DVN-I
Automotive Interior

Thu, 1 July 2021 Weekly Newsletter NEWSLETTER #67

Editorial

OLED Technology For Enlightened Interiors

IMAGE: OSRAM

Ambient lighting began as a decorative element. Now it performs functions and, as a human-centered light, also influences occupant perception and wellbeing in the car. OLEDs are surface lights with high output and amazing homogeneity—perfectly suited for a variety of curved and irregular shapes for ambient and functional lighting for safety. This week's in-depth gives you a thorough overlook on OLED lighting technology.

And in the Design Lounge this week, we've got another chapter of the 'family truckster' story. The market began to move away from station wagons in the 1980s as the minivan's star rose, followed by that of the SUVs and crossovers such as the VW Atlas, Hyundai Palisade, and Kia Telluride we've examined and compared. This week we look at the Jeep Grand Wagoner and Acura MDX. All these vehicles are going progressively upmarket, mostly through interiors with quality materials, bigger displays and HUDs, driver monitoring, premium connectivity and audio, and other suchlike. These various premium upgrades act like magnets, pulling the others along with them.

We're ever so glad you're part of the DVN Interior community, and we eagerly welcome your feedback and suggestions. Not a member yet? **Join in**!

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

OLED Lighting Technology

OLED stands for Organic Light Emitting Diode. It's nothing to do with the likes of organic fruits and vegetables; in this case "organic" means the basic building blocks of the technology are carbon-based. OLED light technology is mainly used in displays and for general lighting in automotive applications, wherein it is favored for its homogeneous light emission and ultra-thin, lightweight form factor, among other things.

IMAGES: OLEDWORKS

OLEDs have thin carbon-based layers sandwiched between two electrodes. When direct current is applied, holes and electrons are injected into the organic layers from the anode and cathode (respectively), forming an excited state on the organic molecules. When the excited state relaxes, electroluminescence occurs and light is emitted.

The color or wavelength of the emitted light is determined by the structure of the organic molecule that forms the excited state. A variety of emission colors are available; the OLED materials emit all wavelengths directly and do not require phosphor conversion to achieve the desired spectrum. If white light is desired, the mixture of organics is carefully selected to shape the resulting spectrum of emitted white light.

An OLED panel starts with a transparent substrate with suitable mechanical/structural and optical properties. The substrate contains a patterned transparent conductive layer, usually indium tin oxide (ITO), which serves as the bottom electrode or anode. Very thin layers of organic materials are deposited on the anode surface, followed by a metallic cathode or second electrode. The entire OLED stack is thinner than a human hair, and each layer can contain several organic materials.

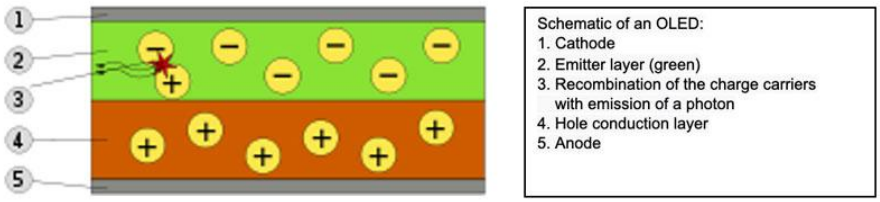


IMAGE: WIKIPEDIA

Unlike inorganic LEDs, the organic materials are disordered and do not need to form single crystals or be deposited on expensive crystalline substrates for efficient emission. Therefore, the emission area with OLED lighting can cover most of the substrate and provides a broad, homogeneous, low-glare light source with no hot spots, ideal for large-area lighting. The wide, flat emission of OLED lighting also offers the ability to selectively target specific areas of the panel with high contrast when the electrodes are patterned, providing an additional layer of communication through movement, customization, and branding with light.

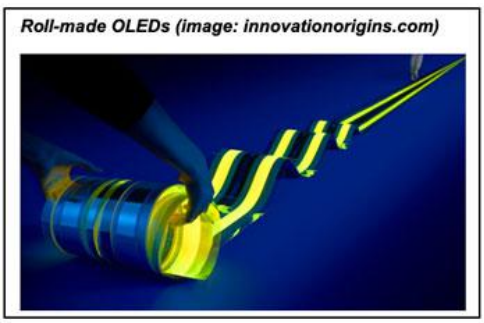
Advantages:

Design:

- Surface light, homogeneous
- Ultra-thin (<1mm)
- Defined segmentation
- Adaptable/Flexible
- High contrast ratio
- Glare-free for indoor use
- Mirror-look-when-unlit
- Trademarks in light

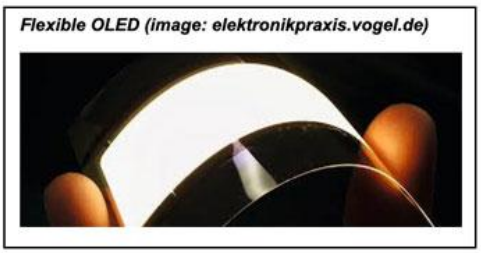
Safety:

- Segmentation for communication
- V2x communication
- Signage, lettering
- Glare-free, flicker-free
- No harmful UV or blue light
- ECE/SAE compliant colors available
- High temperature resistance



Environment and Energy:

- Energy-efficient homogeneity
- Light weight
- Slim packaging
- Recyclable
- Sustainable materials
- Reduced system power level
- Long life
- High efficacy in red, amber, white



Drawbacks and challenges:

The service life of OLEDs is temperature-dependent. A well-cooled OLED of any color with a low initial luminosity has a longer life than an OLED that is operated at maximum luminosity from the start without cooling. This is due to diffusion processes in the OLED that occur more quickly at higher temperatures.

Another disadvantage of OLEDs is the relatively low luminous efficacy, compared to LEDs—commercial OLEDs give 40 to 60 lm/W, and peak values in selected laboratory samples achieve values just above 100 lm/W, about half what's presently attainable with LEDs.

OLEDs also react badly to certain extrinsic substances. Water is one of them, and it is omnipresent by dint of humidity. Oxygen can also destroy the organic material. It is therefore important to hermetically encapsulate the display and protect it from external influences.

That's a real challenge given the temperature range and durability required for automotive service, and rigid encapsulation impairs OLED flexibility. The highly reactive injection layer of calcium and barium is especially endangered by corrosion due to oxygen exposure. Typical signs of failure are dark spots: circular, growing non-luminous areas. The cause is often particle contamination during vapor deposition of the metal layers. The microscopic edges of the multilayer structure are also infiltrated by corrosion, which leads to a decrease in the effective luminous pixel area in screen applications.

OLED vs LED:

LEDs are tiny, highly concentrated light sources well suited for producing intense beams of light for headlamps, signal lights, interior task and reading lamps, and other high-intensity, focused lighting applications. To make LEDs useful for automotive interior ambient lighting or other low-intensity applications, their light must be diffused, scattered and homogenized, which reduces the energy efficiency of the light ultimately delivered and increases packaging space and solution cost.

In contrast, OLED light panels are inherently homogeneous and glare-free, so the energy efficiency of OLED light panels matches the light efficiency delivered. This effect is so significant that in some applications, the OLED lighting solution is both more homogeneous and more energy efficient than the LED lighting solution.

Lighting vs display:

For illumination, the naturally diffuse light beam positions OLED luminaires as a glare-free full-color experience. For display, the direct color output enables a high color gamut including true black.

As a functional light source, OLEDs work well as a uniform, large area, high brightness, white spectrum light engine. The service life of the lighting usually exceeds 10 years in interior applications. Displays, by comparison, typically have a fraction of the brightness and operate as individually addressed red, green, blue (RGB) pixels that have a shorter life. Displays transmit images, videos and messages, usually at very high image data rates exceeding 120 Hz.

OLED display versus illumination:

	Passive matrix display	Active matrix display	OLED illumination
Applications	Secondary display/MP3	Mobile phone display/TV	Any illumination
Substrate	Glass/ITO pixelated	LTPSilicon TFT	Glass/ITO large area
Emission	R,G,B saturated	R,G,B saturated	All, especially white
Brightness (cd/m 2)	400	400	till 8,500
Pixel size	~0.005cm x 0.01cm	~0.005cm x 0.01cm	>12cm x 12cm
Error tolerance	Up to 2 pixels	Up to 2 pixels	0
Value enabler	OLED/driver IC	TFT backplane	OLED
Market development	Decreasing	Strong growth	Development
Problem areas	Limited size	TFT yield/stability	Cost in market

TABLE: OLEDWORKS

OLED luminaires are optimized for illumination, unlike OLED displays, so OLED luminaires are much brighter than OLED displays (8,000 nits for OLED luminaires compared to less than 1,000 nits for OLED displays). OLED luminaires also have a much longer lifetime than OLED displays. OLED lighting drops to 70 per cent of initial brightness at over 100,000 hours of continuous use compared to OLED displays, which drop much lower to 50 per cent over the same period.

Image: Wikipedia

KIT.edu

The OLED display's high frame rate capability makes it ideal for displaying images, videos and messages via phone screens and televisions.

Health and wellbeing:

Exposure to high-intensity blue wavelengths is associated with macular degeneration and circadian rhythm disturbances. OLEDs are inherently safe in this regard because they deliver all wavelengths of light, including blue light. OLEDs deliver the needed light levels at an intensity far below the risk of damage. This is validated by the IEC standard for the physiological risk of blue and infrared light; OLEDs are considered to pose no risk to skin or eyes, and are considered free of all photobiological risks.

Wide-spectrum OLED light provides a full color palette while eliminating the negative characteristics of most artificial lighting solutions such as UV, glare, shadow, and flicker. OLEDs' combination of brightness and inimitable softness enhances the environment and provides daylike light, even if you sit indoors all day.

Sustainability:

Almost 20 per cent of the world's electricity is used for lighting. Energy for lighting accounts for six percent of global greenhouse gases. That is about 1.9 billion tons of CO_2, or about 70 per cent of the emissions of all passenger cars worldwide (source: United Nations Environment Program). By using energy-saving lighting such as OLED lighting, these values can be significantly reduced. Tests have shown that OLED lighting is on the way to becoming about as efficient as LEDs already are. In addition, the manufacturing process of this light source is very efficient.

OLED luminaires are surface light sources that eliminate the need for a diffuser screen that diffuses the light. This has a major advantage, because with conventional light sources up to 70 per cent of the light output is lost through the system. With OLED lighting technology, the efficiency of the light source is equal to the system efficiency. Additionally, OLED lighting is almost 100 per cent glass, that can be easily recycled at the end of its life.

Interior News

Sneak Preview: Lincoln's New EV Platform Interior

INTERIOR NEWS

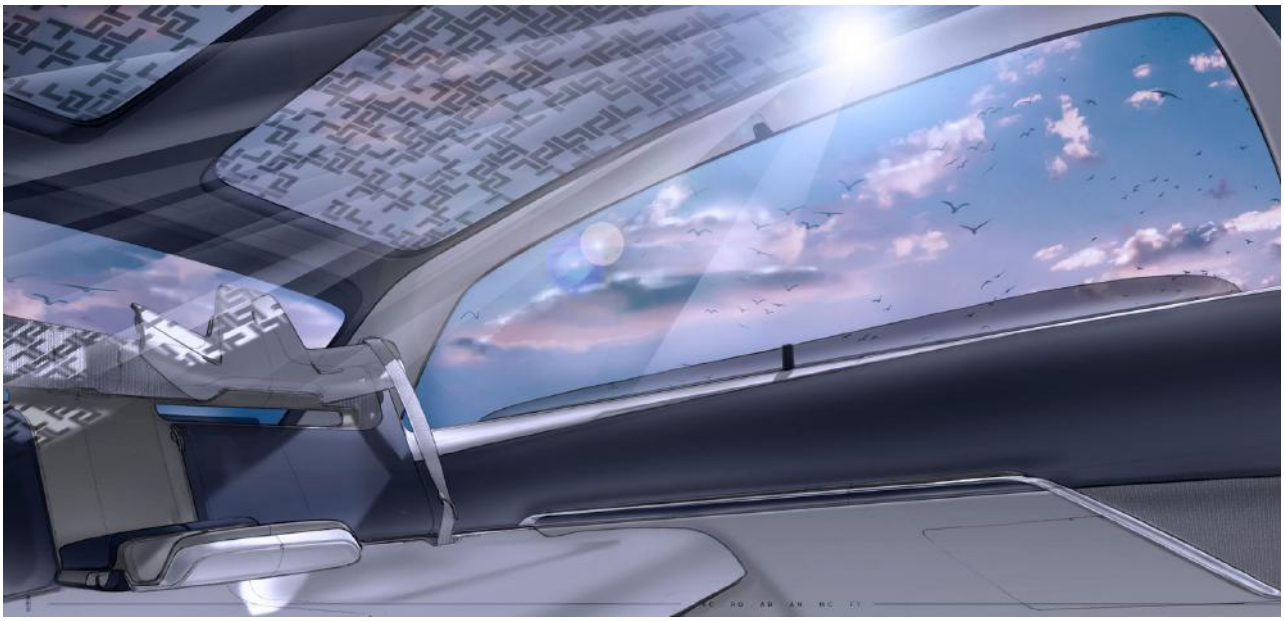
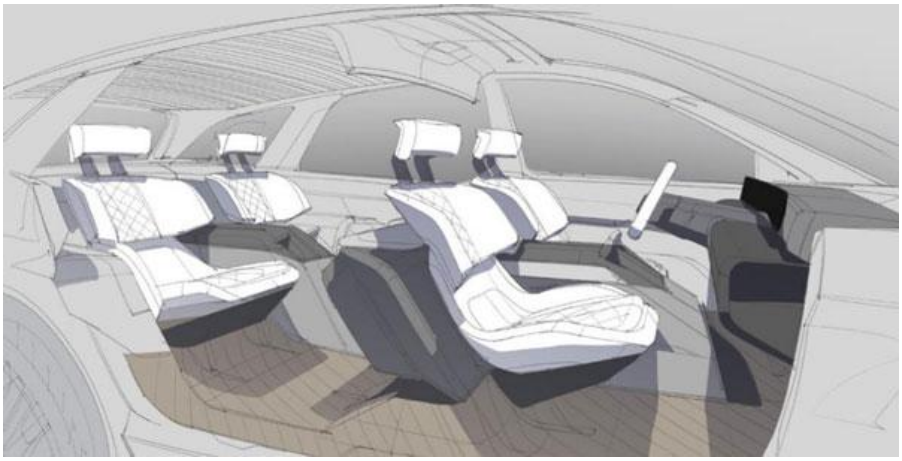


IMAGE: LINCOLN

As the Lincoln brand approaches its 100th anniversary next year, they've revealed first details of their new all-electric vehicle platform and its "Quiet Flight" design, which Lincoln says will deliver a more spacious interior than current models, with improved occupant comfort. The design sketches show a large, expansive panoramic roof enhancing natural light within the cabin, an interior with minimalistic panels, and a great deal of hidden storage.

It also features a pillar-to-pillar display that will serve up Lincoln's new "Constellation" design, which includes exclusive themes showcasing the night sky. Then there's the Lincoln Intelligence System, a cloud-based platform for integrating electrical, power distribution, and computing systems in connected vehicles to enable a software-first approach to update performance without changing hardware. New features and capability updates for SYNC 4-enabled vehicles will be rolled out through the Lincoln Enhance platform via OTA software updates.

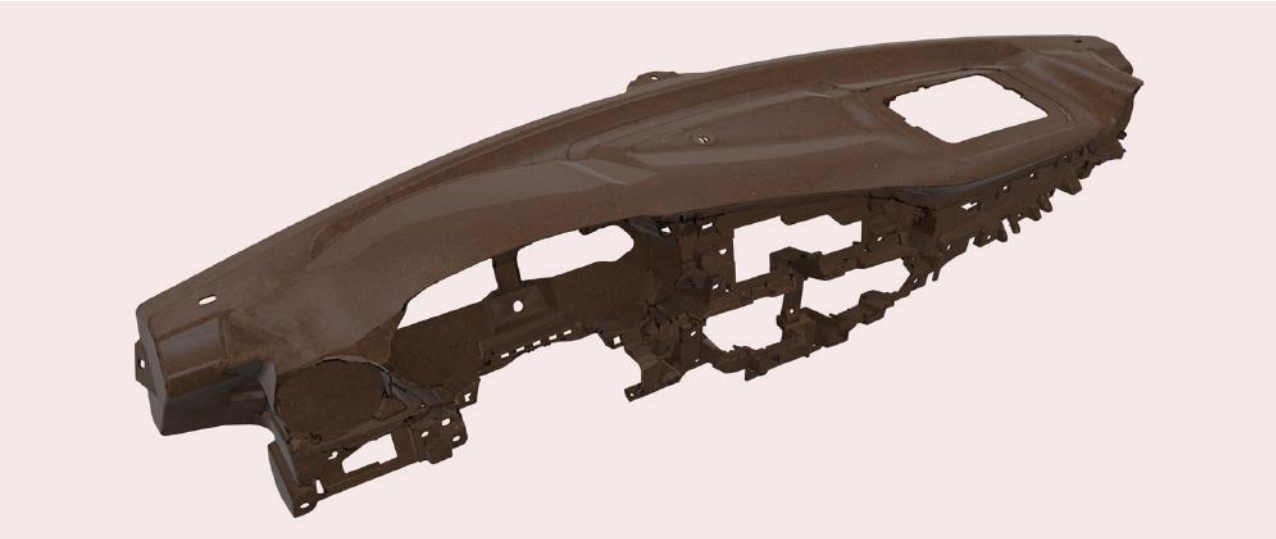
Lincoln says they are also exploring more ways for customers to enjoy the car's interior, allowing them to use it as a space for personal relaxation through more connected features. A proposed 'Rejuvenation' mode creates customized sensory environment through various display, lighting, climate, seat, massage, scent, and audio settings. Lincoln's designers and engineers are experimenting with digital scenting techniques, exploring how warm, pleasant scents positively affect the mood and overall wellbeing of passengers.



"The space that surrounds you has an immense effect on your overall mood," says Lincoln Design Director Kemal Curic. "Crafting a space that goes beyond the traditional—a serene sanctuary that elevates the senses and affects a client's mood every single day—reveals that as designers, we contribute so much more to the overall experience than just creating vehicles that look good".

Faurecia NafiLean®: Hemp Fibers For Sustainable Interiors

INTERIOR NEWS



NAFILEAN INSTRUMENT PANEL (IMAGE: FAURECIA)

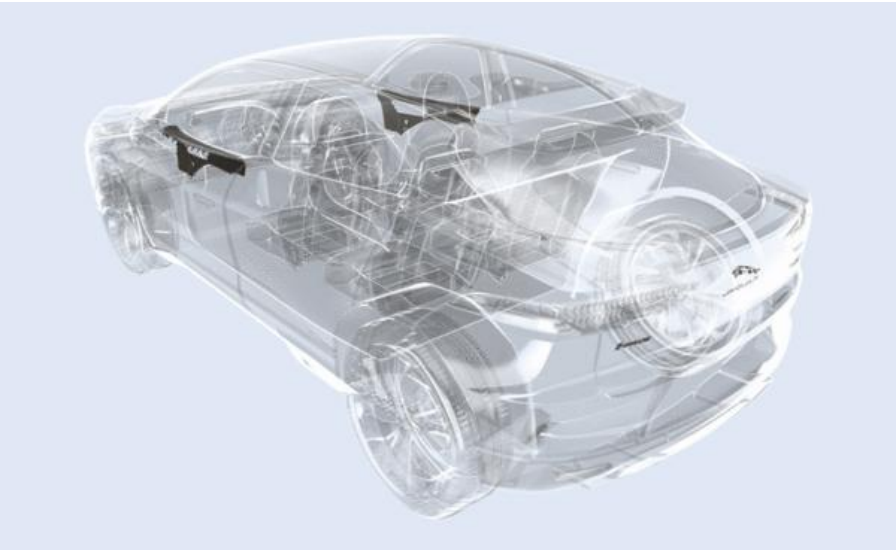
Innovation for sustainable materials is taking place at Faurecia, inscribed in their "Interior for the Planet" initiative, developed based on 3 pillars: use less, incorporate recyclable and recycled materials, and create alternatives to petroleum-based solutions, with no impact on cost. Their target is to reduce their CO_2 footprint of materials by 87 per cent by 2030.

Faurecia started with NafiLean, developed in 2008, and is building on this to develop other interiors products that have lower CO_2 emissions. It's a composite material, a blend of natural hemp fibers and polypropylene resin through injection molding. Their sustainable seat was presented in DVN Interior on February 25, 2021.

Here's an extract of Laurence Dufrancatel's interview published on Faurecia's website. She is Innovation Materials Manager and Sustainable and Smart Product Line core team member, based in Méru, France.

"*[The] target from the beginning was to reduce dependance to petrol-based materials, while lowering* CO_2 emissions. Hemp was selected as a biofiber, as it met OEMs' performance and safety requirements. APM was created, a JV between Interval—an agricultural cooperative in the Bourgogne-Franche-Comté region in eastern France—and Faurecia to facilitate the sourcing and processing of natural fibers.

"[The] NafiLean range has grown to several products, with NafiLean Stiff (–52 per cent CO_2 emissions) and NafiLite (microcell structure, with –29 per cent weight and –43 per cent in CO_2), by lowering CO_2 emissions, reducing weight, or opening possibilities for more uses. New gen[eration] NafiLean-R uses a 100% recycled plastic matrix, and saves 108 per cent (it's a CO_2-negative product)".



NFPP PRODUCT APPLICATIONS (IMAGE: FAURECIA)

Today, 17 vehicles are using it, including the Renault Clio, the Alfa Romeo Giulia, the Peugeot 508, and the Land Rover Velar.

In parallel, Faurecia is developing NFPP (natural-fiber polypropylene) for compression technology. A variety of natural fibers can be used, such as flax and kenaf. It offers up to 50 per cent weight reduction; with up to 45 per cent bio-based content, it can halve the CO_2 emissions. A new generation with 50 per cent recycled content is in development; applications could include visible parts.

Lexus Interface, New Toyota Group Multimedia System

INTERIOR NEWS

Lexus updates their NX small luxury SUV with a completely redone multimedia system called Lexus Interface, including a modern touchscreen with multiple personalization and connectivity options.

Lexus Interface was developed by Toyota Motor North America's Connected Technologies group, established in 2018, after "listening to customers' requests and anticipating their future desires," the company says in a statement. The Group aims to unify customer experience, in-vehicle technology, value chain, and connected revenue process—functions previously scattered across the organization.

That means over-the-air updates, a native cloud-based navigation system for real-time traffic information, user profiles that can move from vehicle to vehicle, and a voice interface, among other new features presented on the optional 14" touchscreen. Mapping doesn't require a constant connection, as Lexus Interface has an offline mode that will download maps and services in advance if you are about to drive into a place without cell service. All screens feature optically bonded, glare-reducing technology for a customer experience claimed to approach smartphone-like capability. The HMI has benefitted from improvements in the graphical and voice interfaces.

Lexus chose a simple design, enabling voice controls as much as possible—including the ability to open windows and sunroof by voice, or turn on the heated, vented seats—through a new conversational virtual digital assistant. The guiding logic: whatever can be accomplished by voice must be done by voice, and other tasks shouldn't take more than a couple clicks of a button, with no deep searching into submenus.

The virtual assistant features dual microphones, enhanced noise cancellation, speaker location and seat detection capabilities, giving front-seat occupants expanded and interactive functionality to access navigation, media, and phone and select vehicle settings. It is based on a combined in-house Toyota Connected engineered machine learning with a cloud-based platform featuring up-to-date content.

The NX uses Predictive Efficient Drive (PED). When used with the navigation system, PED can maximize energy recuperation from the regenerative brakes because it's paying attention to where you drive. It can also learn from your drives, then anticipate regenerative braking levels when appropriate.

Valeo's Anti-COVID Technology for Shuttles

INTERIOR NEWS

Valeo is equipping 250 commuter shuttles for employees with in-house technology which eliminates bacteria and viruses. The system will ensure more than 25,000 Valeo employees across 12 countries can commute to and from work in healthy and safe conditions.

Valeo says their UV air purifier is the world's most powerful air sterilization system for bus and coach cabins, eliminating more than 95 per cent of viruses, including the one that causes Covid-19—and that this has been scientifically proven by Frankfurt University Hospital and the German Institute for Laser Technologies in Medicine and Metrology at the University of Ulm.

Irradiation with UV-C light (254 nm) is a proven method of disinfection by the inactivation of microorganisms and various viruses, including the one currently of most concern, SARS-CoV-2. With adequate exposure time and intensity, the DNA of the virus is cracked and destroyed, so that it can no longer reproduce itself. This ultraviolet ray technology works as both a bactericide and a germicide, killing microbes, viruses, and pathogens. Valeo's technology can be built into new vehicles, or retrofitted to existing ones.

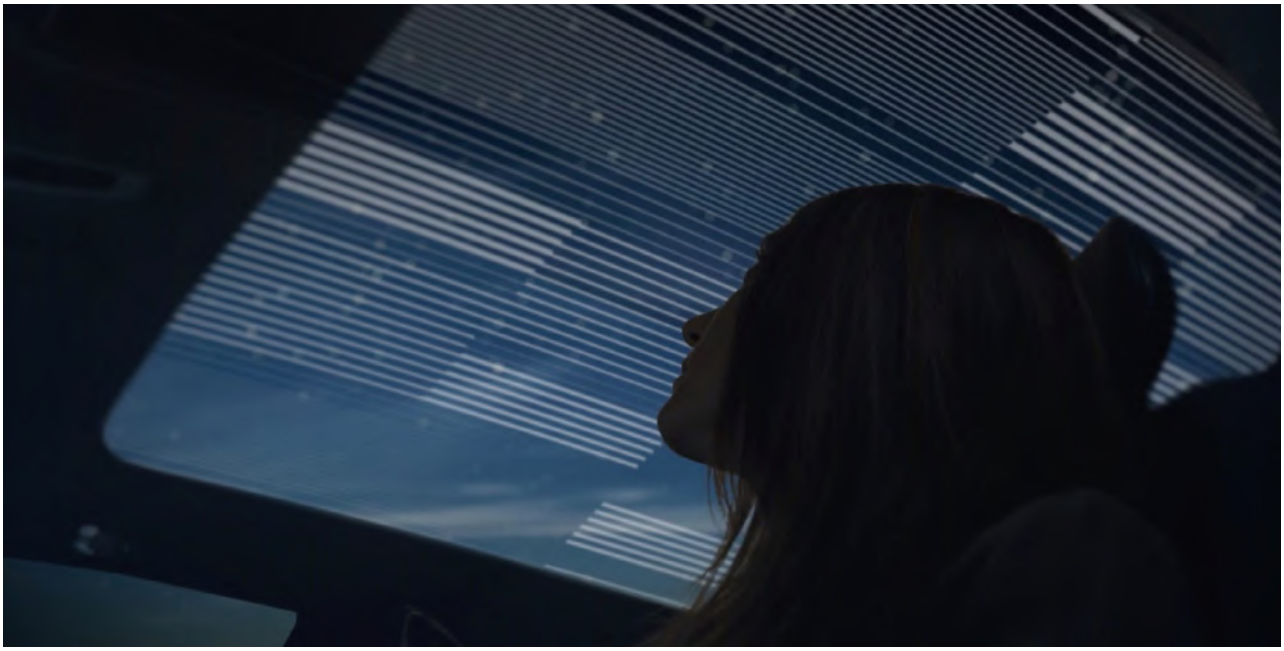
Purified air flows continuously during the entire journey and circulates in the passenger compartment, ensuring that the virus concentration in the bus is kept at a low level, even when there are infected persons on board who are constantly shedding viruses. Exposure time and intensity, blow-through speed, and geometry are carefully coordinated to ensure the air stream flow from the box is virtually virus-free (>95 per cent).

There's a light-labyrinth (**See video**) to keep the UV-C light from emerging (it's dangerous to eyes and skin)...

The Valeo UV Purifier was named as the year's top innovation in Germany by the VDA on World Creativity and Innovation Day on 21 April.

Cadillac Celestiq's Natural Light Monitoring

INTERIOR NEWS



Research Frontiers is a nanotechnology company based in Woodbury, New York that was founded in 1965 to develop light control technology from Polaroid. Now they've developed a new light-control technology, a revolutionary application of patented SPD (Suspended Particle Device) film. By regulating the electrical voltage applied to the film, occupants can enjoy a wide range of light-control.

Nanotechnology is being used to not only improve automotive glass but also sustain the EV and auto-emissions-reduction movements while also boosting vehicle safety.

Cadillac's upcoming "ultra-luxury" Celestiq BEV was presented earlier this year, and its roof is designed to create a new occupant experience, with possibility to tune the tint of the all-glass roof, based on each occupant's desired natural light preference.

According to Daimler data, nanotechnology can keep vehicles 8° C cooler inside than with standard glass technology. That's particularly valuable for an EV, as it will use less air conditioning, and thus save energy to extend the vehicle's range.

With this nanotechnology-powered glass, automakers can offer the open-air feel of a sunroof without having to make headroom concessions, or they can lower the height of their vehicles by several centimeters.

By pairing photovoltaic technology with dynamically tinting glass, vehicle windows can automatically tint and untint to safe levels as road conditions change, such as when a vehicle enters and exits a tunnel or encounters a storm. This stands to provide better glare protection and freedom from distraction by sun visor adjustment while driving.

Automotive Interiors EXPO 2021

INTERIOR NEWS

The Automotive Interiors Expo Europe gives an overview of the world of automotive interiors. The annual show attracts automotive manufacturers, suppliers and buyers for three days of networking and business opportunities. Having been unable to hold the 2020 event due to the pandemic, the organizers have set their new date **for 9 - 11 November 2021 at Messe Stuttgart**. These dates will be shared with the Global Automotive Components and Suppliers Expo showcase.

The exhibitors at Automotive Interiors Expo Stuttgart represent a great spectrum of automotive interiors. The exhibition covers a wide range of functional materials and fabrics, fasteners and adhesives, etching, decoration, lighting technologies, specialty paint finishes and more.

Visitors will have the opportunity to learn about the latest technologies and services designed to improve product quality, reliability, durability and safety. Attending Automotive Interiors Expo is interesting for tier-1 suppliers and interior designers to get information about the latest trends and technologies. It also creates good conditions for manufacturers, suppliers and sourcing specialists for intensive networking. Meanwhile, the free Style & Technology Studio offers a varied program of expert presentations on novel production techniques and innovative products.

And in North America, the **Automotive Interiors Expo** is being held in Novi, Michigan from **25 - 27 October 2021**. It's all about quality, color, texture, feel, touch, and innovation. Specialty finishes are a strong theme at the show, with offerings including plastic compounding and master batching, metallized and chrome-look plastics, hot foil stamping, foil overmolding, and vastly more—a wide range of acoustic and molding materials, joining and bonding systems. From fabrics to lighting, foams to fasteners, veneers to laminates, and seats to switches, attendees can touch, feel, and sample colors, textures and premium finishes while discovering new HMI materials, lighting technologies, advanced materials and manufacturing processes. So, the show is also relevant to design teams, procurement managers, and tier-1 suppliers looking to keep up with the rapidly changing world of materials, finishes and technologies that drive the race toward tomorrow's car interiors.

Naturally, DVN Interior will report on these events in this newsletter.

The Design Lounge

Moving On Up…Market

THE DESIGN LOUNGE

Jeep was one of the originators of the SUV segment, and has now introduced a 7-seater Grand Cherokee for that model's fifth generation. Acura, with their latest MDX was a 7-seater from the start, originally with just small jump seats for passengers six and seven. Both these brands position their vehicles as a near-luxury/premium offering, and have crept upmarket over the years in different ways: Jeep as a luxury SUV capable of going off-road, and Acura as a road-oriented, sporty-driving option.

The new Grand Cherokee will initially come only as a 7-seater, with the 5-seater arriving later this year. This is a drastic proportional change for the Grand Cherokee and coincides with a further luxury/premium use of materials throughout the vehicle.

With the premium variants, stitched leather is used on the interior surfacing along with real wood inlays.

Classic 'VU Meters' with the McIntosh sound system emphasizes the tradition and history of this premium audio equipment maker.

Authentic materials detailing such as contrast stitched leather with brushed and etched metals enhance this up-market feeling, while…

…base models still use standard uncovered plastics.

Ambient lighting is de rigueur these days, and here it is tastefully understated. The 'trimmed' sections of the interior stand out, such as the double-diamond stitch patterning on the door panels…

...and its integration with placed perforation and embossing on the seat trim covers.

With this option, the Grand Cherokee integrated both the double-diamond stitching and the perforation into the second- and third-row seats, creating a stronger thematic presence for the interior.

The rear compartment is also fully carpeted, as is the case for most luxury/premium SUVs.

It will be interesting to see how Jeep positions and executes the smaller, shorter 5-seat Grand Cherokee later this year. Will it be just a shorter version of this vehicle? Or nearer to the 'authentic off-road' heritage of the Jeep brand?

With the latest MDX, Acura has clearly chosen to emphasize the Acura brand's more sport/performance-oriented direction. Not only with the more heavily bolstered seating but also the color choices available.

Much more driver-focused than the Grand Cherokee, the MDX also uses soft-touch leather covered surfaces throughout. By using bold color options on the lower surfaces, a 'cockpit' type of environment is created, spitting the driver's and passenger's compartments.

A traditionally placed cluster, with a full color driver-oriented display is complimented with pushbutton gear selection. Even the dial control above it, which would typically be a volume or UX/HMI control, is used for the drive modes that further emphasis the interior's driver-oriented theme.

Emulating a traditional shifter shape, the UX/HMI armrest also covers the wireless charger…

…with a traditional split for the large glass panorama roof as seen in most new vehicles today.

Using high contrast in both color and materials and a more traditional flowing, luxury-styled seating trim, the MDX is firmly executed as an on-road SUV with sport-oriented intentions fitting the Acura brand.

Both Jeep and Acura have steadily moved upmarket but with very different target customers and brand positioning with success for both makers.

News Mobility

_Car interiors Unplugged

NEWS MOBILITY

IMAGE: VR FOCAL IP

25. VR as a design tool_

Often in car design, Virtual Reality is part of the design process. This kind of practice has come a long way. With the intention to illustrate an aspect of everyday life, the 50-second silent film showing a steam locomotive entering the train station as a continuous real time shot, eternalized the Lumiere brothers in the accounts of filmmaking. The story goes that when the film was first screened, the audience was so overwhelmed by the moving image of a life-sized train coming directly to them, that people screamed and ran to the back of the room. Whether or not it actually happened, the film undoubtedly astonished people, unaccustomed to the illusion created by moving images. That was in 1896.

Since, the ability to change perceptions and create a sense of presence, trained us continuously. By looking many hours, a day to any unnatural, rectangular frame/screen we passed from representation to simulation, from a framed moving image to a 360-degree view embodiment. We have always created worlds through 'windows' and now with VR we can step into them and participate to the making of. Unlike all other media, VR does not have a format. Entering virtual utopia is about tricking the senses by limiting any physical surrounding. The lack of critical distance suspends any disbelief. While toaster-size goggles are strapped on our face and an awkward feeling of isolation occurs, we each create our own environment. Unlike in UX, language is not the only form of interaction. Gesture, face expression and body posture, can play an equivalent role. We can practice anything, from surgery to public speaking, from spacewalk to being lifted out of our bodies into someone else's posture, from driver to passenger or to a pedestrian looking at the car we are in. Thus, it provides a way to create a different understanding from someone else's point of view, adjusting a sense of self according to the viewpoint. However, car interiors are environments, not objects and the amount of information needed is multiple.

Building interiors in virtual terms is a bit like world building. Orthographic views such as plans, elevations, front and rear views don't matter anymore since they all merge into one holographic universe, up to their most

realistic value. Unlike VR exteriors, in interiors there is never enough distance to see pure elevations and more than ever we don't 'see', but we 'experience'. In the interior world, the most complex of all 3D perceptions, representations and creative process require particular artistic genius, comparable to cinematographic environment art. In any other kind of representation, like paintings, our consciousness interprets the medium, while here VR becomes the medium.

VR can be a performing design tool. What is furthermore stunning in this creative and creating process is that 'materiality' is gone. This is the main characteristic of interiors and their reason to be, as the molds of our body-envelops, and so car interiors become visual environments in the purest sense, often loosing scale to the benefit of any important detail. No bumping anymore on bolsters or on central consoles allows a better observation and perception of its systemic aspect. Visually, it often feels like flying through a district of tall and short buildings or deep diving through passages, corridors and cavities, twisting space and time. It is only our physical memory that holds everything in place. The fact of being able to immaterialize interiors while designing them, provides a higher degree of sophistication. It is like making theater sets during rehearsals.

Obviously a ¾ flip-up of a driver's seat doesn't have the same value of a ¾ tip-up view of the entire interior and if the same views are applied respectively to the overhead, they acquire an important R&D value. With the VR, we are fleeing the human perspective, looking into aspects and angles we have never though they existed, learning a lot more about our limits.

VR is a representation medium in a way we have never seen before. It is a picture about the use of a picture, representing reality not as it is but as needed to be and often works like an empathy machine. Trying to explain what VR stands for, is as irrelevant as undetermined and wavering. We progress faster towards the result in a world that even instant gratification is too slow. Frames within frames, images within images, dimensions and perspectives mixed with unreal immaterial proportions, are maybe not the alternative to morphine but a chance to capture feelings of reality, way beforehand. By stepping out of ourselves into VR, our brain is adapting, providing enough of a perspective shift that enables different instant views and options of the future. Virtual reality is the short-cut to the future. The question is who is going to design a different future.

‘Life is not a problem to be solved, but a reality to be experienced’

Søren Kierkegaard

_to be continued…

_____INDUSTRIOUS__

Continental, T-Systems Building Crash-Warn System

NEWS MOBILITY

IMAGE: CONTINENTAL

Continental and T-Systems, a division of Deutsche Telekom, are developing a system that warns of accidents between connected vehicles and VRUs (vulnerable road users) including cyclists, scooter riders, and pedestrians. The solution calculates the paths taken by cars and bicycles. If they are likely to cross at the same time, the system warns both road users via mobile communications in real time. Initial road tests have been successful.

Continentals Head of Research and Advanced Development Karsten Michels says "Vulnerable Road users in particular are often overlooked in road traffic. What's more, according to the European Road Safety Council, more than 80 per cent of accidents between pedestrians or cyclists and motorised vehicles end fatally for the vulnerable road users. Thanks to real-time networking and collision warning, we therefore give cyclists or pedestrians more visibility. In this way, we reduce serious accidents, injuries, and traffic fatalities".

And Oliver Bahns, responsible for connected mobility at T-Systems, says "With collision warning, we are equipping cyclists, pedelec and scooter riders with a digital guardian angel. The key to this is the high level of connectivity: around 85 per cent of the population in Europe uses a smartphone. And more and more cars are connected, too. With our computers in the mobile network, we also ensure extremely short response times".

The collision warning system is based on GPS, acceleration sensors, mobile communications, and cloud computing. The car transmits its position and acceleration values to the cloud via mobile communications. The cyclist also sends this information to the cloud via smartphone. It calculates the paths for the next 5 seconds and sends a warning to the car and the cyclist's device if a collision is imminent. To ensure that this information reaches both road users as quickly as possible, the nearest cloud computer in the mobile network to the location of the possible collision is always used.

General News

Borgward Files For Bankrupcy…Again

GENERAL NEWS

BORGWARD BX7 (IMAGE: BORGWARD)

Borgward—the formerly Bremen-based German automobile manufacturer founded in 1933—went bankrupt in 1961. A relaunch of the brand was announced by the founder's grandson, Christian Borgward, with the presentation of two models at the 2015 Geneva International Motor Show. In 2014, China's BAIC Foton acquired the brand and in March 2019, Ucar bought 67 per cent of the company. UCAR is a leading comprehensive service platform in the travel and auto sector in China, comprising rentals, tailored taxi service, auto purchasing and quick auto loans.

BORGWARD BX7 (IMAGE: BORGWARD)

Foton marketed Borgward as a brand with German origin, investing a lot including a high-tech assembly plant in Beijing. Upon its launch in April 2016, the Borgward BX7 gained significant orders, sustaining sales of 5,000 vehicles for several months and hitting 6,000 vehicles per month at its peak. The early success of Borgward

was even regarded as a classic business case worthy of study and admiration. According to China Passenger Car Association, cumulative sales in the first five months of this year slumped 41.3 per cent year on year to 2,627 vehicles. In 2019, the brand's annual sales totaled 54,500 vehicles. Borgward was also hit by a fraud scandal with UCAR.

AVs More Transformative Than EVs: VW CEO

GENERAL NEWS

VW SEDRIC AV CONCEPT AT CES 2018 (IMAGE: VW)

Volkswagen Group is undertaking the world's largest industrial reshuffle for the electric-vehicle age, planning half a dozen battery plants just in Europe and retooling assembly lines around the globe. But its CEO sees autonomous-driving technology bringing about an even bigger shift.

"The car becomes so different when it's driving autonomously. This change will transform the industry more than EVs or the electrification does," VW Group CEO Herbert Diess said in an interview for Bloomberg's Qatar Economic Forum last week.

Diess' view may be shocking, given the company's (and industry's) efforts to go electric, and the level of disillusionment that has set in for autonomous-vehicle technology despite industry investing billions of every currency—development is taking much longer than expected (and promoted).

Diess says VW's joint AV efforts with Ford are making good progress, but an autonomous vehicle is "the most sophisticated internet device you can imagine"—they need 10 times more lines of code than a smartphone and three times more than a jet plane.

VW announced plans last month to introduce an ID.Buzz microbus EV with L^4 autonomous driving in 2025, with tests starting in Hamburg this year. VW is spending about €2.5bn a year on boosting its software capabilities. Although Diess acknowledges there is still a long way to go to turn Europe's largest automaker into a software powerhouse, he says "We're in quite a good position to remain a very strong player in this future automotive world, in 'new auto,' as we call it".