



# Innovation Brochure

*65 technologies shaping the future of mobility*

#DrivingInnovation

Developed by:



Supported by:

**Deloitte.**

# European automotive suppliers at a glance



**75%**

of the value of a vehicle comes from its parts, components, and systems



**32%**

of total R&D investment in the EU comes from automotive, making the sector the top private investor



**€30 billion**

are invested yearly in research and development



**1.7 million**

direct jobs generated across the EU



**+39,000**

new patents are registered each year



**€26.7 billion**

trade surplus generated in 2023

## Foreword

This year, CLEPA, the European association of automotive suppliers, proudly celebrates 65 years advocating for safer, smarter, and more sustainable mobility across the EU. To mark this significant milestone, we are pleased to spotlight 65 innovations helping to shape the future of mobility.

Amidst unprecedented challenges — such as deep structural changes and intensifying global competition — automotive suppliers continue to champion innovation. These technologies illustrate the industry's exceptional efforts, substantial investments, and technological prowess in driving the EU's twin transition. By consistently developing forward-thinking solutions that anticipate customer needs and elevate the user experience, the automotive supply industry plays a key role in the EU's mobility transformation.

As we look ahead, this commitment to innovation will remain a driving force behind the industry's continued success in providing mobility solutions that meet evolving societal and environmental needs. We invite you to join us in celebrating these achievements, which lie at the core of CLEPA's mission and will guide our work as we navigate the future of the industry.



**Matthias Zink,**  
CLEPA President & CEO  
Powertrain & Chassis at  
Schaeffler



**Benjamin Krieger,**  
CLEPA Secretary General



**David Storer,**  
CLEPA Director Research,  
Innovation & New Mobility

[#DrivingInnovation](#)

# Index



## Digital

Connected and automated driving	6
User-centric experience	12
Safety and security	15



## Green

Electrification and alternative powertrains	21
Green service	26
Sustainable product	27

# Digital Innovations

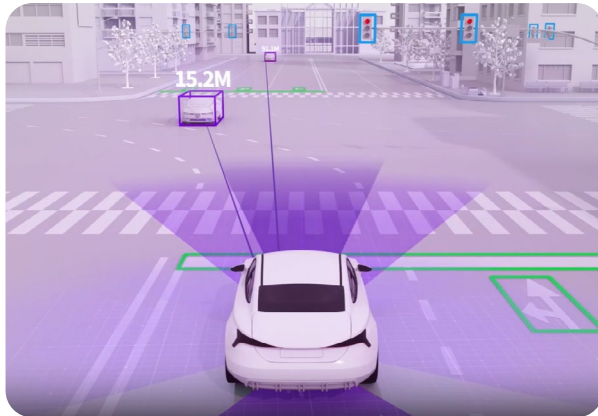
*Smarter and safer mobility of tomorrow*

The automotive supply industry is at the forefront of a transformative digital shift, bringing groundbreaking technologies that enhance safety, connectivity, and efficiency. Innovations in software, intelligent components, and connected systems are reshaping personal mobility, making it safer, more comfortable, and environmentally responsive. Through smart connectivity and advanced automation, the Digital category highlights innovations that not only improve vehicle performance but also enrich everyday experiences for users, creating seamless, productive, and more enjoyable journeys.





## Connected and automated driving



### AI 3D Perception Network

[STRADVISION](#)

Software for integration in ADAS and autonomous driving systems, providing deep learning-based object detection with minimal computational demand. It enables accurate, real-time perception and classification, reduces blind spots and enhances road safety. The software is adaptable to various systems and chips.



### Automotive Smart Grid

[ICarta Technologies](#)

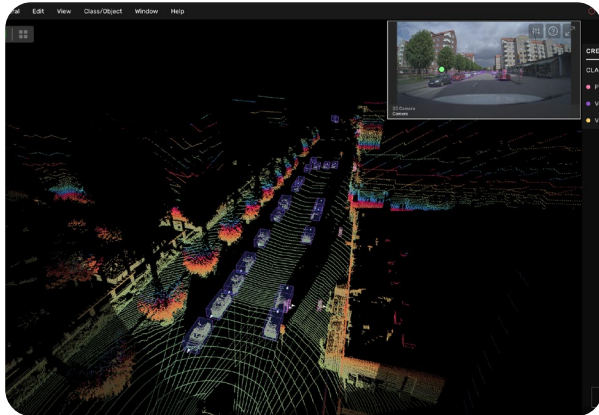
Electrical/Electronic architecture solution, with both hardware and software applications. It allows electronic domains within a vehicle to interact more securely, enhancing performance through higher-speed communication. It also enhances energy management efficiency, boosting the range of electric vehicles.



### Cockpit & ADAS Integration Platform

[Robert Bosch](#)

High-performance vehicle computer designed to host both infotainment and driver assistance functions on a shared System-on-a-Chip. Its flexible design adapts to customer requirements. The platform supports the integration of AI functionalities, including video and speech processing.



### Dataset Management Platform

[Kognic](#)

Platform that tackles a significant challenge in machine learning: helping machines interpret messy and unstructured data from sensors like radar, LiDAR, and cameras. By improving data organisation and visualisation, it enhances model performance and safety in automotive development, leading to better AI training outcomes.



### DiagCom Remote Vehicle Diagnostic for DoIP

[Diadrom Software](#)

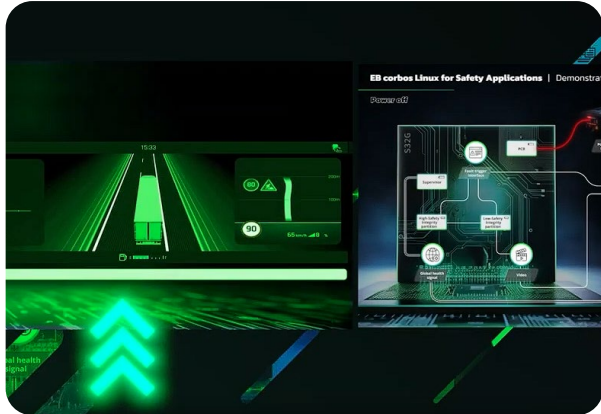
Platform that provides open access to software-defined vehicle diagnostics, facilitating seamless communication between vehicles' electronic control units (ECUs) and diagnostic tools. Hosted on GitHub, a collaborative software for developers, it supports collaboration and real-time diagnostics along with development, testing, deployment and maintenance.



### Drive DigitAlly

[VHIT spa](#)

Digital platform that accurately replicates the behaviour of a component using machine learning and virtual sensors to enable predictive maintenance. IoT connectivity shares telemetry data, allowing real-time monitoring and remote software updates.



## EB corbos Linux for Safety Applications

[Elektrobit](#)

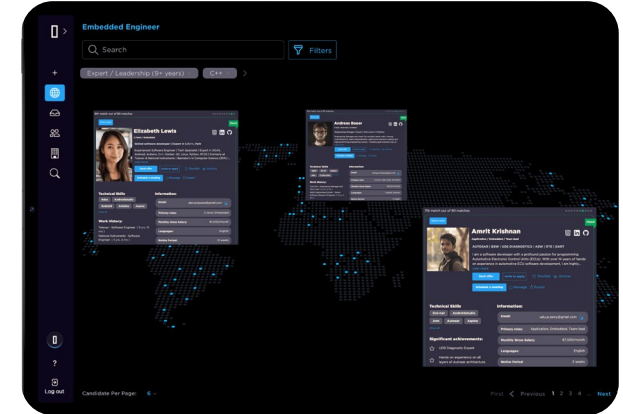
Open-source operating system that provides Linux safety-related high-performance computing functional domains, key for applications such as advanced driver-assistance systems (ADAS). It speeds up time-to-market by removing the need to port applications to proprietary systems and helps reduce total cost of ownership.



## EB zoneo GatewayCore

[Elektrobit](#)

Software that integrates advanced hardware accelerators into automotive systems, enhancing in-vehicle network performance to meet growing communication demands. As vehicles incorporate more and more features, this innovation reduces CPU load, and boosts energy efficiency.



## Global Tech Talent Resourcing Platform for the Automotive Industry

[Hashlist](#)

Talent platform that aims to connect automotive-focused talent globally, offering a single point of entry for engineering teams to engage contractors under one vendor with integrated HR and payment compliance in 150+ countries. It streamlines external talent sourcing and supports faster delivery of software-defined vehicle projects.

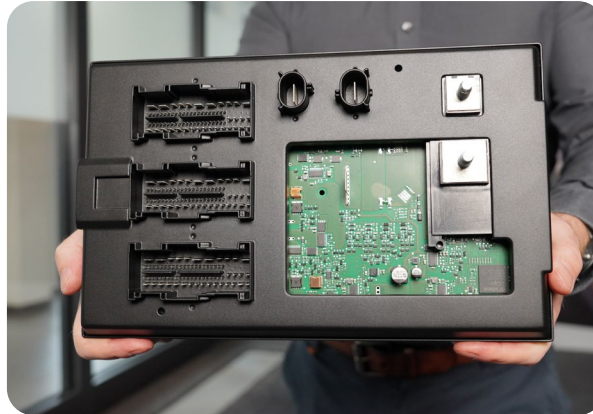




**Highly Reliable Software for Fail-operational Systems**

Elektrobit

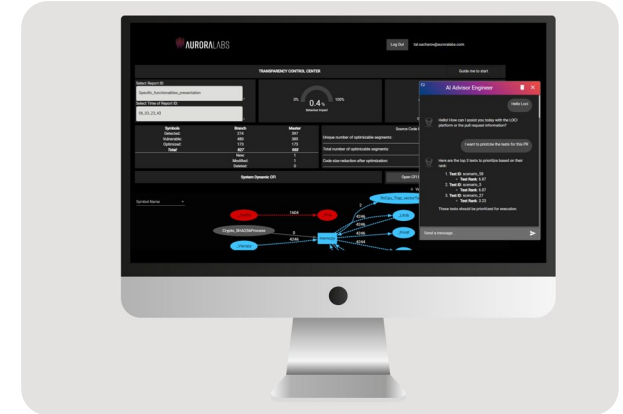
Fail-operational systems ensure that autonomous vehicles maintain operational integrity and safely navigate their environment, even during component failures. This innovation, targeting vehicles at SAE Levels 3 to 5, utilises redundancy and fault tolerance mechanisms to ensure continuous operation and enhance the reliability of autonomous driving.



**Intelligent Power Distribution Module (IPDM) with Integrated Electronic Fuse (eFuse)**

FORVIA HELLA

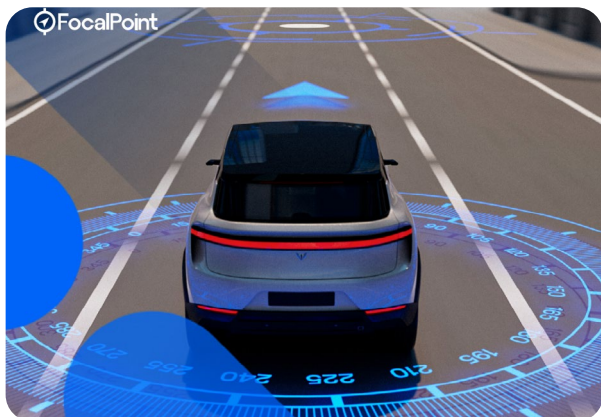
Module that enhances automotive power management by replacing traditional melting fuses with software-controlled electronic fuses. Primarily used in energy management, it supports higher levels of autonomous driving and ensures fail-operational capabilities. Leveraging AI data analytics, the innovation anticipates and mitigates potential issues before they arise.



**Line-of-Code Intelligence (LOCI)**

Aurora Labs

AI-powered tool for automotive software testing and maintenance that uses a Large Code Language Model. It offers insights that can reduce development time and costs. It tracks software at the most granular level, detects small anomalies, optimises test selection, and enables efficient updates and error resolution.



### **S-GNSS® Auto**

#### Focal Point Positioning

Software upgrade for GNSS systems that enhances performance in challenging environments, improving autonomous driving with accurate positioning. It boosts signal strength, rejects interference, and works with cameras and radar. Offered as a firmware update, it delivers reliable results, even with low-cost antennas.



### **Smart Cockpit Virtualization**

#### Continental Automotive Technologies

This innovation advances virtual development in automotive Electronic Control Unit (ECU) projects, allowing software developers to run the ECU in a cloud-based environment. By separating software development from hardware availability, the fully scalable cloud environment setup enhances flexibility and efficiency throughout the development process.





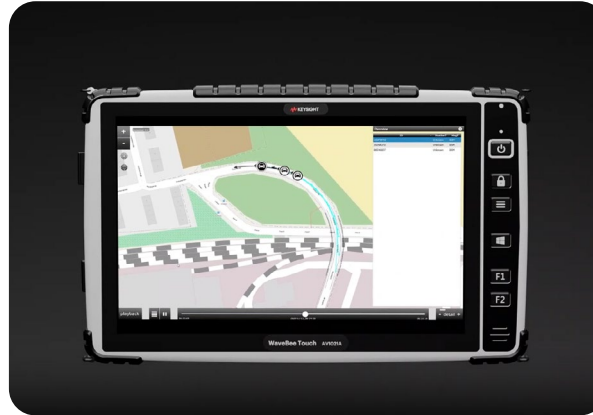
Digital



### Vehicle Diagnostics as a Service - Diagnostics Simplified

#### Jifeline Networks

Innovation that aims to support suppliers in diagnostics routines, by incorporating a cloud-based infrastructure that connects their servers to a remote workshop via the internet. This method allows technicians in the workshop to easily access the latest routines in a cost-effective and flexible manner. Security and intellectual property protection of the diagnostics routines are embedded in the innovation.



### WaveBee Touch

#### Keysight Technologies

Compact, all-in-one tool for visualising, recording, and analysing vehicle-to-everything (V2X) messages. Supporting multiple standards, it offers live data, recording, and playback without requiring programming skills. Ideal for V2X development, testing, and maintenance, it enables comprehensive on-site validation and analysis across various systems and manufacturers.





## User-centric experience



**AI-enhanced, Cockpit Personalization**

[Elektrobit](#)

AI-enhanced cockpit that offers an immersive, personalised, software-defined vehicle experience. It uses AI to interpret driver commands and translates them into actionable adjustments for the User Interface. Based on these commands, the cockpit's visual appearance is modified system-wide, including cluster instruments and infotainment.



**DigiPHY**

[Granstudio](#)

Mixed reality seating buck for automotive and vehicle design that combines virtual and physical support for an immersive design experience. Equipped with 24 actuators, it adapts to the dimensions and ergonomics of any vehicle, enabling real time adjustment to any possible vehicle configurations for iterative loop of design testing and prototyping.



**Display Privacy**

[Marelli](#)

This vehicle feature provides dynamic zonal content selection for OLED and TFT displays, allowing parts of the display to be hidden under certain conditions. In private mode, only passengers can view the content, while in public mode, it's visible to both passengers and the driver. Display Privacy enhances safety by minimizing driver distractions.



### Holographic Transparent Display

[MOBIS](#)

This transparent display technology integrates in-vehicle displays into the windshield, using a projector, a screen and a thin diffractive optical component. It allows for precise light distribution control and can be positioned in the lower part of the windshield, presenting navigation and driving information without obstructing the driver's view.



### LightOpen

[FORVIA HELLA](#)

Software platform that leverages network technology and Electric/Electronic architecture to transform the vehicle's lighting system into a fully customisable environment. The system allows for the customisation of lighting and display features according to individual preferences and enhances functionalities without additional complexity.



### Perceptual UX Engine Software Platform

[FORVIA](#)

Software development kit that aims to enhance the interaction between the user and the car, ensuring comfort, well-being and safety. The scenario engine learns the habits of car occupants, suggests environmental control settings, and generates personalised audio and visual content.



### **Virtual Garage**

Moto-Profil

This virtual reality (VR) tool for training car mechanics offers interactive service scenarios, such as brake or oil changes. It enhances traditional education by allowing students to practice in VR, reducing injury risk and aligning with Generation Z's interest in modern technology.



### **Wide-angle Rear Wheel Steering**

MOBIS

Steering system that uses a ball-screw mechanism, enabling vehicles to make U-turns within a 3-meter radius, significantly improving maneuverability in tight spaces. It enhances steering efficiency, stability at various speeds, and is compatible with both existing and future vehicle designs.



Digital





## Safety and security



**Backeye 360 AI**

[Brigade Electronics](#)

This innovation features a 360-degree camera system for large vehicles, combining four camera feeds into a single 3D image. It uses AI to detect pedestrians and cyclists, issuing visual and audible alerts. By eliminating blind spots and enhancing driver awareness in complex environments it improves road safety.



**Brake Force Button Cell Sensor for Electromechanical Brake System**

[Sensata Technologies](#)

Brake force sensor that enables closed-loop control of caliper or drum brakes in electromechanical braking systems. It also offers high levels of accuracy. Its compact, cost-effective design supports mass adoption of electromechanical braking.



**Cyber Security Testing Platform (CSTP)**

[AUTOCRYPT](#)

Platform that allows vehicle manufacturers to conduct all required cybersecurity tests, in compliance with UNECE Regulation 155, and provides standardised results for vehicle type approval. It supports various protocols and threat scenarios, performing tests such as fuzz, engineering specification validation and penetration testing.



**EVSEC: Automated Risk-Driven Product Security Platform**

[C2A Security](#)

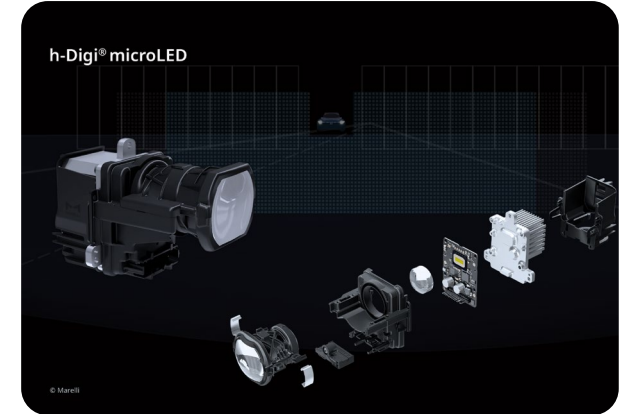
Cybersecurity platform that automates security tasks through AI, allowing developers to focus on new features. It tracks and resolves vulnerabilities, helps meet cybersecurity requirements, and enhances collaboration across the supply chain. EVSEC simplifies security and delivers insightful reports for better decision-making.



**FRONTEYE**

[Brigade Electronics](#)

Advanced monitoring system that enhances safety in commercial vehicles. It offers a 180-degree detection zone so that drivers can spot potential vulnerable road users. This innovation uses pixel recognition and AI algorithms to alert the driver visually and/or with sound.



**h-Digi® microLED**

[Marelli](#)

This module is an advanced automotive lighting system that works with intelligent multipixel LEDs that provide adaptive, dynamic headlights. It enhances safety by adjusting light patterns based on detected objects and projects high-resolution images on the road. This driver assistance feature greatly improves safety and comfort during night-time driving.

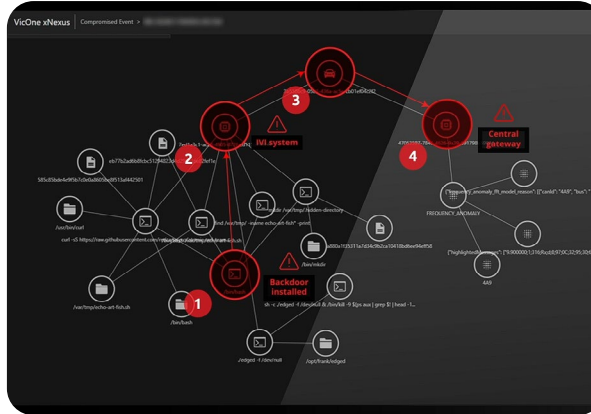




### Light Tile for Transparent Door

FORVIA

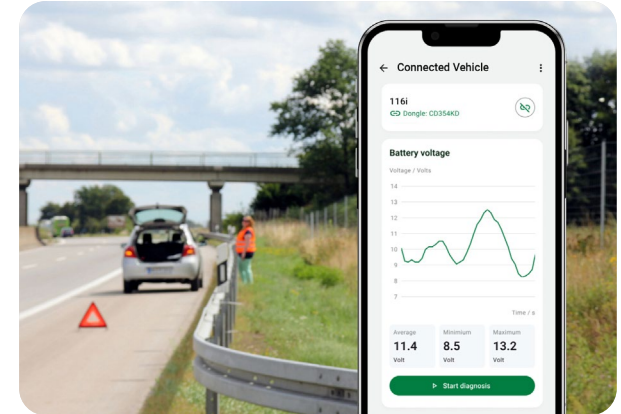
Innovation that seamlessly integrate safety features, aesthetics and various functionalities into a vehicle door panel using LED lighting embedded in interior surfaces. It enhances safety thanks to blind-spot detection with sensors and pedestrian proximity alerts.



### LLM-empowered Automotive Attack Surface Management (ASM) Platform

VicOne

Platform to monitor and manage attack surfaces throughout the vehicle lifecycle, offering a closed-loop, risk-based solution from design to on-road. It ensures holistic risk coverage through AI/LLM collaboration, runs automated security operations and provides proactive risk assessment.



### Mobile Deep Diagnostic Solution (MDDS)

HELLA GUTTMANN

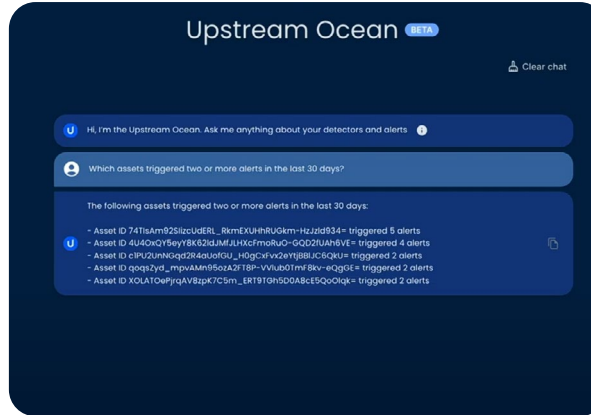
Cloud-based digital system that enables cross-brand condition monitoring and workshop-like fault diagnostics of vehicles from a distance. A telematic dongle is plugged into the vehicle's on-board diagnostics interface and data collected is then transmitted to the AI-supported cloud in a professional technical centre.



### NightSight Assist

[ANTOLIN](#)

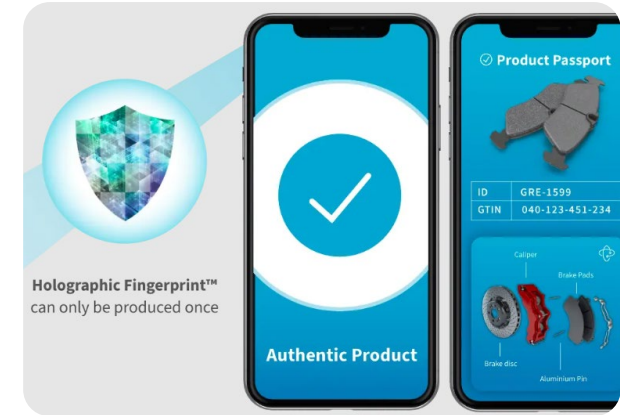
It is three times more likely to suffer a serious accident at night. This adaptive system improves vision in both scotopic and mesopic conditions, through the promotion of an adequate pupil response based on light excitation and pupil diameter control. It is composed of a diffuse light source and a proprietary algorithm-based monitoring system.



### Ocean AI

[Upstream Security](#)

Generative AI layer to enhance the investigation of risks and threats faced by connected vehicles. The tool analyses massive data sets using advanced AI, allowing teams to ask questions in a chat-like format and generating answers. It connects multiple data sources, offers insights, and helps prioritise alerts for faster response.



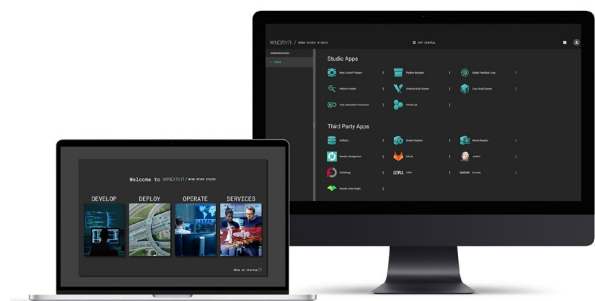
### Secure Product Digitalization

[Authentic Vision](#)

Solution that protects against counterfeit automotive parts using a unique Holographic Fingerprint™. Users can verify authenticity with a smartphone scan, enhancing safety and customer trust. The technology integrates seamlessly with existing systems and packaging, merging digital and physical security for reliable product verification in the automotive aftermarket.



Digital



## Studio

[Aptiv](#)

Edge-to-cloud DevSecOps platform that supports the entire automotive software lifecycle. It allows vehicle manufacturers to develop, test, deploy and operate software in vehicles from a single interface. Studio integrates with existing environments and supports 30 pre-configured industry-standard tools and operating systems.



## VIBE

[FORVIA](#)

System for automotive seating that provides vibrations to warn the driver in case of immediate danger. When risks like drowsiness, lane departure, speeding or blind spots are detected, it triggers dedicated haptic feedback to alert the driver and enhance safety.



## WESETH: Cybersecurity Testing Automation Platform

[drivesec](#)

Platform that verifies cybersecurity in cyber-physical systems, enabling remote validation of security requirements. Key features include automated verification, remote penetration testing, cooperative vulnerability fixing, and attack simulations. It supports autonomous verification and expert involvement to enhance overall security.

# Green Innovations

*Driving the future of sustainable mobility*

The automotive supply industry is at the core of Europe's green transformation. Aligning with the EU's commitment to reducing environmental impact, suppliers drive sustainable mobility by delivering energy-efficient systems, eco-friendly powertrains, and sustainable materials. The Green category highlights pioneering technologies that support climate-neutral mobility, making transportation cleaner and more efficient, while enhancing sustainability for people and the planet.



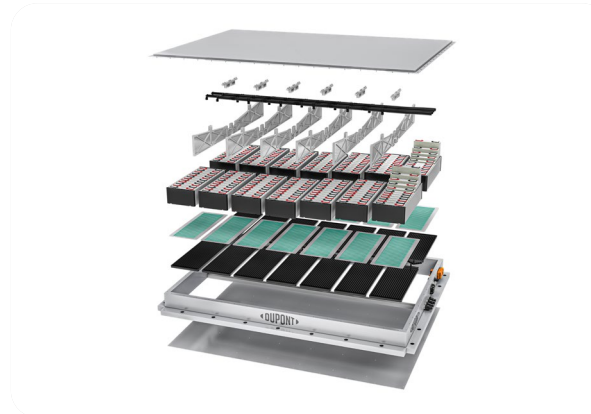
## Electrification and alternative powertrains



### Anode Controlled Fast-charging Software

[FEV](#)

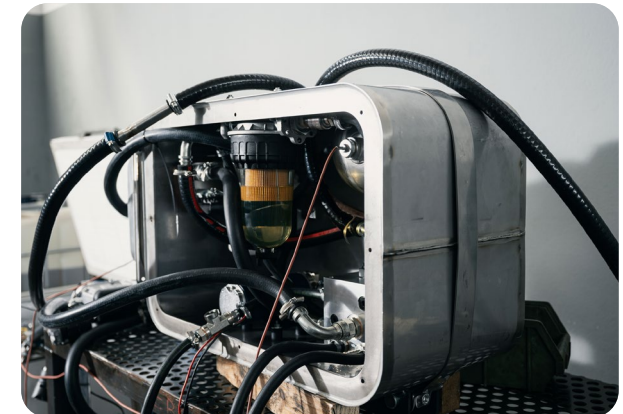
Fast charging is becoming an essential feature for electric vehicles, but it can lead to lithium plating, reducing battery life and performance over time. This AI-driven software solution monitors and controls charging, preventing this issue while still reducing charging times.



### BETATECH™ Thermal Interface Material

[DuPont](#)

Thermal management solution for electric vehicle batteries that helps manage heat safely and efficiently. It features a silicon-free formulation, eliminating free di-isocyanates for improved health and safety. The innovation simplifies battery cell connections, reduces assembly complexity and contamination risks.



### BiodieselKit

[ReFuel Solutions](#)

Kit that enables diesel engines to run on pure, environmentally friendly biodiesel. It includes a mechanical-hydraulic component, an electronic system for remote monitoring and emission data management, and a heating module to ensure optimal performance in diverse climate conditions.



### Conductive Charging Rail

[Elonroad](#)

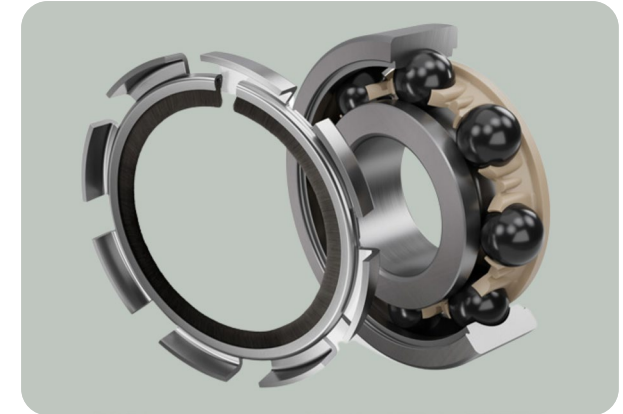
Electric road system that automatically charges all types of electric vehicles while driving or parking. It extends driving range and has the potential to reduce the need for large batteries, improving sustainability. Equipped with IoT sensors and predictive algorithms, the rail provides intelligent feedback and interacts with vehicles in real time.



### Differential Inductive Positioning System (DIPS)

[MAHLE](#)

Positioning system for wireless charging that ensures proper vehicle alignment when approaching a charging point even in adverse weather conditions. The DIPS supports parking in the ideal vehicle position, making charging efficient, fast and convenient without manual effort.



### Conductive brush ring

[SKF](#)

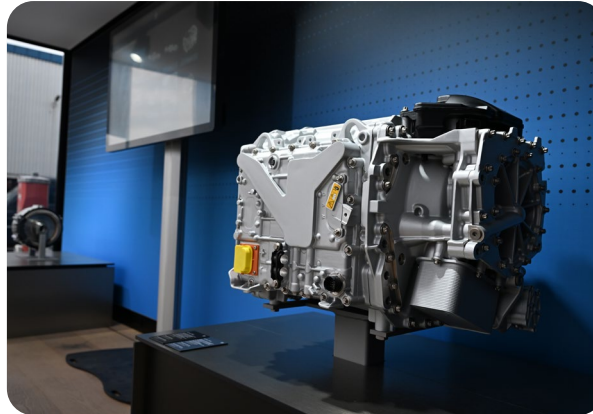
The new generation of EV powertrain architecture combines motors, reduction gears, and control power electronics in a compact e-axle. Parasitic currents can cause micro-pitting, noise, and vibration. The conductive brush ring solves this by providing a reliable electrical connection between the rotor shaft and housing, improving e-axle reliability and lifespan.



### **E-500e**

[Thermo King](#)

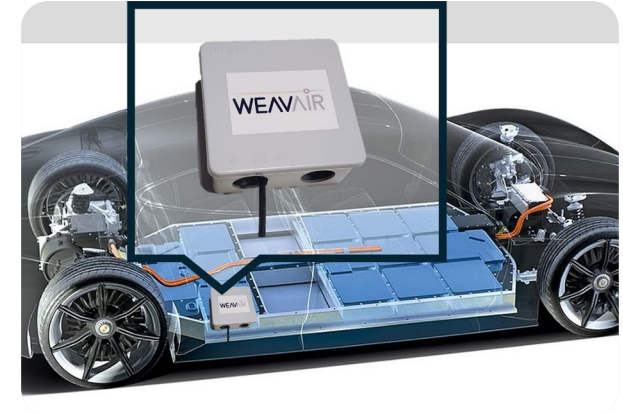
Electric refrigeration unit for light commercial vehicles that provides zero-emission cooling and heating. Powered by the vehicle's battery, it is equipped with a patented inverter technology and an ultra-efficient variable-speed hermetic refrigeration compressor to deliver better performance with reduced energy consumption.



### **Electric Central Drive for Commercial Vehicles**

[ZF Friedrichshafen](#)

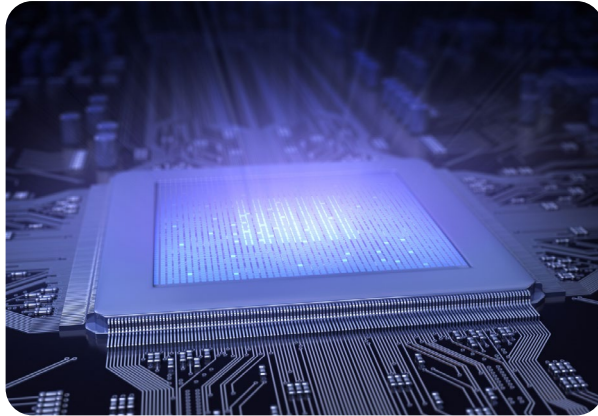
Electric central drive that helps heavy trucks become more sustainable, combining powerful electric motors and advanced technology in a compact unit. It is designed for retrofitting, allowing manufacturers to easily switch technologies. The lightweight and efficient system also provides smooth gear changes, a key feature for commercial vehicles.



### **EV Battery Watchdog**

[WeavAir](#)

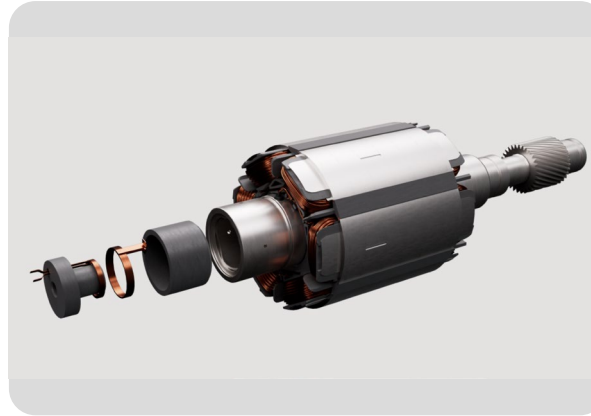
This smart system monitors the health of electric vehicle batteries using specialised sensors to track parameters like temperature and gas levels. By detecting issues early, it ensures battery safety and helps reduce costs. This technology also supports sustainability and protection of the environment by improving the recyclability of components.



### High Accuracy SoC Estimation

[FEV](#)

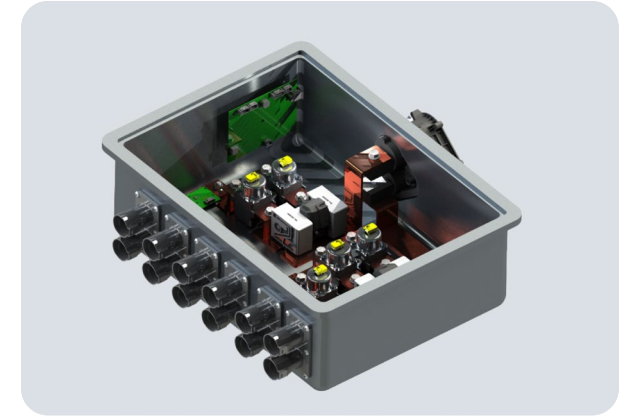
Battery health affects the overall performance of electric vehicles. This innovation combines traditional methods with artificial intelligence to accurately estimate the state of charge of the battery, ensuring better performance and safety.



### I²SM: In-Rotor Inductive-Excited Synchronous Machine

[ZF Friedrichshafen](#)

Electric motor for cars that eliminates the use of magnets, making it more environmentally friendly. Instead, it employs coils to create power, resulting in a smaller and more efficient design. This innovation reduces carbon emissions during production and improves performance, contributing to more sustainability mobility.

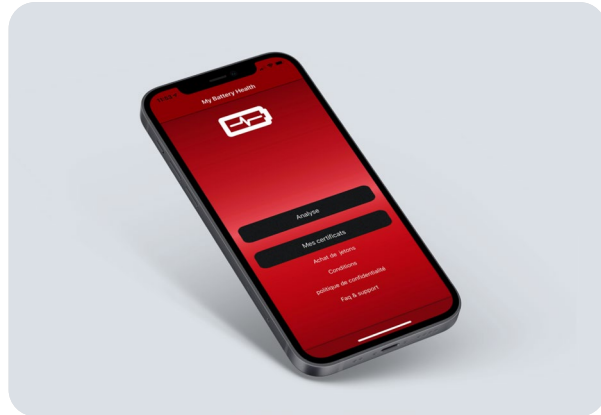


### Megawatt-Charge PDU for Heavy Vehicles

[Sensata Technologies](#)

This device for heavy-duty vehicles allows safe and efficient connection of the charge inlet to the battery, distributing power to auxiliaries and e-motors. It features components of low electrical resistance and an optimised cooling system to minimise heat generation, enabling electric transportation, reducing charging times and lowering total cost of ownership.

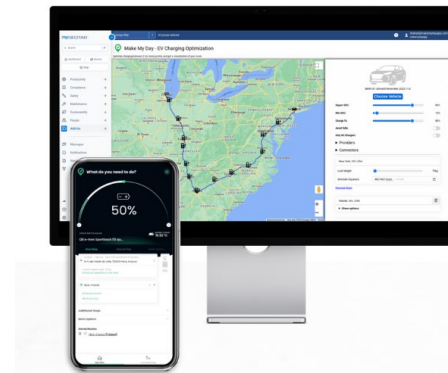




### Quick Battery Health Check

[Mybatteryhealth](https://mybatteryhealth.com)

Technology that monitors the health of batteries in electric and hybrid vehicles. It uses AI algorithms to analyse real-time battery data, providing accurate insights into performance and longevity. All relevant data is collected through an application, interfaced with the vehicle's battery management system and which is compared with database information.



### Smart Mobility Solutions for Electric Vehicle Drivers & Fleets

[Make My Day](https://www.makemyday.com)

Software that simplifies fleet charging of electric vehicles by optimising operations and reducing costs. It supports drive planning, route optimisation, and synchronised calendar-stop planning. With accurate battery predictions, it enables drivers to plan trips effectively, ensuring they won't run out of power before reaching their destination.



### Software Break Resistor (SBR)

[ZF](https://www.zf.com)

The smart system prevents electric trucks from overcharging their batteries when descending hills. By calculating the optimal charge based on the truck's route and characteristics, it reduces the need for costly equipment and saves energy by efficiently managing braking, enhancing performance and sustainability.

## Green service



**ELYGREEN H2: Test Bench for SOEC/SOFC Systems**

[NUTAI](#)

Testing system that integrates the ability to run simulations on fuel cells and electrolyzer cells in one single unit. It operates with different gases and varying test conditions (temperature, humidity, pressure), further helping research and development of alternative sustainable mobility solutions.



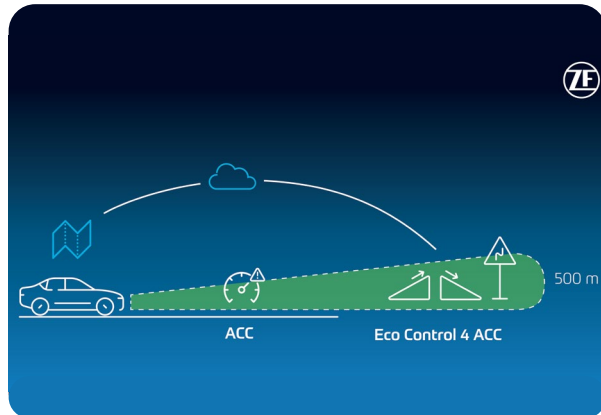
**Product Sustainability incl. Smart Mapping & Smart Connector (IMDS)**

[iPoint-systems](#)

Life-cycle assessment (LCA) software that helps car companies to quickly evaluate the environmental impact of their products. By linking material data to sustainability information, it accelerates carbon footprint calculations. This tool provides valuable insights for production, enhancing sustainability across the value chain.



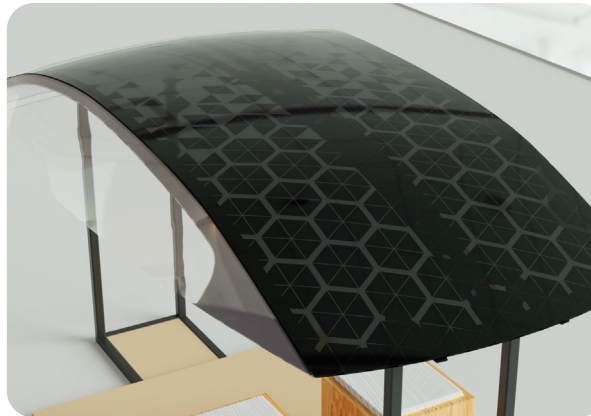
## Sustainable product



### Eco Control 4 ACC

[ZF Friedrichshafen](#)

This technology helps cars control speed and distance automatically. It uses smart software to save energy and time while driving, making it better for the environment. This system can be added to any car, helping to reduce emissions and increase electric vehicle range by up to 40 kilometers.



### EcoPeak

[Webasto Group](#)

Roof system for electric vehicles made from eco-friendly materials and solar cells. By incorporating advanced bio-based materials, the sunroof helps lower the carbon footprint throughout its life cycle while generating surplus clean electricity during its use phase.



### Hybrid Wheel

[MW - CLN Group](#)

Hybrid wheels combine steel and aluminium to leverage the advantages of both materials. The strong steel centre reduces costs and pollution, while the lightweight aluminium outer layer improves handling and minimises noise. These wheels are 25% lighter than traditional ones, making them ideal for electric vehicles, saving costs and energy consumption.



**NAFILEan**

MATERI'ACT

Fully recyclable material made from up to 25% plant-based materials and recycled plastic. Designed for car parts, it offers various colours and textures. This material reduces carbon emissions and is lighter than traditional options, making it both environmentally friendly, and stylish for vehicles.



**NextGen Sustainable Wheel (NGSW)**

EUdrive

Electric vehicles require large, lightweight wheels to reduce drag and carry heavy loads. This new design uses strong steel instead of aluminium, making it more eco-friendly. This approach enhances performance, lowers costs, and offers stylish options, all while improving sustainability.



**Seat Backrest in Composite Natural Fiber**

Sabelt

Homologated seat back shell that replaces traditional fiberglass and carbon fiber composites with a 100% natural flax fiber layup, reducing emissions during production. The design is also lightweight, which improves sustainability while ensuring that quality and performance are not compromised.



**Sustainable Brake Fluid**

Continental Aftermarket

Brake fluid that meets high safety standards and is made from renewable materials, free from hazardous chemicals. It requires no health hazard label, simplifying handling in workshops and eliminating the need for special storage.



**Universal Circular Black Masterbatches with Certified Sustainable Material**

Cabot Corporation

These black masterbatches with certified recycled content are designed for automotive plastics applications, like interiors, exteriors, and under-the-hood parts. These materials contain up to 45% circular content and offer nearly 20% GHG emission reduction compared to a standard black masterbatch.



**Ultracontact NXT**

Continental Reifen

Tyre made from up to 65% renewable and recycled materials, enhancing its eco-friendliness, while offering high-quality performance and earning top ratings for efficiency and noise reduction. All 19 sizes available carry the highest rating of the EU tyre label in rolling resistance, wet braking and exterior noise.



CLEPA - European Association of Automotive Suppliers  
Cours Saint-Michel 30g | 1040 - Brussels  
info@clepa.be

Status: November 2024  
All rights reserved CLEPA, 2024



#DrivingInnovation