DrivingVisionNews.com
Automotive lighting and driver assistance technologies

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Editorial

Munich Behind, Tokyo Ahead

Last week the lighting community came together for the 2020 DVN Workshop in Munich. I was so happy to see the interest of the participants following the 20 lectures, the regulatory session with its discussion panel, visiting the 22 exhibition sponsors' booths, talking and listening with one another, and enjoying the social cocktail followed by the dinner.
This week we bring you initial information about the Workshop; a report with lecture summaries, pictures and video will be forthcoming in next week's Newsletter, and more on the DVN website for DVN Gold members with lecture slides and PDFs as released for publication by the speakers and their companies.

Now, we've got our sights set on preparing the next workshop this Spring in Tokyo on 26–27 May, with the theme **Advanced Lighting Technologies and Safety. It will focus on digital and dynamic lights, displays, customisation, sensor integration, and all the technologies developed by the tier-2 suppliers.**
Of course we invite and welcome your ideas for the Tokyo workshop!
Early bird Registrations for this event are open on our DVN website. After March 31st, the entry price will be increased by 20%.

Also, find below, some information on the «Festival Automobile International» which was been hold last week, at the foot of the wonderful area of Invalides dome and presented the most beautiful cars.

Sincerely yours

DVN President

In Depth Lighting Technology

A Very Fruitful Workshop in Munich

The DVN Munich Workshop is now finished. Here are some highlights we retain from the 20 lectures, the regulation session, and the 22 exhibitions booths:

LEDs

For front lighting, the proliferation of LEDs is now clearly dominant, with 100% of new developments using LEDs (at least in vehicles for developed countries).

Renault Clio V: Full-LED headlamp with standardised driver and light source unit

Several presentations explained how this was achieved with steep cost reduction made possible largely by standardisation of optics and electronics. A notable quote from the session: "*We jointly need to work on making LED headlamp technology even more commercially efficient for full democratisation.*"

ADB

Mechanical shutters are a thing of the past. The matrix beam, first on the Audi A8, has been extended into progressively less expensive cars.

Opel with base EcoLED headlamps;84-pixel matrix is optional

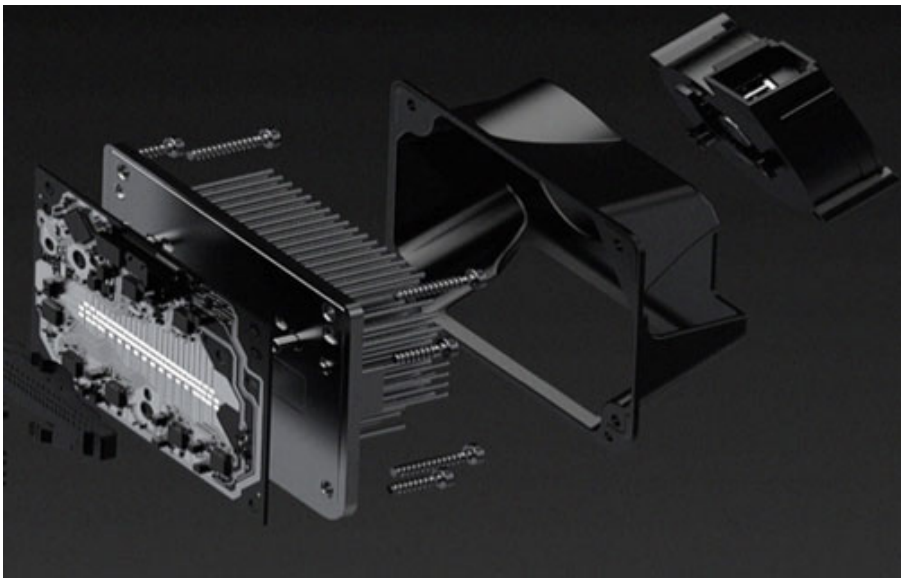
The assumption when talking about headlighting innovations used to be a high/low beam system. That's no longer the case; now ADB systems are the assumption. LED and µLED arrays (additive solutions) are the preference at the moment. Low cost ADB using a limited number of LEDs with new small LEDs chips allow direct imaging without primary optics—that's multiple savings stacking up to make the technology cost-feasible for popular-price cars.

New Renault Espace with ADB

The intermediate level of ADB is shifting toward µLEDs; just about all set and light source makers are using or developing this technology. The pixel count is steadily rising; µLED modules presently under development for SOP in 2022 offer 4 to 25 kilopixels. The number of pixels needed is hot topic of discussion—4 kilopixels is thought to be adequate for road marking but insufficient for road writing, and 25 kilopixels is considered a threshold for clear road writing, though for Chinese character projection (or automatic aiming) a high pixel count is required. The benefit of more pixels is countered by the cost increase.

The upper level of ADB with more than 1 megapixel is currently achievable with DLP solutions that cost out such that they're mainly limited to premium brands, with currently a limited number of applications due high cost and a limited field.

But all these discussions about technique and pixel count are academic if the basics aren't addressed: if digital light is to join the megatrends of the automotive industry, it has to increase safety, it has to be sustainable (acceptable power consumption and packaging volume, etc), and it has to be easy to use.

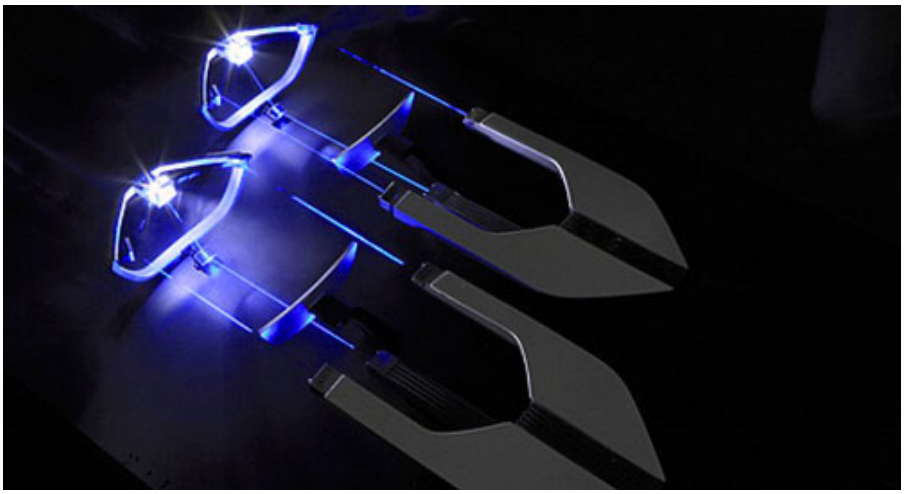


Volvo Polestar 2 ADB

About ADAS or Autonomous Driving, several presentations insisted about the importance of good lighting performance even in these modes, and perhaps even more in this mode as a weak level of lighting was responsible of some accidents with autonomous driving; obviously the sudden necessity for the human driver to be able to see and drive could occur at any time.

Laser

Laser is still pushed by BMW with new solutions and new partners, and with new modules more powerful and more compact and certainly less expensive than the previous ones; that's significant progress on one of the bigger drawbacks of this technology.



These new laser modules will also be applied for ADB. Nevertheless, whether laser will be able to break out of the niche market is an open question.

OLED

For rear lamps, OLED solutions are still pushed by Audi, who envision system functionality and appearance not possible with LEDs.

Audi OLED prototypes

LEDs are fighting back, though; they're extending their styling domain with new appearance capabilities and new materials (LEDified textiles, for example). Displays for dynamic rear lighting and for communication are developed by several companies despite the fact that the current regulations do not allow such items on roadgoing vehicles..

Interior lighting

A specific session was devoted to interior lighting, with 4 lectures. Clearly, interior light is going to be the new "chrome"—widely and diversely used for design and style differentiation. The target should be the driver will leave the car more relaxed than when they entered it. Dynamic visual communication is being deployed to benefit drivers and vehicle occupants. Will it work?

Interior look and feel can be changed with just one click

Regulations

Regulations are progressing particularly with efforts from the GTB. But an acceleration is necessary for harmonisation and to keep up with the pace of technical innovation. GTB needs to develop closer coöperation and more meetings with national regulatory bodies, particularly those of the USA and China. The objective is to discuss future potential of lighting innovations, present results of independent research, and agree guidelines as the basis for decisionmaking. To that end, the latest idea is to hold regular seminars, in conjunction with trade fairs and events relating to technical innovations with tier 1-2-3 suppliers, to focus on developing implementation plans for the next 3, 5, and 10 years to be presented to regulators. Regulators are to be openly invited; effective planning for regulatory coördination upgrade can't be conceived behind closed doors. The whole lighting world has to be involved in these efforts; it can't all be done by a small team led by Geoff Draper, Davide Puglisi, and Bart Terburg.

Lighting News

Winners of 35th Edition Festival Automobile International

The «Festival Automobile International» was been hold from January 29 to February 2, 2020, at the foot of the Invalides dome,

Awarded by a jury from automobile sport, architecture, fashion, design, culture, and media, the grand prizes of the International automobile festival award the most beautiful automobile and artistic projects of the year past.

PRIZe «Most BEAUTIFUL CONCEPT CAR »

Bentley Exp 100 GT

This category includes projects that are futuristic, creative and free from constraints linked to future industrialization and marketing.
“The EXP 100 GT is a vision for the future of sustainable luxury mobility.” Bentley Stefan Sielaff, design director

PRIZE «Most BEAUTIFUL SUPER CAR»


Ferrari Roma

This price rewards new models sold at a price abobe €60,000, produced in series and not competing for the price of «Most beautiful car of the year».

GRAND PRIZE FOR THE MOST BEAUTIFUL SHOWCAR


ALFA ROMEO TONALE

Unlike the Concept Car category, this prize rewards a project that announces, directly or indirectly, a production model that will soon be put on the market.

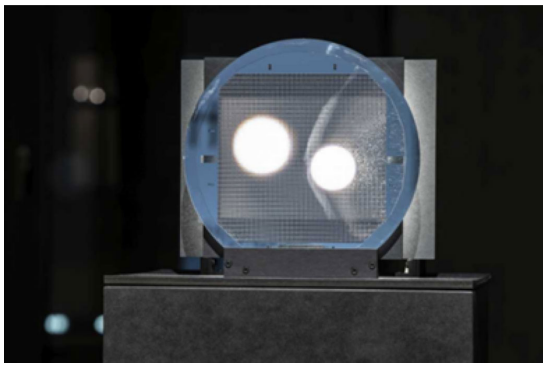
Hella's Lit-Up Grille

Hella have developed an illuminated radiator grille for the new BMW X6. The double-kidney of the new X6 can be illuminated according to the driver's preference when opening and closing the vehicle and/or while driving. The illuminated radiator grille is available to customers as an optional extra under the name "BMW Iconic Glow".

Hella have implemented the illuminated radiator grille as a large-scale integrated lighting concept so as to place the light modules in a limited space within a flat and narrow chrome ring. At the

same time, the illumination had to comply with the legal requirements as it was to be approved as a front position light together with the headlamps. For this purpose, a total of 14 LEDs are arranged in a narrow plastic frame manufactured in the shape of the BMW kidney in the upper area. These shine downward through individually-calculated free-form optics and thus generate a characteristic waterfall effect. An LED light guide is integrated in the lower part of the frame to provide ambient illumination for the side and lower part of the kidney. Hella have also put into practice new production technologies. As part of this process, a new connection technology was used for the first time to integrate and connect the individual LED circuit boards.

3D Lightfield Optics



At the DVN Munich Workshop, Peter Schreiber from Fraunhofer IOF Jena presented his company's innovative 3D Lightfield Optics whichcould be applied for 3D tail lamps or turn signals. The technology is based on replication of aperture masks and reflow microlens arrays as polymer-on-glass elements. The luminaire is formed by a whole optics wafer, which results in a 14 × 10 cm^2 exit aperture.

Further remarkable differences are relaxed manufacturing tolerances and simplified system architecture. Fraunhofer presented the concept in their expo booth in the form of attractive "light balls".

Photogoniometer from GL Optic

A type-A photogoniometer system from GL Optic, the GLG A 50-1800 is suitable for complete photometric characterisation of automotive exterior lamps.

The system complies with the CIE 121-1996 and IESNA LM-75-01 standards that regulate photometric and colorimetric far-field measurement systems, and is configured in accord with UN and SAE standards.

The GLG A 50-1800 is constructed for everyday use in research and development laboratories as well as in labs of product conformity testing centres, where reliable and accurate data needs to be provided in a user-friendly manner. It can measure at distances of 3, 10, and 25 metres, and can take test samples with dimensions up to 180 cm and weighing up to 50 kg.

Driver Assistance News

OmniVision and Artilux collaborate on 3D infrared sensors

The giant image sensor vendor **OmniVision** is collaborating with the Taiwan-based 3D imaging specialist **Artilux** on new devices that promise improved performance in the near-infrared spectrum.

Fabricated with a germanium-on-silicon (GeSi) light absorption layer, the Artilux sensors are able to detect out to 1550 nm in the near-infrared spectrum - meaning that 3D sensing solutions can take advantage of eye safety regulations that permit the use of more powerful light sources than at shorter wavelengths.

The two companies say that the main objective of the new collaboration is to combine that GeSi technology with OmniVision's more conventional CMOS approach for applications in mobile phones and beyond.

“The new product offerings will not only cover the mainstream light sensing spectrum from visible light to 850nm/940nm, but will further extend to 1350nm/1550nm, which can provide a superior outdoor experience and improved eye safety for multiple growing digital imaging market segments,” announced the pair.

UPS-Arrival Deal for EV Package Cars

Shipping, freight, and logistics giant UPS say their venture capital arm, UPS Ventures, now have a minority stake in Arrival, who make electric vehicle platforms and purpose-built vehicles.
Along with the investment in Arrival, UPS also announced a commitment to buy 10,000 specially-built EVs, with priority access to purchase additional vehicles.

UPS will collaborate with Arrival to develop EVs with extensive ADAS, which may include systems to allow the vehicles to move autonomously in UPS depots. UPS will start testing ADAS features later this year

CEO and CIO Juan Perez says "UPS continues to build an integrated fleet of EVs, combined with innovative, large-scale fleet charging technology. As population growth, urban migration and e-commerce continue to accelerate, we recognise the need to work with partners around the world to solve both road congestion and pollution challenges for our customers and the communities we serve. EVs form a cornerstone to our sustainable urban delivery strategies".

Arrival take what they call a ground-up approach to the design and production of their EVs, enabling an efficient path toward mass adoption. The company produce their own major core

vehicle components—chassis, powertrain, body and electronic controls. Arrival vehicles also use a modular design with standardised parts to ease and cost-reduce maintenance.

Arrival will build the vehicles in micro-factories, using lightweight, durable materials designed and made in-house. As an investor, UPS will have the option to fast-track orders as necessary. UPS expect to deploy the EVs in Europe and North America.

UPS Global Fleet Maintenance and Engineering President Carlton Rose says "Our investment and partnership with Arrival is directly aligned with UPS' transformation strategy, led by the deployment of cutting-edge technologies. These vehicles are the world's most advanced package delivery vehicles, redefining industry standards for electric, connected and intelligent vehicle solutions".

Arrival are the first commercial vehicle manufacturer to provide purpose-built electric delivery vehicles to UPS' specifications and with a production strategy for a global scale. Since 2016, UPS and Arrival have collaborated to develop concepts of different vehicle sizes. The companies previously announced they would develop a pilot fleet of 35 electric delivery vehicles in London and Paris.

Wabco's Expanded ADAS Retrofit Range

At Heavy Duty Aftermarket Week in Dallas, Texas last week, Wabco announced new OnSide ADAS retrofit kits, which allow fleets to add blind spot detection technology to existing trucks.

OnSide is a radar-based blind spot detection system that supports drivers merging into adjacent, passenger side lanes by checking them for clearance, to reduce the risk of a lane-conflict collisions. The system alerts drivers of moving vehicles in the blind spot at speeds above 24 km/h. Its radar, which sees a a 160° field of view with reach of up to 10 metres rearwards, continually detects a wide variety of stationary and moving objects in the vehicle's blind spot while the algorithm filters out the stationary objects to allow the system to warn the driver only of moving objects.

The OnSide kits join Wabco's OnGuardActive and OnLane ADAS retrofit kits for an array of popular vehicle applications. OnLane is a lanekeeping assist system, while OnGuardActive provides Forward Collision Warning (FCW), Active Braking, and Adaptive Cruise Control (ACC). It provides for a full stop from up to 60 km/h through active braking after detecting stopped, stationary and moving objects.
The OnGuardActive system offers improved object detection via enhanced filtering capabilities of the integrated short- and long-range dual-beam radar to detect objects up to about 200 metres ahead, alerting the driver to take evasive or preventive action.

ADAS Giveth, Distractions Taketh Away: AAA

Drivers with experience using ADAS like adaptive cruise control and lane-keeping assist are almost twice as likely to shift their focus away from the driving task while using the systems compared to when they're driving without them, and drivers with less ADAS experience are less likely to drive while distracted with systems activated. That's the finding of **new research** from the American Automobile Association Foundation for Traffic Safety.

AAAFTS Executive Director Dr. David Yang says the new research "suggests that as drivers gain more experience using ADAS technology, they could develop complacency while behind the wheel. Over-reliance on these systems can put drivers and others in dangerous conditions during critical moments".

Researchers at the AAA Foundation collaborated with Virginia Tech Transportation Institute to analyse video of on-road behaviours for two groups of drivers using advanced driver assistance technology. Individuals in one group owned a vehicle equipped with ADAS and had more experience using the systems while drivers in the other group were given a vehicle equipped with ADAS to use during the 4-week study period and had less experience with the technology.

The research found that drivers who owned their vehicles—and therefore had more familiarity with ADAS technology—were more likely to drive distracted when these systems were active than when they were not. For example, they texted or fiddled around with infotainment systems. But drivers with less experience using the technologies were more likely to remain attentive and engaged while the systems were in use.

Virginia Tech researchers theorise that drivers move through different phases tied to experience using ADAS. First-timers start in a novelty phase where they learn and test the technology. These drivers are less inclined to trust the systems' function and reliability, so they remain active and engaged while driving. Eventually, drivers reach an experienced user phase where overreliance and too much trust in the systems becomes more common.
These drivers are more apt to take their eyes and attention away from the road. Research in other industries shows that pilots and nuclear technicians demonstrate similar patterns of overreliance on automated systems and exhibit distracted operation.

General News

New CEO for Renault

Following a board meeting last week, Luca de Meo has been confirmed as the new CEO of Renault.

In a statement, Renault said the board considered that de Meo's experience and track record qualify him to "contribute to all aspects of Groupe Renault's development and transformation".
Clotilde Delbos will continue as interim CEO until de Meo takes office.

Jean-Dominique Senard, Chairman of the Board of Directors, said he is "delighted with this new governance, which marks a decisive step for the Group and for the Alliance.

Luca de Meo is a great strategist and visionary of a rapidly changing automotive world. His expertise but also his passion for cars make him a real asset for the Group. I also thank Clotilde Delbos who provides interim management of the Group in an exceptional manner."

De Meo began his career at Renault before joining Toyota Europe, then the Fiat Group where he managed the Lancia, Fiat and Alfa Romeo brands. He joined the Volkswagen Group in 2009 as Marketing Director, both for passenger cars of the Volkswagen brand and for the Volkswagen Group. He then held the position of member of the Board of Directors in charge of Sales and Marketing at Audi in 2012. He was Chairman of the Executive Committee of SEAT from November 2015 until last month.

VW: World № 1 Automaker 2019

The Volkswagen Group delivered almost 11 million vehicles in 2019, beating № 2 Toyota by just under a quarter million units.
In 3rd place is the fraught Renault-Nissan-Mitsubishi Alliance, with just barely over 10 million deliveries.

	Year 2019	Change 2019/2018
Volkswagen	10,974,000	+1.3%
Toyota	10,725,000	+1.5%
Renault-Nissan-Mitsubishi	10,080,000	-6.9%

Volkswagen were in the № 2 position for most of the year, but in the last quarter of the year sales spiked especially in Europe; in December alone, VW's Western European deliveries increased almost 15%.

Renault-Nissan alliance adopts strategy to divide work

The leaders of the embattled Renault, Nissan, Mitsubishi alliance put forward a unified face by unleashing a new divide-and-conquer plan to bolster their troubled business.

The strategy calls for dividing the world geographically, with partners spearheading operations in the regions where they are strongest. And it adopts a leader-follower approach to engineering, in which they will divide responsibilities for r&d among themselves.

But some directions are already clear. In terms of geographic responsibilities, Renault will take the lead in Europe, Nissan will be the director in China and Mitsubishi will head Southeast Asia. They did not specify a point company for North America, though Nissan is the biggest player there.

The companies will also divide engineering work, with one company leading R&D and product development in a given area and the other companies sending people to assist. This will differ from the old method which had teams, for example, in France and Japan working in tandem.