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Weekly Newsletter

DVN
Lighting & ADAS

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Editorial

Two Interviews, Two Perspectives

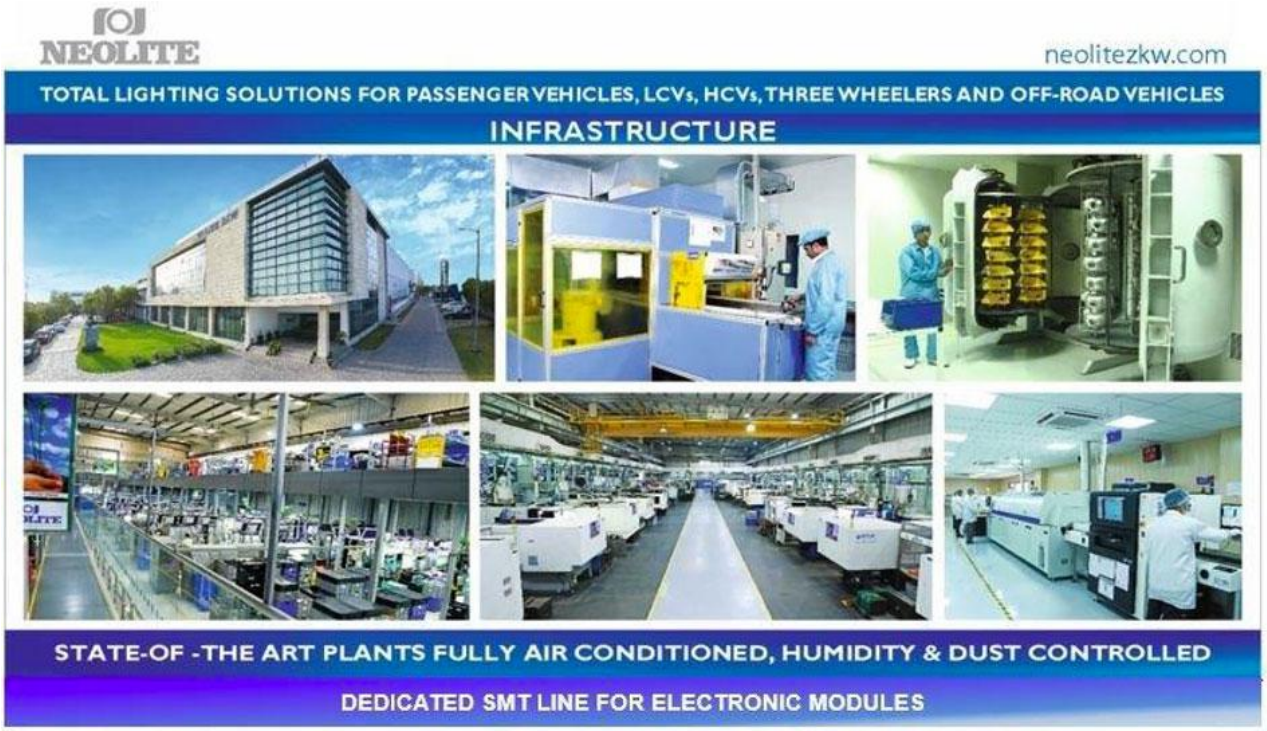
This week we bring you two unique interviews, one with BMW's exterior lighting development chief Jörg Kälble, and the other with Indian lighting tier-1 Neolite ZKW's CEO Rajesh Soni. Both interviews probe innovations and success factors, each in its own context, exactly in line with DVN's mission: talking about cutting-edge technologies and keeping an eye on tomorrow while also keeping track of today, following current lighting products everywhere in the world.

BMW's Kälble talked with us about his views on laser technologies in front and rear lighting; on ADB and road projections; on illuminated grilleboards and logos; on microoptics; communication-displays, and about forthcoming challenges in vehicle lighting.
All very cutting-edge stuff.

Meanwhile, India is zooming along, progressing in every aspect of automobility—including lighting. Just ten years ago, in a report on lighting in India, I wrote that LEDs were out of the question and all projects used filament bulbs. Now LEDs are involved in most of the developments, and **Neolite ZKW's Soni** explains his company is also in discussion with Indian car makers to affordably implement new technologies like ADB; DRLs, and sequential turn signals in the highly price-sensitive Indian market. But wait, there's more! **Today our report goes live** on the VISION congress, with lecture summaries, expo booth presentations, and a whole lot of pictures.
We're glad you're here with us!

In Depth Lighting Technology

DVN Interview: Neolite ZKW CEO Rajesh Soni



Rajesh Soni has 25 years' professional experience in vehicle lighting with the Neolite Group. Over the years, he's held positions in business development; sales and marketing; strategic alliances; customer management, and R&D. Presently he's in charge as CEO of the Neolite Group's vehicle lighting business and leads three operational units; one greenfield project, and the R&D centre.

DVN: Hello, Mr. Soni! Will you tell us about your company?

Rajesh Soni: Neolite group is a homegrown vehicle lighting manufacturer serving the automotive industry since 1952. The company is into development and manufacturing of various lighting solutions for leading passenger; commercial, and off-road vehicle manufacturers in India and overseas. Major customers include Honda; Tata Motors; Volvo; Peugeot Citroën, and General Motors. Neolite and ZKW of Austria joined hands in 2007. In this joint venture, ZKW holds 26 per cent equity.

Neolite group also has an independent vertical under the Neokraft brand, headed by a separate management team. Neokraft is one of the largest manufacturers of home lighting solutions in India; their biggest customer is Ikea.

DVN: What can you tell us about the Indian market? How do you expect it will evolve?

RS: The Indian automotive market has evolved over the years from being an adolescent to an adult having matured over a period. The Indian automotive industry in the actual sense started its journey from the entry of Suzuki into India in collaboration with Maruti and as a result over the years we have all global manufacturers such as Hyundai Motors; Renault Nissan, and Honda Cars having their local footprint in India. Cascading effect of the Indian footprint of all global manufacturers was that Indian automakers such as Tata Motors and Mahindra & Mahindra also changed their expectations from suppliers in terms of quality, cost, and delivery. India is now being looked at as a global sourcing base, on account of economical workforce and engineering resources both for automakers and component suppliers. This presents an excellent opportunity for future growth of the Indian automotive industry.

Another factor which could contribute significantly to the automotive growth is the current per capita of cars India being around 62 which is extremely low; in the US this figure is 868. Moreover, as the Indian Government's focus increases on development of infrastructure combined with our economic growth averaging around 6.5 per cent GDP on YOY basis, could be factors which will help us grow in numbers moving ahead.

Finally, India has a very young population of around 371 million. This young population is aspirational in nature and could contribute in the years to come on the growth of the automotive sector.

DVN: How do the links and relationships work with ZKW?

RS: ZKW is a joint-venture partner with Neolite, having 26 per cent of equity. ZKW has been supporting Neolite in our new technology initiatives from time to time and on a project-to-project basis for new business acquisition, too. ZKW has been a non-active partner since 2011 due to focus on China and resource constraints, however the relationship is open to any opportunity coming up for India on case-to-case basis. We worked very closely for the Land Rover platform in India but unfortunately this platform did not materialise as a footprint in India. Our Chief Managing Director and Promoter Mr. Rajesh Jain and I are in close touch with leadership of ZKW to explore new opportunities to work together.

DVN: How will the arrival of EVs and AVs change lighting?

RS: EV growth will result into a complete shift to LED-based technologies in lighting due to less consumption of power and resulting in better single charge mileage. Shift of technology in lighting from conventional bulb to LED based is mandatory requirement to achieve this.

AV is still at an early-infancy stage in India, and it is too early to comment as this is still to evolve. Indian automakers have not announced any plans on this. Though there are some IT companies which are working with some start-ups to work on various associated technologies though anything more than this is difficult to comment on.

DVN: What are your thoughts about vehicle interior lighting?

RS: Interior lighting is assuming significance as automakers work on the strategy to have better æsthetic improvisations over a period. Neolite are ready in terms of R&D capability as we get new RFQs on new models. Like exterior lighting is the signature of the vehicle, the interior lighting is also going to be equally important for the vehicle owners. Our styling team is giving equal importance to interior lighting as this could be the trendsetter in times to come. Neolite are studying seriously and looking at global partners in this area. In fact, we seek help from DVN to scout for potential partners in this area of opportunity!

DVN: Are halogen headlamps still predominant in India? Are there many optional LED offerings? and are there models with LED in entry models?

RS: Based on the large population in India the majority numbers no doubt is in the 2- and 3-wheeler space. However, the growth is not limited to this segment only; the 4-wheeler segment is increasing by the day owing to a variety of factors explained above. Halogen bulbs are being used in the entry level on 2-, 3-, and 4-wheelers. LED usage is now increasing in the higher variant models in 2- and 4-wheelers and in a small way in the commercial vehicle segment. The growth of the EV segment would further increase the usage of LED options even in the entry models.

DVN: We are seeing more full-width front and rear lighting. Are you?

Rajesh Soni: We are working aggressively to build the R&D capability and be future ready. The front end of the vehicle is becoming more aerodynamic with lamps getting narrower vertically. This along with the evolution of electronics has given the styling team to think of complete end to end lighting systems that will create a homogenous lighting system for better visibility, reliability contributing equally to the vehicle styling. Neolite could take ZKW Support on case-to-case basis. Neolite also takes support from M/S Andaltech another European technology supplier in the field of lighting and supports Neolite on simulations and other aspects of high-end technology wherever possible. This approach of Neolite to have a partner other than ZKW purely for high end technologies ensures good cost synergy and helps us to do cherry picking in the field of technology based on our local needs. This approach results in cost effectiveness and solutions in a time bound manner.

DVN: As you know, ADB is the greatest lighting innovation in decades. Is there interest in India?

RS: Adaptive lighting technology is still to evolve in India on mass production models having high volume. Since this is a future technology, we have started preliminary work with one of our customers, Tata Motors, for whom we developed a proto sample using off-the-shelf matrix beam [components] from our partner ZKW. ADB technology will be adopted as mass produced item only when this technology is [affordable]. Currently the major automakers in India are working on [low-cost] models hence adaptive technology is still at evaluation stage.

DVN: What are the challenges before you, and the strengths you face them with?

RS: Our biggest strength is our knowledge of the Indian automotive customers and their needs over a period. Neolite ZKW essentially are a homegrown component supplier and have learnt through various customer interactions from time to time over the past 70 years.

The biggest challenge we see in front of us is the need to develop future technologies at Indian price expectations, and the capital cost is huge to develop some of these new technologies. Volume numbers must be very large on new technologies to make them a sustainable business case which will be one of the main drivers to succeed. Neolite will be using the Indian Government's "Make in India" initiative to develop new technologies by taking help from ZKW and Andaltech at Indian price expectation levels. Another key challenge that I see is the availability of skilled manpower having the lighting domain skill sets needed.

Some of these technologies like light guides, thick-walled optics in DRL and sequential turn for front and rear is already available at Neolite. Neolite is in discussion with both Indian and global automakers to implement these new technologies [affordably].

Lighting News

DVN Interview: BMW's Jörg Kälble

LIGHTING NEWS

J.KÄLBLE RECEIVING THE DVN STUDY FROM W.HUHN

DVN's Wolfgang Huhn and Hector Fratty had the chance to welcome *BMW's* exterior lighting development chief Jörg Kälble for a talk about technologies and new functions. Herewith, his thoughts:

On the future of lasers in vehicle lighting:
Due to its technical advantages—very high light intensity with minimal light exit surface—laser will always have a future in light development, and China is a great lever, where there is a marketing need. We also have to consider the rear light where laser is used like the new BMW M4 developed together with Marelli AL. The top priority is always to achieve added value for the customer.

On ADB and road projections:
ADB has been around for quite some time and will continue to play an important role, even in some lower-volume cars like Mini. MicroLEDs will be used but certainly not be the only technical choice. For the road projection, it is first of all important which representations the [regulations] will legitimise in the future. DMD has clear advantages in terms of resolution compared to the microLED. As a result, it will always remain a serious alternative.

On microoptics:
Depending on the application, microoptics—which present a good look—are an interesting alternative that we look at in development depending on the customer function and use if necessary. Have also in mind that microoptics use high energy consumption.

On illuminated logos:
My personal opinion doesn't matter here. If the [regulations will] allow it and the customer wants it, we will deal with this topic accordingly.

On the trend toward front ends integrating headlamps; illuminated grilleboards; logos, and sensors:
This is one way in which future vehicles may evolve. At the IAA in Munich, BMW showed what this could look like with the BMW Circular concept.

On communication-displays for V2X:
Here it will be interesting to see what framework the [regulators] will give. But I think that it will need some form of communication and that light will also play a role. The subject of animation will gain in importance, driven by the Asian markets.

On the challenges in vehicle lighting in the coming years:
The biggest challenge will be to be sustainable: low energy consumption, use of green electricity and recyclates. In order to achieve a customer-adequate range, all energy consumers are assigned consumption targets. We are also affected by this in the lighting.
In addition, the semiconductor allocation will continue to occupy us.

DVN and GTB Meet with CASIC in Geneva

LIGHTING NEWS

Geoff Draper DVN | **Bart Terburg** GTB Vice-President | **Valter Genone** GTB President | **Davide Puglisi** GTB Secretary General | **Bao Xiang** Vice Representative of CASIC (Geneva) | **Xie Dongming** Deputy Director of CASIC

The China Automobile Standards Internationalisation Centre (CASIC), with headquarters at CATARC in Tianjin, formally opened its Geneva office in June 2022 and Geoff Draper's interview with Xie Dongming, Deputy Director of CASIC, was published in the DVN Newsletter of 02 August.

The mission of CASIC is:

- Promote China's automobile industries and relevant institutes to participate in the standards internationalisation activities in a more sustainable and international way.
- Support and liaise with global intergovernmental and non-governmental organizations (such as the UNECE, ISO, IEC, etc.) based on Geneva.
- Bring together experts to contribute knowledge for standards internationalisation and provide solutions to global challenges.

During the interview, Draper asked Xie Dongming how DVN could cooperate and support CASIC.

In response, Xie Dongming commented that DVN is one of the main pillars, alongside GTB, in the global lighting and light-signalling family. Both organisations are unique in the regulatory world, focussed on automotive lighting

- GTB is already long established in Geneva as a respected NGO and is one of the few NGO's that have special consultative status at UN ECOSOC.

- DVN has a very different role to GTB, with a different membership, and can provide important information to support the objectives of CASIC. In return CASIC can provide a communication platform, as an additional forum for DVN to engage with the lighting community.

To discuss possible future relations with CASIC, representatives of GTB and DVN visited the new Geneva offices of CASIC on 24 October.

The meeting was a free exchange of views and all parties agreed that effective relations can be established to the benefit of the global lighting community. Further meetings will be arranged in the upcoming new year.

VISION Congress: A Grand Conference

LIGHTING NEWS

The 11th biennial VISION Congress was a highly worthy, content-rich event.
We retain 10 trends:

- **Progress on new lighting functions.** Digital projections are an important domain covered by several lectures, including demonstrations that they pose no significant distraction for other road users.
- **Thinner and thinner headlamps.** The trend for slim headlamps is supported by remarkable new modules of down to 5mm high, yet with the performance of much taller traditional systems, and new solutions mixing low beam; turn signal, and DRL from the same thin module.
- **Endless new styling proposals.** Jewel-like solutions are now available in plastic, reducing the cost of these modules targeting luxury design and appearance.
- **Optic modules.** Another direction to boost slim and compact headlamps is based on microoptics becoming now available also for headlighting after their introduction in simpler applications like side projection
- **Software** is more and more the key-enabler for Advanced Lighting Functions. One consequence is that the automaker must take a bigger part of the job and of the responsibility in integration; homologation, and OTA updates of regulated lighting functions.
- **Sensors** are becoming more and more performant in bad weather and functions.
- **ADB technology carries on evolving.** µLED is the general direction with 15,000 to 25,000- µLED arrays in production soon.
- **Headlight ratings** are still a hot topic, with rating systems being developed and adjusted for maximum benefit to all concerned parties from regulators to night-drivers.
- **Sustainability** is increasingly crucial for compatibility with a finite planet and consumer-acceptability. Particularly salient is the need to reduce electric consumption; several lectures looked at the 'cost' of power consumption—each extra watt reducing the range of an EV by 0.1 to 0.2 km, to be compensated by added battery cost of €1 to €2. Obviously, there are hard limits!
- **Cost control.** All this new technology costs money! Nicolas Morel stressed the need for cost decreases, stating that present EV incentives would amount to €50bn in 2035 if maintained at present levels—not possible for European governments, or most others. So, incentives will phase out, obliging car makers to find around €6,000 of cost decrease per car from their suppliers.

Find more information in the **DVN Report on VISION 2022 published today**.

Koito Buy More Cepton Shares

LIGHTING NEWS

Koito's Board of Directors have resolved to buy more shares of Cepton, a company who design; manufacture, and sell lidar for ADAS and autonomous driving.

AD and AV require highly accurate sensors such as lidars; cameras, and millimetre-wave radars to monitor the equipped vehicle's surroundings. Koito respond to this need by developing solutions to support driver and machine visibility with sensor and lighting technologies. As part of their strategy, Koito have invested USD $100m in Cepton, Koito’s co-developer of automotive lidar.

As higher-definition lidars with expanded range is increasingly necessary for technological progress and dissemination of ADAS and AVs, Koito and Cepton also are developing short- and long-range lidar. As well, the two companies will promote co-development to expand future lidar business, such as commercialising headlamps that integrate lighting and sensing technology, while applying the same idea elsewhere in the mobility arena, such as in smart infrastructure.

New Czechia Tech Centre for Lumax-DK Jain Group

LIGHTING NEWS

LUMAX CTO TODD MORGAN PRESENTS INNOVATIONS TO ŠKODA

Lumax Industries has inaugurated a new technology centre in Czechia, through wholly-owned subsidiary Lumax Industries Czechia. The new centre will develop innovative lighting technologies and systems for the Indian market. It is equipped with a state-of-the-art photometry tunnel and goniometer; a fully ESD-protected electronic laboratory, and dedicated spaces for prototyping and benchmarking.

Lumax chair and managing director Deepak Jain says “The key purpose of the Czech Technology Centre will be to develop leading edge automotive lighting technologies and adapt them for the Indian market". And CEO and senior executive director Vineet Sahni added, "In India, European and Indian [automakers] are collaborating with design centres in Europe, so the Lumax Europe technology centre will be such a gateway for them to help in communication and in accelerating the vehicle development process".

In addition to the development of the technologies themselves, the new centre will be involved in enhancing engineering competencies. This includes activities related to engineering development processes; the creation of custom engineering tools and software, and training and skills development. CTO Todd Morgan says the new centre is equipped and configured to facilitate the design of optics; electronic hardware and software for vehicle lighting: "We will be particularly focused on electronics and software development, which are clearly the main building blocks of future technologies", he said.

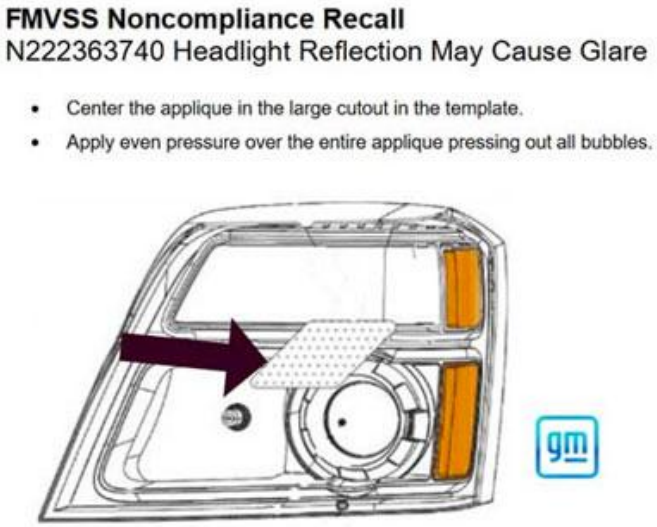
Lumax-DK Jain Group *are a leader in the Indian automotive industry, providing a wide range of automotive components with a sales turnover of USD $730m.*

Lumax Industries *have almost four decades of strong partnership with Stanley, and are one of the major suppliers to automakers including Hero Motocorp; Honda; Mahindra & Mahindra; Maruti Suzuki; MG Motors; Tata Motors, and TVS Motor.*

GM Fix Recalled Headlamps With Clever Sticker

LIGHTING NEWS

This past Spring, we **reported** on NHTSA deciding GM would have to recall about three-quarters of a million GMC Terrain SUVs with headlamps that put a streak of stray light 80° outboard and 45° above horizontal. GM had made a practical case that this stray light's extremely high/outboard angle meant it couldn't realistically intersect another driver's field of view—a position seemingly supported by **online video** of the stray light on the upper side of a truck trailer being overtaken on the right by one of the subject GMCs—but NHTSA rejected that argument and ordered the recall. Now the fix is in, and it's an interesting and unusual one.



Owners will be notified to bring their vehicle to a dealer service department, where a frosted, translucent sticker will be applied to each headlamp lens. A template will be used to position the sticker in the path of the stray light, which the frosted sticker will diffuse so as to bring it below the FMVSS 108 limit of 125 candela from 10 to 90 degrees up. Although this region is commonly treated and tested as though it extends from 45 degrees left to 45 degrees right, the regulation does not specify horizontal boundaries, and NHTSA decided this stray light is consequential to safety and must be corrected.

The frosted sticker—GM call it a *headlamp appliqué*—is generating some eye-rolls online. Owners are saying they'll ignore the recall or peel off the sticker; others are raising the seemingly fair point that the oldest of the recalled vehicles are 13 years old and already have frosted/hazed headlamp lenses, as shown here without (left) and with (right) the appliqué. Nevertheless, a sturdy case can be made that this minor fix is a good match for a minor problem, and surely at a much lower cost than replacing a million and a half headlamps, two on each affected vehicle.

GM's repair time allowance for dealer service technicians to do the job is 12 minutes per vehicle. Transport Canada has not seen fit to order a recall for the same headlamps on the same vehicles sold in that country.

Valeo Show Strong Q3 Sales Growth

LIGHTING NEWS

In the third quarter of 2022, Valeo's sales were up 33 per cent to €5.26bn. The Comfort & Driving Assistance Systems business group outperformed global automotive production by 9 percentage points, thanks to strong momentum in ADAS. To date, Valeo have produced around 13 million front cameras since the business was first created.

The Visibility Systems business group underperformed global automotive production by 8 percentage points, reflecting an unfavourable product mix (lower electronics content) in Europe and China due to the electronic components crunch and an unfavourable customer mix in Japan and China. Nevertheless, the Visibility Systems business group booked the first orders for illuminated grilles with Valeo's LED technology and started production of rear lights equipped with new OLED technology for a premium German automaker.

Driver Assistance News

RoboSense set up its North American headquarters

DRIVER ASSISTANCE NEWS

ROBOSENSE NORTH AMERICA HEADQUARTERS OPENED

On October 21, RoboSense North America headquarters was officially announced in Michigan, USA. For Robosense, the North American headquarters is an important cornerstone for building its North American industrial ecology. According to the plan, Robosense will take the North American headquarters as the center, fully integrate Michigan's industrial advantages in the field of automobile and parts manufacturing, gradually penetrate into the ecological structure of the domestic automobile industry in the United States and focus on building a multi-dimensional and multi-level international market strategy and cooperation ecology for the localized manufacturing and large-scale application of lidar.

In addition, Robosense North America headquarters will form a synergy with its branch in San Jose, California, to continuously consolidate the foundation of cooperation with North American local enterprises around the mass production manufacturing and market application of Robosense lidar intelligent perception solutions and continue to deepen the upstream and downstream cooperation of the industrial chain.

Jidu ROBO-01 Tanyue Limited Edition Released

DRIVER ASSISTANCE NEWS

On October 27, Jidu's new car press conference was held at RoboBase at Jidu's Shanghai headquarters, and the first automotive robot ROBO-01 Tanyue limited edition was officially released,

Jidu Automotive Robot ROBO-01 highly restores the forward-looking design concept of the concept car. The appearance is simple, smooth and full of technology, with powerful AI interaction capabilities, most of the physical controls such as exterior door handles and central control buttons are eliminated, creating a futuristic robot cockpit for users. Excellent aerodynamic design, equipped with active lifting rear wing, which can be automatically controlled according to vehicle speed, the whole vehicle drag coefficient of 0.249.

The robotized front face design integrates interactive AI pixel headlights and high-recognition rate AI voice interaction systems, with a variety of "lighting words" such as outside voice, valet parking status prompt, pedestrian reminder, etc., breaking through the boundary of human-vehicle-environment interaction.

ROBO-01 Tanyue Limited Edition is equipped with advanced high-end intelligent driving hardware package, 31 intelligent driving sensors (2 lidars, 5 millimeter wave radars, 12 ultrasonic radars, 12 high-definition cameras), which can provide 360-degree perception.

General News

Xpeng Motors: The four Dimensions

GENERAL NEWS

The 4th "1024 Xpeng Motors Technology Day" was held on 24th Oct., with the theme of "From Foresight, to More than Encounter", sharing Xpeng's exploration process and mass production promotion plan in the four dimensions of intelligent driving, intelligent interaction, intelligent robots and flying cars.

In terms of intelligent driving, Xpeng Motors not only shared the technical thinking of the industry's first mass-produced urban high-level assisted driving function "City NGP", but also demonstrated its competitive advantages in software architecture, AI and data system based on the new generation of XNGP intelligent driving assistance system, maintaining its continuous leadership in the second half of intelligent driving.

In terms of intelligent interaction, the new generation of voice architecture and self-research of basic voice capabilities have further strengthened the experience of Xpeng voice, and with the powerful function of full-scene voice 2.0, Xpeng has built the industry's first full-time voice interaction system for all vehicles, and through intelligent scene functions, it is possible for users to "customize their own smart cars".

XPENG is a leading Chinese Smart EV company that designs, develops, manufactures, and markets smart EVs that appeal to the large and growing base of technology-savvy middle-class consumers. XPENG develops in-house its full-stack advanced driver-assistance system technology and in-car intelligent operating system.

Europe sales Rise 8% in September

GENERAL NEWS

Europe sales rose 8% at 1.05 million vehicles in September as supply problems eased but economic woes increased. They grew for a second month in September.

Even as deliveries rise, sales remain far below 2019 levels, the year before the pandemic, as automakers continue to battle a range of issues from chip shortages to the energy crisis.

EUROPE'S CAR SALES - SOURCE EUROPEAN AUTOMOBILE MANUFACTURERS ASSOCIATION