Tue, 23 August 2022
Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #765

Editorial

To Propose What Is Needed: Lighting Market Intelligence

I had a talk during ISAL 2019 with Kamislav Fadel, who at that time was just leaving Hella. He presented me his first work (and his dream) on vehicle lighting intelligence, explaining me that it is exactly what automakers, tier-1 and -2 lighting suppliers, and analysts and investors require for in-depth vehicle lighting understanding.

One year later, I again met Kamislav who presented his wonderful achievements. He was with Pascal Popis, former Senior Vice president of Lumileds, who joined forces with him to create LMI GmbH. Pascal was impressed by the results already achieved and convinced of the need for the market of qualitative Lighting data.

Lighting Market Intelligence (LMI), the brainchild of these experienced executives, promises to evolve the state of data collection, quality, and analysis in the worldwide vehicle lighting industry. Having served for more than 50 years combined as senior executives and board members for some of the largest companies in the industry, both co-founders have experienced firsthand the challenges that arise in making informed and accurate strategic choices and even in taking quality operational business decisions based on the lack of quality data availability.

DVN sees the LMI business-idea as a unique service in lighting which was not available before. We are excited about this energetic startup, and we wish LMI great success.

Sincerely yours,

In Depth Lighting Technology

LMI Readies Lighting Intelligence Service

Kamislav Fadel and Pascal Popis' shared sense of purpose, combined with industry stakeholders' basic need for complete, reliable, and up-to-date vehicle lighting market intelligence, drove them in 2020 to embark on a journey to revolutionise the state of vehicle lighting market intelligence.

The pair have met their ambitious and unprecedented goals after almost two years' foundational work to build an intelligence capability and analytic application to cover the needs across the spectrum of industry stakeholders: automakers; tier-1 and -2 lighting suppliers; consultants; analysts who require in-depth understanding on the subject, and investors, including private equity.

Next month, LMI will launch their suite of market intelligence, solutions and services, which they say will include best-in-class automotive intelligence and analytics; benchmarking; consulting, and syndicated, subscription-based reports and bespoke solutions.

LMI's values reflect their co-founders' personal values and they govern every aspect of the LMI processes, from data collection to analytic applications. These principles are exemplified by LMI's comprehensive data gathering and validation processes which ensure their clients are getting the most current, complete, and reliable data.

LMI's intent is to provide unprecedented data coverage and updates; their data scope covers 65 million out of 80 million existing car models—that's 80 per cent, including all relevant car models, ranging from major manufacturers' models in production from as far back as 2017 all the way out to 2027. It's updated quarterly, covering all car model changes from facelifts to new-to-the-world models (approximately 30 per cent annually).

There's full coverage of the whole vehicle lighting ecosystem and all products: comprehensive tier-1 market share data and technology trends; automaker share of portfolio and light source technology shares by functionality. There's analysis and trend projection, enriched by expert interviews and industry knowledge. Moreover, there's detailed systems and components itemisation: lighting projector technical analysis breaking down to the BOM level; detailed assembly processes scoping for approximately

60 to 80 projectors per year covering most relevant car models, and bespoke studies to support specific analyses, investment decisions and RFQ processes, including pricing; intelligence, and competitive data.

The Co-Founders

"LMI uses multiple data sources combined with rigorous internal and external validation processes—audited by DVN—and triangulated with key Industry players ensuring decisions are always based on the highest quality intelligence."

Kamislav Fadel, Co-Founder LMI

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"If you want to have the most complete, validated and up to date vehicle database to ensure you are making the highest quality decisions and analysis; we are the right partners for you."

Pascal Popis, Co-Founder LMI

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Lighting News

Shanghai DVN Workshop: Nine VIP Automakers, Nine VIP Tier-1s

LIGHTING NEWS

The Shanghai DVN Workshop is shaping up as an exceptional event, with two keynotes and 34 lectures. It will be held on 20-21 September in Shanghai, with lectures from American, European, and Asian speakers.

Two Keynotes:

CEO of Hasco Vision Technology, Xuejun Qiu, will speak on the outlook on digital lighting driven by innovation. And GTB ex-president Geoffrey Draper will present on breaking barriers to innovation.

Nine car makers will describe their achievements and innovations for new light functions:

- Audi's Michael Kruppa: "Digital Light for digital cars"
- Volvo's Paul-Henri Matha: "Regulation harmonization, stakes for worldwide OEM"
- Patac's Lei Zhoujixin: "Emotional Lighting-Cadillac LYRIQ exterior lighting"
- Changan's Ms Zhou: "Lighting and Experience"
- Great Wall (to be defined)
- Stellantis' Philipp Roeckl: "Driver Assistance Projections"
- Human Horizons: Speech on digital light
- FAW's Hongliang Han: "Industrial design of Hongqi Lighting. Example of H9"
- Jidu Auto (to be defined)

Five vehicle interior experts will talk about smart interior lighting systems:

- Li Auto's Yang Liu: "Interior atmosphere lighting for space creation"
- Karlheinz' Blankenbach, Inova's Rothlaupt, Antolin's Daubner: "Advances in Interior Lighting"
- Kurz PolyIC (to be defined)
- XingYu (to be defined)
- Melexis' Linhong Song: "Ambient Lighting goes Functional"

Nine tier-1s will talk on innovations for new lighting functions:

- Koito's K. Murata: "Investigation of conflict of a road projection lamp for cyclists"
- Hella's Chris Kirchenbauer: "Digital Flatlight"
- Valeo (to be defined)
- Mind's Jin Hui: "High Definition Display devices and their application in automotive."
- Hasco's Jinlong Ao (to be defined)
- Marelli AL China (to be defined)
- XingYu's Jian Song: "A Solution of Interactive Lighting—Xingyu"
- PO Lighting Varroc (to be defined)
- AMS Osram (speaker tbd): "Smart Surface Sensing and illumination"

Six experts will talk about light source innovations:

- KSLD's Meng Han: "Next Generation LaserLight for Sensing and LiFi".
- Lumileds' Keanu Ma: "New light source architecture design for Car Body Lighting"
- AMS Osram's Kimi Chen: "Lights for Exterior Carbody"
- HC Semitek's Yi Zhang: "Development of automotive LED chip technology"
- Dominant's Dr. Jeffery Xie: "Application of innovative 2520 series in RCL"
- Seoul Semiconductor's Guanghui Yu: "LED Solution for Human Health"

Five experts will talk on Skills to help Development New functions:

- AMLS PO Lighting's M. Yesilgoez: "Projection Solution: Key to Customer Experience"
- Texas Instruments' Steven Zhou: "DLP is enabling smart & dynamic lighting"
- AML Systems' Dian Hong: "HL Condensation through active moisture removal"
- Huawei's Zhiyong Feng (tbd)
- Ansys (tbd)
- Watch for the official program and docket to be published next week.

Forvia, Valeo, PO Emerge as Force in Lighting Market

Extract of Automotive News Europe

LIGHTING NEWS

AUDI RS E-TRON GT COMES STANDARD WITH MATRIX LED HEADLIGHTS

Led by Forvia's acquisition of Hella, the three companies now have more than 25 per cent of the growing global lighting market, which is set to outpace growth in auto production.

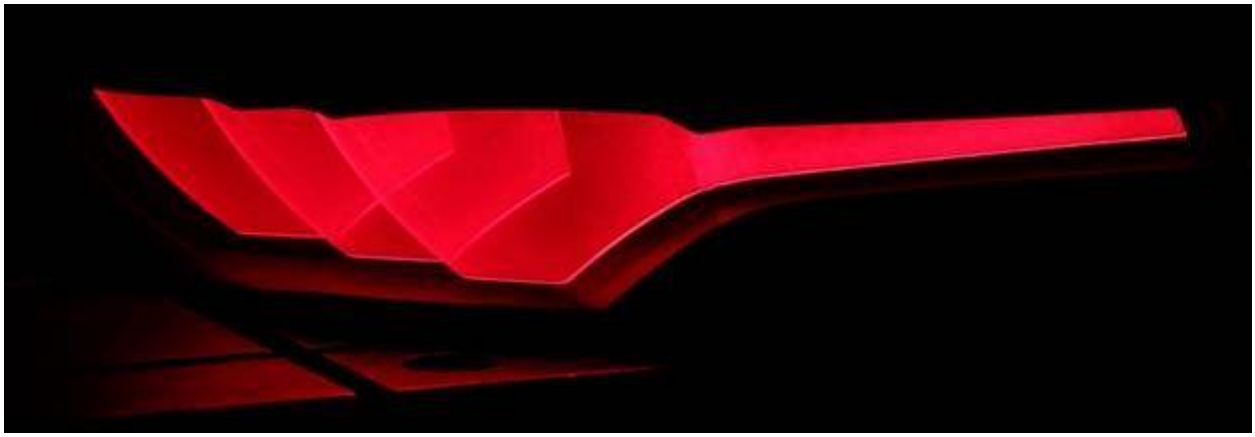
Not long ago, vehicle lighting consisted of headlights, taillights, turn signals and a few interior bulbs. But today's cars are veritable Christmas trees, from front grilles that pulse with elaborate "lighting signatures," through customizable mood lighting in the interior, to full-width light bars in the rear.

Valeo and fellow French suppliers Forvia and Plastic Omnium have gone all in on lighting in the last few years. They gain market share in a business poised to ride the megatrends of electrification, increased safety regulations and ADAS to outperform the overall auto market.
"Hella is perfect because it has two main specialties, one of which, lighting, is a nice add that is aligned with what we are doing in terms of systems, design and safety—it works very well in our portfolio, then you have Hella's electronics and software, which will give us size to achieve leading positions, especially in automated driving and in electrification." Forvia CEO Patrick Koller said.

The automotive lighting sector is predicted to outperform production growth, as new comfort, safety and design features are introduced. A February 2022 report from Fortune Business Insights predicts a fast growth, to USD $57bn in 2028 from $30.19bn in 2021, a compound annual growth rate of 9.5 per cent.

Varroc's Illuvision Surface LED Technique

LIGHTING NEWS



Varroc have introduced a new kind of surface LED lighting. They're calling it "Illuvision", an evolutionary step forward in their S-LED family. It offers ultra-homogeneous appearance; super-thin frameless design with a simpler build concept; fully three-dimensional shapes, and an eye-catching semi-transparent appearance—all of which stand to open new doors and pave new paths for new levels of design freedom.

PO's Transformation into a Tech Company

Extract of French magazine La Tribune interview of PO CEO Laurent Favre

LIGHTING NEWS

- The family business has embarked on a profound transformation of its plastics activities to position itself in growth segments with high added value such as hydrogen and lighting. In an increasingly complex environment, this transformation has taken on an urgency.

- The automotive industry is changing, Plastic Omnium too... In a complicated period where the industry is subject to various pressures (regulatory, inflationary, technological, geopolitical...), equipment manufacturers must reinvent themselves if they still want to exist tomorrow. It has become imperative to move up the value chain in order to continue to weigh in the commercial negotiations of tomorrow. PO needs to reach critical size on expertise to establish its competitiveness. Transforming a plastics manufacturer into a "tech company" is the challenge that Plastic Omnium has set itself.

- The challenge for Plastic Omnium is to reposition itself in the value chain. Market dynamics can no longer be in the perspective of growth in volume, but rather in value. "In 2030, 40% of Plastic Omnium's 15 billion euros in sales will come from products that we do not currently have in our portfolio", he explains to us.

- Through this strategy Plastic Omnium also aims to enter the very closed circle of major French equipment manufacturers such as Valeo and Forvia. PO is a challenger. On lighting, he will oppose the leader Valeo, but also Faurecia which has just completed a very structuring merger with the German Hella.

In 2019, the pre-crisis period, Plastic Omnium had generated €9 billion in turnover. This is €10 billion less than a Valeo or a Faurecia. But if Plastic Omnium does not have the same financial surface and does not have the same financial resources as its compatriots, it can become the free electron in the sector.

- PO has a family shareholding which is part of the long term" in reference to the Burelle family (60% of the capital). In other words, the firm can count on the lightness of its hierarchical structure to be agile and seize opportunities, in complete independence and not to allow its roadmap to be dictated by the market.

Hella Outperform Market in FY 21-22

LIGHTING NEWS

Hella have presented full financial results for their fiscal year (June 2021 to May 2022). Despite the significant reduction in worldwide light vehicle production, consolidated sales of the Hella Group declined by just 0.8 per cent to €6.3bn. The adjusted earnings before interest and taxes (adjusted EBIT) amounted to €279m in the past fiscal year (prior year: €510 million). The adjusted EBIT margin stood at 4.4 per cent (prior year: 8 per cent).

"In the past fiscal year, we were confronted with a variety of challenges on the market side: from bottlenecks in the global supply chains, the effects of the coronavirus lockdowns in China and the war on Ukraine to further increases in energy and raw material prices", says Hella CEO Michel Favre. "We have once again clearly outperformed the general market development, and we have been able to book a record order intake on the basis of numerous large-volume customer projects. Both speak for the stability and future orientation of the Hella business model."

Hella acquired orders with a total volume of around €10bn in the automotive business alone, more than ever before in the company's history. The sales development of the automotive segment in the past fiscal year was influenced by the global decline in light vehicle production, which was down almost nine percent. Despite this massive decrease, the automotive segment's sales only fell by 2.1 per cent to €5.4bn. The fact that the segment again outperformed global light vehicle production by 6.5 percentage points is mainly due to large-volume production launches in China as well as an overall high demand for lighting and electronics products.

For the period from 1 June 2022 to 31 May 2023, Hella expect to generate currency and portfolio-adjusted consolidated sales of around €7.1bn to 7.6bn. The EBIT margin adjusted for structural measures and portfolio effects is forecast to be in the range of around 5.5 to 7 per cent.

NAL Name New President and COO

LIGHTING NEWS

NAL's Senior Vice President, Kishore Ahuja, is appointed as the new President and Chief Operating Officer (COO). Kishore succeeds Kirk Gadberry, who served as President and COO for the past six years.

Kishore brings a wealth of experience in the automotive industry working for Toyota, Chrysler, and other automotive suppliers before joining NAL in 1994. With NAL, he has worked in a variety of roles including engineering, program management and manufacturing before being promoted to Senior Vice President in 2018. As Senior Vice President, Kishore was responsible for manufacturing operations, supply chain/purchasing, and new product launch.

North American Lighting, a member of the Koito Group, are one of the largest vehicle lighting manufacturers in North America. Their ten facilities, combined with the global network of Koito Group companies, uniquely positions the company to meet increasing global demands for safe, energy-efficient, eco-friendly, and intelligent vehicle lighting systems.

Driver Assistance News

Innoviz Automotive Lidar Gains Traction

DRIVER ASSISTANCE NEWS

Israeli company Innoviz Technologies are poised to take the market lead in vehicle lidar, after signing a major supply deal involving the VW Group.

Market analyst firm Strategy Analytics, who have just compiled their first-ever market share estimates for the vehicle lidar industry, say the deal with VW-owned Cariad will fling Innoviz to the top of the rankings when VW begin deploying the technology in the mid-2020s.

This past May, Tel Aviv-based Innoviz said they had signed a supply agreement with an unspecified customer that boosted their forward-looking order book by around USD $4bn. Earlier this month, they named that customer as Cariad, who selected the InnovizTwo sensor (photo) and perception software for integration into ADAS and ADS applications.

Strategy Analytics' principal automotive analyst Kevin Mak says, "The supply win for Innoviz heralds the 'second wave' of lidar supply into automotive applications. This follows smaller deals won by Cepton from General Motors and Luminar from Nissan, Mercedes and Volvo, some of which will start deployments in 2023. However, the CARIAD-Innoviz deal is by far the largest, in terms of both value and volume."
Mak suggests that the agreement signals growing business for lidar startups, of which several have raised hundreds of millions of dollars in recent stock market listings via special-purpose acquisition company (SPAC) arrangements.

Earlier this month, after naming Cariad as the big customer, Innoviz CEO Omar Keilaf said vehicles featuring the firm's technology would start appearing from the middle of this decade.

How Baidu Apollo Rolls in the AV Industry

DRIVER ASSISTANCE NEWS

APOLLO RT6

With total revenue topping USD $19bn and 2021 profit of more than $1.6bn, Baidu have the financial resources to invest in AVs and robotaxis. Apollo is Baidu's open driving tech platform that was introduced in 2017. The goal is to provide an open and safe solution to enable its partners in the automotive industry with autonomous–driving capability. Apollo is one of the world's most active open platforms for autonomous driving, with 500 L^4 AVs in testing or robotaxi operation, including four AVs testing in California.

Apollo Go is currently available in 10 cities in China and has started commercialized operation in multiple cities. Users can hail a robotaxi with one tap in Baidu Maps. In April, Baidu received the first permit in China for driverless ride–hailing services in Beijing. Apollo Go has provided over 1 million robotaxi rides, mostly free of charge. Baidu plan to expand Apollo Go operations to 65 cities in China by 2025, and 100 cities by 2030.

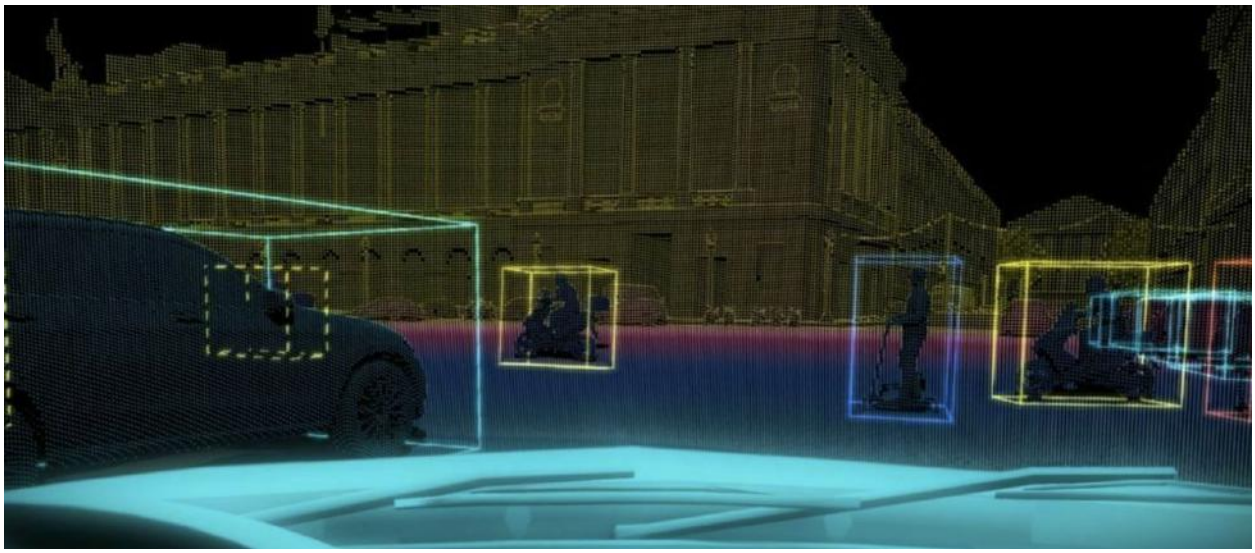
The RT6 Robotaxi is first purpose–built robotaxi for the Chinese market on July 2021. It is the sixth generation of robotaxi vehicles, and has a detachable steering wheel and eight lidars. From the released pictures, it is clear that only solid–state lidars are used; it is unlikely that the RT6 uses any FMCW lidars, which are best suited to high speed and long-distance views.

The RT6 will be put into operation in China in 2023 on Apollo Go, Baidu's autonomous ride–hailing service. The dedicated robotaxi design makes the Apollo RT6 distinct from earlier generations that were retrofitted for AV use in conventional vehicles. The removable steering wheel provides more space for unique interiors at the traditional driver seat. The exterior features an innovative look that integrates sensors on the sunroof alongside interactive lights, with excellent sensor integration. The production cost of the RT6 is impressive, at about $37,000. This is half the cost of the fifth-generation robotaxi, the Apollo Moon, which is currently used in Baidu's robotaxi services.

In March 2021, Baidu formed a JV with Geely called Jidu to produce BEVs and AVs. In December 2021, Jidu said they would introduce a concept vehicle in mid–2022 and deliver its first mass–produced AV in 2023. In June, Jidu introduced a prototype of their first vehicle, called Robo–1, which has considerable autonomous features. Baidu believe the RT6's large cost reduction will lead to deployment of tens of thousands of AVs across China in a few years.

Valeo Wemding, leading ADAS with Sensors and Lidars

DRIVER ASSISTANCE NEWS



With the recent wins of major contracts with automakers Stellantis and BMW, Valeo Wemding are at the forefront of the autonomous mobility revolution, producing innovative sensors that enable autonomous driving and increase safety on the road.

In 2021, the world saw the first two vehicles on the market certified for L^3 autonomy: the Honda Legend in Japan and the Mercedes-Benz S-Class in Germany. Valeo equipped both cars with their Scala lidar sensor, produced at their plant in Wemding, Germany, as the key to achieving the new level of autonomous driving.

Valeo Wemding has been a pioneer in producing driving assistance sensors for more than 30 years, starting with the first ultrasonic sensors for parking assistance, which were created here. Since then, the plant has produced more than half a billion of these sensors. Over the years, Wemding has produced several other types of automotive sensors and today primarily manufactures front cameras, domain controllers and lidars.

Valeo started producing lidars in Wemding in 2017, and released the second generation of Scala lidars in 2021. Valeo have produced more than 170,000 since. The confidence of automakers in Valeo's lidar was recently reaffirmed when Stellantis chose Valeo's 3rd-generation Scala to equip multiple upcoming models anticipated to hit the market in 2024.

By 2030, up to 30 per cent of new premium cars will be able to achieve L^3 autonomy. The market is expected to multiply fivefold between 2025 and 2030, representing a potential value of USD $50bn. Valeo recently signed a major contract with BMW to provide the automaker with the domain controller, sensors and software for parking and maneuvering on their upcoming "Neue Klasse" platform.

U.S. Traffic Deaths Hit Two-Decade High Early This Year: NHTSA

DRIVER ASSISTANCE NEWS

Traffic-related fatalities jumped about 7 per cent in the first three months of this year to 9,560—the largest number of people killed in a single quarter on U.S. roads since 2002. That's according to NHTSA, the **leaderless** and **feckless** American auto safety regulator. And it's not just a transient spike, but a trend; in 2021, whole-year U.S. traffic deaths jumped over 10 per cent to 42,915—the largest death toll since 2005. Steve Cliff, who was briefly NHTSA's administrator before resigning three months in, said "We hoped these trends were limited to 2020, but sadly they aren't".

Governors' Highway Safety Association director Jonathan Adkins said "Tragically, the U.S. is on its way to a third straight year of surging roadway deaths (…) we must not become desensitised to the tragedy of roadway deaths".

7,342 pedestrians were killed in traffic in 2021, a 13-per-cent increase over 2020 and the worst number since 1981. And 985 bicyclists were carried to death, 5 per cent more than the year before and the worst figure since at least 1980.

General News

NIO to enter U.S. and other markets in 2025

GENERAL NEWS

On August 15, it is reported that NIO will enter the U.S. market in 2025, and will deploy its first power exchange station in this market as soon as November this year.

It is said NIO plans to deploy a swap station in San Jose in November for testing purposes. At present, the NIO ES8 model is the first to enter San Jose for road testing, but the NAD function is not enabled.

The relevant person in charge of NIO said: "After entering the Norwegian market, NIO's products and full-system services will be officially launched in Germany, the Netherlands, Sweden, and Denmark in 2022; in 2025, it will enter more than 25 countries and regions."

On NIO Day 2021, NIO officially stated that these more than 25 countries and regions by 2025 will include the United States, Australia, France and Japan.