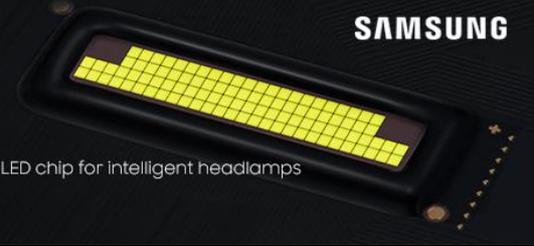


## PixCell LED

Ultimate precision in perfect alignment

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

SAMSUNG



# Editorial

## DVN Lighting Think Tank: A Successful Test

The first DVN Lighting Think Tank took place in Stuttgart on 5 July and included a pre-event dinner at the invitation of DVN. Stuttgart was also the place of the very first DVN event 15 years ago (with just nine participants!).

This seminar was a successful test for intended future small working events about issues and items the lighting community needs clarification and joint discussion on. This time, the US ADB rules were in the foreground, because the latest NHTSA publication is full of riddles. Michael Hamm brought some light into the dark in his unique way of putting things in a nutshell. Hector Fratty took charge of the session on other-than-front lighting, including side projections and logo illumination and the associated international rules and regulations. Me, I led the third part about the new front ends which are expected to integrate lighting components and the grill in the next generation premium electric vehicles. The afternoon was used to work in three groups—ADB; new front, new rear—specifically to clarify the legal requirements and the needs of potential new (or changed) requirements of the three themes. The DVN compliance Statement was read before the working part.

DVN will publish all results after sorting out the large amount of material to create an overview. This was a trial run with 40 invited people, which we think is the right size for such an interactive format. The feedback of the participants was great; the only wish for following events was more time for discussion. In our agenda we planned one hour for discussion, but it took 90 minutes, and we could have used another hour.

The Hilton Garden Inn Hotel beside the Mercedes Benz Museum was a perfect venue. We used four different rooms, all perfectly equipped and without any technical or organisational problems. Five invited guests could not attend because of illness, a great problem these days.

All in all, we can say that this seminar exceeded our (high) expectations and set the stage for many more such events.

The DVN Study is just released. You can immediately receive the electronic version and one week later, three booklets. More information at [www.drivingvisionnews.com](http://www.drivingvisionnews.com)



Wolfgang Huhn  
DVN Senior Advisor

# In Depth Lighting Technology



## DVN Lighting Think Tank: Fruitful Content and Pleasant Time



The first DVN lighting seminar took place in Stuttgart on 5 July with around 35 guests.



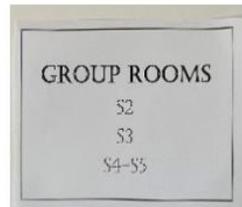
ANNOUNCEMENT



PARTICIPANTS



PRESENTATIONS



WORKING GROUPS



W. HUHN - H. FRATTY, ORGANISERS OF THE EVENT

DVN organized a seminar about problems concerning the whole lighting business beside all the tough competition. Three items were analysed in depth: the consequences of the new ADB regulation in the US, the new front and the new rear ends with the upcoming huge illuminated elements under a diverse worldwide regulatory landscape.

### Fruitful networking in the evening



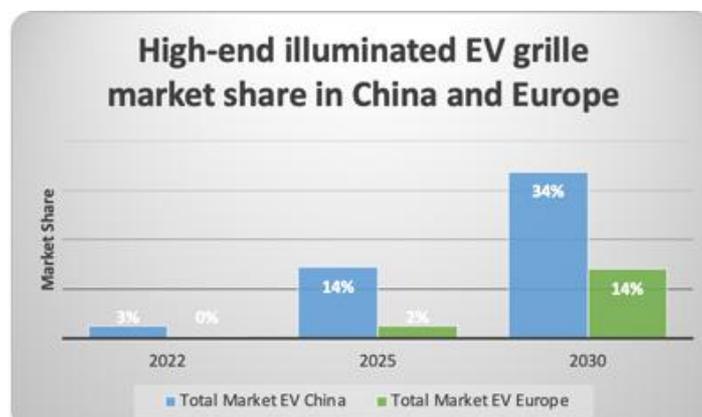
### Fruitful presentations in the morning



THE 35 ATTENDEES

### Three presentations

- **Michael Hahm** tried to clarify the NHTSA ADB standard—how to interpret it, how to handle the required testing, and what are the chances and risks it presents. Then, he came back to the performance of ADB in real conditions: a great increase in detection distance; up to 30 m more seeing with no extra glare versus low beam, for the 63 million equipped cars driven many billions of kilometres at night without any failure or problem.
- **Wolfgang Huhn** explained how the whole front of the car becomes a headlamp, showing concept cars; new business opportunities; new illuminated elements (grilles and logos...), then talked about regulations; changes in the shape and appearance of front and rear lamps; lighting signatures, and visible communication functions and dynamics.



FORECAST MARKET SHARE – FROM STUDY RELEASED LAST WEEK

• **Hector Fratty** took the third part "New rear ends" including side projections and logo illumination and the associated international rules and regulations.

### Three working Groups in the afternoon

The target was to clarify during one hour, the actual legal requirements and the needs of potential new or changed requirements of the three themes.

#### Working Group: ADB



MICHAEL HAHM

#### Working Group: New front



FORD'S ANETTE SAWONSKI, OPENING THOUGHTSTORM



BENTLEY'S IAN HAUGHTON, CLOSING THOUGHTSTORM



WORKING GROUP IN ACTION

## Working Group: New rear 360°



Discussion was about edge-to-edge lighting as a new standard; illuminated Logos, and 360° Projectors.  
A demonstration car was presented with side projection.



GROUP PHOTO AT THE END OF THE THINK TANK

# Lighting News

## Homogeneous Lights Make Night Driving Pleasurable

***Shammika Wickramasinghe, Rivian senior lighting director***

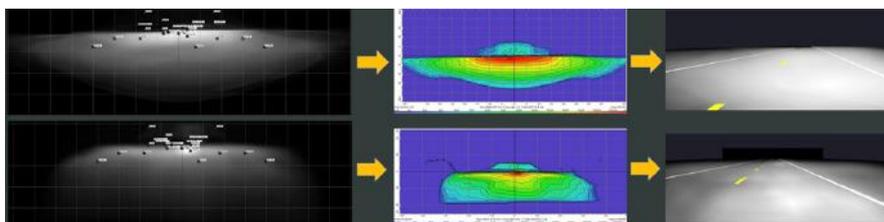
LIGHTING NEWS



Veteran lighting expert Shammika "Shammi" Wickramasinghe—before Rivian, he was Jaguar-Land Rover's lighting strategist—discussed two kinds of homogeneity.

First was how a vehicle's lights look to an observer; Shammi started by pointing out that homogeneity of lights (DRLs and front position lamps; tail and stop lamps...) plays an important part in building and stoking brand image and perceived quality. As such, lamp homogeneity is an important lever for differentiation: "People turn their heads to see 'what is that' which just went past, due to the striking appearance of the lights". And a homogeneous lit and unlit appearance makes a vehicle stand out even when it's parked.

Then came discussion the homogeneity of light output from road-illumination devices like headlamps; aspect of lighting performance often relegated to peripheral attention. Legal regulations permit a wide range of intensity at just about every test point for every kind of beam, and all beam patterns with in-range intensity at each point are legally equivalent. But they're not all practically equivalent; there can be a large difference between a *legal* beam pattern and a *good* beam pattern. For many decades the lighting engineer was stuck having to choose between giving drivers light they need (seeing distance) versus the light they want (foreground light). Now modern light sources and optics allow much more light within a beam pattern, it is possible to meet the driver's needs *and* wants as never before.



Shammi reviewed the reasons why this matters—the crash fatality rate is about triple by night as by day in the USA. He showed comparison photos and isoplots of equally-legal but differently-good beams and posed some fundamental questions: What would you rather drive behind? How many hours' driving before you feel fatigued? A study by the University of Sheffield found drivers grew fatigued after about 45 minutes behind an inhomogeneous beam, but went over two hours before

feeling fatigued with a more homogeneous beam pattern. He also provided guidance: improve the homogeneity (educate lighting teams on the importance of homogeneity; spend time in the virtual environment; design out streaks/shadows/inhomogeneities); think about how much light is needed and where, and overall, design beam patterns for comfort, safety, and performance.

Finally, Shammi provided some benchmarking comparing Rivian lighting systems to competing vehicles on factors including high and low beam uniformity and coverage; colour fringe and cutoff characteristics, and glare, describing how he and his team worked to optimise all aspects of Rivian headlighting system performance.

# HiPhi Z Pre-Orders Open

LIGHTING NEWS



On 5 July, Human Horizons began accepting reservations for their HiPhi Z car. It's the second major product HH have released, after the HiPhi X, and is expected to officially hard-launch sometime this year.



A light strip on the side of the car can also display interactive language. In addition, the form of the open electric door makes the car owner feel more ceremonial on ingress and egress.



The HiPhi Z uses the ISD intelligent interactive light group on the front and back. There are also LED light strips on the doors, which can be lit when the door is opened or closed. The new car also presents a fancy taillight design, with a "Z"-style luminous logo in the details, echoing the front face.

# AMLS Sale to PO Closes

LIGHTING NEWS



AMS Osram have finalised the sale of their AMLS (Automotive Lighting Systems) business to Plastic Omnium. Osram will continue to be a key supplier of automotive LED and optical components to Plastic Omnium.

AMLS was established on 1 October 2021 following the dissolution of the Osram Continental joint venture. AMLS combines lighting technology with electronics and software to develop smart and innovative full lighting systems for the automotive industry.

The transaction did not include other AMS Osram technologies and products for automakers and the automotive aftermarket.

# Valeo, French Research Centre in Mobility Tech Pact

## LIGHTING NEWS



CNRS PRESIDENT ANTOINE PETIT (L); VALEO CEO CHRISTOPHE PÉRILLAT (R)

Valeo and the French National Centre for Scientific Research (CNRS) have signed a five-year framework agreement outlining their cooperation on shared research programs. The partnership aims to accelerate the development of innovations that will lead to cleaner and safer mobility for people and goods.

The new framework agreement includes the launch of new research projects and theses and may also lead to the creation of joint laboratories.

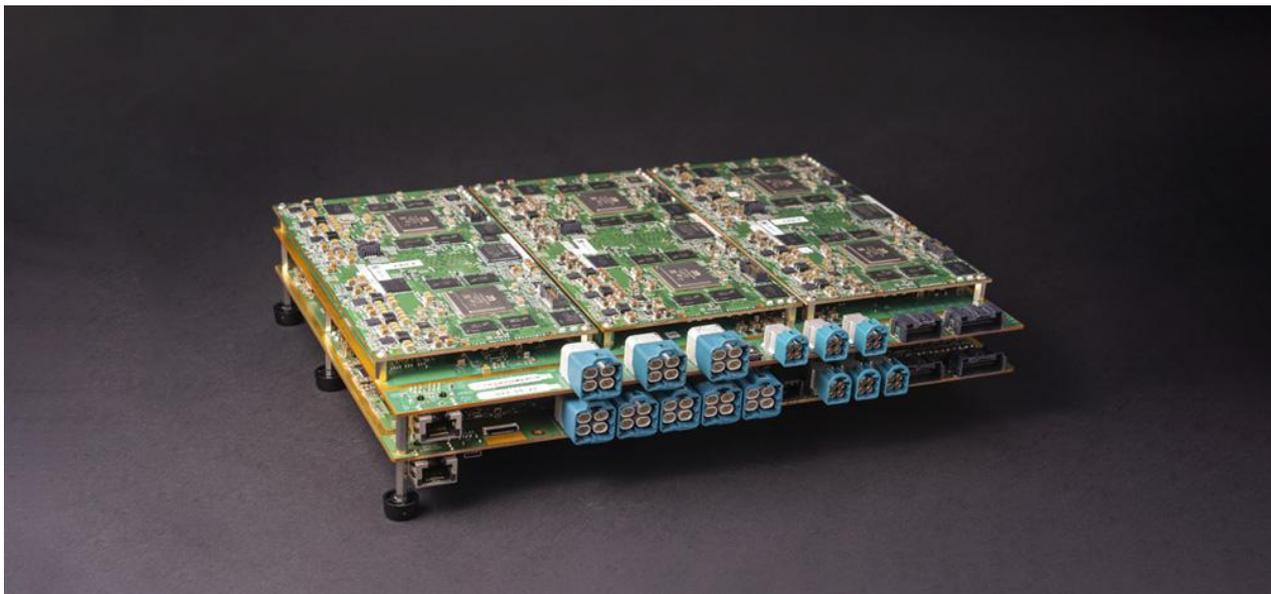
The automotive industry has been of strategic interest to the CNRS since the end of 2019; 1,000 researchers are working on related projects across 200 laboratories, and 100 start-ups have already been created in the sector, directly or indirectly by laboratories under the umbrella of the CNRS, including some 30 joint laboratories set up with corporate sponsors.

The research conducted by CNRS and Valeo will focus on sustainable design, artificial intelligence, intelligent systems, cybersecurity, data science, inclusive cities, and new energies. Valeo CEO says "In the next ten to fifteen years, the mobility space as a whole is set to undergo the biggest transformation in its history, and this transition to cleaner and safer vehicles is essential. In fifteen years, vehicles will be fundamentally different from today's vehicles. Valeo's mission is to develop these technologies, ensuring they are accessible to everyone, while achieving carbon neutrality".

# Driver Assistance News

## Mobileye's New EyeQ SDK for EyeQ6 & Ultra

DRIVER ASSISTANCE NEWS



Mobileye have launched the EyeQ Kit, their first software development kit for the EyeQ SoC which powers ADAS and future autonomous technologies for automakers.

Built to leverage the architecture of the upcoming EyeQ6 High and EyeQ Ultra processors, EyeQ Kit allows automakers to use Mobileye's proven core technology, while deploying their own differentiated code and human-machine interface tools on the EyeQ platform.

Developers will have access to a broad set of Mobileye solutions, including computer vision, REM crowdsourced mapping, and RSS-based driving policy. EyeQ Kit has already been picked up by one major global automaker for future vehicle programs.

# General News

## BYD Blow Past Tesla in EV Sales

GENERAL NEWS



Chinese automaker BYD have left Tesla in the rearview mirror as the world's top electric vehicle producer by sales. Shenzhen-based BYD sold 641,000 vehicles in the first six months of this year, a more than 300-per-cent jump from the same period a year earlier, according to company filings. Tesla's total? CEO Elon Musk claims 564,000, and blames a weak second quarter on supply chain and sales disruptions in China—coronavirus lockdowns and travel restrictions and suchlike.

BYD, which is part-owned by Buffett's Berkshire Hathaway, has also overtaken South Korea's LG as the world's second-biggest producer of EV batteries, behind China's Contemporary Amperex Technology, known as CATL. According to Seoul-based SNE Research, BYD has outpaced LG Energy in terms of monthly market share since April. This was in part because of disruptions at Tesla's Shanghai factory after China's most populous city was forced into a two-month lockdown to suppress a wave of Omicron coronavirus cases. Tesla, along with a clutch of Chinese EV makers including Li Auto, Xpeng and Nio, were harder hit by the lockdowns than BYD, which benefited because most of its factories are not based in the regions and cities that suffered the most severe restrictions.

# VW Mull Major Digital, Software Boost in China

GENERAL NEWS



The Volkswagen Group are planning major investments in China to employ several thousand software engineers and catch up with local Chinese rivals in equipping cars with the latest digital technology. That's according to group CEO Herbert Diess, who says "It's probably not enough just to hire people from other companies (...) we are considering also big moves in China".

Diess has identified software as a key differentiator. He regularly cites Nokia's failure to keep up with the iPhone as a cautionary tale and has said self-driving functions will bring about an even more fundamental transformation of the industry than the switch to batteries from fuel-powered engines.

The VW Group delivered roughly 40 per cent of their vehicles in China in the first quarter. They employ over 90,000 people there, and operate more than 40 vehicle and component factories along with Chinese partners. EV adoption is accelerating and homegrown start-ups are quickly gaining scale in China, and catering for local tastes is crucial to win and keep Chinese customers. Diess says "Developing this in Europe will not work; we are going to have a software team in China, for China".

# Holger Klein is New ZF CEO

## GENERAL NEWS



ZF have named Dr. Holger Klein, a current management board member focusing on China, as the supplier's next chairman and CEO. Klein will succeed Wolf-Henning Scheider, who will leave ZF early next year.

Klein, 52, joined ZF in 2014 from management consultancy McKinsey. He led the integration of TRW Automotive after ZF's controversial purchase of the U.S. supplier in 2015, and in 2017 became head of the Car Chassis Technology Division.

Klein has been a member of ZF's management board since 2018, with current responsibility for the Asia-Pacific and India regions from his base in Shanghai. He also manages the supplier's car chassis technology, aftermarket, and worldwide production.

Supervisory board chairman Heinrich Hiesinger says Dr. Klein "was intimately involved in the strategic planning process for the coming years (...) he will dynamically continue the successful transformation at ZF".

ZF are forecasting sales of €40bn in 2022, with an adjusted EBIT margin of 4.5 to 5.5 per cent. Free cashflow is predicted to be €1.5bn to €2bn.