Tue, 21 November 2023
Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #830

Editorial

DVN: Around The World, Around The Clock!

We bring you a great deal of information this week from three continents—this is a central force and feature of DVN: we are everywhere vehicle lighting and driver vision news is happening, and we bring it all to you from around the globe.

USA: Automobility LA, the Los Angeles Auto Show. Smaller this year in terms of the number of vehicle models on display, but highly focused—the cars on display were significant ones, with important new launches like the Lucid Gravity, Ford Mustang, Toyota Crown Signia, Hyundai Santa Fe, Chevrolet Traverse, and more, all with fascinating lighting.

China: Guangzhou Auto Show. So many new cars with incredible lamp design: Li Mega MPV, Human Horizon Hiphi A, Zeekr 007, GAC Era concept.

Europe: We met with GRE Chair Timo Kärkkäinen for an in-depth explanation about the new 09 series of amendments to UN Regulation 48, and had a fruitful talk about this major evolution of the regulation which will affect all vehicles not only in Europe but in most of the world, except on the North American regulatory island.

DVN has been steadily growing since the start in 2008, and now gathers more than 220 companies, including 160 in lighting, 42 in interior and 18 in lidar. You may have noticed the price for a DVN lighting membership has not increased in six years; it has remained the same since the end of 2016. Meanwhile, we are striving and working to deliver more and more high-quality content, to give you more for your DVN money. For example, we now offer members four free lighting DVN Workshops per year, instead of just two: one in Europe, one in the USA, one in China, and one more elsewhere; Japan this year, India next year, UK or Korea in 2025—stay tuned for details.

To provide all this additional value, the DVN team has grown significantly. I joined the team recently myself, along with experts like Wolfgang Huhn, Michael Hamm, Gerd Bahnmueller, and Thomas Froelich.

As a result, we have had to adjust our prices upward this past summer, to €6,900 for a Gold membership and €13,800 for a Platinium membership. We are grateful to all DVN readers and members for your loyalty, and we hope you enjoy this week's DVNewsletter.

Sincerely yours,

Paul-Henri Matha
DVN Chief Operating Officer and Lighting General Editor

In Depth Lighting Technology

Interview: GRE Chair Timo Kärkkäinen on R48 Amendments

Last week, we brought you GTB President Valter Genone's description of the new 09 series of amendments to UN Regulation 48, decided at the GRE 89th session in Geneva 2 weeks ago. To understand more about the significance of these amendments, we talked with Timo Kärkkäinen, who chairs the **GRE** (Working Party on Lighting and Light-Signalling).

DVN: Hello Timo! Will you please introduce yourself to the DVN community?

Timo Kärkkäinen: I work as a Chief Adviser in the Finnish Transport and Communications Agency Traficom, which is the vehicle type-approval authority of Finland. My duties include also technical issues of vehicle regulation other than lighting. I have acted as chair of GRE from the year 2021, and I will continue the year 2024 in this position. In my spare time I prefer detective novels to legislative texts.

DVN: GRE just approved the new 09 series of amendments to R48, which now mandates automatic leveling for all headlamps, no longer just those with AFS or with low-beam light sources giving more than 2,000 lumens. What can you tell us about this decision?

T.K.: One of the principles in GRE is to find the consensus in proposals. Therefore, the decision making may take much time. The discussion about mandatory levelling was also linked to the initial aiming of passing-beam headlamps. The mandatory automatic levelling was opposed for a long time due to costs. In addition, the aim of GRE is to be technology-neutral and consider possible alternative solutions. In the 09 series of amendments, the manual levelling is still permitted for off-road buses and off-road

trucks (vehicle categories M_2G, M_3G, N_2G, and N_3G). For the other vehicle categories, the automatic levelling was finally decided to be the only reasonable solution.

DVN: It is also the first time some lamps previously allowed will be banned; now only lamps meeting the amendment-01 version of R149 (new photometric grid requiring higher performance) will be allowed. Is this a new trend?

T.K.: It is usual in UN Regulations that Contracting Parties are not obliged to accept old type approvals from a certain date. Actually, this wording leaves the decision of banning to the Contracting Party. Anyway, it is very likely that—for example—the European Union, as a Contracting Party will use this possibility. This kind of transitional provision has not been used in UN Regulation № 48 for a long time. The 01 series of amendment of UN Regulation № 149 included some more stringent provisions. Then it was logical to add transitional periods in the four UN Regulations on lighting installation: № 48 for motor vehicles and their trailers, № 53 for motorcycles, № 74 for mopeds, and № 86 for agricultural vehicles.

DVN: And then there's lighting on vehicles in a parked condition. The 'answer back signal' has been added to regulate the welcoming sequence when approaching the car, in a manner that seems a bit restrictive compared to the full flexibility carmakers previously had, and what is possible in China and the USA. Can you explain the background of this decision?

T.K.: There was a thorough discussion on that subject among governmental and industry experts. This was an acceptable first step for everyone. Some experts in GRE are quite cautious allowing new functions.

DVN: Exterior courtesy light has been extended to allow a red signaling function with possible variation of the shape of the apparent surface and the light intensity. But there is still no regulation for other lamps, like battery-charging lights, in Reg 48. What is your thinking about these kinds of new lights? Are next amendments already planned?

T.K.: The 89th session of GRE in October 2023 established a new task force on Lamps Under Parked Conditions. It will continue the consideration on energy indicator showing the charging status of electric vehicles. Another issue will be the lamp test mode, which could be especially useful in heavy-duty vehicles. It was already recognised that a new 10 series of amendments will be necessary in coming years. As in the 09 series of amendments, the aim of the GRE is to combine several new provisions to the 10 series of amendments. It is also expected that the simplification project of lighting regulations will bring several things to this series of amendments.

DVN: In the 08 series of R48 and the 01 series of R149 and R148, there is nothing about power consumption reduction. In China, they are investigating a new variable-intensity front position lamp that may be below 400 cd by day, instead of a Daytime running lamp. Are there plans to introduce possible power consumption reduction into the regulations?

T.K.: I think the reduction of power consumption in lighting functions without reducing safety will be one of the future priorities in GRE. However, we need further impact assessments before starting the drafting of amendments to UN Regulations. GTB (The International Automotive Lighting and Light Signalling Expert Group) is conducting independent research studies to assess the effective energy saving measures. All the relevant knowledge on this issue is welcomed in GRE.

DVN: Anything else you'd like the DVN community to know?

T.K.: The 90th session of GRE will be held on 29 April to 3 May, 2024. I will look forward to further discussions on signalling road projections of direction indicators and reversing lamps. We have also plans to consider the possible provisions of marker lamps for automated driving systems.

Lighting News

Hella FlatLight, Forvia Tech Win CES 2024 Awards

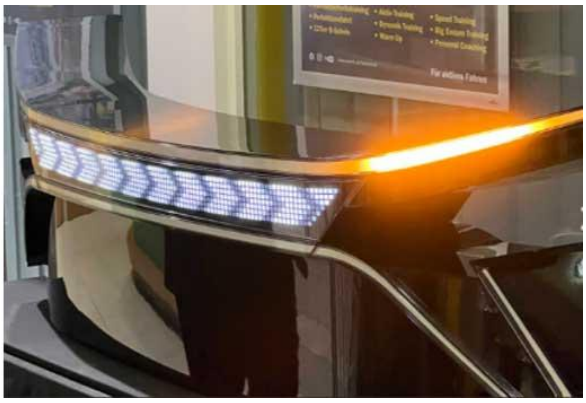
LIGHTING NEWS

Hella's FlatLight µMX technology is based on an innovative LED light guide concept with microöptics smaller than a grain of salt. The FlatLight µMX is notably thin, efficient, and scalable; the required installation space is reduced by up to 90 per cent, to just 5 mm.
Multicolour combinations of turn, stop, and tail light functions can be implemented in just one optical element. FlatLight µMX requires up to 80 per cent less energy compared to conventional LED taillights, while maintaining the same performance and homogeneity. In 2024 it will go into series production as a rear combination lamp, and in 2025 in the front area of a car where it implements daytime running light, direction indicator, and position light in only one light element as well.

Hosted by the Consumer Technology Association, the "CES Innovation Awards" is an annual competition that recognizes outstanding design and technology. Winners are selected by a highly decorated panel of judges.

ZKW, ÖAMTC Present Future Lighting Tech

LIGHTING NEWS



ZKW and ÖAMTC Fahrtechnik presented their concepts for vehicle lighting of the future at an event centred round Driving Safety & Light last week at the Melk/Wachauring Driving Technology Centre. Both companies demonstrated the latest technologies: high-resolution ADB and light projections, as well as person-vehicle-obstacle detection using modern sensor technology and AI. ZKW CEO Wilhelm Steger said, "With the onset of the dark season, the topic of safety and light is increasingly in focus. ZKW is constantly researching the development of digital lighting systems that can interact with other road users and increase driving safety".

During demo drives on the Wachauring, participants could see for themselves how the latest premium headlights and illuminated vehicle fronts of the future work; it was a fine show-and-tell of how glare-free high beam, modern light assistance systems, and sensor technology in the headlights can increase driving safety. Demonstrating experts from ZKW and ÖAMTC included Udo Hornfeck (CTO), Gerald Böhm (Senior Advanced Technology Manager), Georg Pitterle and Matthäus Artmann (Technology Managers), Patrick Schmidt and Martin Lahmer (Pre-Development Project Managers).

Both companies are jointly driving forward the integration of modern lighting systems in vehicle fronts. In the future, 'intelligent' vehicle fronts and possible other series products are to be developed that combine light, sensors and electronics in a 'Seamless Intelligent Vehicle Front' enriched with lighting, logos, sensors, and heating elements. The concept can be used to redesign the front of EV that do not require a radiator, for example. These developments could be seen live on two demonstrators.

The ÖAMTC driving technology offers training for everyone: for frequent drivers, professional drivers, sporty drivers and of course also for those new to driving licenses. In the diverse training courses, participants are taught in a practical manner how to improve the handling of their own vehicle.

Interview: Zeekr Design Boss Jon Rådbrink

LIGHTING NEWS

In parallel with the Guangzhou Auto Show reveal of the new Zeekr 007, the DVN team took time to talk with Zeekr exterior design chief Jon Rådbrink about his work and the new car.

DVN: Hello Jon! Will you introduce yourself?

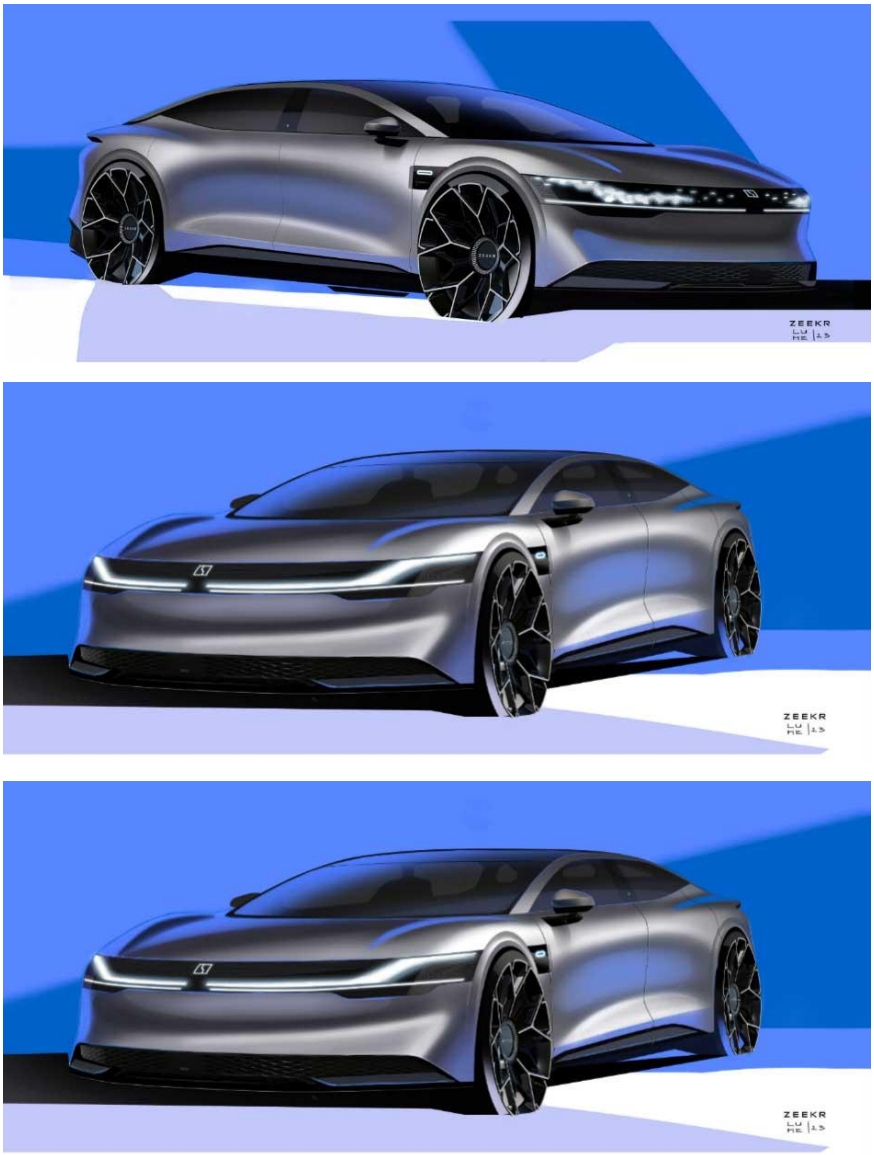
Jon Rådbrink: I am a 41-year-old Swedish designer, who worked previously for Lynk & Co, Land Rover, and Kia. My latest work includes Lynk & Co 02, 06, 09; Zeekr 009, Zeekr X, and now Zeekr 007.

DVN: What can you tell us about the Zeekr 007's exterior design?

J.R.: The identity of a car is in its front face. Traditionally, it was the grille that would have a unique shape that made you recognize the brand. Lately, the light signature has been used to create that recognition. The problem today is that we have now seen all possible static shapes, so it becomes impossible to differentiate. With the 007, we wanted to reinvent the face of Zeekr and create something new in the process.

DVN: And you have used exterior lighting for that purpose, yes?

J.R.: As with many innovations in design, it is technology that allows us to move forward. We had this idea that we didn't want to be recognised for having this or that signature, but instead being the brand that allows our customers to choose their own! With the Stargate we have basically created a three-dimensional screen that enables this.

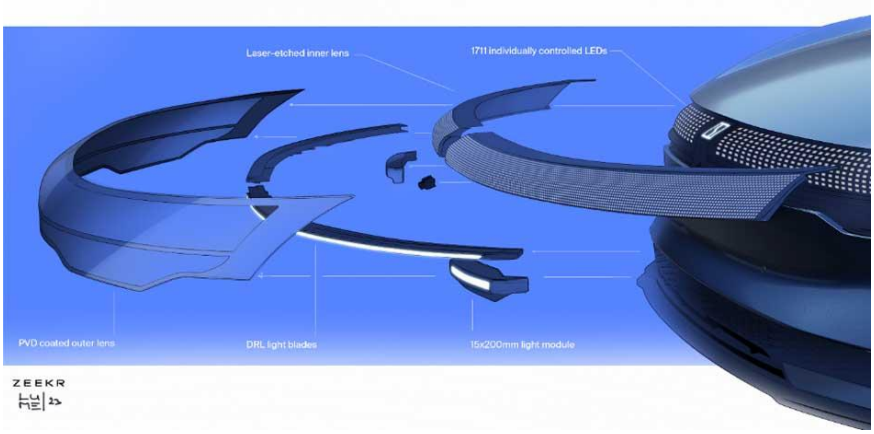


Having the possibility to change between different static signatures also means that we can make another big step. If we can have infinite static images, we can also put them together to create motion. So, with the 007 we can now differentiate our brand with animated light signatures. This dynamic identity allows for an expression that we have not seen before.

In a way, the Zeekr Stargate doesn't just change the game—it creates a new one.

DVN: Amazing concept! Very innovative and for sure your strategy is different compared to what the customer is accustomed to seeing. What technology is behind the stargate?

J.R.: Zeekr has developed this amazing high technology content with Valeo. Two digital panels bundled with more than 1,700 individually-controlled LEDs mounted on flexible PCBs to offer appearance customization capabilities. In front of them is a PVD coated outer lens to be fully integrated in the front face of the car.



For lighting modules: a unique 15 × 200-mm module, the Thinbilite bi-function low/high beam module (honoured by a CES 2023 award and finalist for PACE this year). In the centre, the Zeekr brand identity is enhanced with a central illuminated logo integrating seamlessly an ADAS sensor.

DVN: what about the rear?

J.R.: Technology is more conventional; the rear lamp pattern is picking up the light and we can see reflection on the tailgate.

DVN: Thank you, Jon!

12 new reveils at Guangzhou Auto Show

LIGHTING NEWS

MG Cyberster

The MG Cyberster respects the design of its foregoing concept car, particularly around the headlamps and bifurcated-grille design, while the taillamps have a trendy full-width light band. The price is C¥319,800 to 359,800.

Electric hybrid MPV-JAC Ruifeng RF8

It's got 'Tiger Roar' headlights and full-width daytime running lights up front, and the 'phoenix feather' tail light wraps around the shoulder line.

Audi Q6 e-tron prototype and A7 Sportback

This first mass-produced model of the PPE platform, the Audi Q6 e-tron prototype, was unveiled for the first time at China auto show.

Second-generation digital OLED taillights feature up to 360 light-emitting units that generate a new image every 10 milliseconds through an algorithm that creates a digital light signature effect, enabling for the first time that the vehicle can communicate with its surroundings (car-to-X).

The new A7 Sportback has high-definition matrix LED headlights as standard, with laser headlights available as an option, and a welcome light at the front door to make travel more ceremonial.

Three major Dongfeng ranges

Dongfeg Nano 01

Dongfeng launched their Nano 01, with eyelid-and-brow daytime running lights and a full-width light line up front.

Dongfeng eπ007

Their fun-to-pronounce eπ007model has headlights split by a bumper bar line, and the taillights's full-width design echoes the headlights.

Dongfeng eπ007

Dongfeng Haohan Space E-sports Edition

Geely Galaxy E8

The Geely Galaxy E8 adopts the design concept of 'ripples of light', with a split headlight design. The daytime running lights are very sharp, the rectangular headlights are located low on both sides of the grille, and the two sides are equipped with vertical layout of the deflector groove. There's a grilleboard dotted with a lattice light pattern and an illuminated brand logo. The taillights are a fine-lines full-width design,

Leapmotor C10

Leapmotor's first global model, the C10, made its official debut at the Guangzhou Auto Show, which was also the first domestic debut of the Leapmotor C10 after its global debut in Munich.

The Leapmotor C10 continues the brand's design themes, with full-width front and rear light bands and geometric multi-beam LED headlights.

BYD Sea Lion 07

Angular, squinting headlamps are flanked by fish-hook DRLs. In back, there's a sculpted black-and-red light band with hidden indicators.

HiPhi A

The HiPhi A's brash, futuristic design includes a rectilinear red full-width light bar on the rear, under the giant spoiler.

BYD Yangwang supercar platform Yi Sifang concept

The Yi Sifang concept car does not have traditional steering or braking mechanisms. It does have vertically-mirrored white LED DRLs emphasising the contour lines of the front of this blocky vehicle idea.

Chery: 16 new energy models under four brands

Chery Group brought its four major brands—Chery, Exeed, Jetour and iCar—and 16 new energy models to the exhibition.

Fengyun A9 concept

Star Atlas ES

JETOUR SHANHAI L9

ICAR 03

GAC: Era hydrogen-electric concept

The lighting on this concept car is clearly at the mockup/placeholder stage, but just as clearly, great thought has been put into its design. Up front there's a lit logo, slimline headlights, and a full-width white light line. In back, dashed-line red lights wrap around the quarter panel to trace the bodyline.

Bright Lights, Big City: Los Angeles Auto Show Part I

LIGHTING NEWS

As this issue of your DVNewsletter goes live, we're just back from the Automobility LA, the Los Angeles auto show. It was a smaller show this year in terms of the raw number of vehicle models shown, but it was a notably focused show, with emphasis on new debuts and revised models; markedly less space-filling with unchanged existing models. The fabulous Lucid Gravity was unveiled at the show, and we're working with Lucid to bring you a thorough interview and slide show about it soon.

Starting today, and in instalments over the coming weeks, we'll be presenting lighting highlights from the show. First, some key takeaways:

- Lighting design trends are evolving beyond just stylistic fads. Increasingly, lighting design is being leveraged and integrated to improve and advance not just brand identity and advertisement of whole-vehicle technological levels, but also vehicle capabilities and lifestyle-accessory positioning.
- Nuances are sprouting within the greater trends. For just one example of many, full-width light bands are a thriving trend, and automakers are now playing with textures and depth effects within the light bands, adjusting the band design in accord with not just a particular model, but a particular trim level of a model: the EV version gets bands different to the ICE version, etc. Another example: setmakers are getting very good at "shy-teching" their headlamps with new blackout techniques that make the lamps (even headlamps!) not just less-visible, but well and truly *not* visible until they are switched on.
- New lighting features are arriving, even on the North American regulatory island—we saw a new state-of-charge indicator light perched high on the centre of a dashboard, easily visible both inside and outside the car.
- The LED conquest is nearly complete; most lights on most vehicles have LED light sources. Not quite all the way complete, though; there were still some bulb-type brake lights, licence plate lights—this seems particularly strange—and turn signals. And perhaps oddest of all, there was one model proudly sporting a "BiXenon HID" callout on the headlamp housing near the projector. Given the modular nature of projectors, the cost and complexity of an HID system, and the variety of LED projectors now available, this was an unusual thing to see; sort of like encountering a car with tailfins in a parkade: "Wow, don't see many of those any more!".

With that, here are a first few pictures as an appetiser. Let's start off with the Acura ZDX, which has a strong and prominent check-mark theme to its front and rear lights. They're built with clever, thoughtful depth effects and use reflections to play with lines and angles (see especially the rear turn signal for a neat reflected-line trick):

The Chevrolet Equinox EV mixes up colour conventions to great effect. The front lights are well hidden in a glossy black field—we see the headlight projector nestled in its nacelle, and a light band provision up above. The rear lights have an intriguing all-white look when unlit, including the strobe-stripe type light band:

And this Ford F-150 taillight is a giant, bold sculpture in red plastic, red light, and red textures. The great big tail light sections evince the style of the "F" on the truck's "F-150" badges, with the brake/turn signal light having its own central flag-and-pole shaped region with its own texture. We also see incandescent-bulb licence plate lights—a bit of a throwback.

Watch for more pics and analysis in the coming weeks!

Driver Assistance News

AEye Lidar Maximizes Performance, Design

DRIVER ASSISTANCE NEWS

AEye have announced their ultra-compact, high-performance reference design for automotive lidar, the 4Sight Flex. It delivers unparalleled performance; it is highly compact and energy-efficient, and it breaks new low-cost barriers.

CEO Matt Fisch says, "We believe that performance and design both matter and that both are important to driving lidar adoption with OEMs. Our customers and partners want options that go beyond yesterday's large antennas and today's sensors protruding outside the vehicle. With 4Sight Flex, AEye is delivering what the market demands: exceptional lidar performance together with the option for a more integrated design in the OEMs' location of choice".

The 4Sight Flex delivers superior behind-the-windshield performance and is believed to be the only high-performance 1,550-nm lidar capable of in-cabin integration. It boasts a 120°H × 30°V field of view, with ultrahigh resolution of up to 0.05° × 0.05° and long-range detection of up to 275 metres at 10-per-cent reflectivity, all at approximately half the size and with down to 40 per cent less power consumption compared to AEye's first-generation design.

The 4Sight Flex also offers what AEye believe to be the lowest-technical-risk solution at one of the lowest volume costs in the industry. As production scales up for automotive volumes, the company anticipate an additional 10 to 20 per cent component cost reduction compared to the current generation, making this design very cost-competitive.

Hesai Lidar Will Equip Great Wall Vehicles

DRIVER ASSISTANCE NEWS

Hesai have announced an automotive lidar design win with Great Wall Motors; multiple GWM passenger vehicle models will be equipped with Hesai's ultrahigh-resolution AT128 long-range lidar, with plans for mass production and delivery starting in 2024.

In the future, the Hesai AT128 will serve as a key sensor for GWM's series-production vehicles, combined with GWM's high computational power and mass-producible IDC3.0 ADAS computing platform to meet driving requirements in various road scenarios.

Hesai provide robust, automotive-grade, scalable production capabilities, and integrates lidar manufacturing processes with the R&D phases. This integration facilitates fast product iteration while ensuring high quality. In recent years, Hesai have rapidly expanded their business, working with 14 automaker and tier-1 clients, and securing lidar design wins for over 50 series production vehicle programs.

GWM are one of the largest automakers in China. In the field of intelligent driving, GWM possess comprehensive R&D capabilities for both software and hardware. Their independently-developed intelligent driving systems have already been deployed in over 20 vehicle models, and GWM are leading the industry in high computational platforms and intelligent driving software.

Valeo Scala Lidar Picks Up Another CES Award

DRIVER ASSISTANCE NEWS

Valeo's Scala 3 Lidar is a CES 2024 Innovation Award honoree in the category Vehicle Tech & Advanced Mobility. As the industry recognises the key role of lidar technology in the development of autonomous mobility, this award acknowledges once again Valeo's leading role as a pioneer in bringing this technology to the automotive industry and in producing it at scale.

Scala 3 is Valeo's 3rd-generation lidar perception system. It includes an automotive-grade high resolution lidar sensor, allowing advanced perception in all conditions while meeting the highest automotive industry quality and safety standards. Its high-density point cloud and associated AI-based perception software enables high-speed autonomous driving on highways in a wider range of conditions, dramatically increasing the end-user value of L^3 systems through a large extension of their domain of operation and broadening the scalability of L^4 robotaxi fleets.

Valeo Comfort and Driving Assistance President Marc Vrecko says, "Valeo lidar equips the only Level-3 passenger cars authorized in Europe, and we have announced in March 2023 orders over the past 18 months worth more than €1bn for Scala 3. Valeo has been among the first actors of the automotive industry to believe in lidar's role as the keystone of autonomous mobility. We are honoured to receive a CES 2024 Innovation Award that recognises our vision and technological leadership. After more than 10 years of development and more than five years of production, our lidar is already in use on vehicles around the world".

General News

Europe's October Sales: Strong Gains for Audi, BMW, BYD

GENERAL NEWS

BMW, Audi and BYD had strong gains in October, helping them rise in the ranking of Europe's top-selling brands compared with the same month year.

Audi's 19-per-cent sales jump to 59,000 made it Europe's third-selling brand for the month, compared with a fourth-place finish last October, according to preliminary figures from market researcher Dataforce. Audi increased sales of the Q4 E-tron to 4,400 and boosted sales of the A4 to 5,900 last month.

The VW brand was Europe's № 1-selling brand, followed by Toyota at № 2. BMW rose to fourth from sixth place by boosting overall sales 18 per cent to 56,000. Sales of their top-of-the-range 7 Series doubled to 388, and 4,296 of their i4 EV found homes.

MG finished the month at № 18, compared with being in 22nd place in October 2022, helped by a 61-per-cent sales gain to 18,000.

The month was not as positive for all makers, though. Mercedes increased sales 7 per cent to 54,000, but slid to № 6 compared with a third-place ranking during the same month last year. Mercedes suffered declines of 29 and 57 per cent, respectively, for the S-Class and EQS last month. And Ford's 9-per-cent decline to 42,000 in an overall market that was up 14 per cent pushed them down to 10th place last month, compared with 7th in October 2022.

Sixteen brands—including Jaguar, Ineos, Ora, Wey, Nio, Aiways, BYD, and Xpeng—recorded triple-digit percentage gains or higher. Other brands with strong sales increase last month included Jeep (+61 per cent), Lexus (+60 per cent), and Porsche (+54 per cent).