Tue, 3 June 2025
Weekly Newsletter

DVN Lighting

NEWSLETTER #907

Editorial

China In The Rearview; Japan Up Ahead

It took me time to review my long notes after the Shanghai auto show. Today my report on the lamps at Auto Shanghai 2025 last month **goes live**. It was certainly difficult to select which brands to shine a spotlight on. I tried to give enough details about what caught my eyes during the show, when visiting the different car makers and suppliers.

As you read this week's DVNewsletter, I will be In Hangzhou, visiting shows, automakers, and tier-1s to learn more about the Chinese market and what will come next. Then I will fly directly to Japan for our DVN workshop!

So, this week I bring you two interviews. First with Mitsuyoshi Naritomi, Marelli Interior Experience Global R&D VP — I worked with him at Nissan Atsugi some years ago. He will speak during our interior lighting session, and I wanted to know more about market trends in Japan and elsewhere. The second interview is with Robert Selley from VueReal, a company working on microLED technology for signal functions.

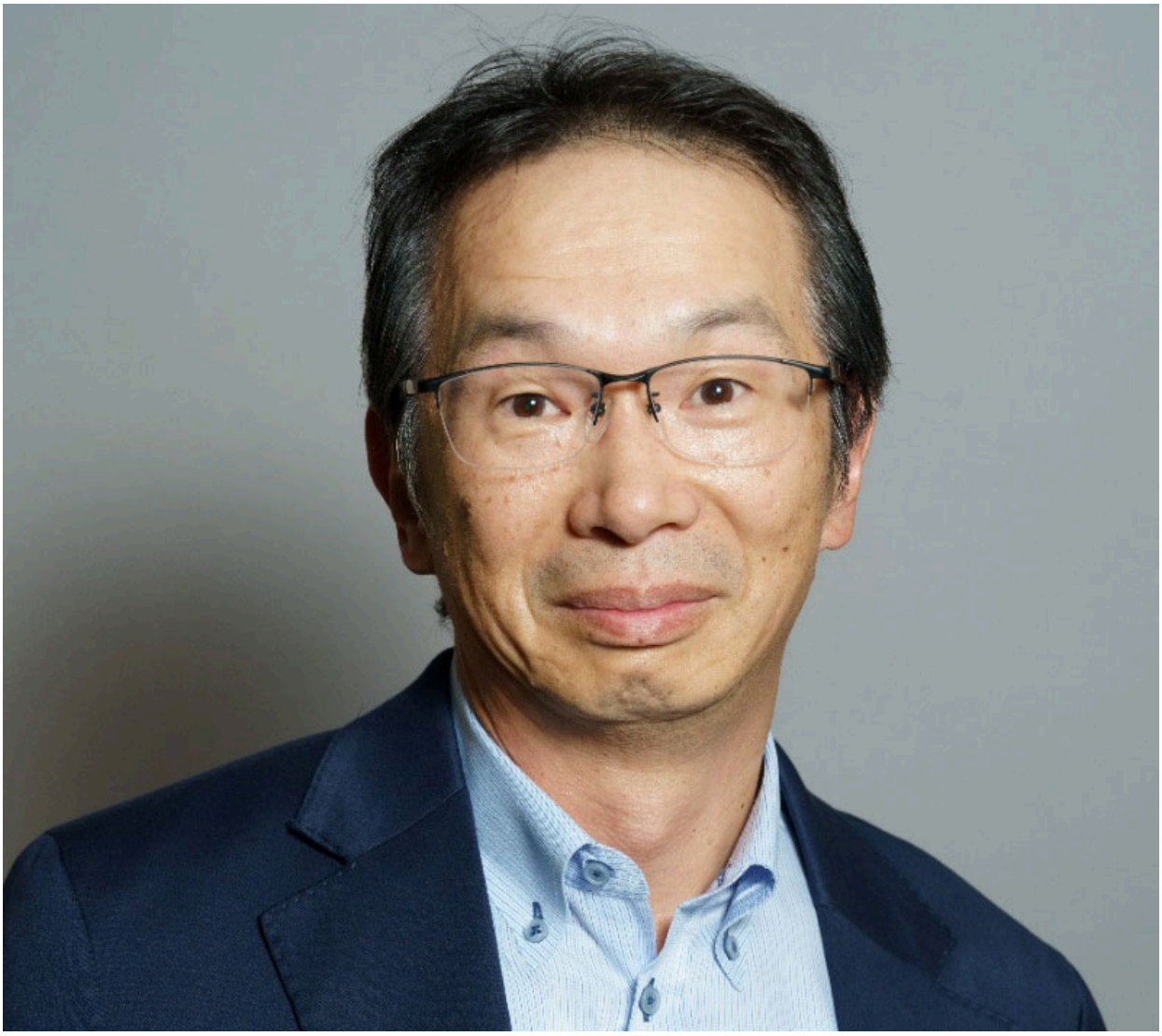
VueReal and Marelli will be two of 75 fascinating companies participating in our Tokyo workshop. Come and **join in**!

Sincerely yours,

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

In Depth Lighting Technology

DVN Interview Marelli Interior's Mitsuyoshi Naritomi



Mitsuyoshi Naritomi and I worked together during my time at Renault. He led the complete interior / exterior team (if I remember correctly) and we always worked in a close relationship with his team.

Paul-Henri Matha for DVN: Naritomi-san, it is a pleasure to talk with your before DVN Tokyo workshop next week. Could you introduce yourself, your background, and your new job at Marelli Japan?

Mitsuyoshi Naritomi: I served as General Manager of Interior and Exterior Engineering at Nissan until April 2020, where I worked closely with Marc Geissmann of Renault on alliance activities involving interiors, lamps, seats, HVAC systems, and more to create synergies across the two companies. Working with Marc-san, Matha-san, Bedu-san and other Renault colleagues was a truly rewarding experience, and I remain grateful to them all.

In April 2020, I joined Marelli as Head of R&D for the Interior Division. I am responsible for innovation and product development in areas such as cockpit modules, instrument

panels, cross-car beams, and consoles—this includes interior lighting as one of our key development areas.

DVN: We will have, for the first time in Japan, a DVN session about interior lighting. Can you tell us about recent innovations in the field?

M.N.: The adoption of RGB-LED technology has significantly diversified the range of lighting colours, enhancing both functional aspects — such as HMI and entertainment — and the overall ambiance of the cabin. In combination with decorative panels, interior lighting now also contributes to enhanced surface æsthetics.

DVN: How is Marelli involved in this field? is it part of Marelli Automotive Lighting, or a separate division?

M.N.: Interior lighting is positioned as a key product within Marelli's Interior Division, and we are actively expanding our business in this domain.

DVN: Do Japanese buyers have specific wants and needs for interior lighting, or does Japan follow the global trends of RGB, light interaction with music, ADAS, lighting activation, phone, etc?

M.N.: Currently, our product development in interior lighting aligns with global trends in terms of functionality. However, when it comes to ambiance and emotional expression, we are exploring wellness-oriented designs that reflect uniquely Japanese sensibilities.

DVN: How do you see the evolution of the smart RGB? they are still expensive, and each LED supplier and every LED IC supplier use their own protocol. Is it time for standardization?

M.N.: Smart RGB enables coördinated control of multiple LEDs across the IP, doors, and roof, allowing for more immersive lighting effects. At the same time, standardization of control protocols will help streamline system architecture and reduce overall costs.

DVN: I perceive a shift in OEM budgeting, from exterior to interior lighting. Do you think that's happening, particularly given the push by Chinese OEMs who focus more on interior?

M.N.: While there is growing use of illuminated exterior emblems and continued advancement in high-performance exterior lamps, the overall budget for exterior lighting has not decreased. At the same time, to enhance perceived interior value, ambient and functional lighting applications are clearly on the rise. In China, interior lighting adoption increased significantly after 2023 and is now reaching a more mature phase. Recently, OEMs tend to favour cost-effective yet value-adding features, shifting some budgets toward entertainment and other experiential functions.

DVN: What do you think about smart surfaces, including haptic activation, flexible PCBs with printed electronics, and that sort of thing? We see a lot of demos at events like CES, but just a few applications so far. Why is that?

M.N.: At Marelli, we mass-produced the world's first large decorative haptic switch panel for the Nissan Ariya, using two proprietary technologies: one for haptic transmission and another for force sensing.

While traditional physical switches are defined by force parameters, smart surfaces require distance-based sensing. The key technical challenge lies in ensuring consistent tactile feedback—especially when factors like glove use change the finger-to-surface distance. We've developed proprietary know-how to address these variations in user interaction.

DVN: What do you think about mini- and microLEDs, will those come to interior lighting?

M.N.: Thanks to their fine pitch, miniLED and microLED technologies offer high brightness and resolution, enabling display quality close to that of LCDs. While their strength lies in high-resolution displays, we do not expect significant expansion into ambient interior lighting applications.

DVN: What about projection technology; what is the feedback from automakers?

M.N.: At present, projection technology remains more costly than LED lighting or TFT displays. OEMs generally consider static image projection, such as what's used in the BMW MINI, to have limited functionality and thus lower priority. Instead, there's growing interest in seamless, dynamic 3D projections spanning from the IP to the doors—this immersive type of content is what OEMs are starting to prioritize.

DVN Interview: VueReal's Robert Selley

LIGHTING NEWS

VueReal came to DVN Munich this year to showcase the microLED product they are developing for vehicle lighting applications. VueReal are back at DVN next week in Tokyo, with a lecture and an expo booth. So, I talked the company's Robert Selley:

Paul-Henri Matha for DVN: Can you introduce yourself, please, and VueReal?

Robert Selley: I have over 25 years of experience in the semiconductor and advanced display industries, leading global business efforts in safety-critical, high-performance applications. I am the Chief Commercial Officer at VueReal, a Canadian technology company headquartered in Waterloo, Ontario. We specialize in MicroSolid Printing™, which enables next-generation microLED display and lighting solutions, with a strong focus on the automotive sector.

At VueReal, I lead our commercial strategy, partnerships, and customer engagement to bring our MicroSolid Printing platform to market. This scalable, high-precision technology enables applications like in-glass displays, transparent lighting, and advanced heads-up displays that redefine automotive design and functionality. Beyond microLED display, our platform also enables broader micro semiconductor manufacturing across a range of industries.

DVN: In Munich, VueReal presented a compelling transparent microLED exterior display. Can you walk us through the technology?

R.S.: The transparent microLED platform we showcased is engineered specifically for automotive integration—across windshields, side windows, panoramic sunroofs, and more. Leveraging our proprietary MicroSolid Printing platform, we can place millions of microLEDs onto transparent substrates with exceptional precision and minimal impact on visibility. The result is a display that remains invisible when off, yet delivers vibrant, high-brightness content when activated. This capability unlocks new opportunities for integrated lighting communication, branding, and safety cues—seamlessly embedded into the glass surfaces of a vehicle.

DVN: Do you manufacture your own microLED wafers?

R.S.: We do not manufacture wafers in-house. Instead, we partner with top-tier wafer suppliers and focus on what we do best—processing, transferring, and integrating microLEDs using our MicroSolid Printing platform. This model allows us to stay nimble and scalable, which aligns well with the needs of our automotive partners.

DVN: How does MicroSolid Printing differ from traditional LED integration methods?

R.S.: It is fundamentally different. Traditional Chip-on-Board (COB) methods or laser-based pick-and-place are limited in throughput and precision. Our process transfers millions of devices in parallel, with deterministic placement and high yield. This makes large-area, transparent integration commercially viable, something the industry has been pursuing for years.

Our industry-first Reference Design kits are also transformative. These kits offer partners and customers ready-to-use blueprints and integration guidelines, dramatically speeding up microLED adoption. By pairing MicroSolid Printing's scalability with these resources, we're removing barriers and enabling faster, broader commercialization of advanced microLED applications.

DVN: What substrates are compatible with your technology?

R.S.: We are highly flexible. For automotive, we work closely with OEMs and tier-1s to co-develop substrate solutions—usually laminated safety glass or high-performance optical films. These materials meet the rigorous environmental and optical standards required for automotive integration.

DVN: How are the microLEDs driven? Are you using CMOS integration…?

R.S.: Currently, we are using passive matrix backplanes and LTPS for the majority of our solutions. That said, we are developing a CMOS micro driver solution for release in 2026. This will significantly enhance integration, reduce power, and enable even smarter displays for future automotive applications.

DVN: Are the displays truly transparent?

R.S.: Yes—transparency is a defining feature. When off, the display looks like regular glass. When on, it produces extremely bright visuals without blocking the driver's view. We optimize LED layout and optical properties to maintain transparency.

DVN: What brightness levels are you achieving?

R.S.: We are seeing impressive performance: transparent displays over 5,000 nits, [vehicle] lighting up to 100,000 nits, and micro-displays for AR/optics approaching 1 million nits. This range allows us to serve multiple automotive applications—from ambient interior lighting to high-luminance external signalling.

DVN: What pixel pitches can VueReal support?

R.S.: Our platform is adaptable. We support pixel pitches from as small as 3μm for AR micro displays to several hundred micrometres for lighting and signage. For automotive, 0.2mm is typical, but we can tailor this based on visual requirements and power consumption targets.

DVN: When do you expect to start production for automotive applications?

R.S.: We are actively engaged in development and validation with OEMs and tier-1s. Based on current timelines, we expect start of production around late 2027 or early 2028 — well aligned with broader industry trends in electrification, autonomy, and personalization.

DVN: How are you addressing automotive-grade reliability?

R.S.: Reliability is a top priority. We have completed thermal, humidity, and vibration testing according to automotive standards. Our facility is also on track for IATF and ISO certification by early 2027 to support full production-readiness.

DVN: Are automakers knocking on your door?

R.S.: Yes, interest in our MicroSolid Printingplatform is extraordinarily strong. OEMs are striving to differentiate with lighting and in-glass display features. There is a significant appetite for display-enabled personalization, branding, and external communication in EVs and autonomous platforms. Our technology offers an innovative design language and user experience.

DVN: Outside of automotive, what other sectors are adopting this platform?

R.S.: While automotive is our priority, we are also active in AR/VR micro displays, wearables, retail signage, and medical displays

DVN: What is your biggest challenge, and what sets VueReal apart?

R.S.: Scaling without sacrificing yield or affordability has always been the challenge. That is why we built MicroSolid Printing from the ground up, to excel in scalability and manufacturability. Now, we are focused on building a robust ecosystem to meet demand while supporting regional manufacturing. Our platform enables microLED and broader micro semiconductor production at a fraction of the cost of a traditional OLED fab—making local, decentralized production a reality. This approach aligns perfectly with industry trends in deglobalization and supply chain resilience. VueReal is well-positioned to support this new era of automotive innovation.

Christian Amsel is New ZKW CTO

LIGHTING NEWS

On June 1, 2025, Dr. Christian Amsel assumed the position of CTO (Chief Technology Officer) at ZKW. With this appointment, a proven expert with extensive experience in the vehicle and lighting industries returns to his original field of activity.

After studying electrical engineering at RWTH Aachen University and subsequently working as a research assistant at the Institute of Automotive Engineering, Christian joined Hella's Lighting Electronics division in 2003. There he played a key role in the development of innovative lighting systems, including concepts for active night vision systems, adaptive cruise control using solid-state lidar, and the next generation of AFS lighting systems with the new Vario Xenon modules and intelligent stepper motors. With his team, he introduced the first Xenon based ADB system for VW Touareg.

As one of the pioneers in the field of camera-based light control, he played a key role in the series development of multifunction cameras. With the acquisition of Hella Aglaia in 2006, these systems were successfully brought into series production at automakers worldwide in 2009 and 2010. Since 2009, he has been EVP of the Driver Assistance division at Hella, focusing on vehicle sensors and radar-based systems for autonomous driving.

In the following years, he helped shape the transition to electromobility and played a key role in positioning Hella as the market leader in 48-volt start-stop components and battery management systems. As a member of the Electronics Management Board, he was involved in joint ventures in Korea and Germany, among other projects.

After leaving Hella, Christian took on management positions as CTO at Inalfa Roof Systems in the Netherlands and at Kongsberg Automotive in Switzerland. At both companies, he played a key role in the strategic realignment and development of future-oriented technologies.

By joining ZKW, he is now returning to the lighting industry. We at DVN wish him grand success in his new position, and we look forward to interviewing him once he's got his bearings.

New Alpine A390

LIGHTING NEWS

Alpine's third model, the A390, joins the brand's A110 coupé and A290 hatchback. The new car is a crossover-coupé, largely true to the A390 Beta concept shown at the Paris motor show last year.

The A390 shares its basic Ampere Medium architecture with the Renault Scenic and Nissan Ariya, but with three motors, two at the rear and one at the front, to give rear-biased all-wheel drive and torque vectoring to boost agility and responsiveness. As to the lighting, we could think that low beam and high beam module are the really slim module just below the horizontal front position lamp. But no, they're fully hidden in a dark zone of the front bumper; looks like a single standard biLED low/high-beam module.

The lighting signature is produced by a combined DRL and position lamp on the front, divided into elements based on triangle and trapezoid shapes. Some triangles appear under the bumper skin. This seems to be done with holes in the bumper to exhibit triangles from an outer lens behind the skin, unlike solutions seen in China (painting laser abrasion on audi and Galaxy E8 cars, for example).

The lighting diverges somewhat from the A390 concept, in that the production car has no front lit logo, though it seems possible to maybe light the alpine callout, fulfilling the 75-mm rule due to the wide horizontal lit band (position lamp).

The rear has also been simplified versus the concept, without any light through the rear bumper, but the rear Alpine logotype remains, like Toyota's CHR, the Porsche 911, and Opel's Grandland; this trend of lit brand names seems to be a strong one.

Interesting to see a vertical reflex reflector, not seen so often on vehicles, as designers often prefer an horizontal one to visually emphasize the width of the car.

Exterior lighting can be seen also into the side mirrors that integrate a puddle light with white Alpine logo. A very simple charging indicator is also present in the charging zone to indicate the battery status.

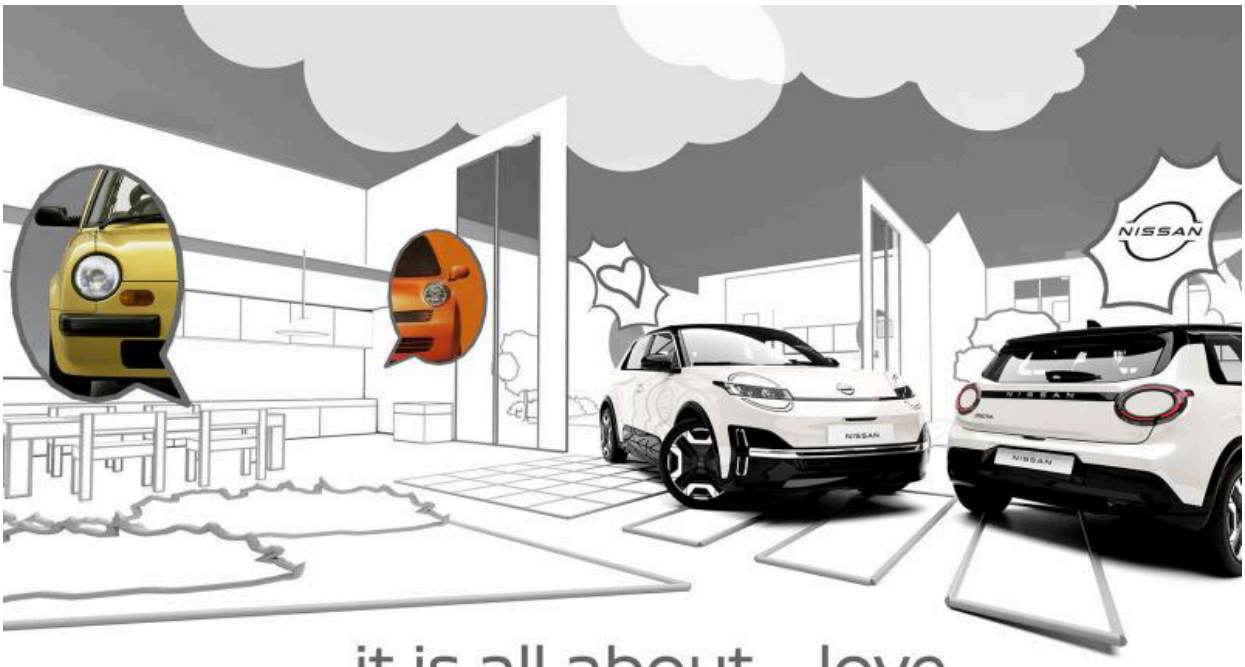
New Nissan Micra

LIGHTING NEWS

The newest generation of the popular hatchback – which has amassed more than six million sales since first being launched 42 years ago – has been revealed by the Japanese firm as a twin to corporate alliance partner Renault's electric 5. This means it won't be sold with a combustion engine at all, for the first time in the model's history. Micras will be built at Renault's plant in Douai, France, and will be focused on the European market.

It's only really the exterior that is the key differentiator to the Renault. Styled at Nissan's design centre in London, the new Micra is similar to the Renault 5 in that it sits higher up than a typical hatchback.

Nissan had already shown a front exterior image of the new Micra, but this is our first look at the whole car. It retains the distinctive lighting signature which runs from the hood into the front bumper, and the model-hallmark big circular headlamps. When the car gets unlocked, the lights are said to perform a 'welcome wink'. The bold circular lighting signature is replicated in the rear lamps.



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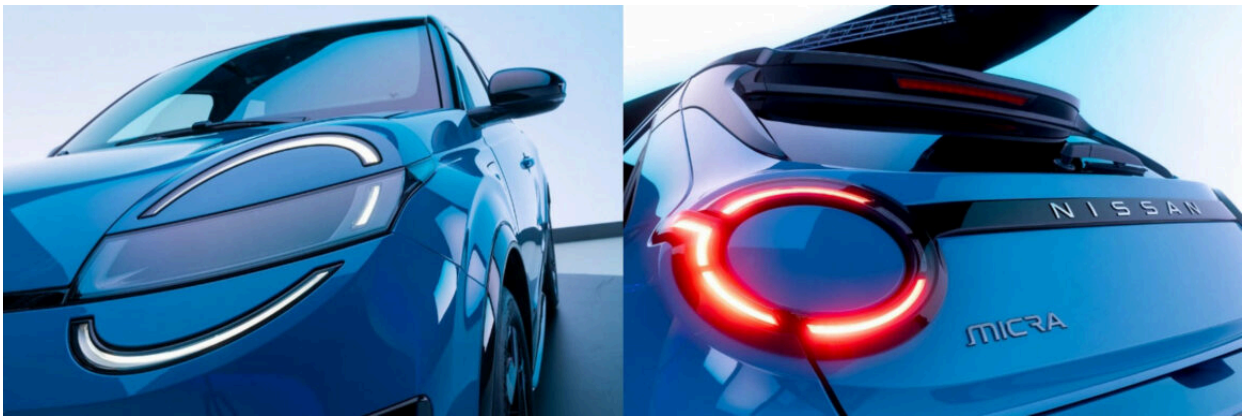
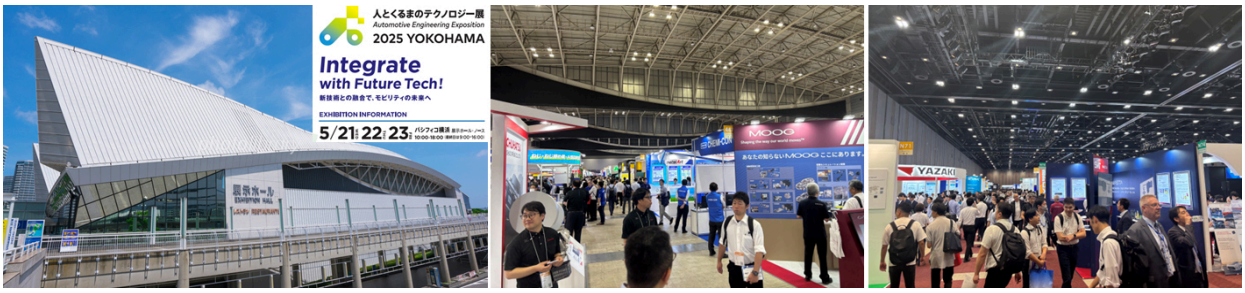


To go further ...

Automotive Engineering Exposition 2025

TO GO FURTHER ...

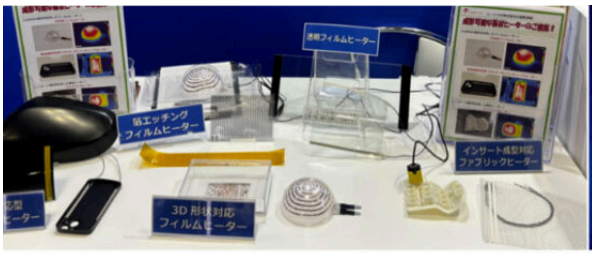


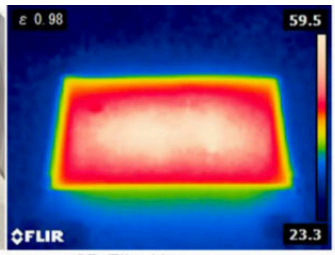
The JSAE (Society of Automotive Engineers of Japan) held the Automotive Technology Exposition 2025 at Yokohama, Kanagawa Prefecture, from 21 to 23 May. This was the 32nd exhibition, and 617 companies participated, including automobile and parts manufacturers, exhibiting electrification and autonomous driving technologies. The number of participants increased by about 27 companies compared to last year, making it the largest ever: about 1,470 expo booths, including joint exhibits. Approximately 76,000 visitors came through over the three days.

At the opening ceremony, JSAE Chairman Kunio Nakaguro said, "At the JSAE, we believe it is our mission to continue to create connections between the various people involved in the automotive industry and local communities, toward the further evolution of automotive and mobility technology and the realization of a mobility society of the future. This year's exhibition had the largest number of participating companies ever. Hopefully this exhibition will connect us not only with the automotive industry, but also with colleagues in new fields, leading to further development".

Unfortunately, Koito Manufacturing and Stanley Electric did not have exhibits, but several suppliers made interesting exhibits and presentations:

Heat Lab



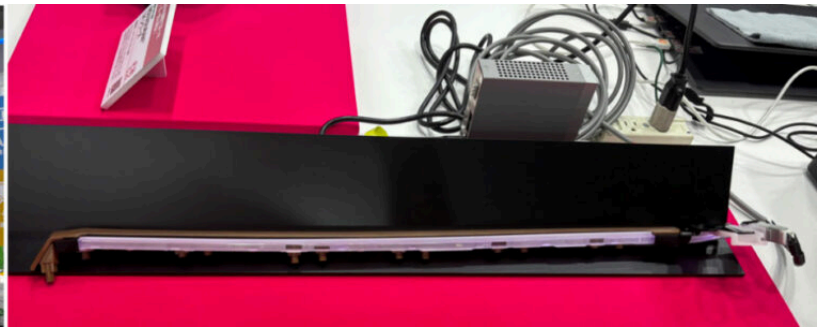


3D Film Heater

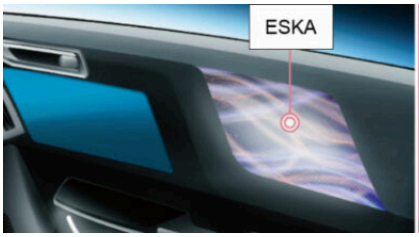
Transplant Film Heater

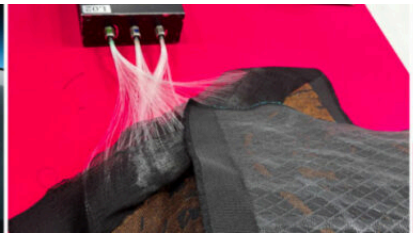
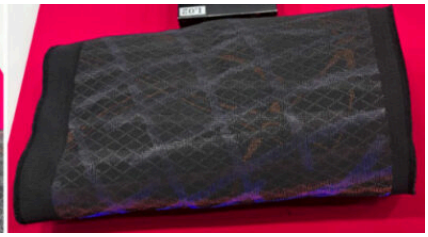
The transparent film heater developed by Heat Lab, headquartered in Shizuoka Prefecture, has high transmittance and no heating wire in the heating area. So, it's well-suited for heating areas where visibility is required. Unlike heaters with heating wires, the entire surface generates heat. It is highly efficient, and heats quite evenly. The film heater is flexible, about 0.1 to 0.3 mm thin, and can be attached to curved surfaces such as cylindrical shapes. It is expected to be used mainly for headlamps, tail lamps, lidar, and sensor cover lenses that require visibility, for anti-fogging, anti-condensation, anti-freezing, anti-snowing, and snow melting applications.

Mitsubishi Chemical



Mitsubishi Chemical have capability from optical analysis to mould creation and mass production, and they've developed ambient lighting as door illumination, for Lexus applications. The moulded prism pattern allows it to shine evenly from the tip to the end. It consists of a light body, reflector case, circuit board, and peripheral parts. The mass-produced exhibit is 60H × 700W × 30D mm, but even larger sizes are also possible.



Eska is a plastic optical fibre product that exploits the excellent light-transmission properties of acrylic resins. It possesses a number of important characteristics not found in glass optical fibre, including light weight, flexibility, and easy processability. Mitsubishi Chemical market Eska for a wide variety of applications, including ambient lighting for entire door panel surfaces.

Ichikoh



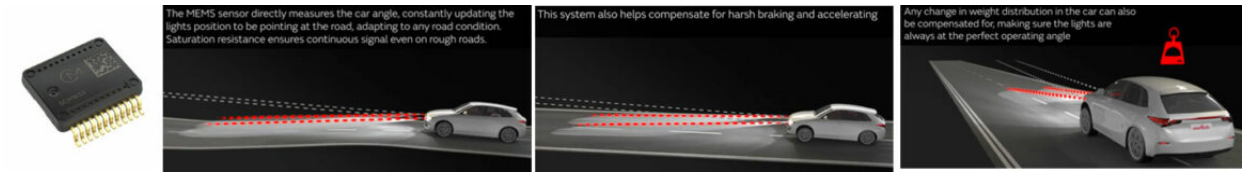
Ichikoh exhibited HD lighting in the form of their Advanced Safety Headlamp in the current Toyota Alphard. HD Lighting is a technology that divides the Headlamp irradiation area into 20,000 pixels and controls each one individually.

By precisely controlling the illumination range of both low and high beams, it improves the driver's visibility and supports driving, increasing safety and comfort when driving at night. In the high beam range, high-definition glare-free high beams ensure

maximum visibility. In addition, precise light distribution control reduces the light emitted on signs, reducing glare caused by reflections, and blocks light from pedestrians to prevent dazzling. In addition to controlling the light distribution of high beams, the high resolution of the low beam irradiation range makes it possible to depict road surfaces such as symbols, improving smooth communication and safety for road users in the future autonomous driving market.

Ichikoh introduced their lamps as part of Ichikoh's 4R Philosophy of Robust Design, Recycle, Repair, and Remanufacturing, and introduced their efforts toward the circular economy.

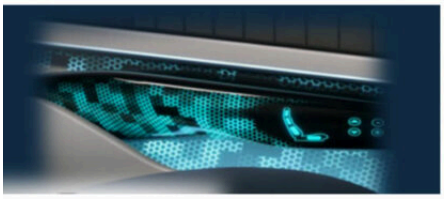
Murata

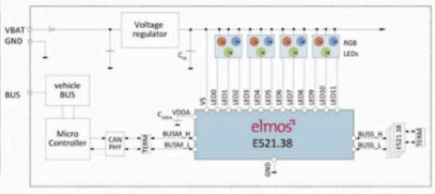


Murata's MEMS 6-axis inertial sensor combines gyro and accelerometer for automobiles. It is in serial production and now available for autodynamic headlight levelling applications.

Elmos

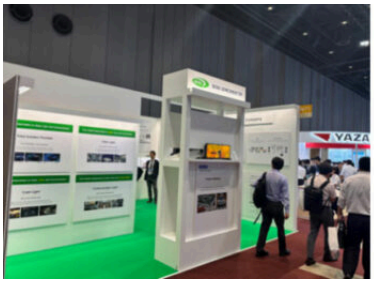
Elmos are a world leader in Ambient Light control, with over 400 million LIN RGB controller ICs in the field, and in dynamic rear light animations. They presented their LED Driver solutions for ambient and rear lighting, claimed as the highest flexibility for LED control in a dynamic animation. Specifically: their 48-channel high-side LED driver E522.96 with high-speed CAN/FD interface for fast automotive LED/OLED exterior lighting applications.

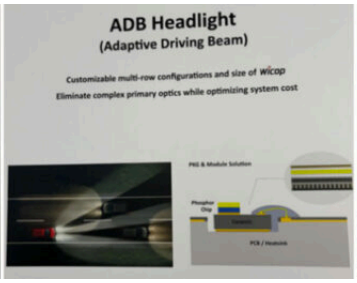


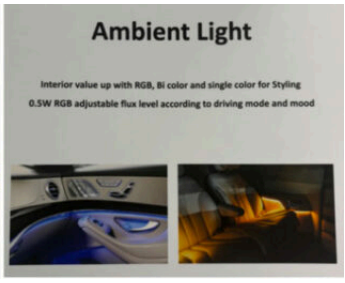


They also showed their bus-programmable 12-channel LED driver, E521.38, which is a multichannel PWM controller for RGB/W ambient light application. It provides integrated current sources controlled by PWM with 16-bit resolution. Each driver can be used to drive external loads with current up to 60mA. Target application is dynamic interior lighting.

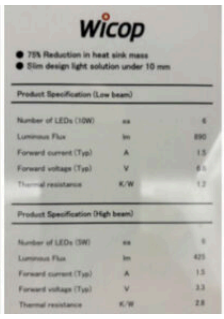
Seoul Semiconductor

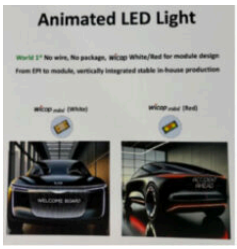


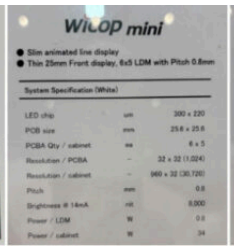



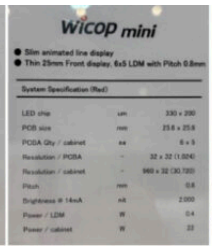


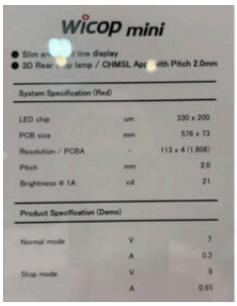
Seoul Semiconductor, № 3 in the global LED market (after Nichia and ams Osram) presented their automotive technologies.

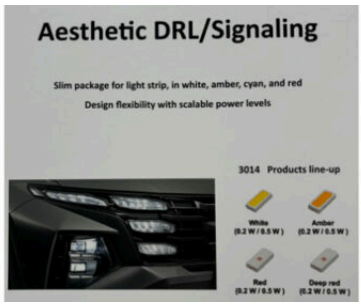


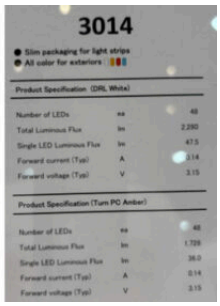











Exhibits included their WICOP (**w**afer-**i**ntegrated **c**hip **o**n **P**CB) technology which mounts the chip directly onto the substrate without using wires or a package. This method eliminates the traditional packaging steps, allowing for a slimmer design.