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Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #820

Editorial

Lighting: From A System Of Components To Functions

Wolfgang and I decided to go to IAA in Munich last week. IAA has always been one of the most important automotive events in Europe and in the world, always with special focus on light technology. For the first time after Covid, and for the second time in Munich, I think it was a really nice success.

IAA combines three events in one:

- A public event for families and car enthusiasts in the city centre, where you can see the offerings from most auto brands under beautiful end-of-summer weather
- A professional event at the Messe with a lot of concept cars and new-vehicle reveals, and a very important business-to-business event with most of the biggest tier-1 suppliers participating
- Demonstration/test vehicles, including for ADAS.

About lighting, the focus was on technology. IAA does not talk too much about sustainability, reuse, CO_2 reduction, usage of recycled material, or otherwise like that. The emphasis was on microLEDs, displays, software-defined vehicles, and sensor integration.

Light is everywhere. At the same time, discrete components like headlamps are disappearing, along with front grilles (which an EV doesn't need). Instead, light *functions* are appearing—they're integrated much more closely into the whole car, rather than as removable separate parts. So we move from system component to function. This is the trend! Tier-1s have to move this way to succeed, and they're doing it. Take a look at the examples we present in this week's DVNewsletter, and maybe take an extra-long look at the BMW Neue Klasse concept for an especially fabulous example.

Sincerely yours,

MATHA Paul-Henri
DVN COO and General Lighting Editor

In Depth Lighting Technology

EVs, AVs, and V2V at IAA Mobility '23

Main takeaways

Full-width front and rear lamps are everywhere, and 360° body lights. Grilles are disappearing (an EV doesn't have a radiator, hence no need for a radiator grille!); they're being replaced by fully-lit grilleboards, soon to upgrade to high-resolution displays.

Here's a sample selection of some of what caught our attention at the show:

Audi Q6 E-tron

Ultra-slim headlamps offering LED adaptive matrix technology. Rear lights feature OLED technology. Navigation system detects traffic jam or accident and changes the rear display to show a warning triangle to alert following drivers.

Avatar 12

This Chinese car—its makers want you to call it the "one two", not "twelve"—has ultra-slim lighting at the front with a big DRL line ensconcing the main headlamps, and squinty taillight stripes.

BMW i5

There's another new iteration of BMW's twin-headlamp signature and kidney-shaped grilleboard.
The headlamps themselves show the traditional four-lamp appearance in a sort of minimalist form. Two nearly vertical LED elements function as daytime running lights and turn signals.

Horizontal-strake rear lights are the latest rendition of BMW's traditional L-shaped taillight signature. Four narrow LED strips handle the lighting functions and are divided by an I-shaped chrome strip.

BMW Vision Neue Klasse concept

The Vision Neue Klasse concept presented a fabulous look at what kinds of lighting future BMWs might come with. There's a reimagined version of brand-signature design elements, like the kidney-shaped grilleboard and double headlamps, and what's most salient about them is how integral they are to the car as a whole. They don't look at all like car parts installed on a car. A lighting effect with precise three-dimensional animation initiates intuitive interaction between the human and their vehicle as soon as they approach the car. Integration similarly defines the design of the rear lights, with 3D-printed light elements giving an infinity-tunnel effect forward into the depths of the car.

Cupra

The technology of the rear lights of the Cupra Tavascan was pre-shown by Carlos Elvira at the Paris DVN Workshop this past January. Now the car is unveiled and the lamps are fully visible, with their impressive animation. It's a great effect without expensive LED matrix display or OLED solutions. Even the logo is part of the animation sequence. Great job providing wow-effect lighting without the wow-effect price!

Hiphi

Chinese EV startup Hiphi entered the European market this year with their X large SUV and Z GT sedan (shown here). The Z was on display at the show grounds, while the X and the Y, a smaller midsize sedan with gullwing rear doors, was on display at a new retail space called the HiPhi Hub, at Munich airport.

Lamborghini Lanzador concept

Slim headlamps take inspiration from the Countach LPI 800-4, while the hexagonal taillights present a high-character light signature with three LED elements on each side. The typical stylistic elements such as the Y and the hexagon, which have characterised Lamborghini's design for years, can be found throughout the car including in the rear lights and in the interior.

Leap Motors

Side-to-side lamp

Mercedes CLA concept

The CLA concept has sculptural definition thanks to slim light lines defining the front edge of the hood, eye shapes in each headlamp, and a star-studded grilleboard with a lit Mercedes logo in the centre. Floating front light elements are integrated to the car—here again, without looking like discrete headlamps installed on the car—and they present a striking extruded pattern with light in the logo. Light bands that wrap around the front and rear are reflective chrome when not illuminated.

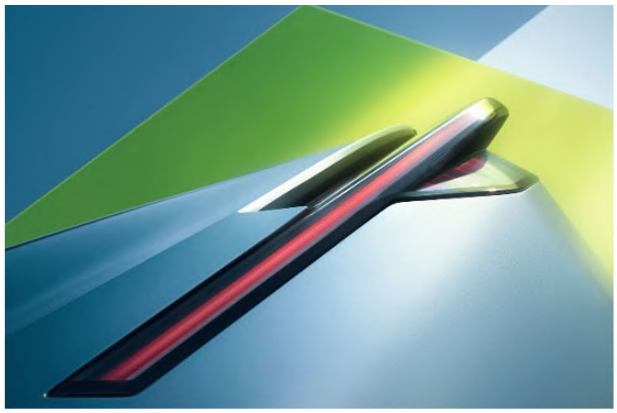
MG Cyberster

With side-to-side rearlamp

Mini Cooper SE

DRL elements can be switched to create three selectable light signatures, enabling drivers to express a distinctive character with their vehicle. All light modes start and end with a specially orchestrated welcome and goodbye animation. The headlamps are still circular, as that is a long running design element with Mini cars, and the taillights bring an updated, matrix-looking presentation of the British-flag theme.

Opel Experimental concept



A newly-illuminated Opel Blitz logo anchors the centre of the signature Opel Compass light lines, flanked by the elongated wing signature lighting on the horizontal axis with an illuminated centre crease. The rear of the car plays with light-lines and creases as well, here in red.

Polestar Synergy concept

The headlamps are an enlarged, highly integral rendition of the Thor's-Hammer theme, with on-body lights flowing along the fenders. At the rear, there's a bespoke version of the Polestar brand's rectilinear full-width light line-box, with corners defined in red light.

Porsche

With side-to-side rearlamp

Renault Scenic E-Tech

The new Scenic E-Tech EV has new signature headlamps introducing the latest revision in Renault's brand identity. Light patterns merge into the headlamps at the top of the grille, creating a spectacular high-tech effect. A welcome sequence greets on approach. LED Adaptive Vision technology is available on some versions; it adapts the beam pattern to suit the driving conditions. The turn indicators are sequential.
At the rear, the high-tech lights are arranged as two road corners merging off into the forward distance. Microöptical technology brings them to life when activated, and they appear to float when switched off.

Tesla Model 3

The first facelift of Tesla's entry-level Model 3 adds ambient lighting, a rear-seat infotainment screen, and new front and rear lights.

Volkswagen ID.GTI concept

This car has a horizontal LED rear light bar in red, with a dark tint. The frames of the 3D tail lights and the Volkswagen badge illuminate in bright red. There's a full-width white light line in front, with a lower-eyelid effect under each tidily-integral headlamp, and two short upright light lines in the bumper fascia.

Volkswagen

Same trend with side-to-side headlamp and rearlamp for the VW ID 7

Other trends: Displays

Still currently limited to demo-car and to booths of Tier1/2.
Main question is: When they will be introduced more massively for vehicles in production?

NOBO

MAGNA

VALEO

SAMSUNG

DVN visits at IAA

Forvia

As one can see on the headliner at the booth, the Hella brand hasn't disappeared.

All business units of Forvia were present at the IAA with their highest Management. Forvia's exhibition was in a private area for customers mainly. The main display was the car mock-up from the CES with the main geometry of the Volvo XC90. This was chosen to show how an interior could be created under real conditions, others than the often used 2,30 m wide nice but unreal showcases. All Forvia technologies, interior and exterior, are integrated in this piece of high tech.

Wolfgang Huhn, Ives Andres, Michel Favre, Michael Kleinkes

Valeo

Valeo was present with a booth full of future technology. Of course, for customers eyes only and photos were forbidden. DVN exceptionally was shown this secret place and the only thing we are allowed to say is that at least a dozen new technologies were on display for front- rear- and interior lighting. All displays show technology only, no serial products for customers as you expect usually. DVN hopes that Valeo will lift the curtain of some samples at a DVN workshop's exhibition or in a presentation for the whole lighting community.

Wolfgang Huhn, Joachim Ripperger, Klaus Matauschek

Swarovski

Swarovski Mobility's Peter Balk showed a steering wheel with crystal controls for the super luxury car segment. A really sublime touch and feel experience, it was. We hope it will be shown soon to the experts at a DVN workshop, and look forward to learning what magic tricks Swarovski might have up their sleeves to combat glare from sun reflected in the crystals.

Autodatas

Autodatas, a Shanghai-based company, do automotive benchmark research regarding new energy, intelligence, costing, and EV-platform architecture. They are especially strong in battery analysis, electric-drive architecture, and intelligent cabin, according to their German VPs Axel Deicke and Björn Sbischek. Nearly all Chinese carmakers and the international China-based JVs are already customers.

Peugeot's race car lighting

Lighting systems for long-duration races like the famous 24h du Mans are fascinating and totally different to street car lighting. Super lightweight carbon structural reflectors, laser and/or LED light sources providing 9,000 to 12,000 lumens per side, a very narrow illumination angle, and a cooling system that only works above 60 or 80 km/h (below which the lights must be dimmed down by 90 per cent)—all this is really strange for us! Unfortunately, details beyond those just described are closely-guarded secrets, so DVN cannot make an in-depth technical report about it.

Nodar

Nodar is a startup providing Software for 3D vision and object recognition without lidar or radar (hence: "no-dar"). The sensors are two Cameras, each on every side of the vehicle, which means about 1.6 to 2 metres' distance between the two cameras—a hammerhead arrangement.

Nodar founder Leaf Jiang and VP of business development Amit Mehta say the system can detect an object the size of a tire on the road more than 1200 metres away, in daylight. At night the Nodar system completely depends on the photons, the car lighting, and the ambient lighting from street lamps or the moon. In other words: Nodar needs ADB for really good nighttime performance. The ADB itself could be improved to meet Nodar's needs best—another strong argument for ongoing lighting system development.

Easelink

DVN met ZKW CTO Udo Hornfeck together with his predecessor Jürgen Antonitsch at the booth of Austrian startup Easelink, who specialise in conductive charging. Conductive charging means the car parks over a charge plate and a contact plate lowers down to the charge plate. They are coöperating with Audi and Scheffler on it.

Lighting News

Lumileds 3D LEDs for Hyundai Grandeur Full-Width Lights

LIGHTING NEWS

Hyundai's 7th-generation Grandeur sedan is just now beginning to go on sale. The front and rear lighting systems present horizontal light bands across the whole width of the car, with remarkable homogeneity of illumination. We talked with Lumileds' senior strategic marketing director Dirk Van der Haeghen, to better understand the concept and the technology behind these catchy lights.

DVN: Great new lights! How do you do it?

Dirk Van der Haeghen: It's a combination of two 3D LED strips, put end-to-end against each together. As the 3D LED light source emits side light at its ends, you can seamlessly optically connect them to each other to make long lighting signatures. This also helps to reduce the optical gap of a lighting profile which runs across different body parts.

DVN: What's the efficiency like on these 3D LEDs?

DVdH: The efficiency of a 3D LED strip is > 90-95 per cent, depending on red wavelength, compared to the individual LEDs. The nominal specified power for one 3D LED strip of 45cm is 6.75W (7,5V @ 900 mA) for red and 8.1W (9V @ 900mA) for white.
In the OEM customer's specific application (e.g. Audi Q8 e-tron), the power consumption can somewhat vary, depending on configuration and efficiency of total optical system.

DVN: Here we see the tail function. Can you do the same signature for stop, turn and DRL?

DVdH: Yes, also possible for stop, turn and DRL, depending on available lighting length and total optical system. The Luxeon 3D LED was fully released in 2022 for all these colour proliferations—reds, white, amber—and is available now for project design-in. SOP timing depends on OEM platform planning.

DVN: Segmentation is a trend; how many segments can this solution support?

DVdH: The Luxeon 3D LED offers the ability to individually address up to five segments within the length of one strip of 450mm (or any other length evenly divisible by 5).

DVN: Do you think the full-width lamp and high homogeneity trends will continue?

DVdH: Absolutely. The high homogeneity for this side-to-side signature lighting is highly desired by [automakers], complementary to realising the same brightness across different viewing angles.

DVN: Can this 3D LED also give a turquoise colour for the AD signal coming in China and already allowed in USA?

DVdH: Yes, as shown in the product portfolio picture, the Cyan (turquoise) color is available and in future also the option of dual colors such as white/turquoise.

DVN: Competitors have shown comparable items—Osram 360 and LG innotek, to name two. What distinguishes the Luxeon product?

DVdH: The Luxeon 3D LED offers the maximum design flexibility with highest homogeneity over viewing angle and lowest possible build-in depth.

New Lighting Technology on Audi Q8

LIGHTING NEWS

For the first time, Audi are putting HD Matrix LED headlights on the Q8, including a laser-based high beam booster. The headlamps feature digital DRLs and selectable light signatures. Digital OLED rear lamps with four selectable light designs complete the expanded light offering.

The laser light becomes active starting at 70 km/h and significantly increases the high beam range. New for the top-of-the-range headlights are digital DRL signatures. They give the Q8 its characteristic and unmistakable appearance by allowing the user to select one of four individual light signatures. High-intensity LED headlamps are standard equipment; matrix LEDs are available as an option. HD matrix LEDs with the Audi laser light are also available, which work with 24 LEDs and a high-power laser diode each and are immediately recognisable via a blue ambient light.

It's not just the expanded range of functions in the headlights that is novel – their design is also fresh. The higher positioning of the DRL gives the Q8 more visual width and also creates a flowing, formal connection between the headlights and the Singleframe. For the first time, the Q8 also features large digitalized OLED rear lights as an optional extra, which also feature four digital light signatures. And there's an LED light strip together with black high-gloss trim and integrated Audi rings.

Similar to the Audi A8 and Q5, the digital OLED rear lights in the Q8 incorporate a proximity indication feature that works in tandem with the assistance systems. When vehicles from behind come within two metres of the stationary Q8, the control units trigger the activation of all the digital OLED segments. Additional functions include dynamic turn signals as well as various welcome and farewell animation sequences.

DBM Reflex: Innovative Lights in the 2024 Chevrolet Traverse

LIGHTING NEWS

2024 Chevrolet Traverse

DBM Reflex has collaborated with Magna Lighting solve some of the industry challenges on the upcoming 2024 Chevrolet Traverse.

In headlamp, DBM Reflex has developed a custom microstructure to meet targeted sharpness of the cut-off line on the low beam projector lens. From optical engineering & tooling to production, at DBM Canada.

In rear lamp, DBM's TEXILIT™ is visible on the Rear Lamp Inner lenses to create homogeneous light functions in an efficient & elegant manner. A first in automotive lighting!

Driver Assistance News

Hesai AT128 Lidar Launches in Europe on Hiphi Z-Car

DRIVER ASSISTANCE NEWS

Webasto roof sensor module prototype

Hesai announced their European-market debut with their AT128 lidar in the Human Horizons HiPhi Z. The Chinese luxury electric vehicle is now available for sale in Germany and Norway. The Z operates with a multi-sensor ADAS, centred round the Hesai AT128. The lidar is seamlessly integrated with the car's roof design, providing a futuristic look while empowering high-resolution 3D perception capability.
The AT128 has a range capability of 200 m at 10-per-cent reflectivity, and a 1200 × 128 overall resolution. With a point rate over 1.53 million per second, it can precisely scan the environment, forming consistent and unstitched point clouds that help vehicles to "see" the 3D world clearly in real time.

Hesai are partnering with Webasto, a leading global supplier of roof systems, to provide high-performance automotive lidar for Webasto's roof sensor modules designed for ADAS production models. Webasto are one of the world's top 100 auto parts suppliers, providing top automakers with innovative multi-sensor roof systems integrating cameras and lidar, which facilitates beautiful and smooth appearance of vehicles while enabling mass production of ADAS intelligent driving applications. Their current roof sensor module is equipped with the Hesai AT128 lidar.

Envisics Closes Funding Round to Push ARHUDs for Cars

DRIVER ASSISTANCE NEWS

Envisics, a U.K.-based holographics company building in-car technology that projects navigation, safety alerts, and other data onto the inside of a windscreen, have closed a USD $10m series-c funding round. They announced this round's first $50-million tranche in March, which brought Envisics up to a $500m valuation. Envisics didn't share an updated valuation with the closing of the c-series C, but the startup did bring on new investors like M&G Investments. The previous $50m round was led by Hyundai Mobis, with participation from InMotion Ventures (the investment arm of Jaguar Land Rover) and Stellantis.

The closing of the funding round comes as Envisics get nearer to commercialising their ARHUD (augmented reality head-up display). GM have confirmed that Envisics' second-generation displays will be available in the electric Cadillac Lyriq.

Envisics founder and CEO Dr. Jamieson Christmas said last March that their first HUDs with GM are "absolutely on track to be released" this year.

General News

Christophe Perillat's Four Rs

GENERAL NEWS

Herewith, comments by Valeo's Christophe Perillat:

"The circular economy is a fundamental challenge for our planet and for our industry. At Valeo, we make sure that each of our technologies brings four fundamental benefits, which we call the four Rs: **r**obust design; **r**emanufacturing; **r**epair, and **r**ecycle(d). And clearly, we are going to accelerate further.
As an example, today, we remanufacture one million products every year. By 2030, we will double this volume of remanufactured products.

"Decarbonising mobility must go hand-in-hand with greater circularity and resource conservation, otherwise what's the point? And from this point of view, there is still a lot to be done.
As an example, do you know what proportion of automotive parts are recovered to be reused, remanufactured or repaired? One per cent! Only one per cent! It's a sad reality.

The rest is recycled to recover the untransformed raw material. But let's not forget that recycling must be activated only as a last resort in the circular economy. That’s why we need to work with policymakers to define the right incentives around core collection to valorise specific components such as electronics. That's why we need to work closer with end-of-life vehicle centers to optimise collection.
Because cores are the essential raw material to fuel the circularity machine.

Hiphi Hub 'Experience Centre' Opens in Munich

GENERAL NEWS

Inspired by the Hiphi Hub concept rolled out in more than 100 locations in China, the Hiphi Hub Munich delivers a serene space for discovery and co-creation.
Visitors can experience what the Chinese electric auto brand call the world's first 'evolvable supercar SUV'—the Hiphi X— as well as the Z car and the Y SUV.

Within the Hiphi Hub, users can find a relaxing environment to explore the personalisation options for the cars, from paints and interior options to the addition of a Hiphi-designed wallbox charger for their home. The interior echoes the personality of the Hiphi range.

The opening of the Munich location will be followed by another in Oslo, Norway, and other places throughout Europe. Both the X and Z are already available to order in Germany and Norway, with the Y going on sale before the end of this year. The Z is a luxury GT which began production in China last year. The X is a luxury SUV with a number of world and industry firsts, blending cutting-edge technology with luxury and advanced design. And the Y follows the same philosophy as the X and Z.

The Y has already garnered a favourable market response since its launch in China. Currently, Hiphi Hubs are operating at full capacity with order intake exceeding expectations in Hiphi's home market. In August, the first full month of deliveries, 1,021 Y models were delivered to customers.