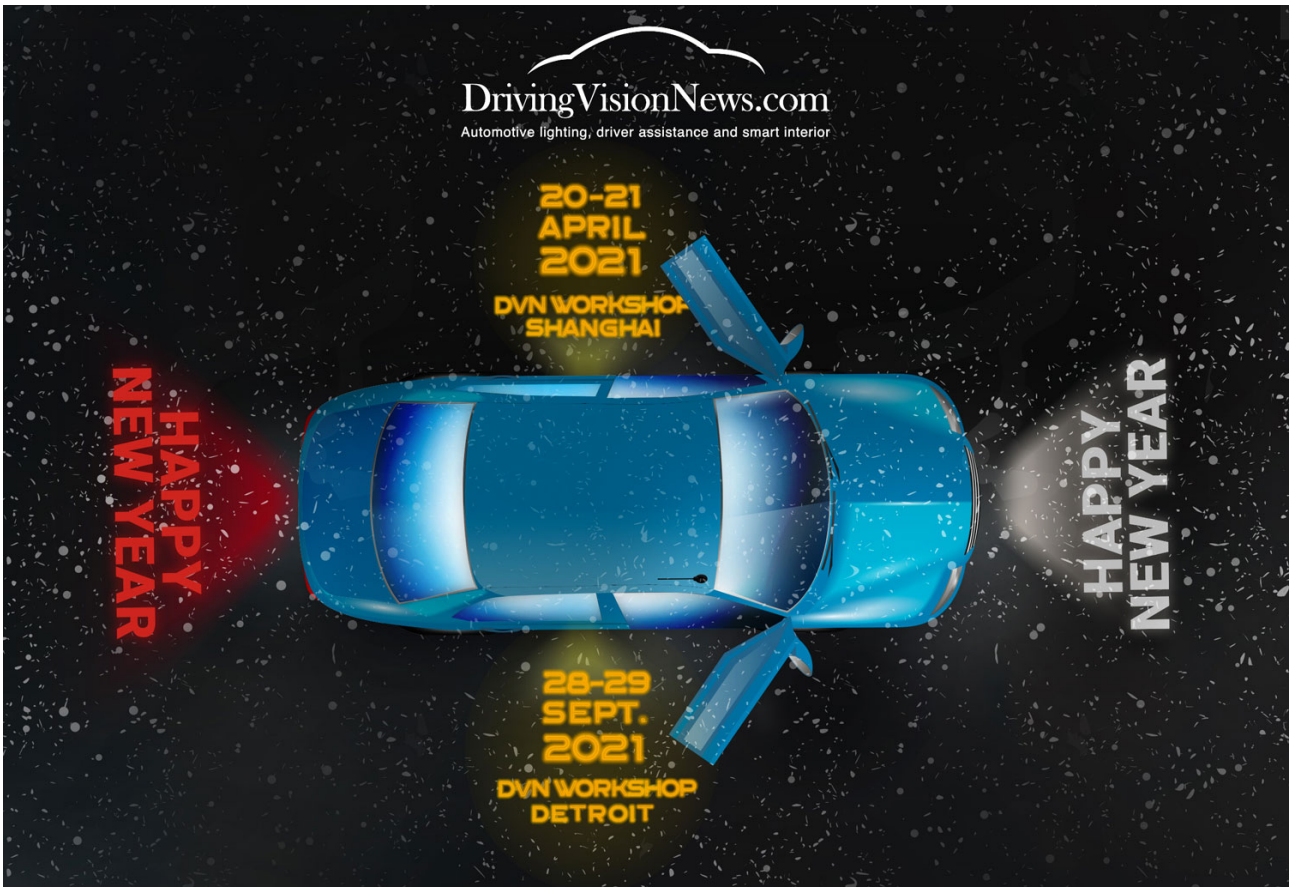
DrivingVisionNews.com
Automotive lighting and driver assistance technologies

Tue, 29 December 2020 Weekly Newsletter NEWSLETTER #679

Editorial

Best Wishes At The End Of A Topsy-Turvy Year



Firstly: DVN community members and readers, I wish you and your loved ones a grand and prosperous new year. I wish you great creativity to propel new kinds of lighting to the top of automotive innovations.

I also wish a great new year to friends around the world who are working for Driving Vision News, and have made a wonderful job of it this year, even despite the troubles.
• In France: Salomon Berner and Philippe Aumont, Carine Abouaf in marketing, Noam and Sarah Ouaknine who manage the DVN website, Jean-Paul Ravier for his endless expertise, Eve Taberna for document design, and Robert Sitbon for pictures and the

videos;
• In Germany: Carstein Befelein, Ralf Schäfer, and Leo Metzemaekers
• In US and Canada: Daniel Stern;
• In Korea: B.Y.Chung;
• In Japan: Eiichi Ono and Takashi Sato;
• In China: Ann Ai
• Engineers, designers, practitioners, and executives at automakers, lighting companies and suppliers, regulatory agencies, universities, and research outfits who help the ongoing DVN project with information and viewpoints.

The reason why DVN exists is to support and boost the vehicle lighting community. The increasing number of Gold and Platinium member companies—160 of you as of today—and the over 1,200 individual Gold members, and the 2,500+ interested readers show that our work is having a beneficial effect; there is great interest in networking and sharing perspectives and technical information.

Don't forget, the next DVN Workshop will be in Shanghai on 20-21 April. We're putting together an excellent roster of speakers and docket of presentations to show and describe the enormous progress being made by the vehicle lighting industry, even in these difficult times. For more information, contact **Salomon Berner**.

Again, the DVN team and I wish you a happy and healthy New Year. See you in '21!

Sincerely yours

In Depth Lighting Technology

DVN's 2020 Achievements

As we reach the new year, it's a fine time to analyse the achievemnts of DVN under the stress and strain of a fraught and difficult 2020. We facilitated the flow and exchange of information by publishing 52 DVNewsletters and 10 DVN Reports as well as a landmark DVN Study. We organised a live DVN Workshop and an online one, as well as an online DVN Lidar Conference.

52 DVNewsletters were sent to the lighting community, week after week without interruption. That's 52 editorials, 52 in-depth pieces, and around 750 news articles about lighting, ADAS, sensors, and relevant industry news. The weekly DVNewsletter's purpose is to cover all important facts and events happening in the realm of lighting and ADAS; we work dilligently to make it the one-stop independent source for relevant news and views for our industry.

10 DVN Reports were released:
• 2020 CES in Las Vegas;
• 2020 DVN Workshop in Munich;
• 2020 virtual motor show in Geneva;
• Lighting in North America;
• Marelli AL profile;
• 50 years of LightStyling;
• ADAS and Lighting;
• Evolution of LEDs;
• New Model launches in July-October 2020, and
• Lighting and ADAS at Audi

CES report

Geneva virtual autoshow report

Lighting in US

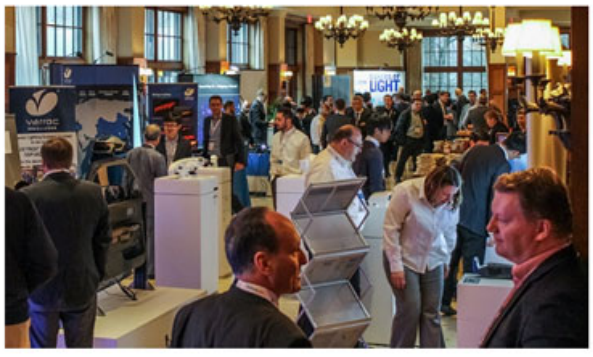
Lighting and ADAS report

Marelli AL report

Evolution of LEDs

Lighting and ADAS at Audi

Three DVN Workshops were organised: a live one in Munich, and the second one online. The Munich workshop saw a huge increase of the number of attendees and a fantastic level of lectures about the vehicle lighting world.



The virtual Tokyo workshop was quite fruitful, with highly relevant lectures by Japanese, European, and American speakers; the slick virtual Q&A after each session; the high level of the regulation sesion, and the quality of the exhibitions. I think it was the DVN Workshop with the highest content. And on top of that, there was the very successful online DVN Lidar Conference out of Frankfurt earlier this month.

As to the **DVN website**, several improvements are now operational:
• There's a new photo album section where our DVN members can get high definition pictures from DVN visits to major auto shows around the world, which are too big to publish in our downloadable DVN Reports.
• There's new access to those DVN Workshop lectures slides authorised by their presenters for publication
• DVN member companies can update and augment their presentations in the Community section of the website whenever they wish.

And next year

DVN will still be at it, putting out 52 DVNewsletters and 11 DVN Reports. As usual, we will cover congresses, workshops, and autoshows, publishing reports on the main events including the Detroit, Geneva, Paris, and Shanghai auto shows, Shanghai and Detroit DVN Workshops, VISION and ISAL congresses.

We will work hard this year to make 11 DVN Reports:
• Lighting in developing countries
• New models launched these last 4 months
• ADB evolution
• Exterior Ambient Lighting trend
• Shanghai autoshow and/or DVN WS
• Lighting in Taiwan
• Comparison of Headlamp performance rating systems
• VISION and ISAL
• IAA and/or NAIAS
• LED maker comparison
• Tokyo autoshow

We will organise two DVN Workshops: one in Shanghai on 20-21 April, and the second near Detroit on 28-29 September—as well as a DVN Lidar Conference in Frankfurt toward the end of 2021.
And we're soon to start work on our next **DVN Study**, to be defined based on feedback from the lighting community.

We're also working to bolster the DVN team with senior lighting experts all over the world—watch for more information soon.

We cordially remind you of the high-value benefits DVN Gold members enjoy with their unique login credentials for the DVN website, including access to the library and archives with over 7,000 news articles and 133 published DVN Reports—all fully indexed and searchable—as well as the DVN Gold members' community directory: detailed presentation of company products and services.

Here again, we happily extend our seasonal best wishes for an optimistic 2021 to all reading this!

Lighting News

Nichia to Found Research Institute

LIGHTING NEWS

Nichia, in collaboration with Tokushima University, will establish a collaborative research centre called the Tokushima International Science Institute on the university's premises next month. The institute's aims are conducting research in advanced scientific fields, developing human resources, and contributing to the international and regional communities.

The Institute will conduct activities in a three-party collaboration of the Israel Institute of Technology (Technion), Tokushima University, and Nichia—the major LED supplier who have been coöperating with Technion since 2016. The synergy from these efforts is expected to contribute to further developments and an increase in youth employment through vitalising and upgrading academic research and shaping internationally competent personnel.

Antolin reinforces its lighting division in Besançon

LIGHTING NEWS

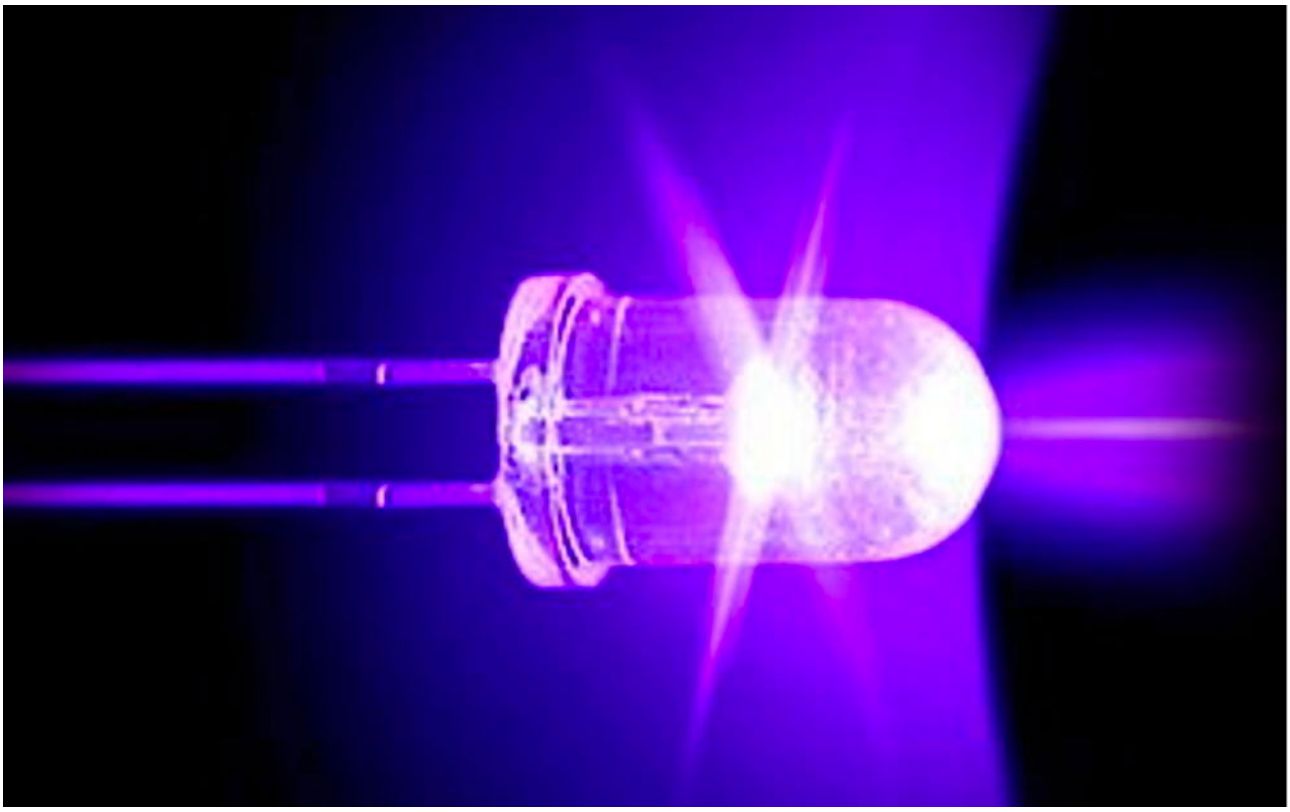
Grupo Antolin is establishing a lasting presence in Besançon, the city of microtechnology, which provides it with essential know-how.

Grupo Antolin, founded in Burgos, Spain, is a global player in interior components for the automotive industry with a turnover of €5.2 in 2019. The group, which has 30,000 employees, is present in the city specializing in microtechnology since 2012, the year of the takeover of the local CML Innovative Technologies factory, specializing in automotive lighting solutions.

In Besançon, Antolin gradually specialized in interior ambient lighting systems and today supplies most of the world manufacturers. In eight years, the factory has doubled its turnover and the workforce has grown from 150 to 400 employees spread over eight sites remote from the former watchmaking capital. Hence the project to create a single roof, to strengthen this major site of the group's lighting division and bring together, on a building complex of 21,500 m2, its R&D center and a 4.0 plant to accelerate in innovation.

UV-B Kills COVID-19 Virus Fast: New Research

LIGHTING NEWS



Ultraviolet radiation is a common method of killing bacteria and viruses. Now, researchers from Tel Aviv University have proven that the coronavirus presently causing such disruption and dismay can be killed efficiently, quickly, and cheaply using ultraviolet-B (UV-B), not just the more exotic, less affordable UV-C.

Professor Hadas Mamane, head of the Environmental Engineering Program at Tel Aviv University's School of Mechanical Engineering, led the research effort with Professor Yoram Gerchman and Dr. Michal Mandelboim. Mamane says "We discovered that it is quite simple to kill the coronavirus using [LEDs] that radiate ultraviolet light", adding that the UVEDs take less than half a minute to destroy more than 99.9% of the coronavirus.

The study is the first of its kind in the world, and was **published** earlier this month in the Journal of Photochemistry and Photobiology.

UVEDs—that is, light-emitting diodes that produce ultraviolet radiation rather than visible light—are available in all three ultraviolet bands, UV-A, UV-B, and UV-C. But UV-C, with wavelengths of 200 to 280 nanometres, is still difficult and costly to produce with solid-state lighting technology. UV-B, in the 280-315 nm range, is easier and less expensive to get from LED technology, but until now hasn't been widely considered as suitable for sanitisation applications.

Mamane explained the benefits: "We know, for example, that medical staff do not have time to manually disinfect, say, computer keyboards and other surfaces in hospitals—and the result is infection and quarantine", she said. "The disinfection systems [based on UVEDs], however, can be installed in the ventilation system and air conditioner, for example, and sterilise the air sucked in and then emitted into the room". She noted that

her research team are "also developing, together with a scientist at Northwestern University, a transparent coating that can be dipped or sprayed on surfaces and can kill viruses using visible-light LEDs that are not dangerous and are used everywhere, providing another application for regular LEDs".

In her team's research, they managed to kill the coronavirus using relatively cheap 285-nm UV-B UVEDs rather than the more costly 265-nm UV-C UVEDs. Mamane says the research "has commercial and societal implications" and applications; as the science develops, the industry will be able to make the necessary adjustments and install the bulbs in robotic systems, or air conditioning, vacuum and water systems, and thereby be able to efficiently disinfect large surfaces and spaces.

She said the 285 nm LED is 15% to 30% less expensive and requires only a little more time to be effective.

"Anything that can reduce cost could help implementation," she said, adding that she expects this technology to be commercially cost-effective by 2025.

Nichia Licence Phosphor Tech for Better LED Light

LIGHTING NEWS

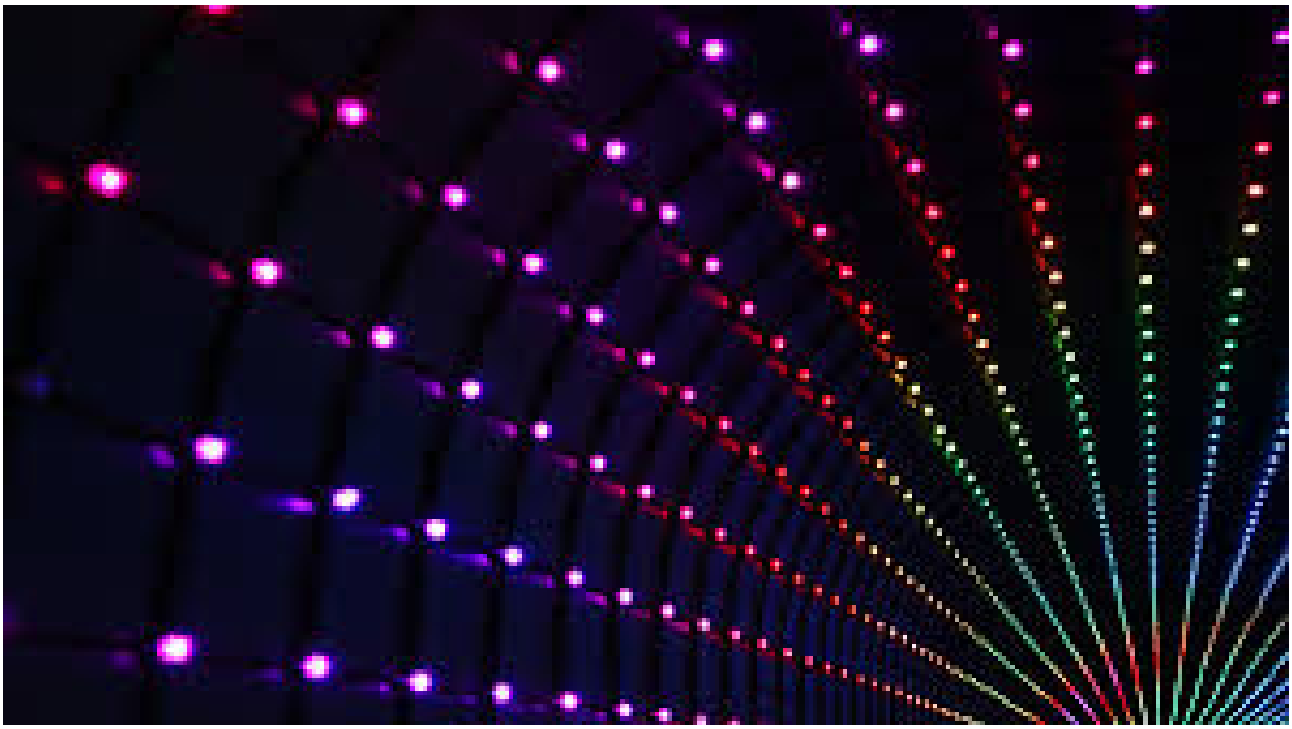
Nichia will soon be the first to licence GE Current's TriGain® technology and deploy it into their LED chip portfolio for lighting applications globally. TriGain is a breakthrough potassium fluorosilicate (PFS) phosphor that improves LEDs' colour rendering by dint of remarkably high red emission without the usual efficacy penalties. The magic comes from a narrow-band red phosphor developed by GE Current to increase both CRI and R9, while improving LED and system efficacy significantly versus other LED products.

With industry requirements in colour quality trending towards a more preferred performance range in fidelity and saturation, and TriGain providing best-in-class colour and efficacy, Nichia saw an opportunity to integrate the technology into their general-illumination products. Given Nichia's strength in the vehicle lighting sectors, it seems only natural to anticipate these natural-light LEDs moving into car interior lighting soon—and might we hope for LED headlamps with high colour rendering power sometime in the future?

Nichia have been a worldwide leader in phosphors since the 1960s, including a longstanding relationship with GE also dating back to the ‘60s. Nichia's phosphor expertise, coupled with their invention of the high brightness blue and white LEDs, has helped make the company into one of the world's foremost LED manufacturers. Nichia began working with Current on general illumination PFS in 2011.

LED Process Refinement Discovery From Wuhan University

LIGHTING NEWS



Researchers at Wuhan University have found a way to reduce the misfit in the coalescence boundary of GaN grown on the sidewall and c-plane regions of the substrate by adopting a PSSA (patterned sapphire with silica array) substrate.

Wuhan University professor Shengjun Zhou directed the research, and says PSSA substrates can significantly improve the efficiency of InGaN/AlGaN LEDs.
This research has demonstrated that PSSA substrates has the potential to increase the efficiency of the III-nitride LEDs, so flip-chip LEDs can conquer their thermal problems and uneven current spreading. In the flip-chip structure, rays emit from the transparent substrate.

According to Zhou, misorientated GaN growth on the patterned sidewall can affect threading dislocation density of GaN film grown on traditional PSS, which in turn can sharply limit the increase in internal quantum efficiency. At the same time, because of the predetermined large refractive index contrast at the sapphire-air interface, breakthroughs in light extraction efficiency are limited for flip-chip LEDs on PSS.

With PSSA, GaN islands will not be formed on the silica array cone sidewall regions—resulting in less misfit in the coalescence boundary of GaN grown on the sidewall and c-plane regions of the substrate. Zhou says compared with the traditional PSS solution, the refractive index contrast between a silica array and air is smaller for the flip-chip LED on PSSA. Therefore, more rays refract from the silica array to air, and light extraction efficiency is improved.

Hella Lauded for Light Design Approach in China

LIGHTING NEWS

Hella have received an innovation prize in China for their innovative "Light Design" approach consisting of matrix LED headlamps, electronics for light control, sensor technology, and software to make glare-free high beam or light animations for greeting and farewell scenarios. The prize was awarded jointly by the leading trade journal Automobil Industrie in China and the Institute of Automotive Engineering at RWTH Aachen University, and was received (photo) by Harpak Mozaffari Gilani, Responsible for Hella in the Asia-Pacific region. The decisive criteria were development innovation and industry influence.

With the "Light Design" approach, Hella can integrate all lighting and electronic components for complex lighting systems into an overall system based on a flexible, modular construction kit. Hella also support the specification of interfaces between the individual components and the development of the optimum light for the driver. In addition, automotive manufacturers receive innovative software solutions for the simulation of lighting functions (ALiSiA) and for the design of animations (GAIN).

Driver Assistance News

On Again: Apple Target Car Production by '24

DRIVER ASSISTANCE NEWS

After a few fits and starts and stops, Apple now say they aim by 2024 to produce a passenger vehicle that could include its own breakthrough battery technology. Apple's "Project Titan" started in 2014, but Apple subsequently paused the effort to focus elsewhere.

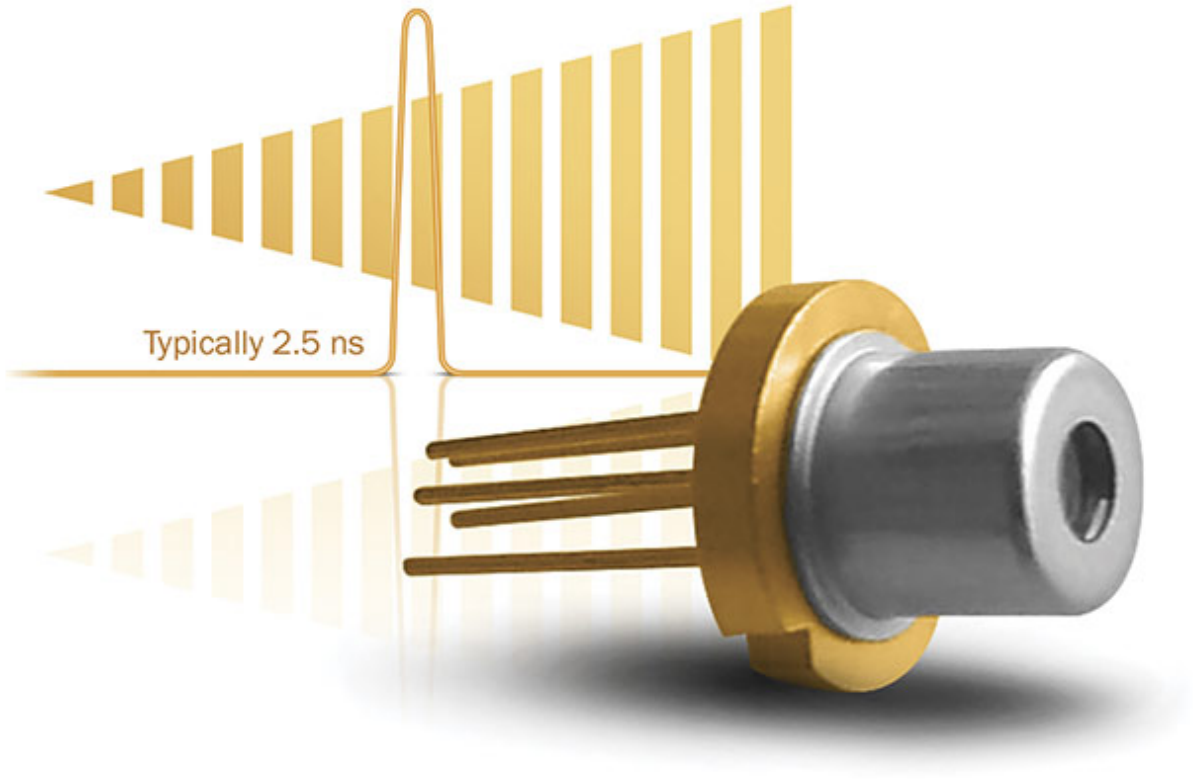
But now Apple have made enough progress to set sights on building a vehicle for consumers. Bas du formulaireCentral to Apple's strategy is a new battery design they think could radically reduce cost and increase vehicle range.

Making a vehicle involves enormous logistics and supply chain challenges even for the likes of Apple—it took Tesla 17 years before they finally turned a sustained profit making cars. Apple will turn to outside partners for elements of the system, including lidar sensors.

As to the battery, Apple plan to use a unique "monocell" design that frees up space inside the battery pack by eliminating pouches and modules that hold battery materials. That means more active material can be packed inside the battery, giving the car a longer running range. Apple are looking at a battery chemistry called LFP, or lithium iron phosphate, which is inherently less likely to overheat and so is safer than other kinds of lithium-ion batteries.

Laser Components' Comprehensive Opto Product Range

DRIVER ASSISTANCE NEWS



A comprehensive optoelectronics product range is offered by Laser Components—including pulsed laser diodes, VCSELs, Si-APD arrays, and CMOS SPADs for next-generation lidars. Now LC have announced cutting-edge advancements and achievements to move the sensor industry forward.

LC have been providing pulsed laser diodes and avalanche detectors for more than 20 years, and have accumulated a wealth of experience in the automotive industry. Discrete laser diode solutions for automotive lidars available on the market usually have a pulse length of 5-10 ns, so LC's QuickSwitch pulsed laser diode, with 2.5-nanosecond pulse length and 90W power is a perfect match for the automotive lidar market. The huge benefit of shorter pulses is the ability to detect with a very high resolution at short and long distances. The other benefit is that lidar can work with higher peak power which allows measurement of longer distances while still being eye-safe like a lower-power laser.

In addition to the lidar market needs, LC also provide photodiodes, including Si-APD arrays and CMOS SPADs. Linear Si-APD arrays include 8-, 12-, and 16-element arrays with 620 × 190 µm active area per element. The advantages of APDs include their small size, high sensitivity, fast speed response, and easy evaluation electronics, which is most suitable for scanning lidar. A CMOS SPAD, on the other hand, possesses a high sensitivity but requires special electronics, so they're more suitable for flash lidar.

Ouster Lidar to Go Public

DRIVER ASSISTANCE NEWS

Ouster, a U.S. startup based in San Francisco, California, making lidar sensors for self-driving cars and smart cities, have agreed to go public through a merger with **s**pecial **p**urpose **a**cquisition **c**ompany Colonnade Acquisition. The deal values Ouster at around USD $1.9bn and makes them the fifth lidar manufacturer this year to agree to a so-called SPAC merger, following Velodyne Lidar, Luminar, Innoviz, and Aeva.

Ouster see their digital lidar technology as having practical applications beyond autonomous vehicles and extending to areas such as drones, smart cities and robotics, according to company co-founder and CEO Angus Pacala.Bas du formulaire

SPACs like Colonnade are an increasingly popular alternative to the traditional IPO process; they raise funds in an IPO with the aim of buying a private company. The acquired company then go public as result of the merger. Colonnade raised $200m in an IPO in August. For the deal with Ouster, Colonnade also raised $100m through a private investment in public equity, or PIPE, transaction. Investors in the PIPE included Cox Automotive, Fontinalis Partners, and WWJ Enterprises.

Overall the deal will bring in up to $300m in gross proceeds for Ouster, who expect to generate around $19m in revenue in 2020. To Colonnade, Ouster stood out from other companies in the space by already generating revenue by selling real products to real customers, not just working along a business plan to fulfill hopes and dreams of entering the space one day.

Five-year-old Ouster had previously raised $142m from private market investors, including Cox, Silicon Valley Bank and Fontinalis.

General News

Europe, 11 months: VW Golf still Number 1

GENERAL NEWS

Ferrari, MG Motor, Lotus, Lamborghini, Bentley, Maserati, Suzuki, Jeep, Audi and Toyota were among the 12 brands that increased European sales in November in a market that was down 13 percent.
Ferrari's November sales rose 54%, Suzuki made a 10% gain as did Jeep, while both Audi and Toyota rose 1%.

A growing number of models increased sales in November despite retailing challenges caused by the pandemic, including the Nissan Juke, which rose more than 240 percent to 4,417 sales.
Meanwhile, 14 brands including Porsche, Mercedes-Benz, BMW, Volvo and Mini reported month-on-month sales declines but still beat the overall market.
The Volkswagen Golf was Europe's No. 1 seller for the fifth consecutive month in November with a volume of 24,476.

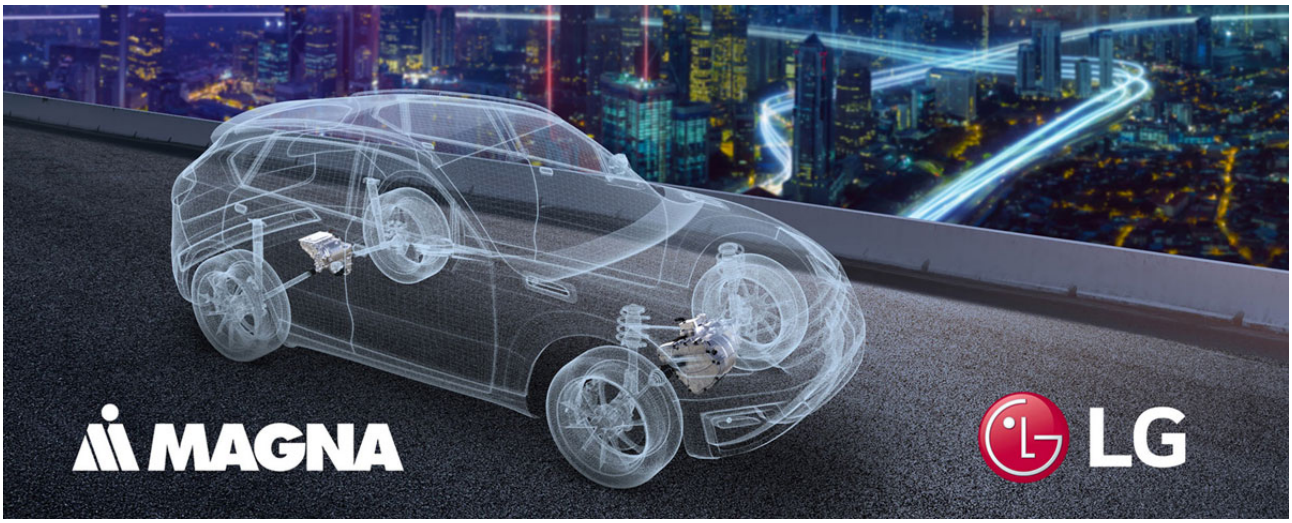
Through 11 months, the Golf was No. 1 with 252,199 sales, a decline of 33%, followed by the Clio, down 23% and the Corsa, down 15%.

Golf	Clio	Corsa	208	Octavia	Tiguan	Focus	Yaris	Captur	Polo
252	221	180	177	160	160	159	158	157	152

TOP 10 SELLERS IN EUROPE – VOLUME X 1,000
SOURCE JATO DYNAMICS

Magna, LG in EV Supply JV

GENERAL NEWS



Magna and LG Electronics are forming a joint venture called LG Magna e-Powertrain to better meet increasing demand for electric vehicle components. The JV will focus on manufacturing motors, inverters, and on-board chargers in South Korea, China, and the U.S. The resultant new LG Magna e-Powertrain will immediately supply General Motors and Jaguar Land Rover, and the JV parent companies are eager to sign up more customers.

Magna CEO Swamy Kotagiri says "We've always been focused on getting power to the wheels, whether it be the transmission or the driveline. From our viewpoint, electrification is a sustainable trend going forward. There might be a little difference of opinion on how fast or how slow it is coming".
And Kim Jin-Yong, President of LG Electronics Vehicle Component Solutions, says "We believe that the combination of our in-house prowess and the experience and extensive history of Magna will transform the EV powertrain space faster than if we proceed alone".
The two companies jointly issued a statement saying "The market for e-motors, inverters and electric drive systems is expected to have significant growth between now and 2030, and the JV will target this fast-growing global market with a world-class portfolio".

The joint venture will include more than 1,000 employees located at LG locations in the U.S., South Korea, and China. Kotagiri says the vast majority of these workers are already employed by LG and Magna and will work at existing facilities. The transaction is expected to close next July, subject to a number of conditions including obtaining LG shareholder approval and all necessary regulatory approvals.

Memorial: Noël Goutard, Former Valeo Chairman and CEO

GENERAL NEWS

Noël Goutard, who was Valeo's Chairman and Chief Executive Officer from 1987 to 2000, has died.

Even today, the Group continues to benefit from his incredible legacy. A visionary industry titan, Goutard led a sweeping transformation that brought Valeo into the modern world, actively contributing to the company's growth and international expansion. As someone who immediately understood the importance of helping automakers expand internationally, Goutard also worked hard to make Valeo a global company. Among other achievements, his time with the Group saw it take its first steps in Germany, Spain, the United States, Japan, China and South Korea.

Under Goutard's stewardship, Valeo's expertise grew to encompass new skill sets, helping to transform the Group into a tech leader. This is especially true in electronics and mechatronics. Goutard will also be remembered for developing the "5 Axes" method, which went on to become the cornerstone of Valeo's operational excellence and is still rigorously applied at every Group site.

In 13 years, Noël Goutard made an extraordinary contribution to shaping Valeo. In doing so, he forever changed the Group's history.