Thu, 14 April 2022
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #107

Editorial

Functional Surfaces With Haptic Feedback For New UI

A NEW KIND OF CAR UI? (MATTHAEUS KRENN IMAGE)

Haptic technology has the potential to create new channels for interaction between vehicles and their operators and occupants; to increase usability, and maybe even to improve safety. The increasing automation of vehicles in general is an opportunity to engage drivers and passengers with multisensory in-car experiences that include visuals, audibles, and haptics. This week's in-depth article explores just what 'haptic' means in the auto interior context, illustrated with recently announced application cases. It's growing more apparent that haptics will be a necessary complement to gestural control. If you wave your hand in the air, you need clear feedback from the car that your directive has been received and understood. Haptics could be one of the technologies to support this kind of communication.

More broadly, haptics could become part of the communication loop of functional surfaces the industry is popularizing in the vehicle interior. A specific session on functional surfaces is part of the upcoming DVN Interior Workshop, happing in Köln on the 25th and 26th of this month. Yanfeng; Grupo Antolin; Poly IC, and Suss MicroOptics will give us their vision on this type of application.

We are 10 days to go! Stay tuned and connect with us to access the DVN-I workshop member account. If you haven't yet registered, you'll want to do so while space remains available. And of course, if you're not yet a DVN-Interior member, do come join us!

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

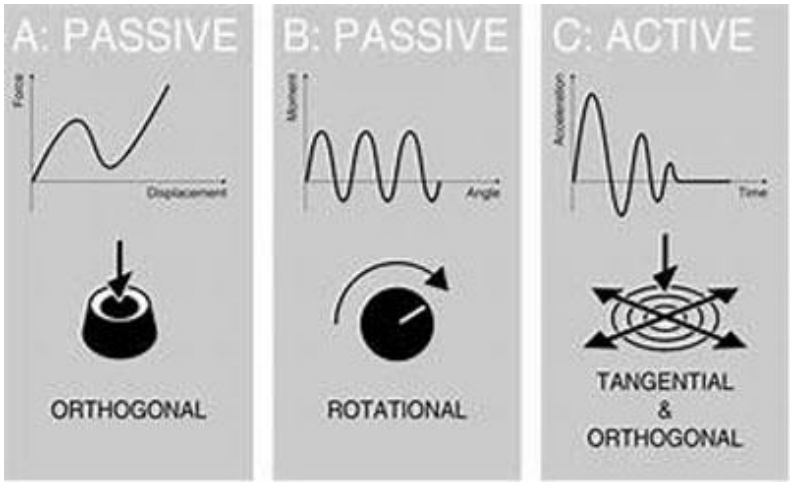
Haptics as Gesture Complement for New HMI

BOREAS TECHNOLOGIES IMAGE

Automobiles have become a new platform for haptic innovation as automakers and suppliers seek to differentiate through advanced industrial design; driver-centered features, and reliability and safety enhancements. Cockpit control design is transitioning from electromechanical switches and potentiometers to touch-screens, pads, and surfaces; these can facilitate cost savings and new, more ergonomic HMI design. But they can also cause driver frustration and distraction, as—ironically—touch controls can't be operated by touch alone. A physical switch goes »click« and changes position in response to finger pressure; perhaps it remains depressed relative to its neighbors. A knob or lever can be moved a certain amount, by feel alone, perhaps past a certain number of click-stop detents. With ordinary touch controls, no such feedback is provided; the driver has no choice but to look what they're doing (and look away from the road). That's why haptics will play an increasing role in providing timely and noteworthy feedback to drivers.

Haptic design that presents important information at the right time and to specific parts of the body will allow drivers to feel confident in the operation of the vehicle while keeping eyes on the road. Haptics will also allow drivers to explore a touch surface and feel the locations of controls before activating their functions. As vehicles become more autonomous, there will be new opportunities for engaging drivers and passengers with multisensory in-car experiences that include visual, audio, and haptic media.

What does "haptics" mean in the automotive context?



HIF IMAGE

Haptics is the use of tactile interfaces to provide touch or force feedback to the user. For example, a vibrating seat to inform the driver of a pedestrian about to cross the street; a tugback from the steering wheel to alert the driver they're drifting from the center of their lane, or a strategically-generated artificial »click« effect from a virtual pushbutton. Haptic technology has the potential to add new forms of driver communication to a vehicle, and to improve the overall usability of vehicles.

The Haptics Industry Forum

The **Haptics Industry Forum** (HIF) is a consortium of companies working to develop the future of haptics, including hardware manufacturers, middleware providers, application developers, researchers, and others who work across all levels of the haptic stack. Members of the Haptics Industry Forum are committed to working together to develop and support haptic standards in ways that enable the market, including licensing, quality and performance metrics, APIs, codecs, and more.

The HIF intends to align the industry on performance specifications for haptics in automotive, enabling clear expectations between automakers and suppliers when specifying haptic functionality. Haptic technologies have seen dramatic increases in adoption, and HIF was created to enable the main ecosystem participants to define common standards; recommended practices, and guidelines to maximize interoperability and continued growth of the market. HIF's unitized voice will pool decades' worth of expertise to facilitate widespread adoption.

In addition, a basic set of haptic design guidelines for use in driver notifications will be developed. These will use psychophysical science to ensure they are readily distinguished at the population level while providing sufficient flexibility for brand specialization. The overspanning intent is to create a haptics equivalent of

standards and regulations like the American FMVSS 101 (controls and displays)—to provide a consistent haptic experience in whatever which car a person might get in and drive.

GREWUS IMAGE

Elisa Santella is a new member of HIF's board of directors. She is one of the founding members of GREWUS (2007), and since 2017, she has been managing director and responsible for automotive haptic key accounts. Together with her team, Santella supports customers in integrating active haptics, and she was recently elected Automotive WG chair for the Haptics Industry Forum and Industrial Chair of EuroHaptics 2022.

Santella says the HIF "is not just about standards and guidelines but also the network. So many disciplines belong together in haptics". GREWUS, based in Hamburg, Germany, develops and produces innovative acoustic components and haptic actuators for all industries and applications, including automotive. You will find acoustic signaling devices in almost every car, and they've been there for decades; think of the clicking of the turn signal. Now, haptic actuators are also increasingly being used on automotive touch panels.

TanvasTouch Technology

TANVAS IMAGE

TanvasTouch uses an electric field to modulate friction where the finger moves across a surface of any shape, with suitable substrates including glass, plastic, metal, ceramics, and natural surfaces. The frictional changes are perceived as fine textures; edges, and bumps that can be felt without looking. The company also offers TanvasTouch for Automotive, the first automotive solution to produce programmable textures and effects with a solid-state actuator. Traditional vibration-based haptics are unsuitable for large or curved automotive displays because they require the display to move. TanvasTouch is a solid-state haptic solution that eliminates the need for costly damping structures to be built into the display assembly. It helps drivers keep their eyes on the road by providing search haptics that allow the driver to find and adjust controls without looking.

Nonvibrating surface haptic technology introduces new options for automotive manufacturers to reimagine the vehicle's interior design and feel. Car manufacturers can create a uniform or harmonious touch experience across multiple surfaces—not just the display screen, but also the steering wheel, exterior door handle, and even upholstery. According to Tanvas, their technology can be implemented with a combination of a proprietary controller solution which performs multitouch sensing and haptic control; supplied in various forms including as an IC or as a module, and transform the multitouch sensor panel to a combined multitouch and haptic actuator for any surface. Traditional vibrotactile and electromechanical haptics are not suitable for large and curved automotive displays because they require movement of the display; with TanvasTouch, there are no moving parts. Software-defined haptics enable an unlimited range of effects that can be felt with the swipe of a finger.

Tanvas was spun out of Northwestern University in 2011, and headquartered in Chicago, where they are pioneering the next generation of multi-touch haptic technology. TanvasTouch can be built into any touch-enabled product. SID, the Society for Information Display, honored Tanvas in 2020 with a Display Component of the Year award.

TANVAS IMAGE

Tanvas recently partnered with Innolux for their next generation multi-touch haptic technology. The companies will produce a 15" automotive-qualified touch display using TanvasTouch, and programmable textures and haptic effects on smooth physical surfaces.

Innolux is a leading TF-LCD suppliers, having strong presence in large, medium and small panels. They offer a comprehensive range of products including LCD panels with touch function in automotive & avionics

applications; in monitors for desktop; notebook, and tablet computers and smartphones, and in LCD TVs. Their production facilities include fourteen TFT-LCD fabs and three touch sensor fabs in Jhunan and Tainan in Taiwan; along with extensive assembly facilities in China, including in Ningbo; Nanjing; Foshan, and Shanghai.

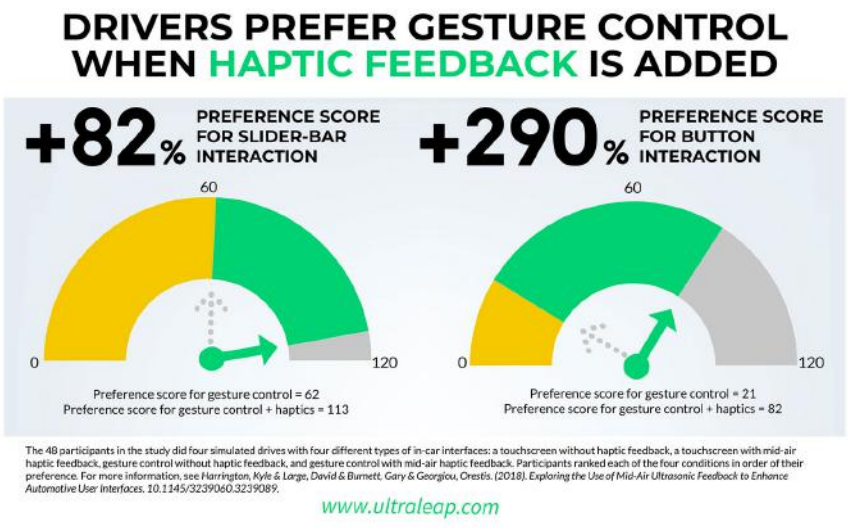
Ultraleap Touch in Mid-Air

ULTRALEAP IMAGE

Ultraleap brings together the world's most powerful hand tracking with the only haptic technology able to create the sensation of touch in mid-air. Ultraleap's team of more than 150 work in California, USA, and in Bristol, UK. They've got world-leading experts in interface design;acoustics; machine learning, and computer vision.

Ultraleap's algorithms modulate ultrasound waves to create haptic sensations in mid-air. No controllers or wearables are needed; as shown in this **online video** the "virtual touch" technology uses ultrasound transducers to project shapes and textures directly onto the user's hands. Ultraleap's technology means that every cubic centimeter of the space within a car can potentially be turned into a programmable haptic interface.

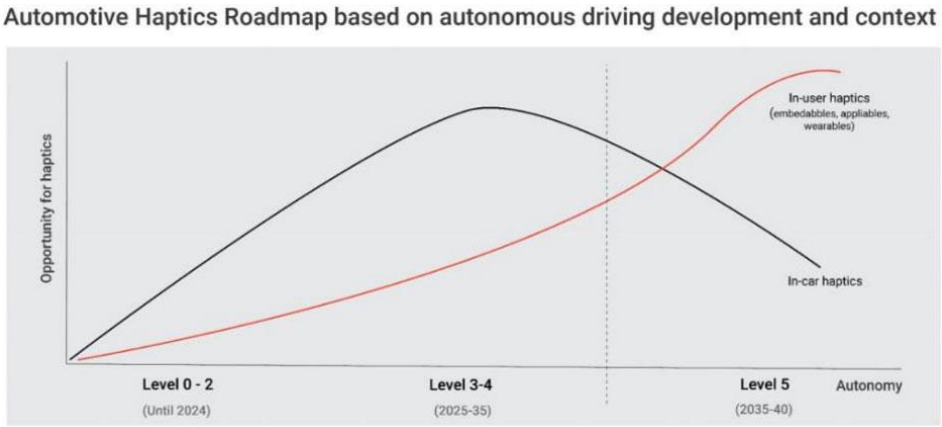
In-car installations typically include an array of ultrasound transducers mounted under the fascia or in a separate control panel. The technology is combined with a hand tracking system—often Ultraleap's own tracking software and hardware. The transducers can provide the sensation of touch up to 1 meter away from the surface. The accuracy of the sensation is less than a finger-width apart, and can track hand position, hand shape, and gestures.



In a collaborative study by Ultraleap and the University of Nottingham, adding mid-air haptic feedback to automotive UI reduced error rates, eyes-off-the-road time, and mental load. It was also strongly preferred by users for some types of interaction.

Two different types of interactions were tested: a slider bar and button presses. 48 participants each did four simulated drives while using four different types of interfaces: a touch screen; a touch screen with mid-air haptics; gestural control, and gestural control with mid-air haptics.

Trends and Perspective



According to a paper (Haptic Learning Industry, 20 May 2020, by Felipe Almeida and Ranjini Raghuveer at Immersion) between now and 2040, a complete paradigm shift is expected, that will result in:

- The transposition of the growing level of autonomy versus the adoption of haptics in the complete cockpit of the car. Automotive controls will move to user devices, as will the UI.
- Greater demand for immersive experiences, adding entertainment to the value of haptics. Once set, the role that haptics plays in safety and improved user experience will match the required level of driver intervention during a car ride.
- A virtual cockpit where you are able to control everything from windows, seats to entertainment packages neatly with tactile feedback.
- Wearables and embedded elements will shift from in-car haptics to user haptics—not limiting feedback to just touch panels, surfaces or center consoles, but instead creating tactile feedback on the clothes of the user and car seats as well that connect with the car data system to give environmental experiences.

Interior News

Camera-Based View-Blocker Stops Drivers Watching Video

INTERIOR NEWS

MERCEDES IMAGE

The forthcoming Mercedes EQS SUV will have a 12.3” OLED display for the front passenger offering the ability to watch streaming video or TV when the vehicle is in motion; there's a camera-based blocking logic that can detect the driver looking at the passenger display and automatically dim the content.

MERCEDES IMAGE

Other expected features include:

- Optional MBUX 56” curved Hyperscreen, first launched in the EQS sedan;
- Loungelike ambience, seven color combinations, fine leather and genuine wood create a warm tactile experience;
- RSE (rear-seat entertainment), storage space and, two individual third-row seats;
- Dolby Atmos sound system allows for individual instruments or voices from the studio mix to be placed around the listening area inside the EV, and

- Energizing Air Control Plus uses a HEPA filter with active carbon to achieve an exceptionally high level of filtration, eliminating fine particulates; pollen, and other contaminants.

Mercedes-Benz has developed a new scent specifically for the EQS, called № 6 Mood mimosa. It is said to have "an earthy fragrance tinged with subtly sensual hints". The EQS is scheduled for launch on 19 April, with US production to follow.

Toyochem Adhesive Boasts Low Odor, Low VOCs

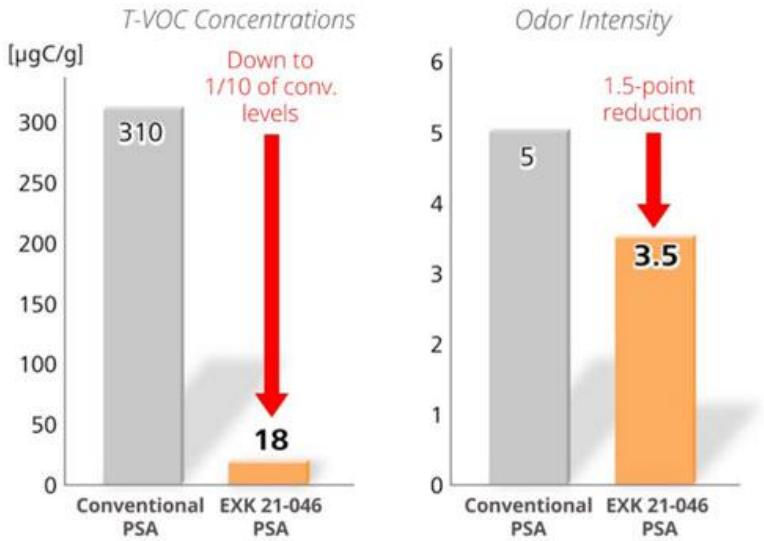
INTERIOR NEWS

Toyochem, the polymer and coatings arm of Japan's Toyo Ink Group, has launched a new low-odor, low-VOC acrylic PSA (pressure-sensitive adhesive) called Oribain EXK 21-046, for use in enclosed spaces such as vehicle interiors. The adhesive adheres to metals; plastics; textiles, and other substrates, and has a total VOC (volatile organic compound) content less than one-tenth that of conventional products.

Demand for environmentally-friendly interior materials is increasing as VOC emission regulations are tightened worldwide due to growing public and industry awareness of the importance of indoor air quality. Toyochem adhesive division general manager Nao Nakamura says "While our conventional PSAs meet the indoor VOC concentration guidelines set by the Japanese government, the newly developed EXK 21-046 system has been able to dramatically reduce trace amounts of T-VOCs remaining in standard products and improve air quality".

Through polymerization and compounding technologies the research teams from Toyochem have a better control over the viscoelasticity of the adhesive material. This results in a significant reduction in VOC concentration and lower odor intensity without compromising adhesive performance. The new adhesive achieves VOC emission rates of 18 µgC/g, well below the 310 µgC/g recorded by Toyochem's conventional pressure-sensitive adhesives. In addition, the PSA system brings a reduction of 1.5 points from the typical odor score of 5 (very unpleasant) recorded by the company's standard products.

Figure 1. Comparison of T-VOC Concentrations & Odor Intensity



*Adhesive composition: 65g/m2 on non-woven fabric
*105°C, 2min dry; 23°C, 50% RH, 7 days after drying

TG0's Software-Supported Surfaces

INTERIOR NEWS

NOVARES IMAGE

Flat, often untextured control surfaces rely heavily on visual perception, which can distract; frustrate, and endanger a driver who must look at such a surface to operate its controls. London-based TG0 is working to change this by transforming interior surface designs into smart, 3D intuitive controls with a uniform injection-molded polymer.

They use in-mold electronics (IME) manufactured using conductive and dielectric inks to print circuits onto transparent plastic films, which are then injection-molded. The latest technology goes one step further and turns the plastic material itself into an interactive surface. By harnessing capacitance, polymers can now be engineered into a flexible conductive material that can sense not only touch but also pressure. The design of the surface geometry creates unique signal patterns, which are then analyzed by machine learning algorithms. These algorithms interpret human interactions and assess the driver's comfort, posture and concentration. These can then be used to adjust the car's systems accordingly.

TG0's partnerships and business development manager Jakub Kamecki says his company's approach "uses the polymer itself as a sensor element to detect touch, pressure, gestures, movements and deformations. The material consists of four main elements. First, there is a nonconductive A-side, which can be made of any non-conductive material, color, or finish. Next to it is a conductive B-side material that can detect changes in capacitance. These signals are sent to off-the-shelf microprocessor units, where AI algorithms analyze and interpret the signal to understand how a given touch corresponds to a given output. The TG0 API then translates this information into more useful metrics such as touch location, pressure mapping, posture assessment and activity tracking.

TG0 technical manager Jose Rodriguez says there are two distinct applications of this technology: "For non-deformable materials like an ABS conductor, we measure the overall change in capacitance to detect touch and proximity. But for materials that deform, such as Thermoplastics, we can measure the deformation of the material as a proportional ratio to the capacitive signal change. This allows us to measure the deformation of the material, which we can use in applications like seamless snap fasteners or pressure mapping". This technology has been incorporated into steering wheels; center consoles, and window regulators.

In order for certain movements to trigger the desired functionality, the AI algorithms must be trained. There are two approaches to calibrating the trackpad. The first is for employees to just randomly move their thumb across the trackpad. The second is more automated, using a CNC machine to guide an electronic finger through predefined routines and coordinates. The approach of using off-the-shelf materials means TG0 can focus on tailoring the software's response times, refresh rates and resolution to the client's needs.

Lotus Eletre Interior Design

INTERIOR NEWS

LOTUS IMAGES

Lotus, owned by Chinese automaker Geely, has unveiled their Eletre electric SUV. It's a dramatic departure from the company's light sports car offerings, and at 5.1 m long with a 302-cm wheelbase, it's the biggest Lotus ever built.

Lotus describes the interior as a "performance-driven and engineered design that is visually light and uses ultra-premium materials to deliver an exceptional customer experience". The debut model has four individual seats, an option that will be available to customers alongside the more traditional five-seat layout.

The interior is made of high quality, durable man-made microfibers on the primary contact points and a wool blend fabric on the seats. This is said to be 50 per cent lighter than conventional leather, which could compensate the overall weight, because of dimensions and batteries. Many of the hard surfaces are made of carbon fiber, although Lotus has chosen to recycle fibers cut from the edges of woven fabrics during production rather than using a traditional fabric. These are reconstructed into mats and then pressed in resin to create a high-quality marble-like finish.

The driver-oriented cockpit and high center console are inspired by the designs of the Lotus Emira and Evija sports cars. The infotainment system is the result of a collaboration between Lotus design teams in Warwickshire and in China, where the Eletre is built, and has some unique features. Below the instrument panel, for example, a light cone runs through the cabin and sits in a ribbed channel that widens at each end to form the air outlets. While it appears to float, the light is more than decorative and becomes part of the HMI. It

changes color to communicate with the occupants, for example when a call comes in, when the interior temperature changes or to indicate the vehicle's battery level.

Below the light is a "technology band" that provides information to the front seat occupants. In front of the driver, the traditional instrument cluster has been reduced to a narrow strip less than 3 cm high to convey important vehicle and driving information. It is replicated on the passenger side, where various information can be displayed, such as music selection or nearby points of interest. Between the two is a 15.1” OLED touchscreen, that provides access to the car's infotainment system. It automatically folds flat when not in use. Information can also be displayed to the driver via a head-up display with AR technology.

While every element of the Eletre can be controlled digitally, certain button controls are duplicated with analogue switches, while voice control via speech recognition technology is also available.

The car's standard audio system comes from the British brand KEF. It's a 1,380-watt, 15-speaker setup featuring the company's Uni-Q and Surround Sound technology. Uni-Q does away with separate tweeters and mid-range drivers, instead combining the two into one acoustical unit. It covers the entire mid and high frequency spectrum from a single point in the room, delivering a more coherent, hyper-realistic sound experience. It uses two dual-force-cancelling drivers with concentrically arranged and overlapping voice coils driven by a single motor. This allows a high-level performance while significantly reducing subwoofer and speaker volume.

ABB: Car Interior Assemblies with Sensitive Robots

INTERIOR NEWS

ABB ROBOTICS IMAGES

A cockpit assembly is heavy and complex to maneuver, and it is fragile and easily damaged. Installing a cockpit assembly in a vehicle on a moving production line subject to erratic movement and vibration requires a sensitivity and flexibility that, until recently, exceeded the capabilities of typical robotic systems.

ABB Robotics, one of the four business areas of Zurich-based ABB, has developed a combination of vision systems and conformal manipulation that allows a robot to mimic the feel of a human operator while handling much heavier loads than a human with greater accuracy and consistency. ABB's system, called the Dynamic Assembly Pack, uses an array of cameras combined with force control to provide highly tactile sensing and make real-time position adjustments. The first application is already being used for the series assembly of cockpit assemblies in a family of VW models in various plants worldwide.

Compliant Vision Guidance (CVG) combines additional cameras on the robot arm with integrated force control. Robots typically use positional control where their path and speed are independent of contact forces and so could risk damaging fragile parts. Using force control means that a constant force is applied in the z-direction (pushing down), while the system is compliant in all other directions. It is this combination of features that gives the robotic system the dexterity to ensure correct installation without damage, even in an unstable environment where the precise position of the target may vary.

Real-time vision allows the robots to continuously adapt their movement to a sequence of reference images captured at between 20 and 30 shots per second, using feedback information from a vision sensor to compensate for movement and vibration. Instead of following a programmed path, the robot's movements are guided by information from the vision sensors.

The Dynamic Assembly Pack was developed for a range of FTA applications, both internal and external. Additional interior applications include cockpit assembly, seats and carpet installation. ABB Robotics sales manager Matthew Weir says "Advances in safety precautions have made it possible for properly designed robots to operate alongside human workers, with no screens or fences to impede their interaction. This has opened up a number of new opportunities for improved productivity, quality and collaboration for both existing and new robot users".

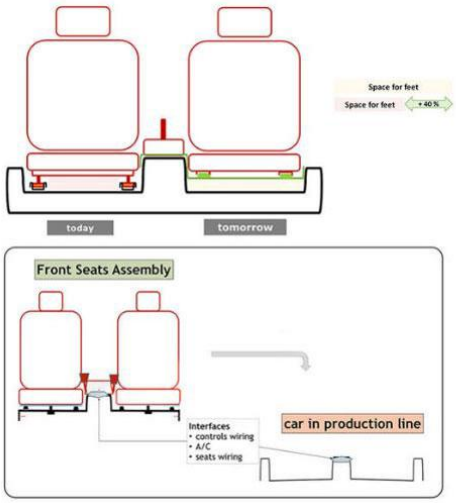
Sintec Seat Bridge is Innovative Seat Mounting System

INTERIOR NEWS

Sintec, an Italian startup, has announced a global campaign for bringing their SeatBridge into production. It offers an effective solution to the issues that characterize conventional seat mounting systems in which seats are connected to the floor through a pair of tracks.

Consisting of a bridge-shaped structure that raises the position of the tracks and frees up the space underneath, the SeatBridge can be fully adopted in any production line with additional benefits in terms of process simplification, and can integrate the center tunnel into a single module.

Sintec is in negotionations presently, and actively seeking new companies and organizations willing to incorporate this solution into their production lines or to invest and reserve exclusive rights for licensing once the solution is implemented, which Sintec thinks will happen in the near future. Founder Claudio Buccini says "The current standard seat mounting solution has reached a high level of standardization but has not progressed in decades and still suffers from the same problems: it leaves little space for rear passengers' legs and feet, and with its cluttered, primitive look, it detracts from the elegance and design of any car interior—even on luxury vehicles".



"For this reason, and also due to the revolution that electric cars will bring in terms of platform architecture, it's only a matter of time until the SeatBridge solution is widely implemented."

"Sintec already owns exclusive rights for Italy and will soon be granted the European patent. We are actively speaking with several companies to move to the production phase, because we believe this will solution ultimately benefit not only car passengers, but also car manufacturers and suppliers."

The Design Lounge

Light Design: Covestro's Clear-Until-Lit

THE DESIGN LOUNGE

Covestro's got a new kind of magic polycarbonate, an edge-lighting materials, which offer substantial opportunities for new design looks for interiors that use PC for trim surfaces and expands design opportunities for external applications like headlamps and tail lamps. The magic? this material is transparent and colorless until it's edge-lit.

Covestro engineering polymers technical marketing manager Mark Torgerson is one of the scientists working on this technology. He says the new material "has broad new application potential to enhance the looks of complex lighting designs and unique lighting effects for the interior. [It's] clear, but when LED lighting is placed on one or more edges of the part, the entire surface becomes evenly illuminated and transmits light and glows".

Torgerson continued explaining that Covestro has been working on this type of polycarbonate for quite some time, and specifically targeted the automotive market and its growing material lighting needs.

Clear Until Lit has many uses. Some are general ambient lighting, like interior trim and on-door spears. It also has suitable applications in branding elements like badging. Light from the LEDs along the edge homogenizes just a few millimeters into the part, eliminating the need for air gaps and diffusion elements; that boosts incoupling efficiency and creates even illuminance with no hot spots or streaks. A range of diffusion levels are available.

Covestro has shown a headlamp mockup with clear-until-lit material prominently on the lamp's outboard side.The cylindrical design tube surrounding the circular low-beam lens is clear when it is off. When the lights come on, the front edge of the tube glows bright white (daytime running lights, anyone?), and the main body of the structure takes on a semi-transparent soft diffused glow—side marker light, anyone?—while significantly adding interest to the design.

It's actually two materials: Makrolon LED 2245 EL for exterior applications, and Makrolon Ai 2215 EL for interior applications. The new materials could be used in instrument panels, HMI touch surfaces, film or graphic overlays that require illumination, interior door trim, light pipes…illuminated accents on grilles, pillars, door handles, and elsewhere in and on vehicles.

News Mobility

Mercedes' View on Legal Liability for Autonomous Driving

NEWS MOBILITY

MERCEDES IMAGE

As fully automated vehicles are still far off, the whole industry is wondering how to handle liability in case of accident. DVN has been keeping tabs on this onrunning discussion since at least as far back as 2015 (see **here**). Mercedes has decided to assume legal liability when one of their cars equipped with Drive Pilot L^3 technology gets in a collision.

Drive Pilot is only available on roads already mapped by Mercedes, and it works at road speeds below 60 km/h on divided highways without traffic controls—and only during daytime, and only in good weather, at that.

Because there are no federal regulations in place, Mercedes will have to negotiate with each state to allow Drive Pilot to be used on that state's roads.

Meituan AV for Last-Hundred-Meters Delivery

NEWS MOBILITY

COMMUNITY VOLUNTEERS PICK UP SUPPLIES VIA MEITUAN VEHICLE (HESAI TECHNOLOGY IMAGE)

Shanghai is in hard lockdown against Covid, and it's making real hardships for denizens. Meituan, China's leading e-commerce platform for life services, has dispatched a batch of automatic delivery vehicles from Beijing to Shanghai. At a Meituan site in Shanghai, Meituan's small yellow car has been put into use to help community volunteers solve the last 100 meters of delivery.

Meituan's newest automatic distribution vehicles can carry a load of over 150 kg. It takes 10 minutes for the round-trip delivery into the community, and each time the vehicle is fully disinfected.

This batch of automatic distribution vehicles has high-level automatic driving ability, which can meet the needs of epidemic prevention materials distribution from single point to multi-point. The vehicles are equipped with 26 sensors such as lidar and high-definition cameras to ensure the safety of automatic driving ability. After completing the preliminary vehicle debugging and road condition test, the vehicle can drive autonomously according to the route instructions, complete the delivery task without contact, and minimize the risk of personnel exposure.

Hesai Technology revealed that the Meituan automatic delivery vehicles and Neolix unmanned vehicles that came to Shanghai this time were equipped with Hesai Technology’s lidar. It is reported that Neolix unmanned vehicles have entered six closed communities in Shanghai to provide unmanned vegetable sales services for residents in the closed communities.

General News

GM, Honda To Develop Affordable EVs

GENERAL NEWS

GM IMAGE

Honda recently announced plans to build electric cars with Sony. Now another close cooperation has been announced, with General Motors. The partners want to jointly develop affordable electric vehicles in the most popular segments.

GM and Honda will collaborate on technology; design, and procurement, with the target of global production of millions of EVs starting in 2027. The companies also want to drive the standardization of plants and processes in order to achieve outstanding quality; higher throughput, and more affordable vehicles. They are particularly focused on the compact crossover segment, which they have identified as the largest in the world, with an annual volume of more than 13 million vehicles.

A joint global architecture using General Motors' next-generation Ultium battery technology will serve as the basis for the planned new electric cars. The two companies plan to explore other opportunities for collaboration on e-vehicle batteries. The goal is to further reduce the cost of electrification, improve performance and increase the sustainability of upcoming vehicles.

Work is already underway to accelerate new technologies such as lithium metal, silicon and solid-state batteries, as well as production methods that can be rapidly deployed to improve battery cell manufacturing processes, GM said. And Honda is making progress on their solid-state battery technology, which it sees as a core element of future electric vehicles.

"General Motors and Honda will share their best technology, design and manufacturing strategies to deliver affordable and attractive electric vehicles on a global scale," says General Motors CEO Mary Barra. "This is an important step in meeting our commitment to achieve carbon neutrality in our global products and operations by 2040 and eliminate tailpipe emissions from light-duty vehicles in the U.S. by 2035. By working together, we will move people around the world to e-vehicles faster than any company could achieve on its own."

Beijing Auto Show, BMW i7 Launch Postponed

GENERAL NEWS

China is once again facing major Covid problems. The automotive industry is among the first to be affected by the resurgence of COVID-19 cases, prompting the organizers of the Beijing Auto Show to postpone the event indefinitely. Originally, Auto China 2022 was to run from 21 to 30 April.

BMW fans are particularly disappointed, as the new i7 electric sedan was supposed to be on display at the show. The recently unveiled long-wheelbase i3 sedan was also expected. The i7 focuses on RSE (rear-seat entertainment). It will get a theatre screen on its inside, which is a 31” ultrawide display along with a touchscreen infotainment system. The theatre screen, which can be lowered from the headliner, is huge, with a sharp 8k resolution. BMW is also collaborating with Amazon Firestick to facilitate watching movies via OTT platforms, and streaming.

And VW were to present their concept electric sedan that anticipates a commercial model slated for next year. The concept is a successor to the 2017 ID.Vizzion concept, and should serve as an emission-free alternative to the Passat. Also expected, a station wagon in the style of the ID.Space Vizzion from 2018. It remains to be seen which cars originally meant to debut in Beijing will still be revealed online in the second half of the month. Whether the show will be rescheduled later in 2022 is currently unknown.