Thu, 12 December 2024
Weekly Newsletter

DVN Interior

NEWSLETTER #240

Editorial

How Silent Are EVs Inside, Really?

ROLLS-ROYCE SILENT SHADOW EV (ROLLS-ROYCE IMAGE)

Unlike traditional cars, EVs are very quiet at low speeds—and that can be dangerous; silent cars can sneak up on pedestrians and cyclists. To address this, regulations require EVs to emit artificial sounds at low speeds.

However, sound in EVs is not just about meeting safety regulations, not just to minimize unwanted noise from the road, wind, and mechanical friction, but also about improving the overall driving experience and creating a strong emotional connection with the vehicle for occupants.

Sound design in EVs can create a unique driving atmosphere, and a sense of connection between the driver and the vehicle. It can reinforce brand identity. This week's in-depth piece looks at the technologies creating the new sounds of silence.

The holidays aren't quite here yet, but watch; spring will be here before we know it. Start thinking about our early spring DVN Interior workshop. It's to be in Köln on 8-9 April, with the theme **Progress in Interior UX & Sustainability**. The call for lectures is open now, and expo booths may now be reserved. Visit our website , or email Emilie.

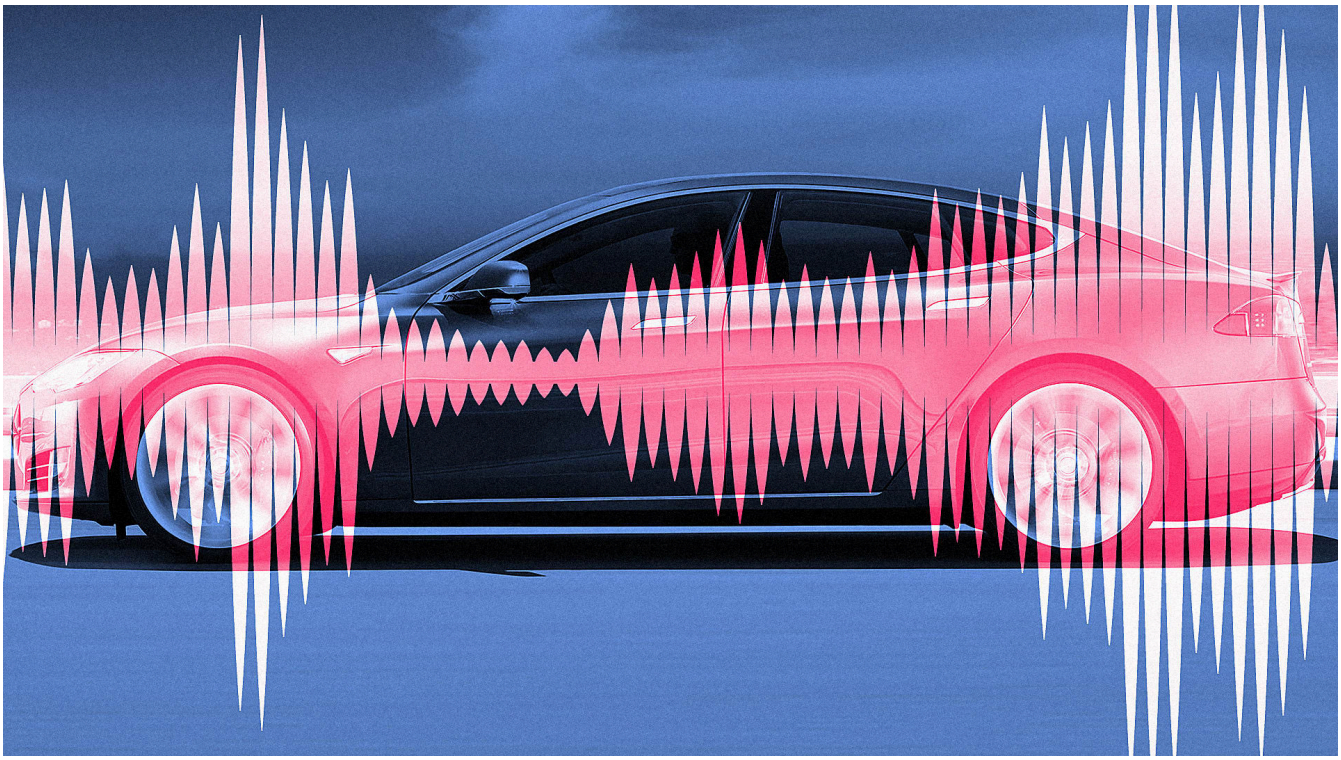
We're looking forward to discussing sound and acoustics at the workshop; it, too, involves challenges in sustainability, carbon footprint, power consumption, and all the others that make the vehicle interior such an interesting world to work in.

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

The Sound of Silence



By Olimpia Migliore, DVN Interior Consultant

Who says electric cars are silent? The issue of noise inside or outside the cabin of an EV seems like a non-problem, as people perceive EVs as extremely silent versus traditional combustion-engine cars. But in reality, it is just a matter of different sound frequencies and types of noise.

For purely electric vehicles, there is no classical engine sound—no mechanical noise, induction noise, exhaust noise, etc. Instead, the electric motors' high-frequency noise, road noise, and wind noise are the main sound in dynamic driving. EVs are also quieter because of other fundamental difference to combustion-engine vehicles. EVs have a simpler drivetrain with fewer moving parts like pistons, valves, and crankshafts that make noises and vibrations. Fewer vibrations mean also less noise transmitted into the cabin. And EVs use regenerative braking, which captures energy as the driver brakes, and converts it into electricity (rather than into heat as in a conventional friction brake). Regenerative braking is much quieter than friction braking, because no brake parts are coming into contact with each other.

Motors make noise, too

Electric cars do make noise while being driven at much lower levels than a gasoline or diesel engine. The absence of a loud combustion engine in EVs shifts the source of their noise output to other components. The electric motor is quiet but emits a distinct hum or whir as it converts electrical energy into motion. The whirring or humming sound can sometimes be barely heard, but due to the high frequency range, it can be annoying for some people. Most other noises, though, are concentrated around 500 to 600 hertz—a frequency range where many EV components resonate, such as gears and motors. Active noise cancellation can't work well at those frequencies, so instead of cancelling that sound, engineers must muffle it, dissipate it, or tune it to be pleasant.

CONTINENTAL IMAGE

Road (tire) and wind (aerodynamic) noise

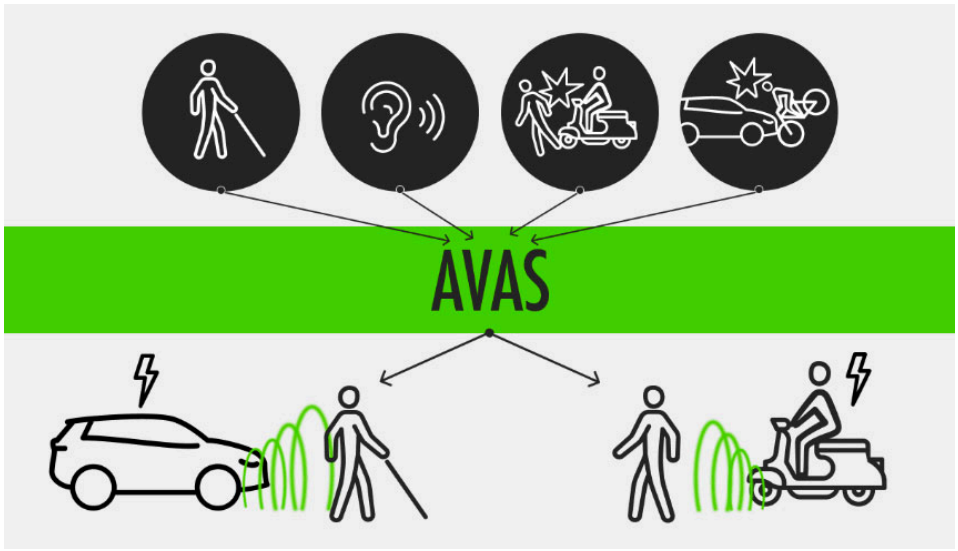
Without a combustion engine masking other noises, the tires' rolling noise ismore readily perceived, especially at higher speeds. EV tires are designed to reduce this noise, but it is lessened, not eliminated.

Aerodynamic turbulence is another contributor to the noise of any car, including an EV. The airflow around the car's body and its protrusions (mirrors…) and undercarriage creates wind noise at higher road speeds. The design of the vehicle is central to its aerodynamic performance (wind resistance), which is closely related to wind noise—less wind resistance means less noise.

The problem with silent cars

EVs are so quiet that even a pedestrian or bicyclist with normal hearing and without headphones or earpods can't hear them approaching—an obvious danger. That's why EVs must be equipped with an AVAS (acoustic vehicle alerting system), essentially an external noisemaker to alert pedestrians and cyclists of the vehicle's presence, in the absence of a combustion car's engine and transmission noise.

In Europe and the rest of the world where UN Regulations on vehicle safety equipment and design are recognized, the AVAS must make a noise when the vehicle is travelling at less than 20 km/h and when reversing. Above 20 km/h, the noise generated by the tires and aerodynamics is considered enough for pedestrians to hear. The artificial sound produced must be easily identifiable as car noise and should increase in pitch and volume as the vehicle gets faster. The system must be automatically activated whenever the vehicle is on, and may not be made defeatable by the driver.



THOR IMAGE

The branding issue

The sound of combustion engine, especially an unusual one, has always been a distinctive character for branding. With electric power taking that away, automakers are busily building new artificial noise profiles for their cars, to avoid losing the ability to advertise brand or model identity acoustically.

The noises made by EVs are not all the same; it varies between manufacturers and models. Some of them are simple continuous tones, while others are more complex sounds that change depending on the vehicle's speed and direction. BMW collaborated with composer Hans Zimmer to create a distinctive sound for their EVs.

Some artificial sounds are annoying or intrusive, so automakers have to work out how to get a balance between safety and public acceptance.

HANS ZIMMER WITH BMW ACOUSTIC AND SOUND ENGINEER ENZO VITALE

Noise annoyance inside the car

When the sound of the engine isn't dominating, you start to hear a lot of little noises coming from the car interior, previously masked by combustion noise. Climate-control fans, cooling systems, BSR (buzz, squeak and rattle) from interior components, especially doors and seats. Tim Bohn, an NVH (noise, vibration, and harshness) engineer at GM, says "the levels from each subsystem have to be lower than we've ever had, especially in EV cooling systems, where we now put much more effort into isolating coolant lines. It's not just about making things quiet, it's also about creating the right kind of quietness. You have to balance wind, road, and powertrain noise. Those are the three fundamental tones the driver hears in the car, and the absence of any one of them is a little disconcerting".

Careful component design that includes optimizing materials and the methods used to fasten them together and mount them is critical to controlling noise, vibration, and harshness.

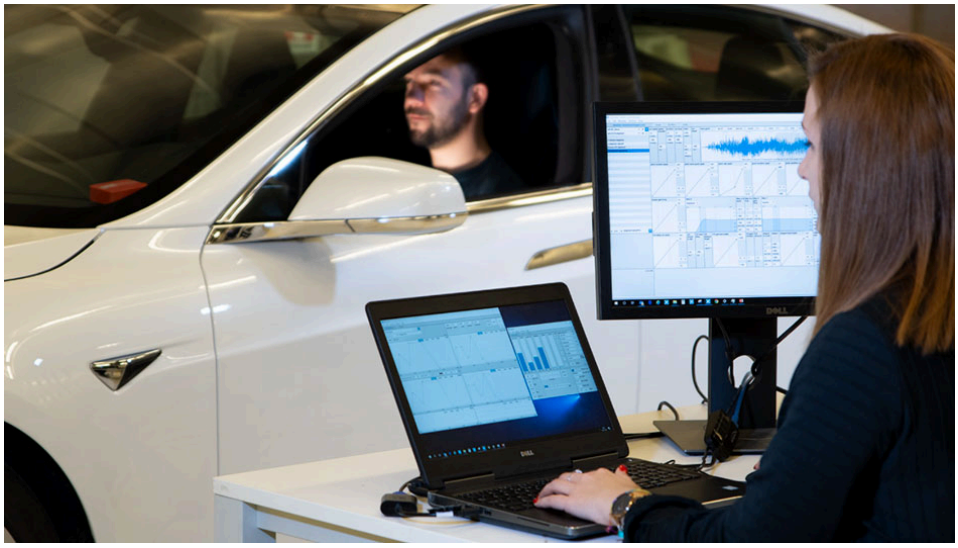
Active sound design

Following the EV market expansion, the world's automakers and suppliers have been investing in active sound design to create EV sounds which meet the safety regulations while also enriching the overall driving experience.

Sound designers recognize their potential in establishing a deeper connection between driver and electric cars, virtually overcoming the issue of the monotonous, annoying electric motor noise, and allowing to create a pleasant environment for a better user experience. ASD also allows to define and reinforce brand identity.

Active sound design technology has several advantages. It helps reduce weight and cost in the car by reducing the need for heavy sound-deadening and damping materials or changing the design of systems or components to reduce noise. Active sound design can be added later in the development cycle, as it is independent from mechanical development. You can change the sound using the software without any physical vehicle changes, allowing the sound engineers to evaluate the car when it is completely developed.

Suppliers are hitting the ground running in this field. Siemens, for example, recently extended their Simcenter software portfolio with active sound design. Siemens' solutions sounds can be order or non-order based. Their system has a direct link to the vehicle dynamics, and it generates sound based on wave tables, frequency modulation, and granular synthesis.



SIEMENS ACTIVE SOUND SOLUTIONS (SIEMENS IMAGE)

Immersive experience

Hyundai says, 'Sound design can be a full sensorial experience. Sound influences functionality, safety, and customer experience. Engine sounds convey power and performance, alerts enhance awareness, and the sound of tyres on the road contributes to an immersive journey'. They introduced their N Active Sound + system in their new Ioniq 5 N.

HYUNDAI'S, N ACTIVE SOUND

The system's functionality provides intuitive auditory feedback directly corresponding to the motor torque output, with eight internal and two external speakers in the Ioniq 5. This setup enables drivers to better gauge the amount of power being harnessed during their driving experience.

N Active Sound + offers three user-selectable sound styles for the car, and integrates the familiar engine and exhaust noises typically associated with gasoline-fuelled cars:

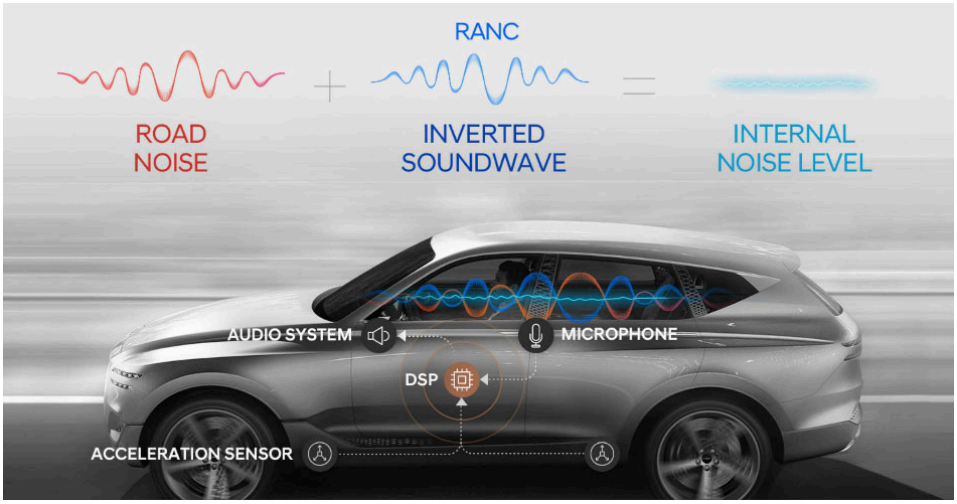
The first sound option, "Ignition", replicates the high-performance N engine sound, belonging to Hyundai's sporty line. Additionally, the function N e-Shift incorporates motor/reducer systems, to mimic the feeling of shifting gears commonly linked with internal combustion engine.

Then there's "Evolution", the second sound, which draws inspiration from the RN22e rolling lab from 2022 and the Hyundai N 2025 Vision Gran Turismo concept car from 2015. It presents a high-performance electric soundscape, emphasized by a lateral sound effect.

The third option is "Supersonic", which delivers a unique sound experience inspired by a jet, incorporating a sonic boom as a distinctive 'fun-to-drive' sound effect during 'gear shifts'.

Additionally, customers can customize sound by activating or deactivating the exterior speaker output and various sound effects. Sound levels are amplified in N Mode, while they are reduced in Eco Mode, offering a dynamic audio experience across different driving modes.

Hyundai is also working on improving the acoustic performance of the car interior with their RANC (Road-noise Active Noise Control)system, to minimize road sound due to the interaction of tire and pavement. Road noise becomes a dominant noise source in the vehicle starting at around 60 - 80 km/h, and it is more noticeable of course in EVs due the near-silent electric motor.



HYUNDAI'S ROAD-NOISE ACTIVE NOISE CONTROL

New partnerships

VI GRADE NVH TECHNOLOGY

NVH simulation system provider VI-grade and sound-design specialists Sound To Sight (STS) have been cooperating recently. STS develops bespoke sound profiles for automakers, delivering immersive soundscapes reflecting brand identity.

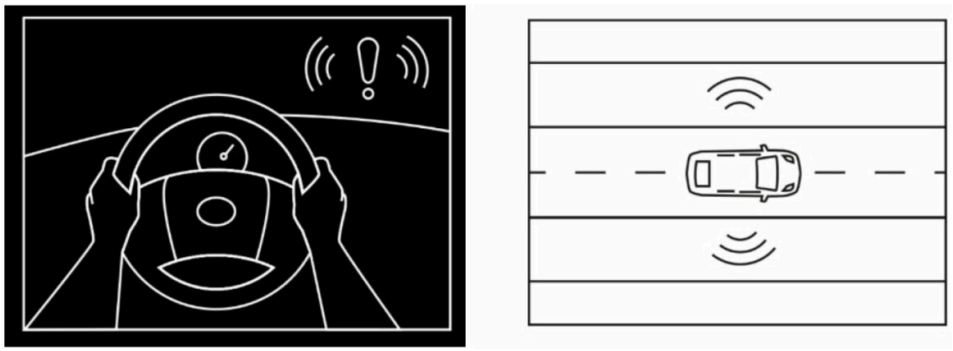
These creations are then integrated into VI-grade's NVH simulator to enable test drivers to experience and evaluate the sounds during simulated driving scenarios.

Guido Bairati, managing director of VI-grade, says "Vehicle design and development teams can decide on the exact right sound of the vehicle, evaluating the holistic vehicle experience of the sound design in context with all other sounds, vibration, motion and other factors in a dynamic, virtual environment much more efficiently, and long before a physical prototype could be made".

Sound Design as communication system

Sound design will become extremely important also in interactions between autonomous vehicles and pedestrians or other road users. Pedestrian warning signals, passenger guidance, vehicle status information, information on road conditions—these are just some examples of how and where sound design can be leveraged to improve traffic safety.

Audity is a company very active in this field, specializing in voice UX design (VUI / VUX) as well as data-sonification and adaptive UI / UX sounds. Experts at Audity stress that sound design used to communicate will have to respect the semantic basics and principlesto understand what sound impressions are accepted by the drivers, and how various auditory signs are interpreted and intuitively understood. Other factors to consider, according to Audity, are crossmodal interactions,to gather what influence perceptual interactions of different sensory impressions have on driver behavior.



SEMANTICS AND INTERACTIONS IN SOUND DESIGN (AUDITY)

Active sound design will surely play a crucial role in the near future, and it will probably also generate a interest in psychoacoustics, a fundamental tool to translate human sound perception in objective data, that can be used in conjunction to sound design in a creative process enhancing user experience beyond our expectations. And hopefully, accelerating the current slow-moving success of electric vehicles.

Interior News

Audiokinetic's Audio System for Changan Nevo E07

INTERIOR NEWS

CHANGAN IMAGE

Audiokinetic has developed a special audio system for the new Changan Nevo E07 EV.

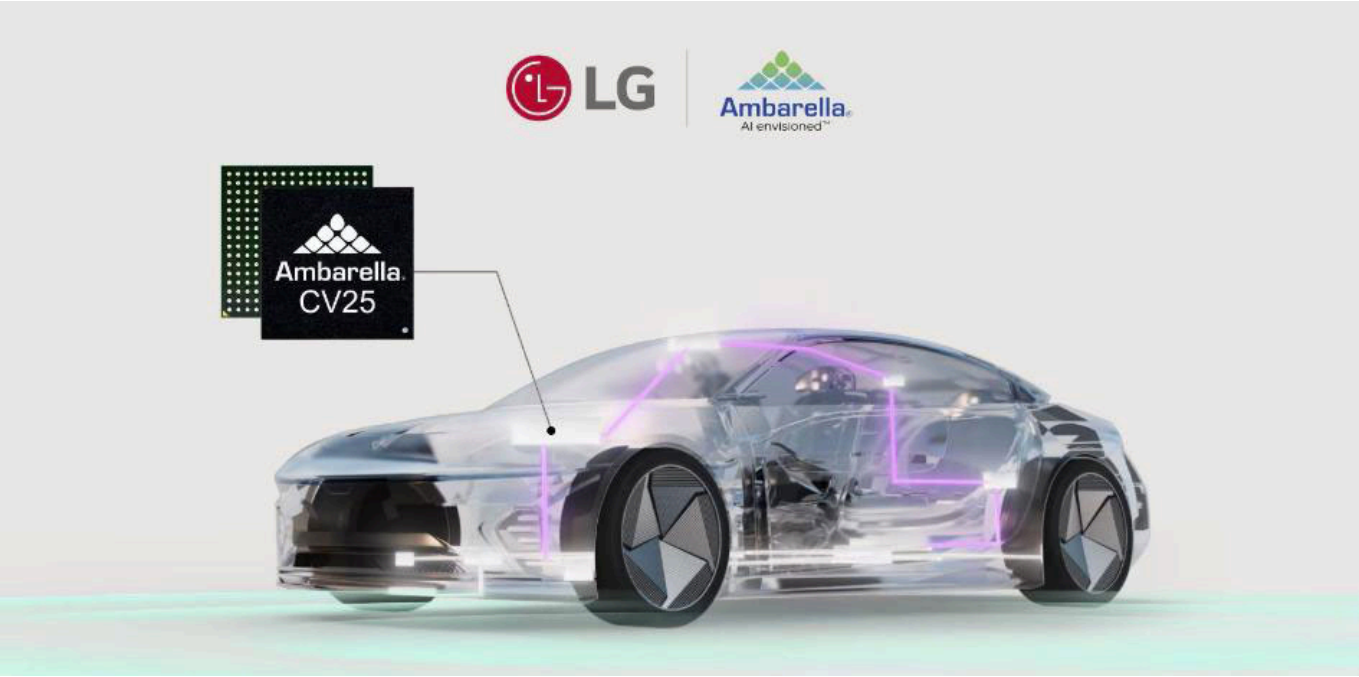
Audiokinetic, based in Montreal, Canada, provides cross platform audio solutions for interactive media and gaming. The audio system they developed for Changan offers features such as spatial warnings using intelligent spatial sound. Drivers receive real-time, directional audio cues to enhance their situational awareness, and thereby safety. Another highlight of the system is ride sonification, which adapts to real-time driving conditions to create a dynamic soundscape, providing an experience adjusting to the environment, speed, driving style, etc. The system also features an engine sound generator with custom engine audio to simulate and pipe a combustion engine sound inside the vehicle with a special sound profile.

François Thibault is senior director of innovation at Audiokinetic. He leads automotive engineering activities at the company, and he says, "Changan used Wwise to effectively unleash the full potential of interactive spatial audio. This provides informative and intuitive user experiences, as well as creative ways to consume innovative entertainment audio content within the vehicle".

The audio is integrated with the digital instrument cluster and the Android in-vehicle infotainment platform.

LG, Ambarella Put 'AI' Sense Tech in DMS

INTERIOR NEWS



LG's latest vehicle in-cabin sensing technologies, developed together with American 'AI' semiconductor design firm Ambarella, will be shown at next month's CES in Las Vegas. Ambarella's CV25 'AI' system-on-chip (SoC) has been integrated into LG's Driver Monitoring System (DMS), already in production at a global vehicle manufacturer. LG says their DMS solution is designed to fit seamlessly into a variety of software and hardware configurations, offering automakers considerable flexibility.

The CV25 is described as offering industry-leading 'AI' performance per watt, enabling LG's DMS to perform real-time analysis of high-resolution video from in-vehicle cameras. In addition to accurate object recognition, the CV25 supports smooth high-definition video processing and achieves high energy efficiency. It is manufactured using 10-nanometer process technology and facilitates high-quality, detailed imaging in low light with wide dynamic range, ensuring stable monitoring regardless of environment, weather or ambient light levels.

LG says they are committed to expanding their partnership with Ambarella. Eun Seokhyun, president of LG Vehicle Solution Company, says, "Our collaboration with Ambarella represents a major step forward in the use of AI-driven technology to advance vehicle safety. By combining LG's in-cabin monitoring expertise with Ambarella's cutting-edge AI chipset, we're setting a new standard for in-cabin solutions and actively enhancing road safety".

And Ambarella's president and CEO, Fermi Wang, says, "Our CV25 SoC combines high performance for processing LG's 'AI' perception stack, along with great efficiency for low power consumption and reduced thermal management, resulting in compact, flexible form factors for vehicle interiors".

Interior of the Future: Igus Second Life Plastic

INTERIOR NEWS

IGUS IMAGE

Many companies are still looking for the right strategy to enter the circular economy. Igus is already further along: recycling and a digital marketplace are firmly established as a business model.

Igus recognized in 2019 that with the right strategy, it is possible to break through the classic linear economy with the end point being landfill: At that time, igus launched their 'Chainge' program. The aim was to give the company's own products a chance beyond the end of their service life.

In October 2022, Igus expanded its offering with the Chainge online platform. Since its launch, the exchange is no longer limited to energy chains. Users can transfer components made from engineering plastics such as PA, POM, and PBT to the circular economy. And the platform approach brings further added value: customers can find a digital marketplace here through which they can buy selected recyclates.

Motion plastics (mostly in interior) are lightweight precision and high-performance plastics. They are also corrosion-resistant and lubrication-free, and their predictable service life makes them reliable components that offer technical advantages and are often more cost-effective than metallic components. From adjustable seats, any interior adjustment (linear, pivoting or rotating), doors, window lifters, switch, up to HUDs, Igus products can help with automotive manufacturing solutions.

In the 4,000-m^2 test laboratory at Igus headquarters in Köln, Germany, the company runs numerous application-specific long-term and endurance tests on their products. Quality inspectors carry out a total of over 15,000 tests every year. The findings are fed into the Igus online service life calculator.

Igus is thus pursuing several approaches for one goal: the combination of durability and a second life for high-quality materials are the key to ecologically and economically sustainable products.

Sonichem: Lignin-Based Interior Materials

INTERIOR NEWS

Lignin has long been known as a possibly sustainable alternative to fossil fuels. It is an abundant material, making up around 15 to 30 per cent of the dry weight of plant cell walls and it's a non-toxic, renewable and biodegradable source of small aromatic compounds. It offers the only potential bio-sourced replacement for the petrochemical phenol, used in resins, coatings, and composites. It could also replace many fossil fuel-derived chemicals in cosmetics, foods, and pharmaceuticals.

The pulp and paper industry generates over 50 million tons of what is termed 'kraft lignin' every year. This stuff takes a difficult process called lignin upgrade to break up the long polymers into lower molecular weight monomers and oligomers. It uses up energy and produces waste, so it's not economical, preventing it being used to produce new materials.

Sonichem has invented a breakthrough process for lignin: a clean ultrasonic technology, which extracts high-purity natural lignin from spruce softwood sawdust generated as a forestry byproduct. The technique breaks the chemical bonds in long lignin polymers to output materials with an exceptionally low molecular weight, enhanced reactivity, solubility in a range of common solvents including ethanol, and sulphur-free. The resulting superior lignin, which is a natural binder acting as a glue between cell walls to provide structural integrity and compression resistance, can then be easier processed into a vast list of materials like resins, coatings and chemical additives, giving them hydrophobic, UV blocking, flame-retardant, and antimicrobial properties. Other materials which can be produced with this process are hemicellulose sugars and microcrystalline cellulose. The latter one has strong binding properties, making it a reliable filler with many technical applications. Hemicellulose sugars can be dehydrated to furfural, a compound adding valuable properties such as corrosion resistance, thermosetting and physical strength to furan resins.

SONICHEM IMAGE

Sonichem, based in the UK, has recently joined the CARMA project **(**Carbon-neutral Agroforestry-derived Resins for autoMotive Applications), in collaboration with a UK funding consortium including the likes of the Centre for Process Innovation, the National Composites Centre,Polestar, and SHD Composites. The consortium has been awarded £600,000 to develop and commercialize bio-based feedstock for the transport industry, establishing a lignin supply chain supporting net-zero vehicle manufacturing and high-performance bio-derived resin formulations for automotive interior plastic applications.

BYD Sealion 7 is Luxo-Performance SUV

INTERIOR NEWS

BYD IMAGES

This BYD interior design is based on a minimalist design with few buttons. BYD largely dispenses with physical buttons and instead relies on touchscreen operation. That's in accord with Chinese consumer preferences.

The cockpit layout offers a 10.25" driver display, a large head-up display, and the rotatable 16.5" infotainment touchscreen, which responds very sensitively and quickly. While the menu structure is sometimes complex, the latest version of the voice control system recognizes who is issuing commands in the vehicle. The spacious cabin in the top-of-the-line Excellence version, lined with quilted leather and with a large panoramic roof, is comfortably and luxuriously equipped and neatly finished; the multiple electrically adjustable seats are comfortable and can be heated and ventilated. Also the rear bench offers heated seats on the outer seats and a 20° adjustable backrest angle. A wheelbase of 2,930mm offers generous legroom in both rows of seats. The trunk capacity is between 520 and 1,789 liters.

The Sealion 7 has front and rear parking sensors, a 360° camera, blind spot detection, driver fatigue management, door opening warning, driver distraction warning, and all the usual ADAS features.

The electronically adjustable steering offers two modes. The suspension with double wishbones at the front and multi-link rear axle offers frequency-sensitive dampers (FSD). The flat battery pack ensures that the rider sits closer to the asphalt, which improves the riding experience (motion sickness…?) and the connection to the road. There is also a tuned chassis with selectable modes for Standard and Sport as well as two-stage recuperation. This combination makes driving fun, both on straight stretches and when cornering.

Audi A6 e-Tron: Progress in Detail, Evolution in Design

INTERIOR NEWS

AUDI IMAGES

The interior of the newest A6 e-Tron is more digital than ever before. Audi has put in a new operating system with ChatGPT integrated, a big HUD, and augmented reality graphics.

The MMI panoramic display, with its curved design and OLED technology, consists of the 11.9" Audi virtual cockpit and the 14.5" MMI touch display and, together with the 10.9" MMI front passenger display, forms a digital stage with visually clear design.

Active privacy mode allows the front seat passenger to enjoy entertainment content while traveling, such as movies or streaming series, without distracting the driver. Depending on the current speed, and seat occupancy, the light is directed (privacy mode on) or diffused (content visible to all).

Sensor fields on the steering wheel and in the doors make operation easier. Essential functions such as mirror adjustment, lighting, and locking systems are integrated compactly into the central control panel in the driver's door. An optional four-zone automatic air conditioning system and the air quality package with aroma fragrance and ionizer complete the ambiance.

An optional innovative panoramic glass roof further enhances the vehicles. In contrast to previous types, the panoramic roof's smart glass minimizes direct sunlight and becomes opaque at the touch of a button. This works with PDLC technology (polymer-dispersed liquid crystal). It can be individually controlled like a "digital curtain", customers can choose from four presets.

The infotainment system uses Android Automotive OS, with OTA updates. Therefore, the latest Audi connect services and the enhanced e-tron route planner, which comes as standard, are always up to date. Apps such as YouTube are available via the Audi Application Store for third-party apps, which are integrated directly into the MMI and does not require a smartphone to use.

The store gives customers access to a wide range of apps. At the car's launch, various applications will be available from categories including music, video, gaming, navigation, parking and charging, productivity, weather, and news services. The store is constantly expanding, and the app portfolio is market specific.

There's a Bang & Olufsen premium sound system; a highly efficient amplifier drives 20 loudspeakers with 830 watts of power. Four of these are integrated into the front seat headrests to provide personal surround sound, personal navigation announcements, and one-on-one phone calls. Additional loudspeakers in the A-pillar and mid-range speakers create a 3D surround sound.

The dynamic interaction light offers a variety of communication functions, supporting the vehicle's interaction with the occupants. It spans the interior and cockpit below the windshield in the shape of a generous arc.

Maxi-Cosi SlideTech

INTERIOR NEWS

MAXI-COSI IMAGE

Many parents with children up to four years old experience physical discomfort—backache and head bumps, for example—when putting their children in and taking them out of their car seats.

Maxi-Cosi, with over 40 years' experience in child car seat innovation, now offers their 360 Pro family, a new range of innovative car seats designed to make parents' lives easier. The new seats feature the company's SlideTech, which allows the seat base to slide out of the car, making it easier to install and remove children without causing discomfort. The FamilyFix 360 Pro base also includes FlexiSpin, a 360° rotative system that enables easy one-handed rotation of the car seat in any reclined position.

All 360 Pro products have been designed to meet the highest i-Size safety standards, including safety features such as an anti-misuse lock to secure rearward-facing travel for up to 15 months, integrated isofix connectors, and visual indicators to confirm proper installation. These safety levels are confirmed by rigorous testing.

These products have also received approval from healthcare professionals and the Aktion Gesunder Rücken (AGR) Seal for back pain protection.

Maxi-Cosi is a brand of Dorel Industries, a global organization with two main business sectors: juvenile products and home products.

The Design Lounge

CDN People Awards Recognize Excellence in Automotive Design

THE DESIGN LOUNGE

DVN IMAGE

COFFEE CORNER
DVN
Interior

Now in its third year, the Car Design News (CDN) People Awards has become a firm fixture of the automotive design calendar. The winners were revealed on stage last week in London, with the selections made by a panel of industry judges across 18 categories. These Awards celebrate excellence in design, shining a light on the creative talent of automotive designers, raising their profile and celebrating their craft.

These awards don't focus on the product only, but Car Design News wanted to celebrate the design teams behind the cars – the people. And not just the design directors, but creative talent at all levels of the design process: from the CMF team to the UX designers and everyone in-between.

Without going through the complete list of distinctions, those corresponding to the scope of DVN Interior are:

Best Interior Design Team: the winner is: Zeekr Europe Mix Interior Design Team; the nominees were: BMW Group Interior Design, Volvo Cars Interior Design, Lucid Motors Interior Design, Rivian Interior Design, and Zeekr. This award was sponsored and presented by Ultrafabrics, company founded in Japan in 1966, specializing in the creation of very high-end PVC-free imitation leather.

This award recognizes a team that delivers design solutions, from form to ergonomics to usability and manufacturing to create class-leading interiors. It goes from ergonomics to manufacturing, with innovative approaches to interior layouts from storage to the integration of technology.

Best CMF Team: the winner is BMW Color and Trim team; the nominees were: Kia Next CMF team, Rivian CMF Team, Lucid CMF Team, Polestar CMF Team, and BMW.

This award recognizes the innovative/sustainable use of materials and color to create a strong, clear and sustainable aesthetic that unifies exterior and interior design and manufacturing and user experience. CMF must demonstrate harmonious exterior and interior color, materials and finishes, clear evidence of consideration to sustainability. This award was sponsored and presented by UE studios, a design and engineering company with studios and prototyping in Germany.

A Special Award, the Peter Horbury Fellowship, also returned in tribute to the great man himself, while a sketch battle supported by Hyundai kicked things off. Peter Horbury Fellowship Award – sponsored by Bridge of Weir, Scottish company that produces high luxury, low carbon leathers for car interiors.

The battle kicked off with ten talented students from design schools including College for Creative Studies, Royal College of Art, University of Staffordshire, University of Wales Trinity Saint David and Coventry University. They are competing to showcase their creativity and skill, all while adhering to the brief set by Hyundai: imagine a Hyundai Ioniq 5, year 2100, How in your view, Ioniq progress, what will future personal mobility look like at the end of the century, and how emotional and functional the passenger experience should be.

And, the winner is Edward Johnson, from the Royal College of Art

A **Lifetime Achievement Award** sponsored by Italdesign went to Shiro Nakamura for his incredible career and contribution to car design. He was the Nissan SVP of Design for decades

Best Lighting Design Team the winner is Zeekr Design Technology & Innovation Team; the nominees were: Zeekr Design Technology & Innovation Team, Verne Design Team, Mercedes-Benz Exterior Detail Design & Light Engineering Teams, Audi Light Design Team, Hyundai Lighting Design Team, and Zeekr. It is sponsored by Swarovski Mobility, leader for the innovative use of crystals for automotive.

The award recognizes a lighting design team that can show how light can convey modes of driving, interior ambience, enhance the UX, brand identity and communicate with the world outside the car. The judging criteria are:

- How well the lighting accounts for safety, communication, and ambience
- How innovative/original technology has been used
- How lighting creates or underlines a readily identifiable brand identity

News Mobility

May Autonomous Shuttle Service at Toyota Plant

NEWS MOBILITY

MAY MOBILITY IMAGE

Autonomous driving technology company May Mobility has launched a corporate autonomous vehicle service that will use the Toyota-made e-Palette vehicle.

The mobility-as-a-service (MaaS) vehicle platform will be operated at Toyota Motor Kyushu (TMK), in Fukuoka, Japan. The service uses a custom version of the e-Palette BEV to provide an efficient and effective transit option for factory employees and guests.

In 2022, May Mobility was provided access to Toyota's next-generation e-Palette platform to install May's technologies into the e-Palette platform, including its autonomous driving kit and MPDM technology.

To prove the technology's capability, May performed robust testing and evaluation in Japan, demonstrating key performance requirements and improved vehicle behavior.

The e-Palette will come pre-configured with leads for third-party autonomous driving kits, including spaces for sensors and computing systems.

Using the data gathered from sensors around the vehicle, May Mobility's patented MPDM technology will enable real-time reinforcement learning, assessing thousands of potential scenarios per second, even when encountering never-before-seen situations, allowing May Mobility's technology in the e-Palette to leverage artificial intelligence to continuously improve its driving capabilities during the course of the TMK deployment.

Edwin Olson, CEO and co-founder of May Mobility, says, "Our longstanding relationship with Toyota is key to driving innovation within the mobility-as-a-service space and I'm excited to expand our autonomous vehicle product offering with the e-Palette's larger, EV form factor".

General News

Proma Takes Over Recaro Germany

GENERAL NEWS

FORD IMAGE

Proma Group, from Italy, has signed an investment agreement with Recaro Automotive in Germany to take over business, and have begun the transition period. This investment will allow operations to continue and relaunch across Europe in January 2025. For instance, Proma will help Ineos Automotive restart production after substituting Recaro for its supply of seats for the Grenadier SUV and Quartermaster pickup.

Proma Group will retain several employees from the original Sales and Technology departments at Recaro Automotive Germany which will be based in the Stuttgart region. This will ensure a more seamless transition of support to meet customer needs. In January, aftermarket seats will be available on the market and OEM production will be transferred to Italy with the first seats entering production.

"Our investment in Recaro Automotive will strengthen our ability to deliver a premium seating product, while embracing the most cutting-edge innovations in the automotive sector", says Proma CEO Luca Pino. "The Recaro name is renowned throughout the world as a benchmark of German industrial technology, and Proma Group, a symbol of Italian manufacturing excellence, is excited about the future and the quality that will be expressed in the automotive market thanks to the union of two first-class companies".

Recaro Automotive’s operations in North America and Japan are continuing to function as usual.

BYD Demands Steep Supplier Price Cut in '25

GENERAL NEWS

BYD SEAL (BYD IMAGE)

China's largest new-energy vehicle (NEV) manufacturer, BYD, is demanding that their suppliers cut prices by 10 per cent in 2025 compared with 2024 prices. This is according to reports in China citing leaked letters sent out in late November by BYD executive vice president He Zhiqi.

While it is common practice within the global automotive industry for automakers to demand efficiency improvements and price cuts from their suppliers, these are normally in the range of 3 to 4 per cent annualy. BYD's much steeper 10-per-cent demand reflects the price war between vehicle manufacturers in China, and it will continue to escalate and spill over into global markets. Many suppliers are expressing deep dissatisfaction with what they see as bullying by BYD.

BYD is the fastest-growing among China’s major automakers, with global sales up 40 per cent to 3,757,300 units in the first eleven months of 2024, including a 74 per cent jump in overseas sales to 360,050 units.

In the leaked letter, which was meant to be confidential, He Zhiqi tells suppliers: "To ensure BYD's competitive edge, we demand the whole supply chain join hands to cut costs continuously. So, we demand that you cut prices by 10%".

Company spokesperson Li Yunfei later pointed out that it is "common practice" to negotiate new prices at the end of the year, and when making large-scale purchases, and claimed that the price cuts are not mandatory, but negotiable.

BYD continues to cut prices of its vehicles, in an effort to overtake Tesla as the world’s largest manufacturer of BEVs, and is aggressively focused on expanding market share globally.