Tue, 6 December 2022
Weekly Newsletter

DVN
Lighting & ADAS

NEWSLETTER #780

Editorial

Paris Workshop For 15th DVN Anniversary

The Paris DVN Workshop will be held on 31st January and 1st February at the Hyatt Regency Paris Étoile hotel. The rubric for the event is to be **Software Defined Lighting —New Possibilities for Optics, Electronics, Material, and Design**.There'll be four keynotes from Valeo's president; an Audi lighting manager; a Bentley designer, and the famous Professor Khanh from TU Darmstadt. 10 Lectures are now confirmed from automakers: Audi; Bentley; Jaguar Land Rover; Mercedes-Benz; Porsche; Renault; Rivian; SEAT; Stellantis, and Volvo. These will be joined by presentations from tier-1 and -2 lighting equipment and light source suppliers. Moreover, two exceptional sessions are on the docket: one on regulations with a worldwide scope; in the other, startups will present their innovations.

At the end of the Workshop will be a panel discussion which will gather the greatest worldwide lighting experts and will be chaired by the incomparable Michael Hamm. The panelists' topic will be **Light is the new chrome; what is the new front end?**
An exhibition area of about 1,000 m^2, covered with booths of international companies and startups, will be available during the workshop next to the main conference room.

This is a very special DVN Workshop, as it marks DVN's 15th anniversary! For the occasion, there will be an awards ceremony during the dinner on 31st January, to thank and recognize those who have especially helped the lighting community during this time of fast-paced innovation and change. Multiple awards will be given including the DVN Personality of the Decade, awarded 10 years ago to Wolfgang Huhn.

In Depth Lighting Technology

DVN Paris Workshop Docket & Program

Never before has a DVN Workshop docket had so many VIPs giving keynotes and lectures. And what a collection of automakers sharing their perspectives, and tier-1s and startups and regulatory experts.
All this and an awards ceremony, too!

Tuesday 31st January

Welcome: opening remarks by Hector Fratty
1st keynote: Christophe Perillat, Valeo President
2nd keynote: Michael Kruppa. *Audi Road Map to Digital Light—Enabling Durable Light Sources for Software-Based Access*

Session 1: Automaker innovations for new lighting functions. Chair: Wolfgang Huhn

SEAT - Carlos Elvira
"*From the line to the surface"*
JLR - Irene Sanchez Funez
"*How lighting can improve ADAS capability*"
Rivian - Shammika Wickramasinghe
"How lighting improves safety"
Stellantis – Mathieu Collot
"Lighting technologies for a Global multi brand approach"

Mercedes-Benz – Uwe Kostanzer
details to follow
Audi - Andre Hainzlmair
"Customer Centricity for Innovation in Software defined Lighting"
Stellantis – Ingolf Schneider and Philipp Roeckl
"Opel's way to digital lighting"
Renault – Nathalie Venot
"Lighting System integration in future Renault SDV, Software Design Vehicle"
Volvo - Paul-Henri Matha
"*Volvo Software strategy, with focus on exterior lighting EX90*"
Porsche - Robert Haehle and Benjamin Hummel
details to follow

Session 2: Tier-1 innovations in new lighting functions. Chair: Hector Fratty

Marelli AL – Jean Pascal Herlin
"Evolution of lighting and sensing in the next 5 to 8 years – an overview at 360° around the car"
ZKW – Gerald Boehm
"*Light Requirements: From Human Driver until Sensor Support*"
Valeo – Christophe Le Ligné
details to follow
Mind – Hossein Nafari
"Lighting evolution from 'Digital' to Meta"
Hasco Vision
details to follow
Marelli AL - E. Rosenhahn
"Digital control of front lighting functions for optimization of power consumption"
Forvia Hella – Michael Kleinkes
"Lighting architecture of the future - safe, customized and sustainable"
Mobis
details to follow
Forvia- DesignLED - Edouard Da Silva and Tony Allison
"*UI+ Light = Ultimate personalisation*"

Session 3: Startups

Seven startups' presentations, details to follow

Wednesday 1st February

3rd keynote: Prof. T-K Khahn. ***Research for Lighting in Automotive and Daily Life***
4th keynote: Mohamed Abd El Ghani. ***Artistic Ambiance of Lighting Orchestration Via Software***

Session 4: Light source innovations. Chair: Gerd Bahnmüller

Lumileds – Lars Dabringhausen
"*Benefits of direct imaging solutions for ADB Matrix and Digital" Headlighting Beam"*
AMS Osram - Stefan Groetsch
"*HR Pixel-LED for forward lighting and digital light communication*"
LG Innotek
details to follow
OLEDWorks
details to follow

Session 5: Regulations. Chair: Bart Terburg

Bart Terburg, GTB VP & Chairman of SAE International Cooperation Committee
Introduction
Timo Kärkkäinen Chairman of GRE (UNECE Working Party on Lighting)
"Relationship with other WP29 WPs and Relevance of UN Regulation 156 to lighting"
Davide Puglisi GTB Secretary General, GRE WG Secretary on Simplification of Lighting Regulations
"GTB update"

12:15 Panel Discussion: Safety and regulatory implications of software defined lighting
Chair: Bart Terburg
Whilk Gonçalves, Valeo Lighting Systems PG Optics Director
Xie Dongming, Deputy Director of CASIC Geneva Office tbc
Timo Kärkkäinen, GRE Chairman
Davide Puglisi, GTB Secretary General
Mike Larsen, Chairman SAE ADB Task Force and SAE Regulatory Cooperation Task Force tbc

Session 6: Skills to help development of new functions. Chair: Jean-Paul Ravier

AMS Osram – Hermann Senninger
"From Dynamic Lighting to OSP – why we need intelligence inside the LED"
Elmos - Jatin Thaker
"Enabling the Lighting Edge using SW driven Smart Electronics".
LMI - Kamislav Fadel and Vincent Keromnes
"Exterior Automotive Lighting Benchmarking Challenges"
LMT-Technoteam - Thomas Reiners and Christian Schwanengel
"*The Best of Two Worlds - Innovations in Light Measurement Technology From legislation and standardisation to the practical assessment of light*"
AML Systems
details to follow
Dajac
details to follow

Panel discussion chaired by Michael Hamm
Rubric: *Light is the new Chrome—what is the new front end?*
Speakers from Forvia; Marelli AL; Valeo; Covestro, and SMP, followed by discussion

Lighting News

Opel Astra is German Compact of Year

LIGHTING NEWS

The new Opel Astra was last week named German Compact Car of the Year. The independent expert jury of the German Car Awards chose the new Astra and Astra Sports Tourer. Innovative safety technologies, which Opel makes affordable for a broad range of buyers in the compact class with the new Astra, convinced the panel of 27 automotive experts. The prestigious award was officially presented at a ceremony in Bad Dürkheim, Germany.

About lighting, Intelligent, high-resolution Pixel Lite ensures better road safety and comfort. The first glare-free high beam was installed in the Opel Astra in 2015. Now, the next stage of development is ready to launch: With a total of 168 LED elements (84 per headlamp), the IntelliLux Pixel Lite developed by ZKW is integrated into the extra-slim front headlamps. This newest version has more, smaller segments, allowing it to achieve higher resolution and lighting quality. Compared to the previous Matrix system, the new headlamps have not only vertical, but also horizontal segments for both high and low beams. This technology makes it possible to illuminate the gap created when masking the oncoming vehicle or vehicles traveling in front of the equipped car.

The “wing” design is a striking feature on the DRL of the new Astra uses specially developed microoptics to deliver a homogeneous appearance, appearing evenly white when switched off.

Behind the Volvo EX90 Thors´s Hammer

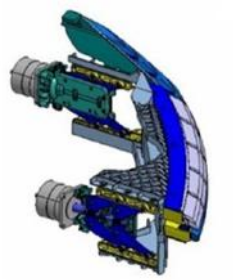
LIGHTING NEWS

VOLVO EX90

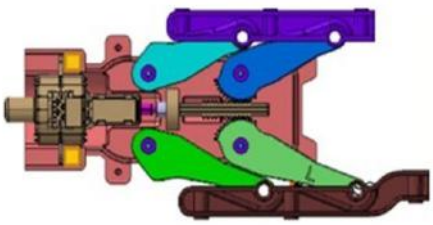
VOLVO TEAM

Paul-Henri Matha gives his feedback and his thoughts, after the Volvo EX90 reveal in Stockholm.
“What an event! I was delighted to hear lots of comments from the journalists during and after the reveal of the headlamp about how cool they are.
“The concept was totally new and represented a new adventure for our team. Low beam and high beam module were not anymore above and below the Hammer, but behind! Engineers were used to see first technical complexity and were very quick to say that it will probably not work. But we still set up a small team to work on this advanced engineering study. Motivation was at a very high level to be able to tackle this innovative concept

“After the first concept in 2D, the next step was the launch of a concept in 3D, with CAD software, done internally by our mechanical engineers, but also with support from Tier1 supplier and Tier2 supplier. These ideas came true and some of the concepts are shown below



Mechanical concept



“After concept selection, we realized some POCs (Proof of concept sample) which confirmed us that we were on a good track and that we can go to development. Concept was promising!

“We were very proud to show the result during the EX90 reveal in Stockholm. It is the outcome of great teamwork: mechanical designer, mechatronic specialist, electrical engineer, system designer, software developer, legal expert, project leader, ZKW tier1 and tier2 suppliers.

Sneak Preview: Lights at LA Auto Show

LIGHTING NEWS

DVN attended the Los Angeles auto show a few weeks ago. Some auto brands were absent, yes, but still: wow, what a grand show after these years of pandemic-grade shows with sparse attendance by automakers and spectators alike. It was a great shock, in the best possible way, to come away once again from an auto show with several hundred photos, just like in the before times!, to show the progress in vehicle lighting design, technology, and style. We're diligently working to assemble the DVN Report with every one of those several hundred pics, annotated for a real show-and-tell experience. Watch for it next week.
In the meantime, here's a sneak preview of a couple of the fascinating lights.

They ranged from new tech dressed up in vintage fashions, as on this dark-blue Charge 67—instantly recalling the 1967 Ford Mustang, without looking like a copycat job—to new tech dressed up in new fashions, as on this white Genesis G90.

Twin racks of small square ice cubes, with DRL-position-signal light cubes interspersed with headlamp cubes of differing optical characteristics. Both lamps are works of art, each of its own genre. And soon, we'll show you the rest of them!

Tesla Taillight Trouble in China, Too

LIGHTING NEWS

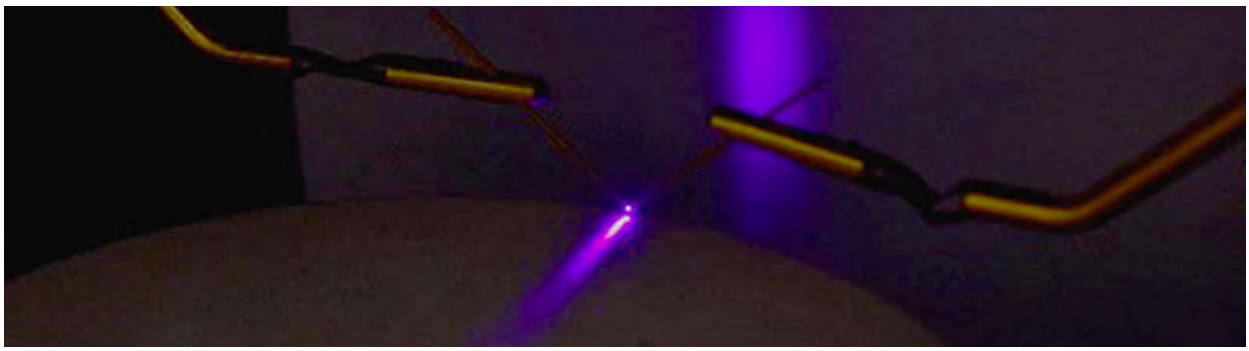
Shortly ago, we **reported** on Tesla's over-the-air recall of well over a quarter-million cars with taillights that sometimes wouldn't light up. Now a similar recall will have to be done in China after that country's auto safety agency issued an order.

Over 435,000 Tesla Model 3 and Model Y vehicles made and sold in China have rear position lamps that sometimes fail to work, according to SAMR—the Chinese State Administration for Market Regulation. That agency found *during the process of waking up from the parked state, the vehicles' software may have an error when initialising internal parameters, resulting in the position lights on one or both sides of the rear of the vehicle not being enabled to illuminate […this] will reduce the visibility of the vehicle and in extreme cases will increase the risk of vehicle collision.*

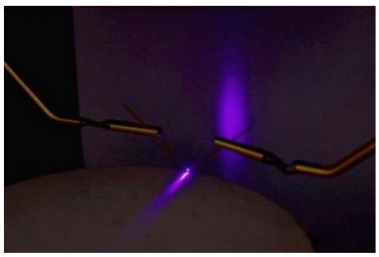
Tesla China have advised owners of affected vehicles to drive carefully. To debug the taillights, vehicles capable of it will be patched with new software at no charge to the user by means of an over-the-air update. Those unable to take on the new software that way will have to be handled casewise by Tesla.

Kyocera's New GaN Laser Chip

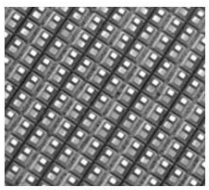
LIGHTING NEWS



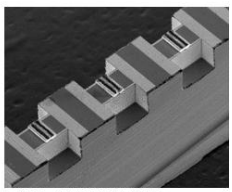
Kyocera have a new thin-film process technology for making unique silicon substrates for GaN-based lasers and µLEDs. A micro-light source is one with a side measuring less than 100µm. Because they offer key performance advantages—higher definition; smaller size, lighter weight—micro-light sources are considered essential to next-generation automotive displays; wearable smart glasses, and communications equipment. The market for µLED chips alone is expected to reach USD $2.7bn in the foreseeable future.



100-µM-LONG LASER



µLED SUBSTRATE



100-µM-LONG LASER

Kyocera have a new thin-film process technology for making unique silicon substrates for GaN-based lasers and µLEDs. A micro-light source is one with a side measuring less than 100µm. Because they offer key performance advantages—higher definition; smaller size, lighter weight—micro-light sources are considered essential to next-generation automotive displays; wearable smart glasses, and communications equipment. The market for µLED chips alone is expected to reach USD $2.7bn in the foreseeable future.

MicroLEDs and lasers have typically been fabricated on sapphire and GaN substrates. Conventional processes involve forming a thin GaN device layer for the light source directly onto the sapphire substrate by heating it to a high temperature in a controlled gas atmosphere. The device layer has to be then removed, or peeled, from the substrate to create a GaN-based micro-light-source device. Despite rising demand for smaller devices, though, significant challenges constrain the ability of this process to achieve miniaturisation targets soon.

So, Kyocera developed their new process technology at the company's Research Institute for Advanced Materials and Devices in Kyoto, Japan. They grow a GaN layer on a silicon substrate available in high volumes at a low cost. The GaN layer is then masked with a non-growing material with an opening in the centre. When a GaN layer is then formed on the Si substrate, GaN nuclei grow over the opening in the mask.

Micro-light sources are expected to improve the brightness; resolution; efficiency; transparency, and affordability of automotive displays, and to expand rapidly in AR/VR (Augmented and Virtual Reality) applications.

Driver Assistance News

VCSEL Lidar for New Changan Car

DRIVER ASSISTANCE NEWS

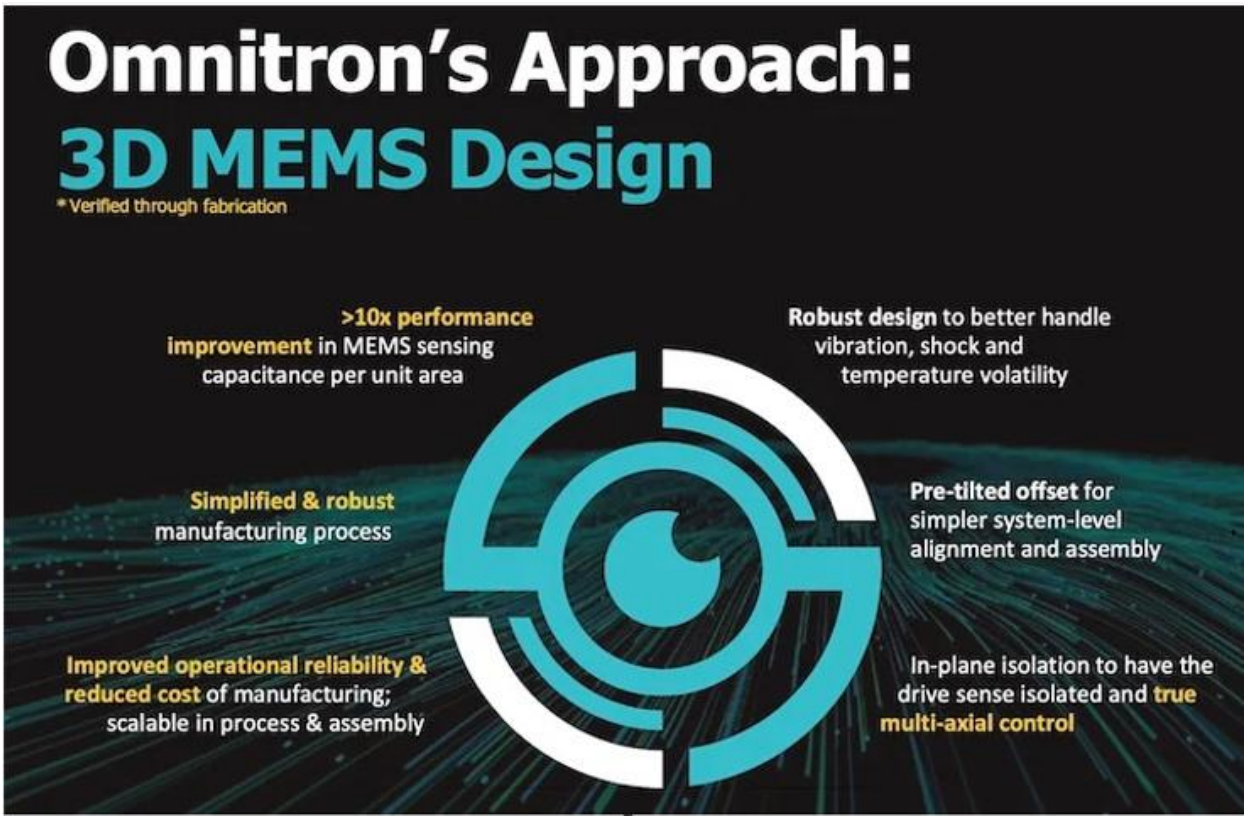
Shanghai-based lidar supplier Hesai say they have agreed a deal to provide their AT128 automotive-grade high-performance lidar sensors for a new car being built by Changan Automobile. Based around VCSEL (vertical-cavity surface-emitting laser) arrays emitting at 905 nm, the AT128 units are claimed to have a range of 200 metres for 10-per-cent-reflective objects.

Changan are said to be transforming themselves into a leading provider of electric vehicles, and revealed details of their new SDA smart car design earlier this year.

Hesai say their new manufacturing centre for automotive production will start operations this year, with a planned capacity of more than 1 million units and volume shipments of the AT128 for existing design-wins slated to begin before the end of the year.

Omnitron MEMS Sensors: This Startup Could Disrupt the Lidar Market

DRIVER ASSISTANCE NEWS



Omnitron Sensors, a startup in Los Angeles, have developed a process to produce a fast-moving MEMS scanning mirror.The company say this will meet the large field of view requirements of lidars used for ADAS; AD; drones, and robotics. Omnitron's MEMS mirror will produce a double- or triple-sized field of view compared to other MEMS mirrors used in long-range lidars, according to Omnitron.

Details have not yet been provided as to how they've changed the MEMS manufacturing process; the company say they have used existing manufacturing equipment in a rearranged order to simplify how MEMS are assembled and packaged.

Omnitron cofounder and CEO Eric Aguilar says "With so much untapped potential in MEMS sensors still before us, we saw how changing the process technology and packaging techniques—which we call a new topology for MEMS—produces measurable improvements in size, cost, robustness, reliability, manufacturability and time to market. Our MEMS scanning mirror for lidars proves out our IP, solving the most serious issues that plague today's lidars for autonomous navigation. And based on the positive market reception we have received, we're meeting a vital need for long-lasting, high-performing, rugged and cost-effective lidar platforms".

Honda: Hands-Off Features by '30

DRIVER ASSISTANCE NEWS

Honda have revealed plans to expand their Honda Sensing suite of advanced driver-assistance technology to include hands-off features on all U.S. models by 2030. The automaker says the technology fits their goal to cut global traffic fatalities involving Honda autos and motorcycles.

The upgraded suite, called Honda Sensing 360, is now being deployed on some models in China. It uses an expanded sensory range around the entire vehicle that eliminates blind spots and enhances collision avoidance. In 2024, Honda will add new features and bring the technology to the United States at mid-decade. The Acura version of the tech bundle will be called AcuraWatch.

Honda said the expanded features are derived from development of Honda's L^3 Sensing Elite package that debuted on the Legend but is available only in Japan.

Honda Sensing Elite uses artificial intelligence to accumulate data and increase the vehicle's capability to recognize complex environments. Honda say they are developing these technologies as a way for drivers to achieve "safe and seamless" commutes on both highways and city streets.

Honda Sensing 360 leverages a more sophisticated collision mitigation braking system that can detect pedestrians and other vehicles coming from multiple directions in an intersection, as well as front cross-traffic warning, active lane change assist and lane-change collision mitigation.

General News

First Solar Car Enters Production

GENERAL NEWS

Dutch startup Lightyear have started making the world's first series-production EV that generates power directly from sunlight. This first model, the Lightyear 0, is priced at €250,000 and has already collected around 150 orders.

Lightyear plan to make about a thousand cars at a Valmet facility in Finland, starting at a rate of one car a week. By the second half of next year, production should increase to five weekly, CEO and co-founder Lex Hoefsloot told Bloomberg in an interview. The car, which features curved solar panels across the hood and roof, can drive two months without charging in Amsterdam during summer, and as many as seven months in Portugal, according to Hoefsloot. Sun-derived power will add as much as 70 km of driving range each day.

Cars powered by the sun have struggled to make it beyond the prototype stage because of the large area solar panels require.

Toyota's U.S. sales Recovering

GENERAL NEWS

Toyota think the microchip shortage that's plagued the U.S. auto industry is likely to remain for an extended period, even as sales in the US continue to slowly rebound. That's according to Jack Hollis, the automaker's U.S head of sales. He sees the industry finishing 2022 at 14 million new vehicle sales in the U.S., with a recovery in 2023 to 15 million as production continues to struggle through supply shortages in microchips and other components.

Toyota's November U.S. sales rose 10 per cent to 170,000 vehicles, Hollis said: "For 2023, we think we're really going up another million vehicles, which is great, because if you look at where we've been so supply constrained, to see there being growth and a path to growth I think is going to be encouraging for everybody in the industry".