DVN-I
Automotive Interior

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Editorial

The Design Lounge Is Back!

KIA SOUL EV DOOR TRIMS MADE OF SUGARCANE AND WOOD-EXTRACTED BIOPLASTIC. (KIA IMAGE)

This week's In-Depth department presents an update on the numerous natural materials popping up in the automotive design studio, trying to be the new alternative to leather in response to environmental and ethical concerns. Beyond this specific societal issue, it renews the importance of color and materials in automotive design, especially for the interior. So it's a double-feature task: create new materials and surfaces with new textures; finishes, and haptics, while eliminating everything of animal origin.

Our popular Design Lounge department has been on hiatus since last November on account of the death of Nick Xeromeritis, our friend and design expert (see DVN Interior 2 December 2021). Now, the Design Lounge is back with Rob Miller. He joins the team with a backdrop of design, innovation and creativity being embedded in every detail of the car interior, to create unique user interaction and experience. Watch for Rob's insights every other week in your DVN-I Newsletter. Your feedback is welcome, of course, and the upcoming DVN-I Workshop in Köln on 25-26 April is the best place to discuss it all together. Not registered yet? **Get on board!**

We hope to see you all there. In the meantime, we're glad you're here!

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Automotive Veganism is no Fad!

RANGE ROVER VELAR (JLR IMAGE)

DVN Interior wrote three years ago “Vegan Materials Are Next Step in Luxury Interiors”. That’s even more true today, as it goes now beyond luxury segment, wherever leather was present. And vegan sentiment is overlapping or merging with whatever is nature-based, or at least sustainable. So, automotive veganism is more than a fad!

Animal-free products are in a popularity boom. Today vegan leather shoes, boots, handbags, and billfolds are getting eagerly snapped up—and car seats are increasingly in on the action. Tesla recently became the latest luxury automaker to offer vegan leather seating, joining the likes of Audi, BMW, Ferrari, Lexus, and Mercedes.

Let’s review with today’s knowledge what is vegan leather, and what are all the natural alternatives, including mycelium/plant-based leather.

What is Vegan Leather?

The veganism trend is quite popular in western countries and gradually coming to other countries. People don’t turn vegan in a day, but with little bit of willpower and time one can make it. And it's not necessarily an all-or-nothing deal; beyond the hardcore strict vegans is a much wider circle of people seriously and actively interested in reducing animal exploitation and increasing sustainability. There’s no stopping it; the trend is expected to grow in the coming years. Although food is the first thing that comes to mind, veganism also includes accessories, fashion, beauty products, and more. Let’s talk here about the automotive leather industry.

290 million cows are killed per year to provide leather. But in vegan leather processing, no animal is harmed. Instead of animal skin, plastics and natural materials such as cork are used. Vegan leather is a kind of artificial (faux, synthetic) leather. It is usually made of PVC (polyvinyl chloride) or PU (polyurethane), which are polymeric (plastic) materials—this kind of material is sometimes called "pleather"—a portmanteau of *plastic* and *leather.* But plastic isn't the only option; vegan leather can be

made from various greener alternatives like pineapple leaves, mushrooms, cork, apple peels, and other fruit waste.

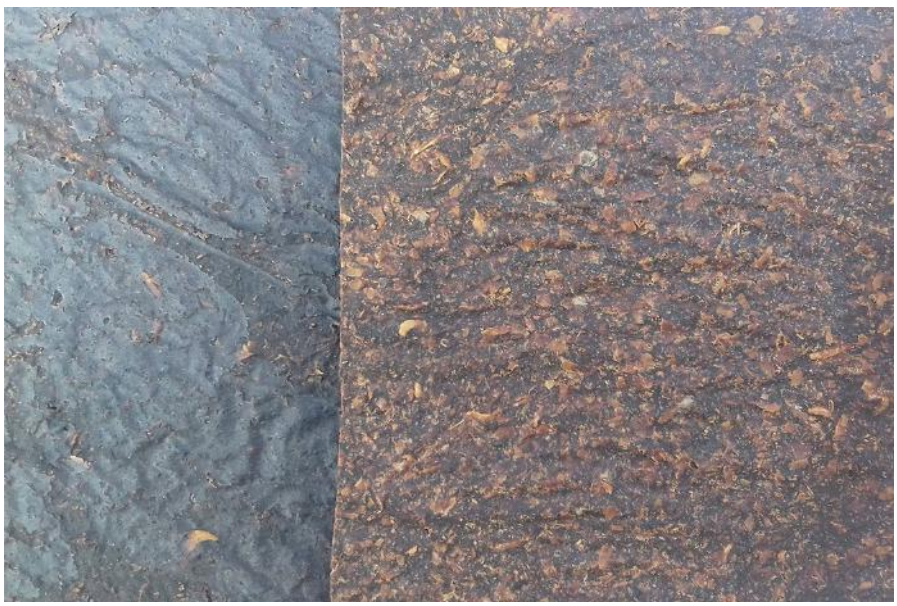
Synthetic leather or Faux leather:

Synthetic leather made of PVC is falling out of favor because it releases doxins, which becomes dangerous in confined spaces and if burnt. The processing of PVC uses plasticizers that are equally harmful in terms of VOC emissions and IAQ.

BTOD IMAGE

Another option is polyurethane, which looks and feels very much like leather. But it also releases toxins and is made of oil-based polymers—that is, from fossil fuels. A good quality vegan leather is mostly similar to real leather. Vegan leather is synthetic so it doesn't form a patina like real leather, and is less breathable—the pores printed on pleather, for example, are artificial. But even if it is petrol-based, it benefits the environment in numerous ways. It is thinner and more lightweight than real leather, which makes it a good choice for the fashion industry. And Cow leather has been determined to be the most damaging of all the fibers in terms of global warming, chemical pollution, and water consumption and pollution.

Plant-based leather or Vegetal leather



APPLE LEATHER (HEDDLES IMAGE)

Apple leather is made from apple residue (the fruit, not the tech devices from the company in Cupertino!). Copenhagen-based company The Apple Girl was first to turn apples into leather. They

treated pulp from the apple residue, rolled it into strips, and heated it. Further processing yielded a flexible, durable, fully biodegradable material.

And a Philadelphia-based company, Veggani, also works with apple residue which is dried, powdered and mixed with polyurethane before being processed into faux leather.

PINEAPPLE FIBERS (PIÑATEX IMAGE)

Pineapple leather is made from waste parts of the plant, mainly from leaf fiber. It does requira a coating of PU during processing. Piñatex, to call out a brand name, is a non-biodegradable leather alternative made from cellulose fibers extracted from pineapple leaves, PLA (polylactic acid), and petroleum-based resin. Piñatex was developed by Dr Carmen Hijosa and first presented at the PhD graduate exhibition at the Royal College of Art, London. Piñatex is manufactured and distributed by Hijosa's company, Ananas Anam. She started working on this in the 1990s in the Philippines. Dr Hijosa noticed that the plant was creating a lot of waste, which was burned (causing air pollution) or piled up to rot naturally.

PIÑATEX TRIMMED PROTOTYPE SEAT (PIÑATEX IMAGE)

The Piñatex process starts with stripping down pineapple leaves, known as decortication. Then the fibers are converted into leather. Moreover, the biomass that is created as a byproduct can be used for fertilization.

Cork leather is made from the bark of cork oak trees. Extractors chip the bark of the oak tree and form cork sheets, which are dried, then boiled to break down their structure so it becomes more shapeable. They're then re-dried; shaved into thin sheets, and laminated to fabric using sealants and other techniques. For durable fabric protection, a spray is applied. Cork leather is elastic and lightweight. It is also hypoallergenic, antifungal and waterproof. No toxic chemicals are used in the processing of cork leather. It lasts for about 20 years and to an extent is fire and flame resistant.

Wine leather, also known as grape leather, is made from the waste collected during wine production. Vegea, an Italian tech startup, has been processing the core and shell of grapes. To make it soft and supple they add various chemicals and compounds. According to Vegea,10 liters of wine produces 2.5 kg of waste, which then produces 1 m^2 of wine leather. So, 2.5 billion m^2 of wine leather can be produced each year.

Other natural vegan leathers:

• Paper leather is also known as washable leather. It is delicate but strong.

• Waxed cotton is just what it sounds like cotton impregnated with paraffin wax. It looks just like leather and it has made a reappearance in vegan fashion lately.

• Mirum is made from 100 per cent natural products such as waste coconut or vegetable oils, combined with waste cork and hemp as well as plastic binders.

• Malai is an India-based startup using leftover coconut water to create vegan leather. This not only puts the waste material to good use, but also creates a durable material that lasts longer. This is completely biodegradable.

• SCOBY (Symbiotic Culture Of Bacteria and Yeast) is a mushy blob of bacteria; when dried it turns into leather like material.

• Recycled rubber, coming from car tires and suchlike, can be processed into leatherlike materials.

• Ligneah is a new material which can be transformed into vegan leather: woods are subjected to micro lasers incisions to create a flexible design and then paired with cotton.

• Mushroom leather, also known as MuSkin, is made from fungal roots (mycelium). it is one of the most durable vegan leathers.

MUSHROOM LEATHER (HEDDLES IMAGE)

Researchers have found a way to feed and grow the mycelial cells into what is possibly the most durable vegan leather on the market. Mushroom leather is made by compressing mycelium's natural layers of foam into a mat. But it does not offer the performance and strength of animal or synthetic leathers. Instead, the Fine Mycelium process directs and engineer's mycelium cells as they grow to create proprietary cellular structures that are densely entwined and inherently strong, comparable to the tight, triple helix of collagen that gives animal leather its strength and durability.

MYCOWORKS

MycoWorks is a biotechnology company founded by artists with the mission to create a platform for the highest quality materials using Fine Mycelium. Their two California plants produced Reishi™ sheets are then finished by tannery partners in Europe, who use chrome-free techniques to bring the signature hand feel of Fine Mycelium™ to beautiful fruition.

NATURAL FIBER WELDING

In 2008, with funding from the U.S. Department of Defense, Dr. Luke Haverhals made the fundamental discovery that would later catalyze the founding of NFW (Natural Fiber Welding). At the heart of this discovery is the ability to manipulate natural fiber structures at near atomic precision. Today NFW has nearly 120 employees.

Regenerative agriculture can produce differentiated raw materials for ~7.5 billion people while sequestering legacy carbon. Their patented ClaruS technology platform uses ionic liquids to swell, mobilize, and then reconstruct cellulosic bonds at the molecular level (e.g., different methods of "welding" fibers). It is a breakthrough textile platform technology, to create the new shape of cotton and natural fibers.

PORSCHE IMAGE

Within Startup Autobahn, Europe's largest open innovation platform, NFW and Indian automotive supplier Motherson presented a pilot project in 2020 together with Porsche: a trim for a Taycan door — with a vegan leather substitut

Plastic-free, all-natural Mirum® was recently featured in an automotive interior prototype by the Hyundai Motor Group. Hyundai's 2021 Open Innovation Lounge event in Korea showcased new technologies from 12 promising startups from around the world, including NFW.

Modern Meadow

Modern Meadow began with an R&D initiative to develop a sustainable alternative to leather. This led to their breakthrough discovery of proteins as functional ingredients with the ability to impact a range of products across multiple industries. Their expertise spans the design and engineering of proteins, their production via fermentation, protein characterization, and the use of proteins to create structure and advanced functionality in materials.

In 2017, they launched a prototype materials brand, ZOA. Experiments and exploration within ZOA led to the creation of Bio-Alloy™ and its application in a wide range of high-performing, low-waste bio-fabricated materials, a miscible blend of plant-based protein and bio-based polymer.

Conclusion

The list is endless—it's growing every day—but much research and work remains to make vegan leather more durable, sustainable, automotive compliant, cost feasible, and to develop a real value chain. Trials and testing are going and soon we will be able to see better vegan leather options in the market. Not all of them will meet stringent requirements of the automotive sector, but many surely will, and eventually traditional leather will be a thing of the past.

Interior News

Nio's Panoramic Digital Cockpit With AR, VR

INTERIOR NEWS

NIO ET5 (NIO IMAGE)

During the annual Nio Day event at the end of last year in Suzhou, China, Nio unveiled their new mid-sized sedan, the ET5.

On Nio Day 2020 (actually held in January 2021) the company launched their top-of-the-line sedan, the ET7, as the first of three EVs to debut on their Nio Technology Platform 2.0 in 2022.

Nio says the ET5 was designed with autonomous driving in mind, starting with its silhouette based on the ET7 while integrating autonomous driving sensors into its body lines.

The ET5 will come with Nio Autonomous Driving (NAD); Nio Aquila Super Sensing, and NIO Adam Super Computing—all to allow the car to gradually achieve safe autonomous driving in scenarios such as highways, urban areas, parking, and battery swaps. Nio stated its autonomous features will roll out gradually as they're validated, and can be added as an C¥680 (~$107) monthly subscription.

The interior of the ET5 will come with PanoCinema, a panoramic digital cockpit featuring AR and VR technology; Nio partnered with an AR device company called Nreal to jointly develop lightweight (76g), model-specific AR glasses, and did likewise with the VR glasses by partnering with Nolo. The VR glasses, with ultra-thin pancake lenses, can provide binocular 4K display effect, projecting a 201” screen at six meters for drivers. It also has an all-new 256-color curtain of ambient lighting and a Dolby Atmos 7.1.4 surround sound system.

The ET5's cabin uses Clean+ sustainable fabric to form a relaxing, cocooning ambiance and enhance the acoustic performance. The instrument panel hides invisible HVAC outlets, and looks neat and delicate. Ingress and egress are facilitated by soft-close doors with frameless windows and flush door handles, and a UWB digital key.

Cipia ADriver Sense Awarded in China Programs

INTERIOR NEWS

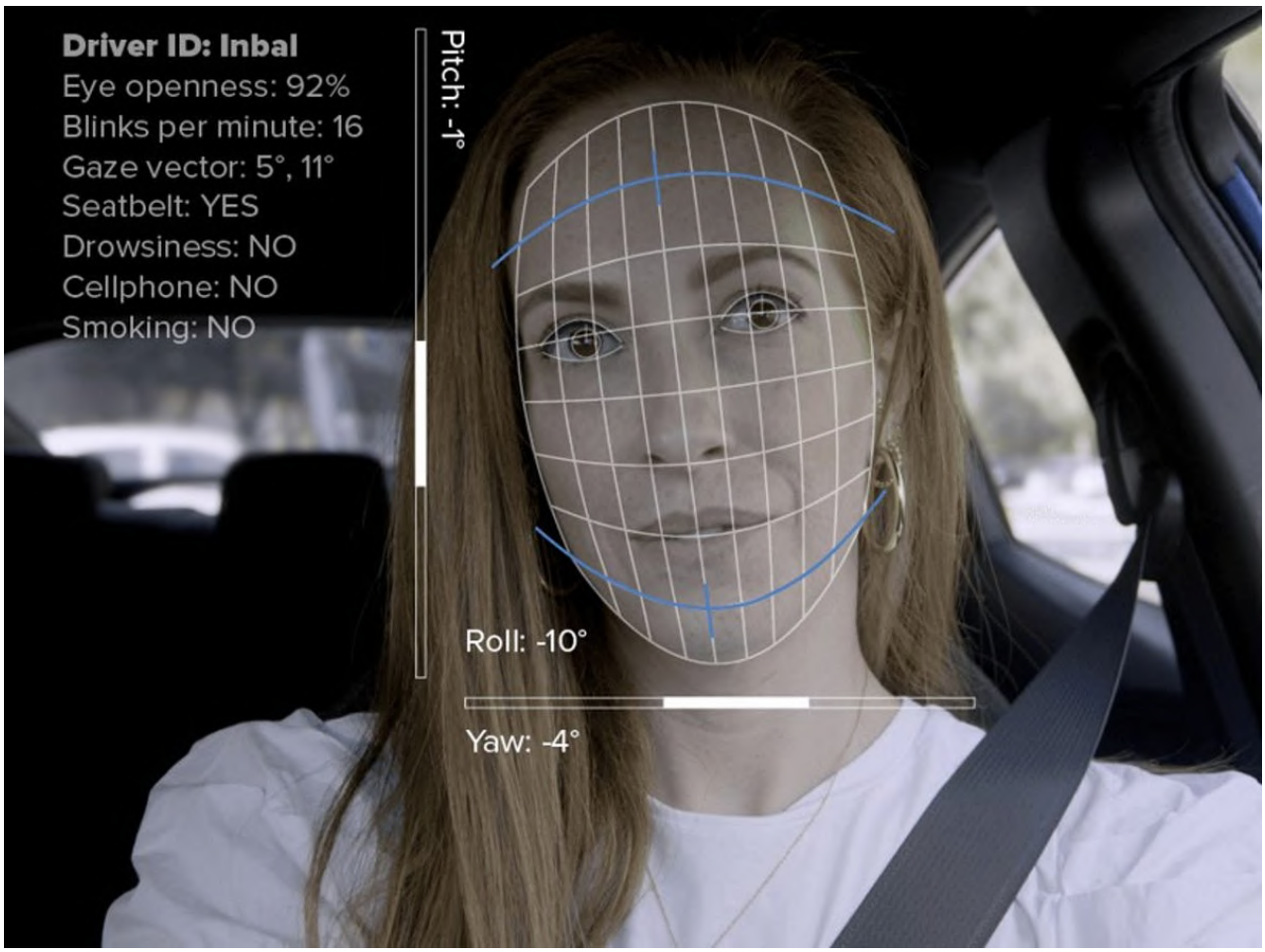


IMAGE: CIPIA

NHTSA has found some 80 per cent of crashes are caused by distracted driving in the 3 seconds before the collision. Further research from AAA shows 21 per cent of fatal collisions are caused by fatigue. Tel Aviv-based Cipia's new DMS, Driver Sense is positioned as a countermeasure; it can tell if a driver is drowsy or distracted.

Cipia announced recently that the company was awarded two new models with a leading Chinese automaker. As part of the collaboration, Cipia's leading Driver Sense Driver Monitoring Solution (DMS) will be integrated in the new models, with an IR sensor placed above the steering column, running on Nvidia Drive® Orin™ System on Chip (SoC) with production of the equipped models expected to begin later this year.

Cibie CEO David Tolub "With these new models, we continue to grow our strong presence in the Chinese automotive market; repeat customers are always a testament to the quality of the product provided".

The latest models increase the total number of design wins for Cipia to 23 vehicle models on 7 different platforms across five car manufacturers. Cipia's customers include an electric car manufacturer in the US, SAIC Motors, an American car brand in China, and two additional leading car manufacturers in China.

The computer vision and artificial intelligence technology that underlies Cipia's Driver Sense system analyzes infrared images to assess driver behavior. The DMS tracks facial features and identifies visual cues from the driver such as eyelid openness, pupil dilation, gaze vector and more, to detect signs of fatigue or distraction behind the wheel. When detected, the Driver Sense system will alert the driver to re-engage their attention and prevent dangerous accidents.

Opel Astra's Expansive Digital Display

INTERIOR NEWS

The newly-revealed Opel Astra Sports Tourer's cockpit features a pair of 10" displays integrated together, also incorporating the driver's air outlet, to create a single display panel.

Opel design VP Mark Adams says "The fully glazed cockpit surface characterizes what I call 'glass to edge', where the glass extends to the edges of the Pure Panel. This creates an exceptionally modern and progressive cockpit look". Thanks to a shutterlike layer that prevents upward reflections in the windshield, the design dispenses with a hood over the displays and the touchscreens found in most other vehicles.

Opel says their designers and engineers have taken great care to ensure that the driver receives all the necessary information and useful operating options but is not burdened with superfluous data or functions. With the physical controls reduced to the minimum in the form of a few important keys, the panel is claimed to achieve that elusive balance between digitalization and intuitive operation.

Thanks to the use of Qualcomm's Snapdragon Cockpit Platform, the digital cockpit should be able to deliver intuitive AI experiences, supporting driver and passenger personalization, in-car virtual assistance, natural voice control, language understanding and adaptive human-machine interfaces.

VW ID. Buzz: Flexible Interior For Eight

INTERIOR NEWS

VW IMAGE

On 9 March, the fully electric VW Bus-again will be launched simultaneously as the ID.Buzz five-seater and ID.Buzz Cargo van. Since the entire drive technology disappears into the floor of the ID.Buzz, there is enough room for eight passengers, and between 660 and 4600 liters of luggage compartment volume. There is even another 200-liter storage compartment hidden up the front.

VW IMAGE

Not likely to be part of the production model is the autonomous driving concept of the study, which is presented in the interior as follows: When the "Pilot Mode" of the VW ID. Buzz comes into play, the steering wheel retracts. The driver can then turn 180 degrees on the seat and devote himself to the backseat passengers. The cockpit in the concept study has no buttons at all. The only displays are on the head-up display, which is enriched with augmented reality, and on a tablet that can be moved around freely in the car and even taken outside after the journey.

With the latest ID. Software VW will also offer the "Plug & Charge" function in the future. In this case, the ID. Buzz authenticates itself via the charging plug at the fast charging points (DC/DC) of many providers and exchanges all the necessary data with the charging point. And there will be another new feature: bidirectional charging. It will be possible to store surplus energy from the house's own photovoltaic system in the ID. Buzz during the day and feed it back into the house in the evening to be self-sufficient even without sunshine.

In general, the same applies to the ID. Buzz as it does for all models in the ID. family: software updates can be downloaded over-the-air. This includes updates to the infotainment system as well as updates in the area of charging or driver assistance.

Toyota bZ4X Interior is Smart, Roomy

INTERIOR NEWS

TOYOTA IMAGE

The Toyota bZ4X has been designed to enhance the driving experience for all passengers. This includes a roomy interior with plenty of space to allow all passengers to unfold freely thanks to generous legroom. Toyota offers a 7” digital display directly in the driver's field of vision and a 12-inch touchscreen infotainment system with an advanced voice control and seamless smartphone integration. With the MyT app on your smartphone, you can check the battery level, plan charging processes, call up travel data or control the car remotely and, for example, regulate the interior temperature.

TOYOTA IMAGE

For a seamless driving experience, the Toyota bZ4X offers single-pedal drive with enhanced brake energy regeneration, which allows to accelerate and decelerate using only the accelerator pedal. The standard heat pump provides energy-efficient heating of the interior, which has a positive effect on range. The Toyota bZ4X also offers a comprehensive safety system called Toyota T-mate. This includes a new pre-collision system including emergency stop assist.

A solar panel on the roof of the bZ4X can harness the sun's energy to charge the batteries, providing a range of up to 1,800 additional kilometers per year. All functions are easy to use and always remain up-to-date thanks to over-the-air update technology.

(the steering yoke was covered in DVN Interior on 11 November 2021)

Rob Miller Arrives On DVN-Interior Editorial Team

THE DESIGN LOUNGE

Greetings Driving Vision News Interior readers! My name is Robert Miller, and I'm excited to have been asked to contribute to this interior newsletter. I reside in Michigan. Over the last twenty-eight years, I have mastered the art of understanding light and how to control it. In addition, I have a creative eye for lighting design and engineering those designs. I am recognized globally for unique and innovative automotive lighting designs using LED technology and advanced materials.

I am also an accomplished award-winning National Geographic book author and professional photographer/photojournalist.

My design lighting experience is vast. It started years ago with my own successful consulting company BrightLights Technologies doing advanced concept cars using LEDs for interior and exteriors. That quickly took off into a global effort, and it seems at that time, every car company wanted to understand and use LED lighting for their interiors and exterior of show cars. So as a result, I've helped and designed many interior lighting concepts and, along the way, combined new materials and ideas to help push lighting as a mainstay. Then, in 2002, I sold my company name and some specific LED technology developed for aquariums. After that, I formed Concepts Design Lighting and continued my global lighting efforts, 100 per cent focused on automotive.

I have assisted in the advanced design of countless concept cars, interiors, and headlamps. I have consulted directly for many global companies like 3M Automotive, assisting them with progressive lighting design efforts. In addition, over the last five years, I have led the advanced design and innovation efforts at Pacific Insight and Myotek Holdings. Together, we pushed the boundaries of Innovation with light. In January 2022, I have returned to full-time consulting and writing for Driving Vision News.

I am eager to share my experience and knowledge. In addition, I hope to uncover new design trends, materials, and technology as it applies to interiors. As we all know, lighting is expanding, and its uses are not just ambient lighting anymore. We are combining it with touch, sensors, safety to provide feedback and awareness in the future. Also, integrating LEDs directly into materials such as Polycarbonate, glass, and other materials will undoubtedly change how we will use light in our vehicles over the following years.

Throughout this year's newsletters, I will write and openly discuss innovation and why it is essential for growth and change. But I'm going to try to keep it concise and straightforward. We're not inventing Innovation to impress the customer; we're doing it to solve a need for that customer and the consumer.

Innovation is like breathing—you need to do it constantly. And my last thought about this subject is. Innovation is not born of the dream. Innovation is born by the journey or need.

Another area I will highlight is the creativity expressed by individual companies and their concepts and offerings. For example, I always ask new designers, one of the questions is, "What makes automotive interiors outstanding?" Generally, I receive many different and unique answers. But honestly, it boils down to six main components. They are:

• How to express light with interior illumination

• How Darkness will play a role in the design with light

• Composition-creature features, perceived quality, color & materials, seats, and durability of the interior

• Technology-the use of sensors, occupant interaction & feedback

• Experience-has the brand identity been successful? Has it set emotional hooks in the consumer? What makes them different? Is the interior comfortable and progressive with design?

• Creativity! How far will the interior design push new boundaries and carve out new ground for the consumer?

(IMAGE: HYUNDAI FUEL CELL CONCEPT)

I'm hoping to highlight what creativity is related to automotive interiors. For me, creativity requires you to think, act and implement differently. In addition, you must be willing to take the risk to create new designs. At no other time in automotive history has there been more Innovation and creativity with interiors. The user experience, interaction, feeling of comfort even combining user-selected interior smells with lighting will continue to grow and play a significant role in today's car designs. A trip to a high-end retail store can confirm this. They control their interior space by adding specific tuned smells to get customers comfortable and wanting to buy more. Apple Stores have a unique, "high tech" clean smell that fosters their environment, and that has worked for me and been my downfall of buying too much.

I'm looking forward to sharing my thoughts and uncovering some of the unique ideas and progressive designs with DVN readers over the following weeks. Please always feel free to drop me a line or comment at: robert.h.miller@me.com. Enjoy your day and keep safe during these challenging times!

News Mobility

Mercedes-Benz, Nvidia in ADAS Business Pact

NEWS MOBILITY

MERCEDES BENZ IMAGE

Mercedes-Benz will offer software packages for automated driving functions together with Nvidia from 2024. As the "Handelsblatt" reported on February 17, Nvidia's business model is to create revenue streams both through the sale of hardware and through revenue sharing on software updates. In the latter case, the semiconductor and software developer could receive more than 40 per cent. If Mercedes charges several thousand Euros per vehicle for its "Drive-Pilot", it could quickly add up to billions if activation rates by customers are high.

Mercedes Benz is not the only car manufacturer to receive chips from Nvidia: Volvo is said to have already received the new Orin chips two years earlier. Audi and Jaguar Land Rover also cooperate with Nvidia. Like Tesla, Mercedes lacks the necessary knowledge to design its own chips. In addition, the Orin chips from Nvidia have a high computing power: they manage 254 tera operations per second (TOPS). The next generation (Atlan) is even supposed to reach a value of more than 1,000 tera operations. For comparison: Tesla's HW3 system currently manages 144 TOPS.

All Mercedes model series are to be equipped with Nvidia technology in the future. Especially for highly automated and fully automated driving functions, Mercedes needs the developer's help. The memory space in the vehicles has to be adapted so that software updates over the air are possible even years after the initial purchase.

General News

Motherson, Valeo Partner for Interior of the Future

GENERAL NEWS

SMR IMAGE

SMRP (Samvardhana Motherson Automotive Systems Group), a Motherson company, and Valeo have signed a MOU which aims to create the automotive vehicle interior of the future through the integration of lighting systems with advanced surface finishes.

Valeo's innovative lighting systems will be integrated with Motherson's new cabin interior modules and surfaces. Instrument panels, door panels, center consoles and other interior trims will be completely redesigned using these new technologies. The parties are joining forces to meet the future needs and demands of automakers who seek to deliver an enhanced illuminated and immersive user interior experience.

SMRP is present in all major global automotive production hubs, with 72 manufacturing facilities spread across 25 countries. SMR is one of the largest manufacturers of rearview mirrors for passenger vehicles in the world. Furthermore, the company is a pioneer in developing intelligent camera technologies for automotive applications, like Driver Monitoring Systems.

Motherson is one of the world's largest manufacturers of interior and exterior automotive components worldwide. The company, through its operating subsidiaries, specializes in the development and manufacture of visibility systems and highly integrated modules such as cockpits, door panels, and front and rear bumper modules.

Motherson and Valeo have an existing joint venture in India (Valeo Motherson Thermal Commercial Vehicles India Ltd) for manufacturing HVAC solutions and roof hatches for buses in India and

undertaking sales and service of Valeo products in the region.

This MOU sets the framework for this collaborative effort between Motherson and Valeo to create new solutions for interior lighting. By combining advanced interior surfaces and lighting solutions, the partnership will create new functionalities and give the materials new properties.

Harman Acquires Apostera for AR

GENERAL NEWS

HARMAN IMAGE

Samsung Electronics subsidiary Harman has acquired Apostera, a German automotive technology company. Harman said Apostera's augmented reality (AR) and mixed reality (MR) software products would expand its automotive product offerings and "position the company at the forefront of automotive AR/MR experience design".

Apostera's mixed reality product combines augmented reality, machine learning, computer vision and sensor fusion in a hardware-agnostic software platform. Apostera already has a HUD product in production with Audi's Q4 e-tron, which is reactive enough to accurately stick to a driver's real environment. The AR windshield on the Audis displays important information like the driving speed, traffic signs, the status of the driver assist system and navigation symbols as static displays. Drivers will also be able to perceive floating symbols to be about 30 feet away, and those will alert drivers to things like lane departure warnings or highlight an active car driving in front when in adaptive cruise control mode.

"Combined with Harman's digital cockpit product portfolio, these new software products will bridge the gap between the physical and digital worlds," the supplier said in a statement.

Harman's software offering, with Apostera's IP integrated, will compute this information and visualize it for the driver and passenger so they know why the car might suddenly change lanes or try to avoid an obstacle. This helps to increase the trust, and therefore the usage of the already available ADAS systems in vehicles, says Golubinskiy, former CEO of Apostera and now senior director of Harman's ADAS strategic business unit.

"For example, you might drive through the Alps and see some beautiful churches or lakes, and you can engage with a touchscreen on the windows and get a different level of interaction," said Golubinskiy. "The information is actually projected, and with a touchscreen you can touch, for example, the mountain and get information about the height or other information."

While Harman says its AR platform is already in the market with some customers, it's able to continuously onboard new features with over-the-air updates. The company says its product is hardware, operating system and sensor-agnostic, so it's designed to reuse data that's coming in from any vehicle network.