

## Editorial

### A New DVN Website, A Great DVN LiDAR Conference Coming, ISAL 2019 Report

Our brand-new DVN website is online, but you will only be able to access its complete content next week. We're still migrating archived content from the old site, so meanwhile, please [click on this link](#) to connect to the old website as usually.

Do visit and discover the fresh new site at the same address you already know: [www.drivingvisionnews.com](http://www.drivingvisionnews.com). You are not yet connected, have not full access to everything, that will only happen next week. But enjoy: It's responsive no matter what kind of device you're on. It's clearly designed and easy to scroll through, with better image presentations. And the search engine has been optimised. Please give it a try, and [let us know](#) of any adjustments we can make for easiest access to your Driving Vision News.

DVN Frankfurt LiDAR Conference on December 2-3 is now 6 weeks ahead. Our intent with this conference is to facilitate reciprocal access, communication, and business opportunities for stakeholders in LiDAR and vehicle industry, and to continue building a new ecosystem for LiDAR and automotive integration. We expect over 200 top worldwide experts in automotive LiDAR and lighting. Lectures will express the different views about Automotive LiDAR Applications and Integration. For more information and to register, [click HERE](#).

Finally, I would like to congratulate the organisers of ISAL who succeeded to have fruitful lectures which show the wonderful progress of our automotive lighting community. However, while there were many very interesting lectures, some seemed not at the right level. It should be better to have fewer lectures, avoiding split sessions which mean sometimes missing good lectures. Nevertheless, the DVN team were at ISAL in great enough number to attend all the lectures. Today we publish our [DVN Report](#) on this year's ISAL. All lectures, keynote speeches, and the winning poster presentations are summarised and commented on. If you weren't able to attend ISAL, get your copy of the DVN Report to catch up on what you missed. And if you were at ISAL, the Report is a handy reminder of the highlights!

Sincerely yours

DVN President



## In Depth Lighting Technology

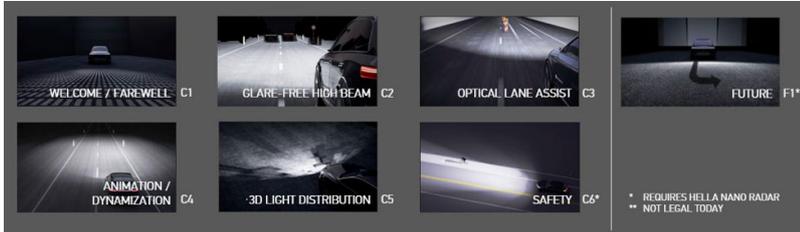
### Ten Takeaways from ISAL '19



Today we've released our DVN Report on ISAL 2019, with annotated summaries of the lectures and presentations. Download your copy today; every summary is well worth your time.

Since 1995, the International Symposium on Automotive Lighting, organised every two years by the Technical University of Darmstadt, has become a primary globally recognised forum for vehicle lighting technology. This year there were close to 900 attendees from Europe, Asia, and North America.

Two of the main focal points of the congress this year were communication between automated vehicles and other road users, and high-resolution headlighting systems. These topics are timely, of course, and they've also rapidly moved out of the theoretical and into the practical realm; in fact 15 million ADB-equipped cars of about 60 models from numerous makers are on the world's roads—except in the USA—without any reported problems.



Here are ten key points we retain from the two days of lectures, panel discussions, keynote speeches, and poster presentations:

### 1) ADB, more and more in the generalist brands

Technical constraints that confined to high/low beam systems have been removed by ADB, which is expanding into high-volume, popular-price models. The high/low-beam binary which has never been good enough for the job is obsolete; how long it takes to die out remains to be seen.

### 2) ADB, but on high-resolution systems

Recent ISALs had a strong focus on ADB, mostly looking at systems and ideas for 8, 16, and 32 segments. This year was different: still a predominant focus on ADB, but on high-resolution systems, no longer with just a few segments.



### 3) Road image projections

Road image projections for new kinds of turn signal and reversing lamp repeaters, vehicle-width guidance through lanes narrowed by construction, and other such driver-aid functions are under very active development.



### 4) Visual communication

Visual communication using front and rear lights to help pedestrians and other drivers is another area of strong developmental interest.



### 5) Displays

Displays for V2X communication and brand communication are arriving.



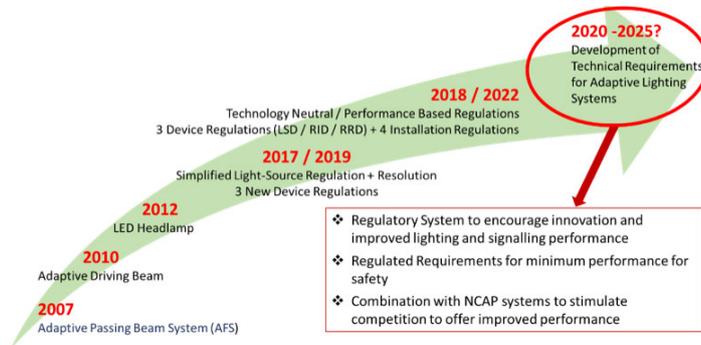
### 6) SSL LED, $\mu$ LED, Monolithic

SSL LED,  $\mu$  LED, Monolithic are the new technologies with a great future.



### 7) Regulations and testing

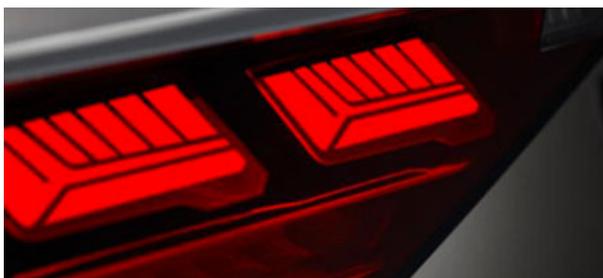
Regulations must be modernised to be technology-neutral for robust resistance to obsolescence, and must be harmonised for worldwide standardisation.



Testing methods, too, must keep up with new technology so as to assure the measurements are in accord with the actual, effective performance.

- ❖ Regulatory System to encourage innovation and improved lighting and signalling performance
- ❖ Regulated Requirements for minimum performance for safety
- ❖ Combination with NCAP systems to stimulate competition to offer improved performance

### 8) OLED



The convergence of ADAS, AD, and lighting systems carries on at an accelerating pace. OLEDs are being developed and commercialised in ways that overcome technical and technological challenges reported as recently as last year.

### 9) Integration of sensors

Integration of sensors as camera, radar, and lidar in the headlamps

### 10) Software

Software Software becoming more and more important in lighting

## LIGHTING NEWS

### Everlight's Automotive IREDS and Mini LEDs

Everlight, having joined the ISELED alliance which integrates the supply chain to boost innovative automotive applications, have been expanding their automotive activities. Recent prototypes and product launches include mini-LED tail lamps and displays,

IREDs for facial recognition, and interior lighting LEDs.



The prototype tail lamp uses fine-pitch mini LEDs to show personalised information. Everlight also have teamed up with Hella to develop matrix LED headlamps.

Everlight's interior offerings include display, ambient lighting, and sensing components. They're working on a mini-LED backlit display that integrates instrument cluster and dashboard functions; plans are for it to enter the market in 2021.

## ST's Duodecachannel LED Driver

Here comes STMicroelectronics with their ALED1262ZT 12-channel LED driver, which supports complex and innovative visual effects for advanced automotive rear combination lamps and interior lighting.



The chip features independent 7-bit PWM dimming on all channels, allowing flexible control and dynamic effects in tail, stop, and indicator lights. Each channel delivers constant output current at 19V for controlling multi-LED series strings. Adjustment from 6 to 60 mA ensures a wide dimming range with high maximum brightness. The LED lighting driver responds to I2C commands from a host microcontroller. It provides two preprogrammed configurations that allow standalone operation for extra flexibility, and has diagnostic features including open-LED detection and overtemperature warning with thermal shutdown. The input-voltage range from 5.5 to 38 V allows use in direct battery-connected systems, and it is designed for low-noise operation with slow turn-on/off time per channel and spread-spectrum clock operation to simplify integration with other in-vehicle electronics. The driver comes in a 6.4 × 7.8 mm thermally efficient HTSSOP24 exposed-pad package.

## 📷Cameras for Mirrors in USA? Data, Public Comment Invited

Japanese and European regulations permit CMS (camera monitoring systems) rather than traditional side- and rearview mirrors. US regulations don't, but perhaps that will eventually change: Tesla and the Alliance of Automobile Manufacturers petitioned NHTSA five years ago, and Daimler Trucks North America put in a petition of their own a year later in 2015, to allow cameras instead of mirrors, citing improved fuel economy through reduced aerodynamic drag. Now NHTSA have issued a [request for public comment](#) and data in response to a comprehensive set of questions about the technology.



Camera monitoring systems are said to offer 35° view fields, compared with the 17° of conventional door mounted mirrors—though the latter figure depends on whether local regulations require plain flat driver-side mirrors with "unit magnification", as in US Federal Motor Vehicle Safety Standard № 111, or allow convex and aspherical ones as in UN and Japanese regulations. A wider field of view helps to reduce blind spots. The images from the camera being displayed on in-car

monitors can bring another safety benefit, because drivers needn't move their eyes as far from the normal road gaze to see the side view, but only if the display is thoughtfully positioned and configured. If not, it can lead to the likes of [this unfavourable review](#) on a popular auto enthusiast website.

And it's not just enthusiasts who have objections to some of the systems that have been commercialised; NHTSA say camera monitoring systems may also introduce new safety risks. A five-year agency study of CMS on heavy-duty vehicles found display screens were too bright, causing distraction and glare for drivers. And the agency's tests two years ago of a prototype passenger car CMS found better-quality images than mirrors at dusk and dawn, but also displays that were too bright at night, distorted images and "bloom" from headlights in the image, and cameras easily obscured by raindrops.

Comments are due by 10 December.

## Matrix Lighting for Bicycle...Helmets!



Apple—yes, the iPhone company—are now selling a bicycle helmet. It's called the Lumos Matrix Urban smart bike helmet, and its prominent feature is a matrix of 77 RGB LEDs on a panel facing rearward. Lumos say the fully addressable 7 × 11 dot-matrix display allows bicyclists to "create [their] own animations and really stand out on the road". Video [posted](#) by the maker shows the helmet in use at night, with various light patterns being produced on the panel.



The helmet also has an integral white front running light with amber turn signals at the ends, and the matrix panel provides left and right yellow turn signals and what are being called "automatic warning lights" with a bright red pattern produced in response to an onboard accelerometer's signal. The direction-indicator lights can be activated with the included wireless remote (clipped onto the bicycle handlebar) or through an iPhone app. The high placement of the front and rear running lights is in accord with recent research on how to reduce motorcyclist involvement in traffic crashes.

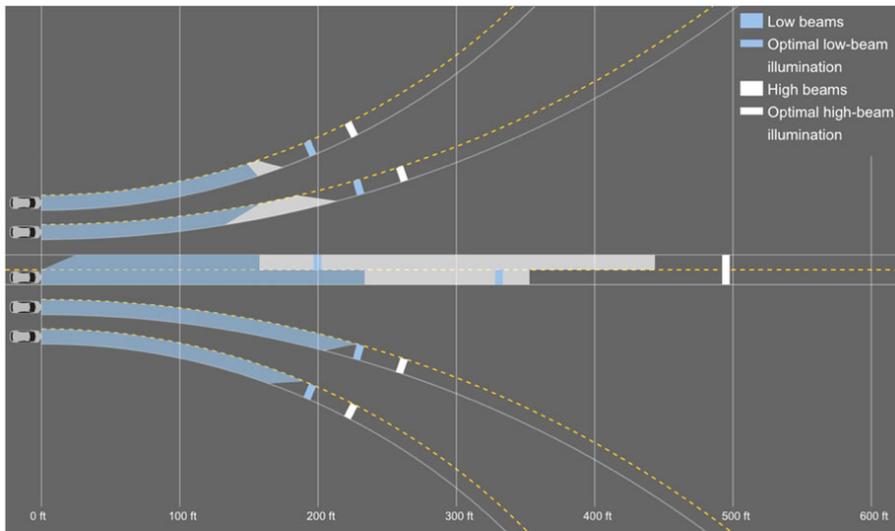
The helmet meets US, European, and Australian crash-protection standards—something of a feat on its own; it's common for suppliers to make a distinct version of a helmet for each of these three regional requirements.

## Headlamps Keep IIHS Award From New VW

VW's new Arteon got almost top "Good" marks in almost every crashworthiness test the US IIHS put it through, and next-best "Acceptable" grades in the rest. Its active front-crash prevention system got the best mark, too; "Superior".

But all three available variants of its headlighting system got a "Poor" ranking, making the Arteon ineligible for the coveted IIHS "Top Safety Pick" plaudit.

All three of the Arteon's available headlight systems were [tested](#). The standard-equipment LED projectors showed very short seeing distance for straight, left-curve, and right-curve roads, on both low and high beam, but no glare was detected, either, suggesting the lamps may have been aimed too low—the IIHS protocol tests headlight performance of cars as received, including whatever headlamp aim has been dialled in by the maker and/or the selling dealer.



The first-option system, curve-adaptive LED projectors, gave much longer seeing distance on all road geometries on low and high beam, but was dinged for putting out excessive glare. The top-option system, curve-adaptive LED projectors with high beam assist (automatic high/low beam) gave that same result. Visibility distance measurements are provided, permitting scrutiny of whether an aim adjustment would have improved things, or if the system simply doesn't perform in a manner that gets a good grade on this test, even with proper aim.

### 3D-Printed Headlamp Mount Repair Kits



A company called Creative Repair Solutions are offering 3D-printed repair kits for headlamps with cracked or broken mount tabs. The makers say headlamps might be just fine after a minor collision, except for mount tab damage, so the repair kits allow expensive headlamps to be put back into service rather than scrapped. The Certified Automotive Parts Association, a U.S. aftermarket-parts industry advocacy group, say they've "certified" the tab repair kits.

CRS developed their additive manufacturing process for the repair parts in house, and have a patent on it. Nevertheless, they keep quiet about the details of their process. CRS Vice President Steve Arnone calls it "not a typical 3D printing process". However it works, the process simulates the same grain structure of the original injection-moulded parts. The tabs are made out of nylon, and CRS say a repaired headlamp can deliver "exactly the same fit" as originally.

The range presently consists of 14 kits covering the various mount tabs on Jeep Grand Cherokee and GMC Sierra models made since 2014. The repair tab covers the original (or what's left of it) like a glove. The installer attaches the tab with screws specifically designed for plastics; an adhesive is applied to the mating surfaces before the screws are tightened.

## DRIVER ASSISTANCE NEWS

### RoboSense Lidar for FAW AVs

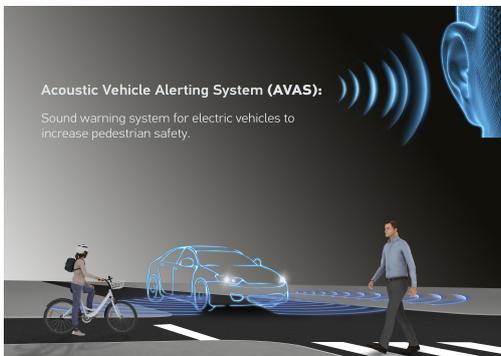
Lidar developer RoboSense have been contracted to supply their newly developed solid-state lidar sensor, the RS-LiDAR-M1, as part of a next-generation autonomous driving system being developed by Chinese auto maker First Automobile Works (FAW).



According to RoboSense, the new sensor is the world's first and only unitised MEMS-based smart lidar sensor for self-driving passenger vehicles, with its own embedded AI algorithm and system on a chip (SoC) architecture. It transforms a traditional lidar system into a full data analysis and comprehension system, collecting and interpreting high definition 3D point cloud data, while also processing road data in real-time and synchronising outputs of high-precision localisation; obstacle, road curb and driving area detection, tracking and classification.

Fengjun Li, director of FAW's Intelligent Connected Vehicle Development Institute, says "Our coöperation with RoboSense demonstrates our confidence in using a smart lidar sensor for Level 3 autonomy and above, and accelerates the commercialised development of our proprietary next-generation autonomous driving system".

## Silent No More: Hella's EV Noisemaker



Since last July, new types of electric, hybrid, and fuel cell vehicles in Europe—usually silent—have been required to make noise with what's officially called an AVAS, for Acoustic Vehicle Alerting System, to protect road users such as pedestrians, cyclists, and the visually impaired. Similar regulations apply or are under development in the U.S. and China. Hella have devised a compliant acoustic warning system for use in passenger cars, commercial vehicles and buses.

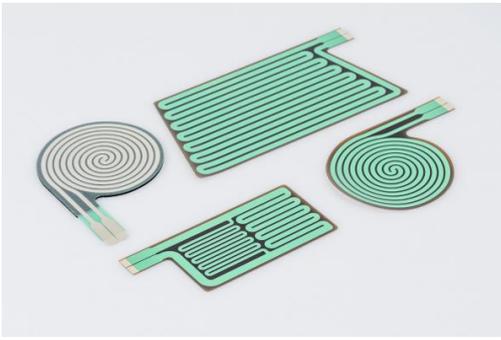
Hella's AVAS gives vehicles with noiseless powertrains a sound similar to a conventional internal combustion engine. This enables road users to detect approaching vehicles they may not be able to see. AVAS will be presented by Hella for the first time at the Busworld trade fair starting on 18 October in Brussels.

At speeds below 20 km/h, the AVAS simulates a noise that rises when the speed increases. The AVAS also automatically generates an acoustic signal when reversing. At speeds above 20 km/h, the simulated engine sound is silenced as the sound of the tyres rolling on the road is loud enough. A video posted online [demonstrates](#) Mercedes' AVAS for Europe and for the USA in comparison to petrol-powered cars' noise signatures.

The regulations specify minimum sound pressure levels and frequency distribution and content of the noise, and a standard sound is stored onboard Hella's AVAS unit. But there's plenty of flexibility in exactly what the noise sounds like—just as combustion vehicles sound different depending on characteristics of the engine, transmission, and exhaust system—so brand- or model-specific AVAS sounds can be developed and deployed.

## Film Heaters Ensure Thaw ADAS Sensors

ADAS system sensors—cameras, radar and lidar units, etc—have to accurately function under all weather conditions. Especially at freezing temperatures, sensors must be thawed quickly and kept ice-free while the vehicle is on the road.



To ensure reliable and permanent deicing of these sensors, Schreiner ProTech of Munich, Germany, have developed film heaters based on printed electronics.

The functional films are lightweight, flat and flexible so that they can be applied close or directly to the sensor with minimal space requirements, which makes them ideally suited for this specific type of application. The flexibility of the films and the variable design of the conductive tracks allow for customisation of the film heater in terms of shape and size, and adaption to any geometry and curvature of the component. Due to state-of-the-art die cutting, laser and printing technologies, complex contours with tight tolerances can be achieved. The planar surface of the printed heating structures avoids the conductive tracks potentially being visible in installed condition. The heating solution is also available as a self-adhesive version, which reduces installation requirements.

## GENERAL NEWS

### Clotilde Delbos is Renault Interim CEO

Renault's board of directors decided to end the mandate of Thierry Bolloré as President and Chief Executive Officer with immediate effect, and to appoint Clotilde Delbos as interim CEO, with Jean-Dominique Senard as interim President until a process is completed to appoint a new permanent President and Chief Executive Officer.

The Board of Directors gave a favourable opinion on the appointment of Olivier Murguet and José-Vicente de los Mozos as Deputy Managing Directors to assist Delbos in her duties.



Delbos graduated from France's Emlyon Business School. She began her career in California, then at Price Waterhouse in Paris before joining the Pechiney Group in 1992. She held various positions in France and in Brussels in Internal Audit, Treasury and Mergers & Acquisitions to then become Division Financial Director of Bauxite Alumina and International Trade.

She joined Groupe Renault in 2012 as Comptroller. In 2014, she was additionally appointed Alliance Global Comptrol Director. In April 2016 she was appointed Executive Vice President and CFO, and this year she also took on responsibility of Internal Comptrol. She is a member of the Groupe Renault Executive Committee.

### Uchida is New Nissan CEO



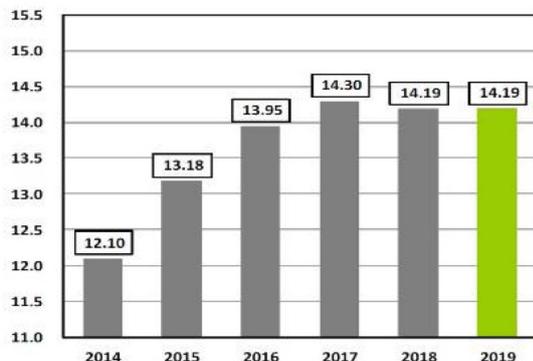
Nissan have named Makoto Uchida, head of the maker's important China division, to be their next President and CEO, after resignation of former CEO Hiroto Saikawa.

A Nissan executive with experience in joint purchasing with partner Renault, the Uchida is of a younger generation than past

leaders. His selection was announced by the chairman of the Nissan board, and Masakazu Toyoda, director in charge of Nissan's nomination committee, at a press conference in Tokyo. The board's vote in favour of Uchida was unanimous.

## West Europe Car Market Up in September

Western Europe's car market was up by a hefty 13.9% YoY (year-on-year) in September as a base effect comparison with the same month last year distorted the result. The German annual selling rate was just 3.0m units a year in September, even though the market grew by a hefty 22.2% YoY, helped by extremely low sales a year ago.



In the UK, the selling rate fell to just 2.0m units a year, with the market gaining a disappointing 1.3%. In France, sales rose 16.6% YoY in September, while the selling rate fell, but only to a still respectable 2.2m units a year. Italy saw a YoY increase of 13.4%, while the selling rate dropped to 1.8m units a year. The Spanish car market experienced 18.3% YoY growth in sales in September, with the selling rate standing at 1.3m units a year.

LMC said after the abrupt fall in the selling rate in September, they expect an improvement throughout the remainder of 2019. LMC analyst Jonathon Poskitt said "There are no apparent issues with the availability of models this year, unlike in 2018 when several OEMs were unable to sell certain models due to failure to achieve WLTP approval".

However, he also said time is running out for any meaningful full-year growth to materialise in 2019. "We believe that regional sales will be essentially flat, the market finishing at around 14.2m units," he said.

## Results Must Improve: Audi CEO



Audi in May outlined a strategy focused on sustainability that includes having 30 models with electrified drivetrains, of which 20 will be fully electric, by 2025. Audi have earmarked €14bn euros toward electric mobility, digitalisation, and autonomous driving—and a great deal of money toward improving their standing in the ultracompetitive premium sector, where they trail Mercedes-Benz and BMW in global sales. Audi CEO Bram Schot says "The main challenge is a combination of two things, markets and investments. Next year will remain challenging on the markets side, including in China, but we are slightly optimistic on the outlook for the premium segment there. We foresee Europe being stable, but the quality of sales has already deteriorated a little bit. We anticipate a lot of pressure in the U.S., where we would be happy to see a stable market. Therefore, if you want to improve your results and market situation, it will be even more important to improve your own performance. We expect to have electrified models account for 40% of our global sales in 2025".