

Tue, 16 January 2024
Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #838

PixCell LED

Ultimate precision in perfect alignment

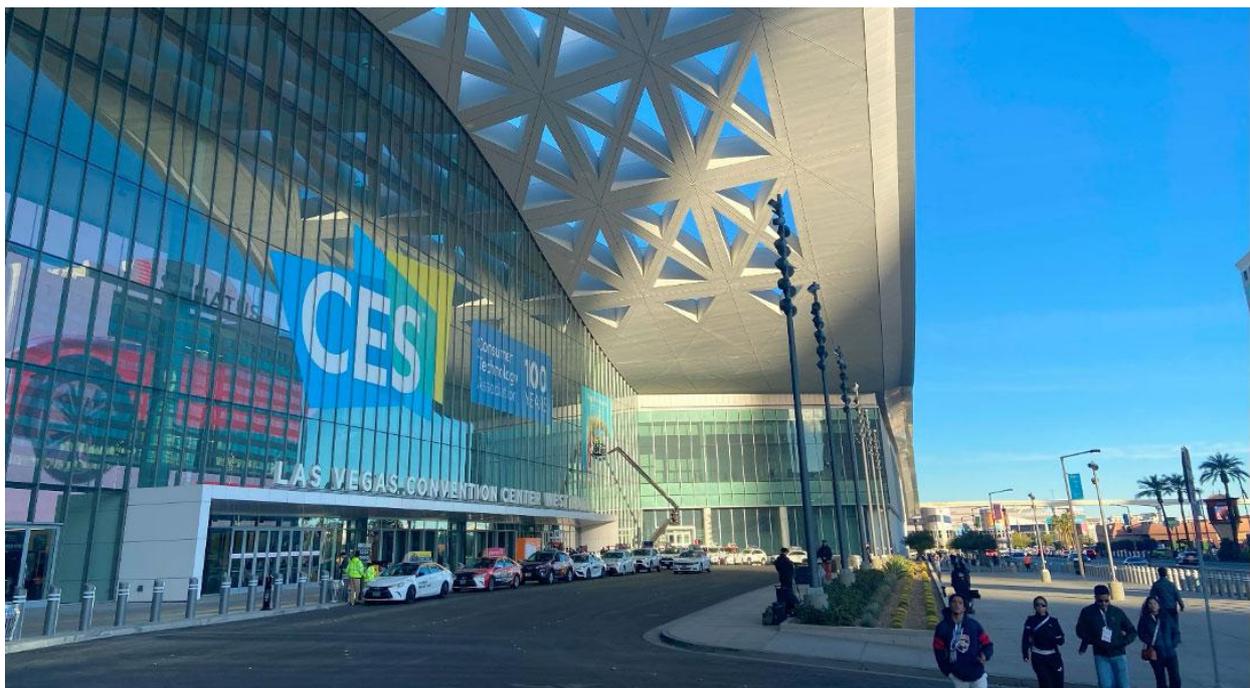
100+ individual cells with just 25 µm spacing, perfectly matrixed onto a single LED chip for intelligent headlamps

SAMSUNG



Editorial

CES 2024: Over And Done!



As a fresh start in 2024, I went with DVN's Philippe Aumont and Daniel Stern to CES in Las Vegas. I focused on lighting technologies and meeting our DVN members, while Philippe focused on interior technologies and Daniel on startups, ADAS and lidar companies. We are preparing our detailed CES reports for next week. Today we bring you highlights and general lighting information about set makers.

During four days from the 9th to the 12th of January, around 150,000 industry attendees visited 4,000 companies. In the automotive sector, the three main trends on display were AI (artificial intelligence); SDV (software-defined vehicles), and AD (autonomous driving). Lighting was not a main focus, but lighting is affected as a part of those three main trends.

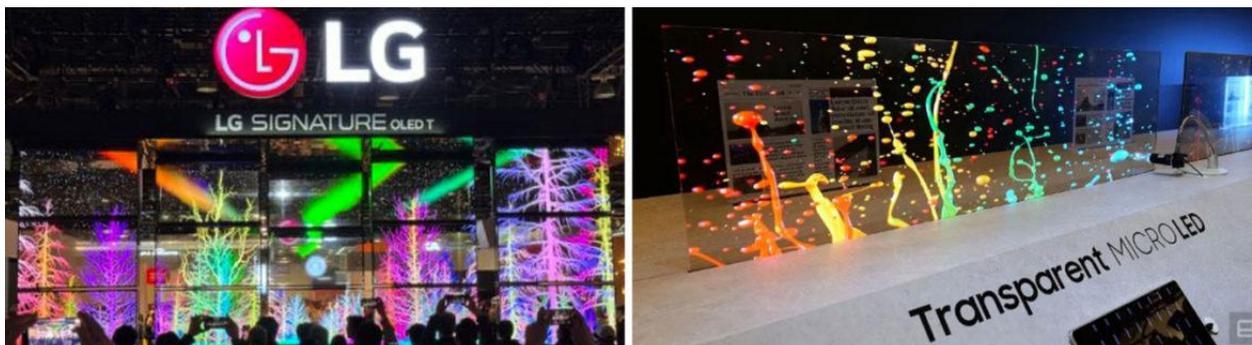
SDV electrical architecture is changing the way we are developing functions and software for our lamps. It makes it easier and faster, but we must change completely the way of thinking—and the value and organisation sides of the supply chain are being shaken up.

AI is improving our intelligent functions like ADB with better detection, anticipation, and reaction. With AI our displays may interact more with drivers and VRUs (vulnerable road users).

AD may warrant more intelligent lighting functions to better detect obstacles and to support sensors and V2X communication between AD vehicles and human drivers and pedestrians. We're already seeing the first of these kinds of developments, like the turquoise AD lamps on the Mercedes EQS in USA. A lot of demos from automakers and tier-1 suppliers were about how to showcase communication with exterior displays. Chinese automakers started two or three years ago with ISD (interaction social display) with simple pixelated lamps, and next steps are coming.

Technology is also coming from consumer to automotive. That is why it is important to keep an eye on CES with the most exciting tech announcements like TVs from LG and Samsung, computing updates from Nvidia and AMD, mobile gaming innovations. My main takeaways come from display technology. Transparent displays is the new trend. LG has presented his new OLED display when Samsung presented his new MicroLED display.

Seeing this technology make the jump onto automotive exterior lighting feels more like a matter of 'when' rather than 'if'.



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

A handwritten signature in blue ink, appearing to read 'pamm', located below the printed name and title.

In Depth Lighting Technology

CES '24: DVN Insights

By Paul-Henri Matha, DVN COO and Lighting General Editor

Most vehicle lighting tier-1s participated at CES this year, and DVN took time to meet them, one by one, to see their latest technologies.

As a summary, all of them have been working on V2X communication for AD, supported by interactive social displays and signaling projection; ADAS sensor integration, and sustainability solutions to reach zero-CO₂ emissions targets.

Koito + NAL (North American Lighting)



The Koito-NAL booth focused on three lighting topics: ADB with a very compact solution (ADB is quite new for US customers); V2X communication with turquoise AD light and signal projection, lidar and sensor integration from Cepton (long and short range lidar), including cleaning solutions.



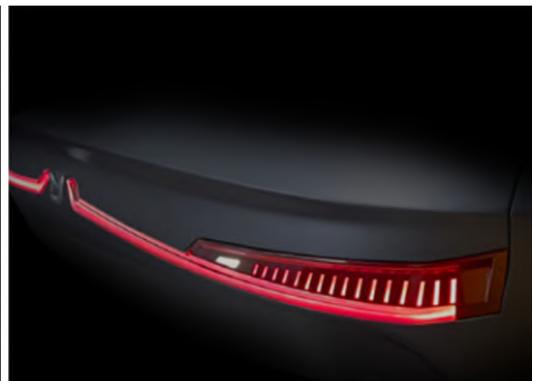
Marelli

Marelli officialised partnership from the software sphere—Amazon Web Services (AWS), Qualcomm, BlackBerry QNX and DSP—who were also present at the booth. With a focus on design for affordability, for cost, for performance, for resiliency and for sustainability, the team addressed key needs of vehicle makers worldwide.



About lighting, the focus was on five items:

- Sustainability with Leanlight front and rear lamps. The headlamp has an optimised CO₂ footprint with one low beam and one high beam module (height 20-24mm), new outer lens manufacturing process, MCU-free electronics architecture, and low power signaling functions, for a total weight around 2.5 kg per headlamp and 1.6 kg for signal lamp. The rear lamp boasts a 20 per cent weight and component count reduction, slim design, and optimised CO₂ footprint.



- Display integration with miniLED technology for full tail photometry and dynamic communication and near field projection (DMD, MLA, gobo).



- Illuminated front grilleboards and rear panels, including illuminated logo with radar transparency, with innovative surface treatments possible like polyurethane coating, foil overmolding, and laser paint ablation.



- Lighting electronics including core computer, zone controller, and light domain controller. One remarkable thing is that Marelli can do the complete embedded software for lighting, from core computer to light domain controller and the lamp itself.

Forvia



Forvia said by 2045, their emissions will be zero and they are approaching two important milestones on that path: by 2025, they pledge to be carbon neutral in terms of their scope-1 and -2 emissions. And by 2030, they pledge to have reduced scope-3 emissions by 45 per cent.

To that end, Hella presented a sustainable headlamp concept using alternative materials and reusable components to increase the recycling rate while maintaining high standards of visibility and illumination. This concept has an optimised (i.e., reduced) component count, and incorporates lightweight, thin, highly efficient Fresnel optics as well as cover optics made from biopolymer. It weighs 2 kg versus 5 kg for a comparable traditional headlamp, without compromising performance.



Hella integrated lighting functions, based on their CLA concepts, in a front fascia with lens height 10 mm.



Signalling functions were based on their FlatLight μ MX: a slim design, with maximum energy efficiency and superior homogeneity and performance. The technology is based on an innovative LED light guide concept with microoptics smaller than a grain of salt. This enables a module depth of just 5 millimetres, and completely new design options for the front and rear, as different lighting functions can be realised in just one lighting element. Another plus: it has up to 80 per cent lower energy consumption compared to conventional LED taillights. In 2024 it will go into series production as a rear combination lamp, and in 2025 front functions will be possible: daytime running light, front direction indicator (brighter than a rear one) and position light in only one light element as well.

ZKW

The LG Concept Car offered visitors an insight into the future of automotive entertainment. The microZ headlamp modules demonstrated how animated projections can be created in the future using intelligent front lighting. The projector function generates a 100-inch image that can be used to display a wide range of entertainment content based on OTT communication via the Internet (e.g. Netflix), transforming the car into a mobile cinema experience.



ZKW also showcased their latest product innovations, including an illuminated multicolour front grilleboard and, for the first time, an illuminated bumper developed in coöperation with Rehau Automotive.

Another new development, ZKW presented innovative rear light modules devised in coöperation with Osram, in which transparent LEDs are laminated onto a transparent carrier substrate. The result is an animated surface that can display taillights, indicators, brake lights, and illuminated logos.

They presented also the new Volvo EX90 headlamp with DLP technology and an 'Ultimate Hammer' feature combining the Volvo Thor's-Hammer landmark with mechatronic pop-up lamp technology.



The new headlamp for GM's Chevrolet Silverado, which enables an illuminated animation of the charge indicator, was also on display.



ZKW aim to make their global production CO₂-neutral by 2025, and all products by 2038. This goal is to be achieved by saving energy, avoiding waste, and switching to green electricity. At CES, they demonstrated how sustainable lighting can be achieved through optimised materials and processes. As part of their 'SusMat4CarLight' project, ZKW are working with partners to research recyclable materials for future lighting systems, including polymers based on renewable raw materials.

Valeo



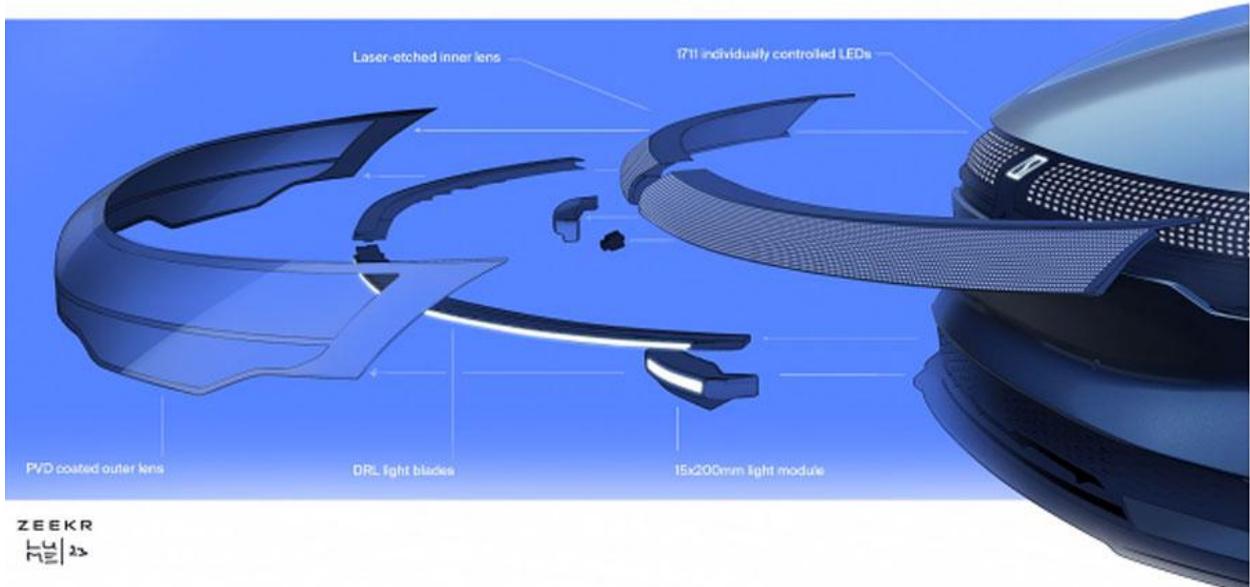
Valeo, too, focussed on five main innovations in their grand showcase:

- Their CES Innovation Awardwinning Scala 3 lidar. Visitors had the opportunity to experience and learn more about Valeo's AI-based perception software and how it helps classify objects identified by the lidar in its point cloud.
- Predict4Range was unveiled: a software solution to predict and drive the most efficient thermal management strategies of EVs for a driving range extended up to 24 per cent, fewer charging stops with faster charging operations, and extended battery life.
- Ineez Air Charging was presented for the first time. It is a wireless charging solution, the first and only one to use an ultra-low operating frequency, around 3 kHz, offering a lighter, simpler and safer charging experience.
- The latest Zeekr model was presented at Valeo's booth. Equipped with a 15-mm-high Valeo ThinBiLite bifunction front lighting module and two digital panels comprising more than 1,700 LEDs, it offers users a unique, personalized, and interactive lighting experience.
- BMW's Valeo-powered tele-operation was also on display at Valeo's show stand.



During the CEO keynote, Valeo focused also on their '4 Rs' sustainability principles. Valeo are committed to be carbon neutral in 2050 and to preserve natural resources by embracing circular economy principles. This starts at the product conception phase by making the right material, technology and design choices. In this spirit, Valeo presented their latest evolution of **Purelight**, a new headlamp concept designed with bio-sourced materials and additive manufacturing that allows repair and re-use of materials to minimise its weight and extend its life cycle.

Outside, on the proving ground, Valeo showed the Zeekr 007 headlamp, the Stargate concept. Equipped with a 15-mm-high Valeo ThinBiLite bifunction front lighting module and two digital panels comprising more than 1,700 LEDs, it offers users a unique, personalized and interactive lighting experience.



Mobis

Mobis' Mobion concept showed off its 4 independent wheels. This concept was equipped with a variety of displays to interact with other road users: signal projections and front grilleboard and rear display.



Inside the booth, Mobis presented five technologies about lighting:

- HD microLED modulew with 25 kilopixels
- Lenticular grille lighting
- Prism slim module (combining both low beam and DRL, with lens size height from 12 to 25mm)
- 12mm ADB module with 12 segments
- On-road signal projections



Plastic Omnium (West Hall)



Plastic Omnium introduced three innovations resulting from partnerships with Sonatus, EyeLights and Paravision, aimed at breaking down the traditional boundaries of the automotive industry and laying the ground for tomorrow's mobility.

1) Intelligent management of rear lights with Sonatus, a major player in the Software Defined Vehicle ecosystem.

Plastic Omnium and Sonatus together bring intelligence to enhance dynamic vehicle lighting. The solution developed with Sonatus enables monitoring and retrieving information from various onboard sensors in the car to interpret situations that may arise on the road. Using Sonatus Automator, vehicle sensors can automatically trigger animated informational or warning messages without driver action on Plastic Omnium mini-LED display in the rear light assembly of the vehicle.



2) Plastic Omnium and EyeLights team up to showcase high-brightness and high-resolution smart tailgate.

Plastic Omnium innovates with the EyeLights startup to offer a groundbreaking technology: a high definition, high brightness display capability at the rear of vehicles. The technology aims to better communicate with the vehicle surroundings, short and

long distances and in any weather conditions. Whether during a sudden slowdown or to signal an object on the road, the technology developed with EyeLights, combined with the expertise of Plastic Omnium, will enhance safety for all road users.

3) Facial recognition built with Paravision Paravision's facial recognition technology creates a template of vehicle owners' faces, and will only allow registered and authorized persons to access the vehicle.

For the second consecutive year, Plastic Omnium won an CES Innovation Award, this time in the "In-Vehicle Entertainment" category for its dynamic interior dashboard projection system.

Plastic Omnium's dynamic projection system illuminates the entire dashboard with colors and patterns to match the mood chosen by the driver. Already integrated into the interior of the new MINI Cooper Electric, it creates an immersive driving experience including lights, animations and projections.

More precisely, this module is composed by several microlens arrays (MLA), integrating different patterns. The light beam is generated by RGB LEDs (R-red, G-green and B-blue. Thanks to the combination of these three colors, all other colors are possible), and is then sent to the microlenses, which project the desired patterns onto the dashboard.



Another highly interesting innovation Plastic Omnium showcased in Vegas, is its Smart Tailgate - an innovative rear-end seamless module with a holistic approach, featuring new functionalities and onboard intelligence. The Smart Tailgate is a closure system integrating rear lighting behind a transparent outer panel with innovative decoration for seamless and daring design. It also features hidden sensors and antennas for advanced HMI (Human Machine Interface) functions and V2X (Vehicle-to-Everything) communication thanks to a display.



Magna

For CES, Magna decided to focus on the three main topics about electrification, ADAS, and connectivity. Nothing was shown about lighting.



HSL

In a private room, HSL—in collaboration with partners and TactoTek—showed off their newest innovations in grilleboards: fully integrated, illuminated and animated front panels made on final production tooling.



In parallel, in the generally-accessible North Hall booth of Mullen—a new startup from California—16mm-high HSL modules were shown on a car.



Lighting News

Interview: Hella's Dr. Karger on New Infrared Welding

LIGHTING NEWS



Hella has introduced an **infrared welding process** for the production of the rear combination lamp of the Lamborghini **Revuelto**. This news was [published](#) in the latest edition of Joining Plastics. DVN's Paul-Henri Matha discussed this with Hella's Head of Global Joining Process Technology Innovation, Dr. Odo Karger:

DVN: How does this new process differ to hotplate, laser, and vibration welding?

Odo Karger : Actually, the IR-welding is not much different from the hotplate welding process. It also constitutes a two-step-process but utilizes a different heater, a non-contact IR-emitter, similar to those widely known in rear-combination-lamp-business for infrared-preheating of vibration welding. Because it is a non-contact heating, issues connected to hotplate welding, like stinging, wear of tool, foamy weld bead, etc. are not present. In comparison to vibration welding, of course there is no vibration movement, thus there are much lower geometrical restrictions, and the precision can be slightly improved. Compared to the simultaneous laser welding cost of machines and fixtures are significantly lower while weld appearance is at least comparable if not better, as can be seen in the picture in our publication. We think IR-welding can be a very good replacement of laser welding, which is increasingly being used lately.

DVN: Can you show the machine and a section of the lens / housing?

O.K.: Our Infrared-welding machine is not much different from a hot plate welder, except the power supplies for the heater, of course. I don't want to share a cross section of the welding area here, as there is something of the magic we developed in there.

DVN: Is it existing already between different plastic in automotive or other products?

O.K.: Definitely yes! IR-welding is far from new. It is widely used for interior application, e.g. welding of airbag boxes, and under the bonnet applications. For whatever reason it never made it into the welding of lighting devices yet. Actually, we found that the materials used here are very suitable for IR-welding, much more than many technical thermoplastic polymers used in other applications.

DVN: What is the material of lens and housing on this lamp?



O.K.: On the Revuelto lamp we use PC+ABS for the housing as well as for the black portion of the lens. This is because of thermal reasons connected to the rear engine vehicle. But also welding of other common rear combination lamp materials like PMMA and ABS are known to deliver very good results.

Nio ES8 Headlamp

LIGHTING NEWS



Kusla Rapid Manufacturing revealed some information about Nio ES8 headlamp last week that include upper lamp and bumper lamp in a unique housing. Low beam and high beam are done by a 100-pixel module with an additional low beam module with 6 LEDs.



A combined DRL and turn indicator has 30 white LED and 30 amber LEDs on 2 flat PCBs, with a two-thick-blades optic solution. Condensation risk is handled by a CMD exchangeable CAP.



Driver Assistance News

Aeva to supply sensors to Daimler Truck

DRIVER ASSISTANCE NEWS



Aeva Technologies said during CES that they have agreed a USD \$1bn deal with Germany's Daimler Truck to supply sensors for self-driving trucks expected to roll on U.S. roads in 2027.

Aeva make lidar sensors which can detect how fast distant objects are moving, which is useful for avoiding other vehicles and pedestrians. They said some revenue from the deal will start to appear this year and that they plan to start production for the deal in 2026.

Under the production collaboration, Aeva will supply their latest [Atlas](#) automotive-grade FMCW 4D lidar technology to Daimler Truck and collaborate with Torc Robotics —an independent subsidiary of Daimler Truck—to enable L^4 autonomous vehicle capabilities beginning with the Class 8 Freightliner Cascadia truck platform. Daimler intend to integrate the lidar sensors directly in their production process, making it easy for customers to buy autonomous-ready trucks directly from the maker without the need for sensors to be retrofitted. Torc will sell their virtual driver technology and supporting services as a subscription to customers. Torc's driving software will use Aeva's perception software, built around Aeva's instant velocity data, to detect objects faster, farther away, and with higher accuracy. The multi-year collaboration begins in the first quarter of 2024 with Aeva's start of production by 2026 and Daimler Truck's production ramping up by 2027.

Cepton Lidar Sets New Industry Benchmark

DRIVER ASSISTANCE NEWS



Cepton have unveiled their new top-of-the-line automotive lidar, called Ultra. They say it is the world's slimmest adaptive, long-range lidar, designed based on real automaker requirements for next-generation consumer vehicle ADAS and automated driving capabilities. It leverages Cepton's latest innovation, MagnoSteer, and boasts these specifications:

- Maximum detection range: 300 m at 10 per cent reflectivity
- Angular resolution: $0.05^\circ \times 0.05^\circ$ within regions of interest
- Field of view: $120^\circ\text{H} \times 25^\circ\text{V}$ maximum, software-definable
- Typical Power consumption: 12 W
- Data rate: up to 3.8 million points per second
- Size: $150\text{W} \times 24\text{H} \times 90\text{D}$ mm

"With the introduction of Ultra, we are proud to reveal MagnoSteer, our next generation of lidar imaging technology," said Brunno Moretti, Senior Vice President of Product and Commercial Operations at Cepton. "MagnoSteer is a revolutionary beam steering mechanism with maximized field of view efficiency. This means that it minimizes the time, space and energy wasted within the architecture as it generates extremely dense point clouds, resulting in impressive data rate from an extremely small package. It is frictionless, automotive-grade and has an infinite mechanical life. It consumes less than half the power of typical scanning systems that deliver comparable performance, while taking up as little as one-fourth of the space.

"Powered by MagnoSteer, Ultra breaks the performance bottleneck of 905 nm lidars while taking advantage of a mature, mass-market-ready laser technology. With a 300 m detection range at 10 per cent reflectivity, it can detect and locate a dark object, such as a black car, at a distance 50 per cent further than what is typically required for automotive collision prevention systems to properly react. All of this is achieved without the need for fibre laser components, which are associated with high costs, low maturity, poor reliability and excessive power consumption for automotive

applications. Ultra presents the ultimate solution that the automotive industry needs today: top-notch performance coupled with superior scalability".

Ultra is by far the smallest, slimmest high-performance automotive lidar on the market today. Similar performing lidar systems are typically triple the volume and double the height. With its extremely compact form factor and power efficiency, Ultra is designed for seamless integration into various locations on a vehicle without the need for an additional cooling system. It can be embedded behind the windshield and into the roofline, the headlamps and the fascia, enabling high-precision perception for various automotive use cases.

Hella, TÜV Rheinland to Co-Devise 'Traffic Rule Engine' AV Software

DRIVER ASSISTANCE NEWS



Hella and TÜV Rheinland have agreed to cooperate in autonomous driving. The aim of the collaboration is the market-compliant development of a new 'Traffic Rule Engine': a new software module which will 'know' the applicable local traffic regulations and thus enable autonomous vehicles to behave in accord with local rules and expectations.

The collaboration will focus on L^3 and higher vehicles, wherein drivers can turn their attention away from road traffic in certain situations and the responsibility for driving the vehicle is transferred to the manufacturer.

Kay Talmi is Managing Director of Hella Aglaia, a Berlin-based Hella subsidiary specialising in software development. She says, "When highly automated vehicles are to manage driving situations autonomously and without human intervention, they must know the applicable rules of the road at all times and be able to control them without restriction. With the Traffic Rule Engine, we are creating a powerful technological basis for this and, in cooperation with TÜV Rheinland, are completely covering the process chain from start to finish".

The software module being developed will monitor the planned actions of equipped vehicle and compare them with current traffic regulations based on sensor and map data. If a deviation is detected, feedback is sent to the driving system in real time. To ensure the latest traffic regulations of a country are used at all times, the software module can be updated continuously and affordably via over-the-air updates.

Hella Aglaia are focussing on the development of the 'Traffic Rule Engine'; the underlying traffic rules database, and the algorithm used to execute the corresponding rules. TÜV Rheinland's tasks include taking into account the approval-relevant requirements for the 'Traffic Rule Engine' software and the type approval of automated and autonomous vehicles.

General News

BYD's New Yangwang U7

GENERAL NEWS



The YangWang U7 sedan from BYD was officially revealed in China. It was previously known under the U6 name. It will adopt the brand's signature design language. The power output of the YangWang U7 will be over 1,000 hp, thanks to the e⁴ platform. Its price will be around C¥1m (USD \$140,000).

YangWang is a high-end new-energy vehicle brand launched in early 2023. It currently sells a single model in China, the U8 EREV off-roader, with a starting price of over C¥1m. The second model is the U9 electric sports car, for which the maker applied for a sales license in China in December 2023.

The new third model, the U7, has big C-shaped headlamps and correspondingly big curvilinear daytime running lights.



The rear part of the car is relatively simple, with an active lifting electric rear wing introduced above the tail, and a large full-width taillight with a Yangwang logo in the middle.

Renault: the five great works of Luca de Meo

GENERAL NEWS



Renault boss Luca de Meo presented in September 2020 the 'Renaulution' idea. Now it's 2024, and time for the last, particularly arduous realisation: de Meo must follow the implementation of five projects in parallel which, taken end to end, must change the appearance of the Group. the goal: to share with partners the colossal development costs of the technological transition underway in the automobile industry, which Renault cannot bear alone due to its small size on the market.

• Ampere

On the first scope of the partition is the listing on the stock market of the software and electrification sector, called 'Ampere' (which already has Qualcomm, Nissan and Mitsubishi in the capital). If market conditions permit. The boss said in September that he was hoping for nearly €10bn. To sell his business, Luca de Meo is dangling the crucial launch of the battery-powered city car, the R5, this year. He also revealed the arrival, in 2026, of an all-electric Twingo. A project that would interest Volkswagen. Enough to share, here again, the development costs in a segment, small city cars, with compressed margins.

- **Alpine**

Renault is toying with the idea of also listing part of Alpine, their brand specializing in high-end sports cars, with a factory in Dieppe. However, if the expected valuation is not there, the operation will not take place. “We are not crazy,” Luca de Meo wanted to reassure the press at the end of 2023.

- **Horse**

The Renault Group must put their thermal engine activity, Horse, up. Oil giant Saudi Aramco must complete their acquisition of capital at the start of the year—enough to finally give a value to this entity.

- **The Future is Neutral**

The CEO should also announce in the first half of the year the arrival of new partners in his third special purpose entity, The Future is Neutral (in addition to Nissan). It specialises in the circular economy. The new expected industrialist would precisely be a specialist in battery recycling, Luca de Meo suggested in December. Another partnership to put to music, the one signed with Volvo Trucks to develop future utility vehicles for the diamond brand, a traditional cash cow for manufacturers.

- **International**

In parallel with these four projects, Renault Group also wants to relaunch internationally, with the upcoming launch of eight models outside Europe. Could they maybe return to North America, even? Time will tell!

Automaker News from CES

GENERAL NEWS



Honda Plan New EV Line



Honda announced plans at CES to launch a new global line of dedicated electric vehicles starting with a sedan in the U.S. in 2026. The portfolio of EVs from what Honda are calling their '0 Series' will revolve around two concept vehicles unveiled at the show: the Saloon and Space-Hub.

They will be the models for Honda's design and engineering approach for the production vehicles. The first Honda 0 Series vehicle will be based closely on the Saloon concept.

The Saloon is a futuristic, low-slung sedan with a wagon-like silhouette and a front end that resembles an ant eater. It is the flagship concept model of the Honda 0 Series. Honda said the human-machine interface will provide intuitive operation as well as superior visibility and a sporty driving position. The Saloon also will have new steer-by-wire technology and motion control systems. A production vehicle based closely on the Saloon concept will debut in the U.S. in 2026. It launches subsequently in Japan, Europe and other markets.



Sony and Honda unveil latest AFEELA electric car prototype at CES 2024



Sony Honda Mobility brings out the latest prototype of the AFEELA electric car at CES 2024 using a PlayStation 5 controller. The recent concept remains the same as the prototype that was unveiled at CES 2023, but this time, AFEELA is gearing towards mass production.

The recent electric vehicle design with artificial intelligence capabilities is packed with technological features, following the announcement of the mobility company with Epic Games, Microsoft, and Polyphony Digital.

The Afeela will come with ultra-wideband sensors and cameras. As the driver approaches, the car greets them with a light and automatically opens the doors. Once inside, Afeela runs an authentication process to make sure the driver is the right owner and sets up the destination and route map on a panoramic display. As they drive, the sensors and cameras monitor every angle, watching traffic conditions and providing driving assistance based on the external data acquired.

Sony Honda Mobility uses the potential of AI, sensors, and cameras by giving Afeela the ability to park itself autonomously when the driver leaves the car. At CES 2024, Sony Honda Mobility president, and COO Izumi Kawanishi told the press that Afeela also features a thematic cabin that allows the driver to choose a certain theme for their driving experience. The car will then automatically change its lighting, sound, and display to correspond to the chosen theme.

Outside, an LED light strip at the front of the car acts as an external information display. It can alert anyone outside the car about certain information such as flashing a warning sign if the vehicle is too close to a rear bumper, projecting the battery percentage, or playing animated sequences to make it look like billboard advertising on the go.

The 2024 concept appeared more production ready than last year's show car, with actual side view mirrors in place of the cameras and headlights that are more realistic than those on the earlier car. The Afeela is set to go into production in 2025 with sales beginning in 2026. A starting price of \$45,000 has been hinted at.



VinFast to show electric pickup concept, VF 3 microcar



VinFast presented two vehicles at CES: an electric pickup and the VF 3 microcar that could sell for under USD \$20,000.



They didn't give details on the pickup, calling it the company's "latest electric vehicle concept" and releasing a teaser photo that showed an elevated truck body alongside the brand's VF 8 compact crossover.

Also in the teaser photo is a yellow VF 3 with a white roof. The microcar, which VinFast call "a mini eSUV" for its chunky styling and ample ground clearance, was designed as an inexpensive model for Vietnam. VinFast presented the VF3 last year in Vietnam and said it would launch in the second half of 2024.

Turkish EV Maker Togg Expand Line, Eye Germany Launch in late '24



Togg T10F

The Turkish EV startup Togg will double the size of their lineup by adding the T10F fastback, which will be sold alongside their debut model, the T10X SUV. Starting in late 2024, the company, founded in 2018 and currently selling only in Turkey, aim to start selling both models in Germany, beginning with the SUV.

The company set a goal of having 1 million vehicles on the road across Europe by 2032. Like the SUV, the fastback is a compact model. Both models are made on Togg's C-segment (compact) platform.

To get to that level the T10F will offer a suite of ADAS that includes intelligent adaptive cruise control with stop-and-go functionality that works in conjunction with a traffic sign detection system; lane-keeping capability and lane-departure warning; a surround-view camera; blind spot and driver attention warning systems, and automatic parking assist.

Togg said the design of the T10F and T10X are the result of its design studio's collaboration with Italian styling specialist Pininfarina.

