus—jointly responsible for the Electronics division on the Hella Management Board, said, "Sophisticated software and automotive electronics are indispensable drivers of mobility already today. They will continue to gain in importance in the future and will undoubtedly become decisive key factors".

With a total floor space of over 6,400 m<sup>2</sup>, with open office concepts and twelve meeting rooms, the new building also has a state-of-the-art test laboratory and an underground car park for test vehicles.

Hella started doing business in Craiova in 2007. The company employ more than 4,200 people in Romania at seven locations in Timisoara, Arad, Lugoj, and Craiova.

# New Antolin-Naen JV in China

## LIGHTING NEWS



NAEN PRESIDENT WANG HONGJIE (LEFT) AND JORGE JUAREZ, APAC PRESIDENT OF GRUPO ANTOLIN.

Grupo Antolin have established a new JV with Shanghai Naen Auto Technology, a Chinese automotive electronics supplier specialising in PEPS (passive entry passive start) systems and other car body management functions, to jointly develop advanced integrated electronic products.

In the future, the joint venture will supply BMW, GM, Toyota, Honda, Volvo, Geely, and other automakers around the world.

Grupo Antolin and Naen will combine their expertise and state-of-art technology to enhance the electronic integration of current products in the vehicle interior as well as bring forth new electronic technologies to local customers. With a focus on ECUs as the core electronic component to manage multiple functions related to Antolin's interior and exterior components, this collaboration aims at consolidating Antolin's position as a global provider of electronics supported by Naen's solid electronic engineering expertise and proven track record in China.

Grupo Antolin and Naen will deploy an ambitious resource plan, which is expected to increase the size of the engineering team fourfold within three years, to offer automakers in China high-level electronic engineering capabilities to develop innovative advanced automotive electronics.

# Nissan Sentra Recalled for Stop Light Defects

## LIGHTING NEWS



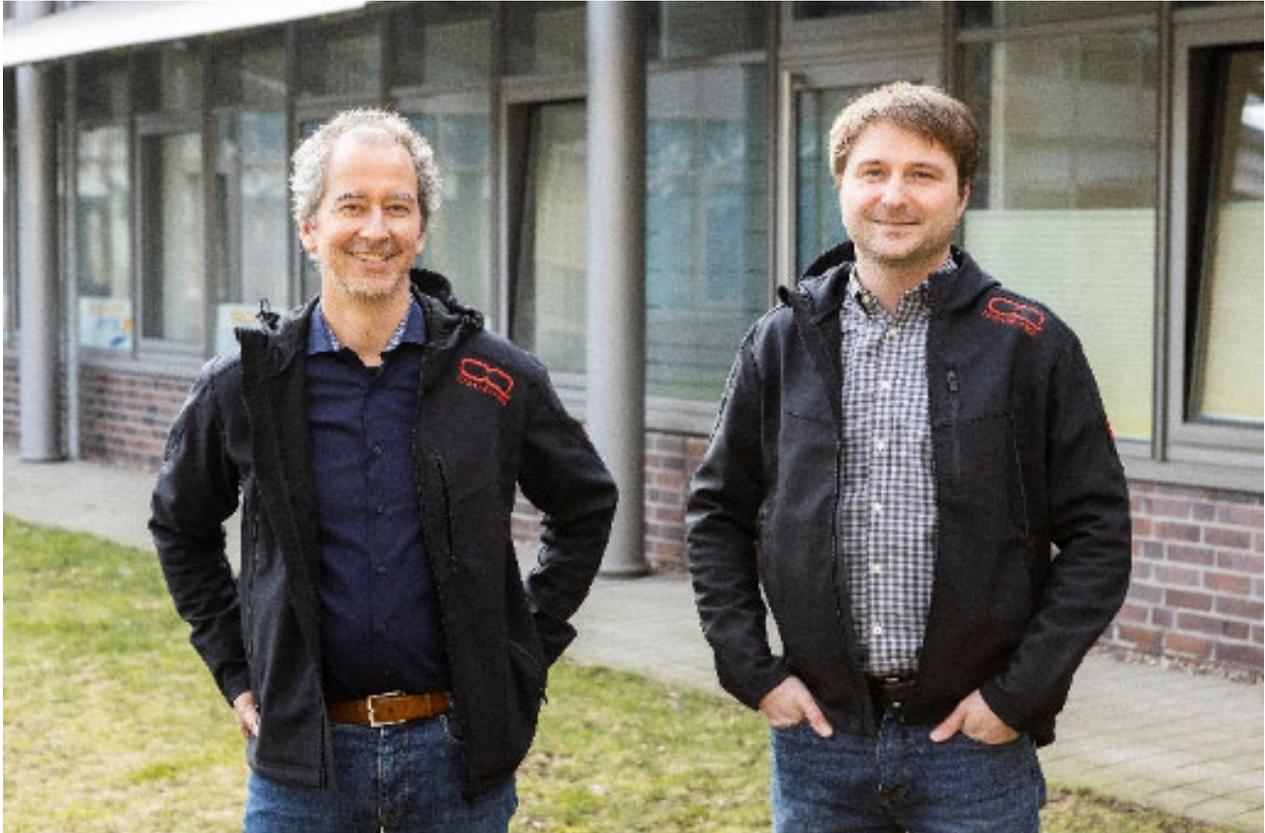
Nissan North America are recalling more than 850,000 Sentra compact sedans over a defect that may prevent the stop lights illuminating when the driver presses the brake pedal. The affected vehicles are 2016-2019 models totaling more than 800,000 in the U.S. and 50,000 in Canada.

Nissan have said they are not aware of any accidents related to this issue, which is caused by the stop light switch getting

contaminated by offgassing from silicone grease used in nearby components. Silicon dioxide, which is an electrical insulator, can build up on the switch contacts and thus prevent the stop lights working. It's not the first time silicon dioxide has been found causing problems with stop light switches, though Subaru's [2019 recall](#) of two million vehicles worldwide was said to be related to post-manufacture use of silicone compounds.

# New Funding Round for OQmented

## LIGHTING NEWS



THE TWO FOUNDERS, HOFMANN AND WANTOCH

OQmented, who specialise in MEMS-based AR/VR display and 3D sensing solutions, have successfully completed a multimillion-Euro financing round. The investment was led by Vsquared, a Munich-based deep tech focused venture capitalist. Among others, the international consortium includes top-notch investor Helmut Jeggle, Chairman of the Supervisory Board of BioNTech, and a renowned Chinese tech entrepreneur.

OQmented was founded in 2018 with the vision to become the innovation leader in optical sensing and displaying for an augmented world. The two founders, with more than 30 years of combined experience in scientific development, together with their team develop and produce MEMS-based LBS (laser beam scanning) systems.

Based on an extensive IP portfolio, their expertise is the key enabler to low-mass, efficient consumer AR/VR glasses and cutting-edge 3D sensing products. "We invested in OQmented as their unique technology may hold the essential key to enable breakthroughs in several industries, such as AR glasses or a broader dissemination of 3D cameras," says Benedikt von Schoeler, Founding Partner of Vsquared Ventures. He believes the young company is not only ready for the next growth phase, but it is set to revolutionizing automotive and consumer markets. Also on board as new investors are MBG SchleswigHolstein and the Baltic Business Angels.

The startup already have R&D contracts with international tech companies, and are working on establishing high-profile partnerships. The recent investment will accelerate the company's business development and allow them to increase their engineering staff.

# Driver Assistance News

## Continental and AEye: Strategy and Product

### DRIVER ASSISTANCE NEWS



During a tech talk organised last week, Continental and AEye presented their strategy and their products. Last October, Continental made a minority investment in AEye and said at the time the mission was to “industrialise and commercialise this technology for automated driving at SAE levels 3 and higher” and that Continental and AEye would focus on both passenger and commercial vehicles.

The short-range lidar is fully designed by Continental. For the long-range lidar, Continental have a partnership with AEYE, while automaker sales and OE design will be done via Continental.

“At Continental, we believe lidar has a full place in the sensor fleet for higher automation of vehicles, and we believe the market will develop very similar to what we know from our radar business,” says Gunnar Juergens, Continental VP and head of lidar segment.

### HFL110 Short Range lidar

The innovative high-resolution 3D flash lidar is a solution that works with other ADAS sensors to achieve highly and fully automated driving. It is a solid-state unit meant for L<sup>2+</sup> and L<sup>3</sup> AVs. Continental will start production of the HFL110 later this year.

### HRL131 Long Range lidar

The HRL131 is a MEMS-based agile lidar with software-configurable scan patterns, Deterministic Detection Logic (DDL), reduced power consumption, and high performance in rain, fog, snow, and dust. It can detect vehicles at a distance of 300 metres and objects on the road at about 160 m.

Continental don't plan to start producing this long-range lidar device until 2024, but already are calling the sensor the “final piece of the puzzle” when it comes to autonomous vehicles navigating complex environments. And they aren't saying yet which automaker they're working with to introduce the HRL 131 – they've revealed only that they will launch the product with a “premium” automaker in three years' time.

VSI made an analysis of AEye's lidar system in long range, high-resolution performance and safety required for automotive and trucking highway autonomy:

**Range:** Greater than 1000m on a variety of vehicles, while maintaining a 10Hz scan rate (10 frames per second).

**Resolution:** 1600 points per square degree at 200m on any object across the Field of View (FOV). Delivering ultra-high resolution enables vehicles to quickly and accurately identify and classify threats, especially small objects.

**Speed:** Scan rates of 10Hz to over 200Hz (200 frames per second) for full Field of View (FOV) – By scanning at 10X-20X the speed of conventional LiDAR, AEye's system provides a unique ability to scan lateral entry from pedestrians or vehicles.

**Sensor Integration Flexibility:** Mounted behind first surfaces, including the windshield, with less than 10% observable degradation in performance.

*AEye is the premier provider of high-performance, active lidar systems for vehicle autonomy, ADAS, and robotic vision applications. AEye's software-definable iDAR™ (Intelligent Detection and Ranging) platform combines solid-state active lidar, an optionally fused low-light HD camera, and integrated deterministic artificial intelligence to capture more intelligent information with less data, enabling faster, more accurate, and more reliable perception.*

# FIA Report: How to Maximize ADAS Safety Benefits

## DRIVER ASSISTANCE NEWS



A more integrated, triangular ‘driver-vehicle-infrastructure’ approach is needed to maximise the road safety benefits of ADAS. That's a key finding in a [recent research project](#), commissioned in 2020 by FIA, the Federation Internationale de l'Automobile, and developed by a consortium featuring Royal Haskoning DHV, TNO, and HAN University of Applied Sciences.

The project provides valuable insights into the improvements required at each corner of this triangle, and involved research carried out in relation to six selected ADAS: Autonomous Emergency Braking (AEB), Emergency Stop Signal (ESS), Intelligent Speed Assistance (ISA), Adaptive Cruise Control (ACC), Lane Keep Assist (LKA), and Drowsiness Detection & Distraction Recognition.

The FIA-sponsored study concluded that even in cases where the systems fail to function well, potential road safety risks can be avoided by proper fail-safe communication.. While ADAS has the potential to deliver significant gains in terms of road safety, it is also undeniable that much remains to be done to turn the vision of safe semi-automated driving into reality. Therefore, governments, research institutes, automakers, service providers, and road operators should align their efforts around an integrated ‘**driver – vehicle – infrastructure**’ approach and set clear goals for the short and the long term.

# Outsight, Robosense in Partnership Pact

DRIVER ASSISTANCE NEWS



Outsight, who specialise in 3D spatial Intelligence, and RoboSense, who make advanced lidars for autonomous driving, have announced a new partnership aiming to combine the pre-processing software engine from Outsight with RoboSense's products. The idea is for 3D perception technologies to be deployed at a large scale for smart city and smart machine applications, giving robots superhuman perception capabilities.

**Outsight** create pre-processing software to make 3D lidar easier than ever to use. It detects, classifies, and tracks objects without relying on machine learning. In a few months, their solution has grown rapidly into applications including infrastructure-based perception and smart vehicles.

As one of the world's first mass-production-ready lidar manufacturers, **RoboSense** provide performant, cost-effective automotive lidar solutions for autonomous driving applications. Thanks to this partnership, the joint solution delivers real-time, reliable, processed 3D data, becoming one of the most advanced 3D perception technologies available and offering an ideal solution which can be easily integrated across many industries beyond automotive. Specifically, it will be applied both in smart cities and smart machines such as vehicles and mobile robots.

Following this partnership, RoboSense will collaborate with Outsight to ensure the best integration between the latest innovations and products of each company. Outsight will develop specific drivers and interfaces to allow its pre-processing solutions to leverage the unique value of RoboSense lidars. In less than a year, Outsight have successfully designed and commercialised a new generation of lidar processing solutions, which has been the subject of 60 patent applications. The company have won many awards, including the prestigious Best of CES Innovation Award in Las Vegas and the Prism Award by the world leaders in photonics and lasers.

# General News

## Mini, Porsche Are Tops in Dealer Service Satisfaction: Survey

GENERAL NEWS



The results are in for J.D. Power's 2021 U.S. Customer Service Index study. CSI rankings are based on dealer service performance during the first three years of new-vehicle ownership, which typically represents the majority of the vehicle warranty period.

Porsche reclaimed the lead from last year's luxury winner, Lexus, with an index score of 899 on a 1,000-point scale. Lexus, which scored 895, was trailed by Infiniti (887), Cadillac (883), and Lincoln (872). While nearly all luxury brands saw an uptick in satisfaction scores this year, Hyundai's Genesis brand accelerated fastest, up 30 points from its debut on the CSI list last year. Alfa Romeo, which also made it onto the list for the first time last year, rose five points to 797.

Porsche	Lexus	Infiniti	Cadillac	Lincoln	Acura	Mercedes	BMW	Genesis	Volvo
899	895	887	883	872	867	867	866	864	863

Compact-car brand Mini scored the highest among mass-market brands, scoring 864—up 28 points from last year. The BMW-owned brand recovered from a poor performance last year when it lost 17 points and fell to seventh place after being ranked in the top three since 2015. Among mass-market brands, Buick fell to second place with 859 points, followed by Mitsubishi (857) and GMC (856).

Mini	Buick	Mitsubishi	GMC	Kia	Nissan	Chevrolet	Honda	Toyota	Subaru
864	859	857	856	855	854	851	846	846	843

Five broad factors are measured: service quality, including total time and thoroughness; timeliness of the drop-off process and ease during the service initiation; knowledge and courtesy of the service adviser; cleanliness of the service facility; and helpfulness of staff at vehicle pickup.

# Volkswagen to Put More EVs in U.S. Product Mix

## GENERAL NEWS



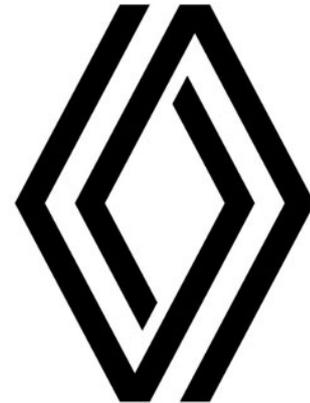
ID.4 GTX

Volkswagen are accelerating their electric vehicle plans, with CEO Ralf Brandstätter pledging more than 50% of the VW-brand sales in the U.S. will be fully electric by 2030. Previously, Volkswagen had announced EVs would be 35% of U.S. sales by the end of this decade. VW also are suggesting up to 70% of their cars sold in Europe and 50% of models sold in China will be fully electric by 2030.

This year, they're planning the introduction of three ID-badged SUV models: the all-wheel-drive ID.4 GTX, the ID.5, and the Chinese-market ID.6. These will be followed next year by production versions of the ID.Buzz MPV and ID.Vizzion luxury wagon concepts. Brandstätter also confirms an entry-level ID model, likely to be sold under the name ID.1, is planned for launch in 2025, about two years later than originally planned.

# A New Logo for Renault

## GENERAL NEWS



NEW LOGO IN RENAULT 5 PROTOTYPE PRESENTED BY DESIGN DIRECTOR GILLES VIDAL

When the "Renalution" plan was announced, a new Renault diamond was proudly displayed behind CEO Luca de Meo, as well as on the grille of the Renault 5 Prototype. Since then, this new symbol has been unfolding gradually, without any fanfare. First with the new Zoe advertising campaign, then on the brand's social networks. It is a launch meant to be frugal but effective.

Over the course of their history, Renault have changed their visual identity several times. But there is one thing that hasn't changed since 1925, and that is the diamond shape that serves as the basis for the logo. It is an immediately recognisable brand icon.

Originally commissioned by Louis Renault, the Renault diamond has been redesigned eight times before. This new one, the first since 1992, is the ninth—in accord with the brand's drive to change with the times. By 2024, the entire Renault range will carry this new emblem.

