DrivingVisionNews.com
Automotive lighting and driver assistance technologies

Tue, 21 January 2020 Weekly Newsletter NEWSLETTER #630

Editorial

DVN Munich Workshop: Last Seats, Last Days To Register

First off, I thank those who have already registered for the DVN Workshop happening next week in Munich. All the expo booth space is booked up, as are the the reserved rooms at the event hotel, and for safety and security we must close the registrations at 300 attendees, but there are still some seats left. If you haven't got yours yet, grab while the grabbing's good.

I'm looking eagerly forward to personally welcoming the many automakers, set makers, tiered suppliers, universities, and organisarions.

20 lectures will be presented by car companies including Audi, BMW, Ford, Jaguar Land Rover, Opel, PSA, Renault, and Volvo; tier-1s such as Hella, Koito, Marelli, Mind, Mobis, Valeo, Varroc, and ZKW; light source suppliers like Dominant, Everlight, Lumileds, and Osram; and tier-2 suppliers including Elmos, Gore/AML, and NXP—followed by the panel session with six experts from automakers, suppliers, and regulators.

In today's Newsletter, we present Marelli CEO Sylvain Dubois and Andrea Stella, the new R&D VP of Marelli Automotive Lighting. Dubois describes the new company's footprint and performance, and discusses the changes and challenges brought on by the merger of Calsonic Kansei and Magneti Marelli. Then Stella talks about innovations being worked on by the R&D department—as well as ongoing paradigmatic changes all up and down the scale (and we're gearing up for an article next week presenting Marelli's technologies).

Also this week, we've got coverage of the advanced headlighting session at the U.S. National Academy of Sciences Transportation Research Board annual meeting this past week in Washington, DC. And much more! Dive in.

Sincerely yours,

DVN President

In Depth Lighting Technology

Interview: Marelli, Automotive Lighting VIPs

Marelli Automotive CEO Sylvain Dubois

French national Sylvain Dubois earned a degree in Mechanical Engineering in 1991 from the University of Technology of Compiegne (UTC) in France. He also holds an MBA from Sorbonne Business School (IAE) in Paris, and a Master of Science from Cranfield University, UK. He attended the Advanced Management program (AMP) and International Directors Program (IDP-C) from INSEAD, a graduate business school with locations in Europe, Asia, the Middle East, and North America. His career has included important roles in companies in the automotive industry around the world, including as Ferrari's Chief Purchasing Officer. Since 2011 he has been holding Managing Director positions of growing importance and last May, he became CEO of Marelli Automotive Lighting. He graciously spoke with us, and now we present this interview:

DVN: What can you tell us about the new Marelli?
Sylvain Dubois: Marelli is born from the merger between Calsonic Kansei and Magneti Marelli, creating one of the world's top ten independent automotive tier-one suppliers. Marelli has a well-balanced global footprint and products portfolio including thermal solutions, cabin comfort and interior experience, electric and conventional powertrain, green technology and ride dynamics, electronics and lighting, and motorsport. Marelli records a sales revenue of €14.6bn with 62,000 employees in 170 locations around the world.

DVN: Will there be big changes soon?
S.D.: Change is already underway, with a new leadership team in place from day one (May 2019), moving forward with the integration of the new Marelli; defining strategic direction for the group, and managing the synergies that you can expect from such a merger as just two major objectives. At Automotive Lighting, we are already working on how to be more present with Japanese OEMs for an example of the numerous initiatives that we have launched since the merger.

DVN: What are AL's strengths and challenges?
S.D.: Marelli Automotive Lighting is a well-established lighting supplier with the critical size, a global footprint, a well-balanced customer portfolio, a diverse leadership team and we are at the vanguard of lighting technology. These are all qualities that make up our strength. Our challenges are to adapt continuously to changing environments, increasing competition and strategic positioning on the new technologies such as mass market full LED solutions, democratisation of ADB, and development of DLP and laser for high end applications. In addition, we are positioning ourselves in the sensing area, investing in lidar, and not only that, to contribute to ADAS development. Our primary target is ADAS Level 2+/3, where I believe the market is going to grow significantly in the next years.

DVN: 2019 was difficult for tier-1s partly because the decreasing of volume of cars mainly in China. How do you see the next 12 months for the automotive suppliers?
S.D.: As you mentioned, the downturn in the automotive industry does not spare any tier-1. We expect 2020 to be equally tough across the global industry, where not only China, but also the rest of the world, continues to be impacted by the external environment. In this situation, we will continue to focus on what we can control, which includes working on our cost base and investing in key growth areas to make sure we are well prepared for the future. This is what we are doing at Marelli Automotive Lighting.

DVN: ADB is a wonderful technology to greatly improve night-driving safety. What can lighting suppliers do to convince drivers to buy it?
S.D.: Most deadly car accidents happen at night, and OEMs and lighting suppliers know how crucial light is in helping to avoid accidents. In this regard ADB is a new step in improving safety thanks to better distribution of light towards where it is needed, hence securing a no-glaring system. As a Tier 1, our interlocutor is the OEM and we have few occasions to have direct access to the final users. Nevertheless, every time we have access to the public, like during motor shows, we take the opportunity to promote ADB. In addition, we realise that car dealers do not always know about lighting technology and ADB. Therefore, we offer our customers support, providing lighting training for their sales people. However, it is in the OEMs' hands to convince the end customers and it is noticeable that lighting technology is getting increasing attention in OEMs' ads and events.

Andrea Stella, Marelli Automotive Lighting R&D VP

Andrea Stella, Marelli Automotive Lighting R&D VP

Of Italian nationality, Andrea Stella has a degree in Industrial Engineering from the University of Udine, Italy. He's been with AL since 2003, and was Program Manager and then R&D Manager for tail lamps at AL's Tolmezzo plant until September 2011, then he took the position of R&D Director of AL's North American operations from their offices in Auburn Hills, Michigan. In 2015 he moved to the AL headquarters in Reutlingen, Germany to take up the position of Headlamp R&D Director, and last September he became the R&D Vice President at Marelli Automotive Lighting. He was kind enough to share his thoughts with us here.

DVN: ADB is spreading from premium cars to the mid-range. How can lighting suppliers convince generalist car makers to accelerate this shift?
Andrea Stella: We are convinced that driving down the cost of ADB will be the best way to make this technology popular, allowing generalist OEMs to use it, and it is already happening. In order to make them accelerate the shift to ADB, we offer cost convenient and scalable ADB systems for example with our standard LED modules. ADB requires a more complex architecture referring to camera or electronic control unit. So, to speed up the process of "ADBzation" we additionally offer to the OEMs entire system integration to fill some technological gaps.

DVN: With the arrival of communication functions—V2drivers, V2pedestrians—and the need of styling differentiation, all lighting suppliers are working on them, right? What's your strategy here?
A.S : We have taken a lead at introducing first on the market communication with light: our digital light is able to project assisting and warning symbols on the road. With this high-resolution system, we go into the next generation for a new market launch. Our animated signal functions are available in front and rear lights. Another promising communication opportunity for V2V is the LiFi technology currently integrated into our Smart Corner concept. We are also working on displays to enable communication vehicle-to-pedestrians or to other drivers in future.

Speaking of styling differentiation, we have to mention our Folia LED, a cost-optimised OLED alternative. Very robust, very long lasting, efficient and, in combination with dedicated software, extremely flexible in terms of design. Here we can use software features to realise different animations and signatures. In all these fields, software is the key.

DVN: Laser technology is used for long visibility distance and now for ADB scanning and communication. Do you see a future of this laser technology in comparison with DMD, LCD, LCoS?
A.S: Laser technology is one of our strengths. Starting with the first laser headlamp in 2014, we now have volume projects with our 3rd-generation laser, capable of ADB. We will continue to work on this technology, though we need to develop more cost-optimised solutions. Regarding the use of laser for ADB scanning, we must keep in consideration that all systems dealing with laser light sources require multiple and redundant safety features.

DVN: OLED is not perceived as an established light source because of cost, durability, and reliability. Do you see a future for this technology?
A.S: OLED is still a remarkable technology allowing for light surface segmentation—which provides a unique aspect for styling possibilities. Therefore, we are still working on it for interested carmakers and have good projects in development. However, since the reliability of OLED in general is still not comparable with LED, we have also developed a very attractive alternative solution called Folia LED. With an appearance very similar to OLED, it offers plenty of benefits in terms of reliability, lifetime and finally, cost as mentioned previously.

Lighting News

DVN Munich Workshop: New Lighting Functions into Regulations

It seems that representatives of industry remain sceptical as reported in the recently published DVN Report on the Future of Exterior Lighting. In its summary of the Regulatory section it states: *"The speed of lighting innovation is not synchronised with the speed of approval by regulatory bodies. Worldwide OEMs and Tier-1s expressed their concern about the speed of movement of regulation versus their investments necessary in innovations."*

This 16th DVN Regulatory Session will attempt to address these concerns by focussing on 3 items:
1. Status of activities to update the UNECE Regulations, the Chinese Mandatory Standards and the US FMVSS № 108
2. Outcome of the Joint DVN / GTB Forum held in February 2019 to brainstorm the priorities for regulatory development providing a basis for GTB Vision 2020–2030.
3. Associated research activities and initial results of a survey of DVN members concerning the introduction of new lighting functions into regulations.

The session will be divided in two parts:
Presentations
• GTB VP, Bart Terburg: GTB Vision to 2030 and Priorities
• GTB Secretary General, Davide Puglisi: Simplification and Updating of UN Regulations
• Chairman WG-SVP, Rainer Neumann: Status of Research of New Lighting Functions in Regulations
• Secretary GTB VLLTP Taskforce, Thomas Reiners: Vehicle Level Laboratory Testing Procedure (VLLTP) for Evaluation of Adaptive systems

Panel Session
Renault's Bedu, Audi's Hamm, Mobis' Lee, Volvo's Matha, Valeo's Fleury, Mind's Nafari, Varroc's Neumann and Opel/PSA's Schneider will talk on reactions to the initial results of a survey of DVN members concerning the introduction of new lighting functions into regulations and the actions to be taken.

Advanced Headlight Research at TRB '20 : IIHS, GM's Larsen, LRC's Bullough

The U.S. National Academy of Sciences' Transportation Research Board held its 99th annual meeting last week in Washington, D.C. Over 14,000 researchers, academics, scientists, practitioners, regulators, standards developers, policymakers, consultants, and others converged on the giant 213,677m^2 Walter E. Washington Convention Center to present and attend lectures, presentations, and poster sessions on virtually every subject related in some way to the transport of people and goods by any and every means.

Included in the program was a lecture session on evaluating and implementing advanced vehicle headlighting systems. DVN Chief Editor Daniel Stern presided over the session, which gathered four high-level expert presenters who described, each through their own lenses, the safety benefit potential of advanced vehicle lighting and how these systems can be evaluated to ensure they realise those benefits for road users.

• **Ian Reagan**, Senior Research Scientist with IIHS, the Insurance Institute for Highway Safety.
He has conducted research on human factors topics related to traffic safety, including crash avoidance technology, and driver distraction caused by technology both built and hand-carried into cars.
Dr. Reagan spoke on the challenges and impacts of the IIHS headlight safety performance evaluation programme. He described the motivation for IIHS' headlighting tests: over 19,000 traffic-related deaths in other-than-daylight conditions in the U.S. just in 2018; research and data suggest better lighting would help, FMVSS № 108 fails to practically guarantee a minimum level of on-road performance, and headlight performance varies widely among different vehicles and headlamp systems.
Then he discussed how the IIHS headlight test protocol was devised, how it's been adjusted to better assess real-road seeing and glare performance, and how the IIHS Top Safety Pick and TSP+ award criteria have been strengthened to place progressively more pressure on automakers to provide effective headlamps.
The most recent change: for 2020, a car can't get the Top Safety Pick+ award unless it has "good" or "acceptable" headlamps as standard equipment (optional at extra cost won't do).
And he described the apparent trend: in 2016, the first year of testing, only three cars got a "good" grade and just 36 got "acceptable" for their headlamps; 43 got "marginal" and 142 got "poor". Those figures have gradually improved; in 2019 68 cars got "good" and 103 got "acceptable"—though 114 got "marginal" and 183 got "poor". Trending in the right direction, but still with a ways to go.

• **John Bullough**, Director of Transportation and Safety Lighting Programs at the Lighting Research Center of Rensselaer Polytechnic Institute in Troy, New York.
He conducts research on vehicle and roadway lighting, traffic signs and signals, mesopic vision, glare, and other human factors topics. He gave a good review of recent research on the safety benefits of adaptive headlighting, described the increasingly-sturdy consensus among researchers, regulators, and industry that adaptive headlighting systems can provide real safety benefits, discussed methods of linking headlight performance to crash reductions, and emphasised that human

factors data, visual performance modelling, and statistical crash analysis all converge toward aligned conclusions, which provides ways of realistically predicting safety benefits from advanced headlights, rather than simply looking to see if benefits were realised after a system was deployed. This is especially significant because the safety effects of crash-avoidance technology like lighting and signalling is notoriously difficult to satisfactorily model in this manner, which is one reason why it is not a favourite topic of American regulators who must work within a legislative framwork that requires concrete cost/benefit calculations.

• **Carol Flannagan**, 29-year veteran research associate professor at the University of Michigan Transportation Research Institute.
She who makes a speciality of applying statistical methods to assessing crash-avoidance technologies. She's in charge of UMTRI's Centre for the Management of Information for Safe and Sustainable Transport, and has over two decades' experience with research and data analysis on traffic-related injury risk. She developed an injury outcome model that allows for direct comparison of public health-, vehicle-, roadway-, and post-crash-based safety measures.
She described a **major UMTRI study**, sponsored by General Motors, looking at the safety benefits of systems including HID headlamps, swivelling HID headlamps, and automatic high/low beam selection systems—each independently—versus ordinary halogen headlamps with manual high/low beam switching. Results: HID headlamps and automatic high/low beam switching are associated with large, statistically significant safety benefits, and if a vehicle has both systems their benefits are both present, though they combine in a complicated manner; they don't just sum or multiply. The swivelling HID headlamps showed a benefit that was smaller, less certain, and not statistically significant, probably because the sample size was too small; there weren't many equipped cars represented in the crash data obtained from a variety of U.S. states. Other interesting results: AEB (Automatic Emergency Braking) showed a statistically significant 46% reduction in system-relevant crashes, but FPB (Front Pedestrian Braking) showed a statistically-insignificant 13%. And all the systems relevant to reversing (rear vision cameras, parking assistant systems, rear cross-traffic alert, and reverse automatic braking) showed large to enormous crash reductions.

• **Michael Larsen**, General Motors' longstanding Global Exterior Lighting Technical Lead.
He's very active in the SAE Lighting Systems Group, wherein he chairs the Adaptive Driving Beam task force.
Larsen presented a thorough overview and explanation of ADB—what it is, what it does, how it works—and a detailed description of the meticulously dogged efforts, including 110 hours' worth of 34 meetings he led to translate the subjective provisions of UN Regulations 48 and 123 (such as "any obvious malfunctions shall be contested") into the objective terms required of vehicle safety standards under U.S. law, while maintaining minimal divergence from the effective technical requirements of the UN regulations so as to assure the greatest possible harmonisation.
Larsen outlined the philosophical position taken by SAE: ADB is optional, so any improvement it offers in a driver's ability to see at night is a benefit, and his task force therefore prioritised glare control rather than on seeing light performance. And while a dynamic system like ADB means thousands of different driving scenarios could be evaluated, the SAE task force strove to boil them down to the minimum count crucial to demonstrating appropriate system performance, and standardising as many aspects as possible of the testing (and of safety non-critical aspects), keeping in mind that it's not necessarily needed or beneficial to write in controls for every possible aspect of a device or system. Importantly, Larsen and the task force looked at requirements present in regulations simply by dint of inertia imparted by past practices, and pared those from their proposed standard if they weren't helpful. Larsen noted Transport Canada's prompt adoption of SAE J3069, and detailed NHTSA's regrettable rejection of it and that agency's ongoing opaque deliberations on the matter.

Finally, Larsen said this work demonstrated the feasibility of devising objective requirements from a feedstock of subjective UNECE regulatory provisions, but it can be difficult and won't necessarily result in full harmonisation.

After each lecture there was ample time for Q&A, which facilitated a good exchange of ideas and helped ensure that all sessiongoers had the chance to fill any gaps in their understanding of the technology and its topography in the U.S. context. Attendees were advised of the periodic DVN Workshops where more research and innovation on topics of this nature can be seen and discussed.

The National Academy of Sciences, founded in 1863 by an act of the U.S. Congress is charged to provide scientific advice to the government whenever called upo' by any government department. The Academy receives no compensation from the government for its services.

"Light is not just visibility, but also security": Audi's Berlitz

Extract from interview to ATZ

Audi's Stephan Berlitz, head of Light/Vision Innovations Development at Audi, will attend the DVN workshop in Munich. In an interview to ATZ concerning the lighting technology of the new Audi e-tron Sportback, Berlitz presented the latest lighting innovations. Here's a sample of what he had to say:

About road marking

"Technically, pictograms such as snowflakes or warning triangles projected onto the road in front of the car to warn the driver of dangers are feasible. However, the security issues regarding the recognizability of symbols must be fulfilled. Even with no law that prescribes or prohibits the symbols to be projected, we want to find a good solution for everyone involved in industry, government, politics, society, and I am also sure that we will succeed. The product advantage must be clearly visible to road users. In the Audi e-tron Sportback, we have done this very well."

About digitalisation

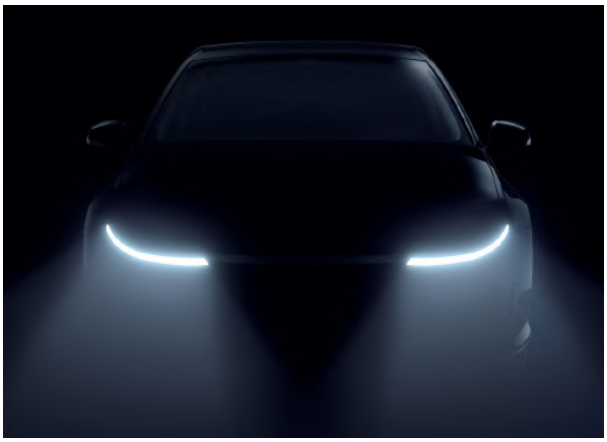
"Since LED technology made its breakthrough in all lighting functions, it has been about digitalisation. LEDs can be switched individually, i.e. digitally on or off. This enabled Audi to optimise the high beam using the matrix function. The next step is micromirror systems with more than a million segments, which make it possible to quickly and precisely point out the precise vehicle contour of an oncoming vehicle or to warn the pedestrian with marker lights on the road.
The digital light represents the cornering, city and motorway lights as forms of the low beam with the highest precision and complements the high beam with an even more precise blanking of other road users.It also offers new functions such as track and

orientation light. On expressways, the lane light creates a carpet of light that illuminates one's own lane brightly and adapts dynamically when changing lanes."

About OLED

"A lot of functions from OLED would be possible. The car knows what is happening behind a curve via swarm data. One could inform the driver 1km before the traffic jam with "Warning traffic jam", via the symbol of a warning triangle. And 200 metres before the end of the traffic jam, the warning triangle starts to flash intensely. If you drive even closer, the brake light comes on in a flashing function."

New Osram LEDs for Super Slim Headlamps



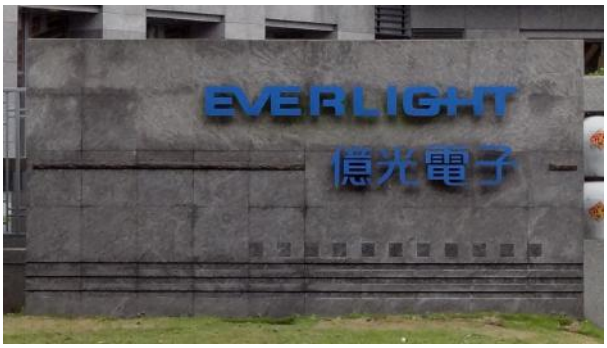
Osram will have new headlamp LEDs on display at the DVN Workshop in Munich next week. They're the Oslon Boost HM, which is said to deliver outstanding brightness with compact dimensions.

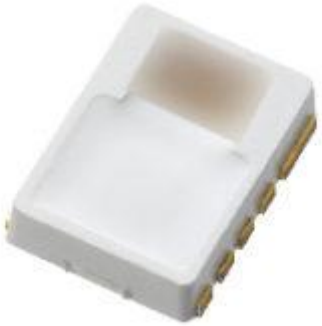
In addition to numerous features such as adaptive front lighting, the miniaturisation of this component plays a particularly important role. With the Oslon Boost HM, Osram developers have succeeded in achieving an outstanding brightness of 415 lm at 1.5A with a very small chip area of just 0.5 mm^2.

The package of the LED is also particularly compact at 1.9 × 1.5 × 0.73 mm, catering for finger-width front headlamp solutions without compromising light output.
The luminance of 255 cd/mm^2 at 1.5 A is an absolute best-in-class performance value for this type of LED.

In addition to headlamps, the Oslon Boost HM can also be used in combination with other LEDs, to provide an additional high beam. Thanks to its outstanding luminance, the LED is also suitable for use in MEMS-based adaptive front lighting systems. The robust ceramic package of the Oslon Boost HM allows for easy thermal management within the component by dint of an electrically insulated pad.

Everlight's Smart Products to be Showcased at DVN Munich

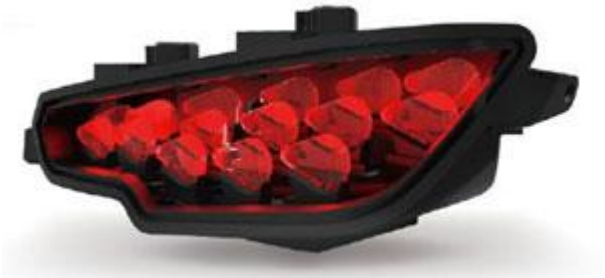




EL SmartLED or interior lighting

Taiwanese LED packager Everlight are demonstrating their complete automotive production lines and related modules such as mini LED lamps, smart multi array lamps, and fish scale rear lamps at the DVN workshop in Munich next week. Everlight have adopted ISELED technology to launch the EL SmartLED series (3.0 × 4.1 × 0.9 mm) with embedded smart ICs to target intelligent innovation and R&D. The driver is integrated into the RGB LED package, and its component calibration colour difference can be controlled in the third order SDCM (MacAdam Ellipse).

In addition, EL SmartLED has been developed for AEC-Q102. A wide application range for lighting the automotive interior includes interior light, moon reading lighting and dashboard display. The dimension of this package is 3.0 × 4.1 mm to provide the best optical performance.



Fish Scale Lamp

The fish scale lamps, developed by Everlight and using light-guide plates with high-power ceramic packages, have a luminescence effect similar with OLED, but more solid and reliable. Mini-LED lamps are made of components with small pitch display, in accord with the vision of the human eye and allowing for a highly adaptive rear lamp system.

Hella: Market Environment Affects Sales, Earnings

In the first half of fiscal year 2019/2020 (June to November 2019), Hella sales dropped 3.2% to €3.3bn, and adjusted earnings (adjusted EBIT) are €257m—down from €296m. This substantial reduction is largely due to extraordinary income booked in the prior year from the sale of the wholesale business.

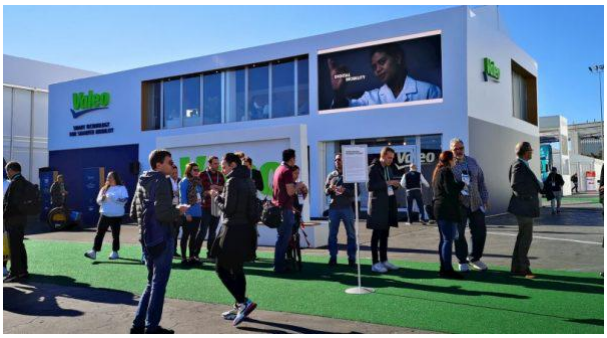
CEO Dr. Rolf Breidenbach says "Given the challenging market environment, our sales and earnings declined as expected in the first half of the year. However, we once again outperformed the market, which speaks to the attractiveness of our products and the strength of Hella's business model. Overall, we are satisfied with the development of our business".

The reported sales in the automotive segment decreased in the first half of the fiscal year by 1.6% to €2.8bn, a decrease was largely attributable to a worldwide decline in light vehicle production, which shrank by 6.1% in the half-year period. Reported sales in the aftermarket segment dropped by 3.8% from €336m to €323m (down from €336m YoY), while reported sales in the Special Applications segment decreased 10.2% in the half-year period to €183m, mainly as a result of market weakness in the business for agricultural and construction vehicles and for buses and trailers.

After the first half-year, Hella confirm their guidance for the full fiscal year 2019/2020. "The market environment remains very challenging. A strong, sustained recovery is not likely to emerge in 2020," said Breidenbach. For the current fiscal year, Hella expect sales of around €6.5bn to €7bn and an EBIT margin between 6.5% and 7.5%.

Driver Assistance News

Hexagon-Hyundai-Valeo's Precise Vehicle Positioning System



At CES in Las Vegas, Hyundai, Hexagon's Positioning Intelligence Division, Valeo, and a major mobile network operator presented a new technology capable of pinpointing a vehicle's exact location while it's on the road.

Using proprietary cm-level precision called High-Precision Positioning (HPP), the system can further enhance a vehicle's advanced active safety technologies. The use of GPS positioning is already widespread in the automotive industry, but the technology currently deployed in the automotive industry only approximates positioning to within 2-3 metres in optimum conditions.

HPP works by applying TerraStar X technology, a correction to the GPS signal received by the vehicle through a channel of the cellular network. The correction to be applied is determined by a network of stationary receivers, which knows their absolute position and serves as a permanent reference point.

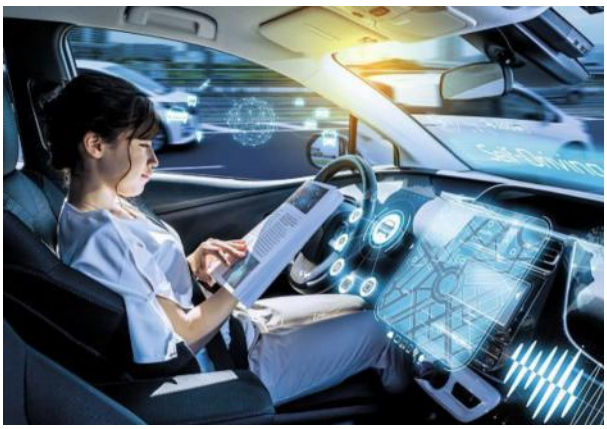
Harman's V2P 5G Tech

At CES, Harman unveiled a new ADAS use case, called Vehicle-to-Pedestrian, that warns drivers and pedestrians of potential safety conflicts.

"With well over one million deaths reported every year, road fatalities are a global public safety imperative. Creating technologies that help prevent the injury of drivers, passengers, pedestrians and cyclists is paramount," said Harman Connected Car President Dr. Mike Peters. "By introducing 5G technology to the car in a way that is both meaningful and practical, Vehicle-to-Pedestrian is an exciting innovation that will make our roads safer".

In the car, Vehicle-to-Pedestrian can work on low-latency 5G peer-to-peer signals to identify objects in the vehicle's path through proximity scanning. Similarly, pedestrians or cyclists with a C-V2X-enabled mobile device will also receive an alert that a vehicle is entering their path. As a result, vehicles, pedestrians and cyclists can be alerted to potential safety conflicts even in situations where advanced cameras can't see obstructions, such as around corners, or through parked vehicles.

Honda to Launch Japan's First Domestic L3 AV

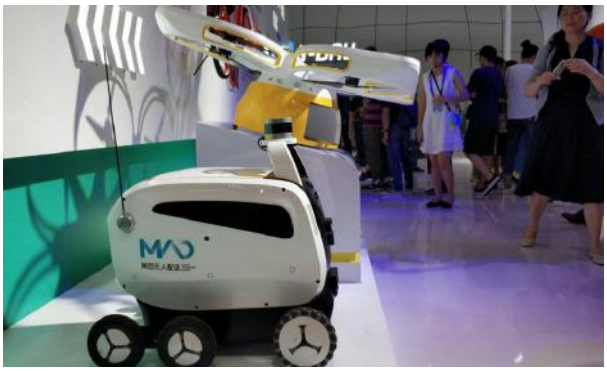


BMW and Nissan have already released L^2 vehicles in Japan, but Honda's new Legend luxury sedan, scheduled to be launched as early as next summer, has L^3 capabilities: drivers won't have to operate the accelerator or the wheel during congestion on expressways. Instead they can watch television or use their smartphone during that time, and are expected to feel less fatigue from driving.

They'll be warned by the car when they need to take control as soon as the congestion ends or if an emergency occurs. The new Legend is expected to be priced at around €80,000, and next spring, the Japanese Government will enforce a revised road traffic law to permit the operation of level-3 AVs on public roads.

Toyota plan to supply their e-Palette L^4 vehicle for use in the Olympic Village when Tokyo hosts the Summer Games next year.

Valeo Show Autonomous Delivery Droid



At CES this year, Valeo showed off their autonomous, electric delivery droid prototype, the eDeliver4U. Valeo developed the technology in partnership with Meituan Dianping, China's leading e-commerce platform for services, which operates popular food delivery service Meituan Waimai. The two groups signed a strategic cooperation agreement at last year's CES to develop a last-mile autonomous delivery solution.

At 2.80 m long, 1.20 m wide, and 1.70 m tall, the droid can deliver up to 17 meals per trip, autonomously negotiating dense and complex urban environments at about 12

km/h without generating any pollutant emissions. With a range of around 100 km, this prototype gives us a glimpse of what home delivery could look like in the near future, especially in the ever-growing number of zero-emissions zones that are being created around the world. Meituan Dianping's connected delivery locker allows for safe delivery to the end customer, who can book through a smartphone application.

The droid operates autonomously using perception systems including algorithms and sensors. It is equipped with four Valeo Scala laser scanners (the only automotive lidar already fitted to vehicles in series production), a front camera, four fisheye cameras, four radar devices and twelve ultrasonic sensors, coupled with software and artificial intelligence. The electrified chassis features a Valeo 48V motor and a Valeo 48V inverter, which acts as the system's "brain" and controls the power, a speed reducer, a 48V battery, a DC/DC converter and a Valeo 48V battery charger.

Meituan Dianping is China's leading e-commerce platform for services. The Company's platform uses technology to connect consumers and merchants. Service offerings on the platform address people's daily needs for food, and extend further to broad lifestyle and travel services. The Company operates in over 2,800 cities and counties in China.

General News

China Passenger Vehicle Sales Fall

Retail sales of new passenger vehicles in China declined by 3.4% to 2.14 million units in December 2019 from very weak sales of 2.22 million units in the same month of the previous year, according to preliminary data released by the China Passenger Car Association (CPCA). The December decline was the 18th in the last 19 months, and brought the full year total to 20.69 million units, down 7.4% year on year. The data covers passenger cars, SUVs, and MPVs.

This followed a 5.8% drop to 22.35 million units in 2018. Dealer inventories were also said to have been reduced by 250,000 units last year. The association expect the passenger vehicle market to have bottomed out this year with retail sales forecast to rise slightly to around 21 million units in 2020 after a slow start to the year.

This would include 13.6 million passenger vehicle replacements with existing owners increasingly attracted to the market by more frequent model upgrades and new technology.

China's Great Wall agrees to buy General Motors' India plant

Great Wall Motor has agreed to buy General Motors' car plant in India, the companies said last week, as the Chinese automaker expands overseas amid slowing domestic demand.

Employees work on the assembly line at the General Motors plant in Talegaon, about 118 km from Mumbai

The deal, which is expected to be completed by the second half of 2020, will jumpstart Great Wall's plans to build and sell cars in India and bring to an end GM's

manufacturing operations in the country.
“The Indian market has great potential, rapid economic growth and a good investment environment. Entering the Indian market is an important step for Great Wall Motors’ global strategy,” Liu Xiangshang, vice president, global strategy at the Chinese automaker said.

Great Wall, one of the biggest sellers of sports-utility vehicles (SUV) in China, plans to enter India with its Haval and electric vehicle brands and will announce detailed plans at the Delhi auto show in February, Liu said in the statement.

New CEOs for Citroën, DS Brands

PSA Group have named two new CEOs. Vincent Cobee, a former Renault-Nissan alliance executive, takes up as CEO of the Citroën brand, replacing Linda Jackson, who will take on a strategic role within the group.

Cobee, a French national, left Mitsubishi in April 2019 in the wake of the arrest of Carlos Ghosn last November. He joined Citroën as Deputy CEO in October 2019, with a mission to increase international sales. He had worked for 17 years at the Renault-Nissan alliance, largely at Nissan.

And Beatrice Foucher, another former Renault-Nissan alliance executive is now CEO of the DS Automobiles upscale brand, replacing Yves Bonnefont. Foucher joined PSA in April 2019 as senior vice president for talent management and held a similar role at the Renault-Nissan alliance starting in 2015.

Linda Jackson, who had led Citroën since 2014 and also oversaw PSA's low-emissions vehicle business unit, will lead a study to clarify and support differentiation of PSA's brands, and will report to CEO Carlos Tavares.

Yves Bonnefont, who has run DS since June 2014 when it became a standalone brand, will lead a study of potential synergies and cost savings across brands, PSA said. The role will include studying brand positioning "from a customer and geographic point of view," PSA said. He will also report to Tavares.