Thu, 4 July 2024
Weekly Newsletter

DVN Interior

NEWSLETTER #219

Editorial

DVN-I Field Trip: Techniplas

Techniplas

DVN-I visited the European headquarters of Techniplas in Rüti, Switzerland, so in this week's newsletter you'll get to read about their interesting technologies and products—including our interview, which reinforces the overview about their technical expertise and capabilities.

Also this week, we report about the design and technology updates in and on the 2025 BMW 3 Series, the revised Škoda Octavia with its increased focus on electronics, the sustainable-plastics traceability of Covestro and Alibaba Cloud, and the mass production of an eco-friendly decorative film for automobile interiors.

We've got coverage of annoyance among Chinese drivers caused by slow robotaxis, and GM's continued investment in their Cruise robotaxi operation.

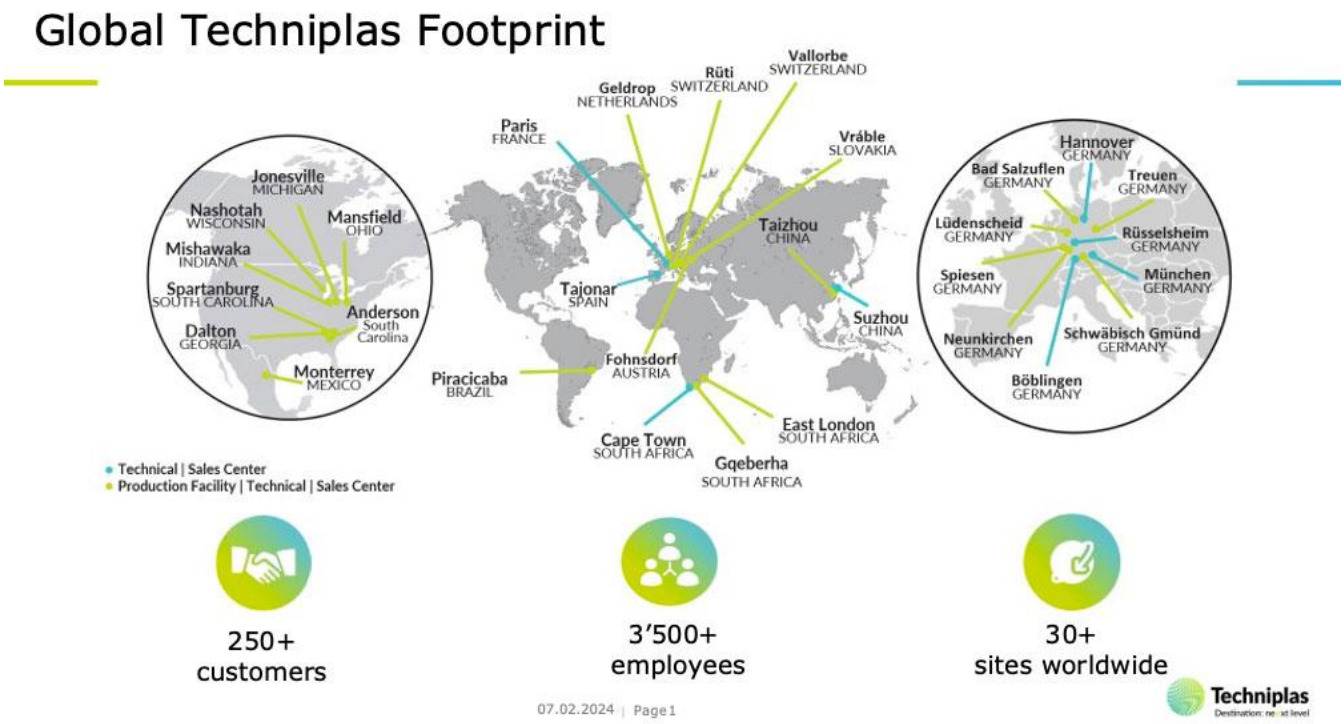
The Bugatti Tourbillon hybrid hypercar has been completely redeveloped as a 'car for eternity'. Ferrari opened a new production plant in Maranello. It's all here, and we're glad you're here with us! Not yet a member? Come **join in**.

Sincerely yours

Carsten Befelein
Consultant, DVN-Interior

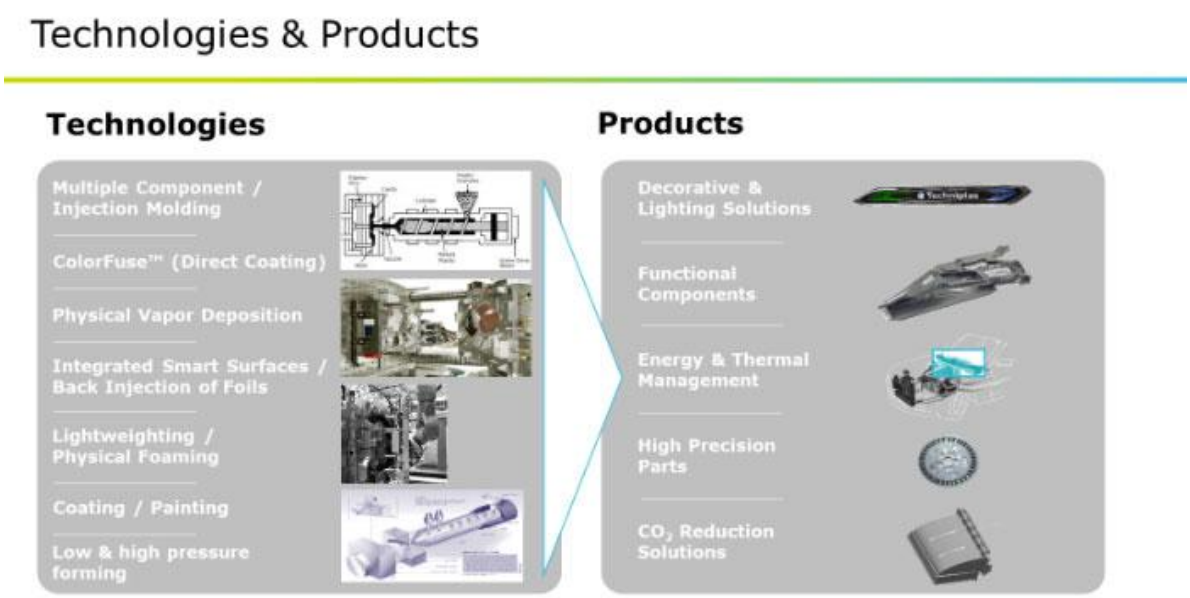
In Depth Interior Technology

Techniplas: Profile and Interview



The Techniplas Group was founded in 2009. Headquarters of Techniplas International is in Rüti, Switzerland, and the headquarters of Techniplas North America is in Nashotah, Wisconsin.

Techniplas has great experience and manufacturing capabilities in automotive and commercial plastics on the basis of material expertise, production capabilities, secondary operations and surface engineering.



This is reflected in many innovative technologies and products: decorative and lighting solutions, functional components, energy and thermal management, high-precision parts, and CO_2-reduced solutions.

For example, **ColorFuse** is an in-mold coating process which combines injection molding and painting in a single process step. It is eco-friendly, sustainable, cost-efficient, resource-saving, and CO_2-reducing.

The products are durable and resistant to scratches, light, and weather, and have minimal wall thickness. Therefore, customers worldwide are using ColorFuse technology for their serial applications.

Another interesting technology is **PVD-Chrome Replacement**. This is an automated proprietary process for in-chamber metallization with the look and feel of chrome. It is eco-friendly, uses no toxic Chromium-6, and REACH compliant.

These products are also durable and resistant to scratches, light, and weather; meeting OEMs' interior testing specs, and enable novel functionalities like light and radar transmission (for sensors) and capacitive touch. The minimal layer thickness creates flexibility of coated parts. The cost is at or below conventional chrome. The patent for this technology is pending.

Techniplas uses lightweighting and CO_2-reducing techniques such as thin-wall technology, foaming on physical/MuCell or chemical basis, organo-sheets with improved weight-to-stiffness ratio, and bio-based materials with optimized density. For functional vehicle components, the company has a focus on acoustic and thermal efficiency, mechatronic/kinetic solutions, hard/soft material combinations, etc.

The company develops and manufactures, among others, **decorative solutions** for the exterior and interior of vehicles. Exterior products include radar emblems, reflectors, radiator grilles; hood, trunk, and bumper parts; A/B/C pillars, spoilers, wheel arches, headlight and taillight components, mirror housings, and sill and scuff plates.

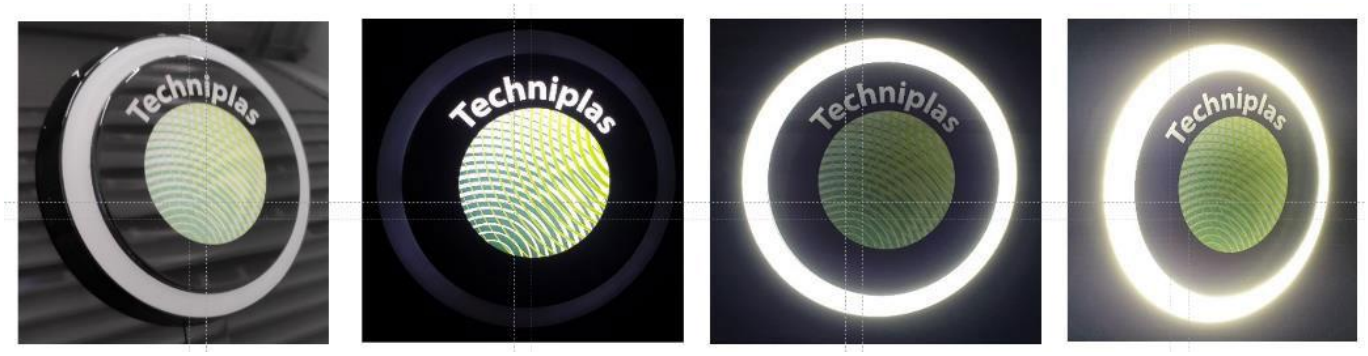
Typical products for the car interior are decorative panels, ambient light covers, center console components, door panel switch covers, door handle covers, door moldings, reflectors, IMD/IML foils, cockpit decorative elements, infotainment, display systems and operating elements with advanced thin films, integrated electronics, surface enhancements, broad range of colors, high quality A-surfaces, functional and light integration.

Lighting Solutions

The lighting solutions of Techniplas comprise light guide design and simulation in-house, use of microstructures for high homogeneity and increased intensity, 2D and 3D light guide geometries, integration in interior and exterior parts, and supporting technology for future autonomous driving as communicator to other vehicles, pedestrians, and the outside world.

With their own powerful Optiback light simulation program, Techniplas computes automatic microstructure optimization and high light efficiencies to reduce the number of LEDs. The activation of light guides with very flat packages becomes possible with nearly invisible structures, light patterns on demand, and even in the volume of light guides with structure lasering.

On this basis Techniplas has developed a lot of interesting light features for the interior and exterior of vehicles —for example, a volume lasered light plate for ambient fond illumination and an Illuminated steering wheel for signal functions.



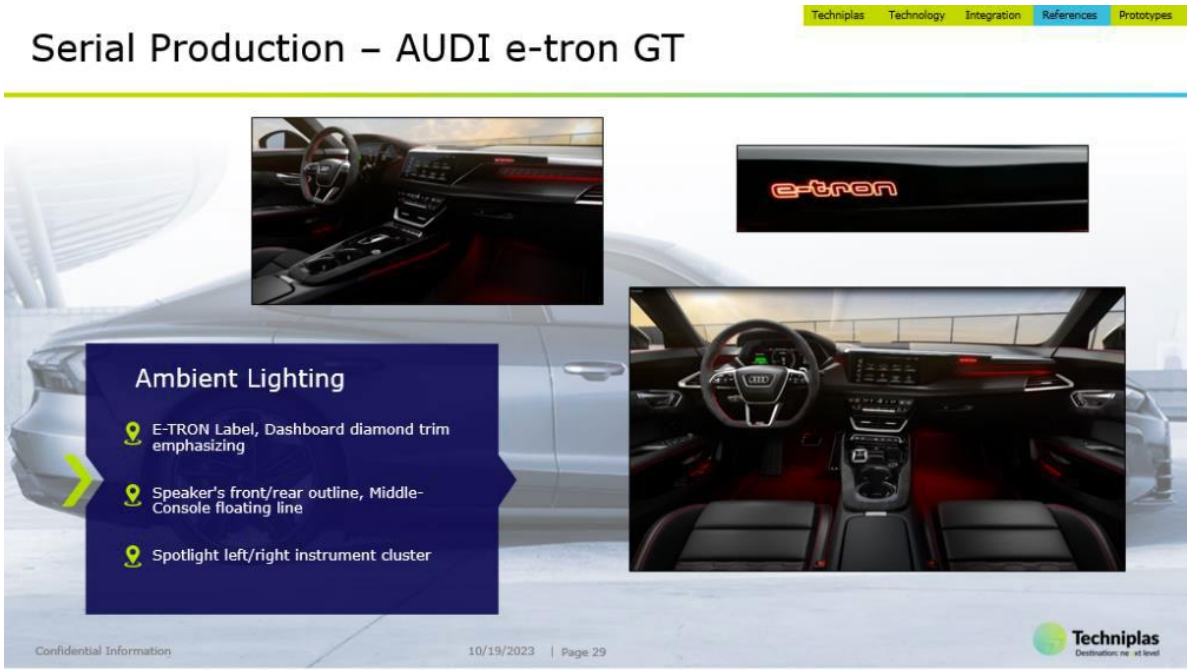
For the exterior, Techniplas developed an illuminated logo combined with functional lighting and different signal warnings, shown in a prototype vehicle.

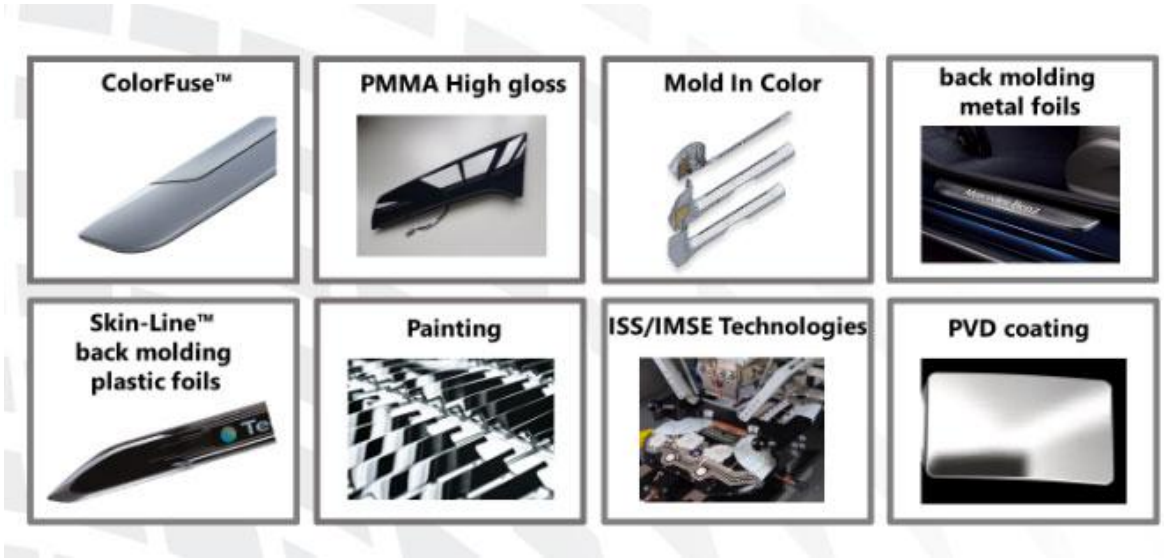
Techniplas also presents a panel-integrated dynamic communication light for autonomous driving – red light for pedestrian 'Stop', green for 'Go'.

Some years ago Techniplas developed for the Faraday FF91 a communication light in the front fascia and door cladding. The door cladding has a black panel look with hidden structures until lit. Electronics, hardware, and software are extensive, to control the RGB-LEDs and light guide elements separately.

Typical examples for serial applications from Techniplas in large quantities are scuff and sill plates, with and without illumination.

The benefits of illuminated sill plates in IMD technology are more diverse design options via printing, hidden-until-lit effects, day-night design, individualization using digital printing foils, UV-hardened surface with good scratch resistance, and 3D-design.



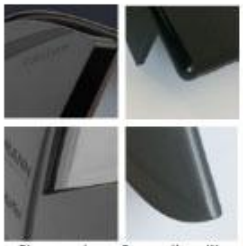


In decorative surfaces, Techniplas-Weidplas uses technologies like ColorFuse, PMMA high gloss, Mold in Color, back molding metal foils, skin-line back molding plastic foils, painting, ISS/IMSE (Integrated Smart Surfaces), and PVD coating.

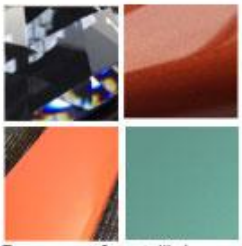
Multi-Textured Surfaces

High evenness, no wave (no orange peal)

1-shot bi-colouring



Sharp edges & small radii



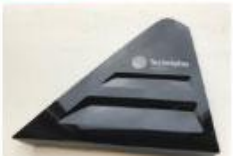
Transparent & metallic lacquer

With ColorFuse-In-Mold-Coating multi-textured surfaces with high evenness and self-healing properties, 1-shot-bi-coloring, sharp edges, small radii, transparent and metallic lacquer are feasible.

Realization of lettering and logos with laser on PMMA and ColorFuse:

BMW 7er (ColorFuse)

Stellantis D-Pillar (PMMA)



B-Pillar PMMA black high gloss / illuminated (Prototype)

Seat „El Born" (PMMA)

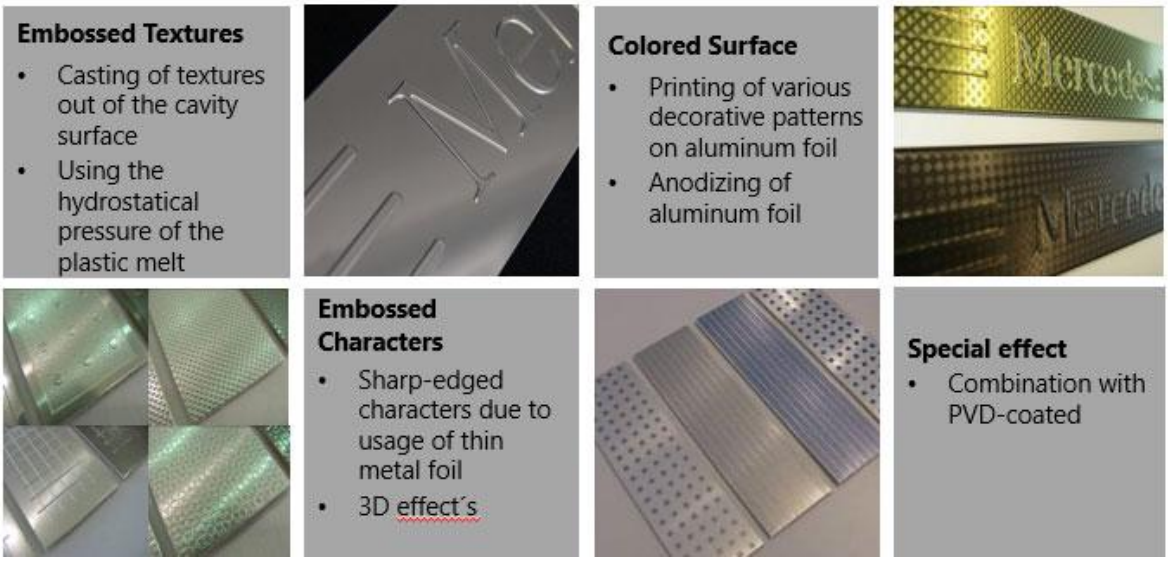
Techniplas also produces pillar trims with high-gloss black and ColorFuse technology for more individualization.

BMW 7er: Décor Trim Interior Glass/Diamond Optic

BMW X3/X4: Décor Trim cupholder Diamond Optic (SOP 2024)

SGMW: Décor Trim Shift Knob / Seat Buttons in Diamond Optic (SOP 2023)

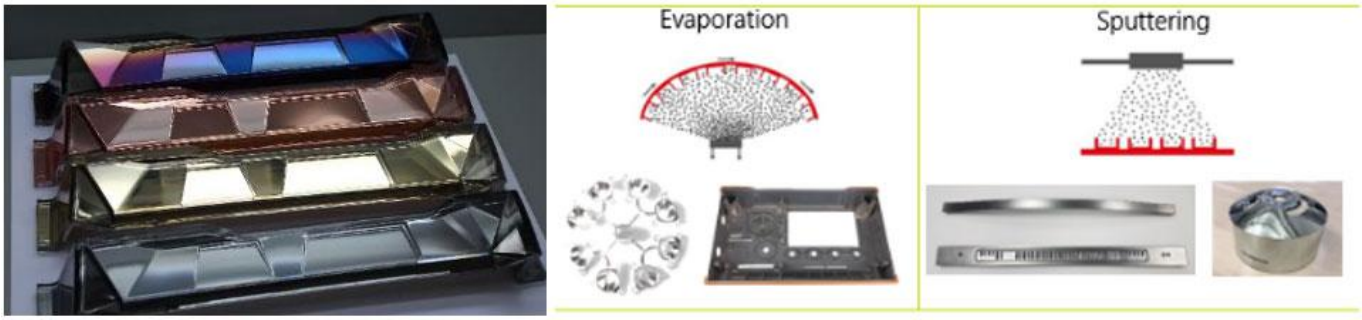
Some examples of serial applications with ColorFuse technology and Glass/Diamond Optic, implemented in the car interior:



With back molding metal films, the company creates design advantages like embossed textures and characters, colored surfaces, and several special effects in combination with PVD coating.

The décor cover of the Porsche 911, the VW pushbuttons and front grille, and the BMW décor panel are serial examples of another Techniplas technology: their Skin-Line plastic foils (back molding FIM).

For 3D geometries, Techniplas also uses a wet-painting technology in an established robotic or manual 3D Spray application process.



ColorFuse + PVD coating in an evaporating or sputtering process opens further surface properties and advantages like scratch resistance, capacitive touch, radar transparency, freedom from splinters, and backlighting via translucent PVD layers in combination with laser ablation.

Interview with Techniplas

L TO R: CARSTEN BEFELEIN (DVN-I) · ERIC-JAN FRIJTERS (TECHNIPLAS) · CHRISTOPH KINDL (TECHNIPLAS)

DVN-I: How did Techniplas get into the automotive realm?

Techniplas: Dating back to the 1930 and being one of the early adapters of IM we naturally evolved into supplying the automotive industry with injection-molded solutions as the application of plastic components in vehicles increased drastically over the years. Probably a case of being in the right place at the right time.

DVN-I: What is the importance of the automotive market from your perspective?

Techniplas: The automotive market is the mainstay of our business, which, through its dynamic nature, ensures we keep pushing and developing ourselves in all our business aspects to be a competent and competitive business partner for our customers.

This is especially so for our lighting and decorative applications for which we use our dedicated centers of excellence to remain relevant.

DVN-I: How did the pandemic affect your business?

Techniplas: The global pandemic created challenges for many around the world on both personal and professional levels. Techniplas, as a global company, was no exception in that respect. We adapted our business processes and human interactions to mitigate the impact of the pandemic on our development and production activities.

DVN-I: What are your main technologies?

Techniplas: Our main technologies are multiple-component and injection molding, low- and high-pressure forming, direct coating with ColorFuse, painting and coating, PVD (physical vapor deposition), lightweighting, physical foaming/MuCell, integrated smart surfaces, and back injection of foils.

Our width and depth of in-house technologies ensures a stable global competence basis. Our ColorFuse, coating and Integrated smart surface technologies are Techniplas signature technologies and are spearheading future developments.

DVN-I: What are your main products and applications?

Techniplas: Our main products and applications comprise decorative and lighting solutions, functional components, energy and thermal management, high-precision parts, and CO_2 reduction solutions.

DVN-I: What are the advantages of your technologies and products?

Techniplas: Our broad spectrum of technologies allows us to provide our customers with a tailored solution for their requirements or ideas. This is also reflected in our solutions for vehicle interior applications.

DVN-I: How are you positioning your technology versus others?

Techniplas: Through our role as system integrator, using state-of-the-art project management tools, in-house development, engineering, process competences, and competent external partners, we bring that decisive *little bit extra* to the table. Our technology itself does not create the successful solutions or innovations. It is the know-how, passion, and interactions among the people involved that make the difference.

DVN-I: What can you tell us about your car-interior offerings?

Techniplas: Our current portfolio for car interiors includes decorative panels, ambient light covers, center console components, door panel switch covers, door handle covers, door moldings, reflectors, IMD/IML foils, cockpit decorative elements, infotainment display systems, and operating elements.

Specific to the car interior applications is how we bring our expertise, available materials, and technologies with understanding of customer demands into the product and process design phase.

Through our deep understanding of surface technologies, combined with our proprietary lighting technologies, we provide light, compact, functional, integrated solutions to our customers. Representative examples of these compact solutions are the Mini Countryman illuminated dash trim, our Smart/Mercedes stainless steel foil back molded illuminated sill plate, and the first fully-industrialized ISS demonstrator.

Another example, bringing technology to the next level for our customers with a unique feature, is the Colorfuse Crystal Clear Smartbar decorative trim for the BMW i7, which we developed for and together with another tier-1 supplier.

DVN-I: What are your next steps within this product family?

Techniplas: We are pushing to further broaden our compact integrated technology solutions in decorative interior trim parts with a focus on ambient lighting.

DVN-I: Which technologies and innovations do you want to push?

Techniplas: In a broad sense, we want to develop our technologies and solutions to support CO_2 footprint reduction initiatives and legislation.

A good example of that is the self-healing aspect of our latest ColorFuse generation. This has the potential to avoid repair or replacement due to normal wear-and-tear damage, hence positively influencing the environmental impact of the part or application.

Another aspect is our continuous push looking at the suitability of alternative or recycled materials with lower CO_2 footprint for our signature technologies.

A third important aspect is thinking of product design for ease of disassembly at EOL. This to enable economical, viable solutions for material and component separation for reuse or recycling.

DVN-I: What are your expectations and targets in electronics and lighting?

Techniplas: We expect to see continued growth of integrated lighting applications in vehicle interiors. We push development of additional design to cost solutions to allow broader penetration into that market segment.

DVN-I: What are your main markets?

Techniplas: Our main markets currently are the European and American Automotive OEMs, which we serve globally.

DVN-I: How do you foresee your market growth?

Techniplas: As a company we have been showing a steady and substantial growth over the years. Our target is to maintain that positive trend into the future.

DVN-I: Who and where are your customers?

Techniplas: Primarily (but not exclusively), automotive OEMs and tier-1 customers are located around the globe, and we serve them through our local plants or prime partners. For a comprehensive overview we would like to refer you to our company presentation.

DVN-I: What are the main challenges for Techniplas?

Techniplas: One of the main challenges we all face in this market is making the right decisions of which direction to commit our means. That is where we see the value of participating in platforms like DVN, and especially DVN-I for vehicle interior lighting, to keep in touch with trends and demands.

DVN Workshops allows for good peer-to-peer interaction, as well as voice of customer exchange to help clarify our vision on future developments.

DVN-I: Do you have other thoughts you'd like to share?

Techniplas: We would like to thank DVN-I for this interview and the opportunity to show our center of excellence, lighting competencies, and laboratory facilities in Switzerland, as well as offering a glimpse of what Techniplas stands for as supplier and partner in automotive interior lighting applications.

Interior News

Design, Tech Updates for '25 BMW 3 Series

INTERIOR NEWS

BMW IMAGE

BMW has announced updates for the 2025 BMW 3 Series to enhance its design, technology, and performance.

It will feature the BMW Curved Display with iDrive 8.5, to improve digitalization and the user experience, and BMW says the updated chassis tuning provides a better balance between sportiness and comfort.

The cabin has been designed to be high-tech and welcoming, with advanced features to improve the driving experience. The interior includes new steering wheel options, customizable interior lighting, and high-quality materials, with the cockpit designed for a 'clean, uncluttered, and tech-forward appearance'.

330i models come standard with a new two-spoke steering wheel with polygonal rim; the M340i and 330i models with the M Sport package feature a new three-spoke, flat-bottomed M steering wheel with a subtle stripe at 12:00. Both of the new steering wheels have illuminated multifunction buttons and gearshift paddles.

There's new cascade lighting integrated into the trim around the new central air outlets. It offers a choice of nine colors, and can be adjusted for brightness. The interior lighting also includes an atmospheric welcome and goodbye animation, and light signals for the likes of an incoming phone call or an open door.

Light open-pored fine-wood trim is standard in the 330i, while the M340i gets M aluminum 'rhombicle' as standard. Ash grey open-pored fine-wood trim, aluminum fine brushed and, on the M340i, carbon fiber is all optionally available. Buyers can specify galvanic controls, which add luster to the window switches, door lock button, and air outlet adjustment stalks. The optional Sensatec dashboard also has a more refined surface and decorative stitching in a contrasting color.

The BMW Maps navigation system aims to makes it easier to input destinations and provide additional information while driving. New features include better usability of filters, a flatter menu structure with touch buttons shown directly on the map view, and route recommendations.

An optional BMW Live Cockpit Professional adds a HUD and an augmented-view function. This supplements the navigation system’s map display by showing a live video stream of the driver’s view on the information display or control display, and augmenting it with contextual real-time information. For instance, at confusing junctions, an animated directional arrow is integrated into the video image to help the driver take the best turn-off for the planned route.

The 2025 3 Series also introduces the latest version of BMW iDrive with QuickSelect, based on BMW Operating System 8.5. This system has a new home screen and improved menu structure for more intuitive control.

Revised Škoda Octavia Puts Electronics Front & Center

INTERIOR NEWS

ŠKODA IMAGE

After four years, Škoda has given the Octavia a facelift. The changes are particularly noticeable on the inside: the Octavia is becoming more digital. Instead of the previous analog instrument cluster, there is now a 10-inch instrument screen and a 10-inch central screen. In the more expensive versions, there is even a 13-inch display on the center console. There are more USB-C ports providing 45 watts of power. And in future, the car will receive updates wirelessly, saving a trip to the garage.

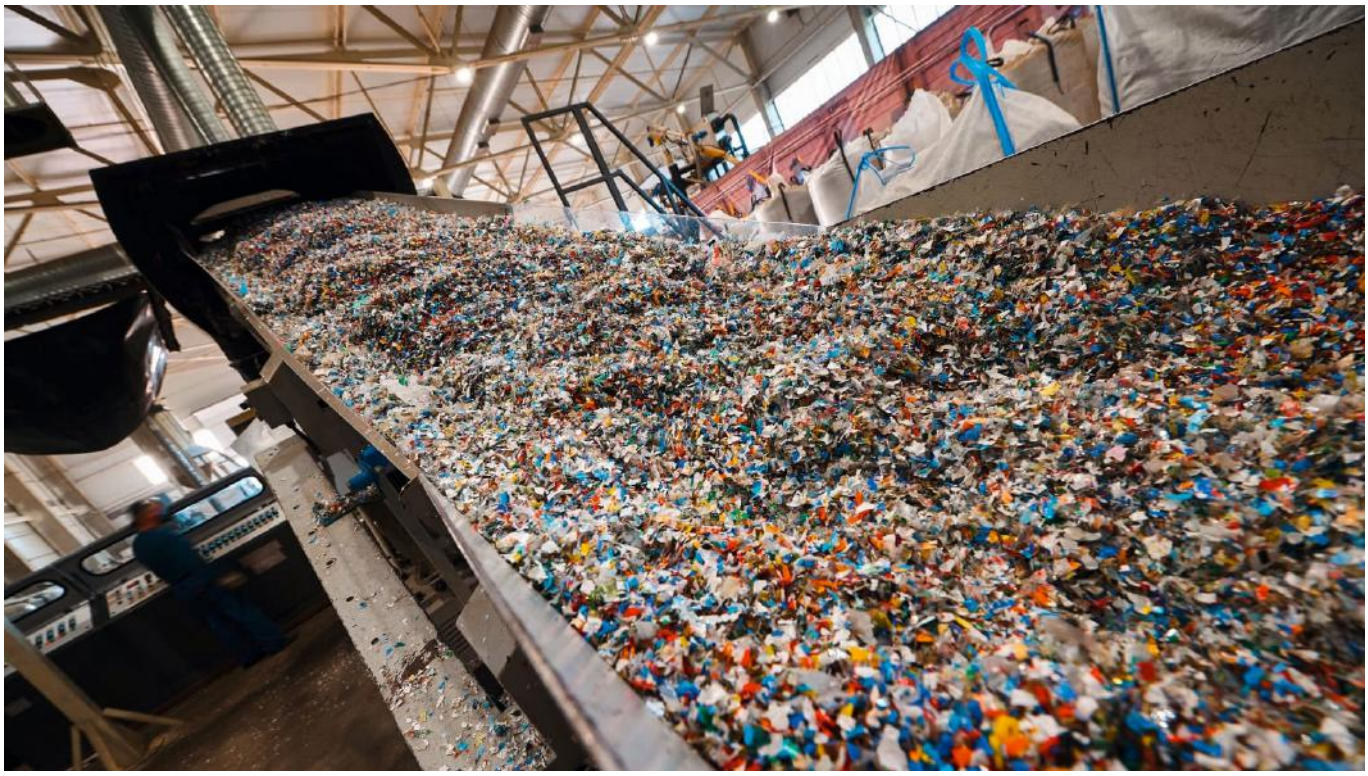
The technology comes from the large Volkswagen modular system and is used in the new VW Passat and Tiguan and the Škoda Superb, among other models. Clear visuals, fast processors, and a thoughtful menu structure make it noticeably easier to use the car. Frequently-used functions can be accessed more quickly—the off switch for the unpopular cruise control nag, for example, which sounds an alarm if the permitted speed is exceeded.

If you don't want to fiddle with the display, you can tell the car what to do. Set the HVAC warmer or colder, change the color of the interior lighting, or search for a pizzeria in the area. It's all based (for better or worse) on an incursion of ChatGPT and a permanent internet connection.

New apps such as Pay to Park and Pay to Fuel mean an end (at last!) to the age-old, cumbersome task of physically paying for products and services you use. And there is a revised version of the My Škoda app, which displays all the vehicle's information. The app is handy for quickly checking whether the tank is still full or the car is locked. And if the neighbor's cat is already making itself comfortable on the warm hood, the horn can also be activated via smartphone…saving the necessity of doing a cat-scan when returning to the car!

Covestro, Alibaba Cloud in Plastics-Traceability Pact

INTERIOR NEWS



COVESTRO IMAGE

Covestro has partnered with Chinese big-data giant Alibaba Cloud to enhance supply chain transparency for sustainable plastics.

According to the companies, this collaboration aims to meet rising consumer expectations and regulatory requirements by measuring the use and carbon footprint of sustainable materials along the value chain.

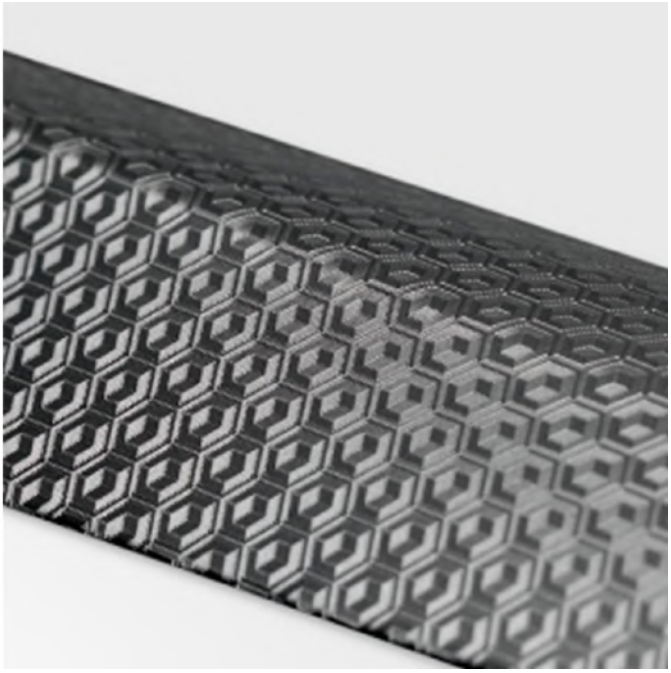
Covestro will provide sustainable plastic solutions along with their carbon footprint data. Alibaba Cloud's AI-driven sustainability platform, Energy Expert, enables comprehensive carbon accounting throughout the lifecycle of materials, from recycled inputs to final consumer products, using digital technology such as blockchain. This platform helps industrial companies measure and optimize their carbon footprint across production lifecycles.

These joint solutions have already been successfully implemented in the consumer goods sector. For instance, Covestro collaborated with Nongfu Spring, a beverage maker in China, to recycle 19-liter water barrels into post-consumer recycled polycarbonate used by Kaco, a stationery brand, to produce gel pens. With Energy Expert's tools, consumers can scan a QR code on the pen's packaging to trace the material's origin, view a detailed carbon footprint breakdown, and see the emissions reduction achieved compared to using virgin materials.

The automotive interiors industry can benefit from adopting similar traceability and carbon accounting practices that will enhance their sustainability credentials, meet regulatory requirements and respond to consumer demand for greener products. This approach is designed to support the industry's transition to a more circular economy, reduce its carbon footprint and improve overall supply chain transparency.

DNP: Mass Production of Eco-Friendly Decorative Film

INTERIOR NEWS



DNP IMAGES

Japanese printing company Dai Nippon Printing (DNP) has developed a mass-production technique for an environmentally-friendly, propylene-based decorative film for automobile interiors they say will promote vehicle recycling efforts.

In Japan, approximately 3.5 million cars are scrapped annually. Since the enactment of the Automobile Recycling Law in 2002, more than 95 per cent of end-of-life vehicles are now recycled. Traditionally, automobile shredder residue (ASR), including plastic waste, has been 'thermally recycled' (i.e., incinerated). In Europe, revisions to the draft regulations on Sustainability Requirements in Vehicle Design and End-of-Life Vehicles (ELV) Management are under consideration, with expectations that the use of recycled plastics in vehicles will become mandatory.

DNP's new decorative film leverages its experience in PP film printing and processing technology. This ensures a high-quality design and ease of handling for the insert injection molding process. The PP decorative film is also anticipated to reduce greenhouse gas emissions. PP is widely used in automobile parts and is recyclable. However, using PP as a base for decorative films has presented challenges such as weak ink adhesion and difficulty in balancing design quality, physical properties and moldability. DNP has addressed these challenges through advanced printing technology and expertise, resulting in a mass production technique for PP-based automotive decorative films.

Benefits include the use of PP to support automobile recycling efforts; and lower greenhouse gas emitted during raw material manufacturing compared to acrylonitrile butadiene styrene (ABS), potentially reducing overall vehicle emissions.

To expand their global presence, DNP is collaborating with DNP Europe, DNP America, and DNP Living Space & Mobility (Shanghai).

The Design Lounge

Bugatti Tourbillon Hybrid Hypercar

THE DESIGN LOUNGE

NETCARSHOW IMAGES

The Bugatti Tourbillon has been completely redeveloped, with a chassis made of a T800 carbon-fiber composite. Despite the electrification, the Tourbillon—which can exceed 400 km/h—weighs less than the Chiron, according to Bugatti.

A sense of mechanical timelessness was a core part of the Bugatti Tourbillon project. For a car that will be displayed on the concours lawns of this and the next centuries, technology can easily grow dated—especially large digital screens—so it was important that it uses as many timeless components as possible. The Tourbillon therefore uses a completely analog instrument cluster crafted by Swiss watchmakers and finished with the same care and attention found in the world's greatest timepieces. Just as these become heirlooms over generations, the Tourbillon is designed as a 'car for eternity'.

The gullwing doors are electrically-operated. The pedals are electrically adjustable, and the seats are rigidly mounted. Instead of displays, the Bugatti relies on craftsmanship: the skeletonized instrument cluster behind the steering wheel with a fixed hub features titanium parts and precious stones was designed and built in collaboration with Swiss watchmakers. The center console consists of a combination of crystal glass and aluminum and integrates a retractable touchscreen. Hidden from view until desired is the high-definition digital screen, which displays vehicle data and offers seamless smartphone connection. An intricately engineered mechanism deploys the touchscreen from the top of the center console; portrait mode for the reversing camera in just two seconds and full landscape mode in five seconds.

Even the audio system is engineered without traditional speakers and woofers, opting for an advanced system that features exciters on the door panels and throughout the car to use existing interior panels as speakers. It is a lighter and more efficient system.

Every decision was made with ultimate performance in mind, without compromising in any way on practicality or comfort. The seats, for example, are fixed to the floor to be as light and as low as they can possibly be, and the pedal box can be electrically adjusted forwards and backwards to ensure a comfortable driving position for everyone. Thanks to this new solution, the interior is spacious, making it ideal for longer trips and daily use.

News Mobility

Robotaxis Annoy China's Drivers

NEWS MOBILITY

BAIDU IMAGE

In China, complaints about driverless cabs are piling up—and some of them could well be taken as an unintended bad report card on the human drivers making the complaints. Much of their criticism revolves around the perceived "excessive caution" of robotaxis on the roads. They're said to drive too slowly everywhere, never exceeding 60 km/h on viaducts, for example, causing slow-moving traffic and traffic jams where this was otherwise not the case. The robotaxis apparently turn so slowly that some drivers behind them grow rageful with impatience. They are "too polite" and give way to every pedestrian, they say. And they often brake so hard that they become a safety risk for vehicles behind, according to some of the accusations against the robotaxis.

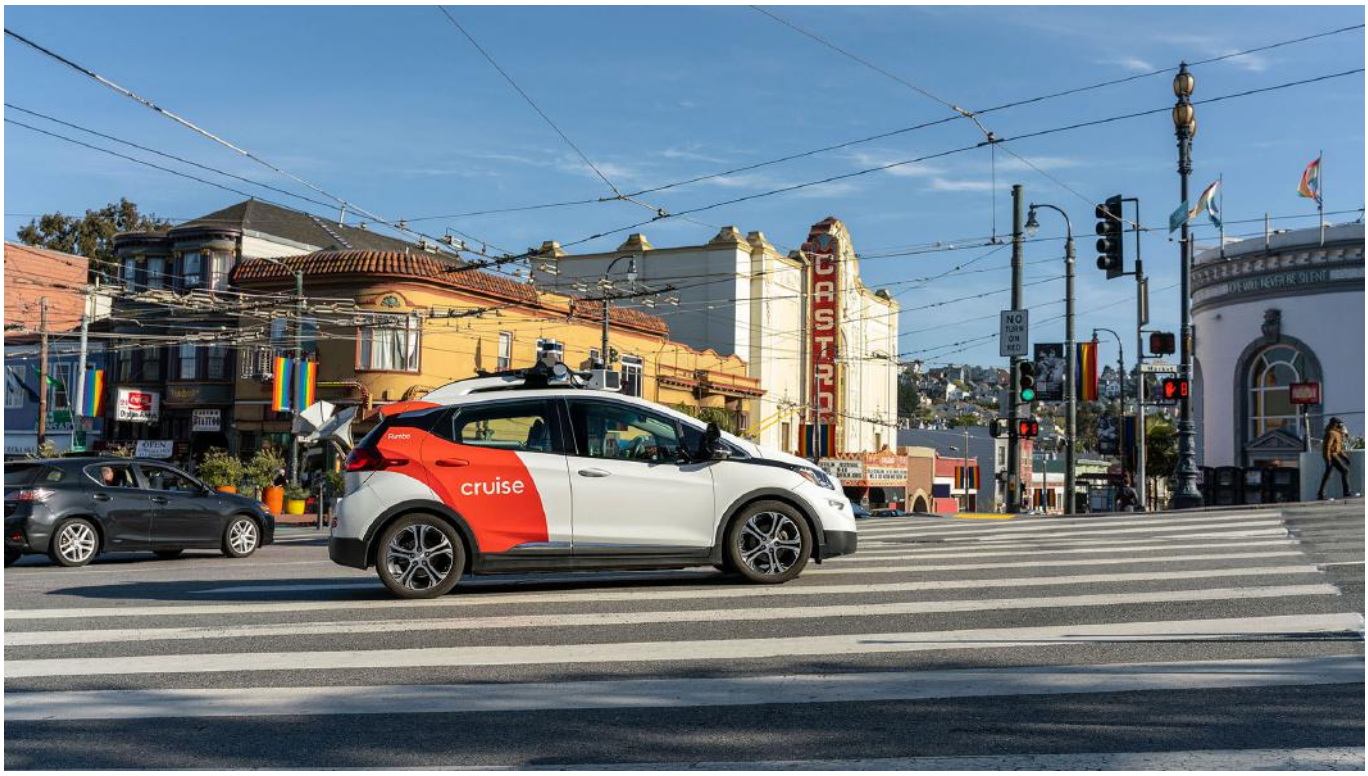
The dissatisfaction is particularly sharp in Wuhan, where people are known throughout China for their rude, inconsiderate road-use manners, whether they are driving or on foot. The bustle of pedestrians with often dubious traffic behavior in the middle of the city of 13 million is a particular challenge for programming algorithms for autonomous driving. Baidu Apollo unveiled the latest generation of their Apollo Go fleet in May this year. The company claims the new system is "more than ten times superior to human drivers in terms of driving safety" and can also cover "complex urban scenarios". Meanwhile, though, the growing number of complaints from drivers has triggered a new debate in China about autonomous driving, its safety, and the feasibility of rapid commercialization at the current level of technology.

A survey by the Capgemini Research Institute shows that consumers in China have a more positive attitude towards driverless cars than consumers in most other countries around the world. According to press reports, more than half of Chinese people would be happy to give up driving if they could switch to self-driving cars. Drivers in Western countries have a much more skeptical view of the new technology, according to articles about the Capgemini survey.

Apollo Go in Wuhan wants to reach the break-even point in business terms this year, and the company aims to be profitable by 2025. This would make Apollo Go the world's first commercially successful mobility provider to rely on autonomous driving. According to many analysts in China, the complaints from Chinese humans that the computers drive too slowly will not be able to stop this.

GM Maintains Cruise Investment

NEWS MOBILITY



CRUISE IMAGE

General Motors is supporting their robotaxi company Cruise with a financial injection of USD $850m. This will buy time to finalize strategic considerations regarding Cruise's future, GM manager Paul Jacobson said at a conference.

Cruise was among the pioneers in autonomous driving and had ambitious expansion plans. But then a Cruise driverless car in San Francisco hit and dragged a woman in early October. After that, all driving was suspended for months, and Cruise is only gradually starting to get their cars back on the road. GM has already signaled that the Robotaxi service will initially be resumed in a single city.

It was devastating for Cruise's reputation that these details only became known later, after the accident was misrepresented at first. GM replaced the company's top management. The carmaker and other investors had already poured billions into Cruise.

General News

Ferrari's New Maranello Production Plant

GENERAL NEWS

FERRARI IMAGE

Ferrari has opened a new production plant at their Maranello headquarters. They plan to build their first electric car there on 42,500 square meters, with over 300 employees, as well as vehicles with combustion engines and hybrid drives.

In the 'E-building', Ferrari is building cars with all types of drive under one roof. High-voltage batteries, electric axles, and electric motors are also produced here. According to Reuters, production is due to start at the beginning of 2025.

Ferrari says more than 3,000 solar panels on the roof of the new plant will generate 1.3 megawatts of electricity. By the end of the year, Ferrari plans to switch off the cogeneration plant previously operated in Maranello and use only renewable energy. To air-condition the plant, Ferrari operates an electric heat pump using renewable energy.

According to the company, Ferrari recovers more than 60 per cent of the energy used for battery and engine testing and uses it for other processes. Ferrari intends to certify the building itself to the LEED (Leadership in Energy and Environmental Design) Platinum level. It is therefore considered a low-energy building. According to Ferrari, the new building's CO_2 emissions are 2.7 kilotons below those of a comparable non-electrified building.

Ferrari also says the designers created the facade components in line with the 'Design for Manufacturing and Assembly' technical methodology. This simplifies assembly and maintenance, is cheaper, and reduces the environmental impact associated with the materials and processes used.