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2024
Weekly Newsletter

DVN
Lighting

NEWSLETTER #884

Editorial

DVN Shanghai: Leadership, Regulation, Design

The recent DVN Shanghai event included three panel discussions for participants to have direct interaction with Chinese setmaker VIPs, regulation officers, and automaker designers. The main goal was to understand better what is happening in China's vehicle lighting business, what are the challenges and the next steps.

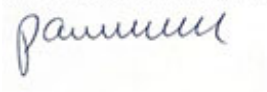
Competition is hard in China, and development speed is so important that a new way of working has been developed between automakers and their setmakers, including the complete supply chain. Less-stringent regulations, Chinese consumer demand for showy lighting, and a large population of new automakers make for more fun in lamp design, more creativity in design and in commercializing innovation, more risk in project management, and more reactivity to solve the problems.

Close relationships are needed among designers and R&D teams at automakers and lamp makers. Regulators need to increase their speed to keep up with evolving technology and consumer desires.

This is really what I like about DVN events: to have a direct exchange with high level people, to create bridges and connections among designers and engineers; automakers, tier-1 and -2 suppliers, and regulators. A DVN event is the only place where a tier-2 toolmaker can talk directly with Dongfeng's head of design, for example.

In this week's DVNewsletter, you'll also find my interview with Mobis Executive Vice President Axel Maschka about his perspective on the automotive industry; particularly vehicle lighting and ADAS business considerations. An interesting discussion to enlarge the scope after our business week in China, and in preparation for the CES event beginning of January in Las Vegas!

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



In Depth Lighting Technology

DVN Interview: Mobis EVP Axel Maschka

By Paul-Henri Matha

Axel Maschka is the executive vice president at Mobis. He graciously shared his thoughts with me:

DVN: Axel, what is your vision about the automotive market?

Axel Maschka: The vision for the global automotive market focuses on sustainability and innovation. In line with this, global players will introduce various technologies and strategies for the future of mobility. Software-defined vehicles, eco-friendly cars, and fully autonomous driving technologies are key elements of the future mobility market. Major players in each region are driving change, and these innovations and sustainability efforts aim to provide consumers with a better environment and improved quality of life—this is the ultimate goal of the automotive market and its players.

However, from my perspective, there are still obstacles with the rollout of electric and autonomous vehicles. In the case of autonomous driving, while advancements from L^2 to L^3 and beyond are progressing, there are signs of technical stagnation, and consumers face financial burdens with the adoption of new technologies. To address this, the market needs to grow through affordable solutions such as L^2 and L^{2+}, paving the way for the adoption of higher-level technologies at a later stage.

For EVs, the lack of charging infrastructure remains a significant hurdle. Expanding the infrastructure is critical to easing consumer concerns and accelerating market growth.

The essence of the market lies with the consumers preferences. Automotive players must address these inconveniences and challenges. The player who excels in resolving these issues will ultimately lead the market.

DVN: What does Mobis' lighting strategy look like?

A.M.: Currently, Mobis is responding to global OEMs with five factories, six sales offices, and five R&D centres around the world. Mobis supplies lamps to a variety of OEMs not only in Asia but also in Europe and North America, maintaining strong business relationships with them. Moving forward, we will continue to strive to expand Mobis' presence in the global market.

DVN: How will you remain competitive within the new automotive landscape?

MCL headlamp

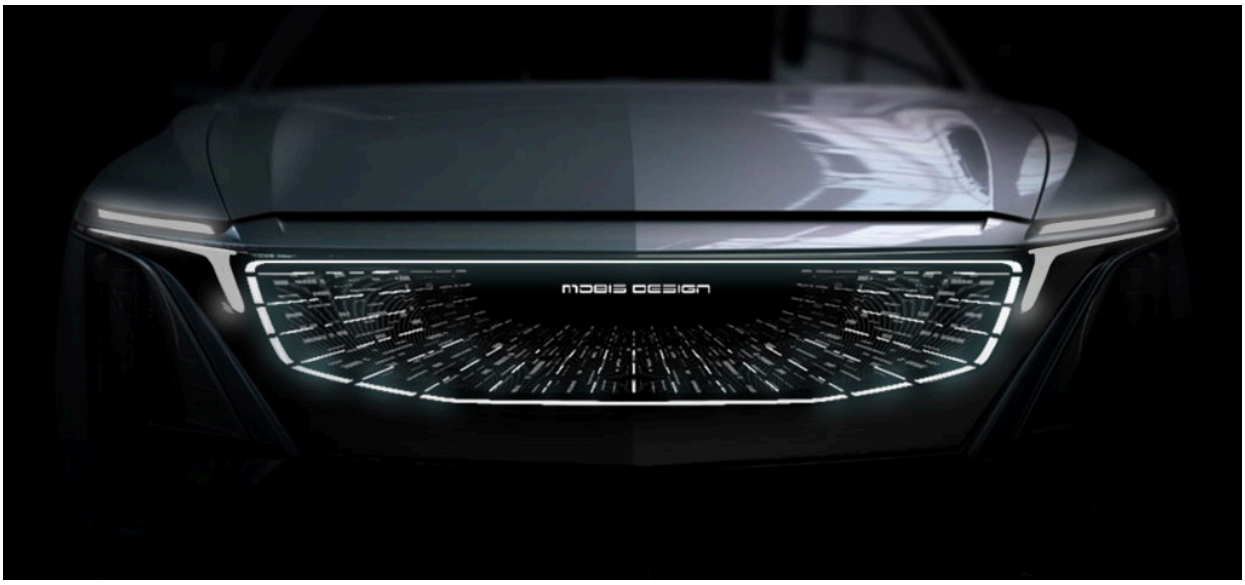
A.M.: Mobis handles lamp development and manufacturing, encompassing design (styling), engineering, production, quality control, and testing—that is our strong point. Additionally, since Mobis has peripheral lighting-related business, such as ADAS sensors and bumpers, we can create synergies in developing new lamp technologies, especially as functional integrated lamps become more prevalent.

Furthermore, Mobis has developed technologies that achieve both cost-effectiveness and cutting-edge innovation, such as the uniform-emitting MCL (micro cylindrical lens) headlamp, which reduces costs by more than 30 per cent compared to MLA and was previously introduced at DVN, and the DLED (direct-diffused LED) rear lamp, a homogeneous lamp integrating tail and stop functions in one area. We will continue to stay ahead of rapidly evolving technology trends by advancing swift and innovative development.

DLED rear lamp

DVN: What about exterior display trends? What do you think of the various technologies being used in them, and will they expand beyond China?

A.M.: While it is challenging at this moment, in the medium to long term, I believe head and rear lamps will increasingly be developed into display forms for information transmission—such as pixel lighting, thanks to the advancements of microLED and miniLED technology. To consider price competitiveness, Mobis is focusing on the development of 3D front grille lamp using our proprietary lenticular technology, rather than miniLEDs.



Mobis lenticular grille light

DVN: Projection systems already exist in Korea for reversing lamps. What is the Mobis strategy, and what technology do you favour?

A.M.: Many tier-1 suppliers are currently developing products using technologies such as gobo, MLA, DLP, and MEMS. Mobis is already mass-producing gobo-type products, and has achieved optimization and miniaturization of projection images with projection optics in reverse guide lamps. Additionally, Mobis has completed the development of technologies for MLA and DLP, and we plan to develop additional content and technologies to differentiate ourselves from other tier-1 suppliers.

Regarding Signal Road Projection, GTB has been making significant efforts toward regulation formulation, but it will take some time for the regulations to be established. Demand from manufacturers for road projection functionality is expected to increase in the future, and Mobis is prepared to provide the technology and products in line with regulatory developments at any time.

Mobis rear projection modules, generations 1-2-3 (L to R)

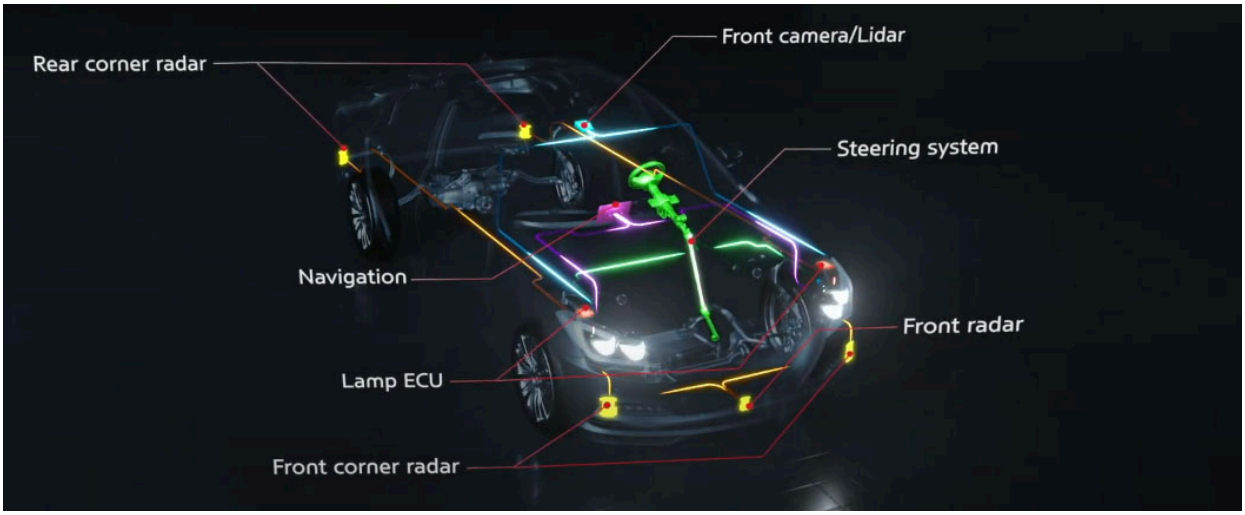
DVN: How do you foresee the prevalence trend of ADB?

A.M.: According to the 2023 DVN report, the market share of ADB is expected to reach 20 per cent by 2028 and 27 per cent by 2030. According to the 2023 IHS Market Research data, systems with more than 500 segments are projected to increase by 6.7 times in 2028 compared to 2023. ADB systems with over 25.6 kilopixels have already been mass-produced in the market, and the adoption of HD microLED technology is also expected to significantly increase.

Since ADB has been legalized in the United States, it is anticipated that the application of ADB headlamps in North American-brand vehicles will rise considerably in the future.

In South Korea, ADB functionality is less activated compared to the U.S. or Europe because of urban roads, which are well-lit with numerous streetlights and vehicles. However, when driving in rural or less populated areas with fewer streetlights, ADB

significantly enhances visibility and contributes to safety. The Korean automotive market is highly sensitive to trends, and shows an increasing demand for the application of new technologies, such as safety and convenience features, in new vehicle models.



AADB has Mobis-made lamp + ECU, radar, camera, navigation, & steering system

As customer demand and awareness of ADB increases, Mobis has successfully developed the second generation AADB (advanced ADB using ADAS sensor integration for better performance), an upgraded version of the 1st generation AADB initially applied on the Genesis G80.

With the development and mass production of high-segment ADB systems and our AADB systems, which enable precise control, it is expected that drivers will experience greater benefits and come to view ADB as an essential feature.

DVN: Speaking of ADAS, what are your thoughts? Cameras for visible light, IR, and thermal imaging; lidar, 4D radar…which ones will win the race for L^3?

A.M.: For L^2 to L^{2++}, Mobis is developing ADAS features based on conventional sensors such as front view cameras, front radar, and corner radar. Additionally, we are expanding functions to meet new regulations (such as low-light AEB). Nobody can anticipate when L^3 market will win broad acceptance. Regulations and insurance issues will play a role, and we are preparing technical solution for future L^3 systems. We are considering the establishment of a redundant system using lidar, thermal cameras, and 4D radar, which can guarantee detection performance and operation even in harsh environments like severe weather, snow, or low light.

Current sensors like radar typically transmit tracking information of objects. A front view camera transmits image-based recognition and classification data. Based on these, most of companies and systems perform a high-level fusion of the detection results. In the future, I believe that companies developing low-level sensor fusion with AI- based object detection will be able to take the lead in the market.

At the sensor level, we are reviewing various vision recognition solutions that can be supplied for different regions and various vehicle segments. To support systems beyond L^3 in the future, we are also considering sensors such as 4D radar, lidar, and thermal cameras. We are developing an integrated controller, the ADC, to replace existing independent controllers for driving and parking. However, the core of our activities is concentrating on the development of safe and affordable L^{2++} systems based on the highest market demand.

DVN: What sensor setup do you like for the new US requirements for AEB (FMVSS 127)?

A.M.: Under FMVSS 127, by 2029 AEB and FCW must operate at 10 to 145 km/h in low-light conditions. To be configured with a front CMOS camera, but additional sensors such as thermal cameras are being considered for supplemental purposes.

Lighting News

Panel Talks at DVN Shanghai

LIGHTING NEWS

The third Leaders Round Table in the history of DVN, after Munich and Pune, was again a great success. DVN prepared a question for each of the VIPs at the table. The participants introduced themselves and their companies and answered the questions. After this opening, a discussion started, chaired by DVN's Wolfgang Huhn. Panellists included:

- Mind Optoelectronic's Hossein Nafari (Lighting Vice President)
- Marelli Automotive Lighting's Peter Cao (General Manager APAC)
- Hasco Vision's Ao Jinlong (Deputy General Manager & CTO)
- Xingyu's Lin Shudong (Deputy General Manager, Research Laboratory Director)
- Liaowang's Yang Kai (Deputy General Research Institute Manager)
- Anrui Lighting's Eric Sun (General Manager)

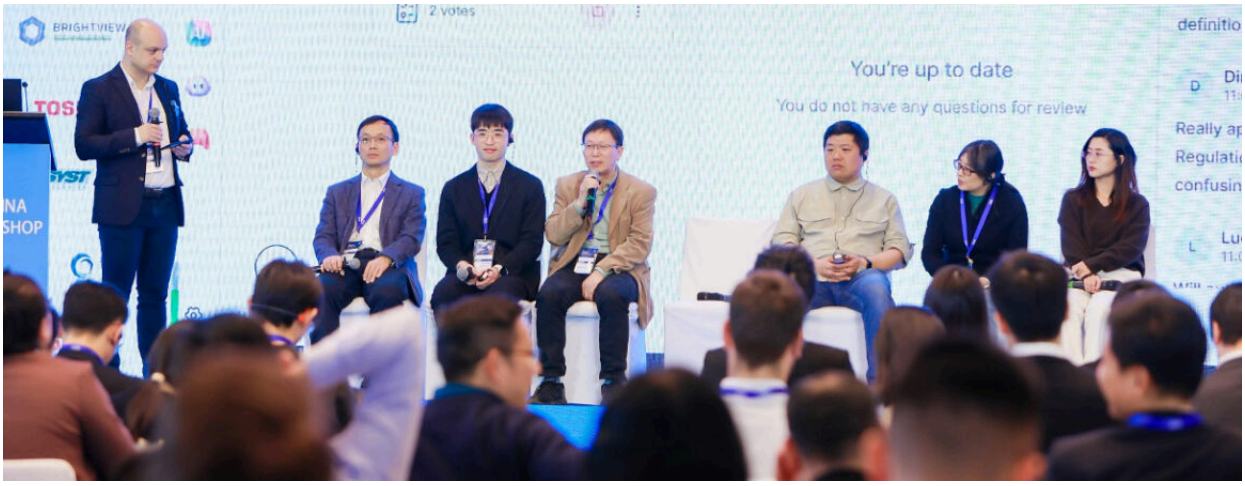
All the executives gave brief and, of course, very positive descriptions of their companies. The Chinese market environment was unanimously seen as extremely challenging but promising for further high-tech solutions. International companies see many opportunities overseas, but also a high political risk due to unpredictable tax strategies.

A particular issue was the different pace of development of Chinese players compared to the rest of the world. Chinese automakers are seen as quick to make decisions and, on the whole, extremely impatient. They are prepared to take risks, such as very short testing times. The Chinese customer accepts that some functions in the car only work properly after several updates, so automakers can act in that way. All of this is the opposite of Europe and other developed markets, where customers expect a flawless car on delivery. Chinese engineers are used to working three shifts, 7 days a week if the project requires it; you rarely find that anywhere else in the world. Also, Chinese automakers' specifications are short, containing only the minimum necessary items. This gives the tier-1s more flexibility.

The provocative question of whether light for safe night driving or light for fun is more important was clearly answered in the direction of safety. Fun functions are important,

especially for young customers, and they bring in a lot of revenue. But safety is the basis of everything.

Sustainability is clearly still a minor factor in the Chinese automotive lighting market. European approaches to recycling and energy reduction haven't yet reached China, but it is expected they will in a few years' time. Today, strong cost pressure dominates the RFQs.



The second panel discussion focused on regulation. GTB Secretary Davide Puglisi presented the latest information from UN Regulations: acceptance of road projection including predicting trajectory, ongoing activity on signaling road projection and autonomous driving indicator lamps. Regulations allowing predicted-trajectory road marking should enter into force in Q4 2025. For signalling road projections, GTB will provide a new proposal for next GRE in April 2024 to get final confirmation. An AD indicator lamp proposal is under construction for both component and installation requirements. Pugliese also mentioned two other topics: the importance of glare, with a new task force at GRE level, and a discussion to clarify the definition of the apparent surface, under the umbrella of SLR.

FAW asked regulators to make more space for innovation, at least in some specific areas, especially about interactive light scenarios—and also faster regulation updates.

Xingyu discussed the latest update in the Chinese GB 5920 standard covering all light signalling device, applicable from July 2025 for new vehicle type (position, turn signal, width marker, daytime running, licence plate, rear fog, and slow-vehicle lamps, as well as light signal projections), July 2027 (stop and reversing lamps) and mandatory for all vehicle types starting July 2028. A small delay has been accepted for stop and reverse lamp application due to new requirements: minimum 15 cm^2 lit area for stop lamps, and an enlarged photometric grid for reversing lamps.

CATARC's He Yuntang described the latest update of GB 4599 (road illumination devices), applicable from July 2025 for new vehicle type (fog and cornering lamps), July 2027 (low and high beam) and mandatory for all vehicle types in July 2028. Similar to LSD, A small delay has been accepted for stop and reverse lamp application due to the same new requirements.

SMVIC's Bu Weili gave some news about the update of installation requirements for vehicles (GB 4785, equivalent to UN R48). The first meeting will be in December 2024, first draft in 2025, and final draft in 2027. Topics to be addressed will include:

- ADB testing (similar to FMVSS 108)
- Clarification about light from parked vehicles and a new definition for a 'non-running' vehicle

- Clarification of the definition of apparent surface, including apparent surface symmetry and the 60-per-cent rule with quadrilateral shapes
- Integration of new AFS mode from GB 4599 into GB 4785
- Certification of the lit grille part of position lamp
- Sequential turn indicator sequence
- Automatic levelling as in UN R48-09
- Autonomous Driving Signaling lamp (need or no need)

The third panel talk gathered designers from Dongfeng, IM Motors, Lynk & Co, and Zeekr.

Compared to what I was used to in previous jobs, I noted the importance of function development, especially for new EV brands. Lighting function development expresses the otherwise hidden 'intelligence' and capabilities of the car. Examples include welcome and farewell sequences, show room modes, and selectable lighting signatures. The more fun you have from your lamp, the more intelligent the car seems to be. That is why ISD, road projection, signalling projection, and videos from lamps are so important in China. Interaction between driver and its vehicle has number one importance.

To shorten the development schedule and integrate innovation and functions into the lamp, a close relationship between design studio, R&D and set maker is needed, that was clearly explained by IM Motors' exterior designer.

TU Darmstadt Lighting Team at VISION '24

LIGHTING NEWS

L - R: Elisabeth Kemmler, Tom Weidemann, Korbinian Kunst, Nikolai Kreß, Markus Peier, Michael Hamm, David Hoffmann

Six students from TU Darmstadt's ALSVV team participated in the VISION Congress in Paris this year, and Dr. Michael Hamm talked with them about their experience.

Michael Hamm: Looking from the perspective of a researcher and scientist, what have been the most interesting fields in the conference and why?

Darmstadt students: From a research perspective, some of the most exciting areas discussed at the conference included innovative approaches to exploiting the capabilities of HD modules to improve driver visibility. In particular, we were interested in the development of adaptive and situational light distribution systems that optimize illumination on the road and its surrounding in different driving conditions. Our colleagues from various universities presented relevant studies in this area, demonstrating the potential for improved safety and driving experience.

Also, the latest developments from tier-1 and -2 suppliers were particularly interesting as they broadened our understanding of emerging technologies and trends. These discussions opened up new paths for future research and collaboration, highlighting the continuing evolution of lighting technologies in the automotive sector.

Michael Hamm: Which topics do you see as innovative challenges?

Darmstadt students: Our primary goal is to develop lighting technologies that improve object detection for drivers. This requires a camera system that delivers high-quality images with a good signal. Especially in low-light conditions, it is difficult to get a high-quality camera image, but it is necessary to be able to control the lighting intelligently. Vice Versa Lighting can be used to achieve better image quality, as both systems influence each other. Good camera quality is particularly important for automated driving at night. This synergy enables safer and more effective automated driving by enabling early object detection, which allows situationally adaptive light distribution controlled by HD modules. Achieving optimal sensor fusion between

camera and lighting systems is fundamental to maximizing the performance and safety of these technologies.

As we explore innovative new light distributions, it becomes increasingly important to establish methods for evaluating the performance of these dynamic systems and to develop regulations that support their safe and effective implementation.

Another important topic in science is the role of vehicle lighting on other road users, such as the challenges involved in implementing projection systems.

Another challenging topic is sustainability. It's a good idea to recycle the material used in headlights and rear lights. However, efficient processes are required to separate and recycle the different types of material properly.

Michael Hamm: Do you have ideas on how to contribute via research?

Darmstadt students: We believe our research can significantly contribute to addressing these challenges by exploring new methodologies and technologies that enhance the effectiveness of HD modules in various driving conditions. Additionally, collaborating with industry partners on practical applications of our findings can further bridge the gap between research and implementation.

Through scientific studies it is possible to demonstrate the benefits of new systems and reduce prejudices against their use. Furthermore, this research addresses fundamental questions in lighting science essential for effective lighting functions, enhancing our understanding of human vision, and providing valuable guidelines for future regulations.

Michael Hamm: VISION 2024 covered lighting and ADAS topics. What is your opinion on that?

Darmstadt students: We found the coverage of lighting and ADAS topics to be particularly valuable. The conference opened the opportunity to engage with experts in the ADAS realm and fostered discussions on how effective lighting can support other ADAS systems. It was productive to discuss how high-quality lighting, as rated by HSPR, could be integrated into rating systems such as EURO NCAP. We also appreciate that glare is discussed anew, which points out the importance of ADAS. Especially interesting is the discussion about the headlamp not only supporting the human driver, but also the camera for ADAS and for new generations of autonomous vehicles.

Michael Hamm: What are your recommendations for ISAL 2025, based on your experience at VISION this year?

Darmstadt students: We aim to find a good balance between industry and research talks to ensure a diverse range of perspectives. It would be beneficial to organize high-quality invited talks that appeal to both industry professionals and researchers.

The discussion topics primarily centred on current regulations and previously approved measures. Exploring and investigating features that are currently not permitted could open up opportunities for even more exciting and forward-looking discussions, potentially leading to conversations about adjustments to the regulations.

The Automotive Lighting Team (TU Darmstadt - ALSVV) and their research:

Elisabeth Kemmler: My research focuses on the investigation of discomfort glare caused by LED light in road traffic. Therefore, I am conducting laboratory and field studies in which psychophysical methods are applied. The aim is to derive a new model that predicts the perceived discomfort glare of different road users.

Tom Weidemann: Tom will consolidate all research and develop adaptive situational headlights using microLED modules, implementing and testing them in a real car under real-life conditions.

Korbinian Kunst: I am currently conducting perception psychological studies on optimal object visibility in virtual and real environments. These studies will be the fundamental research defining what good visibility is. To use this information during driving, I will design a computer vision algorithm which estimates visibility for the driver. With this, adaptive situational light functions by HD modules can be effectively designed.

Nikolai Kreß: I am working on front lighting topics, specifically on evaluating and developing new and improved light intensity distributions. This includes a wide range of subjects, and my current emphasis is on human object detection, which I presented in my VISION talk while additionally covering HSPR. My work is guided by the overarching idea that in the future, light distributions will become increasingly dynamic and adapt to situational requirements, especially in complex environments like urban traffic.

Markus Peier: My research topics are the adaptive control of signalling devices such as brake lights, taillights, turn indicators, and daytime running lights, as well as the communication of autonomous vehicles with non-autonomous road users. In studies with test subjects, we determine the optimum luminous intensities for the signalling lights so that optimum visibility and minimum energy consumption are ensured without disturbing other road users.

David Hoffmann: My research focuses on the requirements and interactions between a vehicle's front-facing camera and its headlamps in nighttime traffic environments. The nighttime traffic environment is particularly challenging due to factors such as glare, motion blur, and low signal levels. For this purpose, we characterize camera systems in our laboratory as well as in the real world. Using this data, I perform experiments to assess the influence of harsh lighting conditions on the performance of convolutional neural networks.

Julian Lerch: My research focuses on the development and advancement of adaptively controlled headlight systems (future ADB). The emphasis is on simulating computer vision solutions that enable optimization for AI-based control systems, as well as the automated calibration, levelling, and aiming of pixel headlights.

Lights on the Avatr 07

LIGHTING NEWS

The new Avatr 07 has advanced technology and artful aesthetics in the front and rear lighting system. Designed by Chongqing Varroc, the lighting system contains innovative technologies for lighting performance and exterior design. The front and rear lights use a double-layer thick-walled structure, which effectively improves the uniformity of the light. The system also supports CAN communication and OTA remote upgrade functions.

The headlights exhibit the Avatr family's saucer-wing front face design, and the all-LED lamp cluster gives the vehicle a unique visual signature. The signal light section includes 109 white LEDs and 31 yellow ones. The headlamps have slim 20 × 60 mm lenses.

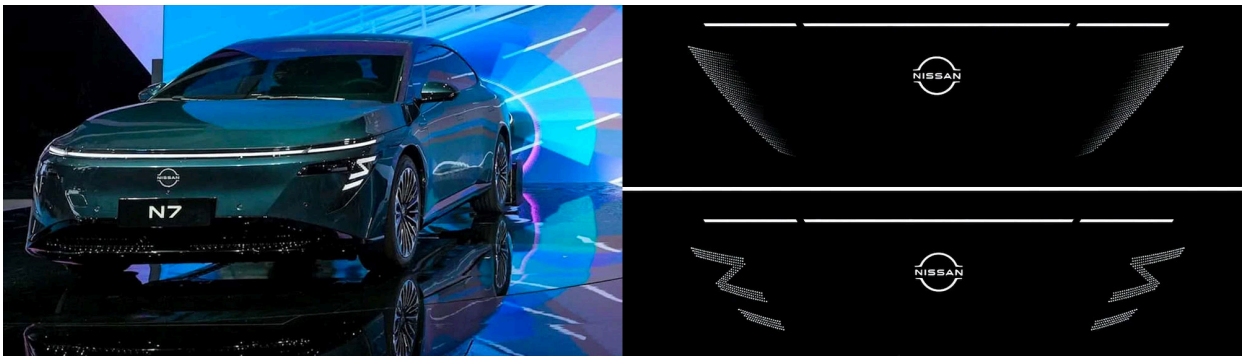
The slim tail lights form a unique visual effect, and give the rear a wider look. The turn signals are sequential.

Through the thoughtfully-designed front and rear lighting system, Avatr 07 achieves high lighting performance for safety and comfort while driving, and bejewels the vehicle through unique lighting shapes.

Dongfeng Nissan N7

LIGHTING NEWS

At the 2024 Guangzhou Auto Show, Dongfeng Nissan showed their new N7 electric sedan, which has 710 LEDs on the front end—including an ISD (interactive social/signalling display) on the front with a variety of welcome and front position lamp configurations.

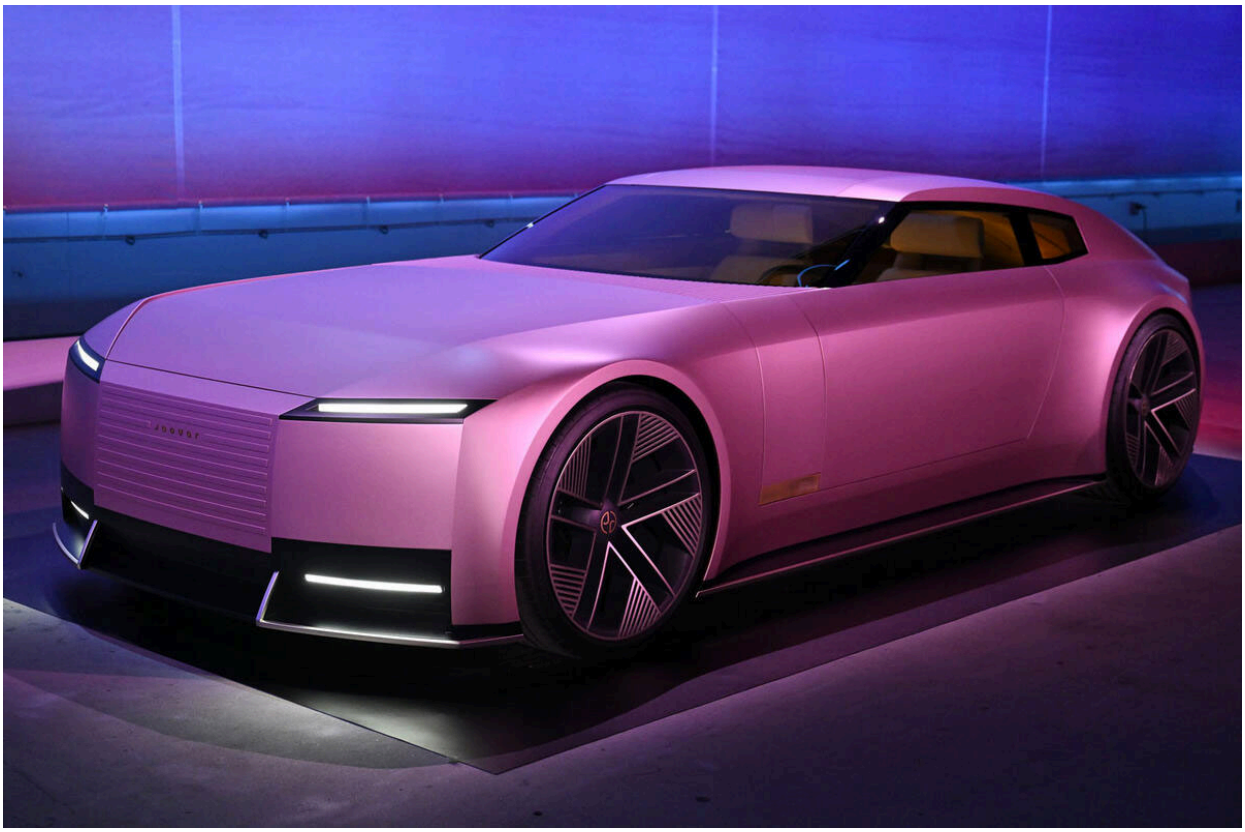


Low and high beam are produced by a unique slim biLED module, with height between 15 and 25 mm.

Another major lighting feature is the 882-pixel OLED taillights from Yeolight. On each side of the car there are five OLEDs, each pixel of which can independently be controlled. This can produce different appearances to meet driver whims.

Jaguar's Type 00 Concept: My Interpretation

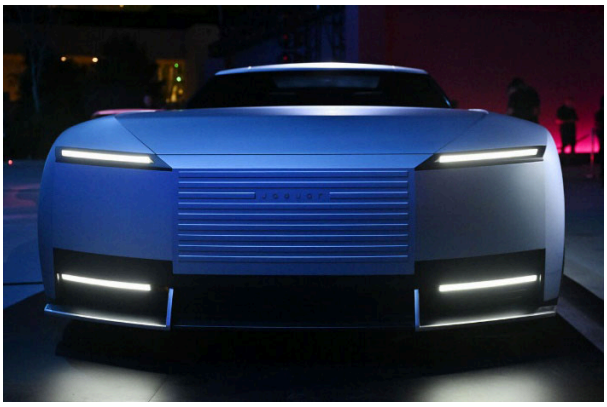
LIGHTING NEWS

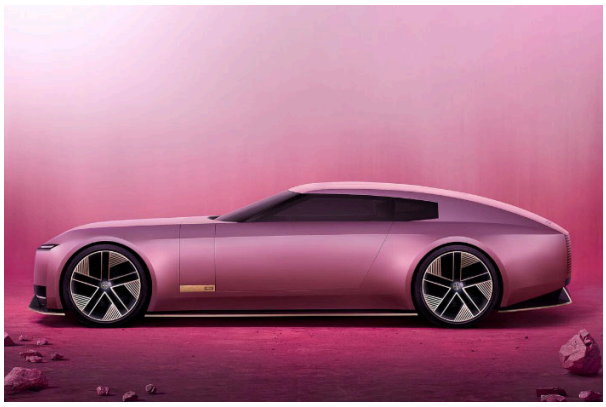


By Paul-Henri Matha

I have read so many articles about Jaguar's new brand strategy since November! Me, I really like it: a simple design; less is more.

When I was working at automakers, it was part of my job to analyse concept cars for commercialization potential. Which technology should we develop? is this design legal or not? So, I tried to think about this Jaguar concept in those terms.



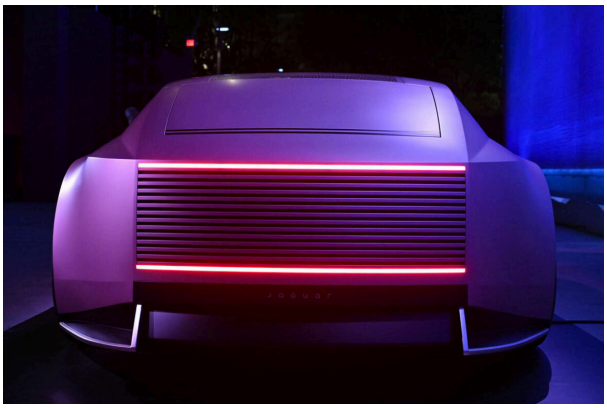


I think the front is feasible. The upper lamp between hood and bumper seems to be the area for low beam, high beam, and ADB. Really thin modules, super slim design. Can we fit here an HD module with minimum height 35mm? I do not think so, and I do not really see any other places for such hardware.

MLA technology, including ADB, would fit perfectly—and low beam homogeneity from a pedestrian next to the car would be perfect.

Pedestrian head impact seems to be ok (head will hit the hood), overhang seems to be ok (the back of the lamp is not in the wheel).

The DRL, turn indicator, and position lamp seems to be very low. will they meet the 350-mm minimum height for position and turn signal lights in UN Regulation 48, or the 381 mm minimum height in MVSS 108? Speaking of which, front side marker lamps and reflectors are missing.



About the rear, I really like this design with two slim lines. But is it possible to do such a design? In UN Regs, it cannot be the position lamp (only one line can be, due to the 75mm rule and the 60% rule). But in USA it may be ok (needs 41 or 56 cm between the two lit areas, depending on whether this is a 2- or 3-lighted-section design). It may be also an auxiliary lamp

If these lamps are on a movable component like a trunk lid, it is not possible. You'd need another lamp in the bumper, or behind the lid (visible when the trunk is open).

Now, do these meet the width requirements for lamps? UN Regulation 48 requires that the outermost extent of the lit area be no more than 40 cm inboard of the extreme outer edge of the vehicle. The North American regulations require that the lamps be "as far apart as practicable" (where "practicability" is determined by the automaker, not by any criterion in the regulations). And in North America, stop and rear turn signal lights must have at least 50 cm^2 lit area—maybe not so easy with this design.

So, will this design remain the same in mass production? Can it? We will see soon, I hope!

MicroLED Technology on the Nio ET9

LIGHTING NEWS

Nio says their ET9—the first in China with steer-by-wire technology—also features the industry's first microLED high-pixel-count headlamps. Combined with the car's 'Aqulia 2.0' sensing system, they allow for precise lighting that is wide, bright, accurate, and far-reaching. An online video walks through the car's design features.

DS № 8 Launched

LIGHTING NEWS

DS has just revealed the № 8, the brand's new top model (replacing the DS 9). The new car presents a spectacular light signature. At the front, there's a 'Luminascreen' illuminated grilleboard, lit up with vertical lines and DS' first illuminated logo. Flex-N-Gate are producing the grilleboard, as well as the car's tailgate. This luminous signature was made possible by technology developed for FnG's Flex Vision concept.

The headlamps, comprising three modules, are outlined by eight LEDs in a Clous-de-Paris pattern, echoing the interior trim’s embossed finish.

The DS Lightblade completes this signature. This layout, which first appeared on the DS E-Tense Performance technology study, visually emphasizes the car's width. The lightblade is vertical, in line with all DS models. Integrated into the side curves of the bumper, it contributes to the car's aerodynamic performance by minimizing airflow disruption up to the front wheels.

The № 8 is the first DS model to present a vertical light signature at the rear. Directly inspired by the DS Aero Sport Lounge, it echoes the vertical signature at the front to make this car instantly recognisable at night, at any sight distance. 3D scale patterns fill the interior of the tapered horizontal rear lights.

DS Automobiles Design Director Thierry Metroz says the car "combines the best of both worlds: charisma with a strong front and rear identity, and elegance visible in the purity of its fastback profile, emphasized by a flowing and continuous roofline to the tailgate. The designers envisaged the evolution of SUV coupés, illustrated by an efficient, elegant shape with a spectacular and high-tech light signature".

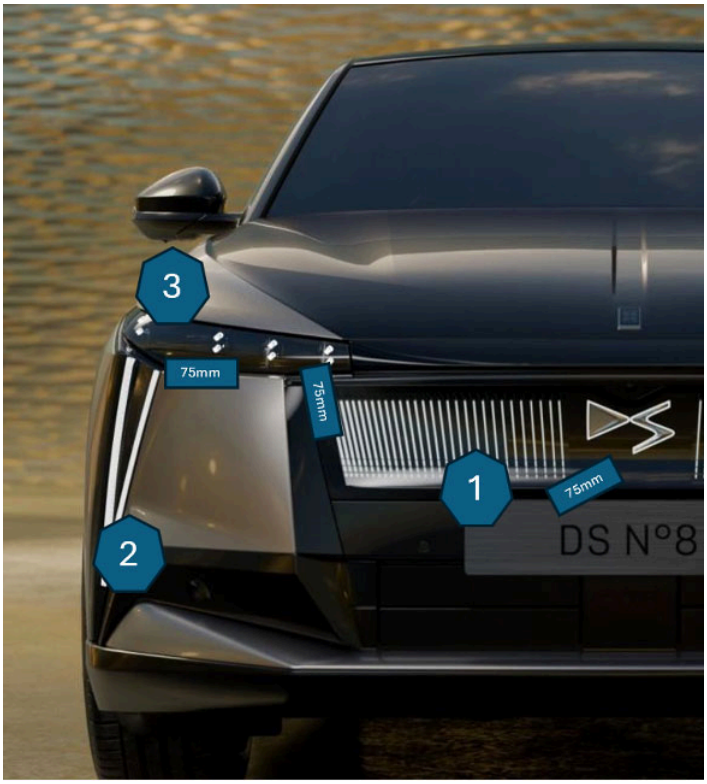
Aerodynamic performance is optimized by the front DS Lightblade, which slices through the air like a boat's prow for a 2 dm^2 savings (+ 8 km WLTP and +10 km on the motorway). The rear DS Lightblade optimized airflow detachment like an airplane wing for a 1 dm^2 savings (+ 4 km WLTP and +5 km on the motorway).

As for lighting performance, the № 8 has DS Pixelvision, which incorporates adaptive lights, swivelling main beam, cornering lights, and ADB to provide the best driver vision.

The carhas a high beam booster, which provides more intense illumination in the centre of the high beam. This mode is automatically activated when speed on a straight road reaches 80 km/h. In these conditions, lighting range is extended to 520 m. Between 40 and 70 km/h, depending on steering wheel angle, an additional light beam illuminates the side of the road.

The low and high beams adapt to illuminate the inside of a road bend by following the car's trajectory regardless of its speed. DS Pixelvision operates in several modes, triggered automatically, to adjust the light beam depending on driving conditions: city mode, country mode, motorway mode, rain and fog mode.

DVN comment : We can also notice how lighting regulation interferes with exterior designer. DS № 8 fully respects UNECE R48 rules for front position lamps (maximum 3 lamp units per side and 75mm between each lit area).



Extract of UNECE R48 for this sort of design including "interdependent lamps" :

2.4.12. "Interdependent lamp system" means an assembly of two or three interdependent lamps providing the same function.

5.7.2.1.(b) The minimum distance between the facing edges of two adjacent/tangential distinct parts of the apparent surface in the direction of the reference axis shall not exceed 75 mm when measured perpendicularly to the reference axis.

Xiaomi YU7 Launched

LIGHTING NEWS

Xiaomi revealed last week their new YU7 SUV. The lighting concept and design are similar to their SU7; headlamps are from Valeo, and rear lamps from Hasco Vision

Driver Assistance News

Innoviz Lidar for Mobileye AV Platform

DRIVER ASSISTANCE NEWS

Mobileye's Drive AV platform will use Innoviz lidar. The supply agreement is built upon mutual work between the two companies over the past few months, with start of production (SOP) slated for 2026.

Drive is a comprehensive driverless system that enables mobility service providers and vehicle manufacturers to make robotaxis, ride-pooling, public transport, and goods delivery fully autonomous, with testing underway in Europe, North America, and Asia. Innoviz lidar, integrated into the platform's sensor suite, will support vehicles built with the Mobileye Drive platform to provide safe and smooth driving performance.

Mobileye CEO and President Amnon Shashua says, "The integration of our imaging radars and high-resolution cameras in combination with the Innoviz lidars will play a key role in delivering Mobileye Drive as a powerful autonomous driving system that will ultimately create safer, more efficient, and reliable transportation."

And Innoviz CEO and cofounder Omer Keilaf says, "Our collaboration on next-generation autonomous vehicle solutions that are both safer and more affordable signifies our shared commitment to accelerate AV adoption. The agreement further attests to Innoviz's capability to meet the stringent requirements of OEMs worldwide and support L^4 driving solutions that will help drive a new era of mobility."

Innoviz's Two product platform was designed for automakers, and can be customized to suit a wide array of vehicular design and functionality requirements. The platform was specifically engineered for Mobileye Drive to provide the L^4 autonomous platform with a complete set of lidars. The combination of lidars and Mobileye's imaging radars as well as high-resolution cameras is crucial to enabling comprehensive sensing capabilities for navigating complex urban environments and enhancing the overall safety and reliability of autonomous driving systems.

GM Pull Plug on Robotaxis, Cruise

DRIVER ASSISTANCE NEWS

General Motors will no longer fund the development of a commercial robotaxi business, and instead will absorb their self-driving car subsidiary Cruise and combine it with the automaker's own efforts to develop driver assistance features—and eventually fully autonomous personal vehicles. The automaker's aim is to bring AV technology into millions of GM vehicles, and now they think that's best done by "incremental delivery of autonomous capabilities".

The pivot is a remarkable step for the automaker, which acquired the self-driving startup Cruise in March 2016 for a billion dollars. Since then, GM have poured more than $10bn into the company in a bid to commercialize autonomous vehicle technology via a robotaxi business.

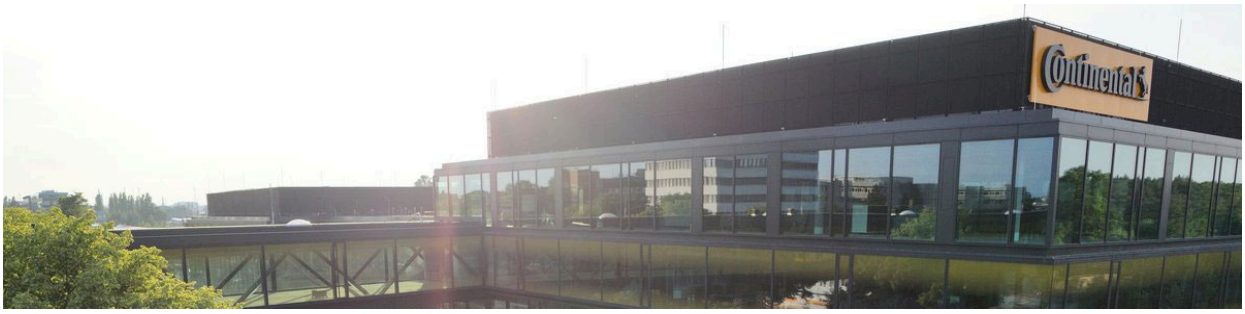
GM cited "considerable time and resources" needed to scale the business, and an "increasingly competitive robotaxi market" as reasons for the change; they expect the restructuring to lower spending by over $1bn annually after the proposed plan's completion, slated for the first half of 2025.

GM will carry on improving their top-rated Super Cruise hands-free driver assistance system. Technology developed by GM and Cruise will be used to develop Super Cruise into a hands-off, eyes-off, L^3 system.

General News

Continental Executive Board Decides to Spin Off Automotive

GENERAL NEWS



- **Spin-off of Automotive group sector planned by the end of 2025, with preparations to be completed by the end of the third quarter of 2025**
- **Continental CEO Nikolai Setzer: "We remain fully focused on spinning off Automotive and achieving greater independence for our profitable Tires and ContiTech group sectors"**
- **Parts of the group-level services and functions will be gradually transferred to the group sectors. The goal is to create a lean, focused holding structure by the end of 2025**

The Continental Executive Board has decided last week to spin off the Automotive group sector following its detailed evaluation announced in early August. Subject to the approval of the Supervisory Board in March 2025, the spin-off will be presented for resolution to the Annual Shareholders' Meeting of Continental AG on April 25, 2025. The spin-off is expected to take place by the end of 2025. The preparations for it are to be completed by the end of the third quarter of 2025.

Philipp von Hirschheydt, Continental Executive Board member and head of the Automotive group sector: "Our continuous performance improvements form the crucial foundation for making Automotive fit for the future and ready for the capital market. We are rigorously implementing all the measures necessary to achieve this."

While preparing for the Automotive spin-off, Continental continues to strengthen the independence of its Tires and ContiTech group sectors. "We have set up our group sectors as strong, self-sufficient units with clear structures. The group sectors are leading players in their product segments and markets. They have matured and are ready for greater independence," said Nikolai Setzer, CEO of Continental.

"We remain fully focused on spinning off Automotive and achieving greater independence for our profitable Tires and ContiTech group sectors. And central to this is the gradual transfer of parts of the group-level services and functions to the group sectors. The goal is to create a lean, focused holding structure by the end of 2025. Corporate responsibility will increasingly lie where it delivers the greatest value – in the group sectors, close to markets and customers. Our new structure will let us respond more flexibly to customer and market developments, enabling us to maximize our opportunities," explained Setzer.

To go further ...

Awards @ Automobile Club de France

To go further ...

On 12 December, in Paris Place de la Concorde, at Automobile club de France, Valeo got a Best Automotive Equipment award from Equip'Auto for their 20-kilopixel HD lighting technology.

Congratulation to Christophe Le Ligné and Fernando Dinis (photo).

Here's a great explanation from Valeo CEO Christophe Perillat (in French):