Tue, 29 April 2025
Weekly Newsletter

DVN Lighting

NEWSLETTER #902

Editorial

Shanghai Auto Show: At The Centre Of The Automotive Industry

During the two-week duration of the Auto Show, Shanghai is the centre of the automotive industry in the world. All media and top decision makers gather to discover, analyze, and exchange about what is happening in China. To emphasize China's key importance in automotive business, I used the figures presented by Valeo and Forvia.

In 2000, China produced about 0.7 million cars. In 2024, that figure was 29.8 million vehicles (S&P data)—fully a third of worldwide vehicle production. Chinese consumers buy younger; in 2022, 67 per cent of car buyers in China were under 45, compared to an average age of 53 in Europe and 51 in the U.S. And Chinese consumers switch brands faster—76 per cent of them plan to change brands for their next vehicle, and 52 per cent say the origin of the car matters less than its ability to meet their needs.

In China, EV sales are expected to surpass combustion-engine models this year—a historic shift, commensurate with the technological and environmental challenges reshaping the future of mobility. Chinese automakers have an EV market share above 60 per cent.

In this challenging market, all the Chinese automakers are competing like hell. Time-to-market and cost have become their main priorities, and non-Chinese OEMs are now trying to adopt that way of development to be competitive. Partnership has become a priority at every level: look at OEMs SAIC and the new 4-letter audi brand, for example. In software development, connectivity, ADAS, and lighting, important partnerships were announced during the show. Valeo and Appotronics; Xingyu, LatticePower, and Oritek.

Coöperation is crucial. We need bridges among industries and companies, to develop faster in a complex environment. DVN is an ideal, proven platform to facilitate the coöperation we have been promoting right from the start.

GTB is an essential platform to propose evolution of the regulatory requirements. Examples abound; just look at the agreement at GRE last week to accept reversing lamp signaling projections after hard work from automakers, tier-1 and -2 suppliers, and test houses to devise and agree a final text proposal.

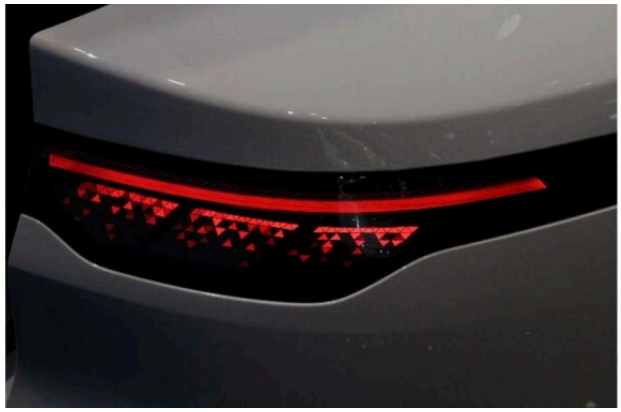
Sincerely yours

Paul-Henri Matha
DVN Chief Executive Officer and Lighting General Editor

In Depth Lighting Technology

Shanghai Auto Show '25: DVN Takeaways

In China, competition is fierce. Non-Chinese automakers are losing market share, and are launching new cars with totally new designs and approaches to entice customers back. They take risks and put a lot of effort into design. OLED technology for the Nissan N7 and the lit bumper on the Audi A5, the lit grille on the Mercedes CLA and Mazda EZ60—these are just a few of many examples.



Chinese automakers are competing on technology and price, offering vehicles with very high technical content and really low price. As an example, the Nio Firefly is priced below €15,000, and it has full-LED headlamps and rear lamps, lit logos, and RGB interior lighting.

For this price, the design needs to be simple. It is also what we see with all competitors: efficient yet nice design. BYD is another good example, with a rear lit logo on all their new vehicles, and really slick DRL design with highly efficient optical system.

Lit logos are a real trend for most Chinese brands. In China there is no regulatory constraint on lights displayed on a parked car, so automakers can put white-lit logos on the rear, and can design front lit logos without regard to dimensional separation from the front position lamps.

Turquoise light for autonomous driving indicators seems to be coming, even though turquoise light is not yet specified in the relevant regulation, GB-4785. Li Auto, Xpeng, and BYD have A.D. indicators on side mirrors:

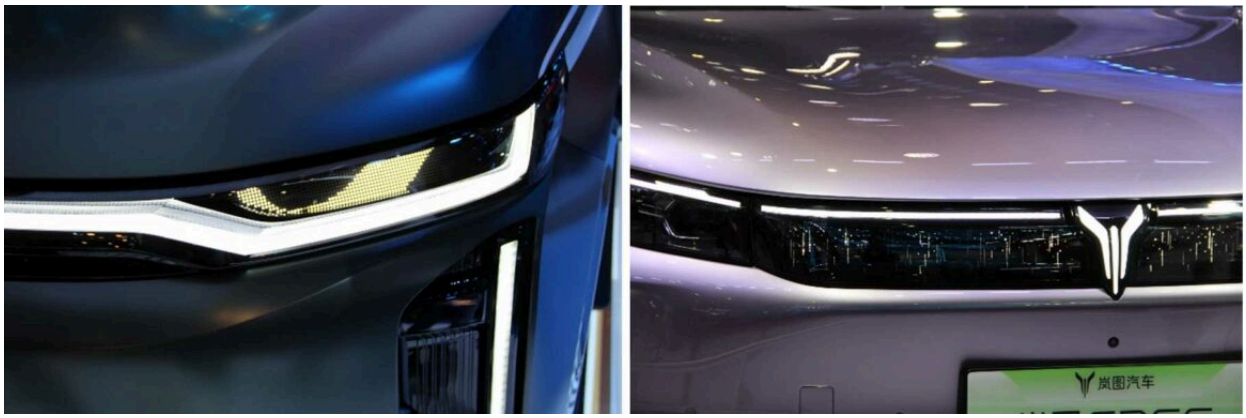
Three main innovations were presented at supplier booths and on some of the show cars:

- **Projection** with DLP on the Aito M8 (by Huawei), Changan C07 (by Marelli), and Smart 5 (by Appotronics); or with microLED on the Nio ET9 (25-kpx from Marelli), and Xingyu's 40-kilopixel proposal

Marelli (L); Appotronics (R)

- **Displays:** just a few new displays on vehicles, with pitch values from 0.1 to 2 mm; monochrome and RGB

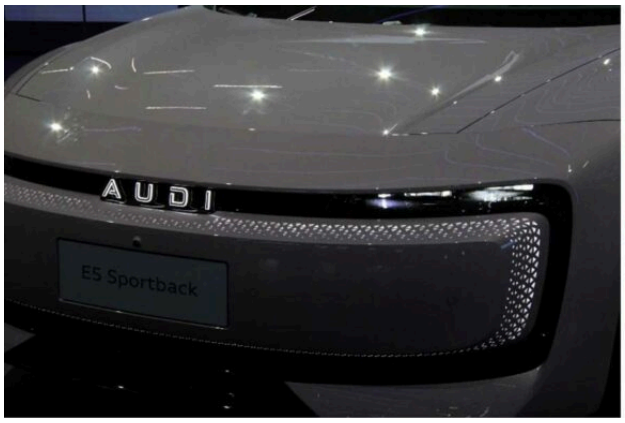
IM Motors, Jetour



GAC, Voyah

Lynk&Co, EXEED

- Grills and Lit bumpers: similar to displays, just a few new cars with lit grill and lit bumpers.



Audi, Mercedes

Dongfeng Eπ, JAC Define-X

GAC

Because time-to-market is key and cost is crucial, lit grilles, bumpers, and displays seem limited to premium vehicles and brands wanting to put very high-tech emphasis and content in exterior design or V2X. These trends are not coming to mainstream cars for the moment.

Lighting News

Reverse Lamp Projection Approved at GRE

LIGHTING NEWS

The 92nd session of GRE was held last week in Geneva. Big news: reverse-light projection is adopted after some minor changes to make it clearer (final text agreed here). It will be presented at WP.29 in November, and is likely to pass.

The direction indicator projection was actively supported by three countries, and almost all other countries considered it acceptable, but it was not supported by one country and strongly rejected by another. To work toward consensus, GTB is offering GRE members a real-traffic demonstration in Darmstadt during ISAL on 22 September. The next discussion on turn signal projections in GRE will be during the 93rd session in October—so no chance for this November's WP.29 meeting.

GTB President Wolfgang Huhn says, "In future, GTB plans to offer GRE members regular demonstrations of new functions in real road traffic. This can preferably take place in Geneva, in conjunction with GRE sessions, but also in connection with international lighting conferences such as ISAL in Darmstadt. For instance, in case there is interest from [1958 Agreement contracting parties], we could provide a demonstration of signal road projections in real traffic in Darmstadt in conjunction with ISAL; participation in the symposium is of course not a prerequisite for participation in the demos."

As to signalling road projections, GTB submitted neutral research reports and collected, evaluated, and submitted accident statistics. All results indicate an improvement in road safety; none indicates any impairment of road safety. All questions raised by contracting parties were answered by GTB. The industry has developed systems and components, and is awaiting approval for use.

China will soon allow these functions, and the same might happen in North America. GTB has indicated they are open to suggestions as to what further data and facts are needed to make progress with this technology and allow this function also within the ECE-regulated world. Maybe the real-traffic demos are helpful here.

Valeo, Appotronics in Front Lighting Pact

LIGHTING NEWS

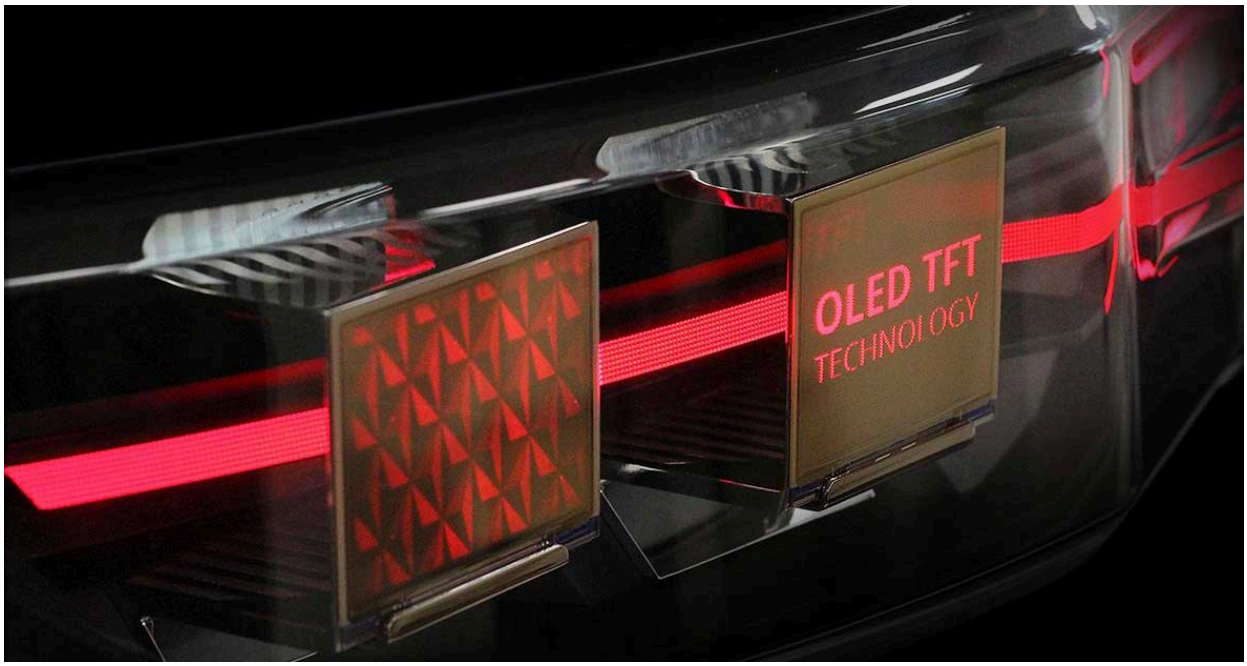
On 23 April, Valeo and Appotronics—inventor of ALPD laser display technology—announced a strategic partnership to offer a new generation of front lighting solutions incorporating Appotronics' all-in-one full-colour laser headlight system. Valeo will bring their expertise in lighting and ECU design and their formidable software capabilities, to make new front lighting setups integrating Appotronics' recognized knowledge in projection systems design based on laser display technologies.

Valeo Light Division CEO Maurizio Martinelli says the partnership "strengthens Valeo's global leadership in next-generation lighting, combining safety, adaptability, and an enhanced driving experience. Leveraging our combined expertise in automotive lighting hardware and software, this new partnership reinforces existing technology alliances and reflects a shared ambition to redefine smart automotive lighting".

And Appotronics VP Yu Xin calls the pact "a transformative step in smart automotive lighting, combining our complementary strengths to advance next-generation illumination solutions. Together, we're accelerating innovations that prioritize safety, intelligent adaptability, and personalized driving experiences for the global market".

Marelli Lighting Tech at Shanghai Auto Show

LIGHTING NEWS



As a technology premiere, Marelli showcased their Pixel Rear Lamp concept, which integrates high-resolution display technology into the taillights, leveraging OLED-TFT technology to embrace the trend of dynamic light communication and personalization. The Pixel Rear Lamp can display vehicle status and driving intent information to other road users in the form of dynamic images. This technology also brings unprecedented design freedom to automotive designers, making personalized lighting signatures possible.

The Pixel Rear Lamp also enables seamless V2X integration. Compared with traditional mini- and microLED displays, pixel rear lamps cost significantly less while offering smooth dynamic image displays.

Marelli's Near-Field Ground Projection enables dynamic colour projections on the ground. Modules can be mounted at the front, rear, and sides of the vehicle, creating a 360-degree lighting impression. This greatly improves interaction between the vehicle, users, and other traffic participants. It can project clear colour warning signs in real time, to alert surrounding vehicles, pedestrians, and bicyclists about vehicle actions such as turning, reversing, emergency braking, and passenger drop-off. It also projects dynamic, real-time displays of autonomous driving status, battery status, driving range,

and the owner's personal QR code with contact information, facilitating convenient and intuitive interaction. The lamp supports welcome light carpets and can even project movies or interactive games, meeting the demand for personalized vehicle expression and in-car entertainment.

Weighing as little as 60 grams, the compact and lightweight projection module allows flexible installation in doors, rearview mirrors, and fenders. It projects full-colour, dynamic, streaming content with at least 50 lumens brightness and 200-kilopixel resolution, covering an area no smaller than a 44-inch TV. At the Marelli booth, the h-Digi microLED & Near-Field Ground Projection is an innovation case integrating near-field projection into headlamps, enabling ground or forward projection of full-colour, dynamic, streaming content with 100 lumens brightness and 400-kilopixel resolution. The projected area approximates a 100-inch TV, making it ideal for outdoor entertainment.

Marelli's latest Thin Lit Line Headlamp pushes lighting design boundaries with an unprecedented lit-area height of just 5 millimetres. This ultra-slim design removes traditional styling constraints, empowering automotive designers to develop distinctive, futuristic, and personalized vehicle appearances aligned with consumer demands for advanced automotive aesthetics.

Despite its extremely slim profile, the Thin Lit Line Headlamp provides exceptional performance and functionality, integrating core features such as ADB, low beam, turn signals, and daytime running lights, with extensive customization options.

Forvia Saphir Masterpiece at Shanghai Auto Show

LIGHTING NEWS

Forvia presented their new Saphir Masterpiece in Shanghai to showcase the diversified supplier's latest innovations in lighting and interiors.

Forvia's display solutions offer full design flexibility, allowing seamless integration at the front, rear, and sides—even in the rocker panels. Automakers can use Forvia displays for dynamic communication features such as safety messages, welcome and goodbye scenarios, and legally-regulated lighting functions like turn signals or position lights.

Building on their CES 2024 award-winning design, Forvia's newest Transparent Door enhances safety and convenience. By replacing the LED matrix with advanced projection technology, it delivers improved image quality at a lower cost. Projected into the upper door panel, the image provides real-time external visibility and alerts

passengers to hazards. It supports dynamic ambient lighting and information displays, seamlessly connecting the cabin with the outside world.

Forvia also presented sustainable headlamp concepts, including a no-heatsink projector unit and a dismountable outer lens, as well as efficient signalling functions using evolutions of their Hella Flatlight technology for front and rear, including RGB applications.

Covestro Launch PCR Plastics From Old Headlamps

LIGHTING NEWS

Covestro have introduced a new range of PCR (post-consumer recycled) polycarbonates made from end-of-life automotive headlamps, marking another milestone in closing the loop for automotive materials. Developed through a joint program initiated by the German federal enterprise GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit), with Volkswagen and Nio as key partners, these TÜV Rheinland-certified grades contain 50 per cent recycled content, and are now commercially available for new automotive applications. Volkswagen and Nio are already validating the material for potential use in future vehicle designs.

Under this initiative, Covestro have been collaborating with partners, including Chinese recycler Ausell and leading automakers, to establish closed-loop pathways for high-value plastics from end-of-life vehicles. This program focuses on strengthening recycling processes and establishing reliable supply chains for high-quality recycled materials from automotive waste streams. Through this partnership, Covestro and their partners have developed practical solutions for collecting and mechanically processing end-of-life headlamps into high-quality PCR grades suitable for a range of automotive applications.

The introduction of these new PCR grades comes at a critical time as the automotive industry, one of the most resource-intensive sectors, faces increasing environmental challenges and regulatory pressures. The EU's End-of-Life Vehicle Directive, which sets recycling targets, along with China's Extended Producer Responsibility (EPR) program and growing sustainability requirements in key global markets, are pushing automotive manufacturers worldwide to seek innovative and sustainable material solutions that comply with evolving regulations.

Covestro’s new PCR grades meet the high-performance standards required for demanding automotive applications, offering excellent surface quality for superior aesthetics and adhering to strict vehicle interior air quality requirements. This combination of sustainable content and premium performance empowers automotive manufacturers to meet both regulatory demands and environmental goals without compromising on product quality.

As part of its broader commitment to sustainability and the circular economy, Covestro continue to expand their portfolio of recycled-content materials. In recent years, the company have introduced PCR polycarbonates with up to 90 per cent recycled content, and opened their first dedicated mechanical recycling compounding line for polycarbonates in Shanghai. Last year, they introduced a new range of polycarbonates based for the first time on chemically recycled, attributed material from post-consumer waste via mass balance.

TactoTek, NBHX Partner to Advance IMSE Tech in China

LIGHTING NEWS

TactoTek and NBHX have entered a strategic partnership aimed at accelerating the adoption of IMSE (in-mould structural electronics) technology in Chinese car production. NBHX will integrate TactoTek's IMSE technology into their product offerings, focusing on illuminated applications that showcase IMSE's design versatility and superior light performance. The partnership aims to address the increasing demand for integrated, aesthetically pleasing, and cost-efficient solutions in vehicle interiors and exteriors.

This collaboration signifies a pivotal step in TactoTek's global expansion, providing Chinese automakers with access to innovative design and manufacturing solutions. IMSE technology integrates electronics into 3D injection-moulded structures, enabling the creation of slimmer, lighter, and more cost-effective components without compromising performance.

TactoTek CEO Jussi Harvela says, "China’s automotive industry is evolving rapidly, with a growing demand for smart, visually impactful solutions. IMSE technology is uniquely positioned to meet this need, delivering integrated illumination and electronics in ultra-thin, seamless formats. Through our partnership with NBHX, we’re bringing a compelling combination of design flexibility and cost efficiency to Chinese OEMs".

And NBHX CEO Yan Sun says, "At NBHX, we're committed to delivering cutting-edge solutions that meet the evolving needs of our customers. Integrating TactoTek's IMSE technology into our product line enables us to offer innovative features that enhance both functionality and design, setting new standards in the automotive industry.”

One of the first applications to be introduced through the partnership is an illuminated NBHX emblem created using IMSE technology. This emblem demonstrates how advanced lighting, electronic integration, and design aesthetics can be achieved in a single injection-molded part. With seamless surface, ultra-slim form factor, and excellent light uniformity, IMSE emblems offer a striking, brand-enhancing solution that also reduces system complexity and cost.

Stanley, Mitsubishi Electric to form Car Light JV

LIGHTING NEWS

Stanley Electric and Mitsubishi Electric Mobility have signed a basic integration agreement to establish a joint venture for the business of electronic and control components that make up lamp systems on 2- and 4-wheel vehicles, with operations planned to start in the first half of FY2025.

Combining the strengths of Stanley Electric's automotive lamp systems business and Mitsubishi Electric Mobility's electronic and control components business, the JV will develop, design, manufacture, and sell electronic and control components for lighting systems to be installed on vehicles. In order to respond to recent trends in ADAS and SDV, and to realize an autonomous driving society, the company will aim to create lamp systems safer and more functional than ever before.

The two parent companies plan to use this integration as an opportunity to strengthen their partnership and maximize the synergy between Stanley Electric's optical control system technology, which contributes to safety and security through automotive lamps, and Mitsubishi Electric Mobility's advanced control system technology, in order to provide new and attractive products to a wide range of customers. Stanley will invest 66 per cent in the new company; Mitsubishi Electric Mobility 34 per cent.

Interesting Lights at Shanghai Auto Show

LIGHTING NEWS

There was quite a bit of interesting lamp design on display in Shanghai. For example, the Chery Qurio's lamps are similar to sensors, and seem to include radar and other sensors. The car is a concept, but not far from mass production. The 'smart zone' is combined with front and rear lamps, giving the car a futuristic look with similar front and rear appearance, like a Zoox shuttle vehicle.

And: will the production version of the SAIC MG Cyber X keep its pop-up lamps?

To go further ...

More Detail: China-Market AUDI Lamps

TO GO FURTHER ...

The Audi E5 Sportback has just been launched in Shanghai, and Audi have released a video with their lighting design leader, Cesar Muntada, discussing the new China-specific audi brand and the new lamps defining its identity.