



Editorial

Have A Grand & Prosperous Year! Picking Out The Challenges Of '22

I personally and professionally wish you and your family, friends, and colleagues a prosperous and fulfilling 2022, brimming with new heights of creativity to keep lighting and driver-vision innovations top, front, and centre on the stage of automotive innovations.

And I extend those same good wishes to my friends and partners here at Driving Vision News, who are making such a wonderful job of it. And all the engineers at automakers and suppliers, regulators, researchers, professors, and practitioners who share their thoughts and passion while carefully respecting the boundaries of intellectual property and confidentiality. DVN wouldn't be nearly so good without these contributions.

The main mission of DVN is to further and facilitate the interests of the lighting community. The increasing number of DVN Gold lighting company members—151 at the end of 2021 (plus 28 members of DVN Interior!); the number of Gold members overall (more than 1,200) and the number of interested lighting members (more than 2,000 others) at the end of the year, show that there is strong and increasing interest in networking, sharing ideas and technical information. Good thing that there are so many challenges in front of the lighting community at the start of the new year!

In DVN meta-news, we're happy to announce that we're increasing our resources in Europe, North America, China, Japan, and India to keep you fully informed and up to date on the needs of automakers and their suppliers, and on the innovative new technologies coming faster and faster. Watch for our forthcoming presentation of the DVN team of passionate, dedicated people working tirelessly to build monthly reports and weekly DVNewsletters for you, to organise DVN Workshops and Conferences, and to build each year an indispensable, must-have DVN Study.

Onward and upward in 2022—together!

Sincerely yours,



W. Frally
DVN CEO

In Depth Lighting Technology

DVN's Great 2021 Achievements—Even Greater Expected in '22

As we start the new year, it's a fine time to analyse the achievements of DVN under the stress and strain of a fraught and difficult 2021. We facilitated the flow and exchange of information by publishing 52 DVNewsletters, 10 DVN Reports, and a high-value DVN Study. We held two live-and-online DVN Workshops in China and the USA, as well as a Lidar Conference in Frankfurt. Let's look a little closer:

52 DVNewsletters were sent to the lighting community, week after week without interruption. That's 52 editorials, 52 in-depth pieces, and around 750 news articles and analyses on lighting, ADAS, sensors, and relevant industry news. The weekly DVNewsletter's purpose is to cover all important facts and events happening in the realm of lighting and ADAS; we work dilligently to make it the one-stop independent source for relevant news and views for our industry.

10 DVN Reports were released:

- Interior-New Mobility
- Lighting in development countries
- New models November '20 to February '21
- Adaptive Driving Beam
- DVN Shanghai Workshop and VISION Congress Q&A
- Rear Lighting
- IAA + New Models April to September '21
- DVN US Workshop
- Global Landscape of Automotive LED Suppliers
- Cars and concepts presented September to December '21



Adaptive Driving Beam Report



ATTENDEES



Q/A ONLINE SESSION

DVN Shanghai Workshop Report



AUDI Q5 ZHUI L7



ZHUI L7

Rear Lighting Report



ATTENDEES



NETWORKING

DVN US Workshop Report



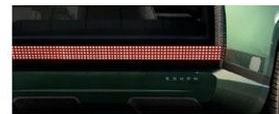
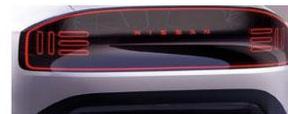
ULTRA SLIM REAR AND HEAD LAMPS



MAIN FUNCTION HIDDEN FOR A MINIMALIST LOOK



REAR LAMPS MADE UP OF A HORIZONTAL LUMINOUS LINE



DISPLAYS ARE PROLIFERATING IN THE REAR END



EXTENSION OF DMD TECHNOLOGY INSIDE PREMIUM BRANDS

DVN Report on Cars-concept cars presented Sept-Dec 2021

At the end of 2021, 151 companies are Gold members in the DVN Lighting community and 28 companies are DVN Interior Gold members (total of 179)

19 New companies joined the DVN Lighting community in 2021

- 4 in Europe

Ferrari, Italy - Delo, Germany - Jokon, Germany - Grupo Antolin, Spain

- 5 In North America

Rivian, USA - OLEDWorks, USA - IHS Markit, USA - ESS, USA - Muth Corp, USA

- 10 in Asia

Huawei, China - Varroc TYC, China - Sunny Optech, China - Tongming, China - Yejia, China
Zvision, China - Bluebinaries, India - DH Lighting, Korea - Brightek, Taiwan - Everlight Taiwan

And next year,

DVN will still be at it, putting out 52 DVNewsletters and 10 DVN Reports.

As usual, we will cover congresses, workshops, and autoshows, publishing reports on the main events, auto shows, and congresses.

We will work hard this year to make the 10 DVN Reports:

- Technologies presented at CES 2022
- DVN Paris Workshop
- Laser-based vehicle lighting
- Vehicle models launched January-April
- ISAL report
- Universities and Lighting
- Lighting in EV
- VISION congress
- Vehicle models launched May-August
- Paris Autoshow

We will organise in 2022 three DVN Workshops in Paris on 1-2 February; in the Detroit area, and in Shanghai; another one DVN-Interior Workshop in Frankfurt, as well as the fruitful DVN Lidar Conference toward the end of 2022.

And we're soon to start work on our next **DVN Study**, based on feedback from the lighting community. Working title: *DVN's Predictions for New Vehicle Lighting Functions*.

We're also working to bolster the DVN team with senior lighting experts all over the world—watch for more information soon.

We cordially remind you of the high-value benefits DVN Gold members enjoy with their access to the DVN website, including access to the library and archives with over 7,500 news articles and 164 published DVN Reports—all fully indexed and searchable—as well as the DVN Gold members' community directory: detailed presentation of company products and services.



Once more we happily extend our seasonal best wishes to all reading this for an excellent 2022!

Lighting News

Mobis Declare Cameras In Headlamps

LIGHTING NEWS



Hyundai Mobis have refined their work toward headlamps with integral cameras; now they've got a solution for the problem of the headlamp's light bleeding over into the camera portion of the lens and causing glare for the camera. The new design has a divider to completely block the emitted light from the camera's line of sight. It's more than a simple partition between the camera and the lighting elements; there's also an opaque partition in the cover lens to put a hard stop to light refracting within the lens material.

LG Spatial Innovation Through Transparent OLEDs at CES

LIGHTING NEWS



LG DISPLAY'S SHOPPING MANAGING SHOWCASE AT CES 2022

LG Display announced that it will introduce its new Transparent OLED solutions at CES 2022. The company aims to demonstrate the new and innovative consumer experiences and values its Transparent OLED solutions will bring to normal everyday spaces like commercial facilities, offices, homes, and transportation.

LG Display is also set to unveil its 'Shopping Managing Showcase,' a Transparent OLED display fitted inside a wooden display stand, which will reinvent the offline shopping experience.

Another example of how LG Display is redefining the shopping experience is its 'Show Window,' which consists of four 55-inch Transparent OLED displays. The distinctive Show Window maximizes the advertising potential of window displays by delivering a more unique and informative shopping experience.

When it comes to the office, LG Display will be showcasing its 'Smart Window' which is specially designed for the office of the future.

Transparent OLED technology leverages the advantages of OLED's completely unique self-emitting nature in several ways. Considering that Transparent OLED displays flaunt a slim design, high transparency and light weight, they can be widely utilized for various industries.

Hyundai, Kia File to Block Copycat Lamps

LIGHTING NEWS



Kia and Hyundai have both filed trade complaints seeking to block the import and penalise the importers of aftermarket imitation headlamps and taillamps. The automakers say the lookalike parts "slavishly copy" Hyundai's and Kia's "elegant and distinctive headlamp and taillamp designs". More formally, the Korean auto brands assert their design patents have been infringed by the copycats.

The complaints, which are presently [open for public comment](#) [pdf], were filed with the U.S. International Trade Commission. They name TYC Brother Industrial and their General

business unit, and LKQ and their Keystone Automotive Industries unit—both high-volume importers of low-cost ersatz replacement lights. Kia's complaint says the knockoff artists are violating 20 patents on lights for vehicles including the Sportage, Sorento, and Forte; Hyundai's complaint similarly lists numerous patents and vehicles.

Tesla OTA Light Show "Upgrade" Kills Headlamps

LIGHTING NEWS



A *whee-look-what-I-can-do-mommy* display of animated light was first introduced by Tesla on their Model X. A recent OTA update enabled all Model 3s and Ys, as well as 2021 Ss and Xs, to put on an improved version, customisable by the car's owner.

The new lights-based bit of gee-whizzery might have been included to try to dilute or tamp down owner dismay over changes to the user interface—for example, turning the windshield wipers on or off, now requires a complex menu navigation.

The OTA "upgrade" also seems to bring along new problems. On at least one Model Y and one Model 3, one of the headlamps remains dark and cannot be activated after the light show is over, and nothing seems to bring it back to life. No word yet on whether Tesla will acknowledge the issue is their fault.

Andaltech Put In New Lighting Equipment

LIGHTING NEWS



Andaltec, the Spanish Plastics Technology Centre, have incorporated new scientific equipment into their laboratories to expand and improve their technological services. Their acquisition of scientific equipment, valued at €900,000, was made possible by a grant from the European Union and the Junta de Andalucía, which aims to promote technological development, innovation, and quality research.

The laboratories have incorporated a universal testing machine; new chromatographs; flammability cabinets; a solar ageing chamber; a luminance chamber, and a new luminance camera.

The solar ageing chamber is used for accelerated-ageing tests to quantify changes in the properties of materials and products caused by sunlight, temperature, and humidity. In a weeks-level time scale, ageing can be produced that would take months or years out of doors—such as crazing, colour fade, yellowing, opacification, and loss of strength. The equipment has a sample-holder surface of approximately 3,000 cm². The lighting lab's new luminance camera (2D photometer) performs luminance and colour measurements of five million points simultaneously from a light source. Thus, it is possible to perform the analysis of the luminance and colour homogeneity that a sample presents. It has great application in the automotive industry, both in external light guides such as projectors or pilots, as well as in interior lighting, such as dashboards, displays, and keypads. It is portable equipment that makes it possible to obtain measurements, with high resolution and a subsequent rapid analysis.

Driver Assistance News

Stanley's Mass Production of High-Power Automotive IR VCSELs

DRIVER ASSISTANCE NEWS



Stanley Electric have begun mass production and shipment of a high-power infrared VCSEL that meets automotive quality requirements. This shipment will be delivered to customer for the world's first in-vehicle sensing device using an infrared VCSEL. The product has been made possible through partnership with Lumentum, a global leader in design and manufacturing of high-performance infrared VCSEL arrays.

"Combining Stanley's automotive qualified packages with our innovative products and proven manufacturing, where we have shipped more than one billion infrared VCSEL arrays with zero-field failures, allow us to deliver compelling solutions for automotive customers who require next-generation optical sensing technologies" said Jenny Kim, Product Line Manager for 3D Sensing at Lumentum

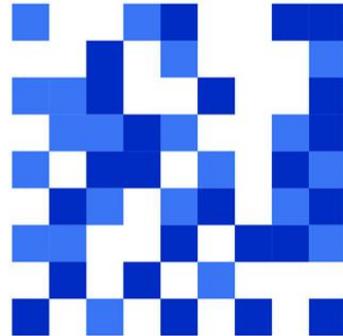
Infrared sensors have been used for a long time in a variety of applications, but in recent years their performance has rapidly increased. The use of Driver Monitoring Systems (DMS) to prevent driver-caused traffic accidents as part of ADAS is increasing, and Occupant Monitoring Systems (OMS) to reduce the risk to passengers inside the vehicle are also becoming more common. In the future, the increasing sophistication of automated driving and ADAS will require even higher performance sensing, creating new areas that cannot be achieved with the infrared LEDs that have been used to date.

Stanley infrared VCSELs can deliver a uniform, high-power infrared beam to all corners of the camera's field of view. This enables the system to read even the slightest changes in the driver's gaze or facial expression, and to detect people anywhere in the cabin without missing a beat. In addition, it is possible to use pulsed light at a higher speed than LEDs, and this characteristic can be used to sense 3D information such as distance and shape using a TOF camera or lidar.

Autonomous Taxicabs Venture Onto UAE Roads

DRIVER ASSISTANCE NEWS

بيانات
BAYANAT



Bayanat, a branch of the Abu Dhabi-based Group 42 tech company, last month launched a trial of four driverless vehicles—two electric and two hybrid—under the name TXAI. Customers can be picked up and dropped off at nine pre-determined spots on Yas Island, amongst which the taxis drive themselves with a "safety officer" behind the wheel. A second phase of the trial will include at least 10 vehicles and multiple locations across Abu Dhabi. Customers can order the vehicles using the TXAI app.

Bayanat CEO Hasan al-Hosani says upgrading from L³ with a safety officer to L⁴ without one will be a major step: "The vehicles are already operational; we are collaborating with the authorities to further expand our operation area geographically, as well as to upgrade to L⁴".

Abu Dhabi is not the only member of the UAE eyeing a driverless future. Dubai says it wants 25 per cent of all of its transport driverless by 2030, cutting costs, pollution and accidents. Dubai aims to launch a small fleet of self-driving taxis by 2023, according to state media, with plans to reach 4,000 by 2030.

Intel's Mobileye Will Go Public

DRIVER ASSISTANCE NEWS



Intel plan an initial public offering for their self-driving Mobileye operation, probably in the middle of this year. Intel will remain the majority owner, and will collaborate on projects for the automotive sector including the advancement of autonomous vehicle technology and the computing that is needed to power these future cars.

This year, Mobileye are expected to have 40 per cent more revenues than in 2020, according to Intel CEO Pat Gelsinger. Amnon Shashua will remain as CEO after the IPO, which will include Moovit. Intel's lidar and radar teams will also be part of the new company.

Mobileye have seen rapid growth in 2021 for their autonomous vehicle technology including shipping their 100 millionth EyeQ system-on-chip and began self-driving pilot projects globally.

General News

CES will end one day sooner as Cancellations on-site Presence

GENERAL NEWS



Organizers of the CES global technology show will close the expo one day early after companies including General Motors, BMW, Daimler and Waymo dropped out of attending the Las Vegas event in person due to Omicron concerns.

Other companies that have canceled in-person plans include Volvo, Robert Bosch, ZF, Magna International, Mobileye, Velodyne Lidar and Veoneer.

The show begins on Jan. 5 with 2,200 exhibitors, half of expectations. Many of presentations will take place online and the event will now end on Jan. 7.

BMW said it is moving all planned media activities to a fully digital program livestreamed from Germany, while Daimler said it has decided to cancel on-site participation of Mercedes-Benz after intensive consultations.

Ford Overtake GM in Market Value

GENERAL NEWS



FORD CEO JIM FARLEY WITH ELECTRIC F-150 LIGHTNING

Ford's market valuation has surpassed that of General Motors for the first time in over five years, on strength of a Ford stock surge. Ford's peak market value of \$83bn at the end-of-2021 close in New York just barely edged out GM's \$82.9bn.

Ford shares more than doubled in 2021 year and have been trading around a 20-year-high, heading upward since Jim Farley became CEO 14 months ago and accelerated Ford's push into electric vehicles. The automaker have sold out the first year of their electric F-150 pickup, debuting this spring, and plan to produce 600,000 EVs annually by 2024.

The valuations of Ford and GM still lag behind that of electric-truck maker Rivian Automotive, valued at \$92bn, who went public in November in the largest IPO of the year.

Tesla posts record 308,600 global vehicle deliveries in Q4

GENERAL NEWS



Tesla delivered 308,600 vehicles worldwide in the fourth quarter. The better-than-expected results published last week pushed Tesla's total sales for the year to more than 936,000, up about 87% over 2020's deliveries of just under half a million vehicles.

"This is a trophy-case quarter for Tesla as the company blew away even bull-case expectations," Daniel Ives, an analyst at Wedbush Securities, said in an e-mailed statement. He called it a "jaw-dropper performance for Musk."

Tesla has said repeatedly it expects 50% annual increases in deliveries over a multi-year period. The seventh consecutive quarterly gain comes amid a global semiconductor slump that has crimped production at most other automakers and kept sales in check despite rising demand.

The company doesn't break out sales by geography, but the U.S. and China are its largest markets, and the bulk of sales were of the Model 3 and Y. Tesla currently makes the Model S, X, 3 and Y at its factory in Fremont, Calif., and the Model 3 and Y at its plant in Shanghai.

In 2022, Tesla will be adding production capacity with two new factories coming online in Austin, Texas, and Berlin.