Tue, 20 September 2022
Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #769

Editorial

China Workshop Under Way Right Now!

The international DVN Workshop in China got off to a great start this morning with 250 attendees, despite the difficulty to travel in and to China right now on account of Covid restrictions. More than 30 car maker representatives are attending the event, with its rubric Innovations for New Lighting Functions.

After the thoughtful keynote from Hasco Vision's CEO came a parade of innovations presented by speakers from Audi; Volvo; PATARC; Changan; Great Wall; Stellantis; Human Horizons; FAW, and Jidu. It is regrettable that most of the lighting community members could not be physically present because of China's travel restrictions.
The second day of the Workshop will get started in few hours, with a presentation by GTB ex-president Geoff Draper, now DVN's senior regulatory adviser. There will be lively lectures from Koito; Hella; Valeo; Mind; AMLS/Plastic Omnium; Hasco; Marelli AL; XingYu; Chongqing Varroc TYC, andAMS Osram.

As Wolfgang Huhn described last week, we are working to spotlight and showcase lesser-known innovative companies, today it's Lightworks' turn; you'll find an interview with founder Michael Höfgen.

Do enjoy the China Workshop as you can. In the meantime, we proudly present this, the 769th DVNewsletter.

Sincerely yours,

In Depth Lighting Technology

Lightworks 10th anniversary: Top innovations in lighting

Lightworks, founded by Michael Höfgen with support from Hella in Lippstadt, recently marked their 10th anniversary with a big celebration including a rock band; DJs, and children's entertainment close to their base not far from Munich. Lightworks' skills include module design, exterior lighting, and the complete development of car interior lighting systems. 31 people work for the company in Holzkirchen, Germany, and Ostrava, Czechia. Most of their customers are premium automakers and tier-1s with high requirements for innovative lighting systems; Lightworks finished more than 300 projects in the last three years, about half-and-half for car makers and tier-1 suppliers.

DVN'S WOLFGANG HUHN WITH ULLA HARTWIG

Lightworks combine expertise in optics; mechanics; electronics, and design with knowledge of industrial implementation under one roof. Their intriguing idea is to be a technology hub for other companies to access. The combination of optical systems with 3D printing and materials including wood; rattan; fabric; stone, and crystal, as well as laser etching and specialty paint creates unique solutions for future design opportunities.

Michael Höfgen and the entire Lightworks team are proud of their in-house virtual reality capabilities. The combination with Unreal Engine for animations together with a self-made database for physically correct representation of surfaces—even wet surfaces (!)—under different lighting scenarios creates a new approach for virtual validation. Höfgen says open-source solutions with bespoke plug-ins are the future of renderings and visualisations for the lighting industry, and that visualisations are the perfect tools for effective communication with car designers.

BMW 7-SERIES DRL WITH TWO SWAROVSKI ELEMENTS

Lightworks proudly delivered or contributed to BMW's new 7-series; X7; and iX exterior and interior lighting; Mercedes S-Class interior; the Audi Q8, and many other projects.

Michael Höfgen kindly granted DVN an interview; here are his thoughts:

MICHAEL HÖFGEN AND DVN'S WOLFGANG HUHN

DVN: Happy 10th anniversary! What have been the highlights for you over this last decade?

Michael Höfgen: We as Lightworks have managed to grow from an optics service provider to a lighting system service provider. Despite the Corona Pandemic, we managed to push innovations and we were able to expand our customer portfolio. Further we took the risk to build up staff and we were proud to manage Lightworks through the crises without short-time work.

DVN: Which project was the most successful and why?

MH: One of the highlight projects was the BMW M6 Le Mans headlamp. The challenge was the passive cooling system in combination with high lighting performance with power LEDs. (Carbon housing, heat pipe cooling concept). The team was forced to manage all challenges in a very short time. But we all loved it.

DVN: How do you see vehicle front and rear ends evolving in terms of lighting design and technology?

MH: The trend is towards illuminated surfaces with full integration of various lighting functions in combination with ADAS sensors for front and rear ends. The main light function is becoming less complex, and the trend is more towards design and customisation. Light is increasingly becoming an interactive interface between driver and vehicle. Digitalisation makes hard demands of vehicle manufacturers; the intelligence of the vehicle must also be perceptible to the customer. Especially when the vehicle drives autonomously on the road, new approaches are needed.

DVN: How about inside the car?

MH: The car is increasingly becoming a living space, and customers in the Asian market in particular are increasingly seeing the car as an extension of their home. Light can contribute to a pleasant atmosphere and make the vehicle interior a new experience with different modes. With the help of translucent materials such as Karuun or laser-textured materials, we can create new types of interactions. In-moulded electronics (IMSE) have the potential to revolutionise the HMI area in particular. We at Lightworks developed over the last years VR expertise to experience the dynamic lighting functions for interior as well as the exterior. This will support decisionmakers and designers to great holistic environments before you even have a prototype at hand. The latest innovation of Lightworks is our in-house development of a virtual connection (Unreal) to physical prototypes via our Lightworks Connect System.

MICROOPTICS MAKING WELCOME-FAREWELL LIGHT

Lighting News

Covestro @ K 2022: Crafting Connections with Lighting

LIGHTING NEWS

A new Covestro front-end concept integrates electronic functions and extends the possibilities of vehicle lighting. Covestro have been developing their own concepts for novel polycarbonate automotive exterior panels since 2014. The latest concept will be on exhibit at the "K 2022" plastics trade show in Düsseldorf next month.

The front grilleboard concept, developed in collaboration with Hella, is based on Makrolon® injection-molded optical components which enable a wide range of designs, functionalities and use cases. The concept features double-sided FIM made with Makrofol DE; 3D surfaces, and pedestrian communication. Integrated lighting effects using edge-lit, clear-until-lit and hidden-until-lit techniques showcase how emblems and other styling elements can be revealed on demand.

Covestro joined up with Lumileds to explore the possibilities of direct overmoulding of LED headlamp modules to validate the viability of this new assembly process. In parallel, Covestro teamed up with Asyst to

showcase how light module adjustability and heat management can be integrated into a single, scalable module.

The transition of what used to be the radiator grille to a grilleboard as an integral part of a seamless frontal design offers the possibility of modular integration of various electronic, design, and regulated safety functions.

In Detroit, new thoughts on what to do with EV

LIGHTING NEWS

LINCOLN 100 CONCEPT:

Automakers have us wondering lately what in the world their designers might do with the front ends and hoods of vehicles once engine compartments are rendered obsolete by EV batteries.

It is a styling challenge for the future.
At last week's Detroit auto show, we were struck by a more immediate design change with vehicle portals.

The lighting community is now able to get the booklet **DVN Market Forecast on New Lighting Systems—Technologies and Skills to Succeed,** able to answer this design change.
The Study presents the market perspective of new lighting elements like illuminated grilles and logos; signal projections; road projections; ADB; laser light sources; OLEDs; communication displays, and more. For each new function, the study shows data-backed market potential forecasts.

Get your copy today, from the DVN website.

Night-Glow Lane Lines in Australian Trial

LIGHTING NEWS

An Australian company, Tarmac Linemarking, are applying high-performance, highly-durable thermoplastic phosphorescent road line materials now being trialed in Australia's Victoria State.
TL representative John Emanuelli says that although the luminous lines' luminance longevity may vary a bit depending on how bright the day is, they "usually last most of the night" after sunny days—which means they'd be good and bright during the especially dangerous dusk hours when animals are on the move in the vicinity of roadways.

Regional Roads Victoria say the project is one of 70 trials being done as part of an AUD $4m initiative to install innovative road safety improvements across the state, including higher-reflectivity road markings and LED-lit pavement near junctions.

Describing it as a “photo-luminescent delineation treatment” the Victoria state government say they're watching for it to give drivers a stronger visual signal to follow in dim conditions: "This treatment will make it easier for drivers to see the linemarkings or signage and provide stronger definition coming up to intersections and curves, giving drivers more time to react and preventing them from veering from their lane; this will be particularly beneficial for people who are not familiar with driving through the area".

Lights and Materials To Make Car Interiors Appealing

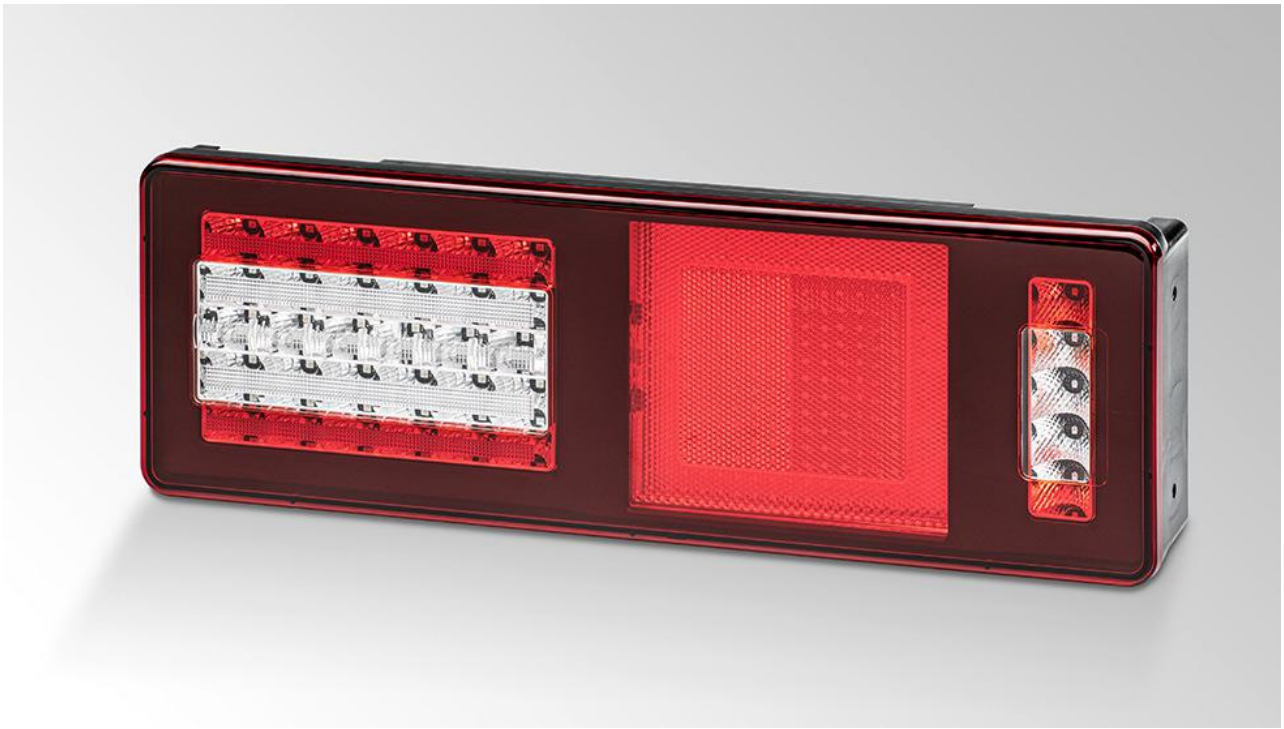
LIGHTING NEWS

Automakers are increasingly using ambient lighting inside their vehicles, a trend that not only makes the cabin nicer but could increase safety and consumer perceptions about the quality of the car. A study by engineers at BMW and the Lighting Engineering Group at Ilmenau University of Technology found ambient lighting improved drivers' perceptions of a vehicle's interior. Such lighting, which is offered in an array of colours in a growing number of mid- and high-end automobiles, intensifies spatial perception, enhances the perceived quality of materials and makes drivers feel safer.

Other studies show drivers feel less distraction when they can control the lighting level. In conducting the study, researchers had 31 people 'drive' a real car in a simulator. Light levels on the simulated roadway varied from 0.1 to 1.5 cd/m2. The engineers tested a dozen lighting scenarios with different colours; luminances, and positions. Drivers were questioned on spatial perception within the car; interior quality; perceived safety, and other factors. Their emotional states also were recorded via questionnaire before and after the test. Each driver's perception of the vehicle improved through the use of ambient light. Drivers found the interiors more spacious, the interior design and finish more attractive and the controls easier to use. They felt safer, too. But a little goes a long way; a few well-placed lights is just as effective as a whole lot of lights, and increasing the brightness did nothing to enhance the driver's impressions. On the contrary, it led to complaints of distracting glare. Drivers perceived blue lighting as brighter than orange or red, which is consistent with research finding that light with a greater blue content stimulates significantly more discomfort glare ("psychological glare") than same-intensity light with a lesser blue content. The researchers suggest colour is important for brand identity, but the test offered no conclusive results on the effect of ambient light on drivers' emotional states.

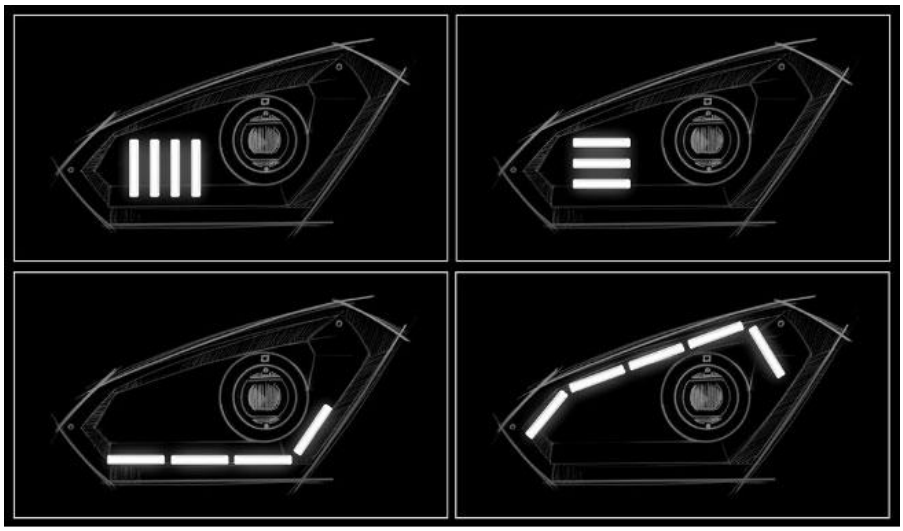
Forvia Showcase Expertise at IAA

LIGHTING NEWS



Forvia are exhibiting at this year's IAA Transportation trade show in Hanover from 20 to 25 September—for the first time with their two brands, Faurecia and Hella. Forvia will showcase the combined expertise of both companies in the fields of lighting and electronics.

A special Forvia product highlight will be the new Hella modular full-LED rear combination lamps for 24-volt trucks and trailers. The patented Hella LED light curtain, in combination with a retro-reflector, realises the tail light and can be individually designed with this innovative light by means of printed graphic structures such as dots; stripes, and shapes. Manufacturer customers can also freely choose the colour of the support frame and, for example, design it along their respective corporate colours. This makes the taillight a central eye-catcher and supports the branding of the manufacturers on the road. Trucks and trailers thus become unique.



Also on display: Hella's new modular LEDayFlex III system, which combines three lighting functions—front position light; daytime running light, and front turn signal—in one module. It's built with innovative EdgeLight technology, and can be integrated horizontally; vertically, or diagonally into any headlamp. The flexible alignment options give the respective vehicle a distinctive appearance.

Driver Assistance News

Innoviz Lidar Picked by Asian Automaker

DRIVER ASSISTANCE NEWS

Innoviz say they've been selected as the direct series-production lidar supplier to a leading Asian automaker. Innoviz will supply InnovizTwo lidar sensors to position vehicles to upgrade to L^3 automation, and the partnership is expected to generate revenues during fiscal year 2024.

Innoviz CEO and cofounder Omer Keilaf says "With this selection, we are continuing our momentum and further demonstrating Innoviz's capabilities as a tier-1 supplier to the world's leading car makers and expanding to additional geographies". The selection represents Innoviz's fourth major design win and second nomination for series production of passenger vehicles as a direct supplier, and follows Innoviz's recently announced partnership with Volkswagen, through which Innoviz will work directly with Cariad SE, Volkswagen's automotive software company, to integrate Innoviz technology into upcoming VW-group vehicles.

Great Wall Pick RoboSense for New SUV

DRIVER ASSISTANCE NEWS

RoboSense will provide lidar and—together with Haomo and Qualcomm—create the "Noh" urban driving assistance solution for Great Wall's Wey Mocha SUV. RoboSense's second-generation smart solid-state lidar (RS-lidar-M1) is to be deployed under the headlamps, one on each side, to give the Mocha DHT-PHEV accurate perception capabilities and provide an extra level of perception safety redundancy. This way the car will be equipped for strong automation with broad coverage of China’s motorways and urban roads, affording greater leisure for Mocha drivers, and greater safety overall.

Widespread uptake of intelligent driving technologies and increasingly-complex application scenarios call for front lidars with automotive-grade reliability. The RS-lidar-M1 is a highly integrated design, and has passed a series of reliability tests including mechanical shock; random vibration; high-pressure water impact; operation at high and low temperatures and humidities; solar radiation resistance; EMC; resistance to chemicals and salt spray, and other tests.

Quanergy & Fabrinet: To Expand Manufacturing of Lidars

DRIVER ASSISTANCE NEWS

Quanergy Systems, a provider of lidar sensors and smart 3D solutions, announced that the company will partner with Fabrinet, a leading provider of advanced precision optical and electronic manufacturing services, for the production of Quanergy's lidar sensors.

Fabrinet is a trusted partner of the world's most demanding OEMs. Their proven track record of customer service, flexibility and skill in managing complex operations aligns with Quanergy's commitment to maintaining high quality and industry standards in manufacturing. With Fabrinet, Quanergy will be able to expand its global manufacturing and scale as demand increases, to deliver greater efficiency for customers.

General News

Missing chips cost auto industry €100b

GENERAL NEWS

The research arm of the Allianz insurance group has quantified the supply problems for semiconductor chips. Some 18 million vehicles could not be built worldwide because the semiconductors intended for them were not available. By the end of this year, the damage from this will add up to €100 billion.

Bracing for tough times at the beginning of the pandemic, carmakers and automotive suppliers responded with deep cuts in semiconductor inventories and orders, the study recapitulates. As demand for cars recovered faster than expected in the second half of 2020, the industry discovered that chip manufacturers had reallocated production capacities to end-markets with booming demand, such as computers and data centers, leaving little capacity for the automotive sector. Nearly two years on from the first signals of a semiconductor shortage, car production remains far below its 2019 level, with a cumulated production shortfall of over 18mn vehicles globally. The situation has been comparatively worse in Europe where vehicle production fell to an unprecedented low of 13mn vehicles in 2021 – a deeper decline than in North America or China (which, by the way came through the crisis relatively unscathed so far).

In line with other studies dealing with the topic, the study names three main factors for the rising semiconductor content of the cars: Connectivity, safety and electrification. With these three drivers, the value of semiconductor content per car has more than doubled to over $600 globally over the past 10 years. Given the European mix (safer, more connected, greener than the average car), the European value is most likely higher.