DrivingVisionNews.com
Automotive lighting and driver assistance technologies

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Editorial

ALE Followed On Heels Of Shanghai DVN Workshop

A few weeks after the DVN Workshop at Shanghai, China's biggest and most important lighting event took place there: ALE, the Automotive Lighting Exhibition and Congress. DVN were actively present with three lectures:

DVN Senior Advisor Wolfgang Huhn talked about GTB strategy working group to support regulatory development with powerful scientific arguments done with neutral research reports made by institutes. **DVN Regulatory Advisor Geoff Draper** presented his proposal for DVN Interest Groups, an initiative to harmonise and synchronise the technical requirements of lighting to be suitable for all national and regional legislations. And special **consultant to DVN Rainer Neumann** discussed developments in ADB, and new functions, helping the driver to detect other road users earlier and generate awareness with projection of symbols and pattern in dangerous situations.

The ALE event underscores the positive presence of DVN, realising our lifelong mission as the main international tech watch and networking organisation in the vehicle lighting world. DVN and ALE were supporting each other in a nice way. DVN brings international awareness, contacts and opinions to the ALE, the ALE gave a nice stage to increase the degree of popularity of the DVN in China. We're always-always-always hard at work for you, the DVN community.
Be sure to plan for the next two DVN events on the docket:
- the US DVN Workshop near Detroit on 21-22 September
- the DVN Lidar Conference in Frankfurt on 15-16 November.
We look forward to your participation!

Sincerely yours

In Depth Lighting Technology

DVN Lectures, Expo Booths at ALE '21

DVN EXHIBITION BOOTH

Wolfgang Huhn: The concept of the GTB Strategy Working Group

Wolfgang Huhn, formerly Audi's lighting and vision systems development manager, is now a Senior Advisor at DVN.Hetalked about the GTB Strategy Working Group (WG-S). The first slide of his ALE presentation was the last slide of his DVN Workshop presentation in Shanghai in April. He described the mayor changes as well as the unchanged parts of his professional life after leaving Audi and starting at DVN.
Then he explained the intent of the WG-S, which was founded to modernise the GTB and find ways to support regulatory development with powerful scientific arguments based on research reports made by internationally reputable institutes. The research is financed on an ongoing basis by a cost-sharing arrangement amongst 25 companies, thus facilitating fully neutral research with no influence by any particular company. Needless to say, the arrangeent also makes the research affordable for each member.
Future fields of research were presented: CO_2, new lighting functions, ADAS/AD support, and safety. First examples for the CO_2 field were given, describing the target conflict between super slim lamp design vs optical efficiency, which is directly linked with electrical power consumption. (as Michael Hamm says: "the price of the beauty").

Main results: CO_2

• Lighting is one of the contributors to power consumption and CO_2 emission
• 100w electrical power equals 2 g/km CO_2
• 100w electrical power equals 100 kg driving battery weight to achieve the same range (EV)
• Conflicting lighting trends: small headlamps give lower optical efficiency, therefore consume more power. Edge-to-edge front and rear lamps use huge plastic elements, therefore weigh more and consume more power.

In the safety field, the Optical Safety Zone concept is an example of what's being loooked at. In the nicely moderated Q&A session Huhn expressed his wish that a Chinese OEM may take the chance to enter the GTB WG-Strategy to support the Chinese ideas in the international research for the regulation development.

Geoff Draper: A New Initiative to Harmonise Technical Requirement

Former GTB President Geoff Draper is now DVN's Senior Regulatory Advisor

Draper explained his proposal for DVN Interest Groups in the 25 May 2021 DVNewsletter. This is a new initiative to harmonise and synchronise the technical requirements of lighting to be suitable for all national and regional technical, legal, and administrative requirements.

The tool to achieve this is national and regional interest groups communicating under the DVN umbrella on multiple platforms including DVN, LinkedIn, and WeChat, with everyone welcome to contribute.

Removal of barriers to innovation requires worldwide harmonised and synchronised technical requirements that are introduced into national legislation type approval or self-certification legislation.

At the 2018 Tokyo Workshop, a panel of experts from China, India, Japan, Korea, and representatives of UN WP29, GRE, the European Commission, and the American Automotive Policy Council agreed that a new initiative was required. However, because of the anti-regulatory, uncoöperative stance of the Trump Administration and the pandemic, no progress was possible. Even with the new US administration and the beginnings of a handle on the pandemic, it is still difficult because everyone is waiting for someone to make the first move, as it seems.Geoff Draper believes that to achieve world-wide harmonisation:
• Global Technical Regulations (GTRs under the UN 1998-1999 Agreements) are not an effective way forward for lighting
• GRE must focus on replacing subjective technical requirements with objective testing
• Industry must support GTB and GRE to develop objective testing requirements
• The examples of Korea and India to adopt the UN technical requirements into national legislation are to be studied.
• NGOs have to follow their democratic processes, and without consensus they cannot propose new harmonisation initiatives to WP.29 or GRE. In contrast, DVN Interest Groups can provide an informal worldwide opinion that the NGOs and WP29 and GRE can consider.

Draper's conclusion is that all industry stakeholders must work toward harmonisation and synchronisation. Importantly, national administrations must be encouraged to be active in GRE, and to follow the examples of Korea and India to update their national legislation within 12 months of the adoption of the GRE amendments.

The main challenge is the USA, because its technical requirements are sharply different to the international UN Regulations and increasingly outdated with respect to technology; there's only a cumbersome, slow, failure-prone system to update FMVSS 108, and the US is reluctant to join GRE. China is a challenge but is making good progress and is committed to follow the evolution of the UN technical requirements. The major problem is the time it takes to process updates to the Chinese GB Standards.

Draper ended his presentation with an open invitation to join his DVN Interest Groups.

Rainer Neumann: Future Automatic Light Control Systems

Rainer Neumann, in charge of regulations at Varroc Lighting Systems, is also a consultant to DVN. Neumann explained how headlamps are getting more and more complex in providing several functions aside from low and high beam. The complexity for the driver will not be anymore controlled if these new devices will have an automatic mode, thus providing the best light distribution for the prevailing situation. The UMTRI-GM study has shown that even the relatively primitive automatic high/low beam switching has shown a reduction in accidents with vulnerable road users of around 35%; it seems obvious that ADB could do even better by providing high-beam seeing with low-beam glare.

New functions will follow, helping the driver to detect other road users earlier or generate awareness with projection of symbols and pattern in dangerous situations. Examples include the optical safety zone when passing bicycles, bus stop line indicator for pedestrians, and construction zone lines to help drivers keep their lane.

To approve such future automatically-controlled lighting systems, we need to go for a simplified but controlled way. As done in the approval of ADB with a real driving test drive to prove functionality we should also take care on the upcoming projection symbols and pattern currently in discussion. Today, we are struggling to get even for the simplest informational lighting function an approval in GRE. There are several reasons why this is not the future to allow improvements in safety for new lighting systems. The entire system contributes, including the lamps, the sensors, and the cameras. A real test drive with the features in mind should be introduced instead of defining and discussing all small items of parameters individually. Additionally, the exchange of different countries and their behaviour will much better solve with practical parts and vehicles.

We already have experience when presented vehicles showing new features and could be experienced by the contracting parties. They will get a much better feeling of the topic we are discussing. The message is: to find and facilitate the best solutions, communicate more intensively, and try to define a common target instead of bringing prepared arguments in the discussion which cannot be solved directly.

Lighting News

ISAL Postponed to April 4th to 6th 2022

LIGHTING NEWS

Because of the actual Covid situation the Administration of the Technical University Darmstadt has decided to have no events with physical attendance before October 31st 2021.
ISAL was unfortunately inside this time frame with a planned event date on September 13th to 15th. It is now a huge task for Timo Singer's ISAL organizing team to change all due dates, exhibition details and, especially, to negotiate a new date for this big event with the conference center Darmstadium.

The new date was found and released by the ISAL steering board, it is April 4th to 6th at the Darmstadium Conference center as in the last years, hopefully without any Covid restrictions. Good luck for the organizing team!

U.S. Traffic Deaths: 38,680 in 2020 +7% vs 2019

LIGHTING NEWS

U.S. traffic deaths soared dramatically after coronavirus lockdowns ended in 2020, hitting the highest yearly total since 2007 as more Americans engaged in unsafe behavior on U.S. roads, the NHTSA said last week.

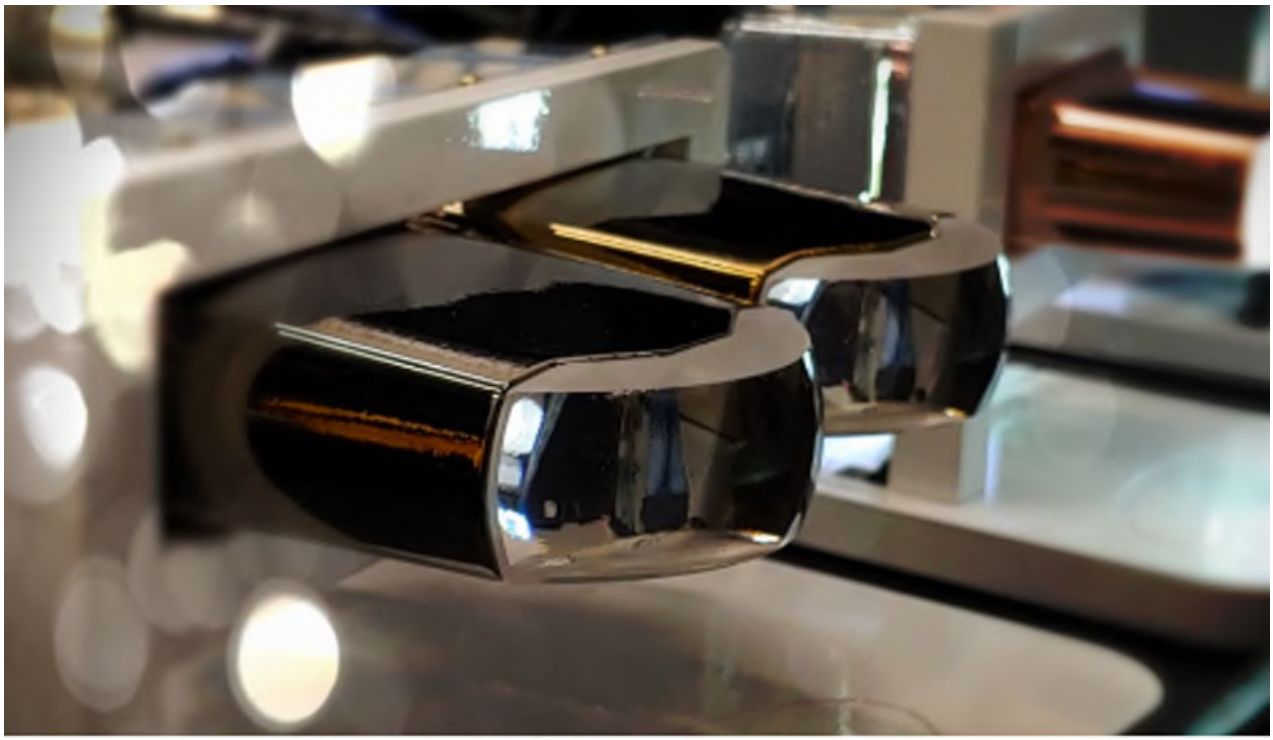
For all of 2020, 38,680 people died on U.S. roads, up 7% or nearly 2,600 more than in 2019, even though Americans drove 13% fewer miles, preliminary data shows. The fatality rate hit 1.37 deaths per 100 million miles, the highest figure since 2006.
In the second half of 2020, the number of traffic deaths was up more than 13%.

"We intend to use all available tools to reverse these trends and reduce traffic fatalities and injuries," said acting NHTSA Administrator Steven Cliff. In an open letter to drivers in January, NHTSA urged action to address the "terrible trend."

Driving Vision News will organize a DVN workshop in Novi, Michigan, US on 21-22 September totally dedicated to the safety at night titled: “How to Save Lives in Night-Time Driving” with the participation of all companies, and organizations involved in safety: OEMs, Lighting and ADAS suppliers, universities, regulators, safety authorities.
More information at sberner@drivingvisionnews.com

ZKW are № 4 in European Patent Applications

LIGHTING NEWS



Last year, ZKW applied a total of 57 innovations for international patents: 50 in Europe, and seven in China. As a result, ZKW lead the patent rankings in Lower Austria for 2020, and are in 4th place in Europe among all Austrian companies that submitted their inventions.

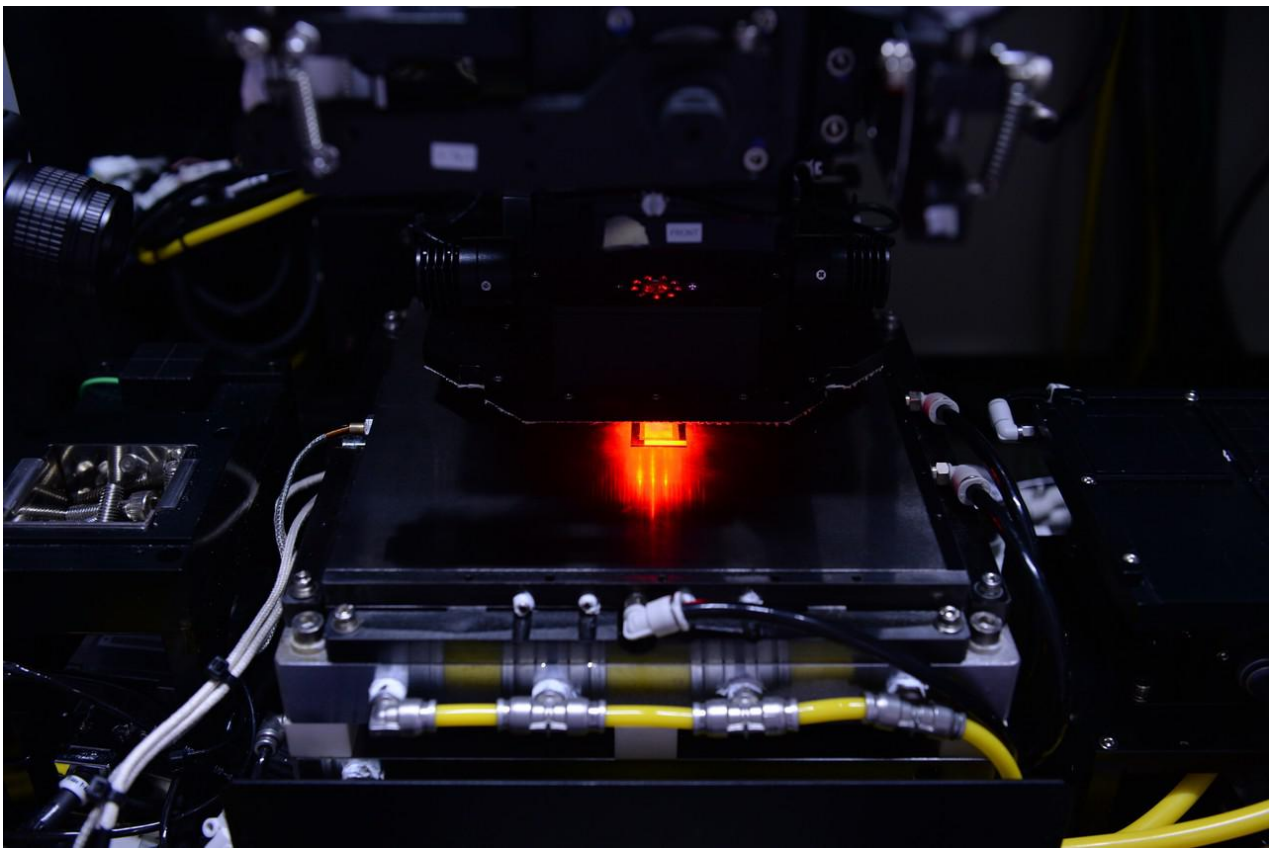
ZKW secured a top placement thanks to the company's central focus on R&D and resultant proliferation of innovations in intelligent lighting and sensor solutions required for autonomous driving. New products with modern measurement technology are tested in the company's lighting channel, which is one of Europe's largest. CEO Oliver Schubert says "Our patents represent the values of our company. Innovation is essential to us, to illuminate a path towards the future".

The majority of patents ZKW applied in 2020 are for technologies and sensors used in autonomous driving. One of these, for example, ensures an optimal view by camera sensors at night, by providing targeted illumination of the area around the vehicle with an intelligent headlamp. Sensors can easily become dirty, and that causes problems. If their sensing capacity is impaired this way, it can make autonomous vehicle operation impossible. So ZKW developed a solution for cleaning the sensor area by using high-frequency vibrations or a targeted jet of water, and applied for a patent.

Overall, a total of 2,737 inventions were applied at the Patent Office last year. Despite the pandemic, Austria was once again at the top of the rankings for international patent applications. The country was 6th in the EU and 11th in the world as a whole, which ZKW assert is proof of the force of innovation of Austrian companies.

90% Faster, Cheaper MicroLED Production: Korean Research

LIGHTING NEWS



Through a 16-year development project, South Korea's state research institute has discovered a way for the cheaper production of microLEDs by combining two separate manufacturing processes. The new technique using laser melding will save time and costs to eventually lower the price of microLED products.

The state-funded Electronics and Telecommunications Research Institute (ETRI) said their research team simplified the process of manufacturing microLEDs by using a laser and a filmlike novel material called SITRAB. Researchers were able to create a flat-panel display prototype with 1,225 microLEDs. The Institute aims to commercialise this technology in two years' time. Once that happens, ETRI representatives say, it can cut down manufacturing time and cost by 90 per cent.

Conventional microLED manufacturing includes a transferring process in which microscopic LEDs are moved onto a chip, and a bonding process that fuses diodes and the chip together. ETRI's new method uses a laser to heat microLEDs adhered onto a SITRAB film to bond them onto a chip. ETRI say their manufacturing technique can selectively meld LEDs without having to move diodes from a manufacturing palette to a preferred position before fusing. The new laser-melding technique can also be used for other types of LEDs as well, such as miniLEDs.

New Chinese Firm Buy LG InnoTek's US LED Patents

LIGHTING NEWS

LG InnoTek have sold their 2,000 patents related to LED technology registered in the US to a Chinese company called Suzhou LEKIN Semiconductor, according to filings made to the United States Patent and Trademark Office.

Suzhou, China-based LEKIN Semiconductor were founded in March and registered as a company in April. The firm's initial capital was shown to be C¥80m. LEKIN is to be owned by various entities, each owning shares ranging from 8 to 17 per cent. This includes CEO Guilin Shuang, who owns a personal stake of 16.37 per cent.

LEKIN say they have aquired around 10,000 patents, which they're planning to maybe sell on to a third party, or help patent funds monetise them by dint of litigation. LG InnoTek decided to exit the LED business in October 2019, and that exit was finalised last October. Throughout 2020, they had been attempting to sell their LED facilities in South Korea and China but these plans were delayed by the pandemic.

Antolin Q1 Sales Figures Shine Brightly

LIGHTING NEWS

Grupo Antolin, who supply technological solutions for car interiors, improved their gross operating profit (EBITDA) by 26 per cent in the first quarter of the year, to €96m.

Sales over the same period reached €1,076m, compared to €1,053m in the first quarter of 2020.

The recovery in global vehicle sales, as well as efficiency and cost-containment measures to deal with the crisis, enabled growth of 9 per cent in results and the EBITDA margin, compared to 7.3 per cent in the first quarter of 2020, when the crisis began.

By region, Antolin experienced a significant recovery in Asia with a revenue growth there of 78 per cent (€130m), as well as in Europe, with an improvement of 6 per cent (€570m).

Despite the weakness of some markets this quarter, Grupo Antolin are optimistic about the evolution of car sales this year, as the vaccination process favours an overall recovery in global economic activity. The company expect a substantial improvement in their 2021 performance, with strong revenue and operating margin growth.

Antolin's sales in China experienced a strong growth of 113 per cent, up to €110m. The country accounted for 10 per cent of the company's business in the first quarter, up from 4.9 per cent a year earlier. To harness the growth potential of this market, Antolin are focussed on expanding their customer and product base with more advanced electronics and lighting solutions. In March, Antolin created a joint venture with Shanghai NAEN Auto Technology, with the aim of jointly developing advanced vehicle electronics with a high level of integration.

Driver Assistance News

OS7 Update Brings Upgrades to 1m+ BMWs

DRIVER ASSISTANCE NEWS

Last week the rollout began of the new BMW Remote Software Upgrade for 1.3 million vehicles with BMW Operating System 7. This activates Amazon Alexa integration in four more markets. The upgrade also includes improvements such as the integration of the traditional destination entry in BMW Maps. The upcoming BMW Remote Software Upgrade will update the BMW Operating System 7 to Version 21-03. The rollout started in Germany, gradually covering more BMW Connected Drive markets worldwide. In total, more than 1.3 million BMW vehicles, representing more than 20 models, will be given the upgrade.

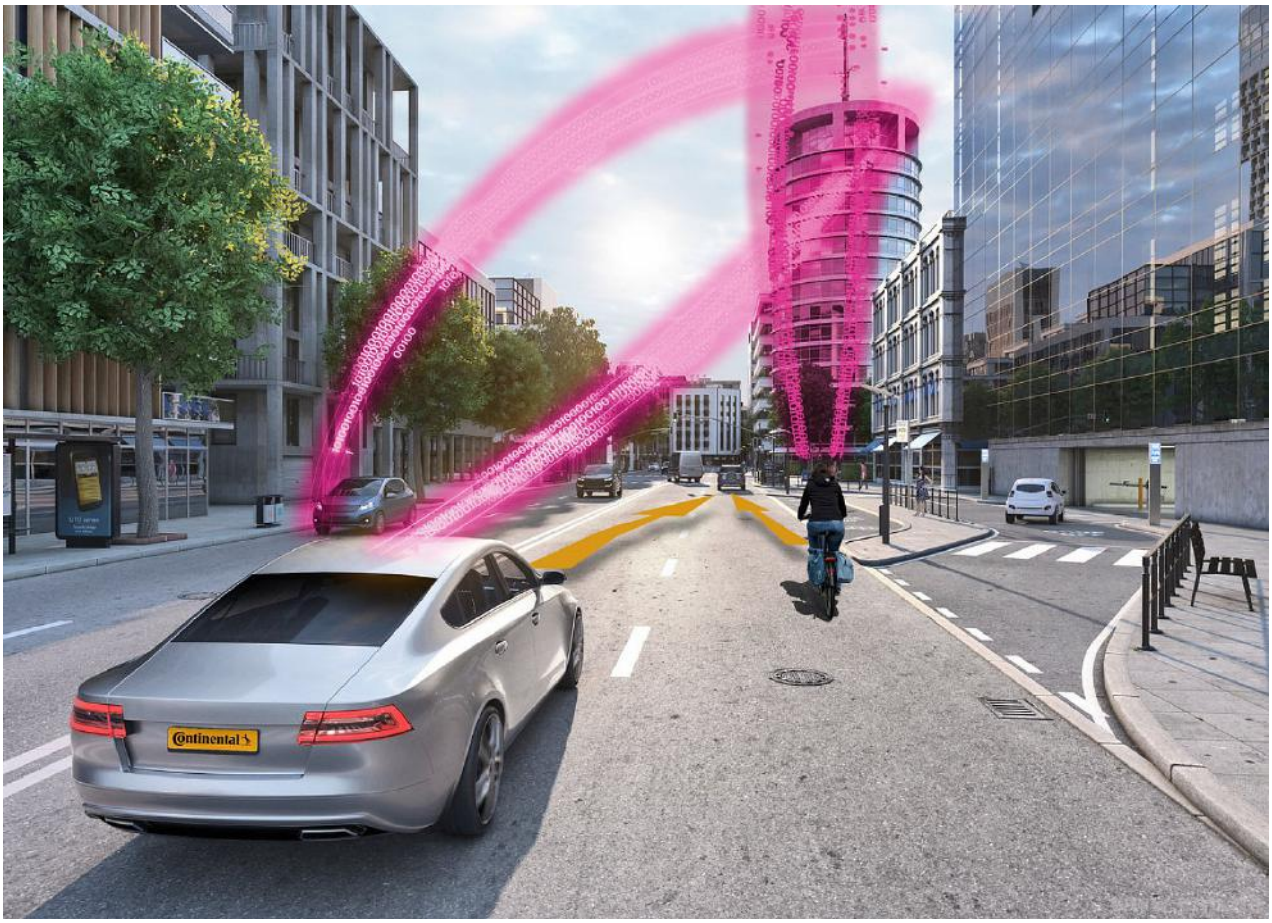
The BMW Maps navigation system went live in mid 2020 for vehicles with BMW Operating System 7. The system, cloud-based for the first time, makes route calculation significantly faster and more dynamic by combining real-time information with predictive models. The cloud also contains additional context-related information on now over 120 million points of interest, such as ratings, opening hours and images. The POI database is updated several times a week.

The easiest way to enter the destination is in natural language in dialogue with the BMW Intelligent Personal Assistant. With BMW Maps, additional improvements in terms of ease of use via touch or BMW controller have been implemented. Other improvement provided by this upgrade is that the Lane Departure Warning settings can now be saved permanently or LDW can be disabled at will. From now on, the deactivation remains stored in the corresponding activated BMW ID. The function is only reactivated if the customer asks the car to turn it back on.

The update also corrects a display error when playing media with smartphones paired via Bluetooth and running Android 11. After the upgrade, the cover art is processed correctly when music tracks are changed.

Continental, T-Systems Building Crash-Warn System

DRIVER ASSISTANCE NEWS



Continental and T-Systems, a division of Deutsche Telekom, are developing a system that warns of accidents between connected vehicles and VRUs (vulnerable road users) including cyclists, scooter riders, and pedestrians. The solution calculates the paths taken by cars and bicycles. If they are likely to cross at the same time, the system warns both road users via mobile communications in real time. Initial road tests have been successful.

Continentals Head of Research and Advanced Development Karsten Michels says "Vulnerable road users in particular are often overlooked in road traffic. What's more, according to the European Road Safety Council, more than 80 per cent of accidents between pedestrians or cyclists and motorised vehicles end fatally for the vulnerable road users. Thanks to real-time networking and collision warning, we therefore give cyclists or pedestrians more visibility. In this way, we reduce serious accidents, injuries, and traffic fatalities".

And Oliver Bahns, responsible for connected mobility at T-Systems, says "With collision warning, we are equipping cyclists, pedelec and scooter riders with a digital guardian angel. The key to this is the high level of connectivity: around 85 per cent of the population in Europe uses a smartphone. And more and more cars are connected, too. With our computers in the mobile network, we also ensure extremely short response times".

The collision warning system is based on GPS, acceleration sensors, mobile communications, and cloud computing. The car transmits its position and acceleration values to the cloud via mobile communications. The cyclist also sends this information to the cloud via smartphone. It calculates the paths for the next 5 seconds and sends a warning to the car and the cyclist's device if a collision is imminent. To ensure that this information reaches both road users as quickly as possible, the nearest cloud computer in the mobile network to the location of the possible collision is always used.

Germany Takes Worldwide Lead in AV Allowance

DRIVER ASSISTANCE NEWS

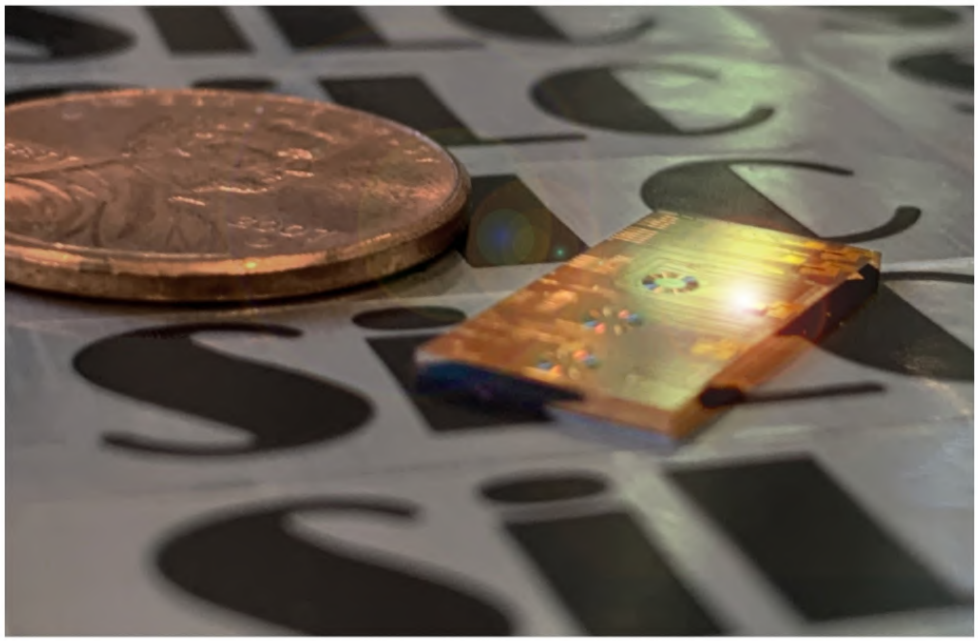
The German Federal Government wants to promote R&D and thus make the mobility of the future more versatile, safer, more environmentally friendly, and more user-orientated. Federal Minister Andreas Scheuer said "The Federal Council has passed our law on autonomous driving. This clears the way to get self-driving vehicles on the road as normal, as the first country in the world. With the new law on autonomous driving, we have created the legal framework so that L^4 autonomous vehicles can drive in regular operation in specified operating areas in public road traffic". The aim is to bring vehicles with autonomous driving functions into regular operation by 2022.

The law focusses on flexibility: the operation of driverless vehicles is made possible for a maximum number of application scenarios which include shuttle traffic from A to B,
people movers (buses travelling on a specified route), hub-to-hub transport (e.g., between two distribution centres), first- and last-mile goods and people transport, and automated valet parking.

The law regulates, inter alia, technical requirements for the construction, condition, and equipment of motor vehicles with autonomous driving functions; and obligations of the persons involved in the operation of vehicles with an autonomous driving function. It also provides for the creation of uniform regulations to enable testing of automated and autonomous vehicles. The Federal Ministry of Transport and Digital Infrastructure will evaluate the effects of the law after the end of 2023, especially with a view to the developments in the field of autonomous driving and the updating of international regulations as well as the compatibility with data protection regulations.

SiLC Mull Lidar Ramp-Up on $17m Fund-Up

DRIVER ASSISTANCE NEWS



Silicon photonics startup SiLC have raised $17m in a venture funding round expected to support the launch of a new lidar imaging chip later this year. The California-based company, founded by CEO Mehdi Asghari in 2018, are one of a handful of companies working on FMCW (frequency-modulated continuous-wave) lidar, which brings a number of advantages over pulsed, time-of-flight, and MEMS-based systems.

Led by Alter Venture Partners and Dell Technologies Capital, the series A round was also supported by Osram's Fluxunit, Sony's venture division, Epson, UMC Capital, Yamato Holdings, and Global Brain. SiLC had previously raised $12m in a seed round. The additional cash will help finance an expansion of company operations, and accelerate product development.

SiLC were aiming for a formal product launch of what they call their "4D+ vision" sensor later this year, with immediate volume capability; they assert the product launch will be optimised for medium-range applications such as industrial, security, and robotics markets, offering unprecedented levels of precision.

The sensing chip is intended to imitate human visual capability, with SiLC claiming "best-in-class" performance in terms of range, resolution, and accuracy. More specifically, the company's claims include a precision of 3 mm at a 30-metre stand-off distance, alongside 0.01° angular resolution, and up to 150 metre range, though they plan to follow the initial product with a long-range version offering 300-metre range, perhaps in the first half of 2022.

Unlike conventional lidar, FMCW systems can determine the direction vehicles or other hazards are moving, by picking up a Doppler shift in the frequency of light used to scan a scene. Varroc, a major headlamp supplier, are expected to reveal a concept car fitted with SiLC's 4D+ vision sensors later this summer.

Valeo Lidar: Great Features, Great Price

DRIVER ASSISTANCE NEWS

Extracted interview with Joachim Mathes
CTO, Valeo Comfort & Driving Assistance

"We need a comprehensive transformation of mobility, and this is underway around the world. The acceptance of autonomous cars is still one of the critical success factors on the customer side. As of today, there is still mistrust, and sometimes fears may even be involved. You always have to earn trust. The development and validation of driver assistance systems should be transparent and clearly regulated. The top priority on the list of priorities must be road safety and efforts to further reduce the number of road deaths. The European New Car Assessment Program NCAP has done excellent groundwork here in recent years. Active and passive safety systems are increasingly delivering one.

"Contribution to avoid collisions entirely and to mitigate the consequences of accidents. It is important that drivers are familiar with the additional electronic equipment in their vehicle and they know what they are doing in which situations. This aspect is becoming increasingly relevant. In the next few years, additional systems for automated driving at L^{2+} and L^{3} will come onto the market and will technically enable the driver to devote himself to other activities, at least temporarily.

"According to SAE, the definition of autonomous driving is clear: Everything below L^{3} is classified as automated driving; everything above it as autonomous driving. If I want to cross this dividing line, the systems have to have a completely different technical design.Valeo covers the entire spectrum of ADAS, starting with systems that are already part of the safety equipment of many series models to functions at L^{2+}, which often lead to *wow* reactions from buyers of a new car. We are working on L^{3} functionalities, many features that are just coming onto the market or are announced for the near future are based on technology from Valeo. Four leading automakers are already equipping their cars with this technology. Without them, autonomous vehicles could not exist today or in the future. Our lidar works like a radar, but uses light beams. It combines a wide field of vision with an enormous detection range and makes highly automated driving safer than ever before. The Valeo 3D lidar is also characterised by a low price."

General News

VW Group: Two Operating Chiefs to Boost Synergies

GENERAL NEWS

Volkswagen Group plan to create two new top posts to supervise their brands more closely. The automaker will install two new chief operating officers to oversee the group's 12 premium and volume brands, which include Audi, Porsche, Bentley; VW, Škoda, and SEAT. The new chief operating officers will be appointed directly below the management board level.

VW Group CEO Herbert Diess aims to reduce overlap between brands and find more synergies as he pushes to improve profitability at the automaker. In particular, Diess wants to boost the VW brand by reducing competition with sister brands Škoda and SEAT. He believes there are still too many duplicate developments. It would be the job of the new chief operating officers to smooth over friction among the brands.

Hella's Ultra-Wideband Smartphone Car Key

GENERAL NEWS

Hella are consolidating their leading market position in the field of sophisticated solutions for vehicle access, from an ultra-wideband (UWB) technology, going into series production for the first time within the next two years. This digital, smartphone-based car key offers the greatest possible convenience for the end user, as it enables completely hands-free vehicle access; it also meets the highest safety standards. The first to be supplied is an international car manufacturer.

With Hella Smart Car Access, end users can lock and unlock their cars completely hands-free and can also start the engine without having to pick up a classic remote key or a smartphone. From a distance of 50 m, the mobile device is automatically detected and recognised by the vehicle. As soon as the driver approaches within 2 m of the car, it is unlocked. The engine itself can only be started when the smartphone is inside the vehicle. At the same time, access authorisations to the vehicle can be digitally managed and shared on the basis of the Hella Smart Car Access system, e.g. for car sharing services or for fleet providers. Personalisable information can also be stored in the smartphone to activate additional comfort or individualisation features, such as functions enabling welcome or interior lighting.

In order to implement these Smart Car Access functions simply, reliably and safely, Hella use ultra-wideband technology. This radio technology for near-field communication is used as standard in new smartphones. It is characterised by highly precise, centimetre-accurate locating and, furthermore, it prevents the danger of relay attacks, i.e. the unauthorised opening of a vehicle by remote extension. At the same time, the technology ensures that Hella's system solution does not necessarily require an app and that it continues to function even in situations without a network or internet connection. The system solution is compatible with both Android and iOS operating systems.

Hella successfully put UWB technology in classic remote keys into series production as far back as 2019. The ADAC (German Motoring Association) has highlighted the safety of Hella technology in an independent test. According to the study, one mass-produced German vehicle with a Hella UWB-based remote key system was the first vehicle ever in its class that could not be opened by remote extension in the test.

Geneva Auto Show's New Format for '22

GENERAL NEWS

Organisers of GIMS, the Geneva International Motor Show, say the event will go ahead next February, after two years of forced cancellations due to the coronavirus pandemic. The show will be open to the public from 19 to 27 February.

GIMS CEO Sandro Mesquita said the 2022 show will provide GIMS with an opportunity to showcase the digital innovations that were planned for the canceled shows last year and this year. He acknowledged that the coronavirus has accelerated the digital shift across trade shows of all kinds and said GIMS plans to use digital tools to expand the reach of the event and provide new experiences that bring together the virtual and the physical.

"We already know our show will be a kind of hybrid show," he said. "Digital is important and will play a role in our show, however, physical contact is something that is also important, and our exhibitors are looking for that."

In 2019, about 660,000 people attended the Geneva show.