



PressKit

IAA Transportation 2022



FORVIA
Inspiring mobility

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about **FORVIA**

FORVIA, the 7th largest automotive supplier globally, combines the complementary technology and industrial strengths of Faurecia and HELLA for a safe, advanced, customized and sustainable mobility.

With over **300 industrial sites and 77 R&D centers**, 150,000 people, including more than 35,000 engineers across 40+ countries, FORVIA is composed of 6 business groups:

SEATING | **INTERIORS** | **CLEAN MOBILITY**
ELECTRONICS | **LIGHTING** | **LIFECYCLE SOLUTIONS**

FORVIA provides a unique and comprehensive approach to the automotive challenges of today and tomorrow. With 24 product lines, and a strong IP portfolio of over 14,000 patents, FORVIA aims to be a change maker committed to foreseeing and making the mobility transformation happen.



A strong partner for sustainable mobility

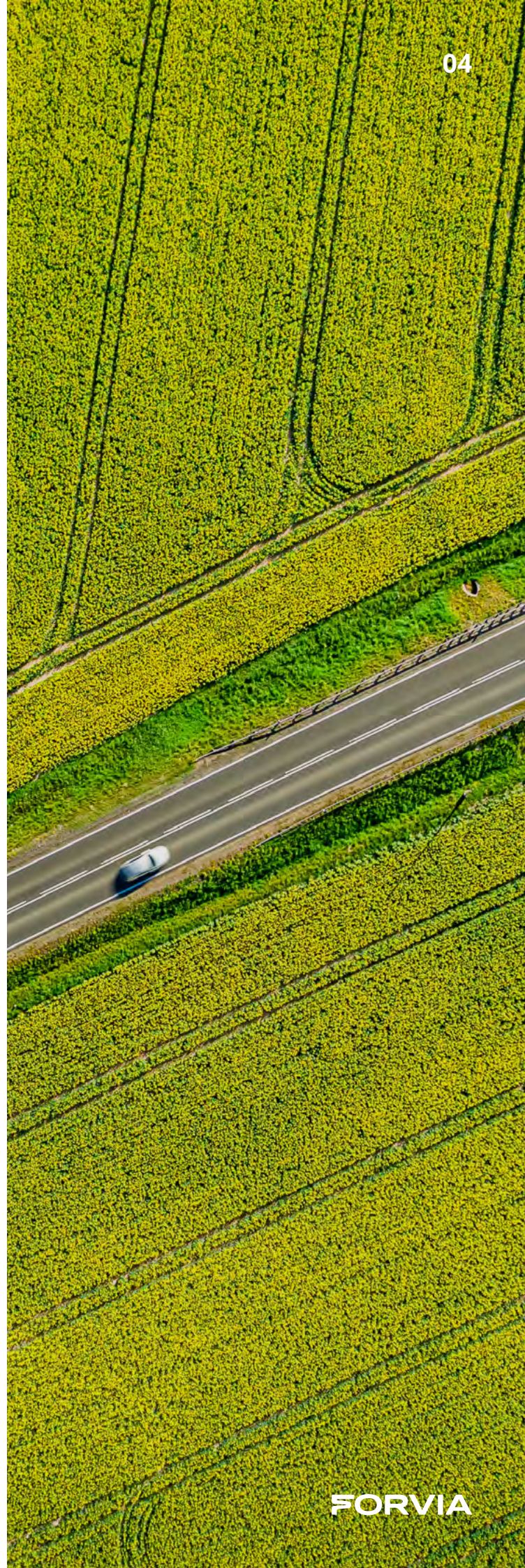
Today, global megatrends and technological disruptions are shifting the center of gravity in the automotive world. FORVIA aims to address future mobility needs with sustainable and innovative solutions that benefit our customers, consumers, and the planet.

Both Faurecia and HELLA are already acting on many fronts to combine business growth and environmental protection: By continuously rethinking their products, materials and architectures, and the way they are produced. In 2022, FORVIA is the first automotive industry company to receive the Science Based Target initiatives (SBTi) certification meaning that the company will be **carbon net-zero by 2045**.

FORVIA is fully committed to achieve its ambitious 2045 net-zero target. The SBTi certification represents FORVIA's ambition to become a leader with highest sustainability ambitions within our branch.

In the meantime, FORVIA is working on concrete intermediate targets, meaning today, 2025, and 2030. The group is **actively implementing new architectures and materials** into the coming product generations. As another step to achieve net zero by 2045, FORVIA has successfully launched a cross business group division dedicated especially to the development of sustainable materials.

The Science Based Targets initiative (SBTi) is a collaboration between the Carbon Disclosure Project (CDP), the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF).





First class fit for the commercial vehicle industry

The commercial vehicle industry is under great pressure: 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 major challenges for the industry.

FORVIA, a system integrator with decades of automotive expertise, is ideally positioned to accompany and support truck manufacturers as a strong partner in developing technologies for today and tomorrow.

For the first time, FORVIA is attending IAA Transportation with the **combined expertise of both companies, Faurecia and HELLA**, in the fields of sustainable drivetrains, 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, CO₂ reduction and circular economy objectives. At the same time, the platformization of the production process gives manufacturers great design freedom at the lowest development costs.



Zero-emissions technologies: For a hydrogen-driven mobility

At the heart of a growing ecosystem, leveraging commercial and technological partnerships, FORVIA covers 75% of the hydrogen powertrain and offers best-in-class solutions. In addition to the company's manufacturing global footprint, systems integration know-how, and R&D hydrogen center of expertise, FORVIA has a proven record of hydrogen commercial and light commercial vehicles on the road with international OEMs including Hyundai, Hvia and Stellantis.

Pioneer in hydrogen truck, the company is equipping the first H₂ truck in the world, on the road since 2021, and developing hydrogen tanks perfectly adapted to meet the requirements of heavy-duty vehicles and other applications with intensive use cases.

Hydrogen is **perfectly suited for commercial, heavy-duty on- and off-road vehicles**, as well as high-horsepower engines, giving it the potential to transform transportation and logistics.

By 2030, FORVIA estimates that over 20% of the hydrogen vehicle annual production will be commercial vehicles (excluding light commercial vehicles).

Indeed, hydrogen is seen as part of global CO₂-free mobility solutions especially in commercial vehicles.

Hydrogen fuel cell solution allows flexible and zero-emission electric mobility and is perfectly suited to intensive use of commercial vehicles. Among its key benefits, this solution doesn't emit any CO₂ or pollutants, and offers **short refueling time, greater driving range, with no compromise on payload capacity**.

Finally, for 40T trucks, total cost of ownership is lower than for battery electric vehicle as of today and will be breakeven with diesel around 2030.

With the ambition to be a world leader in hydrogen mobility, FORVIA invested close to €300 million in hydrogen technology since 2018 and targets €3.5bn sales by 2030. The group developed a best-in-class ecosystem to provide the two key elements of hydrogen technologies, fuel cell systems through Symbio, our joint-venture with Michelin, and hydrogen storage systems, which combined represent around 75% of the value content.



XL gaseous storage tank & advanced liquid hydrogen solutions for enlarged truck driving range

FORVIA is committed to sustainable mobility and a pioneer in hydrogen trucks, equipping the first H₂ truck in the world, on the road since 2021 (Hyundai X-Cient), with its 350 bar hydrogen storage system.

In terms of hydrogen storage systems, FORVIA positions itself as H₂ storage solution provider for all through **onboard storage (mobility), hydrogen distribution and stationary storage**. We are solution provider whether the right technology is gaseous hydrogen or liquid hydrogen.

Gaseous Storage Systems

FORVIA has confirmed its capabilities on heavy-duty fuel-cell vehicles being able to provide to its customers the full hydrogen drivetrain, including a complete 700 bar hydrogen storage system (allowing up to 80 kg of gaseous hydrogen stored) and Symbio fuel cell StackPack.

To **maximize driving range and to comply with higher pressure needs**, FORVIA has developed 700 bar tanks for truck applications which bring almost 80% higher hydrogen capacity than 350 bars and provide new solutions of vehicle integration (in addition to existing cab module):

- XL-Type IV composite tank has been developed to comply with side tank truck installation and belt mounting. This very large tank solution brings the best weight performance with a ratio beyond 7% at 700 bars.
- The XL-tanks complete a wide range of tank solutions allowing best adjustment depending on the packaging: external diameter from D200 to D700 / length up to 3300 mm.
- To meet capacity needs as well as volume constraints, XL-tanks can be installed alone or in groups, in combination with a vertical storage system mounted behind the truck cabin for example.
- Considering regulated overall dimensions limitation in Europe for trucks, to maximize the storage, FORVIA recommends an architecture / installation storing 80 kg hydrogen @700 bars, with 5 tanks cab module and 2 side tank modules (D700 L 2500).

In addition to storage capacity maximization, our complete system (tanks and auxiliaries) is designed to satisfy **fast refueling operation** (under 15 min). Furthermore, these systems have been optimized and homologated to comply with 20 years service life and to comply with stringent safety & high durability requirements.



- FORVIA has developed advanced CAE simulation skills and is now recognized by its customers as among the market leaders in many domains like refueling performance, fire resistance and crash behavior simulations.
- Our wide range of type-IV tanks and maintenance-free auxiliaries allows best adjustment with allocated packaging.
- Our modular systems comprise highly robust valves and sensors to monitor system safety.

Furthermore, to respect our engagement of being carbon net-zero by 2045 and pursue our ambition to deliver the safest products, we are developing a **smart and sustainable carbon fiber composite** structure combining:

- Upgraded composite with higher mechanical strength and lower CO₂ footprint carbon fiber, enabling up to -30% of CO₂ emission.
- Innovative tank production processes to ensure recyclability.
- Smart sensing system to reinforce safety in use by detection of critical events and optimize operating period and downtime with tank structural integrity monitoring.

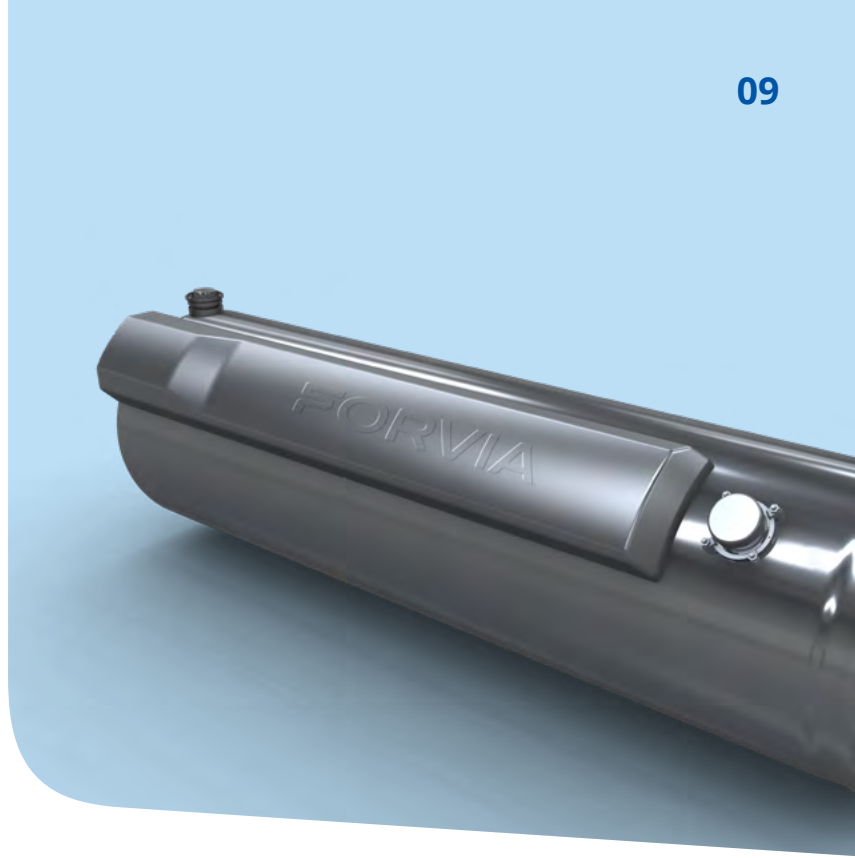
Cryogenic hydrogen storage solutions

FORVIA is showcasing its cryogenic hydrogen storage solution for the first time, highlighting the innovative capabilities of the company.

In parallel to gaseous hydrogen storage solutions development, FORVIA has started R&D activities in liquid hydrogen to upgrade vehicle autonomy. Indeed, liquid hydrogen **allows for over 65 % increased energy density versus 70 MPa H₂**, and over 200 % increased versus 35 MPa H₂.

Faurecia has developed a compact liquid storage solution that enables to store the same quantity of hydrogen while reducing occupied volume by 40 % versus 70 MPa H₂, thus enabling an easier vehicle integration and maximizing the quantity of hydrogen on-boarded. This technology of hydrogen storage is particularly adapted to intensive usage and will allow to reach an autonomy of 1,000 km range milestone, matching ICE vehicle performances.

Together with Air Liquide, our partner in this development, we aim at developing a cost competitive solution fit for heavy-duty vehicles, by combining the streamlining capabilities of a Tier one automotive supplier with the cryogenic expertise of a recognized global gas supplier.





Emission reduction technologies: Ready for Euro VII

To help customers fulfill the Euro VII requirements, FORVIA has developed several technologies for the most effective emission reduction. This includes a wide portfolio of AdBlue® mixers that suit the different customer needs, such as the Plenum Mixer, which achieves best performances in combination with the Heated Doser, or the innovative Flex Mixer, which optimizes CO₂ emission reduction thanks to 40% backpressure reduction.

The Heated Doser has been designed to achieve ultra-low NO_x emissions by operating efficiently in all conditions, for example at low temperatures, with low load and in urban operations. It is compatible with current and future aftertreatment architectures. As part of a full system approach, this technology will enable **compliance with the next wave of regulations** (EPA2027, EuroVII) cutting NO_x emissions by 90% in the most CO₂ efficient way.

This can be achieved by using the so-called flash-boiling method: by generating a high-pressure and high-temperature mist composed of extremely small droplets, allowing to inject AdBlue® in operating conditions not covered today and enhance NO_x reduction for diesel internal combustion engines. This technology **enables low temperatures dosing** and therefore provides CO₂ benefits compared to the traditional double dosing by avoiding fuel consumption or the need to add heating devices. Furthermore, FORVIA is further developing technologies and producing Exhaust Compact Systems which optimize the engine's thermal efficiency leading to fuel consumption reduction and as well contributing to emissions reduction. As an example, the new Scania Exhaust After Treatment System produced by Faurecia (part of the next generation powertrain "Scania Super") is contributing to an overall 8% fuel reduction.



New truck seat platform: balancing complexity and cost

FORVIA presents the world's first platform for truck seats at the IAA Transportation. In its development, FORVIA transferred its extensive know-how in safety, comfort, personalization and platformization from passenger car seats to truck seats. The modular architecture of the platform now gives truckmakers the ability to produce a wide variety of different seat models with the lowest development and implementation costs.

Prior to the platform development, FORVIA conducted an extensive market study to understand the needs, habits and priorities of truck drivers and to gauge their desires in terms of user-friendliness and comfort. As a result, a seating environment was developed that is particularly comfortable, allows the integration of massage, air conditioning and heat, and ensures very good accessibility to all control modules from the optimal seating position, by making it **fully modular and scalable**.

Within the same platform, comfort, wellness and monitoring modules can be added, making the seat suitable not only for the different needs of today's customers, but also for different scenarios of partially or fully autonomous driving. For example, monitoring and vital sign evaluations offer the possibility of ensuring a smooth transition from autonomous to manual-drive mode.

Thanks to its modular design, the platform contributes to manufacturers' ambitions in the area of sustainability and the circular economy: Sustainable materials such as Ecorium cover, PET-based foam backing or lightweight structures can be integrated. Thanks to the Automotive metal frame design, up to 16% of the weight of a complete seat can be saved. In addition, the seats are designed for **easy assembly and disassembly** to enable the replacement and recycling of components.



Smart Massage Cover: Relaxing massage on long drives

FORVIA aims to make professional driving a relaxing experience. Long car journeys and the associated restricted movement are often triggers for discomfort and back pain. Therefore, it has developed the Smart Massage Cover - the first retrofittable massage mat certified by AGR ("Aktion Gesunder Rücken") that can effectively **prevent and alleviate back pain**. The company drew on its extensive expertise in interior, comfort and wellness technologies to ensure that vehicle occupants are relaxed and refreshed at the end of the journey. A new generation of the app piloted massage cover can be activated via voice control.

Lighting products:

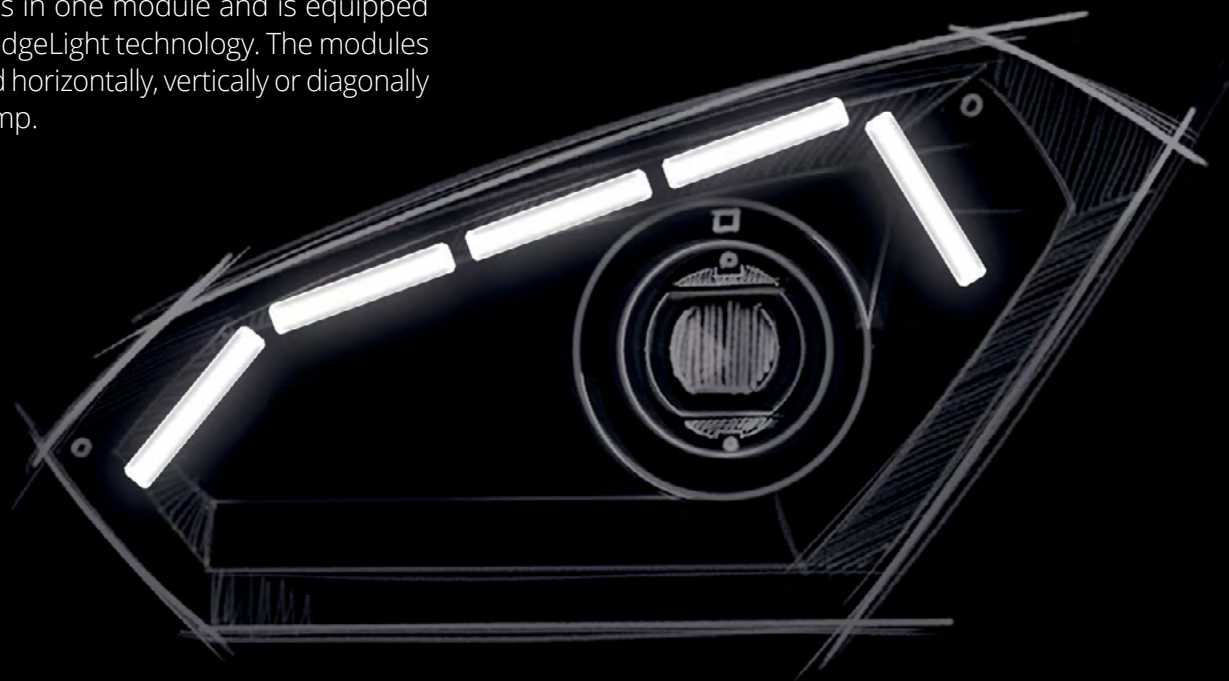
A unique appearance for commercial vehicles

FORVIA is also presenting a number of lighting solutions for the commercial vehicle market. With its product range, FORVIA is making a significant contribution to greater safety and comfort in road traffic. These products also address the growing customers demand for individualization and energy efficiency.

Products from the FORVIA lighting range for example are highly customizable to give commercial vehicles a distinctive appearance. Thus, the brand-new, modular full-LED rear combination lamp for 24 V trucks and trailers uses the patented HELLA LED light curtain in combination with a rear reflex reflector to realize the tail light of the full-LED rear combination lamp. This innovative light solution can be individually designed with printed graphic structures such as dots, stripes and shapes.

Also, the new modular LEDayFlex III lighting system boasts flexible alignment options to give vehicles and **individual appearance**. It combines three lighting functions in one module and is equipped with innovative EdgeLight technology. The modules can be integrated horizontally, vertically or diagonally into any headlamp.

FORVIA's new FlatLight I μ DP prototype is a smart robust and an economic alternative compared to organic LEDs (OLEDs). The prototype introduces the latest advanced light guide technology. It boasts a never-before-seen OLED-like homogeneity and customizable welcome and farewell scenarios. The lighting graphics are also customizable and similar to OLED-like passive segmentation. The FlatLight I μ DP prototype has a 2-component light guide optics which improves the tail light performance. The back of the light guide can either be metallized or painted which allows for multiple styling options such as a glass mirror or a simply white or transparent look. The size, shape, graphics, number of LEDs and the modules are customizable which makes the FlatLight I μ DP ideal for manufacturer who wish to individualize their vehicles.



Electronic products: Perfectly designed for the requirements of commercial vehicles

FORVIA's innovative electronics solutions for a wide range of applications include intelligent battery sensors (IBS) for 24-volt vehicle electrical systems which ensure optimum energy management in trucks and buses as well as large construction machines and are suitable for both combustion engines and electric motors.

FORVIA is currently the only supplier of an innovative combined rain-light sensor designed for steep windshields with a windshield inclination of 80° to 90°. This **combined rain-light sensor**, developed by HELLA, is ideally suited for vehicles such as trucks, buses or large construction machinery.

FORVIA's product range also includes accelerator pedals, linear actuators for folding and closing systems as well as space-saving rotary actuators for low forces for locking and unlocking systems in confined spaces, e.g. fuel filler flaps, glove compartments or charging plugs on e-vehicles and charging columns from its comprehensive electronics segment.





Park Safety Fix: Ensures the safety of the trailer at all times

A product that helps to greatly increase safety on the road is FORVIA's Park Safety Fix. When decoupling trailers from towing vehicles and placing them on parking lots or public roads, the power supply for the lighting system has generally been cut off. Only reflectors are left to mark the vehicle. The missing lighting can present a danger to other road users, especially at night. For this scenario, FORVIA is offering an independent battery-supported power source. The Park Safety Fix, or short PS-Fix, **enables the active illumination of trailers even without a towing vehicle**. PS-Fix can be flawlessly integrated as "Plug and Play" into the existing EasyConn wire structure of the lighting system. The core of the system is constituted by the electronics box operating the lighting system in the decoupled state. The control unit and battery packs are integrated in a 30 x 22 x 20 cm box to be mounted onto the vehicle's side.

As soon as the trailer is coupled to the towing vehicle, the PS-Fix system becomes inactive. The lighting system can then only be controlled via the towing vehicle. While driving, the truck's power supply charges the PS-Fix. This requires no additional plug connection from the truck to the trailer. PS-Fix gets activated whenever the power supply is interrupted.

Switches for the individual lighting functions are situated at the FORVIA PS-Fix system. Users can then make targeted use of lighting functions, such as parking and hazard warning lights. In addition, two AUX connections allow for additional special functions, such as work lights or beacons. This enables safe vehicle loading and unloading at all times. The PS-Fix is approved acc. to ECE R10.



FORVIA

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