DrivingVisionNews.com
Automotive lighting and driver assistance technologies

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Editorial

Shanghai DVN Workshop Sold-Out On-Site!

I thank all the companies who booked their trust in us for this hybrid DVN Workshop— the 13 sponsors for their sturdy investment in exhibition booths; the 35 speakers who prepared their lectures without being sure of the attendance and did extra work to make their presentations compatible with the dual live/online channels of the Workshop, the 240 attendees from 80 companies who arranged travel to Shanghai in today's difficult conditions, and the over 100 attendees from China, Japan, Australia, Koreawho who

attended online in real time . Thank you so much for believing in DVN!

I also must apologise to those who weren't able to get a seat for the in-person Shanghai event. Because of Covid, we had to cap and close the registrations on 15 April. Nevertheless, everyone who wanted to could join in online, and the lectures and discussions are still available at your convenience from April 22nd until the end of the month.

To be honest, we weren't sure about this hybrid congress. We hesitated: why take on the extra work and logistical complications of a hybrid event rather than just taking the easier route with an online-only Workshop? Simple: the goal was to bolster the Chinese lighting community, and for that there was just no substitute for a face-to-face event.

So, was the extra effort worthwhile?
Initial feedback, just hours after the end of the event, suggests a loud **yes**! Chinese in-person participation in DVN is thriving. All attendees are now sharing a social cocktail and Dinner. Lighting companies in China are eager to build and bolster the DVN community and show their capabilities and innovations to the lighting world at large; it's a win-win relationship all around. As to the content of the workshop: wow! These were high-level lectures from automakers, lighting suppliers, and Chinese and international regulators. There was vibrant discussion and exchange of news, views, and ideas. It was everything the community has come to expect of a DVN Workshop—and a little bit more.

Next week, we'll bring you summary digests of the lectures, the Q&A discussions, and the expo booths. Meanwhile, I would like to circle back about the ADB report we released two weeks ago in English and this week in Chinese. It's a terrific go-to document for when you have a question about ADB technolgy, technique, suppliers, safety effects, or regulations. It's also a geat tool for teaching and training. Get your copy today!

Sincerely yours,

In Depth Lighting Technology

Sparkling Expo Booths at DVN Shanghai Workshop

Marelli AL's Latest Innovations

• A whole library of modules from basic matrix with 24 segments, through 84-pixel matrix, to the novel high-resolution microLED "h-Digi" module with >20 kilopixels
• Lighting ECU portfolio from basic to HD solutions
• ADB with intelligent 84-pixel matrix module
• Lamp-integrated radar, well protected from dirt and with optimal field of view. Gives styling freedom and cost reduction via simpler assembly and testing in one step

• Audi Q5 digital OLED rear lamp with impressive 3D effects whether lit or unlit.Each OLED panel has 6 segments, allowing a variety of dynamic lighting scenarios.
• Lidar modules in conjunction with Xenomatix, using mature VCSEL and CMOS technologies, from standalone lidar units to modules embedded into lamps (SmartCorner™) to achieve short-, mid- and long-range sensing

AMS-Osram's New High Power Multichips

In 2020, AMS-Osram launched their OBF-S automotive high power multichip product family. At the DVN Shanghai Workshop, they showed the newest OBF-S products with improved optical efficiency, flux, and surface luminance.

Of note is the no-heatsink headlamp concept, which uses only the aluminum PCB for heat dissipation. This means headlamp mass, bulk, and cost can all be reduced.

AML's Gore-Powered Condensation Killer

AML Systems and W. L. Gore showed their clever technology to actively prevent condensation and the problems it causes in headlamps.

AML's Condensation Management Device uses Gore technology, electrical power, and regenerative desiccants to actively remove recurring moisture from within headlamps. The CMD is installed on the headlamp housing. Equipped with a breathable membrane and a radial seal, the CMD allows the headlamp to remain completely sealed, yet it also provides pressure equalization and ingress protection.

Mind's Innovation Products

- **MICRO LED**

The first micro LED module in Asia-Pacific lighting field, it brings over 16.000 pixels resolution for ADB, AFS and projection functions. It has a compact optical design according with the small packaging trends.

This one offers a reduced cost for HD level illumination.

Micro LED

• **LB & HB LASER MODULES**

One of the first full laser illumination modules in the world , equipped with an innovative laser safety device integrated in the laser diode.

This laser technology brings a high lighting performance with an ultra slim size including laser risk free.

Laser HB

Laser LB

Lumileds shows latest innovations

- Micro LED solution: LUXEON Mosaic is a 20k pixel monolithic light source designed for high-resolution direct-imaging projection systems with ultracompact built-in depth. Along with the ability to generate an infinite number of customized light distributions, it offers superior contrast for perfect road projection and sharp cut-off lines.

- High-performance low beam and adaptive driving beam in a slim design with LUXEON Altilon Intense Gen2
- High-performance low and high beam in a slim design with LUXEON Altilon Intense. Four modules provide low and high beam in a slim headlamp format. Each module utilizes reflector-based projection optics with 12 mm lens height.
- Entry-level matrix system utilizing direct imaging of a single row of LUXEON NeoExact 1.0 mm^2 and high-end high-resolution matrix system with simple optics and LUXEON NeoExact 0.5 mm^2
- Standard LED headlight source (LUXEON Go) for mainstream car segments to reduce system complexity and cost: one demo for reflector system; the other demo for projection system.
- LUXEON Versat portfolio for versatility of rear lighting.

Covestro's All-PC Headlamp Concept

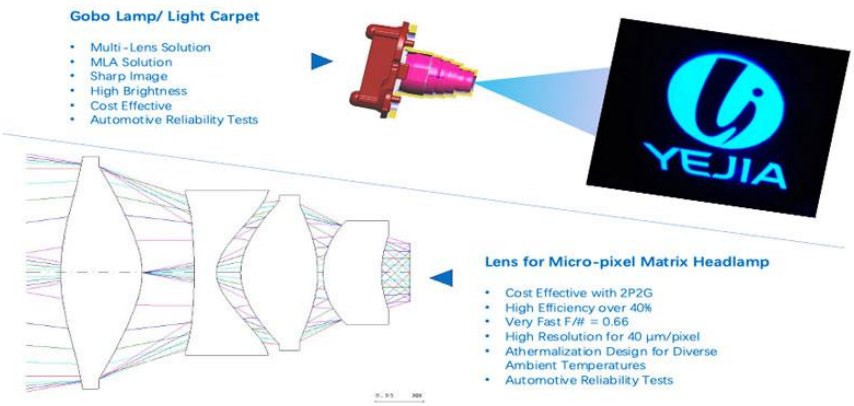
Multi-shot molding of Covestro's Makrolon TC thermally-conductive and Makrolon DS dimensionally-stable polycarbonates, along with a molded-in-place design strategy, enables the low-and high-beam LED modules and their corresponding reflectors to be produced less expensively through elimination of added heat sinks, attachments, and other components.

The Makrolon bezel uses multi-shot moulding to consolidate the turn signal and DRL while hiding sensors behind a lidar-transparent, visually-opaque mask. This cuts complexity and cost, simplifies assembly, saves space, and reduces headlamp mass—all of which go toward better fuel mileage and lower emissions or increased battery range.

The LED headlamp system uses only four different materials: Makrolon (polycarbonate); Bayblend (polycarbonate/ABS mix), a scratch-resistant coating (outer lens cover) and metallisation (reflectors).
Key Benefits:
 Improved production efficiencies and smart headlamp design reduces parts count;
 Lightweight polycarbonate provides high performance with low mass
 Integrated electronics (lidar, radar, cameras…)
 Greater design freedom broadens possibilities for æsthetics and progressive styling
 Reduced mass, parts count, and materials contribute to eco-friendliness

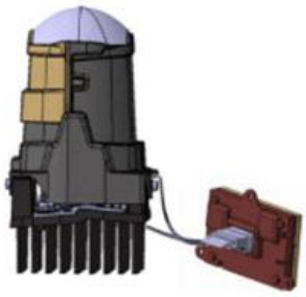
Covestro are focusing on front end design with a forward lighting demonstrator and front grille concept. EVs require less cooling air than combustion-engine vehicles, which means the open front grille design can be closed and the resultant surface used for signature light, 3D patterns, message displays, and colour effects on a transparent, impact-resistant polycarbonate panel.

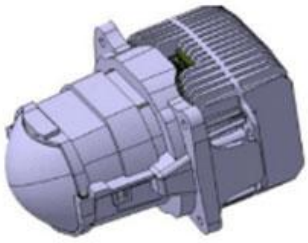
Yejia



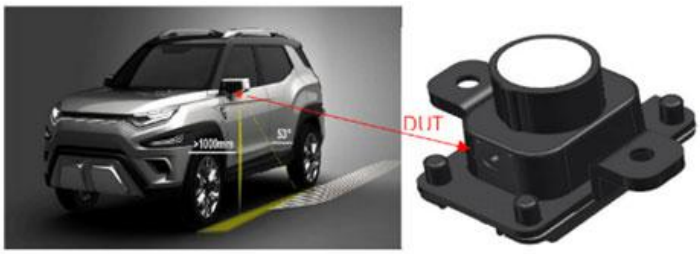
Bicom Optics' Car Light Cornucopia

• **LED headlamp module** provides low and high beam.It's a two-part product: headlamp controller and LED headlamp module with lens. The module meets UN requirements, while the headlamp controller can drive two LED strings for low beam and high beam. The whole package meets the electrical, environmental, EMC, and material requirements.





• **Multicolour smart angel wings**: the design concept is from BMW's radiant blanket lamp. Upgraded now from monochrome to multicolour, the smart light can switch freely.



• **Ambient light** divided into two parts, LED driver and lightguide. The LED driver is a module which can drive RGB LEDs according to the LIN signal. All inputs are from LIN Bus. LDF file contains address information, luminance information, light color information

Lighting News

Shanghai Workshop: Wonderful Session with Tier 1

LIGHTING NEWS


W. Huhn, chairman


Jinlong Ao


H. Nafari


S. Hirsch


C. Kirchenbauer


C. Yeonggi


L.Brisson


Lei Fan

We attended yesterday a wonderful session dedicated to Lighting Tier 1 suppliers.

Jinlong Ao, Hasco Vision showed us his clear future vision.He gave an innovation firework beyond lighting.
Some of his examples show Hasco's Lighting Systems in production cars like HiPhi X, some of his flashlights went some years into the future. He showed a broad lighting system approach including sensors, electronics and software.
Hasco's technological bandwidth, like a headlamp integrated NIR Camera in a serial project, is really surprising. At Q/A session, Jilon Ao howeveranswered that their integrated IR camera in headlamp is not yet in production as some technical difficulties need to be solved.
At a question about the requested number of pixels useful, he stipulates that 1M pixels is not necessary for road marking.

Hossein Nafari, Mind Optoelectronics made one of the best presentations of the WS. He announced the serial introduction of a 10 kpixel ADB system for Q1- 2022, and 100kμLED module in 2025. He also expressed the fact that despite using DMD technology in production since 2019, he does not think to use it for headlamp in the future.
He said that China has solutions for everything and proved it with several examples. He believes that lighting signatures will become even more important and visible with the growth of electric cars. One of his remarkable sentences was addressed to the regulators: «Regulation shall not be an obstacle for technology".

He highlighted the fact that Electric cars makers and particularly the new ones are much more demanding for their lighting signatures.

Sebastian Hirsch, Marelli AL saidthe sensors, mainly lidars, will be integrated into the headlamps, but not before 2024-2025.
In China timing is the most challenging part of a project, developments in China are faster than in Europe.
About the number of pixels necessary, he said that naturally there is an important gap between 20k and 1M pixels, but that between 20k and 100k pixels, there is not a huge gap really seen on the road.

Chris Kirchenbauer, Hella said he is a lighting guy in the 3rd generation. He followed the passion of his father and grandfather and earned spontaneous applause of the audience for this nice personal story.
Thenew Flatlight technology for signal with 5mm thickness and floating appearance is effectively giving a similar style as OLED, but with a reduced cost, standard technology, and 1W electrical consumption. First SOP will be beginning 2023.
This technology can also be used for front lighting, considering naturally the specific temperature constraints

Cho Yeonggi, Hyundai Mobis was presenting Lighting and ADAS developments, with an ADAS sensor integrated in ADB system. He pointed out that he has a safety technology background and showed us some pics of the facilities in Shenzen, where Hyunday Mobis uses a complete proving ground with high-speed test track and light tunnel to better combine ADAS and lighting development.

Luc Brisson, Varroc, and Ralf Muenster, SiLC showed us object tracking with 4D+ imaging using Lidar sensors with advanced dimensions. Both' focus is the functional integration. SiLC is a Varroc supported start up in California with 52 people. Ralf was life in our workshop, despite it was 2 am Californian time.
There will be two distinguished parts behind the same lens of the headlamps, particularly as asked by Wolfgang Huhn to keep the service cost acceptable.

Lei Fan, Valeo was talking about Valeo's monolithic technology which is also known as Micro LED ADB. Monolithic technology will be used for high resolution high beam as well as for projections on the road. First cars lighting up Chinese roads with Valeo's monolithic high-tech headlamps are expected in 2023.
To a question concerning the third revolution of lighting, he thought that it will no more be around optics, but with 360° view and for AV, Wolfgang Huhn stating that this third revolution would be a software centric lighting.

Don't misss the report, concerning the workshop, DVN will publish next week,.
Very fruitful information will be there.

Successful 18th Regulatory Session at DVN Shanghai WS

LIGHTING NEWS

Geoff Draper

Xie Dongming

Immediate impressions from DVN Senior Regulatory Advisor, Geoff Draper

Organisation of the DVN Regulatory Sessions is always a challenge and this 18th session has been no exception! My objective was to dedicate most of the session to listen to our Chinese colleagues and I was not disappointed. I am delighted that they have delivered a comprehensive and fruitful session. As usual, GTB provided a valuable input and DVN has also proven that great things can be achieved in a hybrid live / pre-recorded format and although I was operating remotely, I truly felt as though I was in Shanghai!

The session started with Wang Wei of SMVIC who provided a very interesting overview of the work plan and progress of the TC-114/SC21 development of the GB Standards. This was followed by Zhu Caiping of Xingyu Lighting who identified the hot topics being addressed concerning light-signalling devices, including the status of the requirements for illuminated logos.

Rainer Neumann provided his regular status report on the GTB Research activities and Davide Puglisi, GTB Secretary General provided a very good overview of the GTB activities in GRE, GTB President, Valter Genone, had contributed a section concerning the operation of exemption procedures to approve innovations when the regulations need to be updated.

Finally, but very importantly, there was the presentation by Xie Dongming of CATARC, in his new role as Vice-President and Chief Representative of CASIC. CASIC is the China Automotive Standards Internationalisation Centre established in Switzerland in February 2020 with head office in Geneva, It is clear that CASIC will enable China to participate more comprehensively in the development of the UN Regulations and this is really good news for the global lighting “family”.

The panel session consisted exclusively of Chinese experts who addressed the question “Could the recently launched CASIC be the key to synchronise the adaption to technical progress of the GB standards and the UN Regulations?”. Xie Dongming summarised the opinions of the panel by pointing out that *“CASIC is about Internationalisation. It means that CASIC is an activity between nations. Inter says everything; it is a co-direction and if there is more cooperation, there is more discussion, less misunderstanding and less questions,*

leading to greater efficiency. It Is very important to consider and understand national differences at country level and also at the level of human relations."

In conclusion I believe that the latest plans to update the GB standards in line with the UNECE technical requirements and the creation of CASIC are a significant step toward real harmonisation and both GTB and DVN will have a real opportunity to contribute.

Interview: DH Lighting's Hee-Chul Chae

LIGHTING NEWS

Hee-Chul Chae owns Korea-based DH Lighting. He has had only two careers in his life: education and vehicle lighting. He started his first lighting job in 1987, at Daishin Electric (later Daishin-Philips), where he worked for around eight years before starting his own business in 1994. DH are now the leading manufacturer of automotive halogen bulbs in Asia. In 2019 he took over Innorex Technology, one of Korea's leading Aumtomotive LED module manufacturers, and is now focusing on LED products for cars through both companies' developing and manufacturing activities.

DVN: Tell us about your company, won't you please?

Hee-Chul Chae: We have four factories in Korea, China, and Vietnam for producing automotive halogen bulbs, LED modules, LED turn signals and logo lamps. We also have sales offices and warehouses in Luxembourg and New Delhi. We are selling our products to over 50 countries for OE and aftermarket. Our name is not well known because we are a tier-2 vendor to tier-1 headlamp and side mirror makers. Our key customers are Hyundai Mobis for Headlamps and RCL and Magna for turn signal and logo lamps. Our total sales turnover was USD $170m in 2020 and will be $200m this year. There are about 850 employees at the moment. Our strategy is to be the global business partner of LED application products for the 1st tier of automotive lamps, interior lighting, and side mirrors in the world.

DVN: Can you describe some of your products?

Hee-Chui Chae: We are producing various types of LED application products including LED submodules, modules with heatsink for headlamps, DRL, Fog Lamps, RCL, CHSML; LED interior lights, logo lamps, and turn signals.

DVN: What is it about your company that attract purchasers?

Hee-Chui Chae: We have three strengths:
• Long Expérience**:** We were the first developer and supplier for automotive LED products to Hyundai and Kia in Korea, and we are still the key supplier for them.
• Strong R&D power**:** We have our own design centre for LED modules and can meet all automakers' requirements.
• Quality and cost-competitiveness**:** We have two factories in Korea, one in China, and another in Vietnam. We can use all four locations depending on the customer's quality and price requests.

DVN: Who are your main customers, both in and outside Korea?

Hee-Chui Chae: Our key customers in Korea are Hyundai Mobis and Huyndai IHL; overseas it's Magna.

DVN: Are you involved in new functions like light projection, welcome/farewell lights, and logo lights?

Hee-Chui Chae: We are producing various design of logo lamps already and doing the R&D projects for welcome and farewell lights.

DVN: In 2020 you acqired Innorex Technology. What can you tell us about that?

Hee-Chui Chae: My description of our LED products is mostly from Innorex Technology. DH Lighting and Innorex will be combined to one company within three years..

DVN : Are you producing Interior lighting?

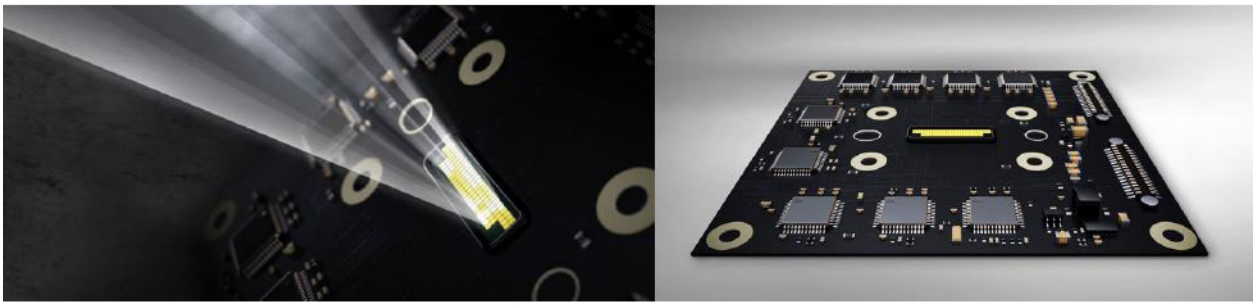
Hee-Chui Chae: Yes, we are suppling to Hyundai Mobis now and want to expand the market for other car makers.

DVN: Have you a message to transmit to the worldwide lighting community?

Hee-Chui Chae: As I mentioned, I have worked and focused only on the vehicle lighting business for 35 years, and will continue until I am retired. I want to be a good friend and business partner with all members of the DVN community.

Samsung's PixCell LED for Smart Headlamps

LIGHTING NEWS



Samsung Electronics' new PixCell LED is a new automotive LED module optimised for intelligent headlights, such as ADB systems. It can monolithically integrate more than 100 ultra-small segments into a single LED chip, while making the light-emitting area significantly smaller.
These LED segments are separated by a silicon wall to prevent optical cross-talk and, in turn, offer superior contrast for much greater driver visibility. Each segment functions like a pixel to meticulously control light distribution, as it distinguishes on and off areas so that the beam from the headlight only illuminates the exact location where it is needed.

With the light-emitting area shrunk to just 6.3 per cent that of conventional discrete LED modules for ADB systems, the PixCell LED can reduce the headlamp size by 30 to 50 per cent, allowing greater freedom in design. The light distribution and brightness levels of the PixCell LED are easily adjustable to meet diverse applicational and regulational requirements. Lamp makers can customise light output to suit varying design needs and enjoy reduced lead time for development, production, supply, and time-to-market.
Samsung have begun shipping the PixCell LEDs to lamp manufacturers, and have already provided enough PixCell LEDs to light up more than 300,000 vehicles.

(Watch for a future DVN interview with Samsung Electronics VP Joongkon Son)

ZKW's Cobot: Humans, Robots Working As a Team

LIGHTING NEWS

Collaborative robots are working alongside personnel on the production line. While industrial robots are placed in a separate cell, shielded behind protective installations and safety doors, the ZKW Cobot is free-standing and can interact with the operator. Currently, the intelligent machine is used to assemble headlamp light guides. The smart robot relieves human employees of exhausting manual work, accelerates the assembly process by around 20 per cent, and helps ensure consistently high production quality.

The collaborative robot needed to be able to execute screw fitting of nine screws in a headlamp lighting strip in a maximum cycle time of 70 seconds. The human worker inserts the lighting strip into the jig, then presses a button to release the work to the robot. While the operator manually positions additional components, the robot approaches the positions of the screw holes, and automatically screws in the screws.

ZKW CEO Oliver Schubert says "In the future, the Cobot can be used to support other work steps in production, for instance in component handling". The device in action can be seen in an **online video**.

Red Dot Best-Of-Best Design Award for Polestar

LIGHTING NEWS

The Polestar 2 has won a Red Dot Best of the Best award in the internationally renowned contest's Product Design category. The award recognises groundbreaking design and is the top prize in the highly competitive category.

Polestar Head of Design Maximilian Missoni described the 2: "I believe we have created a very strong visual identity for the Polestar brand. Being a new player allows us to create a design language that is contemporary and doesn't rely on traditional paradigms".

Entries were judged by an esteemed panel of around 50 international experts who tested, viewed, and evaluated each submission on nine criteria including degree of innovation, functionality, durability, and ergonomics. In the 60-plus-year history of Red Dot's design competition, this year saw a record number of submissions. In the end, the Chinese-owned Swedish EV brand's second model vanquished entries from 60 countries.

The Polestar 2 was launched in 2020 as a premium five-door electric fastback. It embodies the brands' design-led philosophy with close attention to detail. Highlights include a standard vegan interior with progressive textiles, and a rear light-blade that stretches the entire width of the car. With adaptive brightness from its 288 LEDs, it brings concept-car flash and intrigue onto the road. And there are some playful touches like the Polestar symbol reflected into the glass roof above the front occupants.

Seoul SC Join ELS Chair

LIGHTING NEWS

Seoul Semiconductorhave become an associate member of the Embedded Lighting Systems (ELS) Chair academic program.

Dr. Oliver Rösch, the company's Automotive Vice President for Europe, said "We are very proud to join the ELS program, and to participate to both the education and the research activities for future lighting application designs with our automotive team in Europe. This underlines our constant and increasing investment into LEDs for automotive applications". And Bertrand Barbedette, head of the ELS Post-Master and Associate Professor at the ESTACA Engineering School, said "Seoul Semiconductor as an associate member of ELS Chair strengthens its industrial network in lighting automotive. Thanks to the new members, the ELS Chair is enriched with new skills, thus contributing to the development of its research programs bringing together carmaker, suppliers and research laboratories".

Seoul Semiconductor are well known for providing high-quality light sources for interior and exterior vehicle lighting. Their SunLike natural-spectrum LEDs offer safe, healthy, humancentric ambience for vehicle occupants, and Seoul Semiconductor have the world's first patented packageless WICOP technology for applications like turn signals, DRLs, and headlamps.

OLED Light for Aerospace, Rail Applications

LIGHTING NEWS

The choice of lighting technology in the cabin of a plane or train must balance energy consumption, packaging space, durability, dependability, regulatory compliance, design and appearance, and passenger safety and comfort. For many years, the job's been done with recessed lighting with uneven, high-glare illumination that can put strain on the eyes. Fixture bulk can limit placement options within the interior and add unwanted weight, resulting in extra fuel consumption. For longer, overnight journeys, improper illumination spectrum can also interfere with the circadian rhythm and lead to sleep disruptions, worsening the common adverse effects resulting from travel, such as jetlag.

OLED lighting can address many of the design challenges found in the train and plane cabin environment. With an ultra-thin and lightweight profile, high efficacy, and long lifetimes, OLED panels offer weight reduction and low power consumption to help manage operation and maintenance costs.

The compact nature of OLED lighting, when combined with the glare-free, diffuse illumination from the panel, gives flexibility for integration on horizontal and vertical surfaces and compact spaces, providing more design freedom to optimize cabin lighting for passenger comfort. The illumination from OLED lighting is also low in spectral content shown to interfere with melatonin production, which is ideal for helping passengers get the rest they need and adjust to their new destinations.

The inherent surface illumination of OLED lighting technology also provides the ability to selectively address certain area segments of the panel with high contrast, which enables the ability to communicate with passengers or crew through light for safety and branding purposes.

Hella Earnings Improve Despite Tough Environment

LIGHTING NEWS

In the first nine months of fiscal year 2020-21 (June 2020 to February 2021), the Hella Group's currency and portfolio-adjusted sales fell by 0.3 per cent to €4.7bn, and adjusted EBIT improved significantly by 10.1 per cent to €373m.
Sales in the automotive segment declined by 2.7 per cent to €4bn in the first nine months of the current fiscal year
A slight increase in sales was seen again in the third quarter in the wake of some market recovery after the segment had already grown in the second quarter. Positive business development in China and Europe made the biggest contribution to this rise.

The company outlook for the current fiscal year 2020-21 (June 2020 to May 2021) remains in line with the forecast raised on December 2020. Hella are assuming sales will be in the upper half of the given forecast range of €6.1bn to €6.6bn and EBIT in the upper half of the forecast range of six to eight per cent.

Driver Assistance News

Innoviz's Latest Lidar Innovation

DRIVER ASSISTANCE NEWS

The new InnovizTwo lidar sensor boasts a thirtyfold performance improvement over its InnovizOne predecessor, while costing 70 per cent less. Innoviz say this will facilitate the Two's fitment in all vehicle classes.

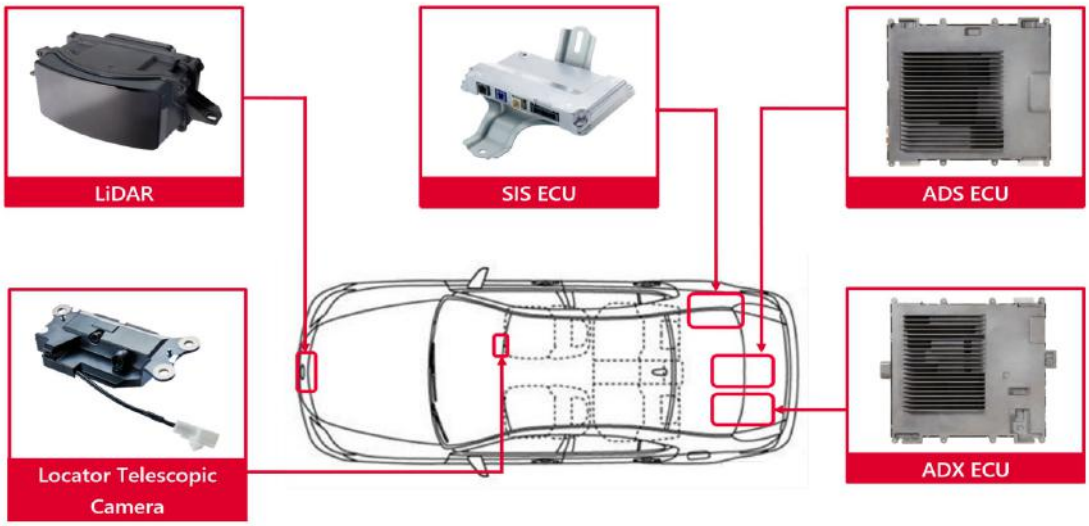
The new sensor's remarkably compact size lets it fit easily in all sorts of vehicles. It includes a new detector, scanner, and multiple advances in the optical packaging and the electric design. Its giant improvements, elucidated, look like this:

• Extended 125° × 40° field of view
• Increased native resolution of 0.07° × 0.05°, over 8000 lines per second
• Exceeding market demand with a range of 300 m; can see small, dark objects with 10 per cent reflectivity at over 220 m under strong sunlight conditions (100 kLx)
• Embedded Automotive-grade Perception Platform (InnovizAPP) for object detection and classification of cars, pedestrians, motorcycles as well as providing shape, orientation, velocity, acceleration and occlusion status
• ASIL B(D) functional safety, full temperature range of -40 to +85 °C
• Flexible, modular design to allow for design flexibility across markets and verticals.

InnovizTwo samples will undergo rigourous testing and revisions this year to dial in the optimal design. Innoviz expect that the product will enter series production next year to serve automaker programs due in 2023. Innoviz also are developing new manufacturing tools to reach production levels between 500,000 and 1,000,000 units per year by 2024. Customers presently using the InnovizOne will be able to switch to InnovizTwo as their programs scale to leverage cost and performance improvements. InnovizTwo's high volume production is planned to be managed and scale though Innoviz's multiple tier-1 partners.

Denso's ADAS Components for New Toyota Models

DRIVER ASSISTANCE NEWS



Denso are delivering a number of the key components behind Advanced Drive, the ADAS technology suite in the new Lexus LS and Toyota Mirai, which have both just been released in Japan this April.

Denso are supplying a lidar for detecting the shapes of surrounding vehicles and roads; a locator telescopic camera for detecting the environment ahead of the vehicle; a spatial information service electronic control unit (SIS ECU) for accurately identifying the position of the vehicle itself; and an automated driving system electronic control unit (ADS ECU) and automated driving extension electronic control unit (ADX ECU) for the high-speed processing of information delivered by each of the products.

Denso's new products support a system, Advanced Drive, which out the driver on an expressway or other motor-vehicle-only roadway. The driver sets their destination in the navigation system, then the onboard system will appropriately detect the situation, make decisions, and assist driving under the driver's supervision according to actual traffic conditions. It can keep the vehicle in its lane, maintain the distance from other vehicles, navigate a lane split, change lanes, and overtake other vehicles.

Lidar and the locator telescopic camera are able to detect large areas with high accuracy: both products can detect more than 200 m ahead of a vehicle. Long-range detection has been attained by increasing the output of the laser beam and the sensitivity of the beam-receiving sensor, according to the Japanese company. A flat mirror is used for scanning to detect a wider angle.

Velodyne, Ansys Speed Lidar Development

DRIVER ASSISTANCE NEWS

Velodyne and Ansys are developing software models of next-generation automotive lidar sensors to provide substantially improved hazard identification capabilities for highly advanced AVs. The collaboration incorporates Velodyne's lidar design into Ansys's virtual sensor suite and will expedite the integration of Velodyne's sensor into AVs, according to both companies.

Velodyne are collaborating with Ansys to integrate an encrypted 'black box' physics-based lidar sensor model into Ansys's VRxperience, a real-time interactive driving simulator that models, evaluates, and validates lidar designs within a highly realistic virtual environment. This end-to-end capability enables engineers to rapidly model countless edge-case driving scenarios across millions of miles and substantially reduce physical tests. As automakers integrate Velodyne's lidar into their ADAS portfolio, VRxperience will help reduce development costs by enhancing lidar placement within AVs and validating AV performance.

Velodyne CEO Anand Gopalan says "Ansys VRxperience supports faster development and deployment of ADAS solutions using Velodyne's lidar by providing a fully immersive environment to test and improve hazard identification capabilities. Velodyne's focus on safety aligns with Ansys strengths in enabling informed design decisions. Our collaboration helps engineers virtually run their ADAS applications in challenging roadway conditions so they can build solutions that achieve safe navigation and collision avoidance".

General News

French 5 in E-mobility Software and Data Alliance

GENERAL NEWS

CEOS OF THE 5 COMPANIES

STMicroelectronics, Atos, Dassault Systèmes, Renault, and Thales join forces on a European e-mobility software and data alliance. The Software République will see chip maker STMicroelectronics working with supercomputer supplier Atos, design tool and digital twin developer Dassault Systèmes, car maker Groupe Renault, and engineering giant Thales.

Pooling their expertise, the five plan to develop and co-market systems and software to provide an enriched and sustainable mobility offer for cities, regions, businesses and citizens. This is partly in response to the challenge of the Bosch software business restructuring in Germany, and is also aiming to challenge US and Chinese projects.

The Software République will focus on Artificial intelligence, cybersecurity, connectivity, embedded electronics, and virtual twin technology in an open ecosystem.

According to the Boston Consulting Group, the global mobility market will grow by 60 per cent by 2035 to reach €11tn, driven by electric vehicles, new components, new after-sales services and other value-added services whose share will increase from five to 45 per cent of the global mobility market.

March, Registrations of cars in the Europe + 87%

GENERAL NEWS

1,062,000 new cars were sold in the EU last month, compared to 567,000 during the same month in 2020.
In Europe (EU + EFTA + UK) markets rose to 1.39 million year-on-year, ACEA presented last week.
Registrations at Volkswagen Group increased 46%, while No. 2 Stellantis saw its sales jump 141%, and registrations at Renault Group, rose 70%.

During the first quarter of 2021, EU demand for new cars grew by 3.2% to reach 2.6 million units registered in total. Despite steep declines during the first two months of the year (-24.0% in January and -19.3% in February), March's strong results managed to offset the negative trend. Looking at the major EU markets, last month's gains brought the cumulative performances of Italy and France into positive territory (up 28.7% and 21.1% respectively). On the other hand, both Spain (-14.9%) and Germany (-6.4%) continued to post declines so far in 2021, although significantly less dramatic than in the preceding months.

German Automotive Industry Situation Sunnier

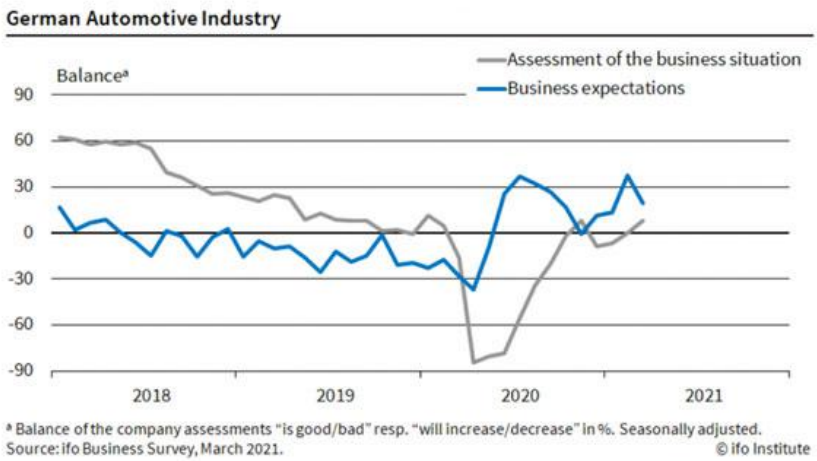
GENERAL NEWS

A survey published by Ifo economic Instutute shows business improved in March for German automakers and their suppliers. The ifo business situation indicator rose from minus 0.4 points in February to plus 7.9 points in March. "Spring has arrived for carmakers," says Klaus Wohlrabe, Head of Surveys at ifo. At the same time, managers are no longer as optimistic about the coming months as they were recently; the corresponding indicator fell to 19.1 points, down from 37.3 points in February.

"However, automakers were able to continue filling their order books," Wohlrabe adds. As to demand, the survey score rose from minus 1 point in February to plus 10.7 points in March. Order books grew only slightly, with the indicator reaching 14.8 points, up from 11.7 points in February.

Production is set to ramp up further. This indicator rose to 46.1 points, up from 35.7 points in February. Automakers expect their export business to see positive development; the relevant indicator reached 27 points in March.

The stock of finished goods remained larger than usual for the season; this indicator dropped to minus 10.3 points, down from minus 9.9 in February. Despite good business, companies are looking to employ fewer staff. Employment plans continue to provide for job losses.



Dr. Anish Shah is New Mahindra CEO

GENERAL NEWS

The Board of Directors of Mahindra and Mahindra have announced that Dr. Anish Shah, formerly the Deputy Managing Director and Group Chief Financial Officer, is now taking over as the Managing Director and Chief Executive Officer.

Dr. Shah joined Mahindra in 2015 as the Strategy Group President, where he led strategic development, built capabilities such as digitisation and data sciences, enabled synergies across group companies, and managed the risk and performance review organisations. Prior to joining Mahindra, Anish was President and CEO of GE Capital India, where he led the transformation of the business, including a turnaround of its SBI Card joint venture. His career at GE spanned 14 years, during which he held several leadership positions at GE Capital's US and global units. He also has diverse experience with global businesses beyond GE. He led Bank of America's US Debit Products business. He started his career with Citibank in Mumbai before moving to Boston with Bain & Company as a strategy consultant.

Anish received a Ph.D from Carnegie Mellon's Tepper School of Business, a Master's degree from Carnegie Mellon, and a post-graduate diploma in Management from the Indian Institute of Management at Ahmedabad.

The Mahindra Group is a $19.4bn federation of companies that enables people to rise through innovative mobility solutions. It enjoys a leadership position in utility vehicles, information technology, financial services and vacation ownership in India It also enjoys a strong presence in renewable energy, agribusiness, logistics and real estate development. Mahindra employs over 256,000 people across 100 countries.