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Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #840

Editorial

Cast Your Votes For DVN Awards!

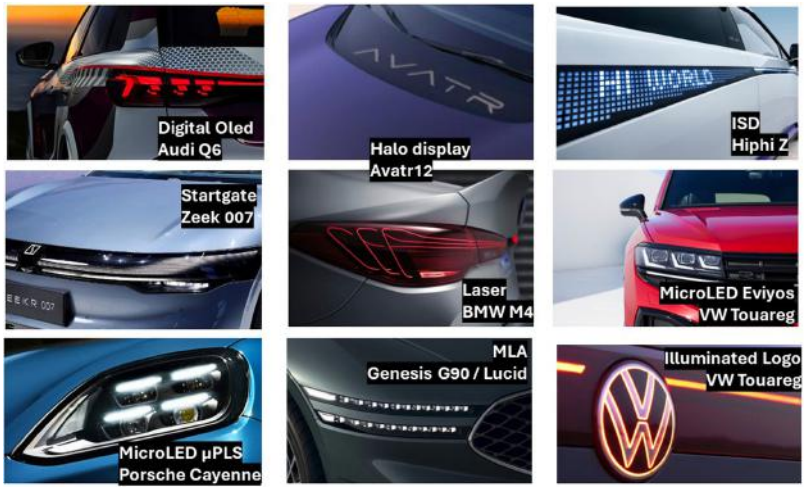
We are busily working on our upcoming DVN Event in Munich, and one of the present work items is the awards. Up to now, the DVN team has selected the winners, but this time we want to innovate a bit. During our events, for a year now, we've used the Slido app for online surveys and real-time Q&A, and we've had really good feedback from attendees about that method.

So rather than declaring awards top-down, we're going to try a more participatory, democratic approach: we're asking you, the DVN community, to cast your votes for the 2023 DVN Awards. There are five categories:

Best front lighting design, based on innovative design criteria. The nine finalists are the BMW i5; Ford Mustang; IM L7; Volvo EX90; Changan CD701; Kia EV9; Zeekr 009; Li L9, and Cadillac Lyriq.

Best rear lighting design, based on innovative design criteria. Finalists are the Avatr12; Cupra Tavascan; Polestar 3; Lucid Gravity; IM L7; Toyota Prius; VW ID.7; Xpeng G5, and Mini Countryman.

Best new technology, based on concept, technique, design, novelty, courage to do something new, and sustainability. Finalists: the digital OLED taillights on the coming Audi Q6 e-tron; illuminated logo on VW; display on the Avatr 12, ISD on HiPhi cars; the Zeekr 007 stargate; the BMW M4 laser; HD microLED lamp on VW Touareg; HD microLED lamp on Porsche Cayenne; and the MLA on the Genesis G90 and Lucid.



Best Lecture in a 2023 DVN Workshop, based on content (innovation, cost, sustainability) and quality of the presentation (slides, charisma of speaker). There are nine finalists; three each from automakers, tier-1s, and tier-2s:

- Reinhard Völkel of Suss MicroOptics: *Unleashing the Power of Microoptics in Automotive Lighting* (San Francisco)
- Gerald Böhm of ZKW: Light Requirements: *From Human Driver until Sensor Support* (Paris, about creating illumination for machine vision)
- Robert Haehle & Benjamin Hummel of Porsche: *HD-Matrix Headlamps* (Paris)
- Paul-Henri Matha & T. Jon Mayer of Volvo Cars: *From Lightsabers to Thor's Hammer* (Paris)
- Hossein Nafari of Mind: *Lighting Evolution From Digital to Meta* (Paris)
- Lars Dabringhausen of Lumileds: *Benefits of Direct Imaging Solutions for NAFTA ADB LED Matrix Solutions* (San Francisco)
- Stefan Berlitz of Audi: *Software Defined Lighting to Enhance Safety* (Shanghai)
- Lan Lai of Huawei: *Exploration of Intelligent Headlight Scenarios for Upgrading Driving Experience* (Shanghai)
- Zou Jian of Chongqing Varroc: *The Market Trends and Challenges for New Fully Integrated Headlamps* (Shanghai)

If you do not remember and want to review the presentations, hit the VOD link or take a look at the DVN Workshop reports:
San Francisco: VODs · Workshop Report
Paris: VODs · Workshop Report
Shanghai: VODs · Workshop Report

And finally, the **Best Munich Lecture** award will be voted on live at the end of the event.

To vote, please use **this link**. Voting is open now and will close on 14 February, so that we can analyse the results and prepare the awards.

We hope you will like this initiative and participate in the poll!

See you soon,

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

In Depth Lighting Technology

Xingyu's Innovative Signal Lighting Techniques

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

Changzhou Xingyu Automotive Lighting Systems—Xingyu, for short—was established in 1993. They make exterior and interior lighting components; around 13 million headlamps and 24 million rear lamps per year. Production is fully integrated, with 95 per cent in-house production. They're headquartered in Changzhou, Jiangsu, China, and have over 8,000 employees. Their customer portfolio includes BMW, Mercedes, Audi, VW, Nio, Toyota, Honda, Nissan, Mazda, Xpeng, Chery, Geely, FAW, Li auto, and more.

Xingyu's revenue grew from USD $584m in 2017 to $1,129m in 2022, which is more than double over five years' time. The company pride themselves on their family culture, established by founder and Chairwoman Sally Zhou.

In addition to their five plants in China, Xingyu opened their first plant abroad in 2022, in Serbia. With 200 employees, it's intended to supply European automakers including BMW, Mercedes, VW, Audi, and Škoda; the new factory specialises in rear lamps and small lighting components.

During the 2023 Shanghai DVN Workshop, two innovations really grabbed my attention, and I talked them over with the Xingyu team: their miniLED display, and their signalling road projections.

They gave an interesting presentation about rear lamps with miniLED technology. Xingyu have already produced a lot of lamps incorporating interactive signalling displays, but the miniLED aspect is new.

Chery Sterra ES front ISD (interactive signal display)

Aito M9 front and rear ISD

So, their presentation focused on the miniLED technology they're developing.

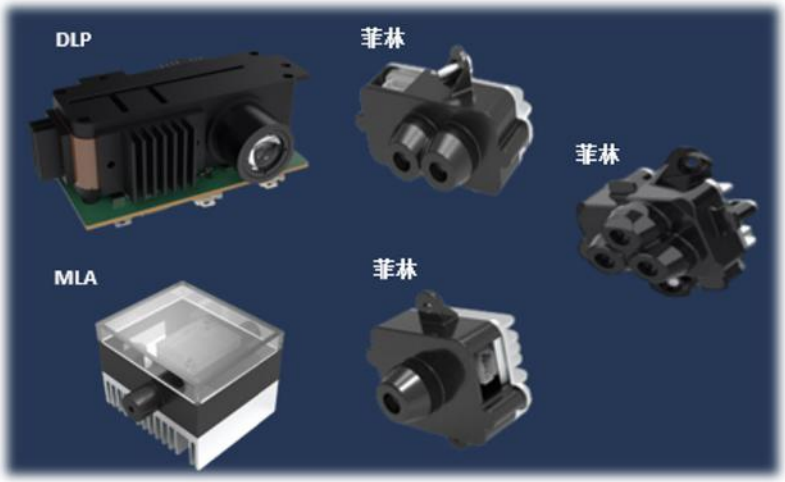
So far, possible colours on the display are red and white. Luminance is around 2,000 $^{cd}/_{m^2}$, with a pitch of 0.93.

The 84,240-pixel miniLED module can put up a lot of different messages such as welcome/farewell, temporary parking, or whatever the vehicle user might want to say.

Electrical communication with the vehicle ECU is done by CAN, and the controller of the light source board inside the lamp is done not with FPGA, but with SPI for its lower cost; its relatively low bandwidth is adequate. Xingyu makes the complete ECU inside the lamp to translate CAN to SPI.

As to the sample at Shanghai workshop, the display can meet the relatively low intensity requirements of the position light function. They say in the near future, when semiconductor companies will solve thermal dissipation issues in the harsh end-of-vehicle environment and increase the available intensity, it will then be possible to do other signalling function such as stop, turn indicator, and daytime running light.

The second Xingyu technology that caught my attention was signalling road projection. Xingyu presented different technologies they have developed; some are already on the road. According to their presentation, there is a real need in China for projection, and they're responding with a range of options including a super high performance, high-end setup with DMD; a medium-cost arrangement with MLA, and a low-cost option with traditional film-based lamp.



According to Xingyu, products such as ground-projecting headlights, digital grilleboard lighting, dynamic projection lights, and display taillights with strong interactivity and good user experience will become of great interest in the future—certainly in China, and probably in other markets (where and when allowed by regulations).

Another point of their presentation: the market is placing more importance on energy savings and smaller carbon footprints, so products with higher efficiency and energy-saving features will eventually become the norm. Accordingly, industry is putting effort into iterative upgrades to micro- and miniLED technology.

Lighting News

Antolin Launch Pupil-Tweaking Safety Light

LIGHTING NEWS

Antolin have developed what they call the NightSight Assist, a light said to enhance vision for safer driving in the dark. Designed in collaboration with the Institute of Applied Ophthalmology (IOBA) and the University of Valladolid (UVa) and co-financed by the Instituto para la Competitividad Empresarial (ICE), the system is intended to optimise the driver's pupil diameter to reduce headlight glare, improve shape recognition in low visibility, and enhance signal interpretation.

The system addresses challenges associated with driving after dark, such as glare from headlights and detection of hard-to-see items in the roadway area, such as animals (which **usually** aren't retroreflective). The collaboration involved building a simulator to clinically measure the impact of light on users during night driving.

Antolin, the IOBA, and the UVa built the simulator to clinically measure the impact of light on the user and investigate how to mitigate visual impairment during night driving. Positive results obtained in the tests enabled the majority of monitored users to improve their visual acuity and comfort while driving at night.

The system can be integrated into the sunvisor, thus giving it new functionality without making new problems for the placement or packaging of other interior equipment. The device settings are configurable, so it can be adapted to personal conditions, such as age and ocular pathologies.

Kia EV9 Has Animated Ice Cubes of Light

LIGHTING NEWS

Extract from Fast Company

The electric Kia EV9's headlamps contain the Hyundai-Kia-Genesis group's brandmark ice cubes of light.

But on some trim levels, in place of the grille, there are more light cubes: a matrix of customizable lights animates with different patterns when you approach the vehicle.

Kia calls these glowing animations 'welcome lights', and they were born from an opportunity that came with building an EV, says Kurt Kahl, the chief designer at Kia Design Center America. “It’s an electric vehicle—we don’t need a traditional grille and all that cooling. We had this bit of a blank slate to come up with something new for EV9 for the face, and to have something very memorable and recognizable.”

The EV9’s two highest trim levels have the animated welcome lights. Approach an EV9 GT, and you’ll see a pattern Kia calls “Focused” play out on part of the front grille area; that one pattern comes with the car, and then owners can pay $250 for five more pattern options. One of these, called “Solid,” begins with the LEDs forming two arrows pointing toward one another, followed by a line of light that moves from the top to the bottom, and concluding with a line of three vertical columns, each smaller than the next. The five different optional patterns have names like “Active,” “Technical,” and “Elegant”; you can see some of them in an online video.

Kahl says the animation is “almost like your vehicle is acknowledging you—it’s just this kind of interesting interaction you can have with the vehicle as you’re approaching”.

The display is a clever design that involves 84 LEDs blinking behind a painted acrylic casing laser etched with a static pattern of tiny holes not noticeable to the eye. Kahl describes the etched pattern as very small windows where the LEDs can shine through and create the animated patterns.

Robby Degraff, who focuses on product and consumer insights analysis at auto market research and analysis firm AutoPacific, thinks all this is fun. But he advises caution about cost.

The EV9 models that support the welcome lights begin at around USD $70,000, which can make a frivolous add-on hard to stomach. Degraff says, "EV shoppers in general are very, very, very, very, very price-conscious. Kia has a great idea with these adjustable, customizable lightings, but I think they really need to be careful about how much they charge for it…$250 is a lot of money just to change some lighting". That feeling is also illuminated on Reddit, where one poster called the price "insane" and others added that it should just come free to people who buy a GT-Line vehicle. Kia say the one-time purchase stays with the vehicle for its life, remaining activated even if you sell it.

"I love the idea of it," Degraff adds. "I think it's super cool, it's very future-focused, it's unique, but I just think that it might be a tough sell for people."

Porsche's Electric '24 Macan

LIGHTING NEWS



Porsche are launching their second EV: the new Macan, capable of delivering up to 470 kW (630 hp) on any terrain and a high level of day-to-day usability, including fast charging capacity of up to 270 kW.

It's on a platform co-developed with Audi. Called Premium Platform Electric (PPE), this platform uses an 800-volt electrical architecture and will make the basis for the upcoming Audi A6 and Q6 EVs, and likely also an electric Porsche Cayenne.

The front lamps are divided into two parts: the prominent upper light unit with Porsche's brandmark four-point DRL is embedded in the fenders and emphasise the width of the car. The main headlight module with optional matrix LED technology is lower in the front fascia. At the rear, the Porsche logo now sits in the center of the sculpted 3D full-width light strip.

General News

Chery's Exeed Exlantix/Sterra Starts Production

GENERAL NEWS

Chery’s premium brand, Exeed, announced the start of production for their Exlantix ET (Sterra ET in the Chinese domestic market) on 19 January.

The car is on Chery’s E0X high-end electric platform, like the Exlantix ES launched late last year. The same platform also underpins the Chery-Huawei Luxeed S7. The ET features a closed front grille design, LED DRLs, and an interactive headlight assembly capable of producing whatever symbols, signs, shapes, and messages might come to the user's whim in the relatively unregulated Chinese market.

Standard features include a panoramic sunroof; options include interactive signal display lights, a front grille (the more things change…!), and grey metallic trim for the optional grille.

Stellantis' New Large EV Platform: 800-km Range

GENERAL NEWS

Stellantis unveiled STLA Large, their new, versatile, BEV-native platform meant for a wide range of upcoming D- and E-segment vehicles. The platform enables capabilities including embedded energy, charging efficiency, high-performance vehicle dynamics, and off-road driving. It will first be used in the North American market for Dodge and Jeep vehicles, followed by other brands including Alfa Romeo, Chrysler, and Maserati. There will be eight vehicles launched from 2024-2026.

Stellantis say the platform is engineered with 'unparalleled' flexibility to enable vehicle diversity, quality, and customer satisfaction from a base set of componentry, along with robust and cost-efficient manufacturing processes that can be duplicated in multiple assembly plants. Upcoming products will cover a full spectrum of vehicle types—cars, crossovers, and SUVs. Brand-specific product announcements will begin this year.

CEO Carlos Tavares says, "The flexibility and agility of this platform is its hallmark and will be a driving force for our success in the shift to electrification in North America". That flexibility includes the unibody platform’s propulsion systems, with an option for 400- or 800-volt electric architectures. Three-in-one electric drive modules (motor, power inverter, and gear reduction) can be configured for front-, rear-, or all-wheel-drive. The power inverter uses silicon carbide semiconductor technology to minimize power losses. Propulsion system performance is said to be upgradeable during the vehicle’s lifespan via over-the-air software updates.

STLA Large also supports hybrid and combustion-engine propulsion systems without compromising key vehicle capabilities. The flexibility provides a bridge for customers around the world during the transition to electric propulsion and the development of a robust and widely-available charging network. Design flexibility includes transverse and longitudinal engine mounting configurations to allow for front-, rear-, or all-wheel-drive powertrains.