

Tue, 29 August 2023
Weekly Newsletter



NEWSLETTER #818

PixCell LED

Ultimate precision in perfect alignment

100+ individual cells with just 25 µm spacing, perfectly matrixed onto a single LED chip for intelligent headlamps



Editorial

The 'Why' Of DVN Workshops

As you read this, the DVN Triple Workshop in San Francisco is getting started. And the DVN team are already working on the upcoming China workshop. Why do we do this? Why do we hold these DVN Workshops—and how do they come to be so consistently successful?

As in all the various congresses, automakers present their achievements and their needs; suppliers present their technologies and innovations; researchers present their findings and conclusions, and exhibitors present their products.

But DVN Workshops bring *more* than that to the lighting community. For one thing DVN Workshops aren't always in the same place compared to all other congresses. Rather, DVN Workshops are held all over the world. Germany, France, India, Korea, China, and the USA—now for the first time out west in California, rather than back east in Michigan. We hold DVN Workshops in the vicinity of local lighting ecosystems, facilitating robust, diverse participation and fresh networking. That's the DVN difference.

The overspanning goal of DVN is to boost and bolster the worldwide lighting community, with worldwide workshops and a steady stream of publications keeping DVN subscribers right up to date on the works and plans of the whole lighting world—big, famous companies and small startups; individual innovators, researchers, regulators...everyone. That is the primary main focus of the whole DVN team, with COO and General Lighting Editor Paul-Henri Matha focussing our work toward those targets.

As an example, we present today two innovative suppliers, a tier-1 and a tier-2, both of whom you likely don't know about yet. But you should, and with today's DVNewsletter...you will!

That's why we're here, and it's why we're glad you're here with us.

Sincerely yours,

A handwritten signature in black ink that reads 'P. Matha'. Below the signature, the text 'DVN CEO' is printed in a small, black, sans-serif font.

In Depth Lighting Technology



DVN Workshop
Lighting

29-30
AUGUST 2023

"Lighting the Future:
Safety, Communication & Emotions for EVs, Avs & Trucks"
San Francisco

[Click here for more information](#)

DVN Interview: Less CEO on Nano-Active Fibre Optics for Efficient Laser Lighting



Less stands for Light Efficient SystemS. They're a lighting specialist company in Renens, Switzerland, founded in 2012, and they've built a reputation in the high-growth industrial sector. With around 40 employees and an international presence, they develop numerous applications for nano-active fibre optics, a more efficient and advanced technology than LEDs, for vehicle lighting and inspection systems. Today's DVN Interview is with founder and CEO Dr. Yann Tissot.

DVN: The new Pininfarina Pura Vision Design concept has a super-slim DRL with your technology in it. Can you tell us about that?

Yann Tissot: We partnered with Automobili Pininfarina to support their elegant, pure, and monolithic design philosophy with our intense, ultra-thin front and rear fibre lightings based on our nano-active fibre laser technology. In the front, we designed a 60-cm-long fibred DRL that is integrated in a minimum space (< 2.9 mm), flush to the edge of the [panel] such that it is barely visible in its unlit state, and flawlessly follows the surface of the car body in its lit state. It is 1.9-mm thick fibre lighting that delivers over 400 cd at 6000K. In the rear, we delivered a 45-cm-long fibred turn indicator hidden along the side of the stop light when off and delivering bright thin amber lighting when on with a dominant wavelength at 593 nm.

DVN: And this Pininfarina is not the first concept car with Less' laser technology, right?

YT: We have always been active on concept cars since we are convinced that is a creative way for car designer to adopt and appropriate themselves the technology to exploit the full design potential of it.

The very first integration of our technology was on the AMG GT concept in 2017 at the Geneva Motor Show, and subsequently the BMW Vision M Next in 2019 at the IAA in Frankfurt.

In the concept of Automobili Pininfarina, in addition to brightness and uniform rendering, they wanted to take advantage of the extreme minimalism integration specificities of the technology to merge it with their monolithic design concept. The integration is so compact that the fibre lighting seems to be part of the hood.



High intensity, high uniformity, 3-dimensional nature, and ultra-thin integration are parts of the inherent advantage of our technology. We invite the community to stay tuned for the release of an additional show car from another brand in early 2024, where the designers made first use of the 3D asset offered by our technology to design light and minimalist front and rear lighting.

DVN: Very fine examples on concept cars. When will be your tech in mass production?

YT: The post-Covid and supply chain challenges impacted our ramp-up plans, but we are back on track now to reach the demand in volumes with a first milestone of 100,000 units/year from Q1-24 and over a million a year by Q1-26. Our modular approach in our production facilitates rapid ramp-ups to response to customer demands.

DVN: What functions can this technology fulfil? What's the power consumption like?

YT: Today the technology can be applied to all signal lightings around the car. For a DRL, we typically exhibit power consumption of 6 W for 400 cd and can deliver up to 1000 cd with one single fibre laser. This power budget enables to fulfil and/or combine different exterior lighting functions such as grille lighting, position lighting, and DRL within the same embodiment.

For a super-red taillight, we typically exhibit a power consumption of 0.5W; for a stop light 7W, and for a turn indicator 10W.

DVN: Staying with the DRL function for the moment, what is the benefit of using your technology?

YT: We've worked a lot to ease the integration of our technology; now it is mechanically plug-and-play to any part of the car. Together with the 3D nature of the fibre technology, the ease of integration allows for designing unprecedented intense lighting with almost unlimited design option. The fibre merges with the body of the car with a minimum of space, volume, and weight.



One of the recent examples is the fibred kidney lighting on the BMW M Hybrid V8, which had basically no space to integrate intense lighting. We've got a [page about it](#) on our website. We developed and delivered an intensity of 180 cd per side over a 1.6-metre-long, 1.9-mm-thick laser fibre light. These are flush to the carbon fibre body and weight just 200 g total—including the driving electronics, safety electronics, and heatsink. The system could be pushed to the DRL intensity level within the small space integration.

DVN: What distinguishes your tech from, say, the BMW M4 CSL with optical fibre and laser technology?

YT: These are two distinct technologies. The tech you are mentioning is based on a diffusing fibre. Red laser light is injected into the fibre and diffused out from it at 360° around the fibre with limited intensity and uniformity due to its exponential decay in intensity with length. Based on our experience, the applications are limited to low-candela application (e.g., taillight and grille lighting).

Our nano-active fibre laser technology is based on selective and directional pumping. Blue laser light is injected into an engineered fibre that will selectively down-convert blue light to red; amber; white, or turquoise by specific dopants (e.g., phosphors), and the resulting light will emerge with directionality only on one side of the optical fibre thanks to nano-antennas inserted inside the glass material of the fibre.

Our technology platform allows for adapting lighting lengths, typically from 20 cm to 2.5 m; segmentation from a few cm to a few metres; intensity from a few cd to 1000 cd; uniformity up to 99 per cent, as well as lighting angles from 100° down to a few degrees. We can do the low-candela applications, but also the high-candela applications like stop light, DRL, and turn signal. And we can combine functions as well.

DVN: Would your tech work with high power LEDs instead of lasers as a light source?

Yann Tissot: Not at the moment. The low physical etendue of high-power LEDs light would jeopardise the high candela and high efficiency assets of the technology.

DVN: This is all fascinating! We look forward to seeing your technology on more and more cars. Thanks so much for talking with us.

Yann Tissot: Happily!

Lighting News

Shin-A T&C IMS: An Innovative Tier-2 Supplier

LIGHTING NEWS



Shin-A T&C, established in 2006 in Korea, are producing sophisticated IMS, acrylate, and epoxy resins and other kinds of high-end raw materials applicable to electronic fields. Revenue was USD \$123m in 2021 and is expected to rise to \$200m in 2024.

Their products are tailored for applications including LDC (low DC-DC converters), HUD, LED headlamps, and DRLs for Korean and international customers, with ongoing production for more than 80 vehicle models. We spoke with Shin-A to get to know them better:

DVN: So far, in the vehicle lighting sector you serve Mobis and SL Corporation. Are you seeking business with other tier-1 suppliers?

Shin-A: Yes, our market share is already saturated in the Korean market. Now we are trying to expand the business territory and expecting that we can win new tier-1 customers in the EU.

DVN: What are the strengths of your company, as you see them?

Shin-A: It's our combination of R&D capability and business experience. More than half of our staff are in R&D, and we have been the market leader in the Korean for over five years. Also, our big product portfolio; we have many kinds of raw material resin. With modifications and compositions of our own raw materials, we can develop innovative products with competitive cost. We are ready to add value for new markets with high quality, innovative products, and competitive pricing.

DVN: How do you see the future of your components for the vehicle lighting market?

Shin-A: The future of the vehicle lighting market is very prospective with growing adoption of LEDs. Depending on this trend, we continue to develop new innovative products. We are ready for the market requirements.

DVN to Present at ALE '23

LIGHTING NEWS



The 18th Auto Lamp Industry Development Technology Forum and Shanghai International Auto Lamp Exhibition (ALE 2023) will be held on 21-22 September at the Shanghai Automobile Exhibition Centre. ALE is a platform for experts from automakers and lighting companies to share industry news and advanced lighting technologies. It attracts visitors every year from home and abroad. In 2023, ALE will focus on 'Intelligent Lighting in the ICV Time'.

DVN Senior Advisor Wolfgang Huhn will give a lecture about Chances and Risk of the New 360°Lighting Approach. And DVN COO and General Lighting Editor Paul-Henri Matha will give a talk about the new challenges in electrical architecture.

Flex-N-Gate Innovation Chief on New Osram Plant Bought in Italy

LIGHTING NEWS



Further to last week's [report](#) on Flex-N-Gate's purchase of Osram's vehicle lighting facility in Treviso, Italy: Flex-N-Gate Europe's Research and Innovation manager Yohan Garnier (photo) tells us "This new acquisition is an important step for FNG, as it will support our competitiveness thanks to vertical integration for lighting components, and significantly reinforce our electronics know-how. It illustrates FNG's ambitions for the Lighting business and will open new fields of play to our Innovative & Engineering teams, working on advanced Light integration and modules with profitable synergies for lighting and exterior systems".

Fancy Front, Racy Rear Lights on Polestar 3

LIGHTING NEWS



The Polestar 3 will come with ADB HD headlamps from ZKW, who say they've developed an intelligent lighting system for the first SUV from the Volvo-affiliated EV brand. The Polestar 3 was unveiled last October, and deliveries will begin in some countries—such as China—later this year.

The 1.3-megapixel modules in the front lights automatically adjust the intensity, size, and height of the light beam to comport with the ambient light and weather conditions as well as the driving speed, without blinding other road users, and while producing ground projections to warn of hazards and provide driver-relevant information.

ZKW CEO Wilhelm Steger says, "The Polestar 3 headlamp system combines the latest technologies and innovative functions into a premium series product. The warning functions help to increase road safety and avoid accidents". ZKW also provide premium LED headlamps for the Polestar 2 sedan.

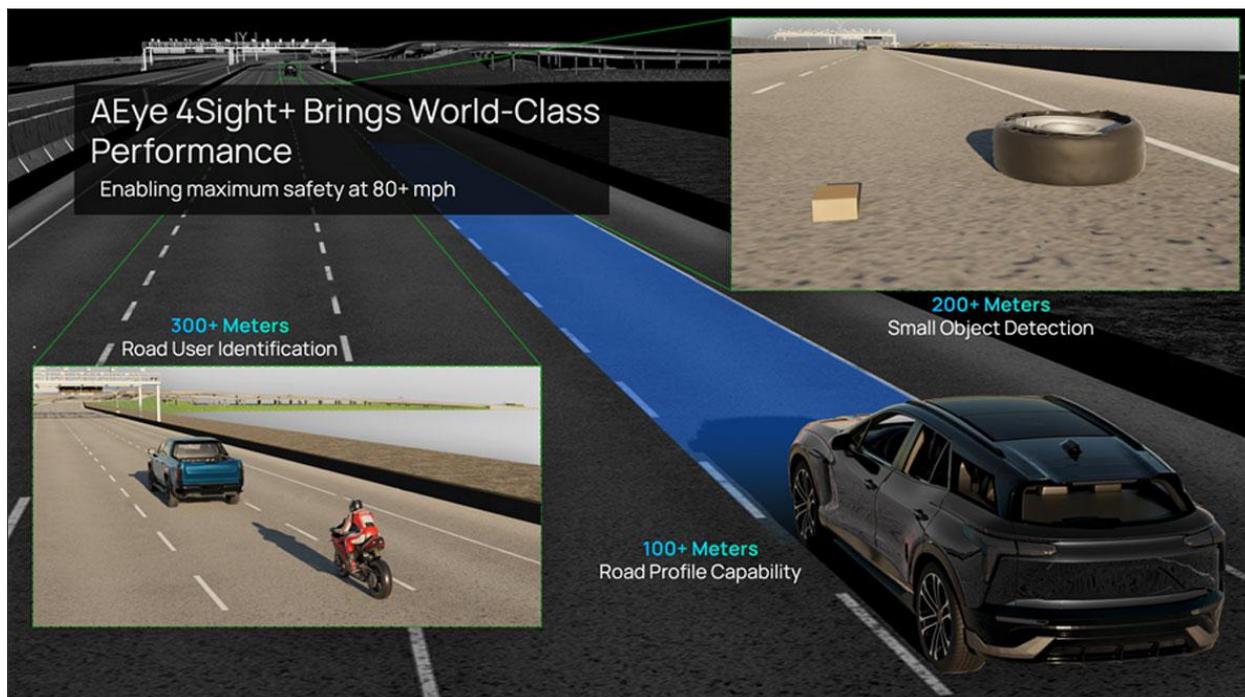


At the rear, the Polestar 3's impressive full-width taillights adapt their brightness to ambient conditions and provide a striking brand signature design, day and night.

Driver Assistance News

AEye 4Sight+ Boasts Better Resolution, Range

DRIVER ASSISTANCE NEWS



AEye's new 4Sight+, the latest addition to their 4Sight Intelligent Sensing product range, delivers impressive new levels of path-planning, obstacle avoidance, and prediction capabilities. The sensor's range has been increased by 20 per cent and spatial resolution by an astonishing 400 per cent, extending high speed small obstacle detection capabilities, while enabling the same hardware to address hazardous vehicle cut-ins.

The software-defined platform's modular, bistatic system can reconfigure lidar performance dynamically and add new capabilities with OTA updates. Powered by a tiny MEMS device that allows for ultra-fast, precise movements, the 4Sight Intelligent Sensing Platform is designed to be highly programmable to meet performance requirements for both urban and highway driving using a single platform. The 4Sight+ improves prediction capabilities by tracking vulnerable road users at up to 300 metres. It improves vehicle ride quality and reaction time by detecting small objects, like bricks and tires, at up to 200 metres, and it helps with vehicle path planning by classifying road surfaces—such as cement and asphalt—at up to 100 metres, including in direct sunlight and dim environments. These advantages allow AEye to enable predictive safety systems for a smoother, more comfortable hands-free driving experience at 130+ km/h, without requiring driver intervention.

General News

EU Will Import Million-Plus EVs From China in 2030: Report

GENERAL NEWS



BYD Denza N7

Chinese brands like BYD, Xpeng, and Nio are launching models across Europe this year. That's a toehold in the European market, and a new report from global technology intelligence firm ABI Research forecasts that in 2030, 1.2 million Chinese-made EVs will be imported into the European Union, making up 12 per cent of EU BEV sales.

In the last five years, vehicle exports from the EU to China have fallen slightly, but EU imports of Chinese cars have quadrupled. In 2022, China became the biggest source of imported cars for the EU, but this still only accounted for under 6 per cent of all vehicles registered that year. However, 28 per cent of the EU's BEVs were from China.

Chinese brands did not make the majority of these imported EVs. Western automakers are increasingly using China as an export base, taking advantage of the supply chain and labour force and locating their capacity with the largest source of demand.

40 per cent of the cars made at Tesla's Shanghai factory are exported, for example, supplying 80 per cent of Europe's Teslas. BMW produce their iX3 in China exclusively, for sale locally and abroad. And the Dacia Spring, made in China by Renault and Dongfeng, is one of the best-selling cars in Europe.