Tue, 11 June 2024
Weekly Newsletter

DVN Lighting

NEWSLETTER #859

Editorial

DVN Lighting Detroit Workshop Under Way!

As you read this, Michael Hamm, Daniel Stern, Geoffrey Lebrun, and I are amidst the lighting community for the 2-day US DVN Workshop event near Detroit.

More than 400 people are gathered here—designers and engineers; researchers and developers; decisionmakers and regulators—to listen, talk, and see about the latest trends and technical challenges particular to North America. Major topics will be addressed like the challenges for US ADB, and the lit-logo boom (facilitated by less-stringent installation regulations). And this time, for the first time at a DVN Workshop, there will be night-drive demonstrations on a road officially closed for the event.

I am proud to have succeeded to bring together more than 170 companies, including 14 automakers, for this grand show-and-tell of the dynamic lighting community in North America, and the strong interest in sharing, discussing, scouting and networking—which is the primary main objective of DVN!

Sincerely yours,

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

In Depth Lighting Technology

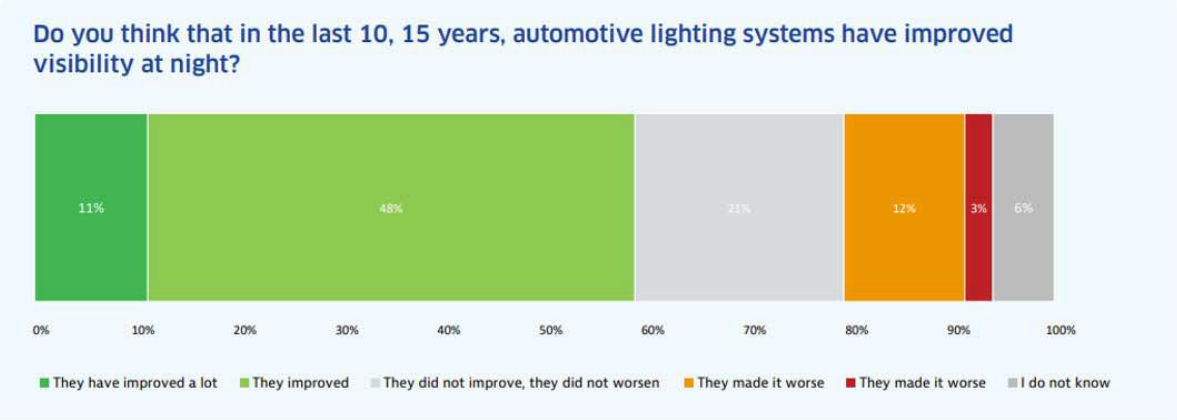
A Deeper Analysis of the FIA Glare Survey

Do you think that vehicle lighting has improved visibility at night in the last 10 to 15 years? (only 1 answer possible)	% ADAC (Germany)	% ÖAMTC (Austria)	% TCS (Switzerland)	% TCB (Belgium)	% ACL (Luxembourg) *(not representative)*	% Ø D/A/CH/B
Very much improved	14	26	20	12	44	18
Improved	51	50	54	49	43	51
Not improved, not deteriorated	24	16	18	22	8	20
Deteriorated	4	3	4	9	3	5
Severe deterioration	< 1	< 1	< 1	1	1	1
I do not know	7	4	4	7	2	6

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

I took time to carefully read the document from FIA about glare (GRE-20) to understand the feedback and concerns from respondents, and especially the two detailed surveys done by ADAC (Germany) and ANWB (Netherlands).

The survey has its good points, to be sure. Over 60 per cent of respondents answered positively when asked if they think vehicle lighting has improved visibility at night in the last 10-15 years.



ANWB survey

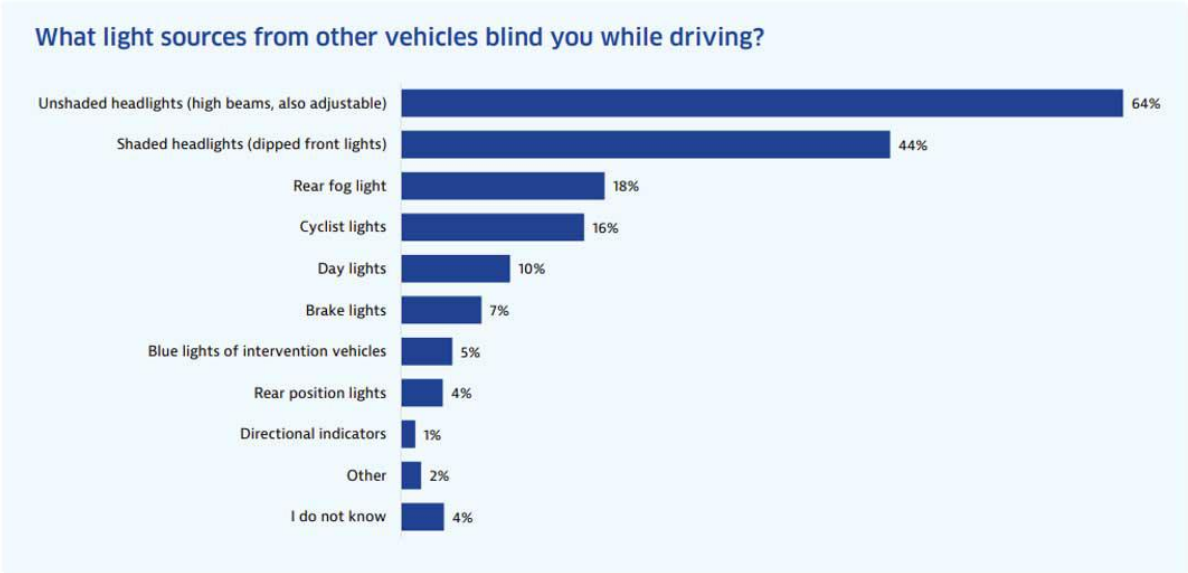
This reflects public awareness that lighting performance has increased with advancing technology. A halogen low beam puts maybe 450 lm on the road (H7 projector), but now most LED low beams put at least 600 lm on the road. More light, better seeing!

Then there is the glare concern. Most of the immediate reactions were about low beam glare, aiming, apparent size of the lamp, blue colour, etc, but it represents indeed (only) 36 per cent of respondents.

Which individual light sources from other vehicles dazzle you when driving? (multiple answers allowed)	% ADAC (Germany)	% ÖAMTC (Austria)	% TCS (Switzerland)	% TCB (Belgium)	% ACL (Luxembourg) *(not representative)*	% Ø D/A/CH/B
Low beam	41	36	39	28	39	36
High beam (also adaptive)	82	89	74	77	75	81
Daytime running light	7	7	9	9	9	8
Brake light	9	6	8	7	9	7
Rear light	6	4	4	3	3	4
Direction indicator	2	1	2	3	2	2
Rear fog light	27	31	30	21	58	27
Blue light from emergency vehicles	9	8	8	10	7	9
Bicycle lighting	9	4	10	17	12	10
Miscellaneous	1	2	2	1	3	1
I do not know	4	2	2	4	1	3

ADAC survey

A lot more respondents were concerned about high beams, including ADB, especially late detection by cameras (81 per cent in the German survey; 64 per cent in the Dutch survey). Of course, these answers must be interpreted in context: very few of the respondents are lighting experts, and it is likely many of them do not accurately identify low beams versus high beams (assume high-glare lights are high beams, for example, when they could easily be misaimed low beams).



ANWB survey

Respondents to both surveys also mentioned bicycle lights—regulated in Germany, but unregulated in many other countries. All other concerns were about signalling functions: 8-10 per cent for DRLs; 7 per cent for brake lights; 1-2 per cent for turn signals; 5-9 per cent for emergency vehicle lights; 4 per cent for tail lights (another indication of the knowledge and functional discernment abilities of respondents; it is practically not possible to be glared by tail lights), and 18 to 27 per cent for rear fog lamps (a more plausible source of glare in traffic).

For all these signalling functions, glare is particular to nighttime driving, except for DRLs and sometimes rear fog lamps, and UN Regulations already contain provisions

to allow variable-intensity signal lights to assure adequate conspicuity in daylight, bad weather, and fast traffic, and guard against glare after dark and in slow, congested traffic. But this is merely allowed, not required, and few automakers provide such equipment.

The original dual-intensity systems in the early 1970s were in bright/day mode when the headlamps were switched off, and dim/night mode when the headlamps were switched on. Today's technology means much finer granularity is possible: ambient light, fog, snowfall, rain, spray, dust, and dirt on the lamp surfaces can be taken into account, as can traffic conditions (speed threshold or distance to the following vehicle). This requires the use of sensors (already on the car for some of them) and could really reduce the signal light glare concerns mentioned by the survey.

Lighting News

BMW Concept Skytop

LIGHTING NEWS

With their Concept Skytop design study, the BMW Group brought an elegant, unique vehicle to this year's Concorso d'Eleganza Villa d'Este, the annual beauty contest for historic cars and motorcycles held on the shores of Lake Como.

BMW Group design chief Adrian van Hooydonk says the car is a "truly unique and exotic design, in the tradition of the Concorso d'Eleganza Villa d'Este. It offers a combination of driving dynamics and elegance at the highest level, comparable to its historic ancestors, like the BMW Z8 or BMW 503".

The headlamps integrate highly complex details into the overall concept. The LED units, on their milled aluminium carriers, are based on the flattest technology and design currently available. The intricate taillights evoke fine mechanics, reminiscent of clockworks, and their flat and defined shape complements the car's overall appearance.

Van Hooydonk said a production version is being considered; he believes 20 to 25 cars could be built.

Lancia Upsilon Lighting Details

LIGHTING NEWS

Lighting is crucial to Lancia's new style signature, built around a reinterpretation of Lancia’s historic grille. It has been modernized and this grille consists of 3 LED lines, which give an iconic look to the new Upsilon and clearly identify it as a Lancia from far away.

The 'Chalice'-design lamps provide the front position light function. They are on during the day, together with the rear lamps. They're constructed with light guides and thick-wall components, and despite simplicity, they have quite good uniformity. The power of these 3 devices is 5W.

The headlamps provide low and high beam, DRL, and turn signal functions; the latter two share the thick-wall element and the exterior surface despite the presence of 1 LED per function. There's a biLED module for the low and high beam. Low beam puts out 1,000 lm and takes 24W per headlamp, and high beam adds 500 lm and takes 16W each.

One to Watch: Liaowang Lighting

LIGHTING NEWS

DVN's Wolfgang Huhn with Liaowang's Yining Lu, Avatr program Senior Design Manager

DVN recently visited Chinese lighting supplier Liaowang at their Shanghai Jiading R&D office and Chongqing factory. Liaowang, with their active CEO Gu Dan, is well known to the DVN community as the maker of the 10,000-LED display for the Avatr car, which has 10,500 LEDs in the new generation. Both of these MDL (micro display lighting) were shown at the DVN Workshop in Munich this past March.

Liaowang belongs to the Foshan Electric and Lighting Company, along with their sister company and LED supplier Nation Star Optoelectronics. Together with five other companies, they belong to the Guangdong Guangsheng Holding Group, who are № 221 on the Chinese Top 500 Stock Market list.

Main customers of Liaowang are Chinese automakers, as well as Shanghai VW, Audi, and Mazda. The revenue forecast for 2024 is C¥ 2.3bn (€294m).

Liaowang's product range includes the MDL displays, front and rear lamps, signal lamps, grille and emblem illumination, various projectors, and the affiliated electronics.

Liaowang MDL rear lamp for the SAIC IM L6

Full design capabilities are available; over 300 engineers work in Liaowang's development ranks.

Product Design Director Huan Zhang (L;) Yining Lu, Wolfgang Huhn, Kathy Meng, Senior R&D Director Kai Yang (R)

Every headlamp they make has de-condensation items as standard: anti-fog coatings, multiple ventilation tubes, and a desiccant bag.

The Chongqing plant is Liaowang's high-tech factory, where they make the MDLs, front and rear lamps for the Aito M7, and other high-end products. Chinese automakers are raising their aesthetic standards very fast and very high, so the moulding processes for the MDLs require special manufacturing expertise and huge, high-precision machines to avoid scrap. Full-width rear lamps are laser-welded to tight tolerances.

The whole factory is in the process of increasing its automation and size.

DVN saw a fast-growing company with highly motivated people who love their work and of course their results. Clearly, Liaowang is a new key player in the vehicle lighting sphere.

Left: Yuangen Liu, Wolfgang Huhn, Chongqing plant manager Shibin Mo
Right: Wolfgang Huhn with Liaowang CEO Gu Dan, in the unbelievable city of Chongqing

Refreshed Rivian R1 Revs Up the Lighting Tech

LIGHTING NEWS

1Slashgear image by Chris Davies

The Rivian R1S - R1T's first facelift-and-refresh has been revealed, with significant changes in the lighting system.

The front full-width light bar is now both slimmer and brighter, and contains RGB LEDs so it can serve as a battery state-of-charge indicator. This is done by selectively illuminating the bar in green 10-per-cent increments. Rivian Chief Design Officer Jeff Hammoud has said, "It's definitely a little bit of showbiz, but it's cool (…) you walk up and you can see where you are immediately. We don't want to take ourselves too seriously all the time. It is a little moment of fun". Photos show similar state-of-charge indication being given by the rear light bar.

And the rear full-width light bar has a new hazard mode that makes it glows bright yellow to warn cars behind you to watch out; drivers can even set an animation to signal for drivers to go around you to the left or right. No word on how lawful (or unlawful) it might be to use these features in US states or Canadian provinces.

The headlamps are still upright, insectoid things—but now they have matrix technology. This will initially be used for steerable beams, and eventually could gain ADB functionality of one kind or another via an over-the-air update.

Also, the front turn signals have been moved. Previously, they shared illuminated area with the thick light guides surrounding each upright-oblong headlamp module. Now they're down by the fog lamps.

General News

Audi's New Innovation-SDV Board member

GENERAL NEWS

Audi have picked Geoffrey Bouquot as their board manager in charge of software-defined vehicles, a new role underlining the growing importance of digital architecture in the industry. Audi say Bouquot will join the team as head of innovation and software-defined vehicles, leading the company's transition to a software-centered organization.

Manfred Doess, Audi's supervisory board chair, said, "With the decision to create the new position at board level, we are strengthening the long-term technology and innovation strategy and focusing on the development of [software-defined vehicles]".

Bouquot has experience leading international teams from different fields of technical development. He headed large software-engineering units during major change and transformation processes, and was responsible for the strategic management of long-term innovations, for example in artificial intelligence and automated driving. His most recent position was Group CTO & Senior VP of Strategy at Valeo; he was responsible for corporate strategy, R&D, public affairs, and sustainability, marketing, and innovation. He headed an R&D network of 20,000 engineers as well as 20 research and 40 development centres.

At Valeo, he implemented the transformation plan for R&D, accelerating digitalisation and achieving increased efficiency by concentrating on selected platforms. He also set up the first specialized laboratory in France for autonomous-vehicle AI.

Electrify Expo '24: EV Fair at Long Beach

GENERAL NEWS

By Shammika Wickramasinghe

The Electrify Expo festival returned for its third year on 31 May – 2 June at Long Beach, California. A record number of EV manufacturers showed their stuff, including Hyundai, Kia, Tesla, Toyota, Volvo, Lexus, Ford, Rivian, Fisker, Kawasaki, Pebble, Living Vehicle, Motorrad, Luna Cycles and more.

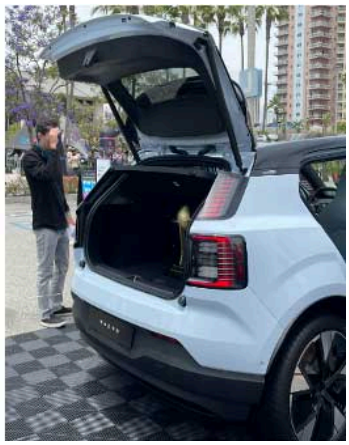
The event is North America's largest electric vehicle festival; this year's event took place in a total of eight locations. Long Beach by far had the highest attendance yet, and over 50,000 EV demos were taken over the weekend by the different automakers that had allowed interested parties to experience their vehicles around a 1-mile, round-the-block driving experience.

The weekend kicked off with Industry Day, an EV education and networking event for media, analysts, and government officials that was stacked with product reveals and press conferences from leading brands including Maserati, Ford, Kia, Volvo, and Rolls Royce amongst others. There were some great panel discussions about the EV industry and rates of adoption. EV sales have slowed somewhat from the pace they were selling at a year ago—analysts have said this apparent effect is largely because of a precipitous drop in Tesla sales dragging down the whole sector—but sales are still climbing, according to the experts at the festival.

Electrify Expo Founder and CEO BJ Birtwell said EV interest and demand from consumers is growing, not shrinking; he cited the record-setting festival in Long Beach: even in a mature EV adoption market like Los Angeles County and Southern California, residents showed up in masses to experience the festival.

There were test drives available for most models in the EV Demo District Sponsored by Hankook Tire, and Ford had a Thrill Zone where a professional racing driver zipped festival attendees around violently on a track to show off the capabilities of the Mustang Mach-E.

Volvo and Electrify Expo collaborated at the event to support Alex's Lemonade Stand Foundation for pediatric cancer research. Volvo donates a portion of the proceeds from every car they sell, and the Lemonade Days events have raised over $20m so far to support research and treatment for childhood cancer.



Rivian showed their newest R3X model, a midsized electric SUV designed to deliver exceptional performance both on and off the road.

The R3X brings its A-game, lightingwise. Rivian have ditched cheap-looking R1 lights for ones that look more like jewellery and crystal. This can be taken as indication that Rivian have quickly caught up with bigger automakers. The rear lamp on the R3X is a unique offering, with well-disguised front and rear indicators hidden in the lower section of the bumper. Perhaps the side turn signal repeaters are hidden in the mirror or in the Rivian logo on the side of the vehicle (or perhaps there's no repeater; North American regulations don't require them).

The top three stars of the show were the Rivian R3X, the Tesla Cybertruck, and the Volvo EX30 (shown here with award).

the Kia EV9 had a lot to offer for the price, in terms of comfort, features, and functionality—prompting discussion of what other makers will do to compete.

The Tesla Cybertruck, of course, attracted worship from the faithful at the show. Its design reflects (literally, until handprints dull the stainless steel) the lack of any pedestrian-protection regulations on the North American regulatory island. It has super-slim headlamps embedded in the lower area, between the trunk and the bumper, and slim rear lights similarly placed. The 'unbreakable' double-panel glass and the claimed range of over 300 miles were boast points for Elon Musk fans to lap up and tweet about.

Long Beach had the largest outdoor recreation area yet. More than a dozen vendors included Falken Tires, Dunlop Tires, Suweeka Racks, Pebble, Living Vehicles, Irv Labs, RadGnarack, Anker, Innovate Maquette, CarMart, eFireX, Pickman, Astro Ai, Ferla bikes, Polydrops and more. Attendees got to explore and imagine travelling across the country with an electric vehicle.

BMW and Lexus showcased their electric and hybrid vehicles. The interior finishers as well as the rear seat entertainment systems were the highlight of these products, foretelling the autonomous-drive experience of the future.