



Editorial

2021 DVN Study: A Source Of Advice

Until today DVN has published three studies. 2020 a study about new lighting functions of the next ten years, 2019 a Lidar study about technology and applications and 2018 a study about the impact of the change on automotive lighting. All studies contain a lot of technical information, prognoses that were later seen in presentations of companies and major consultancies, and fundamental analysis about the automotive lighting market and technology. All were written out of the perspective of a tier-one supplier and all are still available.

The 2021 Study will be totally different.

Lighting under pressure?

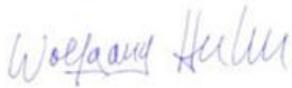
Leveraging tensions between Design, Marketing and Engineering

The new study is written under my supervision out of the perspective and the experience of an OEM, through my own experience and through many interviews. It does not provide much technical content, but it informs about the processes inside the OEM during a car project. It describes the tasks and duties, as well as the tensions and target conflicts during the car development with a special eye on the lighting, of course. The tasks and demands of Design, Marketing and Engineering are shown in detail. Scenarios and examples of problems in the different project phases are described; different ways to solve them are suggested. Concrete examples and practical tips on how to solve the conflicts between the major stakeholders are given.

If you are with an OEM, you should read the study because it can bring real benefit for your next project. If you are a tier-one supplier, you are provided with a lot of “behind the scenes” information and eventually you will better understand and forecast the OEM’s next needs. If you are a tier-two supplier you will have a lot of information that, normally, not even the tier-one has.

The study is a valuable source of advice for everyone working in the automotive lighting process chain. We are currently polishing the text of this study that will be available end of September. I am looking forward to your comments and questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Wolfgang Heilmann".

DVN Senior Advisor,
Chairman of the 2021 DVN Study

In Depth Lighting Technology

Constructive Tensions in the OEM's Vehicle Creation Process



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from DVN Study team

DVN Studies, Reports, Workshops and Conferences have focused mainly on the technical elements of automotive lighting and lidar applications. Concentration on engineering achievements, technology perspectives, futuristic design ideas, safety and regulatory aspects, dominantly covered the scene.

With this new study, DVN is adding another dimension to its repertoire by contemplating how a new car model is created and the role of lighting within this framework! This study focusses on the OEM perspective of the vehicle creation process.

A group of senior experts in the field of car lighting; (Carsten Befelein, Salomon Berner, Geoff Draper, Hector Fratty, Wolfgang Huhn, Leo Metzemaekers, Jean Paul Ravier, Ralf Schäfer) have analysed how a new car model is created and the roles of the different functions, especially with respect to creating the lighting functions. Not unexpectedly, during the discussions it became obvious that several conflicts exist between the targets of the three key functions of Design, Marketing, and Lighting-engineering. Additionally, regulations as an “external force” have to be followed for a successful homologation of a vehicle.

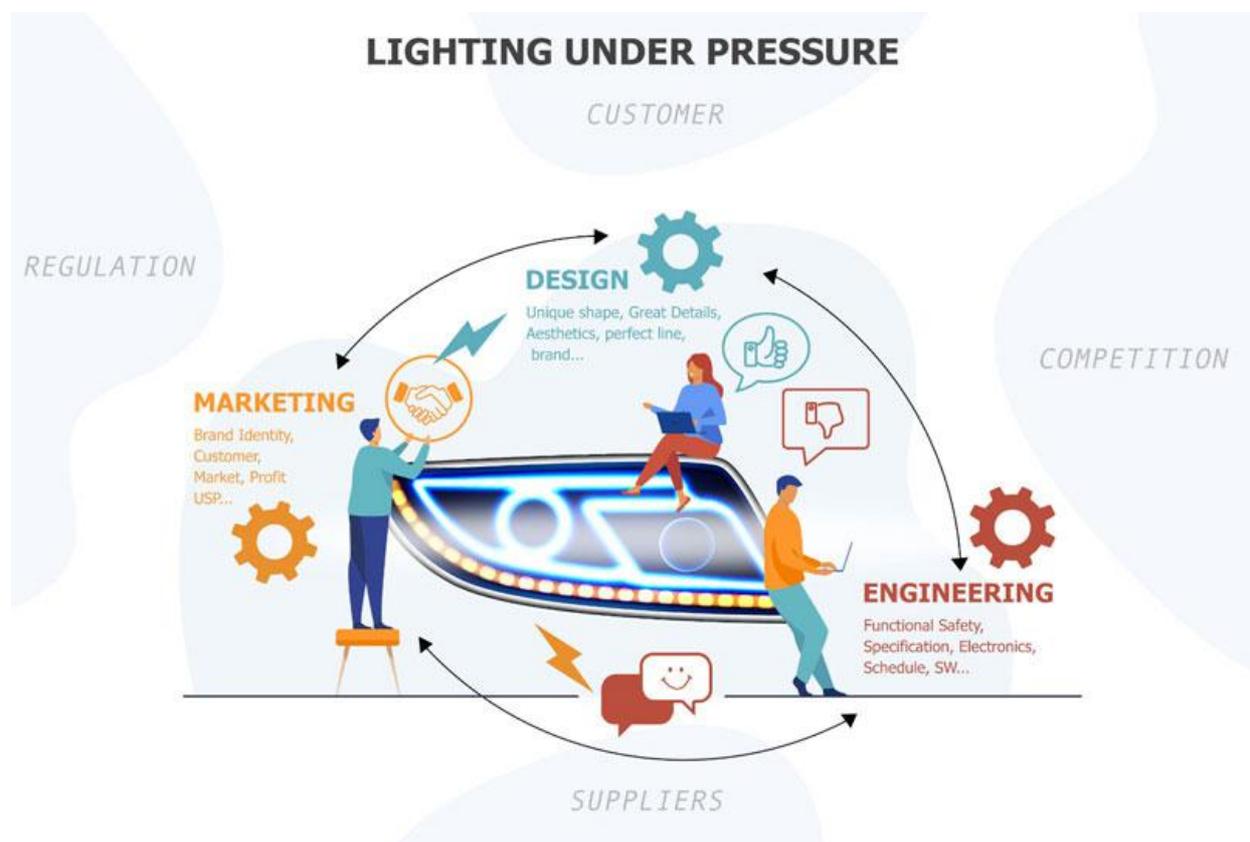
On the basis of these preliminary discussions, DVN decided to launch a study with the title:

Lighting under Pressure?

Leveraging tensions between Design, Marketing and Engineering.

As with former studies, a key element of information gathering was interviews with a number of key representatives from Design, Marketing and Lighting-engineering at OEMs and T1s. In a next step, a thorough analysis, discussion and consolidation within the team, took place.

The study starts by describing the main demands of the three key functions, including the influence of the homologation process. The study concludes by outlining the upcoming tensions during the development of a vehicle, and how to deal with them in a constructive manner.



Design and Lighting-engineering are functions which have specific influence on the lighting system installed on a vehicle. Opposite this, the Marketing function has to consider the **overall impression of the new car model, including brand identity, all its features to make it attractive for the car buyer, price positioning, and after sale services.** In this context, lighting is only one segment in competition with other features of a car like infotainment, seats, wheels etc. and Marketing has to find an optimum mix of the different elements.

As part of the program for the development and launch of a new vehicle model range, homologation is a significant contributor to the tensions that can occur between Marketing, Design and Engineering departments. Engineering is responsible for ensuring that all legal requirements are satisfied before the lighting installation(s) can be signed off as part of the complete vehicle homologation. This is a key point in the overall vehicle launch program. Engineering is also responsible

for supporting activities to amend regulations, to allow new functions that cannot currently be installed on the vehicle.

Tensions during the Vehicle Creation Process

Vehicle creation is a very competitive activity. Evaluation of the external competition, by benchmarking similar vehicles in the same segment of other brands, is essential. But equally, internal competition for budgets between different functions, especially in the early phase of the vehicle development process is significant. Tension results from the different demands of the OEM functions. Data such as target cost, size, general packaging, target weight and environmental aspects have to be defined. Once decisions are taken by the Program Management and agreed by the Board of Directors, there is a high hurdle to be overcome for arguments requesting a change.

This new DVN study will shine light on such tensions with some examples; especially the role of Lighting-engineering in its relations to Marketing, Design and Regulation will be highlighted.

Leveraging Tensions to create a Win-Win situation

Internal tensions in a company or project are not a negative sign. This is a natural phenomenon, if various faculties with conflicting targets are brought together. A key element is, how to constructively moderate and combine the tensions and find a superior solution? With some examples, the study will explain methods and joint ways forward under conflicting interests.

Target group and publication

The authors of this study have the strong belief, that the content and insights are a helpful reference for OEM engineers, Tier-1 marketing and engineering managers, and Tier-1 specialists. For Tier-2s, the study will strongly contribute to a deeper understanding of the decision making processes, during the development of a new car model. Leveraging this knowledge, in day-to-day as well as critical business decisions, is a strong tool for business growth.

The study will be ready for publication and sale at the end of September 2021.

Lighting News

LG InnoTek Sell Korean LED Patents to Chinese Firm

LIGHTING NEWS



LG InnoTek have sold 114 South Korean patents related to LED technologies—around 100 of which are still pending—to Chinese company Suzhou Legin Semiconductor. This after LG InnoTek sold 1,968 U.S. LED-related patents to the same Chinese company. In total, LG have transferred 1,977 US patents to Legin, as part of a larger deal to sell around 10,000 patents in total as well as their production equipment; last October, LG InnoTek announced their plans to exit the LED business, except for vehicle lighting.

Suzhou Legin was formed this past March, with a capital of C¥80m (around €10.5m).

Legin are registered as a semiconductor, electronic component, and machine equipment company.

Strategy Analytics: LED Value at \$4b in 2024 in Car Lighting

LIGHTING NEWS



Value demand for LEDs alone in automotive lighting will nearly triple from \$1.4 billion in 2020 to \$3.9 billion by 2024.

The latest report from the Strategy Analytics Powertrain, Body, Safety & Chassis Service, predicts that OEM requirements for styling and functionality will further increase demand for LED-based automotive lighting systems.

The analyst notes that LED has seen further developments in efficiency and Tier 1 vendors have developed cost effective solutions for LED headlight modules.

LED is also being used to raise functionality in lighting systems, particularly Digital Light Projection (DLP) and matrix LED headlights to form a precise Adaptive Driving Beam (ADB) and increase the use of glare-free high beam illumination, as well as new welcome lighting and even projecting messages and virtual lane markings.

“While the emerging market regions, low cost and heavy duty sectors seek component integration to lower the size, weight and cost of the lighting system, the increasing requirement for styling and functionality in the mass market will raise the profile of semiconductor vendors in system development,” commented Kevin Mak, principal analyst in the Global Automotive Practice.

Moody's Raises Hella Outlook

LIGHTING NEWS



The rating agency Moody's Investors Service has confirmed the corporate rating of Hella at the BAA1 level and raised the outlook from negative to stable. According to Moody's, key factors in the rating upgrade are the company's faster economic recovery from the consequences of the pandemic, and the expected further earnings improvement on account of continuous efficiency improvements. Moody's also factored in the supplier's good strategic orientation and above-average business development in recent history; good financial position and the forecast improvement in profitability and cash flow.

Lightworks Use TactoTek for Innovative Lighting

LIGHTING NEWS



Finnish company TactoTek have licenced their injection-moulded structural electronics package IMSE Designer[®] to Lightworks, who will use it to design IMSE solutions that enhance functional and ambient illumination in vehicles.

Lightworks are specialists in vehicle interior and exterior lighting system development; now they will combine IMSE and conventional illumination system elements to realise their customers' design visions. Lightworks CEO Michael Hoefgen says his company "strive to create innovative designs in which system elements are a fusion of styling, function, and efficiency; IMSE lighting solutions are valuable additions to our design portfolio because they can deliver stunning lighting in ultra-thin, conformal 3D structures that are easily integrated, even in unconventional and space-restricted locations".

TactoTek IMSE technology combines structure, electronic functions, and cosmetics in lightweight, thin, and rugged smart surfaces. Popular uses for IMSE parts include control panels and functional and styling illumination in automotive, home appliance and smart home markets.

TactoTek CEO Jussi Harvela says "Witnessing Lightworks' skill in applying IMSE technology to lighting designs has been inspiring: their design creativity builds on a foundation of optics, electronics, mechanics and industrialisation expertise combined with deep understanding of OEMs' design language".

Nissan, Mercedes to Repair Lighting on Existing Cars

LIGHTING NEWS



Nissan's supplier sent the automaker incandescent turn signal bulbs that can crack and prematurely fail, forcing Nissan to recall 2020-'21 Titan pickup trucks and Versa sedans— nearly 31,000 of them in the United States alone, not counting Canadian vehicles that might also have to be called back. The affected Titan trucks were made between July and December of 2020; the Versas were built from June to October of 2020, and the fix is easy: new properly-made bulbs will be installed.

Nissan are also moving toward resolution of a class-action lawsuit filed last May in the U.S. state of Tennessee by three owners of 2013-2018 Altima cars with halogen headlamps. The complainants say the headlamps' low beam reflectors burn off under the broiling heat of the nearby halogen bulb; the reflector can then no longer amplify light from the bulb to produce sufficient beam intensity, and the burnt reflective material gets deposited on the lamp's lenses, further reducing intensity. The settlement, which still must be approved by the judge in the case, proposes to extend the warranty coverage of the headlamps on vehicles still under their whole-vehicle warranty, replace failed headlamps free of charge on affected vehicles out of warranty, and reimburse owners of the affected cars for parts and labour costs already paid to replace the headlamps.

Mercedes, meanwhile, have an unusual headlamp recall of their own on their hands. Nearly 1,700 A-, C-, GLB-, and GLE-class vehicles from 2018-2021 have LED headlamps with an incorrect data label applied by the manufacturer, leading to improper aim, and the light intensity of the high beam, low beam, and turn signal may fail to meet US requirements. Affected lamps will be replaced and correctly aimed.

Teslas Will "See" Turn Signals, Hand Gestures, More: Musk

LIGHTING NEWS



Elon Musk, the notoriously cocksure king of Tesla, claims his cars will soon detect other cars' turn signals and hazard warning lights, emergency vehicles' flashing lights, and even hand gestures.

The claim comes along with Tesla offering a new \$199/month subscription for "Full Self Driving" on cars equipped with the latest control computer, called HW3; cars without it must first be upgraded for \$1,500. Despite the customer-facing names and claims, Tesla have disclosed to regulators that "Full Self Driving" brings equipped cars up to L2 capabilities—which means the driver must maintain vigilance and control at all times. Nevertheless, Musk calls the software updates "mind-blowing" and says they'll self-improve faster through machine learning.

"It will soon capture turn signals, hazards, ambulance/police lights and even hand gestures", Musk tweeted; he has also said after detection of the lights is added to the system, the next step will be reactions to these new inputs, as well as having the cars hear sirens and alarms. Tesla recently decided to move forward with a cameras-only machine vision system in their Model 3 and Model Y. Removing radar from these cars meant Tesla also had to remove adaptive cruise control, automatic emergency braking, and limit the speed of "auto steer". All other makers working on autonomous driving and advanced driver assistance systems also use other kinds of sensors such as radar and lidar, which Musk has derided as being "for losers". Asked to explain the new only-cameras strategy, Musk said "The whole road system is designed to work with optical imagers (eyes) and neural nets (brain). That's why cameras and silicon neural nets are the solution".

2022 Mahindra XUV700 To Get "Auto Booster" Headlamps

LIGHTING NEWS

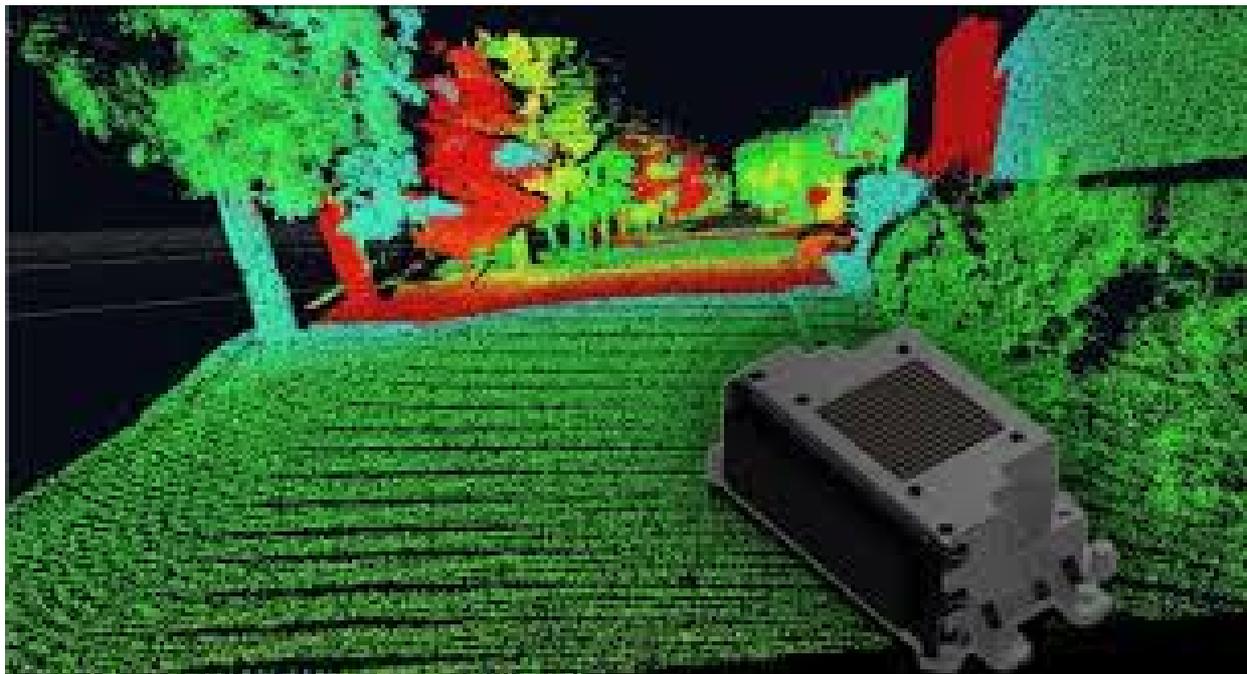


The 2022 Mahindra XUV700, a model made and sold in India, will come with headlamps that get brighter as the vehicle's road speed increases. An [online video](#) teases the new feature without going into detail, but the automaker sought to fend off assumptions this is just an automatic high/low beam switching system by tweeting *The Auto Booster is a first-in-segment feature and adds 1.6× times [sic] the illumination to high beam headlamp [sic]*.

Driver Assistance News

Continental Integrate AEye Long-Range Lidar

DRIVER ASSISTANCE NEWS



10 months after joining forces in partnership with AEye, Continental are integrating AEye's long-range lidar technology into their full sensor stack solution to create the first full stack automotive-grade system for L²⁺ to L⁴ automated and autonomous driving applications.

The solution based on AEye's lidar technology is a substantial part of the sensor setup for high level automation systems. It complements the radar, camera, and ultrasonic technologies in Continental's sensor system, and enables a reliable and redundant AD platform that can handle complex, diverse traffic scenarios and adverse weather conditions.

The high resolution of the long-range lidar improves the classification of objects. "Reliable and safe automated and autonomous driving functions will not be feasible without bringing the strengths of all sensor technologies together," said Frank Petznick, head of Continental's ADAS Business Unit. Complex and safety critical traffic scenarios, such as obstacles on the road and fast vehicles passing on highways, require high automation systems to have a maximum sensing range and image resolution to ensure sufficient response time. A single technology approach cannot fulfill this requirement..

One of the most challenging parts of developing new technologies is to make them accessible to the mass market. Continental are now industrialising AEye's reference

technology for mass-market production, which is critical to ensuring consistent quality that vehicle manufactures can rely on. “Our partnership with AEye is unique because it enables Continental to build a new long-range lidar in a very short time, based on AEye’s reference architecture and software,” said Dr. Gunnar Juergens, head of lidar Segment at Continental. “We will manage the entire product life cycle, including the development of a mass market product, as well as manufacturing, validation and testing according to automotive grade standards.”

AEye Lidar Gives Kilometre Range in Rain

DRIVER ASSISTANCE NEWS



AEye have achieved a milestone: 1,000-metre lidar range in the rain, behind windshield glass. The test was performed at the American Center for Mobility (ACM) test track in Ypsilanti, Michigan, with results verified by active safety and automated vehicle technologies researcher VSI Labs.

The test was conducted using VSI's research vehicle, which integrated AEye's sensor into its AV stack to study the impact of adaptive lidar on the performance and safety of automated functionality. The team used a rain machine to simulate wet weather, and mounted the sensor behind a piece of windshield glass to gauge long-range sensor performance in heavy rain.

Jordan Greene, AEye's General Manager of ADAS and VP of Corporate Development, says this ultralong-range capability of their adaptive lidar paves the way for automakers to "release new revenue-generating applications like highway autopilot or hub-to-hub autonomous trucking; being able to deliver this performance in all weather conditions ensures these applications can be safely implemented in even the toughest driving environments".

AEye provide high-performance, adaptive lidar systems for vehicle autonomy, ADAS, and robotic vision applications. AEye's AI-enabled and software-definable iDAR™ (Intelligent Detection and Ranging) platform combines solid-state adaptive lidar, an optional low-light HD camera, and integrated deterministic artificial intelligence to capture more information with less data—enabling faster, more accurate, and more reliable perception.

ADAS: Lidar is Gaining momentum

DRIVER ASSISTANCE NEWS



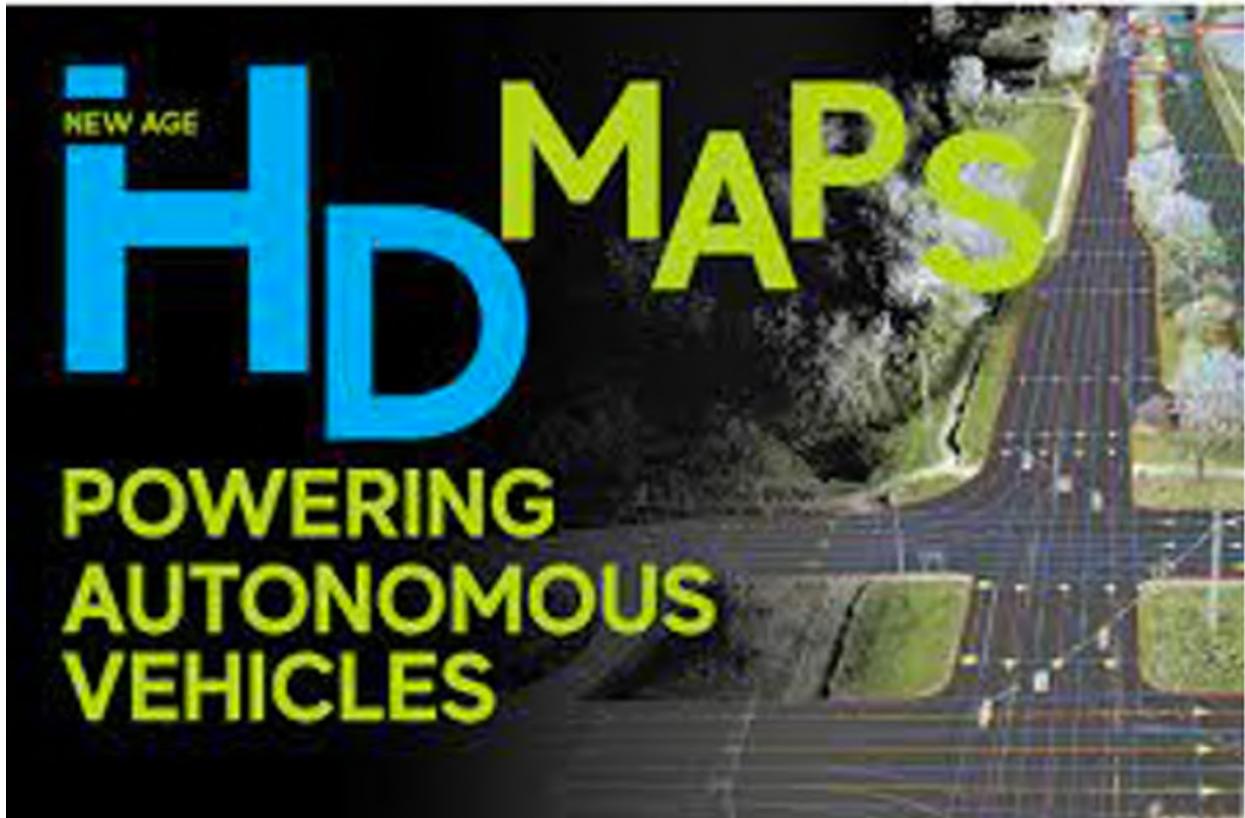
The US company Cepton Technologies, a provider of lidar solutions from San Jose, California and other suppliers have received orders for lidar sensors in series vehicles. There is movement in the future billion-dollar market.

Lidar system in the front of the vehicle.

Cepton sees itself confirmed with a major order. Cepton Technologies made a news item in the middle of the week. The technology company receives the largest order to date for the use of lidar sensors in driver assistance systems from a US automobile manufacturer. Cepton sees this as a milestone for both lidar and other sensors.

Toyota takes over HD mapping specialist HD Carmera.

DRIVER ASSISTANCE NEWS



Woven Planet Holding, the subsidiary of Toyota takes over HD mapping specialist Carmera. The teams of Carmera, a start-up founded in 2015, will join those of the Toyota subsidiary, which will expand its geographic footprint by having additional offices in New York and Seattle.

Once the transaction is completed, the Carmera teams will be attached to the Automated Mapping Platform (AMP) section of Woven Alpha. This division of Woven Alpha focuses on exploring new strategic areas for business expansion and incubates several innovative projects, such as Woven City (a smart city designed at the foot of Mount Fuji) and Arene (a platform to allow third-party developers to deploy applications and Toyota to 'install new functions remotely, depending on the equipment available to the vehicles).

AMP is a connected software platform that supports the creation, development and distribution of HD maps. Woven Alpha aims to make AMP the most comprehensive HD road network mapping platform in the world. These HD maps are essential in the development of autonomous vehicles and allow most of these vehicles to find their way precisely. Carmera's main clients are companies and start-ups developing autonomous vehicles.

Toyota will benefit from Carmera's map update tools, change management and IoT sensor technology. This will allow AMP to cover different roads more quickly and to integrate changes in lane markings, traffic lights, signs, etc. almost in real time. Improvements that will help support its future multiregional commercial launch.

Renault's Hochgeschurtz Is Next Opel-Vauxhall CEO

DRIVER ASSISTANCE NEWS



UWE HOCHGESCHURTZ

Opel/Vauxhall CEO Michael Lohscheller is stepping down after nearly four years and will be replaced by Uwe Hochgeschurtz, the head of Renault's operations in Germany, Austria and Switzerland.

Lohscheller, who was appointed CEO in 2017 when Opel was acquired by PSA Group—now part of Stellantis—has "decided to pursue a new challenge outside Stellantis", Opel said last week.

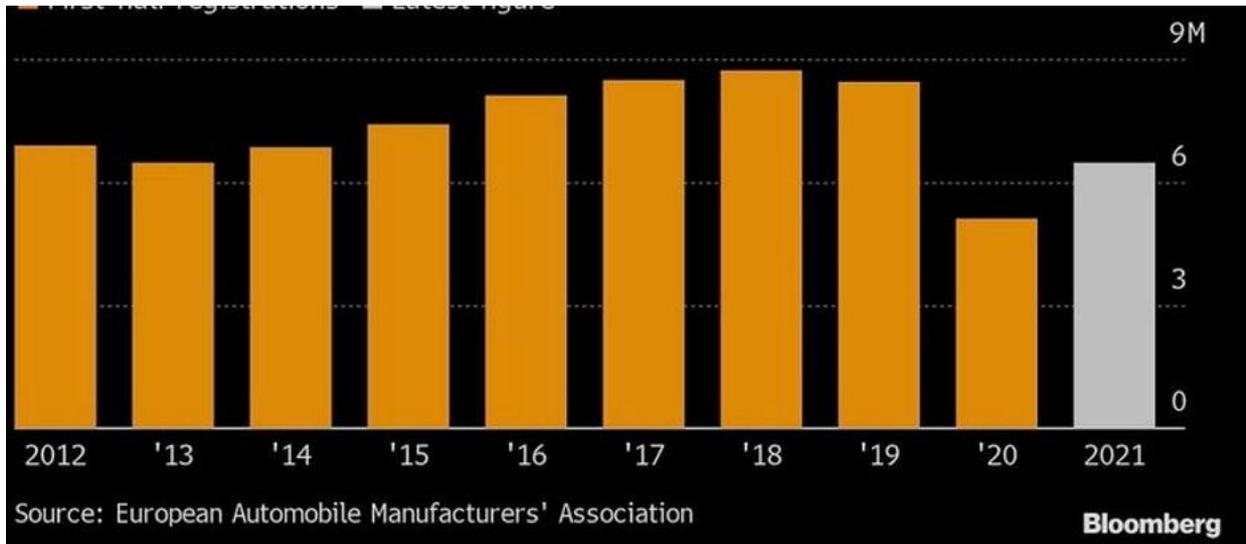
Hochgeschurtz will start as CEO on 1 September, and will report to Stellantis CEO Carlos Tavares. He will be a member of the group's top executive team. He started his automotive career in 1990 at Ford, and joined Volkswagen in 2001 and then Renault in 2004. He studied business administration at universities in Germany (Wuppertal and Cologne), the UK (Birmingham) and France (Paris Dauphine).

Lohscheller started his automotive career at Mitsubishi Europe in 2001. In 2004 he moved to Volkswagen Group, where he worked in marketing and served as chief financial officer for VW Group of America. He joined Opel as CFO in 2012 and was named CEO in July 2017, shortly after PSA Group bought Opel/Vauxhall from General Motors. He was responsible for implementing the PACE turnaround plan under Tavares.

After losing tens of billions under GM ownership, Opel recorded a positive operating margin by 2018. Lohscheller was named an *Automotive News Europe* »EuroStar« in 2019 because of the turnaround. "I would like to warmly thank Michael for having established strong sustainable foundations for Opel together with the employees," Tavares said. "This impressive turnaround paves the way for the forthcoming worldwide commercial development of the brand."

European sales rose 13% in June

DRIVER ASSISTANCE NEWS



EUROPE'S PASSENGER-CAR FIRST-HALF REGISTRATION

New-car sales surged in Europe in June, rising for the fourth month in row, as sales continued to recover from the low level reported last year when coronavirus restrictions shut dealerships.

Registrations rose by 13% year-on-year to 1.28 million vehicles in the European Union, Britain and European Free Trade Association, according to ACEA.

Among brands, the monthly winners included Hyundai, whose registrations rose 75% percent, and Jaguar, which gained 55%.

Losers included Renault brand, down 24%, and Ford, which slipped 20%.

In the first half, registrations rose 27% to 6.49 million cars, remaining well below levels the industry was accustomed to prior to the pandemic.

"With the further easing of lockdown measures and subsequent support from an improving economic backdrop, selling rates should pick up over the second half of this year," analysts at LMC Automotive said in a report.

"Risks lie on the downside, as the semiconductor supply shortage threatens to disrupt the post-lockdown rebound in demand," LMC said.

The slower sales recovery in Europe is having little effect on the bottom lines of Volkswagen Group and Stellantis, the region's two largest auto manufacturers.

VW Group last week reported that earnings surged to €11b in the first half, while Stellantis said its profit margin for the period should achieve 7.5% for the year.

VW Group is benefiting from strong deliveries in China, while Stellantis is cashing in on buyers snapping up lucrative Jeep SUVs and Ram pickups in the U.S.

General News

Europe Propose Ban on New Combustion-Cars by '35

GENERAL NEWS



EUROPEAN COMMISSION PRESIDENT URSULA VON DER LEYEN (CENTRE)

The European Commission are proposing an emissions limit of zero g/km of CO₂ from new cars sold in the European Union by 2035—a plan that would effectively ban new cars with gasoline and diesel engines. The Commission are also seeking a 55 per cent reduction of CO₂ emissions by 2030 compared with 2021 levels.

Passenger cars account for about 12 per cent of total EU CO₂ emissions, so curbing that output will be key to achieving the bloc's overall climate goals. The measures will require approval by member states and the European parliament, a process that could take about two years.

Some European automakers have already announced they will switch to zero-emissions cars in Europe. IHS Markit says "It is clear that if these stretch goals are implemented as solid proposals to be voted into legislation, carmakers that have been bolder and invested heavily earlier on in electrification will have a significant advantage." But the zero-emissions target for 2035 likely will meet with opposition in countries with major auto industries such as Germany and France.

To address the infrastructure needs an EV-mandate would create, the EC have also proposed legislation requiring countries to install public charging points no more than 60 km apart on major roads by 2025.

Audi CEO Works to Recover From Coronavirus

GENERAL NEWS



Audi CEO Markus Duesmann has gone into a rehabilitation clinic to recover from a coronavirus infection he contracted in the spring. An Audi spokesperson said Duesmann's admittance to the rehabilitation clinic was purely a precautionary measure on the advice of his doctors. Duesmann is already scheduled to return to work at the end of the month, and has said he does not feel any long-haul Covid-19 symptoms.

Duesmann fell ill in April, then spent two weeks in quarantine at home. In a message to his employees this week, Duesmann wrote that based on his experience he felt anyone could catch the disease "despite caution and many safety precautions." For this reason, he said, he had now decided to take part in a rehabilitation program for two to three weeks, just to be on the safe side, so that he could then come back to work and "go full throttle again."