Hanover, Germany
September 17th - 22nd, 2024

IAA TRANSPORTATION

PIONEERING TRANSFORMATIVE TECHNOLOGIES FOR MOBILITY EXPERIENCES THAT MATTER TO PEOPLE

PRESSKIT 2024

FORVIA
Inspiring mobility

Table of contents

Driver of **transformation**

The automotive industry is undergoing a profound transformation. Electrification, connectivity and individualization combined with the strive for greater sustainability are changing the way vehicles are designed, produced and how consumers use them.

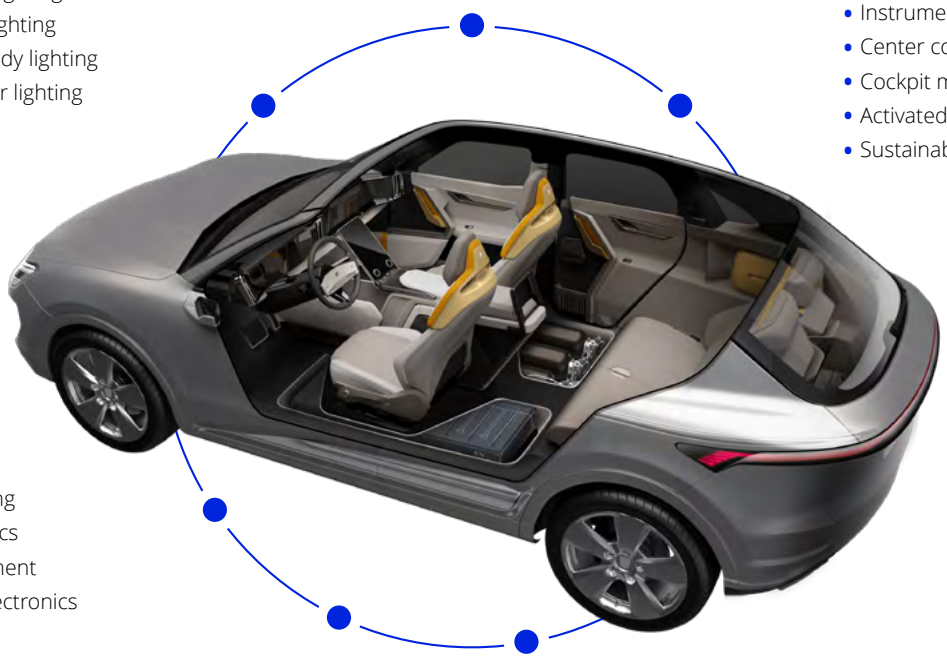
In a changing industry, transformational companies are needed: FORVIA is at the forefront of this change, working tirelessly to define a more people centric mobility. As the seventh largest automotive technology supplier in the world, FORVIA brings together two European tech leaders: Faurecia, a leading French company in automotive technology, and HELLA, a leading expert in lighting technology and automotive electronics headquartered in Germany. The Group leverages this extensive know-how to create safe, affordable, customized, and sustainable mobility experiences.

Today, one in two vehicles worldwide is equipped with FORVIA technology from its six business groups.

LIFECYCLE SOLUTIONS
- Special Original Equipment
- Parts & accessories for the independent aftermarket
- Diagnostic services for testing & repair

LIGHTING
- Front lighting
- Rear lighting
- Car body lighting
- Interior lighting

INTERIORS
- Instruments & door panels
- Center consoles
- Cockpit modules
- Activated surfaces
- Sustainable materials



ELECTRONICS
- Automated driving
- Cockpit electronics
- Energy management
- Lighting/body electronics
- HMI/displays
- Sensors & actuators
- Apps Market
- Perceptual UX Engine
- Safe UX Engine

SEATING
- Seat structures with advanced safety systems: frames, mechanisms, and mechatronics
- Complete seats for a comfortable onboard experience: foam, covers, comfort & wellness solutions, and seat assembly

CLEAN MOBILITY
- Ultra-low emissions solutions for passenger & commercial vehicles
- Zero-emission solutions for battery & fuel cell vehicles

A bold leader in **sustainability**

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

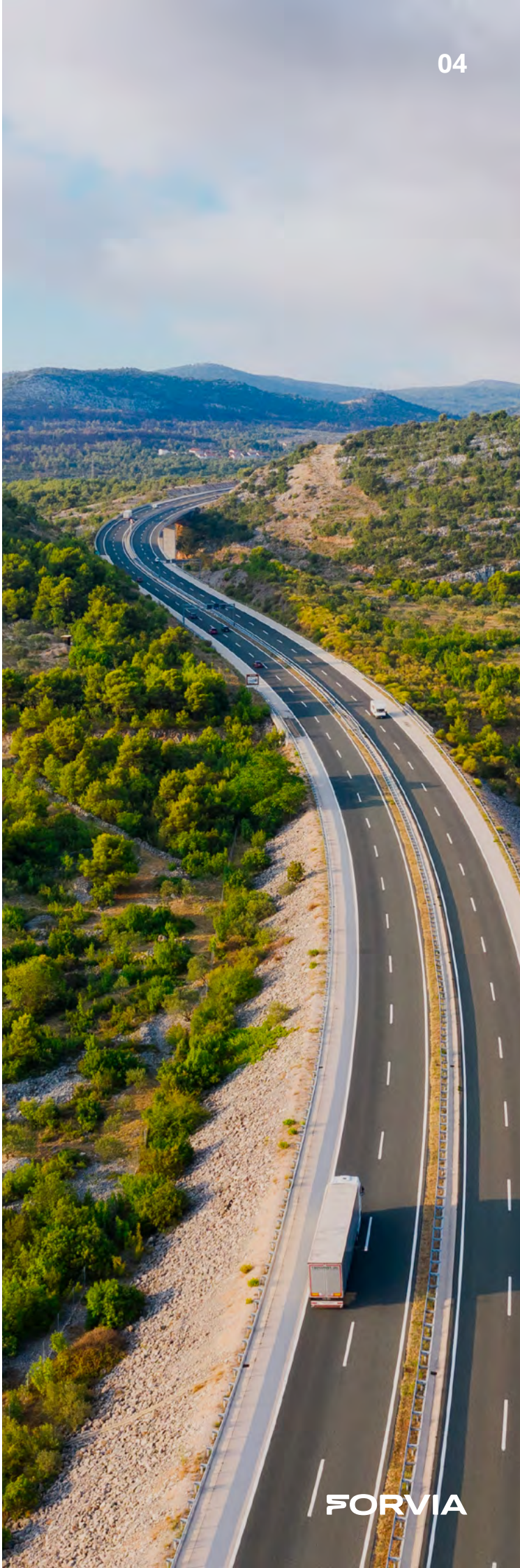
Faurecia and HELLA already combine economic growth with environmental protection in many areas by continually optimizing their products, materials, and structures, as well as their manufacturing processes. In 2022, FORVIA became the first automotive company to commit to being CO_2 net-zero by 2045.

In the meantime, FORVIA has set itself key targets for 2025 and 2030:

- 80% reduction in absolute Scope 1 and 2 GHG emissions by 2025, from a base year of 2019.
- 45% reduction in absolute scope 3 GHG emissions by 2030.

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 company called MATERI'ACT, specifically dedicated to the development of sustainable materials and offers a whole range of *Designed for Scope 3* products to achieve decarbonization.

From now on, every new product FORVIA offers its customers must include a reduction in CO_2 emissions.



First class fit for the commercial vehicle industry

The commercial vehicle industry is experiencing major structural changes: the impending emissions standards, the electrification pushing into the commercial vehicle market, but also the increased demands on the safety and user-friendliness of trucks and light commercial vehicles pose new challenges for the industry.

FORVIA, which already equips 1 in 3 buses and trucks, is ideally positioned to accompany and support truck, bus and coach manufacturers as a strong partner in developing technologies for today and tomorrow.

The Group is attending IAA Transportation with its unique expertise in the fields of sustainable powertrains, seating, lighting and electronics. The combination of our expertise for light and heavy-duty commercial vehicles leads to an unprecedented display of competence for safe and sustainable technology of future commercial vehicle generations.

The technologies on display are designed to meet manufacturers' sustainability, CO_2 reduction and circular economy objectives.

Three questions to **Anne-Isabelle Da Costa**

R&D Advanced Innovation
Senior Manager, Seating

Considering FORVIA's expertise in automotive seating – very different from the truck world – how did you assess the specificities required for trucks?

We started back in 2020 by surveying nearly 300 truck drivers, asking for their pain points and the pros and cons of their current seating, along with the seating features they most wanted to see in the future. The survey was geographically broad, with responses from the US, Germany and France. Extensive product benchmarking followed so we could understand what was already available on the market and how we could differentiate ourselves. Most recently, we also spoke to multiple truck manufacturers about how they saw the needs of their truck customers and the future trends that were impacting their sector, including any incoming safety regulations. Our first designs were given a "blind test" by a sample of truck drivers and fleet managers. All this rapidly accelerated our expertise in truck seating and helped to shape our new product range.

How did your knowledge of human anatomy enable you to design a seat as a work tool?

FORVIA is renowned for its comprehensive knowledge in postural and ergonomic comfort, based on decades of experience in automotive seating, and we have a global team of experts specialized in measuring and optimizing the comfort of seating. Truckers spend long periods of time every day in their vehicles so we had to adapt our use cases to broad trucking scenarios, from delivery vans to medium-duty vehicles, all the way up to long-haul vehicles, where the driver may be behind the wheel all day. This required an increased focus on dynamic comfort and especially on the suspension system, which delivers about 80% of the dynamic comfort in truck seating. For this we partnered with Sears in July 2024, a highly respected name in seating suspension for the trucking and agricultural machinery industry.

Which components of automotive seating did you leverage when designing truck seats?

We used our passenger vehicle frame platform and built on it to harness our existing cutting-edge, lightweight technology. For medium and heavy-duty vehicles, which require belt-in-seat capability, we designed a patented kit that is attached to our existing frame without compromising its weight. Using our existing platform meant our comfort and safety features, such as air bags, massage and thermal functions, and pneumatic lumbar support were easy to integrate.

The modular approach means our truck seating can be easily upgraded to incorporate new technology innovations or adapt to new regulations. Modularity also makes the range easier to recycle at the end of its life, and there's added sustainability with the option of FORVIA's diverse eco-friendly materials.

Three questions to **Christophe Schmitt**

Executive Vice President,
FORVIA Seating

FORVIA has extensive experience with light commercial vehicles but is better known for its expertise in passenger cars. What is the rationale for entering the truck market now?

Truck fleet managers are currently looking for new ways to attract and retain drivers in a highly competitive skills market. Offering new features and upgraded cabins for both the driving experience and onboard life is a major way they can do this. In addition, truck manufacturers are examining several options to offer increased comfort, safety and wellbeing features while enhancing their own sustainability. FORVIA's expertise in driver comfort and well-being means we can deliver a new approach to truck seating that offers many of the innovations and sustainability techno bricks that we've developed for passenger vehicles. In addition, the truck market offers FORVIA the chance to diversify its customer base and seize new areas of growth.

What are the strategic differences between the two markets in terms of customers, end users, and how we can cater to their needs?

Truck manufacturers generally look for long-term partnerships of at least 10 years. That really gives us a chance to understand their needs and tackle future challenges together. In terms of end user, the truck is their work tool par excellence. Many truck drivers live a major part of their lives inside the cabin of their vehicle, so ergonomic comfort and reliability is, if anything, even more important than for passenger vehicles. FORVIA already offers best-in-class comfort and safety thanks to our seat system architecture and by adapting it robustly to the truck market we can immediately offer our latest innovations directly to this new market.

What growth prospects does this market hold for FORVIA? Are there significant synergies between the two markets?

The truck seating market is worth about €2 billion a year, globally, and we are looking to be a key player by 2030. Since the early 1990s, we have been building our experience in the light commercial vehicle segment, equipping several models for Daimler, Renault-Nissan-Mitsubishi, Volkswagen, and Stellantis. There are also significant synergies between cars and trucks, especially since we have built our truck seats by adapting the platform approach which we developed for passenger cars. In terms of the main areas of innovation that we believe are driving the seating sector forward – modularity, sustainability, wellbeing, and occupant monitoring – these are equally in demand by our passenger vehicle and our truck customers, so we are eager to expand our expertise into both markets.

CREATING A WHOLE NEW SEATING EXPERIENCE

FORVIA's comfort-oriented and eco-friendly seating solutions unveiled at IAA

With almost 110 years of history, FORVIA is a world leader in the seating industry, offering carmakers around the world a comprehensive range of services for the design and production of components used in car seats. Its seating business focuses on two strategic activities:

- The development and manufacture of seat frames and mechanisms. FORVIA is the world's number one manufacturer of these essential elements of on-board safety.
- The manufacture of all other seat components and their assembly in complex configurations to ensure optimum on-board comfort, an area in which FORVIA is one of the world's top three manufacturers.

Building on its expertise in automotive seating, and in particular its experience in seating for light commercial vehicles, FORVIA recently entered the heavy commercial vehicle seating segment. The move into this new market got off to a promising start commercially, with the signing of an initial contract last year. With its sights set on becoming a major player in this segment by 2030, FORVIA is unveiling its entire new range of seats for trucks at IAA Transportation. The new range is suitable for all types of vehicles in this segment: from light commercial vehicles to medium duty and up to long-haul trucks.

One platform
for all types of seating

The new range is based on a unique, light seat structure platform, building on FORVIA's major expertise in automotive seating. This frame includes an in-built seatbelt and state-of-the art suspension systems, while allowing optimum airbag integration, to provide a driving experience with enhanced safety.

Did you know?

FORVIA's unique seat structure platform is around 10% lighter than current competitor systems, contributing to improved performance in terms of CO_2 emissions.

Driving comfort
at the heart of
the new range

Truck drivers spend long hours behind the wheel, which is why it was essential to place ergonomics, comfort and durability at the heart of our new truck seat range. Suspension systems are an essential component of onboard comfort, helping to reduce drivers' exposure to vibrations. Accordingly, FORVIA's new truck seats have been developed in collaboration with Sears, a company renowned for its suspension seating in the commercial vehicle markets. The seat platform also offers a huge variety of possible motorized and pneumatic adjustments, allowing the seat to adapt perfectly to a wide range of body shapes. Finally, the new range offers numerous wellness features such as massage, heating, lumbar support and VIBE® haptic vibrations coupled with sound, which can be integrated to improve the driving experience.

Modularity meets sustainability

To design its new range of seats for commercial vehicles, FORVIA has embraced an ambitious eco-design strategy to minimize environmental impact.

The seats include sustainable materials, contributing to the decarbonization of industry.

In addition, the cushions and backrests of the new range are modular, making it simple not only to access the suspension systems for easy maintenance, but also to remove and replace, in order to extend the lifecycle of the seats. This modular design also allows the seats to be upgraded with new functionalities in the future, for example to add additional comfort features or to comply with new regulations, without the need to replace the whole seat.

The new range incorporates the following bio-sourced, recycled or recyclable materials:

Auraloop®, a cushioning solution made from 100% recyclable polyester-based fibers

Bioflex, a foam material made using castor oil

Ecorium, an alternative to animal leather made from recycled PET and hemp

Bloomera™, a seat cover made from recycled production scraps

NAFILean Vision, a composite material for visible parts, developed by MATERI'ACT, FORVIA's sustainable materials subsidiary. Fully recyclable, it can integrate various sources of biomass and recycled plastics.

FORVIA truck frame
for commercial vehicles

The new FORVIA truck frame is a lightweight solution offering improved CO_2 performance, enhanced safety features, and versatile adjustment and suspension options. Already in production for the 2024 Renault Master van, FORVIA's truck frame is 10% lighter than comparable truck seats on the market. The new frame was designed to embed, on demand, all our techno bricks to deliver unprecedented safety and comfort for professional drivers who spend long periods on the road. The platform offers a wealth of options for scalable adjustments, from manual to powered, including cushion length and tilt. Its suspension systems are also scalable, with mechanical and pneumatic options, while optional belt-in-seat technology offers heightened safety with both fixed and adjustable options.

Seats
for light commercial vehicles

Supplying of seats for light commercial vehicles since the early 1990s, FORVIA has drawn on its expertise to develop its seat range for light commercial vehicles.. This seating package for commercial vehicles, comprising a driver's seat and a passenger bench seat, is perfectly suited for short, repeated journeys made by one or more delivery drivers in the course of a single day. The seat's side panels feature recycled materials, which account for between 30% and 60% of their weight. The driver's seat features a mechanical damper and a removable cover allowing easy cleaning made of FORVIA's Bloomera™, a material for textile seat covers created from recycled production scraps. Its fixed bench includes a mobile cushion and a central, foldable backrest that offers easy kinematics and storage. Its cushioning incorporates Auraloop®, a sustainable solution made from 100% recyclable polyester-based fibers with improved durability and limited subsidence over the duration of its lifetime.

Seat
for medium-duty vehicles

FORVIA's seat for medium-duty vehicles has been developed to support the versatility of vehicles used in a wide range of sectors (from deliveries to construction and industrial uses). It employs a pneumatic suspension system, with fore and aft isolators for enhanced comfort. Modular cushion and backrest mean these parts can be easily replaced to extend the overall lifecycle of the seat. Wellness features include heating pads and lumbar massage support, with an adjustable cushion. It has been designed to make maximum use of sustainable materials. Padding is made using Bioflex, a foam material derived from castor oil. Seat covers are made of Ecorium, a premium alternative to animal leather made from recycled PET and hemp. MATERI'ACT's NAFILean Vision, a composite material created from various sources of biomass and recycled plastics is also used extensively in the seat's design, slashing its overall carbon footprint.

Seat
for heavy-duty vehicles

FORVIA's seat for heavy-duty vehicles answers the needs of truck drivers who spend several days in the cabins of their heavy goods vehicles and are looking for greater comfort to enable them to carry out long journeys in the best possible conditions. Already selected to equip tens of thousands heavy-duty trucks from 2027 onwards, this seat range offers pneumatic suspension, including fore and aft isolators, and ActiveVRS, a magnetic ride suspension system that greatly reduces vibrations for the driver. Both the cushion and backrest are modular, meaning they can be replaced when needed, extending the lifecycle of the seat. Adjustable seatbelts and premium wellness features, including massage, heating, lumbar support, and VIBE® haptic vibrations combined with sound can be offered as options. Almost all seat features are fully adjustable, and comfort is enhanced by ultra-premium Hycoflex foam, which acts like memory foam on a mattress. FORVIA's commitment to lowering the CO_2 footprint of vehicles can be seen in the seat's use of NAFILean Vision.

Three questions to **Stefan van Dalen**

Managing Director Lifecycle Solutions, FORVIA HELLA

What are currently the biggest challenges that FORVIA HELLA has to face?

The commercial vehicle industry faces significant challenges, driven by the megatrends of electromobility, digitalization, and autonomous driving, along with new legislation like the General Safety Regulation (GSR) that mandates improved direct vision for drivers and CO_2 reduction. This leads to a wave of new cab concepts with more aerodynamic and wider windscreens and rounder driver cabins. For us, however, these changes represent opportunities, because we support our customers on their way to safe and sustainable mobility with robust and durable lighting and electronic components fulfilling these requirements and offering solutions for all market trends and changes.

Can you give specific examples of how FORVIA HELLA's products drive forward the transformation of the commercial vehicle industry?

FORVIA HELLA is driving significant advancements in lighting and electronic systems. One long-standing product in our electronics range, for example, is the IBS, which plays a key role in electrification, reducing downtimes and enabling future-proof concepts for predictive maintenance. Future generations of commercial vehicles will be more aerodynamic and safer while offering more comfort, also thanks to our solutions. Our new solar sensor, for example, helps to regulate the temperature in the interior, enhancing the comfort in the driver's cab. The innovative roofmarker concept can be integrated directly into the truck's front design, which supports the reduction of flow resistance. Our modular lighting solutions allow vehicle manufacturers to customize the styling of their vehicles and to add features like welcome and goodbye scenarios. They also enhance road safety by displaying light functions over a large area and long distances.

A buzzword these days is sustainability. What role does this play in product development?

It is not for nothing that we bear the name Lifecycle Solutions. At FORVIA HELLA, we develop products holistically to support our clients on the way to safe and sustainable mobility. Thus, we focus on sustainable solutions that reduce energy consumption and extend the lifecycle of vehicle components. Using lightweight materials, our products contribute to lower vehicle weight and energy requirements. The usage of High-Quality LED Technology improves not only lighting efficiency but also extends durability, reducing the need for frequent replacements. Recognizing the critical role of aerodynamics in fuel efficiency, our solutions minimize drag, reducing fuel consumption and emissions in heavy-duty vehicles. This is shown by our innovative Future Trailer Lighting System, which uses a digital approach to reduce the weight and CO_2 footprint of the lighting system.

Three questions to **Michael Schöne**

Head of Advanced Engineering, Special Original Equipment, FORVIA HELLA

New aerodynamic and direct vision regulations will transform the truck industry in the upcoming years. What does it mean to the future of lighting products from FORVIA HELLA?

Our future lighting solutions will be engineered to significantly reduce the vehicle's drag coefficient. This means that they will be smoothly integrated into the vehicle's body to minimize air resistance. However, it is essential that our products not only improve aerodynamics but also adhere to direct vision standards, enhancing visibility and safety on the road. We are already considering these new requirements and technical enhancements to improve our solutions, ensuring that our products contribute to a more sustainable footprint while also enhancing safety and performance for commercial vehicles.

How do FORVIA HELLA's aerodynamically designed truck headlamps and roofmarkers contribute to reducing air resistance in commercial vehicles?

Reducing drag, or air resistance, is crucial for improving vehicle efficiency. While considerable progress has been made in passenger cars, commercial vehicles like trucks still have significant potential for aerodynamic improvements. By focusing on reducing the drag coefficient, FORVIA HELLA's aerodynamically designed truck headlamps and roofmarkers help to substantially decrease air resistance. For example, the headlamp's form is extra streamlined, slim, and curved to the sides. Meanwhile, the roofmarker can be seamlessly integrated into the windshield of the vehicle, combining the light functions of an outline marker lamp, direction indicator, and high beam.

To what extent do sustainable practices play a role in product development at FORVIA HELLA?

For us, it is important to consider the entire lifecycle of our products. Therefore, we already begin minimizing our CO_2 footprint during the development phase. To achieve the best results, we reduce the footprint of the parts manufactured in our factories by using sustainable materials, reducing the weight of individual parts and optimising the electrical performance of the products . Reducing the carbon footprint not only includes solutions for production, especially through the use of sustainable materials such as recycled or bio-based plastics. It also includes solutions for the utilization phase of products and their disposal.

DRIVING INNOVATION

Pioneering Technology for On and Off-Highway Vehicles

Through its Special Original Equipment division, part of the Lifecycle Solutions business group, FORVIA HELLA pioneers the development of lighting products and electronic components for commercial vehicles and other target groups. At the IAA Transportation 2024, FORVIA HELLA will showcase its innovative strength for sustainable commercial vehicles. The focus will be on sustainability, safety, future viability, and modularity. Innovative headlamp concepts, customizable tail lamps, and holistic, sustainable lighting systems for heavy commercial vehicles will be showcased in the field of lighting technology. Additionally, the electronics sector will present intelligent sensor technologies to enhance driver comfort and optimize vehicle fuel consumption. These innovations pave the way for the sustainable transport industry and autonomous driving.

Extending vehicles' lifetime

FORVIA HELLA aims to develop solutions that increase the value and extend the service life of a vehicle. Here, we serve a wide range of customers from various fields such as trucks, buses, construction machinery, agricultural vehicles, and more. FORVIA HELLA's ability to offer systematic transfer and suitable adaptation of technological, process, and quality expertise acquired directly from the automotive sector forms the foundation of the comprehensive and innovative product range.

For the special original equipment business, FORVIA HELLA operates four production sites in Austria, Romania, India and New Zealand as well as five R&D centers in Germany, Austria, Romania, India and New Zealand. FORVIA HELLA's 2,500 employees develop solutions for various customers and different vehicle types. With a global footprint, the company strives to expand its core competences in robust, durable lighting and electronic products to promote the health of advanced vehicles.

A Sustainability Enabler

The Special Original Equipment division of FORVIA HELLA serves as a sustainability enabler for its customers by offering innovative lighting and electronics solutions for trucks and trailers. The products enable air drag force optimization based on an aerodynamically improved design, further advantages such as a reduction in vehicle weight thanks to modern wiring of the lighting systems and the use of sensors to optimize power consumption. These solutions aim to reduce the carbon footprint by combining new services such as predictive maintenance and enhanced diagnostic as well as functionalities such as animation, control of new light functions like maneuvering light into a single device. In addition, the Special Original Equipment business is actively looking for new ways to ensure the recyclability of its products and expand the use of sustainable materials.

Did you know?

Whether it's illuminating the road, improving the vehicles energy management, or ensuring visibility from behind, FORVIA HELLA is offering a comprehensive product portfolio of electronics and high-performance LED lighting modules in order to contribute to a safer, sustainable and more comfortable driving experience.

Front lighting concepts for trucks reduce fuel consumption

To meet emission reduction requirements, FORVIA HELLA has redesigned product-shapes to pave the way and support new requirements regarding lighter and more aerodynamic trailers and trucks. The new slim, streamlined headlamps use highly efficient LEDs, offering longer service life and reduced maintenance. Future headlamps may be made from sustainable materials. EdgeLight, in which the light emerges from a narrow strip within the lamp instead of from a large surface, ensures a homogeneous light signature, creating an aesthetic appearance day and night. The innovative roofmarker above the truck's windscreen serves as a position light, direction indicator, and high beam. Its aerodynamic shape contributes to a reduced flow resistance.

Did you know?

FORVIA HELLA aims to reduce fuel consumption by using the first-of-its-kind Future Trailer Lighting System. By digitally transmitting signals through the ECU and CAN communication interface, this system reduces cabling needs and saves up to four kilograms of copper. As a result, trailers are lighter, contributing to a reduced CO_2 footprint.

Future Trailer Lighting System makes trailers lighter, saves fuel and enables new functions

FORVIA HELLA is presenting the "Future Trailer Lighting System" as a world first at the IAA Transportation 2024 trade fair. The system's core component is an ECU (electronic control unit) with a CAN communication interface. It integrates the components of the trailer's rear lighting, reduces the amount of copper by minimizing the amount of cabling required and thus reduces the weight and CO_2 footprint of the system. Furthermore, digitalization enables new functionalities, like automated manouvering lights and status monitoring of lighting modules. Additional sensors ensure flexibility for future requirements, making it suitable for autonomous driving. The system includes a modular, Full-LED rear combination lamp with five functions, communicating via CAN bus and providing direct information to the driver's cockpit.

Rear Combination Lamp Concept for trucks enables customized appearance

The Rear Combination Lamp Concept "Truck Custom LC" by FORVIA HELLA enhances road safety for trucks by displaying light-functions across a large area. Innovative LED technologies ensure high quality while reducing weight and energy consumption. EdgeLight technology produces a far-reaching, sharply defined light signal, while LED light curtain enhanced by FORVIA HELLA patented technology allows customizable logos and graphics. Additional functions, like static or dynamic direction indicators and customizable stop lights, can be adjusted via software. Manufacturers can also choose frame and bezel colors, making the Rear Combination Lamp a central eye-catcher.

Solar Sensor increases the feel-good factor in innovative cab concepts

European countries are implementing safety laws, such as the Direct Vision Standard, which requires vehicle manufacturers to eliminate blind spots using cameras or increased cabin glass. However, more glass can lead to faster cabin heating from sunlight. To enhance comfort and interior well-being, FORVIA HELLA developed the solar sensor for commercial and luxury class vehicles. Mounted on the dashboard, it detects intense solar radiation and ensures efficient air conditioning. The sensor-supported climate control optimizes energy use. An optional ambient light detection system enhances interior brightness. The Solar Sensor communicates via a cost-effective Local Interconnect Network (LIN), reducing installation and maintenance complexity while providing stable data transmission. Overall, the Solar Sensor with LIN technology provides optimized energy management for next-generation commercial vehicles.

Intelligent battery sensor enables smart energy management in the vehicle

FORVIA HELLA's Intelligent Battery Sensors (IBS) are vital for vehicle energy management. They reduce CO_2 by enabling start-stop functions and provide crucial battery data. Additionally, they extend battery life by preventing deep discharging and ensuring optimal charging conditions. For vehicles with 24-volt architectures that require a separate battery monitoring, FORVIA HELLA offers a concept consisting of two intelligent 12-volt IBS, each dedicated to monitoring a 12-volt battery. This setup ensures precise measurement of voltage, current, and temperature parameters. The IBS offers valuable insights into the State of Charge (SoC), State of Health (SoH) and State of Function (SoF). The data can be accessed via a control panel, the on-board computer or cloud services.

Three questions to **Yves Dumoulin**

Senior Vice President Hydrogen Solutions, FORVIA

What will it take for the European market to take off?

Coordination and actions to incentivize end-users! Governments, European institutions, and industries have collectively invested significant efforts in advancing hydrogen technology. Today, we take pride in having developed cutting-edge hydrogen solutions. However, to fully realize their potential, we require a dynamic market.

Clear directives and coordinated actions are essential for driving vehicle adoption, accelerating infrastructure growth, and achieving energy sector competitiveness. A unified message emphasizing hydrogen's pivotal role in the energy landscape is also crucial. Let us promote hydrogen technology as Europe's optimal decarbonization solution, aiming not only for technological excellence but also the establishment of a robust market. And incentivizing end users to embrace this sustainable solution remains paramount.

Infrastructure – or the lack of sufficient infrastructure – is often given as one of the main reasons for alternatively powered vehicles not becoming more widely adopted. If BEV will be the dominant choice, why does it make sense to invest in both infrastructures?

Believe it or not it's actually cheaper to invest in parallel infrastructures – so both BEV and hydrogen – than investing and relying only on one. It cannot be one or the other we must see recharging and refuelling as complementary infrastructures – addressing different needs.

The Clean Hydrogen Partnership estimated a 100% full electric scenario would require 3-5 trillion Euros more by 2050 than the deployment of two parallel infrastructures. For hydrogen refuelling stations, studies are showing a linear investment curve with scalability, compared to deployment of electric recharging stations, where an exponential increase of cost is expected with scalability.

Hydrogen combustion technology sounds like one step forward and one step back in terms of decarbonization – should we really pay it attention?

Hydrogen combustion technology is very low emission – in European regulation it's even considered zero emission for heavy duty vehicles because the emissions are so low.

We have seen increased interest from customers in recent years due to the benefits the solution offers - it can help otherwise hard to decarbonize use cases, such as vehicles operating in harsh conditions that need the reliability diesel engines provided and crucially it can play an important role in facilitating the take-off of hydrogen mobility by reducing the energy barriers for OEMs as it utilizes existing knowledge, talents and assets!

It's also so far from being one step forward and one step back, we believe the technology should be part of the toolkit to full decarbonization.

PIONEERING TECHNOLOGIES FOR A CLEANER AND ZERO-EMISSION MOBILITY

A comprehensive offer of innovative solutions to decarbonize intensive mobility

FORVIA's Clean Mobility business group is a world leader in its industry, with 74 R&D centers and plants in the world and more than 19,000 employees. In 2023, Clean Mobility accounted for €4.8 billion of sales (18% of FORVIA's annual sales) and offers carmakers around the world innovative solutions to drive mobility and industry towards cleaner and zero-emission technologies. Its business focuses on two strategic pillars:

- The development of ultra-low emission solutions depolluting passenger cars and light commercial vehicles
- The development of hydrogen storage solutions for applications in automotive and hydrogen distribution and storage

First global supplier of hydrogen storage systems for mobility

With serial production underway in state-of-the art facilities in South Korea, China and France, FORVIA is the first global supplier of hydrogen storage systems for mobility. In 2023, the Group delivered 11,000 hydrogen tanks and generated significant total sales with customers such as HKMC, Stellantis, Hyvia, SAIC and Weichai. Our customers are renewing their trust in FORVIA with second and third business opportunities. In coming years, a facility in North America will complement FORVIA's footprint to reach all customers.

Ambitious objectives have been set to drastically reduce CO_2 emissions in use, mainly from medium and heavy-duty vehicles. At FORVIA, we believe hydrogen is one of the solutions. In 2040, up to 30% of the new heavy-duty vehicles on the roads could be powered by hydrogen and we are prepared for that.

Relying on its strong industrial performance aligned with automotive standards, the Group leverages its global footprint to develop and industrialize cost effective hydrogen storage systems, meeting OEMs autonomy, reliability, performance and fast refilling needs. This distinctive feature makes the Group a major supplier of hydrogen storage solutions.

FORVIA recently developed a complete hydrogen storage system, composed of valves and 5 second-generation carbon fiber composite tanks, enabling to onboard nearly 9 kg of hydrogen, being the only supplier enabling customers to onboard such quantity of gaseous hydrogen for light commercial vehicles. This system with a specific design offers the possibility of adapting the storage capacity of the light commercial vehicles to the use: it comprises 3 main gaseous hydrogen tanks which can be completed by 2 optional side tanks. This tailored shape of the storage system fits easily into the small available space of the van underfloor, thus maximizing the capacity of storing hydrogen on-board. FORVIA will supply the 2 versions of the system.

designed for SCOPE 3

35% CO_2 savings MATERIAL SCOPE

FORVIA XL Gaseous Hydrogen tank.

Did you know?

CLEPA Innovation Awards

In 2023, FORVIA XL Gaseous Hydrogen tank has been nominated among the CLEPA Innovation Awards, recognizing it as a key innovation to decarbonate heavy mobility.

Innovative Hydrogen Storage System Technologies

The Group developed a comprehensive range of compressed hydrogen storage solutions, which can be suitable for light commercial vehicles as well as medium & heavy-duty and off-road vehicles. Ease of vehicle integration, maximized autonomy, strong reliability including in demanding operating conditions are the key characteristics of this portfolio.

The size of FORVIA's hydrogen tanks varies between 300mm diameter (M size) and 700mm diameter (XL size) allowing different configurations for vehicle integration thus making it suitable from light commercial vehicles up to medium & heavy-duty vehicles, and off-road vehicles.

Today, FORVIA is the first supplier to have certified two formats of XL Type IV composite tanks at 70MPa for mobility purposes:

- The 201L XL Gaseous Hydrogen Tank short version stores up to 8kg of hydrogen
- The 435L XL Gaseous Hydrogen Tank large version stores up to 17,7kg of hydrogen

The heavy-duty trucks equipped with FORVIA's XL type IV composite tanks 70MPa can offer a usage experience comparable to internal combustion engine (ICE) vehicles with a driving range up to 1000 km and a short refiling time comprised between 10 to 15 min while offering a great payload.

This size of tank is particularly suitable for maximizing the autonomy while adapting to the packaging constraints of the trucks since it can be installed in its wheelbase or on a module behind the cabin, allowing many design possibilities to our customers.

Key customers from Europe, Asia and North America have already shown their interest in this advanced technology which is a key contributor to the market adoption of hydrogen trucks for decarbonized transport.

The Foenix H2. A H2 ICE race car equipped with FORVIA XL Gaseous hydrogen tanks.

Did you know?

Hydrogen can power vehicles in two different ways. Fuel cells convert hydrogen and oxygen into electricity and H2 ICE vehicles are powered by an engine that is similar to traditional gasoline-powered internal combustion engines. Both powertrain technologies require hydrogen storage tanks.

Aftertreatment and hydrogen storage solutions for H2 ICE vehicles

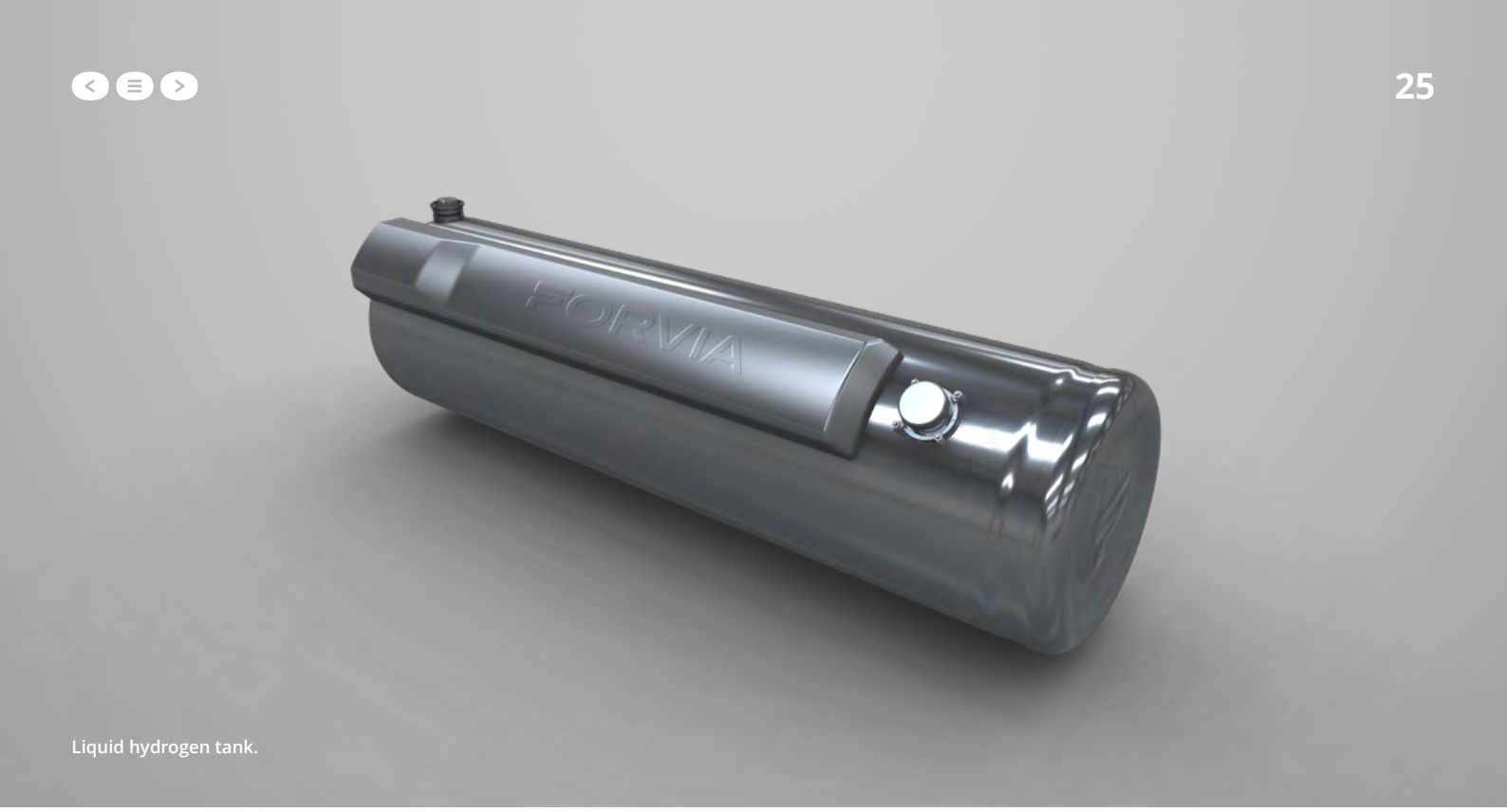
The complete range of hydrogen gaseous storage solutions of FORVIA is powertrain agnostic and provides the same storage benefits for H2 ICE (Internal Combustion Engine) vehicles as for fuel-cell electric vehicles, providing a solution for vehicles needing a high range of autonomy, short refilling while operating in harsh environments.

Relying on a mature technology, H2 ICE can help accelerating the widespread adoption of hydrogen mobility, fostering the growth of the hydrogen ecosystem, and refueling infrastructure. H2 ICE boasts minimal NOx emissions.

Given Europe's leadership in ICE technology, H2 ICE offers a competitive advantage in terms of intellectual property, know-how and skills and is a very dynamic market for this technology.

This solution is explored for a large range of applications including light commercial vehicles, heavy-duty, off-road and even race cars applications. H2 ICE technology is strongly seen as a short-term solution to help the take-off of hydrogen mobility market sooner than for FCEV.

FORVIA is strategically positioned in aftertreatment and hydrogen storage systems, contributing to several H2 ICE R&D projects, such as the HyMot project, backed by the France 2030 investment plan, and the Southwest Research Institute's H2 ICE Demonstration Vehicle project, which aims to showcase H2 ICE's potential for near-zero emissions.



Liquid hydrogen tank.

Preparing the future
with liquid hydrogen storage solutions

As far as longer-term market introduction is concerned, liquid hydrogen technology is a promising storage solution.

FORVIA is developing liquid H2 tanks, for second wave market introduction, to upgrade vehicle autonomy and compactness.

Cryogenic storage can achieve higher driving range compared to compressed gas at 70MPa and Battery electric vehicles at constant integration volume and is foreseen as a solution to increase the autonomy for a given space.

This hydrogen storage technology will be particularly adapted to intensive usage and will allow to reach a large autonomy of 1,000 km range milestone. Together with Air Liquide, our partner in this development, we will bring a costeffective solution to decarbonize heavy-duty vehicles with intensive use.

FORVIA
by the numbers

260~
plants

78
R&D centers

40+
countries

150,000+
employees

FORVIA
in Germany

60+ sites

13,000+ employees

Balanced sales
by geography

46%
Europe,
Middle East,
Africa

27%
Americas

27%
Asia

Press contacts

FORVIA

Christophe MALBRANQUE
Group Influence Director
+33 (0) 6 21 96 23 53
christophe.malbranque@forvia.com

Iria MONTOUTO
Group Media Relations Manager
+33 (0) 6 01 03 19 89
iria.montouto@forvia.com

Yasmin MARKERT
External Communications Germany
+49 (0)152 520 32314
yasmin.markert@forvia.com

FORVIA HELLA

Daniel MORFELD
Press Officer
Tel: +49 (0) 2941 38 7566
daniel.morfeld@forvia.com

September 2024 • Designed by iLemon • Photos credit FORVIA, GCK, iLemon

For more information about FORVIA and the technologies presented at IAA Transportation, visit **www.forvia.com**

FORVIA
Inspiring mobility