

*We pioneer technology
for mobility experiences
that matter to people.*

PressKit

IAA Mobility 2023



IAA»
MOBILITY

FORVIA
Inspiring mobility

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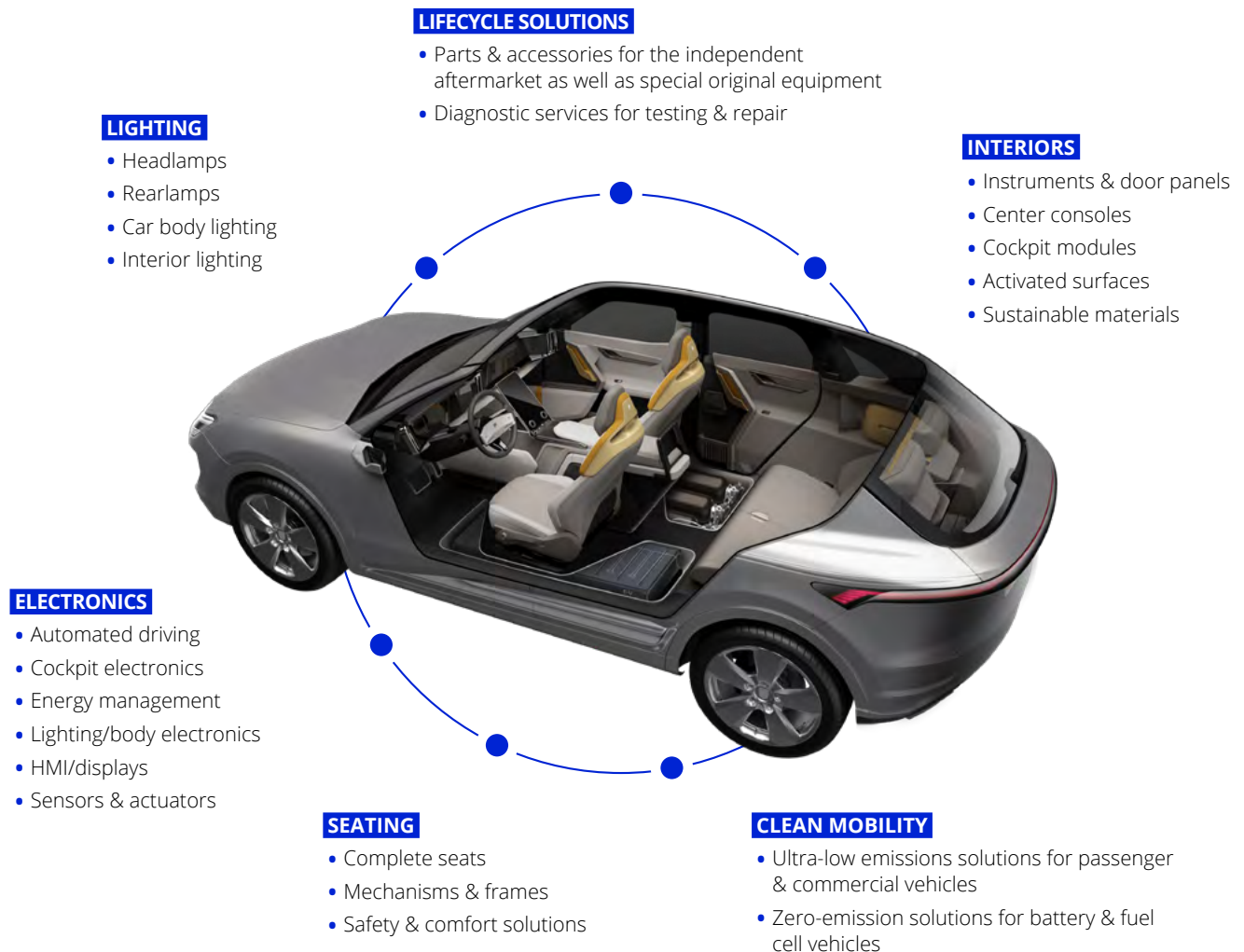
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Driver of transformation

The automotive industry is evolving rapidly. Electrification, connectivity and individualization combined with the desire for greater sustainability are changing the way vehicles are designed and how consumers use them.

In a changing industry, transformational companies are needed: FORVIA is at the forefront of this change, working tirelessly to define a more people-centric mobility. As the seventh largest automotive supplier in the world, FORVIA brings together two

European power houses - Faurecia, a leading French company in automotive technology, and HELLA, a leading expert in lighting technology and automotive electronics with headquarters in Lippstadt (Germany). The Group leverages this extensive know-how to create safe, affordable, customized, and sustainable mobility experiences. Already, one out of every two vehicles worldwide is equipped with FORVIA technology from six business groups.





A strong pioneer in **sustainability**

FORVIA aims to serve the mobility needs of the future with sustainable and innovative solutions that benefit automakers, consumers and the environment.

Faurecia and HELLA already combine economic growth with environmental protection in many areas by continually optimizing their products, materials, and structures, as well as their manufacturing processes. In 2022, FORVIA became the first automotive company to receive the globally recognized SBTi (Science-Based Targets Initiative) certification: FORVIA aims to be CO₂ net-zero by 2045.

In the meantime, FORVIA is working on specific milestones for today, 2025 and 2030, and the Group is actively implementing new processes and materials for upcoming product generations. As a further step towards achieving its net-zero roadmap by 2045, FORVIA has successfully launched a cross-company business unit called MATERI'ACT, specifically dedicated to the development of sustainable materials.



FORVIA in **Germany**

FORVIA is strongly represented in Germany due to its European roots: Every day, around 15,000 employees at over 40 locations put their expertise and innovative strength to the benefit of the Group's global customer portfolio. With its latest production site opened in Hanover in 2022, FORVIA is continuously expanding its presence in the region. Additionally HELLA has been headquartered in Lippstadt, Germany since its founding in 1899 and maintains major production and development sites here.

Over decades, FORVIA has established solid relationships with all major European automotive manufacturers to support them in their transformation. Recognizing Europe's potential for global mobility transformation, FORVIA works closely with universities, research institutes and start-ups to develop solutions for the European market in the region. Strong in-house development centers such as the hydrogen hubs in Augsburg and Bavans, leading lighting and electronics research centers or the MATERI'ACT business unit for sustainable materials newly established in Lyon in 2022 underline this ambition.

FORVIA at IAA Mobility 2023

At booth C40 in hall A2, FORVIA offers the opportunity to experience its three core strategic themes through interactive exhibits. The booth is divided into the following three meta-themes:

Digital and sustainable cockpit experiences

- **Cabin Centerpiece “Lumières,”** which showcases integrative solutions for sustainability, for natural human interaction and for a versatile Third Place, bringing together innovations from the fields of interiors, seats, electronics and lighting
- **“Modular Seat for me” demonstrator,** which allows visitors to experience how modularity enables the circular economy
- **“Advanced Interiors for me” demonstrator,** a display of innovative interior components with particularly low CO₂ emissions and innovative activated surfaces including lighting and heating
- **“Interiors for the planet: MATERI’ACT” demonstrator** - an overview of the different sustainable materials FORVIA has developed for interiors

Safe and automated driving

- **“Safe & automated driving” demonstrator,** where the occupant can experience how digitalization and connectivity can support the feeling of safety in different levels of automatization

Electrification and energy management

- **“Zero Emission Powertrain” demonstrator,** illustrating the solution portfolio for battery and hydrogen-powered electromobility.



**DIGITAL
& SUSTAINABLE
COCKPIT
EXPERIENCE**

"LUMIÈRES" demonstrator

A versatile "Third Place"

IN SHORT

At IAA, FORVIA is presenting a holistic concept that conceives the car journey as a third living space alongside one's own living room and office: a place where - surrounded by technologies and sustainable materials perfectly suited to personal needs and habits - one can pursue a wide range of activities. In a nutshell, "Lumières" is not a design manifesto, but attractively showcasing the design freedom created by a sustainable and modular interior concept.

"Lumières" allows a comprehensive insight into FORVIA's technologies: seats, electronics, interior, lighting, HMI and displays. Aligned with FORVIA's roadmap to CO₂ neutrality, "Lumières" reduces CO₂ emissions by 45% thanks to a combination of lightweight construction, sustainable materials and energy-optimized

electronics. These sustainable materials, which have very low or even negative CO₂ emissions, are used in the door panels, center console, seats and seat structures.

In this demonstrator, FORVIA saves energy through solutions such as heated radiant surfaces in door panels and center consoles that improve individual thermal comfort while reducing energy consumption. FORVIA is also introducing smart dimming of the cluster display, a power-saving display technology that is up to 30% more economical than a conventional HMI.

Did you know?

Lightweight architectures, sustainable materials and energy-optimized electronics lead to an interior with **45% lower CO₂ emissions.**





Lightweight construction and modularity on board

Numerous lightweight innovations for the interior are integrated into "Lumières":

- An ultra-slim instrument panel made of lighter and sustainable materials, which also integrates the steering wheel pad to reduce vehicle weight
- Slim Light, optimized for dynamic area illumination with up to 70% less weight for lighting
- An expandable cockpit architecture that allows components to be redesigned, swapped and added, and supports new business models for repair, recycling and upgrades



Creative interior design

FORVIA has designed the interior of the vehicle as a “Third Place”: a customizable premium interior that provides an environment ‘just like home’, with customized lighting, intuitive controls and many functions in the rear. The innovative interior of this exhibit includes the following features:

- A swivel seat that allows dynamic seating configuration for different activity scenarios
- A multifunctional, swiveling console that converts from an armrest to a screen holder or table
- An integrated bookshelf, reading lamps and personalized headphones

Did you know?

Lumières contains three world premieres:

- **Transparent hood with a panoramic camera at wheel height**, allowing a wider and more complete perception of the environment
- **Reactive dimming**: an intuitive HMI that adjusts the brightness of the display based on gaze detection by the Driving Monitoring System camera
- **X-By-Wire technology** for steering and braking



X-By-Wire: electronic steering and brakes

IN SHORT

With Steer-by-Wire and Brake-by-Wire, FORVIA does away with the inflexible steering columns and clunky pedals of conventional vehicle cockpits and meets the highest safety requirements. Steer-by-Wire introduces advanced electronic control technology for a smooth and customizable steering wheel feel, ideal for the future automated driving experience.

In the “Lumières” demonstrator, FORVIA illustrates advanced technology and a streamlined design approach through innovative electronic by-wire systems. Steer-by-Wire and Brake-by-Wire make bulky steering columns and stodgy pedals of conventional vehicle cockpits a thing of the past and meet the highest safety requirements.

The Brake-by-Wire system features lighter, narrower brake pedals that provide drivers with more foot room and comfort, as well as a customizable braking feel. Beyond their design benefits, these systems aim to provide a safe and intelligent driving

Did you know?

Safety is one of FORVIA’s top priorities, which is why the Group offers automakers systems that minimize the risk of failure in the same way as aviation safety systems.

solution that will increase driver confidence in future automated and autonomous vehicles.

Steer-by-Wire brings advanced electronic control technology to the vehicle, providing a smooth, adaptable steering feel ideal for future autonomous driving in electric vehicles. It creates space for the driver’s legs and knees, allows more flexibility in designing a minimalist cockpit, and helps reduce the overall weight of the vehicle. FORVIA has integrated the steering wheel hub into the instrument panel, simplifying design, installation and airbag mechanics, and increasing safety.



Lighting personalization

IN SHORT

FORVIA presents a range of dynamic and customizable optical solutions that help address key Automotive lighting megatrends: Energy efficiency, safety and vehicle branding. In “Lumières”, FORVIA will demonstrate numerous automotive lighting solutions for interior ambiance as well as for distinctive exterior vehicle lighting.

The Front Phygital Shield (FPS) is composed of up to eight different foil and plastic layers. It represents a highly integrated vehicle front module with animated RGB lighting, illuminated radome, sensors and electronics. FPS incorporates lighting features specifically for electric vehicles by utilizing the space between the front headlamps that traditionally houses a grille on internal combustion engine vehicles. FPS integrates multiple LED segments for dynamic surface illumination and provides digital use cases for custom animations. New functionalities and branding elements can also be integrated to

Did you know?

Compared to conventional radiator grilles, the Front Phygital Shield reduces assembly and logistics costs **by 50%**.

allow automotive manufacturers to give their brands a distinctive design. With further functionalities such as integrated sensors and heating, they additionally play a central role in automated driving. Polyurethane plastics can also be used for front phygital shields, which give the FPS a self-healing effect under the influence of heat, such as from sunlight.

Digital FlatLight consumes 80% less energy than a taillight and enables custom styles thanks to a smart-glass cover with switchable segments that provide a technical alternative to OLED lamps with a conventional structure. With a material thickness of just 8 millimeters, Digital FlatLight offers manufacturers more design flexibility to create a unique, distinctive expression for their vehicles.



Award-winning innovation: SSL | HD digital headlight system

The CES 2023 Innovation Award-winning digital headlamp system is the world's first high-resolution headlamp based on matrix LED technology with the implementation of new, safety-relevant lighting functions through intelligent control of up to 25,000 LED pixels per chip.

The new system is also up to 75% smaller than the previous generation of modules, creating new opportunities for integrating headlights into vehicle architectures. Its patterns and functionalities are generated with software, enabling over-the-air updates and the implementation of new functions over the product lifetime. With SSL | HD, FORVIA can offer additional digital symbol projections, such as the vehicle width in a construction site or the illumination of the roadway. This technology has been on the market since summer 2023.

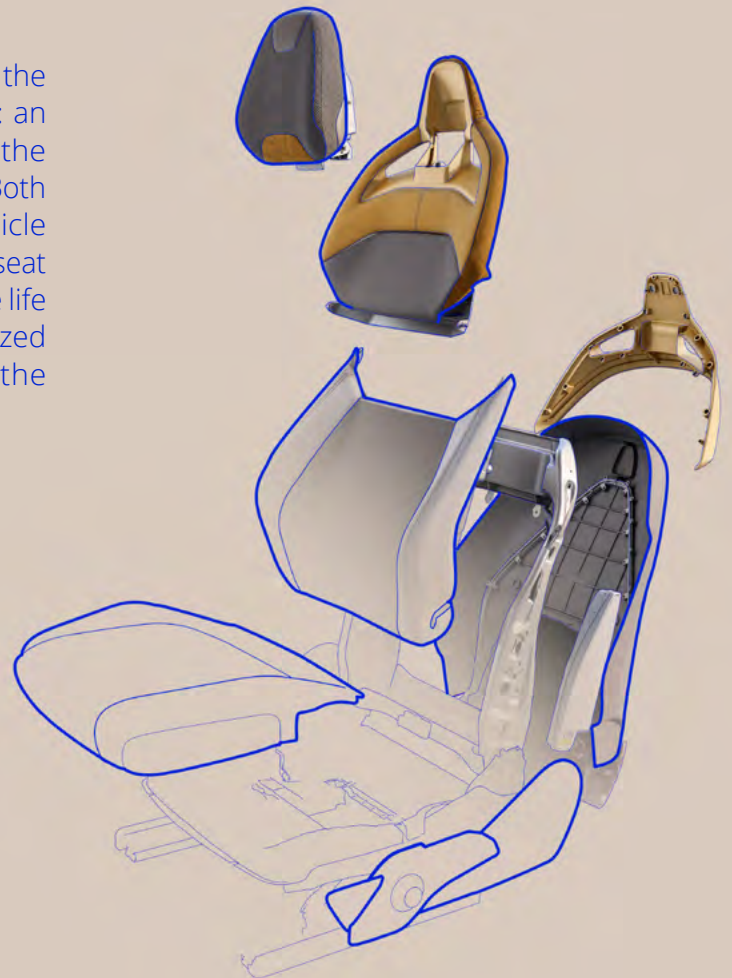
"MODULAR SEAT FOR ME" demonstrator

Modular seat design for longer use

IN SHORT

FORVIA has developed a seat architecture that allows a variety of seat models to be produced on the same manufacturing platform. This reduces complexity from 120 to 10 parts while maintaining the diversity of seat designs and models and without compromising seating comfort.

This seat architecture is a response to the challenges faced by most automakers: an extended vehicle life combined with the need for greater comfort in the vehicle. Both trends make it necessary to give vehicle owners the option of retrofitting certain seat features. This allows them to extend the life of the vehicle and achieve a personalized feel-good experience throughout the vehicle's lifetime.





VIBE®: a game-changing immersive technology

One example of optional modules in this modular concept is VIBE®, a cutting-edge immersive technology that redefines consumers' time behind the wheel. This solution delivers an unparalleled and safe experience by embedding tactile sensations within the car seat, creating a fully-immersive journey.

With VIBE®, users can alleviate cognitive overload and enjoy enhanced biomechanical benefits. More specifically, VIBE® provides the following three remarkable services:

- **Safety:** Advanced Driver Assistance System (ADAS) featuring haptic alerts for blind spots, lane changes, speed limits and drowsiness.
- **Music & Entertainment:** A heightened level of immersion as electronic algorithms, accompanied by 4D sound, automatically create vibrations that synchronize with any audio played on the vehicle's audio system, be it music, movies or games.
- **Wellness:** Various experiential scenarios from an ever-growing catalog of programs by leading haptic artists that allow users to enhance their relaxation, recreation or activation.



Supporting the **circular economy**

In addition to its strong focus on comfort, FORVIA's modular approach is also based on sustainability: The group is reducing the carbon footprint of seating inspired by circularity by streamlining design to use less material; choosing sustainable materials that are recyclable, recycled or bio-sourced (including fossil-free steel); avoiding mixed

materials to simplify recycling; and making seats easier to assemble and disassemble in less than 5 minutes. By taking a modular architecture, FORVIA can also offer refurbishment of seating elements which will support longer lifecycles and stimulate new recycling and repair activities.

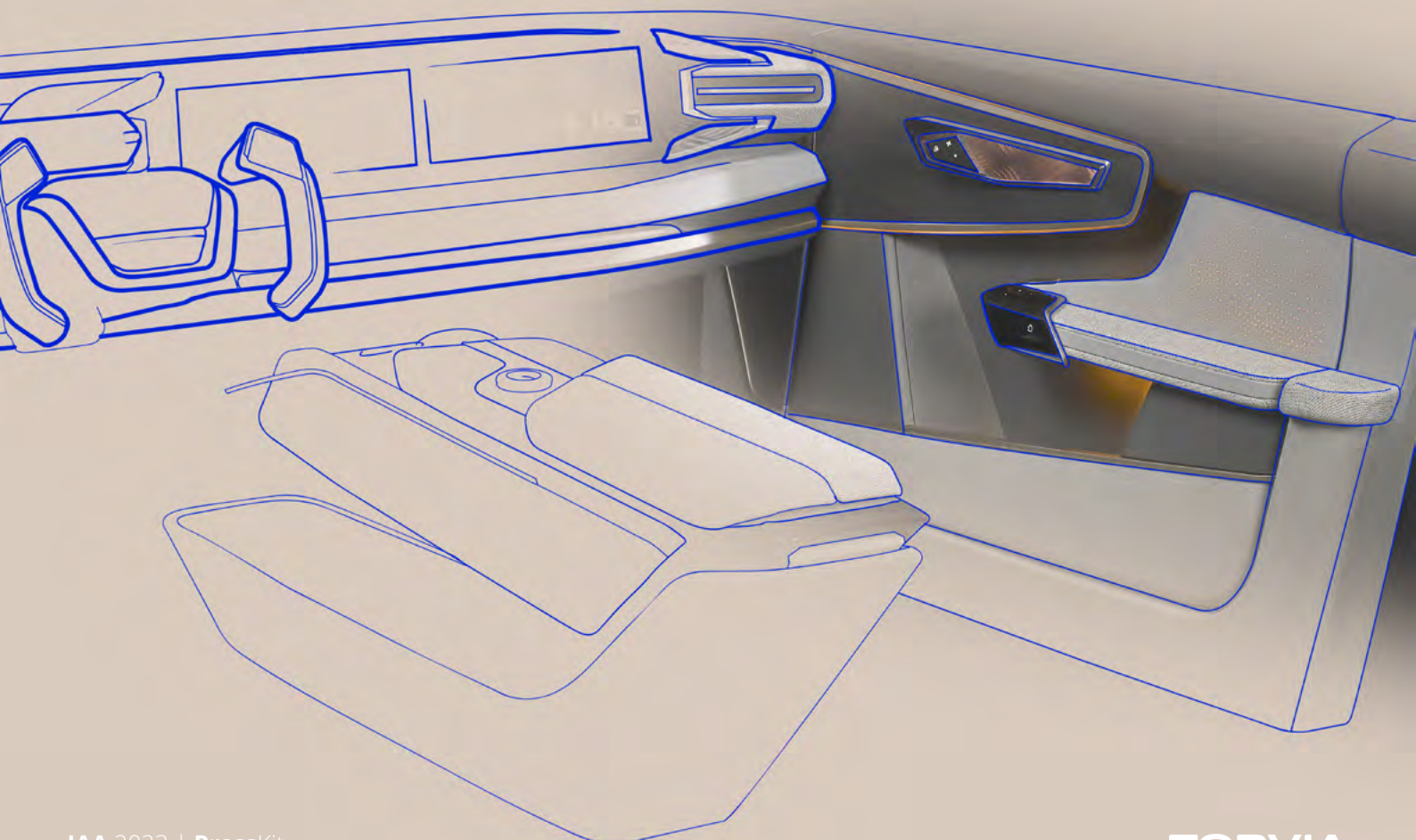
"ADVANCED INTERIORS FOR ME"
demonstrator

Relief and comfort advanced interiors

IN SHORT

FORVIA is a leading innovator combining sustainable solutions and intuitive interiors that anticipate automakers and users' expectations for sustainability, extended life, and advanced experiences. Our latest interiors innovations focus on driver and passenger experiences and how we can make mobility more personalized, intuitive, and enjoyable.

The use of sustainable materials, through our new MATER'ACT brand, and the use of advanced technologies, through Surface Activation, creates an elegant and vibrant vehicle interior that has a minimal environmental impact but has a maximum impact in terms of comfort and look. Additionally, FORVIA incorporated modular interiors and architectures to improve life cycle management and customization. This allows for interior reconfigurability, which is the ability to customize and upgrade functionalities and surfaces appearance for a longer and better vehicle lifecycle management.





Reducing **cognitive load** and increasing **safety**

The "Advanced Interiors for me" exhibit combines sustainable materials and activated surfaces to create a dynamic and sustainable cockpit experience for drivers and passengers alike. FORVIA believes in smart technologies and design that makes the vehicle interior more interactive and elegant. This translates into intuitive interfaces, including CID and cluster content, that reduce cognitive load and increase safety. In addition, smart lights are used as a dynamic way to communicate and provide warning functions. For Surface Activation, FORVIA developed Injected PC/PUR technology, which allows the decoration, display lens and touch panel to be combined (in one piece) with effective cost and CO₂ reduction compared to glass.

Heating solutions include both injected radiant panels and large surface lighting. The combination of radiant panels and slim lighting system allows for dynamic lighting scenarios for an optimal comfort experience. The integrated heating solutions consume 30% less kWh. They fully meet the energy efficiency requirements of electric vehicles and can be used on large interior surfaces.

Did you know?

30% less kWh consumption for heating due to large area radiant panels.



Design freedom through slim and modular components

The attractive new instrument panel design integrates slim and invisible vents, giving designers great freedom.

Sliding armrests and sliding control panels improve accessibility for passengers at rest and facilitate the versatility of the cabin for different purposes.

Combined with sustainable materials and world-leading high-tech displays, the result is a dynamic, elegant cockpit experience for drivers and passengers alike.

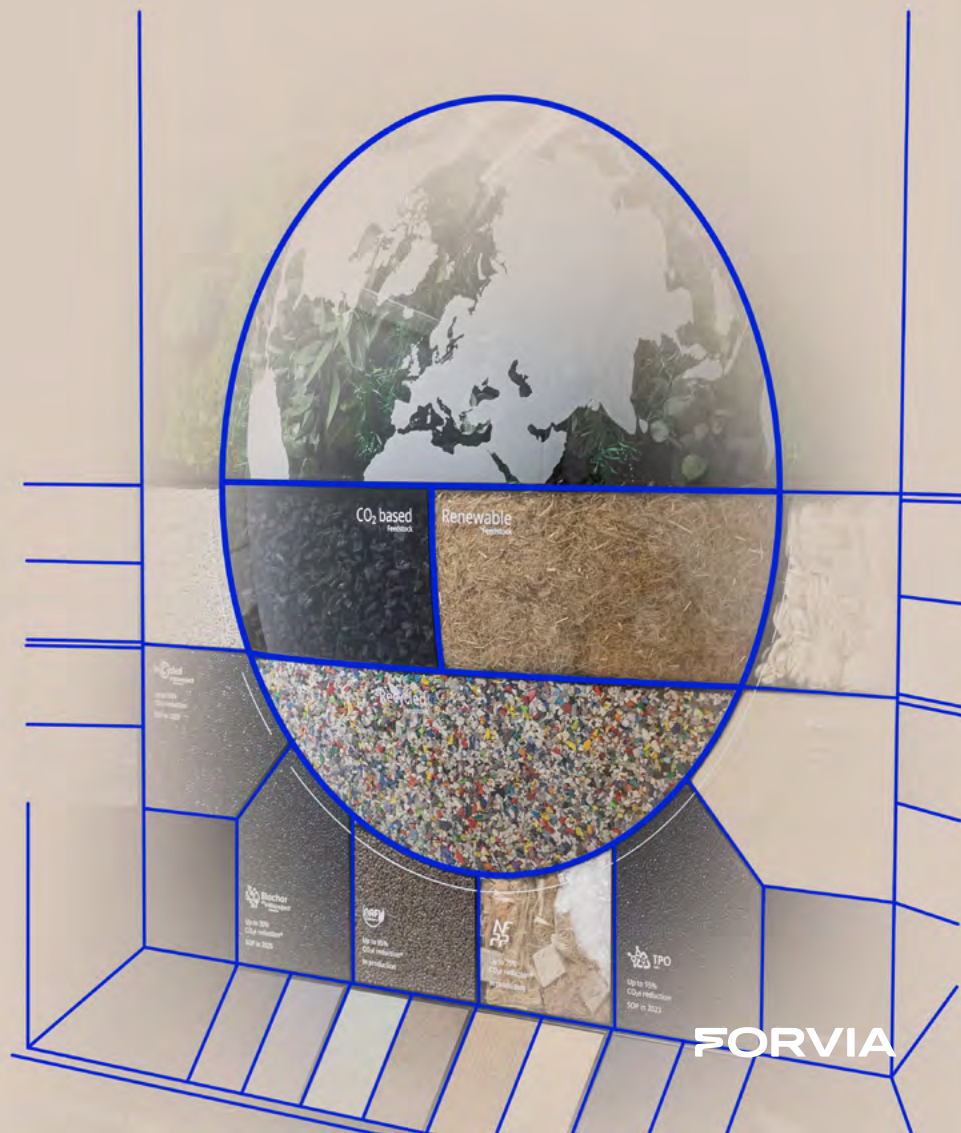
"INTERIORS FOR THE PLANET" demonstrator

Accelerated development of sustainable materials

IN SHORT

In October 2022, FORVIA launched MATERI'ACT to accelerate the development of advanced materials with a low to very low carbon footprint. The goal is to achieve up to 85% CO₂ reduction by 2030 by following a clear strategy from raw materials to sustainable materials. At IAA, FORVIA will present several composite and film materials that are already ready for the market and can be configured for all vehicle segments.

MATERI'ACT 



NAFILEan

NAFILEan is a 20% hemp fibers reinforced polypropylene compound designed for automotive injection molded structural parts (non-visible parts) in the automotive industry. Combining recycled content with natural fibers, NAFILEan-R is the perfect example of the future of sustainable materials. It combines the best of both worlds: CO₂ reduction and improved mechanical performance thanks to renewable fibers on the one hand, and the integration of recycled materials for a circular economy and a very low carbon footprint on the other. NAFILEan Vision enables a new differentiated aesthetic with a visible natural fiber effect while meeting stringent performance requirements. NAFILEan Vision is the way forward for visible sustainability in automotive and beyond.



IniCycled

IniCycled is a new sustainable composite for visible and non-visible parts with recycled content from 20% up to 80%. IniCycled can be used with FORVIA's proprietary Microject Advanced Patina Injection Technology to achieve high quality surfaces. IniCycled meets the most stringent OEM requirements for surface finishes and colors. FORVIA is working with Veolia to develop breakthrough products for a sustainable future without technical compromise on safety.



Ecorium

Ecorium is an alternative to animal leather developed by research and development teams in collaboration with TMG, a leading supplier of coating materials for the automotive market, with a significantly lower carbon footprint. With a multi-layer composition of recycled polyethylene terephthalate (PET) and hemp fibers, Ecorium enables up to 90% lower CO₂ emissions compared to animal leather. Its elasticity and high-end feel offer premium quality and aesthetics. With the use of Ecorium in vehicles unveiled this year, FORVIA is leading the way in the use of renewable and bio-derived materials in cars.

Piñatex

Piñatex is made from sustainably sourced leaf fibers of the pineapple plant, is the second leather-like material developed by FORVIA and Ananas Anam. It is made from 60% natural and renewable materials. A cover made from pineapple leaves is just as high-quality as a cover made from animal leather, but 25% lighter. In addition, the new material can save up to 98% CO₂ emissions.

Did you know?

Pineapple fibers are **25% lighter than leather** and enable a **CO₂ saving of 98%**.





SAFE & AUTOMATED DRIVING



360° environmental perception for more safety

A key feature of the exhibit is a dynamic 360° perception. To get a 360° view of a constantly changing environment, you need the right combination of far-field and near-field sensor technology around the vehicle. FORVIA has a broad portfolio of proven sensor technologies and offers a new, powerful and cost-efficient radar and camera solution. This is coupled with sensor fusion algorithms to provide seamless environment awareness. This solution enables the vehicle to continuously and accurately detect stationary objects or road boundaries and dynamically track moving elements such as pedestrians, bicycles or cars - ideal for driving and parking aids.

- A latest-generation 77 GHz corner radar uses innovative waveguide antenna and the latest chip technology to provide a wider field of view, extended range detection, and increased close-range precision.
- A short- to medium-range surround-view camera for effective detection of road users and infrastructure up to 30 meters away.
- An AI-driven medium-range 360° sensing system for vehicle and occupant protection in the event of potential external impacts.



eMirror and Smart Dimming: Thinking ahead for better visibility

The latest generation of the eMirror replaces side and rearview mirrors with a camera-based system that are coupled with algorithms to improve visibility in challenging weather and lighting conditions. The eMirror also features a reactive dimming function - a gaze-based, intuitive HMI that uses data from the Driver Monitoring System to ensure the main display being viewed by the driver is at full brightness, while other displays are dimmed, reducing cognitive load and driver distraction and fatigue.

Did you know?

77 GHz radar sensors detect speed, angle and distance information from objects within **a range of up to 190 meters around the vehicle.**

FORVIA meets current EU standards with the eMirror. At IAA, FORVIA is demonstrating its electronics and integration expertise with a series solution for eMirror and door panels. This uses a camera and a 6-inch touch display in combination with the latest algorithms for camera vision. With its expertise in interior design and system integration, FORVIA offers a complete solution that houses the eMirror's exterior camera in an aerodynamic, compact design along with the display in the left corner of the door panel. The model demonstrates the difference FORVIA's design offers: a high-quality wrap, a narrow electronic vent with multimodal control via an HMI display or voice activation, integrated LED light strips for more design freedom.



Ambient sensors: Good visibility in bad weather

A clear view for sensors and cameras is essential for automated and autonomous vehicles. FORVIA's latest environmental sensors ensure highly accurate data that helps vehicles reliably assess road and weather conditions and adjust their driving accordingly.

Adhesion and braking distance are highly dependent on the road surface, road type and tire condition. The innovative road condition sensor SHAKE is able to accurately detect and calculate the amount of water or grit on the road. This up-to-date and accurate road condition data enables vehicles to activate warnings or adjust driving dynamics in real time to the actual road condition for safer and more comfortable automated driving.

A new rain light sensor, in addition to normal functions such as light, sunlight, head-up display and humidity, also detects the type of rain and size of droplets to activate on-board functions such as windshield wipers, headlight control, display brightness adjustment and windshield fogging, and to serve as a possible redundant source of information for autonomous vehicles.



Smart Presence Detection

The latest intelligent software algorithms, based on the first-to-market ultra-wideband (UWB) technology for Smart Car Access, enable additional security features such as intrusion detection and presence detection of children and occupancy detection. In the case of child detection, for example, the algorithm identifies the smallest movements of a baby or pet, even if it is under a blanket, and sends notifications to the connected cell phone in the event of potential risk or danger. These additional functions make it possible to replace other sensors and thus save costs and weight that would otherwise be additional.

ELECTRIFICATION & ENERGY MANAGEMENT

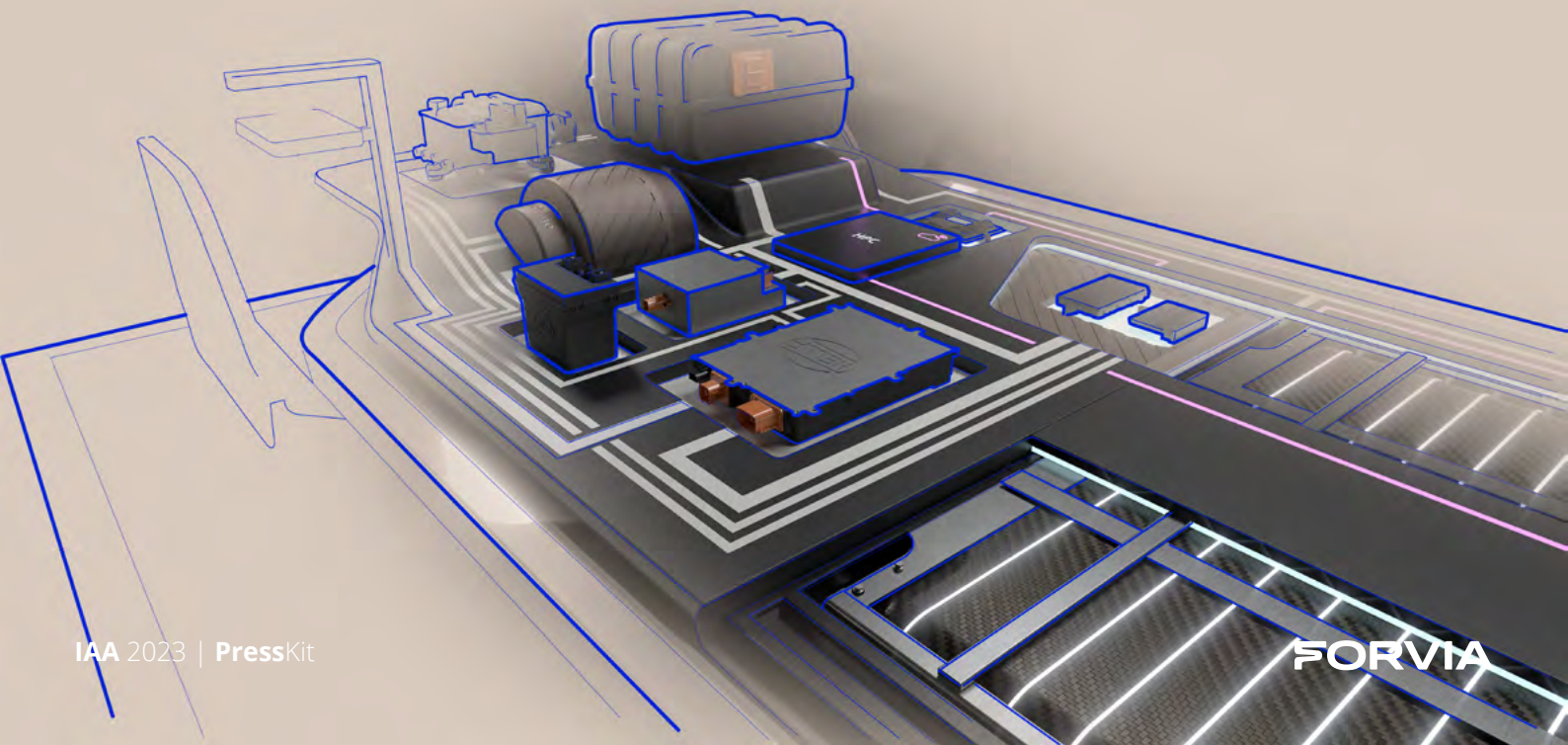
"ZERO EMISSIONS DRIVE TRAIN" demonstrator

Zero emissions, multiple drive trains: one solution provider

IN SHORT

FORVIA is convinced that the mobility of the future will be characterized by a mix of drivetrain technologies. At IAA, FORVIA will present its full range of technologies for plug-in hybrid electric vehicles, battery electric vehicles and fuel cell electric vehicles. These include, among others, solutions for energy and thermal management as well as electric/electronic architectures (E/E architectures).

Reducing emissions and improving air quality have been at the heart of FORVIA's innovations for over 20 years. The company supports automotive manufacturers in electrification with solutions for electric, hydrogen and hybrid drive trains for passenger cars, commercial vehicles, stationary and industrial applications. Given the different requirements of users and the uncertain supply of raw materials for electric vehicle batteries, different types of drive will jointly replace the combustion engine.



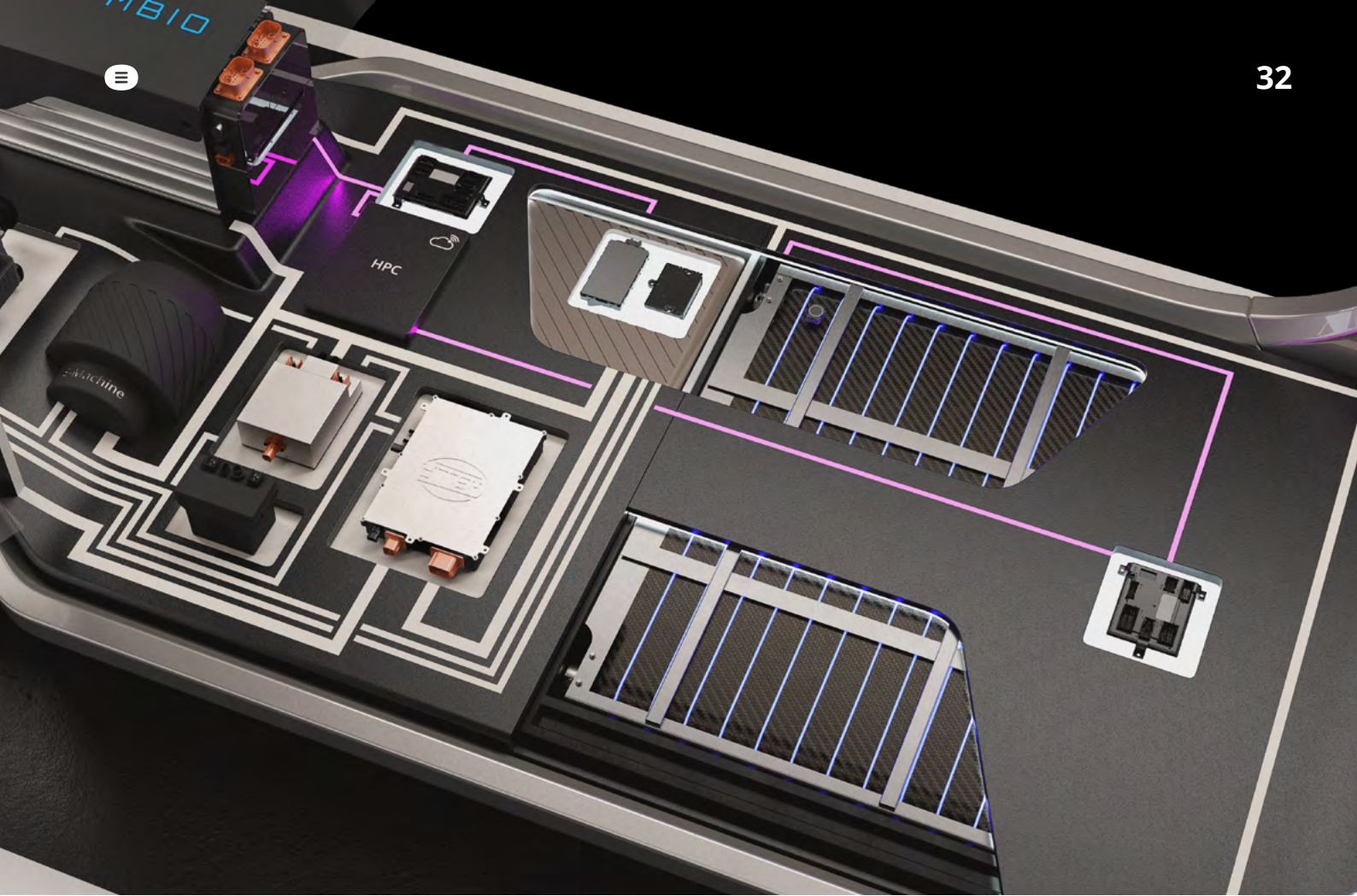


Hydrogen: Key technology for the decarbonization of mobility

Hydrogen is an important energy carrier of the future and a key factor in the decarbonization of mobility. The most important criteria for vehicle design and the future mobility experience:

- Higher range with flexible, fast charging
- Optimized vehicle interior and cargo volume
- Improved powertrain efficiency and performance
- Safe and sustainable operational solutions for energy management
- Simplified, compact E/E architecture

Using an electric vehicle (EV) skateboard platform, FORVIA will demonstrate at IAA how its fuel cell systems, high-voltage EV components and scalable zone architecture fit into a single chassis to support FCEV, EV and hybrid powertrain architectures.



State-of-the-art hydrogen storage system

As one of the industry leaders in the development of hydrogen storage systems, FORVIA introduces an innovative platform for electric vehicles in which solutions to electrification - battery or fuel cell technologies - can be easily integrated.

Key features of this new system include:

- An innovative, prism-shaped composite structure that offers up to 50% more storage capacity and thus greater independence compared to cylindrical tanks
- A compact underbody design that meets electric vehicle packaging requirements
- Easier recycling and reduced environmental impact
- Networked sensors for safety monitoring



High Voltage EV Energy & Thermal Management Technologies: Experience and ingenuity

With more than 15 years of experience in electrification and market leadership in intelligent battery sensors as well as 48V DC/DC converters, HELLA brings a growing portfolio of electronic components supporting the power, energy and thermal management requirements of electric vehicles into FORVIA. These technologies are all designed to maximize efficiency and reduce size, complexity, and cost.

- High voltage battery management system – a modular and scalable solution to manage the safe and reliable function of Lithium-Ion batteries in hybrid and electric vehicles.
- High density onboard charger – For faster charging and smart vehicle-to-grid features at 15% lower weight and 20% lower volume than conventional onboard chargers.
- 12V Lithium-Ion battery – a lightweight replacement for lead-acid batteries for 48V and full electric vehicles, occupying 50% less space than a conventional battery.
- High voltage DC/DC converter – innovative and highly efficient design minimizing packaging and weight for a wide input voltage range from 400 and 800V.
- Coolant control hub - innovative thermal management subsystem that revolutionizes thermal management as it connects up to three cooling and heating circuits for battery, power electronics and electric machines as well as the cabin circuit. As a result, significant material and energy savings can be achieved.

FORVIA

by the numbers



291
plants



76
R&D centers



40+
countries



157,000
employees



Balanced sales
by geography

FORVIA
in Germany

40+ sites

15,000 employees

45%
Europe,
Middle East,
Africa



28%
Americas

27%
Asia



Where
to find us
at **IAA 2023**



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FORVIA
Inspiring mobility