DrivingVisionNews.com
Automotive lighting and driver assistance technologies

Tue, 20 October 2020 Weekly Newsletter NEWSLETTER #669

Editorial

Get Ready To Network! 2 DVN Events In 2 Months

Our last live, in-person DVN Workshop was in Munich last January. Nine months of Covid restrictions make it feels like that was years ago. A pity, but—like you—we're carrying on as best we can. In such a dynamic industry as vehicle and driver vision, networking is a perpetual must; it's grease for the wheels of innovation and collaboration. So we all miss producing and attending live events, but we're working hard to keep greasing the wheels with our nonstop weekly Newsletter, our monthly DVN Reports, and online DVN events.

Following on the success of last month's inaugural DVN-Interior online Smart Interior Workshop, we're organising two important events for the next two months:
- The DVN Lidar Conference on 17 November,
- and the 21st DVN Workshop on 2 December.

How will we facilitate networking during these online events? Mainly by dint of virtual exhibitions and chats among attendees. At the Smart Interior e-Workshop we noted attendees' keen interest in exhibitors' information—pictures, video, and suchlike. To stay visible and avoid getting overlooked in the industrial community, Workshop exhibitors had a good opportunity to keep networking ongoing, and a fine platform to showcase their innovations and important messages to the more than 300 attendees.

So that's the model we're building on for the the two next events, where exhibitors will also get even more benefits: in an exceptional DVN Newsletter dedicated to the event, each exhibitor will be profiled with an interview and presentation of their products and services. And there'll be new communication on the exhibiting companies to automaker and and tier-1 customers.

Like everyone, we're learning as we go—picking up new skills, developing and refining new methods best suited to today's reality. We're glad you're here with us, and we're relentless in our drive to maximise DVN's value to you.

Sincerely yours

DVN PRESIDENT

In Depth Lighting Technology

DVN Lidar Online Conference: Better Than Ever

Taking account of the feedback on the DVN-I online Smart Interior Workshop last month, hard work is under way to make the third DVN Lidar Online Conference a grand success. Dedicated to lidar applications, components, technology, and markets, this conference will gather lidar experts, suppliers, and applicationists from car makers, integrators, and producers.

Dr. Gunnar Juergens, Lidar VP of Continental Advanced Lidar Solutions US, will deliver a keynote on the entry of lidar technology into the automotive mainstream.

Two sessions will present lidar applications—one from Volvo's Paul-Henri Matha, PSA's Matthieu Dabek, Audi's Berlitz, Great Wall Motors with LiangDao, and the second from Marelli AL's Thomas Fröhlich, Koito's Teruaki Torii, and ZKW's Georg Pitterle.

Two further sessions will focus on lidar sensors components, with lectures by Osram Opto Semiconductors' Stefan Mergl, Dioptic's Dr. Niklas Andermahr, OQmented's Dr. Ulrich Hofmann, Lumentum's Thomas Sommer, Jenoptik's Dr. Hagen Schweitzer, and Fraunhofer IMS' Dr. Jennifer Ruskowski.

The final two sessions will look at lidar technologies with presentations by Ouster's Raffi Mardirosian, Valeo's Dr. Hassan Moussa, Ibeo's Mario Brumm, Xenomatix's Filip Geuens, and Innoviz's Anna Michlin, as well as presentations by Leddartech and Cepton (speakers TBC).

Dr. Mircea Gradu (photo), SVP at Velodyne Lidar and SAE International Officer, will give a keynote on lidar market and technology trends for robotic vehicles. And Yole Développement's Pierrick Boulay will close the Workshop with an update on the automotive lidar market.

The whole event is designed and configured to get attendees optimally and efficiently informed about the state of the art, technology, technique, application, market, and outlook for automotive lidar, with 20 expected exhibitors showcasing their products and services with explanatory text and image galleries and company outreach information. The virtual expo will be accessible for a full week after the event, as will the conference video recordings. 300 attendees will be present and will have the opportunity to visit each virtual booth. And all of this will be recapped in a DVN Report on the event, sent to the 1,000 DVN members from over 150 Gold member companies.

Lighting News

DVN Exhibits at Chinese ALE

LIGHTING NEWS

The 15th Auto Lamp Industry Development Technical Forum and the 6th Shanghai International Auto Lamp Exhibition (ALE) was held this past Thursday-Friday. Organised by CATARC, the Chinese Automotive Technology and Research Centre, ALE brought together hundreds of experts, scholars, automakers, lamp manufacturers, and premium suppliers who attended the forum and showcased their latest products in the exhibition.

DVN's presence at the ALE exhibition highlighted key activities with a presentation of DVN as a company, an exhibition of the 2020 DVN Study on new lighting functions, and a sample of the weekly Driving Vision Newsletter.

DVN was proud to welcome ***He Yuntang*** at its booth in the exhibition. He is professor at the CATARC Auto Standardisation Research Institute (ASRI), President of C-GTB (the Chinese member of GTB), Executive Director of the Chinese National Technical Committee of Auto Standardization (SAC/TC114), Head of Chinese delegation to the UN working party on lighting and light-signalling (GRE) and is a major contributor to the development of standards and global technical regulations.
He Yuntang was highly active in the 2019 DVN workshop in Shanghai.

Draper at ALE on Knocking Down Barriers to Innovation

LIGHTING NEWS

In his video presentation, GTB Chairman Geoff Draper summarised the history of regulatory harmonisation and gave his opinions on how best to remove barriers to innovation. Draper was one of the 8 lighting expert who built the pertinent 2020 DVN Study on new lighting functions, now available **by enquiry**.

In his last-but-one scheduled talk on the subject (his last lecture before he retires will be at the DVN Workshop on 2 December), Draper presented examples of new lighting functions and how they mesh—or don't—with existing regulations.

He stressed two main points: not all innovations will be accepted by regulators, and proposals must be supported by independant research concerning their impact upon safety.
His message is that NGOs representing car makers and their suppliers should combine their resources and support GTB to develop recommendations and plans, then jointly approach the regulators.

Draper closed his lecture by presenting the three elements necessary to ongoing global harmonisation:
agreement to develop worldwide harmonised technical requirements, agreement to introduce legal mechanisms to add the harmonised requirements into national legislation, and a common forum to develop harmonised technical requirements and to maintain them in line with innovations.

CEO on Osram Continental's Future

LIGHTING NEWS

Osram Continental CEO Dr. Dirk Linzmeier shares his thoughts on his company's situation and outlook:

"In two years, we have developed highly innovative products, initiated numerous successful projects and entered into a number of important partnerships. OC has developed ground breaking lighting solutions for the automotive industry and acquired orders worth almost €1.5bn. Within a short period of time, we have succeeded in establishing a high relevance in the market and strong customer relationships all over the world.

"However, our mother companies Osram and Continental have decided to start negotiations on a transformation of OC and the re-integration of the business into their own companies. Osram Continental will continue to exist and operate as an independent company until end of 2021.

"Existing relationships will remain unaffected and orders placed will, of course, be fulfilled as planned. We will also continue to work together with our customers on new products and solutions and follow up on opportunities in new business fields. Intelligent lighting solutions will continue to require the close interaction of electronics, software functionality

and modern LED light sources. In order to bring the resulting innovations and projects into series production on time, all parties will jointly ensure the continuity of project implementation and the necessary expertise for our customers.

"There's no way to deny the fact that I am saddened about the upcoming reintegration. However, I accepted the fact that there is one constant in life which is called change and I choose to see change as an opportunity. As an entrepreneur, this motivates me to use this change to create new, successful businesses and companies. Furthermore, even if the structure changes, it is important to focus on our customers and my team. I am so proud of my team and of everything we achieved together. And I am sure that we will achieve even more in the upcoming months. With innovative lighting technologies, we will continue to change the car as we know it today—and turn it into something even better!"

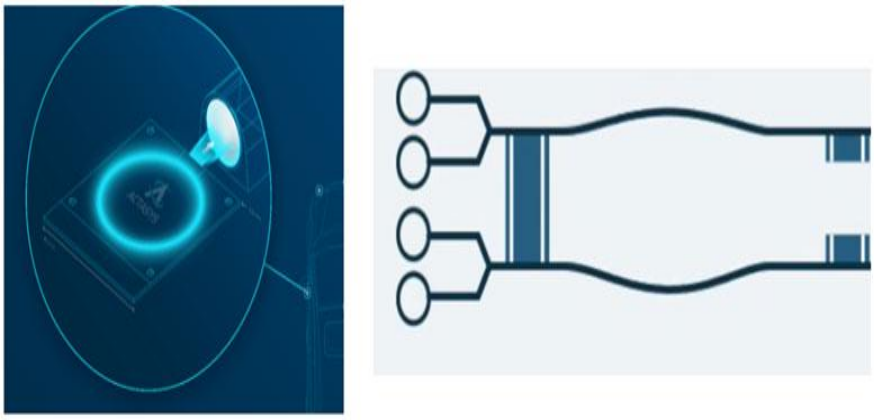
ActaJet Air-Jet Sensor Cleaning System

LIGHTING NEWS

ACTASYS

ADAS sensors have to be clean for the same reason as a pair of eyeglasses, a windshield, or a pair of headlamps: dirt blocks the view. Up to now, sensor cleaning systems have mainly used water jets. They work, but they require a space-hogging, heavy water tank and have to be checked and refilled regularly.

Actasys, a company created in 2015 and now with a team of 18 people, have a new high-efficiency solution they call ActaJet™. Actasys CEO Miles Flamenbaum describes the system as "an electronically controlled system of small actuator cartridges that generate strong jets of air, without the need for a compressor, pump or fan."
A piezoelectric device emits an extremely fast jet of air at 130 km/h by dint of high frequency movement of two discs. The first-generation implementation is 90 × 90 × 3 mm, and mainly targeted for lidar applications with a relatively big lens. A smaller second-generation version is under development with a planned readiness date early next year.



PIEZOELECTRIC DISCS ACT LIKE A BELLOWS, EJECTING A STRONG STREAM OF AIR

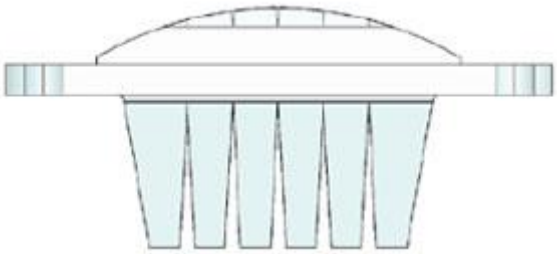
Actasys say the system is very effective at eliminating water drops from a sensor lens. In case of a dirty lens, adding water to the airburst gives highly effective cleaning, with a consumption significantly reduced compared to traditional cleaning systems.

ActaJet is composed of two basic components, an electronic controller and an actuator cartridge. The electronics send a signal to the actuator cartridge that causes a set of discs inside to deform and reform, very much like breathing in an out, but at a rapid rate. This action generates a strong jet of air. One controller can individually control up to twelve actuators, so as to clean multiple sensors in different locations and be adaptive to different surface conditions, shapes, and locations on the vehicle.

Dow Optical Silicones Support LED Applications

LIGHTING NEWS

During a webcast organised by LEDs Magazine, Dow's Gifford Shearer (Market Manager for Silicone Elastomers in North America) and Jake Steinbrecher (Associate Technical Service and Development Scientist) presented their company's new generation of silicone and discussed potential applications.

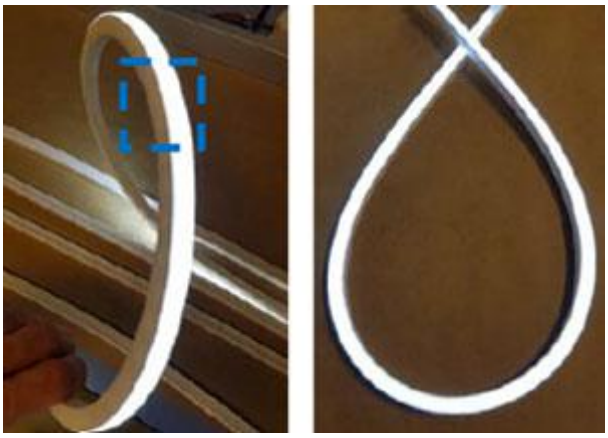


Favourable properties of silicone include moisture resistance, thermal stability, good physical properties, high purity and clarity, and easy injection moulding—all facilitating the realisation of primary optics for ADB systems.

Dow presented their newest silicones, Silastic MS-4002 and MS-4007, expanding the product range from soft and pliable to firm and tough. With higher elongation and shore A durometer, the impact and scratch resistance is improved. And with a range of hardness and material toughness increased, part fixation can be more accurate.

A new potential application proposed by Dow is for UVED (ultraviolet-emitting diodes). The global market with UV LEDs is rapidly growing at 19 per cent per year, and is expected to exceed $1bn by 2026. In the automotive realm, there's intense interest in UVEDs for cabin sanitising and disinfection. Dow consider optical silicone one of the best solutions for UVED optics, for its 40–50 per cent transmittance at 250 nm with very good stability under UV exposure.

Another grade, Silastic MS-2002 white reflecting mouldable silicone, has an extremely high reflectance ratio reaching 98%, allowing new kinds of use.



And the Dow duo pointed out that silicones can be used for 3D flexible LED linear lighting device thanks to these materials' high tensile and elongation properties.

Dajac's Osprey Checks Numerous Lamp Functions

LIGHTING NEWS

U.S.-based Dajac, who specialise in equipment to align and validate vehicle lighting components, have launched their Osprey Lamp Inspector. It's based on Dajac's IntelliAim technology, and can handle every relevant non-alignment task at very affordable cost.

Dajac say the Osprey Lamp Inspector is perfect for testing and verifying animations, flicker, colour, intensity, and many more tasks, as well as testing secondary lighting such as DRL, turn signals, rear lamps, accent lighting, and board-level LEDs.

Lamp Inspector intelligent validation software is the control centre of the Osprey. The main window clearly shows the status of the script along with a large image that provides maximum clarity to the operator. Lamp Inspector also controls the cycle and has numerous configuration options, such as photo point thresholds, pattern-matching parameters, and photo area colour thresholds.

Dajac's lighting alignment and validation equipment is widely deployed in lamp manufacturing, vehicle assembly, quality assurance, and lighting laboratories. More information is on the company's **website**.

Opel Mokka's Adaptive LED Matrix Lights

LIGHTING NEWS

The new Opel Mokka underlines again that Opel is a leading brand in lighting technology. All variants are equipped with latest-generation LED lamps, including DRLs reinforcing the Opel brand identity; headlamps, front fog lights—the works.

A particular highlight in this segment is the Mokka's adaptive IntelliLux LED matrix headlamps with a total of 14 elements. The rear lights are a trim, sharply-styled package with a prominent red stop/tail element echoing the DRL design; a chrome style line divides the red section from a well-hidden blackout turn signal section. The outboard face of the tail light appears package-compatible with a US-style side marker light and reflector, though none is present.

Next week, DVN will publish a report presenting the worldwide models launched these last three months, with a fruitful Takeaways part.
Don’t miss it.

Steve Barlow is New Lumileds Automotive Chief

LIGHTING NEWS

There's a new President of Lumileds' Automotive business unit: Steve Barlow has successfully led the supplier's LED Solutions unit for over three years.

Mr. Barlow has over 28 years' experience in sales, marketing, and business development in the semiconductor and LED lighting industry. In over 18 years of executive leadership at Lumileds, he has managed sales and marketing of automotive, illumination, and specialty LED businesses.

He first joined Lumileds in 2003 and helped to build their LED lighting business. He rejoined Philips Lumileds in 2017 as the company's SVP of Illumination after serving as the Chief Commercial Officer at Intematix and SVP of sales and business development at Cree.

Driver Assistance News

New Lidar Products for AD, AV Applications

DRIVER ASSISTANCE NEWS

Lidar sensor manufacturers across the world have recently announced new achievements in products tailored for the needs of the autonomous and assisted driving sector. Here are some examples:

Innoviz Technologies added a new automotive-grade sensor to their product line, the InnovizTwo. It's far less expensive than the previous InnovizOne, and offers a solution for all levels of autonomous driving.

China-based Hesai also released a new 32-channel midrange lidar based on a system architecture integrating Hesai's self-developed lidar ASICs. Named PandarXT, the new product has a minimum range of zero and puts out a valid point cloud even when an object directly touches the sensor's enclosure. It is designed for applications including unmanned logistics, robotics, surveying, security, mapping, and low-to-medium-speed autonomous driving.

Lumentun announced at several upcoming industry events their latest technological advancements, and will display their broad portfolio of products and solutions addressing all of its markets–cloud, networking, advanced manufacturing, and 3D sensing.

Velodyne Lidar say their Alpha Prime sensor, made particularly for autonomous driving in complex conditions at highway speeds, is ready to support advanced smart mobility applications. This sensor is presently applied by robotaxi company Voyage.

InnovizTwo to Accelerate AV Push

DRIVER ASSISTANCE NEWS

Innoviz have a new generation of their lidar, called InnovizTwo. Its performance is significantly better and its cost is less than 30% of that of its predecessor, the InnovizOne. Samples will be available in the third quarter of next year.

Only a few car manufacturers have the resources in house to engineer, design, and equip L^3 cars all by themselves; it's a process that requires the work of hundreds of engineers over multiple years of validation, across all driving scenarios, to the point that they are willing to take full liability for cars released to the public roads. Innoviz cofounder and CEO Omer Keilaf says "We know how difficult it is to introduce a fully validated L^3 platform to the market. InnovizTwo will allow more car makers to offer safe L^{2+}, while paving the path to full L^3 automation in the most efficient and safe way, eventually enabling the autonomous revolution".

Including Innoviz's high-performance lidar and its advanced Perception Software in L^{2+} platforms will not only bring safer mobility to all, they will also allow the car manufacturers, Tier-1s, and Innoviz to collect data through their customer base. While L^{2+} drivers are still responsible for how the car is driven, new features will continue to be validated; later, when safety is statistically proven, the software will be upgraded to full L^3 without any hardware change.

Ouster's First High-Performance Digital Lidar

DRIVER ASSISTANCE NEWS

Ouster have anounced a new high-performance solid-state lidar sensor based on the company's digital lidar architecture; they say their new ES2 sensor will be the first true solid-state, high-resolution, long-range (200-metre) digital lidar sensor.

The ES2 sensor uses what Ouster call "electronic scanning" to sequentially fire an array of over ten thousand lasers printed onto a single chip. These lasers are paired with a custom digital detector array capable of counting trillions of individual photons every second. Built to fit ADAS and higher-level autonomy performance targets, Ouster's ES2 sensor will debut with a maximum range of over 200 metres on a 10% reflective surface.

Just as Ouster have brought down the cost of spinning lidar by as much as 95%, the company plan to aggressively reduce the cost of solid-state lidar. The ES2 debuts with an expected price of $600 for series production and a roadmap to achieve $100. Ouster plan to deliver samples of the product to key customers and partners in 2022. Volume production will commence in 2023.

Velodyne Partner with RoboSense, Baidu

DRIVER ASSISTANCE NEWS

Velodyne Lidar have signed on for new collaboration with their partners in China, as well as a long-term global cross-licensing relationship with RoboSense and a three-year sales agreement with Baidu.

The cross-licensing relationship with RoboSense encompasses a broad range of 360° surround-view lidar sensors, which Velodyne say will be mutually beneficial for the existing and future patents of both companies. Velodyne and RoboSense have also agreed to dismiss all current legal proceedings between the two companies in the U.S and China.

Meanwhile, Velodyne will sell their Alpha Primelidar sensors for autonomous applications with Baidu via Apollo, an open-source autonomous vehicle software platform. Chinese search and big-data giant Baidu have been a strategic investor in Velodyne since 2016.

Tesla Autopilot Found Susceptible to Fake Signs

DRIVER ASSISTANCE NEWS

Researchers in Israel have shown that Tesla's controversially-named "Autopilot" driver-assistance system can be tricked into changing speed, swerving, or stopping abruptly—simply by projecting fake road signs or virtual objects in front of them for a fraction of a second.

The researchers, from Ben-Gurion University of the Negev, say their findings "reflect a fundamental flaw of models that detect objects [and] were not trained to distinguish between real and fake objects". They explain that these attacks would not have fooled autopilot systems that rely on lidar. Notoriously cocksure Tesla CEO Elon Musk (photo) has long scorned that technology, though, declaring last year that "Lidar is a fool's errand; anyone relying on lidar is doomed."

The researchers' hacks worked on Tesla cars with the latest HW3 and the previous HW2.5 versions of the company's "Autopilot" hardware. In one example, a Stop sign hidden within a fast food commercial successfully caused a Tesla running in Autopilot mode to stop, despite the command only flashing onscreen for less than half a second—so fleeting as to be difficult for the human eye to detect, and leave behind very little evidence.

A malicious individual or group could exploit the Tesla fault to cause crashes and traffic jams by hacking into a digital billboard, for example, or otherwise arranging for a display to be in vehicles' normal field of vision.

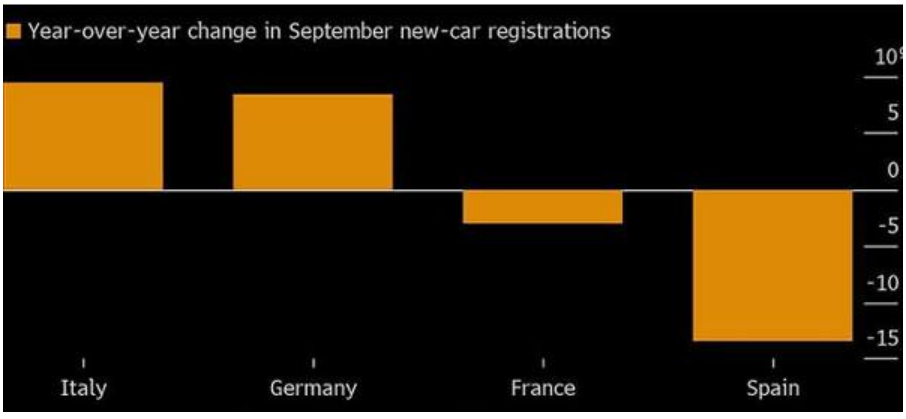
The researchers note such an attack could be both dangerous and easy to carry out, because they "can be applied remotely (using a drone equipped with a portable projector or by hacking digital billboards that face the Internet and are located close to roads), thereby eliminating the need to physically approach the attack scene, changing the exposure vs. application balance".

General News

Europe Car Sales in First Gain of Year

GENERAL NEWS

Europe's car sales are down 29% for the year through September, but new-car registrations rose 1.1% to 1.3 million vehicles in the European Union, Britain and the European Free Trade Association (EFTA) countries in September, according to industry association ACEA. Sales increases in Italy and Germany offset still-slumping demand in Spain and France.



Targeted strategies to slow the spread of Covid are being used for now, in hopes of avoiding a return to the kinds of broad national lockdowns that clobbered car sales earlier this year.

Michael Dean, a Bloomberg Intelligence analyst, expects annual deliveries to decline at least 20% and sees risk that the drop will be worse because of coronavirus-related restriction measures.

The Chinese car market grew again in September

GENERAL NEWS

The Chinese car market grew again in September—but not enough to make up for the Covid-related slump in the year to date.

VW grew again in September; last month, they sold 1.94 million cars, SUVs, and multipurpose vehicles to end customers. That was 7.4% more than in the same month last year, per figures announced by PCA (China's Passenger Car Association). This is the third month in a row that the year-on-year comparison is pointing up. In the full year, however, due to the severe impacts at the beginning of the year due to the pandemic, it is still the third year with a decline in sales. After nine months, the backlog of 13.15 million cars is 12.5 percent.

China is considered something of a beacon of hope for the global automotive industry. The pandemic froze economic life there early in the year, but the car factories also restarted sooner than in Europe and North America. According to preliminary figures from CAAM (the China Association of Automobile Manufacturers) from last week, September continued the strong, mostly double-digit percentage growth from the previous months. Accordingly, the total sales of the manufacturers rose by 13.3% compared to the previous year. The PCA measures the sales of cars to the end customers, the CAAM the sales of the manufacturers including commercial vehicles to the dealers.

China is by far the most important single market for the German car groups Volkswagen (including Audi and Porsche), Daimler and BMW. Audi, BMW and Daimler already presented their sales data for the third quarter last week and reported strong sales in China.

Chinese Lifeline for German Car Industry

GENERAL NEWS

Automakers are barely keeping their heads above water in Europe because of the pandemic, but German manufacturers are saving their year thanks to China—where the market, which accounts for a quarter of automobile sales in the world, has experienced a sharp rebound since climbing up from the depths of the pandemic. According to official figures released last week, new car registrations in China rose more than 7% in September after gaining 9% in August.

The increase in recent months is especially noticeable in the top of the range, the favorite field of German brands. BMW's sales in China climbed 31% in the third quarter compared to the same period last year, which allows the BMW Group to post 6.4% growth over the first nine months of the year, with 560,000 cars sold. Mercedes increased their sales 23% in the third quarter, and 8% at the start of the year. China alone accounts for 32% of Daimler's sales in 2020, for now. And VW's sales are down 11.6% from January to August, but Audi and Porsche achieved good scores. Audi's new boss Markus Duesmann told the German press a few days ago that he expects sales in China to increase slightly for the whole of 2020.

Audi Boss Seeks to Recapture Tech Lead

GENERAL NEWS

Audi is benefiting from a surge in China demand, but it won't offset losses suffered during lockdowns around the world caused by the coronavirus pandemic, CEO Markus Duesmann said. The 51-year-old executive also ruled out a move to Wolfsburg to take on a bigger role within Audi's parent, the Volkswagen Group.
"July, August and September look very good. September was the strongest month of the year, worldwide. Things are going especially well in China, where we even expect a small increase for the entire year. But we are not making up for the heavy losses from April and May of this year, although our sales organisation has done a really good job. I expect it will be about two years before the normalization is complete.

"Our plan is to breathe life into the claim *Vorsprung durch Technik* (Advancement through technology) and give it greater clarity. That's why we launched the Artemis project and created the Car.Software organisation at the corporate level. It makes sense that I would have responsibility for R&D. The construct fits this purpose very well and it works superbly, even if it is naturally very demanding for me to deal with all these matters well. But special times require special measures. And these are very special times for the auto industry. It's a good thing that I have a strong team handling these issues.

"My most looking forward to when the pandemic is over is greeting people with a handshake again. I am a big fan of the handshake. I miss it a lot. It's not the same as someone just nodding at me or bowing."