

# INNOVATIONS@IZB

Connecting Car Competence.

11<sup>th</sup> to 13<sup>th</sup> October 2022

Wolfsburg | Allerpark

Including 26 World Premieres!



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#izb2022



CONNECTING CAR COMPETENCE.

**DEAR SIR OR MADAM,**

The automotive industry is constantly transforming. The key trend topics in the industry such as autonomous driving, electrification and digitalisation are continuously advancing. They are changing the product and thus also the manufacturing processes and supply chains. These changes across the value chains repeatedly demand new innovations and companies that drive them. At the Allerpark in Wolfsburg, from 11th to 13th October, the exhibitors at this year's 11th International Suppliers Fair (IZB) provide an insight into what exactly will define the automotive world of the future. These exhibitors have already announced that they will be showcasing 119 innovations at the event, 26 of which are even world premieres. As you can see, there is certainly plenty to look forward to at the IZB 2022.

The role of the IZB as an important international marketplace for future-oriented innovations is impressively underlined by presentations of world premieres and new products from 12 countries. In addition to Germany, companies from countries such as Great Britain, France, Singapore, Spain, Switzerland and the USA are all represented here. They are showcasing a wide variety of new solutions and innovative products in the key topics of E-mobility, Production 4.0, Electrification, Autonomous Driving and Software. The aim of the IZB to represent the entire value chain of the "vehicle" product, developing into a networked user device, continues to be the focus of the trade fair. The quality in all individual parts and the reliable cooperation of the hardware and software suppliers are guarantors of innovation, safety and sustainability of the end product.

The innovations@izb Report 2022 offers you a compact summary of the new and further developed products, systems and services that will be showcased at this year's event.

I hope that you will enjoy reading about these exciting innovations and maximise your time at the IZB 2022!

**We look forward to enjoying a successful trade show with you.**

Josef Schulze Sutthoff  
*Head of the IZB*

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Legend to symbols:

 This exhibitor presents one or more world premieres.

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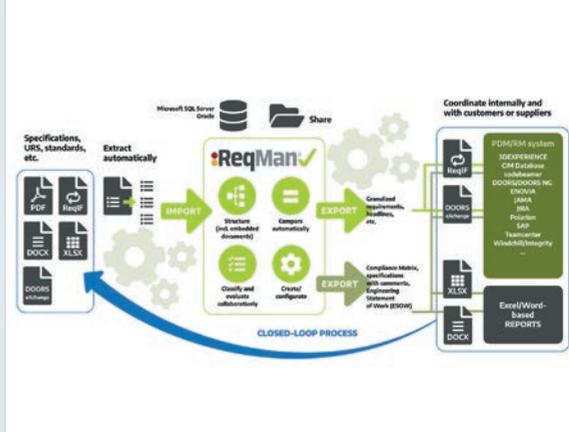
*The AutoScan-K 3D inspection system*

## TRUE FREEDOM IN WIRELESS 3D SCANNING

**3Dokuteam – das dokuteam NordWest GmbH**  
**Hall 5 | Stand 5124**

The **AutoScan-K series** (see image) from SCANTECH, an automatic 3D inspection system, can carry out non-contact and non-destructive inspections using machine vision technology. While ensuring extra-high accuracy, it can effectively perform online batch scanning and inspection. Featuring 24-hour constant operation, the AutoScan-K 3D system helps enterprises reduce manufacturing costs, accelerate product time to market and increase return on investment. Equipped with multiple working modes, the AutoScan-K 3D system can adapt to carry out measurements in various industrial scenarios. What's more, it can also precisely control robot movements based on cutting-edge machine vision algorithms, thus enabling efficient and automatic batch inspection. 3Dokuteam is a value-added reseller for SCANTECH products in Germany.

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**ACOME** cables  
 for connected mobility

**HV & LV POWER CABLES**

**DATA CABLES**

**SINGLE CORE & MULTICORE CABLES**



The functions of ReqMan

## ANALYSE BIDS AND PROCESS ORDERS IN RECORD TIME - WITH A COLLABORATIVE, AUTOMATED, TRANSPARENT AND EFFICIENT SOLUTION

**:em engineering methods AG**  
 Hall 5 | Stand 5119

The problem: thousands of requirements and customers who expect to receive classified and qualified responses within a matter of days. The solution by :em AG: ReqMan® (see image) frees users from Excel spreadsheets and supports them in their distributive bidding management (e.g. tenders, specifications, etc.) and efficient evaluation of bid requests in order to save time and valuable resources. What's more, it does so in a semi-automated process. As a result, bid evaluation and order processing take place in record time. ReqMan® uses team-based collaboration and the parallelisation of tasks to reduce processing times, improve quality when evaluating customer requirements and optimise processes by re-using templates and standardising responses. ReqMan® can automatically distinguish between requirements and information, thus making risk management much easier and more reliable.

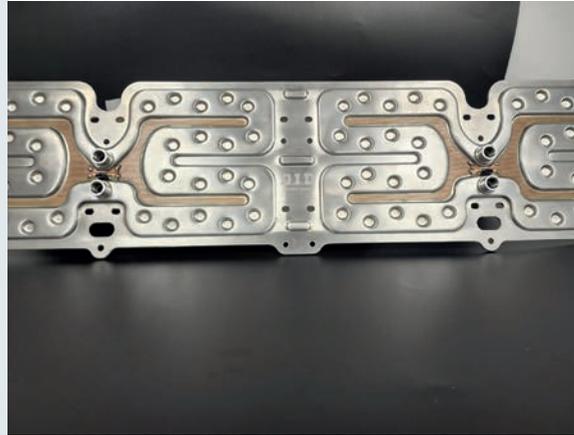
## PERFECTLY ADAPTED TO THE THERMAL REQUIREMENTS OF NEW ENERGY VEHICLES

**ACOME**  
 Hall 1 | Stand 1119

ACOME is an international industrial group specialized in high-tech cables for the automotive industry. It is renowned for its expertise in the development of comprehensive cabling systems for the new generation of electric, hybrid, networked and autonomous vehicles. At the IZB, visitors can discover high-voltage cables that make up the backbone of the Powernet architecture inside electric and hybrid vehicles. The UltraFlex HV portfolio expands the ACOME range for plug-in hybrid (PHEV) and electric (EV) platforms. These power cables made of cross-linked polyethylene (XLPE, silicone-free) meet the major challenges faced by carmakers in terms of competitiveness and functionality. Their performance is identical to that of silicone in terms of flexibility and is perfectly adapted to the thermal specifications of new energy vehicles.

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*A battery cooling plate with a new design*

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*Aluminium casing for cooling power electronics*

## BATTERY COOLING PLATES WITH A NEW DESIGN

**AdvanTech International, Inc.**  
Hall 2 | Stand 2613

World Premiere!

At the IZB 2022, AdvanTech / Daido Koygo is showcasing a new technology for battery cooling plates / heat exchangers for the first time. This compression-moulded high-performance plate with a light weight and high stability (see image) offers design flexibility, the use of different materials and the latest trends in joining technology. The specially developed adhesive and fibre laser welding can replace conventional methods such as hard-soldering and rolling adhesion. These production and joining methods enable the manufacturer to use stronger materials (Series 5000 and 6000), which make it easier for the plates to be integrated into battery packs and thus save both weight and costs. What's more, the design allows for the integration of a heating function to warm up the battery cells in colder environments, as well as offering flexibility in terms of dimensions, for example with sizes ranging from small plates with one module to large plates with 15 modules, which are used in battery electric vehicles and electric buses.

## CUSTOMER AND FUTURE-ORIENTED SOLUTIONS IN THE ALUMINIUM DIE-CASTING PROCESS

**ae group ag**  
Hall 6 | Stand 6327

At the IZB 2022, the ae group is presenting new possibilities in the die-casting process to tackle the challenges involved in electric mobility with innovative solutions. When it comes to mastering intelligent thermal management, especially when designing efficient cooling solutions in components of the electric powertrain, automotive manufacturers struggle due to known assembly complexities and the challenges they entail. Complex mechanical processing of joint areas, expensive seals and risks of leaks are just some significant examples. With the aim of reducing these "customer pain points", ae has developed customer-oriented solutions such as one-piece aluminium casing for cooling power electronics (see image), which features an integrated flow-optimised cooling channel manufactured without any seals, screws or welding processes.

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The Minitek HVLC high-voltage solution

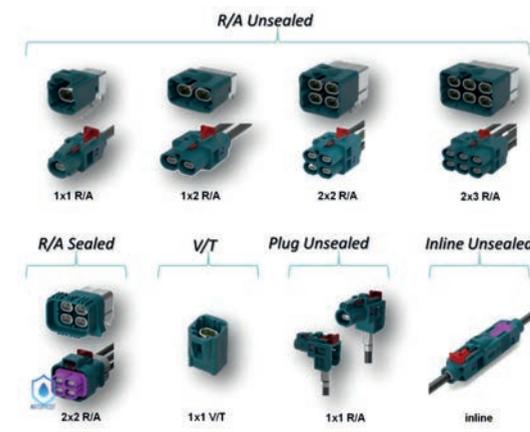
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The Ve-NET Ethernet connector system

## A HIGH-VOLTAGE SOLUTION FOR BATTERY MANAGEMENT SYSTEMS

**Amphenol Communications Solutions**  
Hall 1 | Stand 1324

“Minitek HVLC” (see image) is the high-voltage solution developed by Amphenol Automotive for battery management systems that use a low current ( $\pm 2$  A). This connector model is used for performing high-voltage measurements. Special materials and a patented design enable the Minitek HVLC to achieve the creepage distances and clearances, voltages of up to 1,000 V and pulse voltages of up to 3,000 V required at a height of 5,500 m. The connector has a touch-proof design in accordance with IPXXB. It is fitted with TPA and CPA and meets the requirements of USCAR-2 T2V2, LV214 S1 and IEC 60664-1. Minitek HVLC has a modular design that can accommodate the following positions: position from 4P to 12P (in increments of 2) with a grid of 4.5 mm. Vertical, right-angled, SMT and THT connections are all possible with the same connector.

## AN ETHERNET CONNECTOR SYSTEM FOR HIGH DATA RATES

**Amphenol Germany GmbH/Amphenol Automotive**  
Hall 1 | Stand 1324

The Ve-NET™ Multigigabit Differential Connector System (see image) by Amphenol Automotive is designed for an automotive environment that is able to transmit data at a rate of between 1,000 Mb/s and 10 Gb/s in accordance with IEEE 802.3bp 1000BASE-T1 and IEEE 802.3ch 10GBASE-T1. It also supports higher data rates of 25 G+ in accordance with IEEE 802.3cy (specification currently in preparation). This Ethernet connection system, which is suitable for vehicles, uses a shielded twisted pair (STP) / shielded parallel pair (SPP) cable for its data transmission. It was developed in compliance with USCAR-2 T2V1 & LV214 S1 and Ethernet specifications and is available in miniaturised and sealed configurations. All versions are fitted with CPA and CCPA and have been developed for use in a temperature range of -40 degrees Celsius to +105 degrees Celsius. Ve-NET™ is available in different variants and will be showcased at the Amphenol Germany GmbH stand at the IZB.

**Press contact:**

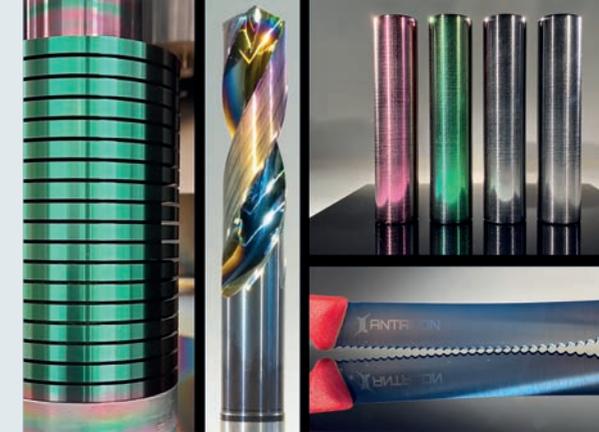
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*The Dynamic Controllable Clutch*

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*Sample applications for super-hard DLC coatings from ANTACON*

## NOVEL WAY TO DISCONNECT THE E-MOTOR FROM THE WHEELS IN ELECTRIC DRIVE UNITS

**Amsted Automotive**  
Hall 6 | Stand 6418

Amsted Automotive's first-to-market **Dynamic Controllable Clutch** (DCC – see image) and **Electro-Mechanical E-axle Disconnect Solutions** provide a novel way to disconnect the e-motor from the wheels in electric drive units. The DCC is the first production disconnect solution to be located at the EV transmission output. Other main benefits include the discrete and simplified technology packaging, imperceptible engagement and disengagement and the fact that the solution is easy to apply, calibrate and use. The torque-dense and robust design is ideal for delivering quality components and managing the extreme torque and impact demands of electric vehicle propulsion. Further impressive features include the opportunity to significantly reduce battery and structural mass, a sub-20 ms engagement time, a transfer of 6,200 lb-ft (8,500 Nm) of ultimate torque and a 10-percent increase in battery range due to improved energy efficiency.

## SUSTAINABLE HIGH-PERFORMANCE COATINGS FOR WEAR PROTECTION

**ANTACON GmbH**  
Hall 6 | Stand 6108

High-speed applications, machine parts, tools, technical components – above all in vehicle production – are subject to heavy wear. Wear costs EUR 35 billion annually, including repairs, in Germany alone. Super-hard coatings can provide a remedy here. Made of carbon, they are almost as hard as a diamond. The problem: During manufacturing, high mechanical tension builds up in these layers; as a result, they quickly become unstable and can peel off under heavy wear and tear. ANTACON has found a solution for this. Thanks to a patented process, for the first time deposition of these extremely hard coatings is possible without tension. The components (see image) are thus up to ten times more durable than the previous coating solutions. This saves a tremendous amount of material, lowers costs, conserves energy resources, and improves the ecological balance.

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*Facial authentication (left) and a look into the vehicle interior*

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*The Smart Vehicle Architecture*

## SECURE AND EASY ACCESS TO VEHICLES

**ANTOLIN DEUTSCHLAND GmbH**  
Hall 3 | Stand 3329

**2 World Premieres!**

ANTOLIN is presenting as an IZB world premiere a combined hardware/software solution for integration into the driver's door or another exterior area of the vehicle (see left image). It offers multi-factor authentication for vehicle access by means of biometrics (facial recognition, voice recognition and fingerprint), digital keys (mobile APP or NFC card) and/or PIN code. Also a world premiere, ANTOLIN is showcasing its VIVAR CONCEPT CAR, a more sustainable and comfortable vehicle interior (see right image). When the vehicle doors open, they reveal a more spacious interior. An interior that perfectly adapts to the particular situation, enabling this electric car to be used for both autonomous and manual driving. Grupo Antolin also combines its expertise in developing and manufacturing instrument panels with its smart-integration strategy to achieve seamless integration of displays in instrument panels.

## FEATURE-RICH, HIGHLY AUTOMATED VEHICLES THANKS TO A FUNCTIONAL SVA

**Aptiv Services Deutschland GmbH**  
Hall 1 | IZB Cube 1

The Smart Vehicle Architecture™ (SVA, see image) by Aptiv lowers the total cost of ownership and enables next-generation functions, for example advanced exterior and interior sensor technology. The radar-centred perception and sensor fusion improve performance and lower costs by means of machine learning. High-voltage solutions on a system level reduce the vehicle weight, the installation space required and the vehicle's energy consumption, thus optimising its automation and heat dissipation at the same time. Modular components, a stable power and data backbone and Aptiv's Dock & Lock™ system all improve quality and lower labour costs. What's more, the fully integrated, cloud-based end-to-end DevOps platform maximises modularity, flexibility and re-use.

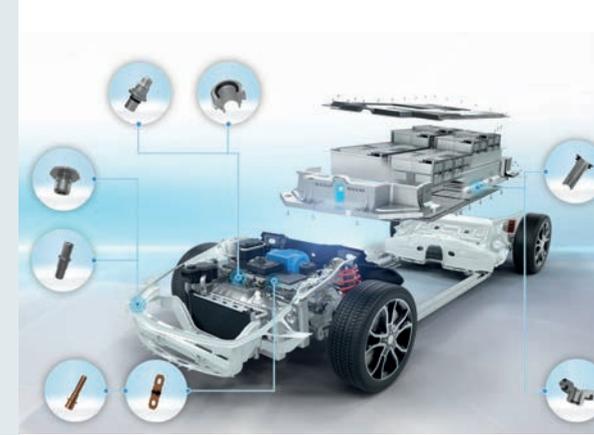
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*Conform – complex cold-formed parts for multifunctional applications*

## IMMERSIVE 3D SOUND AND A TAILOR-MADE SOUND SIGNATURE

**Arkamys SA**  
Hall 1 | Stand 1312

Comprised of 100-percent software, the **SoundStage solution** by ARKAMYS is dedicated to media enhancement and brings immersive 3D sound, a tailor-made sound signature and unique audio ambiances to vehicles using their existing built-in speakers. By creating individual audio features, the solution provides listeners with an immersive audio experience so that they can enjoy all kinds of media sources. The user experience makes the most of the benefits provided by the connected capability of the head unit, which allows users to select the best sound setting depending on the content provided or by activating on-demand features. The SoundStage solution is adaptable to many hardware technologies such as small speakers, actuators, roof speakers or even headrest speakers. ARKAMYS has also developed innovative technologies such as Smart Tuning, an automatised in-vehicle tuning system for tuning process standardisation and time and resource optimisation.

## COMPLEX COLD-FORMED PARTS FOR MULTIFUNCTIONAL APPLICATIONS

**Arnold Umformtechnik GmbH & Co. KG**  
Hall 6 | Stand 6207

Under the brand name Conform, the company Arnold Umformtechnik GmbH & Co. KG develops and manufactures complex cold-formed parts for multifunctional applications (see image). These parts are solutions that are individually developed with each customer to meet their special demands, often in the fields of electric mobility or lightweight construction. According to Arnold, such components need to be designed in such a way that they can be manufactured using cold-forming technology. In specific cases, subsequent machining is also necessary, for example when manufacturing hollow parts with an internal screw thread. What's more, it is important that capacities are monitored right at the start of the development process with regard to the selection of the manufacturing technology and the costs incurred. Functioning models produced by the Arnold team during the development and concept phase support the process.

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*A PU surface manufactured using the direct back-moulding concept*

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*Digitalisation of on-board power supply planning*

## HIGH-TECH AND HIGH-TOUCH QUALITY FOR PU SURFACES

**Ascorium GmbH**  
Hall 3 | Stand 3411

The innovations from Ascorium, the specialist for polyurethane surfaces, offer a broad spectrum of high-quality and highly functional applications. One example of its high-tech solutions for vehicle interiors is its translucent PU surfaces for surface back-lighting of components and the integration of backlit switch or sensor foils. The materials' high-touch quality guarantees 100-percent reproduction of fine graining and the surface feel of textile fabrics, while the ultimate highlight is the company's multi-coloured components. The new PU surfaces from Ascorium bring together all of these benefits. With its innovative direct back-moulding concept, Ascorium is able to foam polyurethane skins in one process step with an injection-moulded carrier. This method saves resources and eliminates complex process steps (requiring no back-foaming, punching or milling). What's more, 20 percent of the raw materials used in the method are either renewable or recycled, thus making it sustainable and resource-conserving.

## ON-BOARD POWER SUPPLY PLANNING: AN EASY APPROACH TO ANALYSIS AND SIMULATION

**AUCOTEC AG**  
Hall 2 | Stand 2304

At this year's IZB, the engineering software developer Aucotec will provide a wide audience with an insight into its EDS Design Center for the first time. The new solution for the development of on-board power supplies is based on Aucotec's data-centred platform "Engineering Base" (EB). It aims to achieve significant time and cost savings by allowing users to produce plans, simulations and analyses in just a few clicks. The prerequisite for this is a central data model for the on-board power supply from the EB, which grows continually from the initial component definition to the manufacturing information while always storing all relevant data. Only with this database can users – in contrast with purely graphical documents – analyse and calculate different scenarios. Furthermore, the Design Center can generate subsequent documents for the EDS scenario that is ultimately chosen in just a few clicks.

**World Premiere!**

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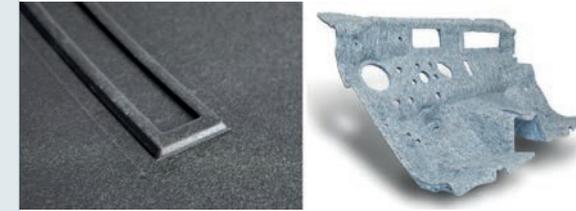
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A composite battery protection plate and inner dash (image right)

## USE OF BUSBARS HAVING A FLAT GEOMETRY

Auto-Kabel Management GmbH  
Hall 1 | Stand 1226

World Premiere!

In e-mobility, the term "fill up the tank" is rapidly changing these days. Given the goal of recharging batteries as quickly as possible, charging will become a feature for OEMs to set themselves apart from the competition in the future. Charging requires currents of up to 1kA, which can quickly cause components to overheat. Today, on the infrastructure side, liquid cooling seeks to solve the overheating of cables. Such an effort on the vehicle side is not feasible. That is why there is a focus on reducing losses and thus preventing cables from heating up in general. This is achieved through cables with large cross-sections – even more innovative is the concept of using busbars with a flat geometry in the first place (see image). Their large surface area can dissipate more heat and thus remain cooler. The use of lightweight aluminium enables cross-sections of up to 300 mm<sup>2</sup>, thus optimally geared to the future of charging.

## A LIGHTWEIGHT BATTERY PROTECTION PLATE AND SUSTAINABLE ACOUSTIC TECHNOLOGY FOR MAXIMUM PASSENGER COMFORT

AUTONEUM AG  
Hall 3 | Stand 3406

2 World Premieres!

Capitalising on its industry experience and expertise in the engineering of underbody systems for vehicles, Autoneum has developed a lightweight **composite battery protection plate** (see image left) for electric vehicles. Since composite materials are much lighter than metal alternatives and can outperform them in terms of impact protection, thermal insulation and fire resistance, they are ideally suited for the design of this key component of the battery housing. **Hybrid-Acoustics**, which is also an IZB world premiere, is an acoustic concept for improving the NVH (noise, vibration and harshness) performance of interior components (see image on the right). With its lightweight and porous material construction, the technology offers both acoustic insulation and absorption, thus providing optimum protection against rolling and powertrain noise. The ECO+ version of this hybrid technology is based on thermoplastic felt with up to 70-percent recycled content and is fully recyclable.

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*The KVBA 01 evacuation, filling and test system*

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## QUALITY ASSURANCE AND ERROR MINIMISATION BY MEANS OF SPECIFIED PROCESSES AND STANDARDISED PROCEDURES

**Autotestgeräte Leitenberger GmbH**  
Hall 5 | Stand 5127

With the automatic **evacuation, filling and test system KVBA 01** (see image) from Autotestgeräte Leitenberger, a device is now on the market that is oriented precisely to the requirements of manufacturers and has been specially developed for the cooling system and thermal management system of fuel cell vehicles and electric vehicles. Great importance was attached to the following points in particular: quality assurance and error minimisation by means of specified processes and standardised procedures, documentability of filling and parameters, reduction of process costs due to effective and fast testing and filling, user-friendly operation, a fully automatic and reproducible process and, last but not least, freely configurable sequences via a simple graphical user interface. The KVBA 01 can be used for initial filling in production, for rework or for small series and test benches, as well as in development.

## SOLUTIONS FOR DATA-DRIVEN ADAS/AD FUNCTION DEVELOPMENT, VARIANT AND CYBERSECURITY MANAGEMENT

**AVL Deutschland GmbH**  
Hall 1 | Stand 1403

With the **ADAS/AD Big Data & Analytics Platform**, an IZB world premiere, AVL offers a solution that allows efficient and scalable searching, visualisation and analysis of large data sets in an integrated way. By digitising the vehicle development process with state-of-the-art and highly-scalable IT, software, and technology platforms, AVL creates new, sustainable solutions to further advance developments in the field of future mobility. **Tools established throughout the Group for managing ECU data** according to Group guidelines, based on a secure and scalable multi-tier architecture, are available in close collaboration in 2022. Thanks to state-of-the-art REST APIs, the tools can be integrated with CI/CD and DevOps, making them usable by decentralised teams. In combination with the AVL Cyber Framework, the solution can be used for audit-proof management of work products relevant to functional safety and cybersecurity.

**World Premiere!**

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*Pedal boxes for new mobility*

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*DARTec gear dosing pump*

## SUSTAINABILITY THROUGH INNOVATION

**Batz Group**  
**Hall 6 | Stand 6302**

BATZ is driving innovation along the way towards more sustainable mobility, offering solutions based on the development of proprietary composites, structural lightweight engineering, active aerodynamics, and safety mechatronics. These are the current driving forces behind the company, meeting the challenges emerging through new technology trends and uncertain scenarios. Thus, visitors to the IZB can see demonstration models of pedals for autonomous driving (see image), aerodynamic devices for improving the range of electric vehicles and several other structural solutions such as battery housings that are enabling the final transition to electrification. Those interested can find out about more advanced solutions for a new generation of clean and efficient vehicles at the trade show.

## HIGH-PRECISION DOSING OF THERMALLY REACTIVE MATERIALS

**Beinlich Pumpen GmbH**  
**Hall 2 | Stand 2216**

With a product portfolio of high-precision external and internal gear pumps, high-pressure radial piston pumps, along with progressive cavity pumps, Beinlich Pumpen GmbH is one of the world's leading suppliers in adhesive and dosing technology. Complete pump units or individual components manufactured by Beinlich are applied in the chemical, dyes and paints, coatings, hydraulics, plastics, food and pharmaceutical industries, as well as in shipbuilding and in the aerospace industry, and not least in the automotive industry. The DARTec® gear dosing pump (see image) was specifically designed for high-precision dosing of thermally reactive fluids. Its protected sealed needle bearing system eliminates material contact with bearings.

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The CRASH PROTECT R (left) and THERBATEX (right) protective hoses

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Brake-by-wire pedal modules made by BOGE

## A PROTECTIVE HOSE WITH HIGH CRASH PROTECTION

**BIW Isolierstoffe GmbH**  
Hall 2 | Stand 2404

World Premiere!

**CRASH PROTECT R** (see image on the left) has a mechanically high-quality design and was specially developed for use in the automotive sector, for e-mobility applications in particular. This new solution is being presented at the IZB for the first time. The constructively developed and tested textile fibre structure provides very high crash protection and features high-quality impregnation that allows it to withstand mechanical and thermal stress and meet current environmental requirements. The round design of the hose makes it very easy to install, while the flexible PET material also allows it to be laid with tight bending radii. The new **THERBAFLEX** and **THERBATEX insulating protective hose series** (see image on the right) offer an environmentally friendly basalt-fibre knitted or braided fabric that is resistant to high temperatures of up to 700 degrees Celsius (working temperature). The basalt fibre is extracted from natural rock and manufactured in an environmentally friendly production process with low carbon emissions.

## WEIGHT REDUCTIONS AND ENERGY SAVINGS: PEDAL MODULES FOR BRAKE-BY-WIRE

**BOGE Elastmetall GmbH**  
Hall 4 | Stand 4304

Brake-by-wire pedal modules made by BOGE (see image): With intelligent pedal units, BOGE offers efficient solutions for fully electric brake systems, which in particular offer weight and space reductions, as well as energy savings in the entire vehicle. This helps to extend the range of electric cars and to lower the CO<sub>2</sub> emissions of vehicles with combustion engines or hybrid vehicles. Brake-by-wire has the potential to achieve totally new levels of freedom in design of the vehicle brake system (also as a displacement-free pedal), as all the components can be freely arranged physically separate from one another. Brake-by-wire also provides the opportunity to introduce a dry brake without the use of today's hydraulic oils. Considering these aspects, the fully electric brake has the potential to become a standard for the entire automotive industry and thus makes a decisive contribution to the mobility of the future.

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The RTK031 COFDATA 50 031 105 FLEX-1 (left) and COFDATA 100 JSTP ETH 105-7 (right) signal lines

## FIRST COMPREHENSIVE, COLLABORATIVE, OPEN DATA ECOSYSTEM FOR THE AUTOMOTIVE INDUSTRY

**Catena-X Automotive Network e.V.**  
Hall 1 | Stand 1115

Optimized planning, quality management, monitoring of the carbon footprint, along with recycling of components: If data is made usable across the value chain, the structural transformation of automobile production can achieve more sustainable, more resilient production. The Catena-X Automotive Network frames this vision in an open and collaborative data ecosystem, based on the principles of data sovereignty, interoperability and trust. The result: Automotive manufacturers, suppliers and service providers along the entire supply chain are being networked in a new quality and on a level playing field. At the stand, the exhibitor will be showing cases of application for reducing carbon footprints and promoting a circular economy. It will present the added value that Catena-X can deliver to users, how they can connect to the data ecosystem in the future, and how they can participate in shaping it today.

## EFFICIENT AND SAFE DATA AND HV CABLES

**Coficab Deutschland GmbH**  
Hall 1 | Stand 1326

The coax cable **RTK031 COFDATA 50 031 105 FLEX-1** (see image on the left) offers very good IL and RL behaviour. It performs outstandingly in the M3 test of the LV213-2 standard without losing performance in EMC and RF behaviour. Another IZB world premiere from Coficab is the **COFDATA 100 JSTP ETH 105-7** (see image on the right), which allows frequencies of up to 6 GHz for cable transmission rates of up to 12 Gb/s. Another of the exhibitor's new innovations is the **COFData coaxial cable for headlamp applications**, which provides high flexibility and is optimised with regard to the environmental impacts of headlamps. Last but not least, the innovative and cost-effective **e-COF Power+ cable** comes with two different layers of insulation and combines the unique benefits of a SiR insulated conductor and a flexible XLPO jacket.

2 World Premieres!

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*Stainless steel bipolar plates and the 4 kW single-mode HighLight FL-ARM laser*

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*The COMAN Mobile app*

## SIGNIFICANTLY INCREASING THE WELDING SPEED OF BIPOLAR PLATES AND AVOIDING THE HUMPING EFFECT

**Coherent**  
Hall 6 | Stand 6113

Application engineers from Coherent have significantly increased the welding speed of bipolar plates while also avoiding the occurrence of the so-called “humping effect”. Tests conducted by the Coherent lab have revealed that the 4 kW single-mode HighLight FL-ARM laser (see image) is able to weld stainless steel bipolar plates at a speed of 1.2 m/s with no humping effect. This is 50 percent faster than was previously possible with fibre lasers. The ARM fibre laser avoids the humping effect by eliminating the turbulence of the moving melt pool. It does so by configuring the beam in Adjustable Ring Mode in such a way that a zone is formed around the central beam in which the melted material can have a slower, laminar (non-chaotic) flow. Anyone also looking for improvements to the laser process can make the most of the comprehensive process expertise available from Coherent Labs.

## NEWLY MARRIED: PROGRESS RECORDING AND DEFECT MANAGEMENT

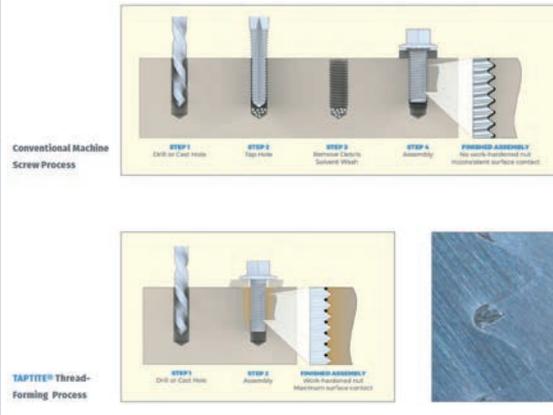
**COMAN Software GmbH**  
Hall 5 | Stand 5301

When COMAN Software GmbH added the lightweight LoP (List of Open Points) app to its project management tool COMAN five years ago, no one could have predicted just how much of a success story it would be. At the interface between OEMs and suppliers, the mobile app makes it possible to record the project progress of all parties involved and can be used as a basis for coordinating deadlines and reporting the findings from the store floor to the boardroom – in real time, with consistent data, customisable and audit-proof. The software company then tried its methodology in defect management – and what was intended to be a feature quickly became a standalone app. But since you can’t plan defects and they appear at any time in the daily process, constantly switching between apps became increasingly annoying. The exhibitor therefore combined what belongs together and created a unique fusion of quality and time management in one app: the new **COMAN Mobile** (see image), an IZB world premiere.

**World Premiere!**

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*A comparison of the installation processes of a metric fastener and a thread-forming fastener*

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*C-Shape Display*

## EXCELLENT ELECTRICAL GROUNDING QUALITIES

**CONTI Fasteners AG**  
Hall 6 | Stand 6306

Thread-forming fasteners (see image) have been used in industrial applications for decades because they help to save costs, simplify processes and eliminate quality problems. **TAPTITE PRO® fasteners** are an advancement in thread-forming technology. Their hand-to-glove fit offers excellent electrical grounding qualities, which are especially important in electric vehicles. When thread-forming screws are not an option but reliable and secure locking is required, **POWERLOK® II™ fasteners** are the ideal fasteners. They create a physical interference in the root of the threaded nut, which eliminates the need for physical and chemical locking solutions. In addition, **POWERLOK® II™ fasteners** offer excellent grounding qualities. They work well in both steel and aluminium and offer vibrational resistance and/or secure locking. They additionally provide excellent electrical grounding and can be removed and reused several times when necessary. The exhibitor's global licensing network is comprised of more than 85 companies at nearly 150 locations worldwide.

## INNOVATIVE SOLUTIONS FOR SAFE AND CONVENIENT MOBILITY

**Continental AG**  
Hall 1 | Stand 1213

Continental's MK C2 brake-by-wire system is more compact, lighter and more economical than conventional braking systems. It also offers higher performance features, and thanks to its modular and scalable layout, it is a "door opener" for holistic motion control solutions. With the C-shaped display (see image), Continental has developed an individual and driver-centric display design. Thanks to the curved shape, information can be perceived more intuitively, and functions can be operated more easily. The immersive design enables harmonious integration into elegant, curved dashboard shapes. The display solution thus creates a holistic experience that not only ensures extreme user-friendliness, but can also further enhance driving safety.

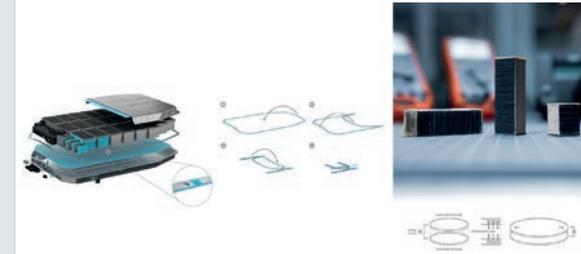
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*Foldable gasket (left) and EAP stacked actuators*

## INTEGRATION OF BIO-BASED CHEMICALS AND A NEW MECHANICAL PRODUCTION SETUP

**World Premiere!**

**Couro Azul, S.A.**  
Hall 4 | Stand 4107A-02

Couro Azul has developed a sustainable leather that has no limitations in terms of durability, sophistication or quality but actually enhances the material's natural properties. This new sustainable process also requires a newly developed bio-based tanning technique, so-called vegetable tanning, which involves the integration of bio-based chemicals and a new mechanical production setup. "OAK" is the key to this innovation – in its tanning process, it provides natural ingredients extracted from the cupule of acorns that have fallen from oak trees. This "OAK-Tann" process was developed to demonstrate new ways of meeting demands for products that contain no heavy metals or glutaraldehydes while maintaining the traditional high-quality properties of leather such as its durability and noble ageing, or in short, the fact that leather is forever.

## FOLDABLE GASKETS AND EAP STACKED ACTUATORS

**Dätwyler Schweiz AG**  
Hall 2 | Stand 2609

Loose gaskets, cure-in-place (CIP) or form-in-place (FIP) solutions are typically used to seal the battery housing. These may be effective, but they are subject to certain limitations. For example, once cured, CIP seals can no longer be opened without destroying the battery system. To solve this problem, Dätwyler has developed a foldable elastomer gasket (see left image) with defined metal plates inserted to seal the battery housing. EAP stack actuators (see right image) consist of a large number of small capacitor cells. Each individual capacitor cell is made of electrodes and a dielectric in between. This dielectric consists of soft and flexible rubber material with favourable electrical insulation properties. EAP can be used in interior applications such as valve systems, haptic feedback and morphing surfaces.

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*The sleeves in the NU-CRUSH V1 range*

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*The DEWE3-PA8 Power Analyzer*

## EFFECTIVE PROTECTION IN CASE OF COLLISIONS

**DELFINGEN DE – Hassfurt GmbH**  
Hall 3 | Stand 3322

NU-CRUSH V1 is a range of woven sleeves made of high-tenacity PET. The products feature an extremely special weave design that was developed by DELFINGEN and gives these products their outstanding level of impact resistance. The products exist in two different constructions: tubular (NU-CRUSH V1) or self-closing (NU-CRUSH SC V1) for easy installation. **The new NU-CRUSH V1 range** (see image) is an improved version of the company's NU-CRUSH range. The versatility of the process gives DELFINGEN the ability to be more flexible in terms of colours, thus enabling it to offer a large palette of colours adapted to all application needs. NU-CRUSH V1 products can also be cut with a cold cutting process to avoid fraying. The sleeves were developed for applications on the cable harness and on wires and cables, but also on hoses and tubes, to provide protection in case of collisions.

## FAST, FASTER, THE DEWE3-PA8 POWER ANALYZER

**DEWETRON Deutschland GmbH**  
Hall 5 | Stand 5301

The PA8 Power Analyzer (see image) is the new high-performance power analysis solution by DEWETRON. With up to 16 phases, it makes problems when measuring multi-phase drive trains a thing of the past. The selection of different interfaces makes it the ideal solution for integration into automation systems. The PXI Express Bus ensures a rapid throughput for future measuring tasks, while the sampling rate of 10 MS/s/ch results in high-resolution raw data. The unique single-range technology offers direct measurements from 10 to 1,000 V without switching the range. Further advantages include the fact that only one measurement system is needed for all measures and that, in addition to the electrical performance, other measurement categories (temperature, strain gauges, bridges, vibrations, acoustics and much more) can be recorded at the same time. Gapless raw data, an integrated power supply for the current transducers and easy configuration with the OXYGEN measurement software result in lower costs. Last but not least, the touch display is the perfect finishing touch for the new PA8.

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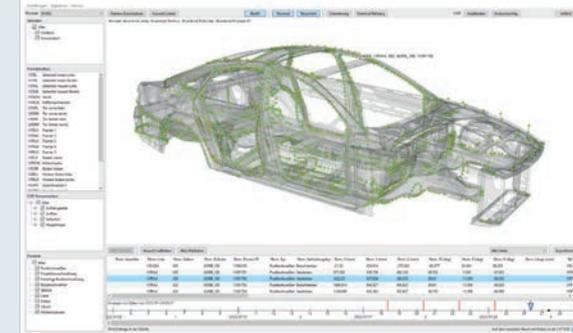
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*The graphical interface of the process visualisation*

## OUTSTANDING SOLUTIONS THROUGH SYNERGY

**DRÄXLMAIER Group**  
Hall 1 | Stand 1225

DRÄXLMAIER is committed to giving premium vehicles their own distinct character with regard to aesthetics and technology so that its customers are at the forefront of the market. To achieve this, the company thinks in terms of systems – beyond product boundaries and product areas. It pools its expertise in interiors, electronics, electrics, components and battery systems to set new standards. The result: outstanding solutions through synergy. With its system-based approach, DRÄXLMAIER also brings people together – both its own specialists and those of its customers – to develop the best ideas for the mobility of the future. At the IZB, the exhibitor is focusing on the electrical system of the future, where it explores new realms of complexity; the interior of the future, especially with regard to the integration of functions; light; e-mobility, for which it offers customers a complete package; and sustainability, which the company actively shapes, for example with its innovative surfaces and lightweight construction.

## A COMPREHENSIVE SOLUTION FOR THE COMMISSIONING, ANALYSIS AND QUALITY ASSURANCE OF ROBOTIC PRODUCTION PROCESSES

**Dressler Automation GmbH**  
Hall 6 | Stand 6338

**RoboLive®** is a comprehensive solution for the commissioning, analysis and quality assurance of robotic production processes. Its “Process Visualisation” (see image) enables monitoring of the equipment from project planning and throughout the product’s entire service life. All parties involved have the same data basis for their analyses and can therefore initiate specific corrections and monitor their implementation. The integrated best-fit algorithm and the “Vehicle-0 Determination” significantly reduce the effort required for the optimisation of and changes to plants. With the “Software Overview”, data that are relevant for planning are bundled and made available in one document. The “Path Calibration” shifts parts of the workload from the plant to the office, speeds up commissioning and enables the digital twin to be connected to the real plant. Last but not least, “Robot Documentation” replaces unused and obsolete archives with the current status at all times.

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*DERAY vision system*

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*Test stand*

## CAMERA-BASED QUALITY CONTROL OF VISUAL FEATURES OF THE APPLICATION DURING THE WORK PROCESS

**DSG-Canusa GmbH**  
Hall 2 | Stand 2302

**World Premiere!**

The exhibitor's new DERAY® vision system (see image) is available as a plug & play add-on for the DERAY® WorkMan 2.0 and functions as a camera-based inspection system before and after the shrink process. It was designed to inspect visual features of each application, such as positioning of the heat shrink tubing and application, wire colour, and much more. The vision system is capable of checking up to 16 different features per monitoring step and transmitting relevant visual feedback to the worker. Using the touch panel, the user can configure a variable number of test sequences for each process. The customer-specific fixing and locking mount ensures process reliability according to the poka-yoke principle. Integrated image storage of all visual feedback enables easy traceability.

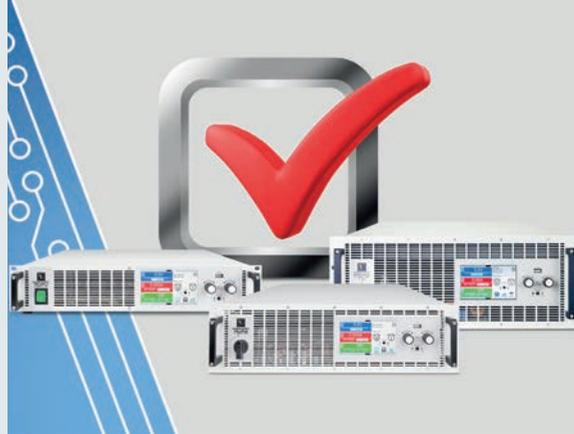
## DYNAMIC DRIVING WITH STEERING MOVEMENTS IN CURVES

**Dürr Assembly Products GmbH**  
Hall 5 | Stand 5306

For decades, Dürr Assembly Products has been providing innovative solutions for car manufacturing and testing (see image). To achieve a significant boost in efficiency on the assembly line, cars of the future will move autonomously and be tested without a driver. The key element on the driverless end of the assembly line involves the x-around and x-road curve test stands. Unlike conventional roll test stands, the x-road curve enables dynamic driving with steering movements in curves. In combination with virtual environments, typical traffic situations are simulated, to which the sensors installed in the vehicle react. This allows driver assistance systems to be tested in terms of their functionality. The exhibitor's new x-light headlight measurement and adjustment system guarantees precise headlight adjustment. And it also works fully automatically. Dürr Assembly Products is ready for autonomous driving.

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*The enhanced and expanded 10000 series*

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*An innovative lighting solution*

## PROGRAMMABLE DC POWER PRODUCTS – BIDIRECTIONAL AND REGENERATIVE WITH AUTORANGING

**EA Elektro-Automatik GmbH & Co. KG**  
Hall 1 | Stand 1125

The enhanced and expanded **10000 series** (see image) includes the EA-PS and EA-PSI programmable DC power supplies, the EA-PSB bidirectional DC power supplies and the EA-ELR regenerative electronic DC loads. More than 180 new models offer an impressive, enlarged power range from 0 to 600 W to 0 to 30 kW, output currents of up to 1000 A and output voltages of up to 2000 V. Users can look forward to powerful features that make working with the high-tech devices even easier and more efficient. These include parallel connections for high power systems up to 1.92 MW, allowing systems to be comprised of different power levels from 1.5 kW to 30 kW within the same product family, accessing a wider voltage and current range in one device with autoranging and, last but not least, a built-in arbitrary waveform function generator for creating AC and DC signals and for simulating fuel cells, battery cells and more.

## AN ORIGINAL SOLUTION BRINGING LIGHT TO TEXTILE SURFACES

**Eissmann Group Automotive**  
Hall 3 | Stand 3224

This innovative lighting solution (see image) by Eissmann Group Automotive enables extremely sharp illumination of hard and soft coated textiles with patterns, symbols and logos. For a perfect design both during the day and at night, the masking required for the lighting is completely invisible when switched off. The solution is therefore particularly suitable as a Shy-Tech alternative to a black panel. With the corresponding control electronics from Eissmann, it enables welcome animations, mood-light applications and ambient lighting to all be integrated into textile surfaces. An extremely wide variety of textile materials are suitable for creating such surfaces, and when it comes to implementing the solutions, the creative design possibilities are endless!

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*EJOT's extensive product portfolio for electric mobility applications*

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*Virtual Prototyping technology*

## EJOT – MUCH MORE THAN ‘JUST’ A SCREW

**EJOT SE & Co. KG**  
Hall 6 | Stand 6210

As environmental protection regulations become increasingly stringent, automotive manufacturers are being forced to make a radical move away from ‘more of the same’ and towards alternative drive systems, above all electric mobility. The fastening technology specialist EJOT uses innovative production technologies in the areas of cold forming and plastic injection moulding to also provide customers with tailor-made solutions for these alternative systems. In the field of high-voltage contacting, both special metal and plastic components and high-precision copper parts are used. When it comes to battery systems, the exhibitor offers a multitude of suitable fastening elements (see image), for example its **FDS® low drilling screw**, which features a special sealing function, its **EJOWELD® friction welding** or, for battery boxes made of plastic, its **self-tapping EVO PT® screw**.

## A LIGHTWEIGHT BODY AND CHASSIS THANKS TO MULTI-MATERIAL ASSEMBLIES

**ESI Group**  
Hall 5 | Stand 5220

When it comes to the cHallnge of electrification, multi-material assemblies are critical to producing vehicle bodies that are both lightweight and cost-effective and to increasing energy efficiency during production. However, higher investments for powertrains translate into more conservative investments for the body and chassis. This increases the pressure to achieve better cost efficiency in vehicle engineering and manufacturing. Automotive manufacturers are now shifting towards a fully streamlined and virtual prototyping approach to assess feasibility, predict assembly processes and validate performance at very early stages of development in order to solve this conundrum. ESI is presenting the latest **solutions of its Virtual Prototyping technology** (see image) at the IZB 2022. Find out more at <https://bit.ly/3xJ0HoL>

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*A processing robot for the production of cable splices*

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*The EvoWeld Mini turnkey system*

## SPLICE CONNECTORS – RELIABLE AND LEAKPROOF

**Eurotech Direct GmbH**  
Hall 2 | Stand 2606

World Premiere!

As part of the globally active Eurotech Group with locations in the USA, Mexico, China and Germany, the company Eurotech Direct GmbH is presenting the world premiere of its processing robots (see image) able to produce fully leakproof and reliable cable splices. The Eurotech product bluSeal is applied by the robots with high precision. As a sealing solution with an anti-capillary effect, bluSeal is already being used in series production by a variety of OEMs. bluSeal is silicon-free and fitted with a UV tracer for easy visualisation. It enables companies to minimise process times in their production activities. Eurotech offers its customers various approaches for sealing their electrical applications. With bluSeal, the company prevents stress corrosion on busbar applications with welded outlets. bluSeal makes welded contacts completely leakproof and reliable.

## SET IT UP, CONNECT IT, WELD IT

**Evosys Laser GmbH**  
Hall 5 | Stand 5111

The EvoWeld Mini (see image) is the latest addition to the turnkey systems available from Evosys Laser GmbH. The extremely compact tabletop machine features an impressively conclusive, ergonomic and economical overall concept. The new system was developed so that laser plastic welding can also be used for smaller quantities or for laboratory operations. It offers system technology that is precisely tailored to the processing of small batches such as prototypes or assemblies with low volumes. With EvoWeld Mini, the motto is “Set it up, connect it, weld it!”. With a footprint of just 320 × 663 mm<sup>2</sup> and a height of 533 mm, the tabletop system offers everything that is needed for laser welding. It also, of course, complies with laser class 1, which means that no further protective equipment is required during operation. Extensions for process and quality monitoring are possible.

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*An optimal brake solution for the rear axle*

## AN OPTIMAL CORROSION-RESISTANT AND LIGHTWEIGHT SOLUTION FOR THE REAR AXLE

**Fagor Ederlan S. Coop.**  
Hall 6 | Stand 6203

In electric vehicles, 80 percent of the braking comes from regenerative brakes, meaning that conventional mechanical brakes are used less. This reduced use increases the potential of corrosion issues on the brake system, meaning that specific solutions that are highly resistant to corrosion are now required. Fagor Ederlan pursues the goal of providing specific solutions for electric vehicles, in which sustainability, weight reduction and improved performance are the key focuses. With this goal in mind, the company has now launched its latest development: EDERALSI Aluminium Brake Discs and Drums. The final development step in the EDERALSI innovation programme is the production of its new **Aluminium Brake Drums** (see image), an optimal corrosion-resistant and lightweight solution for the rear axle that incorporates sustainable processes in terms of energy efficiency, recyclability and reduced waste.

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*The mobile honeycomb plate eMOBEE*

## A MOBILE HONEYCOMB PLATE WITH E-DRIVE

**FIXTURE TECH Solutions GmbH**  
Hall 5 | Stand 5306

At its production site in Tholey, Germany, FIXTURE TECH Solutions GmbH develops and manufactures measuring equipment and manual, semi-automatic and fully automatic loading systems for the international industry. All FIXTURE TECH fixtures are based on the modular system CARFIT: the parts developed in-house can be constructed like building blocks for the standardised installation of systems for testing components and geometries within component groups. FIXTURE TECH recently launched its new innovation eMOBEE (see image), a mobile honeycomb plate with e-drive: this automated plate is used as a fleet system in industrial production and impresses users with its high stability combined with very agile driving and a low empty weight. As a freely configurable loading solution with these properties, eMOBEE is unique in the field of self-propelled smart systems.

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*The WireSense robotic assistance system*

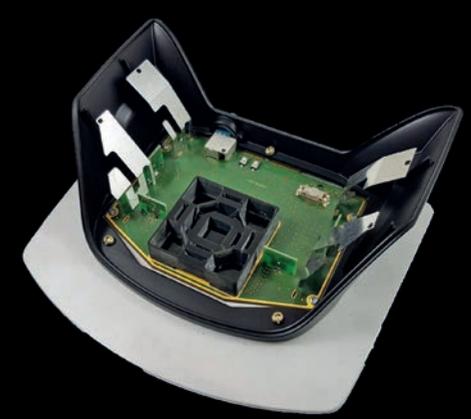
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*The Fuba Smart Antenna*

## WIRESSENSE – THE WELDING WIRE THAT DOUBLES AS A SENSOR

**Fronius International GmbH**  
Hall 6 | Stand 6334

In the welding process, component deviations such as varying air gaps or clamping tolerances pose a quality risk. In the worst-case scenario, the welding position changes, which leads to a lack of fusion in the weld seam. To prevent such problems, the robotic assistance system WireSense (see image) by Fronius uses the welding wire as a sensor to precisely check the component position before each weld. The welding system uses a reversing wire movement to reliably detect the sheet edge height and position and sends this information to the robot. The robot is then able to determine the actual component conditions in order to call up the suitable welding parameters. The result: manufacturing inaccuracies are compensated for, and perfect welding results are achieved. Visual inspections after welding can therefore be minimised, and rework and component rejects can be reduced up to 100 percent – allowing users to save both time and money too.

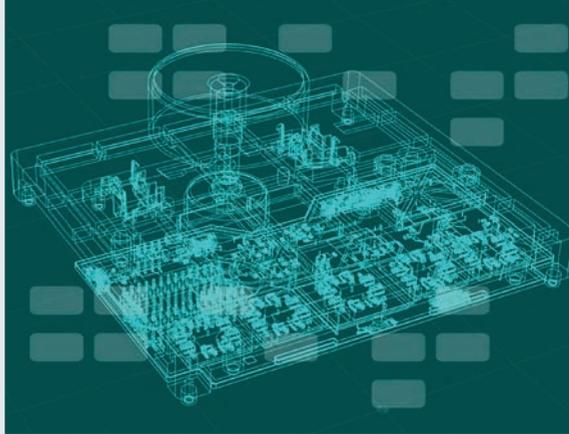
## ANTENNA ARRANGEMENT THAT SUPPORTS ALL RELEVANT RF COMMUNICATION STANDARDS

**Fuba Automotive Electronics GmbH**  
Hall 2 | Stand 2610

Fuba Automotive Electronics GmbH is presenting a full running prototype of its **Smart Antenna** (see image) for all services within the automotive standard at the Merit Automotive Electronics Systems stand. The highly sophisticated antenna arrangement supports all relevant RF communication standards and integrates all antennas and all receiving electronics on one PCB. The data is then provided via Automotive Ethernet in the car.

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GE-T rotary selector

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The Gentex system for driver and vehicle interior monitoring

## PEOPLE, BUILDINGS AND VEHICLES LINKED INTELLIGENTLY FOR THE FIRST TIME

World Premiere!

**GE-T GmbH**  
Hall 1 | Stand 1124

For the first time, GE-T GmbH, a subsidiary of the Wolfsburg-based ES-Tec Group, is linking people, buildings and vehicles intelligently on its exhibition stand. In cooperation with its sister company CUBOS GmbH, a world consisting of smart home elements and charging infrastructure is being created that can be read out and even controlled from inside the car. To demonstrate this authentically on site, the exhibition stand will access the data from the photovoltaic system, the CUBOS.Connect electricity management system, and the electricity storage system from the ES-Tec main control centre. Along with these connectivity innovations, there will be two other world premieres: the "GE-T rotary selector" (see image), which can be highly customized to the driver's personal needs in the centre console of a car, and third-party and GE-T apps can be effortlessly run on the new "Android Automotive" operating system.

## COMPREHENSIVE MONITORING OF VEHICLE INTERIORS IN 3D

**Gentex GmbH**  
Hall 1 | Stand 1109

The Gentex system for driver and vehicle interior monitoring (see image) not only provides information on the driver's attentiveness and availability but also displays precise details with regard to passengers and items in the vehicle interior. With a combination of video image recognition and 3D mapping, the Gentex system records the precise position, posture and even physical features of the passengers. This in turn enables comfort functions to be optimised and safety functions such as airbags and seat-belt tighteners to be perfectly controlled for each individual passenger. The system additionally records even the smallest movements (micro-vibrations) of objects. Its unique technology is even sensitive enough to recognise the breathing of a sleeping child. With the addition of Gentex vehicle interior sensors, which detect smoke, vapours and even volatile organic compounds in the vehicle, the exhibitor offers a comprehensive system for monitoring vehicle interiors.

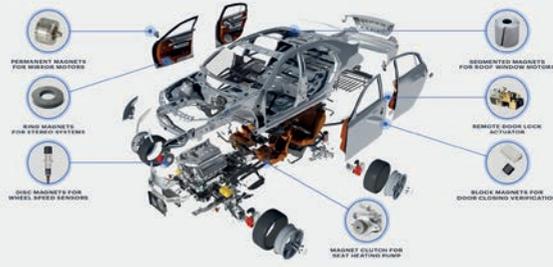
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*Magnets can be found in various locations in a car*

## EXTREME-SIZE COMPONENTS MADE FROM HOT-STAMPED MATERIALS

**GESTAMP**  
Hall 6 | Stand 6216

The development of extreme-sized automotive components ushers in a new era in the field of structural body parts. This innovative generation of intelligent assemblies, combining several conventional products into one single part (also called "gigastamping"), offers many advantages in terms of performance, weight, cost, as well as assembly time. Gestamp develops and manufactures "gigastampings" and will soon introduce new assemblies in the market. Hot stamping is the technology of choice for the production of "extreme-size components". Through its use, all modern requirements for the production of safety-relevant components for electric vehicles and the optimization of existing ICE/hybrid architectures are implemented in the best possible way. As one of the global experts and leading proprietors of hot stamping equipment, Gestamp is able to offer its customers comprehensive customized solutions worldwide.

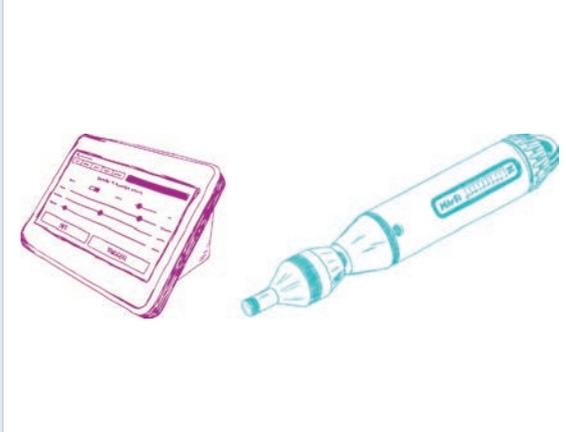
## CUSTOMER-SPECIFIC MAGNETS FOR THE AUTOMOTIVE INDUSTRY

**Goudsmit Magnetic Supplies BV**  
Hall 6 | Stand 6314

Finding the right magnet for an electric motor, actuator or sensor can be a difficult and time-consuming process for automotive suppliers (see image). Goudsmit supplies magnetic components and assemblies and also offers services that accelerate the market launch for automotive manufacturers. The company demonstrates its expertise by means of magnetic and FEM calculations and 3D simulations, which help it to develop a magnet or assembly that not only meets all requirements but also confirms the use of the correct function as early as during the prototype phase. With the help of FEM simulations, product developers receive a 3D insight into how a product behaves in a magnetic system. Such simulations speed up the development and prototyping process by allowing the shape, quality and size of a magnetic component to be rapidly determined.

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*The Haptic Evaluation Board (HEBO – on the left) and Manual Artificial Finger (MarFi – on the right)*

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*OSIXO OS 05 special coating fluid*

## A MEASUREMENT SYSTEM FOR THE UNCOMPLICATED MOBILE QUANTIFICATION OF HAPTICS

**GREWUS GmbH**  
Hall 3 | Stand 3424

**World Premiere!**

Especially in the field of prototyping haptic technologies, complex development kits are often needed to generate the desired haptic signal. With the new **HEBO** (Haptic Evaluation Board – see image on the left), the exhibitor GREWUS GmbH offers a simple and comprehensive solution to meet this requirement. Users can connect many types of electromagnetic actuators to HEBO and also easily customise the haptic feedback. A simple UI can be used to select the haptic feedback signal for the actuators and the trigger. With **MarFi** (Manual Artificial Finger – see image on the right), GREWUS has developed a measurement system for the uncomplicated mobile quantification of haptics – a world first. The significant advantage of this device is that it doesn't need a complex setup – just connect MarFi to the software and get started. This ready-to-use measuring system impresses users with its precise measurement results, handy shape and uncomplicated application method.

## REDUCING THE GWP VALUE FROM 320 TO 60

**H. Costenoble GmbH & Co. KG**  
Hall 4 | Stand 4210

OSIXO® OS 05 (see image) has been successfully used to prevent squeaking and creaking noises in vehicle interiors for many years. It is used wherever high material compatibility, a permanent and reliable effect, low volatilisation and a wide operating temperature range are required. A new generation of this universal problem-solver is now being launched on the market. Its name: "OSIXO® OS 05 ECO". This new product variant has enabled the manufacturer to use a new solvent and thus reduce the GWP value from 320 to 60. OSIXO® OS 05 ECO is particularly designed for users who would like to or have to take account of their increased responsibility towards the environment. After all, the path to achieving a low-emission and environmentally friendly car requires a rethink from all participants involved in the production chain. With OSIXO® OS 05 ECO, Costenoble contributes to achieving this aim.

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*The IONSTAR ionising gun*

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*Magnetic wire*

## EVEN MORE TOP PERFORMANCE FOR THE BEST PAINTING RESULTS

**Herrmann Innovations GmbH**  
Hall 6 | Stand 6326

A clean surface is an important basic requirement for the painting process. Dust, lint or other contaminants on the vehicle surface lead to defects and dust inclusions in the paintwork, which must then be removed. Dark edges, cloud formation or colour-matching difficulties also extend the post-processing and polishing time. The result: lower productivity and higher costs. **IONSTAR** (see image) is a unique solution to all these problems. As the world's first anti-static gun with innovative fibre-optic technology, the device offers even better performance and works without any external power source or batteries. Its built-in air turbine supplies the necessary power when connected to the existing compressed air system in the spray booth. IONSTAR does not require cables, rechargeable batteries or battery packs and therefore offers more freedom of movement and easier operation. In addition, the ionising gun has a much lower weight of 240 g as a result.

## TEMPERATURE-RESISTANT SOLUTIONS FOR ELECTRIC MOTORS

**HEW-KABEL GmbH**  
Hall 2 | Stand 2207

The further development of e-technology poses major challenges for the automotive industry, especially when it comes to engines. Electric motors not only have to be more compact and designed for mass production but also need to produce higher power and have a longer lifespan. Temperature resistance additionally plays a major role. Conventional enamelled copper wires have reached their limits, and improved insulation is now crucial. HEW-KABEL solutions are available with **round, profile and hollow chamber profile wires** (see image) that reliably meet this requirement. In addition, the company has developed a particularly powerful **alternative to enamelled copper wires**, which is based on fluoroplastics and guarantees 100-percent adhesion between copper and plastic. The result is permanent temperature resistance of up to 260 degrees Celsius.

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*Members of the new family of valves*

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*A forged structural component made of aluminium*

## SMART CARTRIDGE VALVE FAMILY FOR HEAT PUMPS

**Hilite Germany GmbH**  
Hall 4 | Stand 4218

Hilite has come out with a new family of valves (see image) that can manage all the functions in the cooling circuit of a heat pump. The company will be showcasing this innovation to a larger trade audience for the first time at IZB 2022 at stand 4218 in Hall 4. Consistent with the trend towards environmentally friendly refrigerants, the valve family is also available not only for R1234yf but also for CO<sub>2</sub> (R744). In fact, the proportional and directional control valves can be optimally integrated into modules as cartridges. This provides an utmost space-saving and cost-effective solution in terms of the valve engineering of a heat pump. All valves have an integrated controller with a LIN interface and options for performing functional diagnostics.

**World Premiere!**

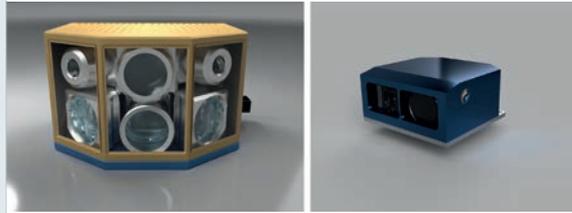
## MAXIMUM FUNCTIONALITY WITH MINIMUM WEIGHT

**Hirschvogel Holding GmbH**  
Hall 4 | Stand 4313

The forged aluminium components (see image) manufactured by Hirschvogel combine maximum functionality with minimal weight. Here are three examples: heat sinks for pulse inverters support thermal management in the vehicle thanks to optimum conductivity and pressure-tightness; high-strength and ductile structural components for battery boxes protect the battery while also performing an underbody or bodywork function; and drive-independent chassis components such as steering knuckles, wheel carriers and control arm components additionally contribute to weight optimisation. As a result, vehicle concepts make gains in terms of safety and range. At the IZB, the exhibitor is providing an insight into its growing range of components for the clean mobility of the future. Its new products include a **structural component for enhanced protection of the battery box**.

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*The solid-state LiSSA universal industrial flash LiDAR sensor (right) and LiSSA Automotive (left)*

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*A hydrogen sensor*

## A SOLID-STATE FLASH LIDAR SENSOR WITH A TEN TIMES HIGHER RESOLUTION

Hybrid Lidar Systems AG  
Hall 5 | Stand 5224

World Premiere!

Hybrid Lidar Systems AG has invented a new method for using light to measure distances. This hybrid method enables the company to build its solid-state flash LiDAR sensor with a resolution ten times that of its rivals, which additionally always makes it 50 percent cheaper due to the system. The exhibitor's 3D solid-state "LiSSA universal industrial" flash LiDAR sensor (see right image) is being demonstrated live as a sample exhibit at the IZB for the first time. In October, it will go into series production for applications in the fields of logistics, robotics, smart cities, smart buildings, drones and wind energy. "LiSSA Automotive" (see left image) is currently being developed by Hybrid Lidar Systems and will be available to SOP customers from 2025. It enables vehicles to detect and classify objects that are 10 cm large from a distance of over 200 m. The sensor meets all requirements for fully autonomous driving.

## H<sub>2</sub> SENSORS FOR LOW TO HIGH PRESSURE RANGES IN HYDROGEN ENVIRONMENTS

i2s Intelligente Sensoren Dresden GmbH  
Hall 1 | Stand 1324

Hydrogen propulsion represents the future of environmentally friendly vehicles because H<sub>2</sub> acts as an alternative energy source for combustion engines or in fuel cells connected to downstream electric drives. i2s supplies sensors developed specifically for such systems (see image) that are able to withstand the conditions of hydrogen environments and are suitable for use in low to high pressure ranges. The company is presenting its new products and innovations at the IZB. The manufacturer's pressure and temperature sensors are used to monitor tank pressure and in fuel cells. H<sub>2</sub> is stored in tanks under extreme pressure that needs to be monitored extremely precisely – which is where the high-pressure sensors from i2s for measurements up to 900 bar come into play. The sensors are designed to provide accurate measurements even if condensation freezes on the sensor membrane. i2s develops sensors in accordance with ASIL and offers different output signals for each sensor. The hydrogen sensors are certified according to EC79 and HGV 3.1.

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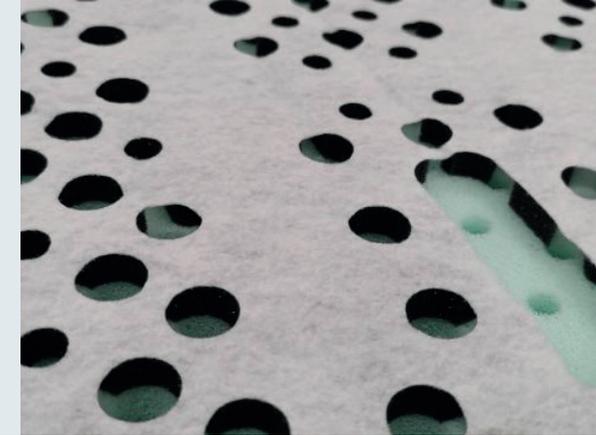
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*The O3R camera platform*

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*A carrier material for improved ventilation of seat surfaces*

## CENTRALIZED, SYNCHRONIZED PROCESSING OF IMAGE AND SENSOR INFORMATION IN AUTONOMOUS MOBILE ROBOTS

**ifm electronic gmbh Vertrieb Deutschland**  
Hall 5 | Stand 5301

O3R (Fig.) is the comprehensive solution for centralized, synchronized processing of image and sensor information in autonomous mobile robots, e.g. AGVs. The streamlined integration and reliable interaction of cameras and sensors enables the implementation of relevant functions such as collision protection, navigation and positioning. Moreover, the system can also handle stationary tasks for the analysis and dimensioning of objects, such as the measurement of pallets, logs, packages or suitcases. A powerful computer, the Video Processing Unit (VPU), makes this possible. What's more, additional sensors and up to six camera heads can be connected via a gigabit Ethernet interface. These are part of the platform solution: 2D/3D cameras with an aperture angle of 105 degrees and the latest time-of-flight imager from pmdtechnologies ag. Thanks to modulated infrared light, objects are detected with maximum reliability even under increased exposure to ambient light.

## BETTER VENTILATION WITH CONSTANT FAN POWER

**I.G.Bauerhin GmbH**  
Hall 2 | Stand 2109

I.G. Automotive, a leading supplier in the electric seat heating and seat air conditioning market, has succeeded in developing a completely new **approach to distributing and controlling the airflow in seating**. This new solution, which is now readily available for series production, is being presented as a world premiere at the IZB. The innovative approach is based on a carrier material (see image) that is in turn based on the comfort requirements of the seat manufacturer and aims to achieve targeted adjustment of the air flows for optimal use of the cooling capacity. The solution uses a foam which, with the help of a newly developed manufacturing process, directs the airflow to where it is needed to cool passengers. Thanks to its cooperation with various OEMs and Tier 1 suppliers and the in-depth analysis of the air flows, the exhibitor has succeeded in improving the ventilation of the seat surfaces while maintaining the same fan performance.

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The Cell-PLX Battery Interconnect System

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**Self-learning + Explainable Artificial Intelligence**

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SIEMENS

Koehler

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BASF

LG

BARTZ

hager Group

POLIZEI

EVO

Systems

DILLINGER

## A ROBUST AND CUSTOMISABLE SOLUTION FOR ALL EV BATTERY DESIGN NEEDS

**Interplex**  
Hall 1 | Stand 1229

When it comes to addressing battery design and assembly challenges, there is no “one-size-fits-all” approach because each challenge has its own set of specifications. Interplex’s **Cell-PLX™** (see image) addresses these challenges with a custom Battery Interconnect System that is designed to provide battery manufacturers with a single robust, customisable and cost-effective solution for the full range of design requirements. Cell-PLX™ connects battery cells to current collectors and can be used with cylindrical, prismatic or pouch battery modules. It offers the option of high-speed, robust laser-welded attachment to the cells, thus enabling efficient production processes, lower manufacturing costs and high-volume operations. As a global solutions provider with vertically integrated in-house production capabilities, key OEMs and Tier 1 suppliers trust Interplex to design, develop and manufacture custom battery solutions to reduce their total cost of ownership (TCO).

## ADAPTIVE AND EXPLANATORY ARTIFICIAL INTELLIGENCE FOR THE AUTOMOTIVE INDUSTRY

**IS Predict GmbH**  
Hall 5 | Stand 5306

Although there is a huge range of topics, the main focus is always placed on examining complex data to understand what will happen and why. This information is then used as a basis for developing recommended courses of action or fed directly into automated machine control. Application examples include energy cost optimisation and CO<sub>2</sub> reduction, for example at Opel; reducing poor quality in production, for example at ZF; predictive maintenance, for example at Daimler; and capacity and logistics optimisation, for example at Deutsche Bahn. The clients of IS Predict GmbH value the company’s many years of experience in the automotive sector for functional artificial intelligence applications. At the IZB, the company is presenting new solutions for tasks such as automating data science, developing scalable solutions and discovering influences. In contrast to deep learning with neural networks, clients always know why AI does something or provides a recommendation thanks to explanatory AI.

**Press contact:**

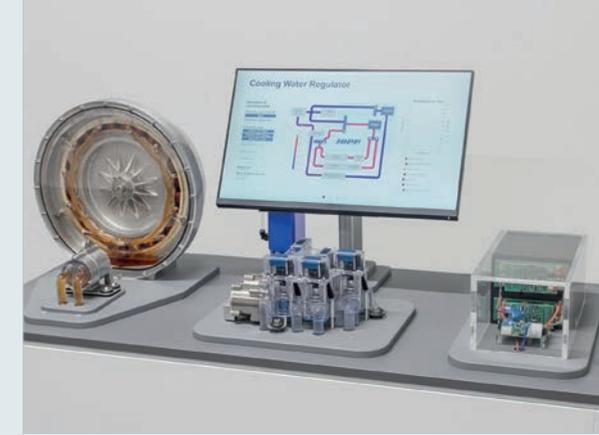
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*A forged and machined shaft*

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www.interplex.com



*From left to right: a highly integrated valve block, electric motor cooling and battery temperature control*

## OUTSTANDING TECHNICAL PART COMPLEXITY

**Jesus Oñate, S.A.**  
Hall 5 | Stand 5217

Jesus Oñate has been producing complex metallic components since 1879 and is presenting its **new special parts** at the IZB 2022. The company developed these new parts by applying and combining the most innovative techniques in the preparation of the raw material and the cold-forging and machining processes. On the one hand, utilising the fully robotised facility enables the company to use the raw material in such a way that it can significantly reduce its purchase price, and on the other hand, the company applies edge cold-forging techniques using extremely competitive mechanised equipment. By cleverly combining both techniques, Jesus Oñate is able to offer the best of the net shape concept and the best profile definition by means of soft and hard machining. The result is outstanding technical part complexity and quality (see image) accomplished with highly competitive prices.

## THERMAL MANAGEMENT IN ELECTRIC VEHICLES

**JOPP Group**  
Hall 4 | Stand 4409

At this year's IZB, JOPP is showcasing its innovative solutions for thermal management in electric vehicles with interesting demonstration models. A **highly integrated system block** (see left image) with continuously electrically adjustable valves, integrated pumps and sensors distributes the cooling agent to the battery, power electronics, electric motor and vehicle interior as needed. For electric motors, the company now offers **oil spray cooling** (see middle image) directly on the windings in addition to the established stator jacket cooling. As the industrial partner of a state-funded research project for optimum vehicle battery cooling, the exhibitor is well aware of the wide range of challenges involved in this area. At the IZB, it is therefore presenting an **approach to liquid cooling** (see right image) with significantly reduced thermal resistance. As a long-standing supplier of gearbox cooling modules and cooling agent distributors in combustion engines, JOPP can offer a great deal of technology for thermal management applications.

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## Digital Engineering Solutions

 <b>The place for functional maturity development</b> Early recognition of conflicts → requirements management Secured access to all functional data → need to know principle Efficient supplier integration → precise PEX data format Faster parameterization of FEM models → 75% time saving*		 <b>The place for your measurement and simulation data</b> Efficient analysis of large data sets → Big Data meets structured meta data All required artifacts at one place → shorter simulation cycles Interoperability through industry standards → ASAM QDS Reduce infrastructure costs dramatically → 50% cost savings
<a href="http://www.exoknox.com">www.exoknox.com</a>		<a href="http://www.lyzium.com">www.lyzium.com</a>

*EXOKNOX Software*

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*Parts manufactured with MultiMaterial Welding*

## CRITICAL COMPONENTS FOR FULLY DIGITALIZED PRODUCT DEVELOPMENT

**Karakun GmbH**  
Hall 1 | Stand 1115

When developing sophisticated mechatronic products, such as vehicles, vast amounts of data are generated and used in all phases of the engineering process. Karakun's EXOKNOX software (see image) provides critical components for fully digitized product development, with a focus on data quality, data context, and efficient data management and processing. As a development platform, EXOKNOX<sup>hub</sup> is the central solution for the specification, management, and analysis of all data that affects the behaviour of systems and components, and defines the DNA of the user's product. In terms of results data, EXOKNOX Lyzium is the home for all test, simulation and electronic control unit data generated during the development process. In a word: EXOKNOX is the key to accelerating development processes by more than 75 percent, thus reducing time-to-market.

## MULTIMATERIAL-WELDING – AN INNOVATIVE FASTENING SOLUTION

**KVT-Fastening GmbH**  
Hall 3 | Stand 3417-3

Speed, durability and a high level of cost-consciousness are three of the many criteria with which MM-Welding<sup>®</sup> technologies stand out as a fastening solution. After all: Lightweight materials, such as porous fibre composites or sandwich panels (known as honeycomb core boards), make it difficult to either join them together or to attach them to a fixed mounting or connecting element. Unlike compact materials, where conventional connections are used, it is far more difficult to anchor a screw, for example, in a sandwich construction, due to its honeycomb structure. With MultiMaterial<sup>®</sup>-Welding technology, the specially developed polymer fastener, liquefied by ultrasound, flows into the top, core and bottom, and anchors there as it solidifies, creating a form fit with the entire structure (see image). And it is in fact more durable and rugged.

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MEXS 400 modular test system

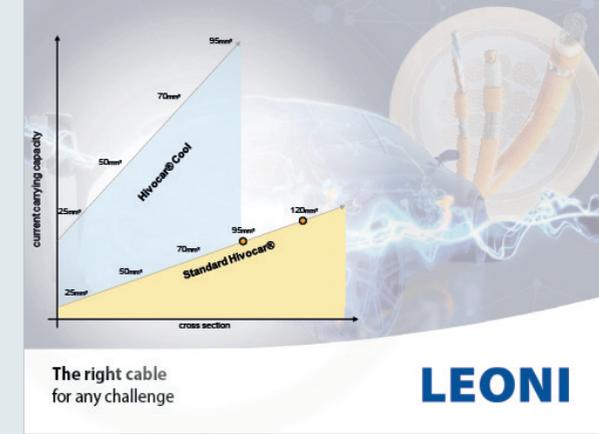
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The right cable for any challenge

**LEONI**

## TEST STATIONS ON INTERCHANGEABLE TROLLEYS, INDEPENDENT OF THE TRANSPORT SYSTEM

LAW-NDT Mess- und Prüfsysteme GmbH  
Hall 5 | Stand 5307

World Premiere!

Once manufactured, safety-relevant components must undergo a 100-percent inspection. For this purpose they are fed into a testing machine, which tests them in different testing stations, e.g. for straightness, threads or for cracks. Up to now, the test stations were permanently installed in testing machines: In case a station had to be serviced, for example, the entire system remained at a standstill. A new system had to be purchased for a new product, or lengthy rebuilds were necessary. To eliminate these deficits in conventional systems, the MEXS 400 (see image) has a modular design: The test stations are mounted on interchangeable trolleys, independent of the transport system. Test processes can thus be individually configured by the user. In case of maintenance or retooling at a test station, units are individually removed from the process and reworked externally. The entire system can keep running – without any downtimes.

## COOLED HIGH-VOLTAGE CABLES FOR EFFICIENT CHARGING

LEONI Kabel GmbH  
Hall 1 | Stand 1127

World premiere!

With Hivocar® Cool, LEONI has now expanded its portfolio of high-voltage cables for use in the HV electrical systems of electric and plug-in hybrid vehicles. Hivocar® Cool offers the special advantage of integrated cooling, which enables it to achieve a much better charging capacity than standardised cables. This two-in-one combination leads to a saving of at least 75 percent in overall weight and reduces the cable diameter by 30 percent compared to standard HV cables. The high-voltage cable with a high cooling capacity is used in temperature-critical contact areas such as vehicle charging sockets. It also offers the advantage of a much higher current carrying capacity than non-cooled standard HV cables with the same heating while also combining the coolant supply and the high-voltage cable in one single product. Hivocar® Cool is available as a screened and non-screened cable.

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*The ligShuttle – a sustainable lightweight transport trolley*

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*Mobile analysis system for determining water properties and quality*

## SUSTAINABLE LOAD CARRIERS

**ligenium GmbH**  
Hall 5 | Stand 5301

ligenium has succeeded in using modern wooden materials to reduce the dead weight of load carriers. Its sustainable solutions (see image) are up to 50 percent lighter than steel alternatives. This weight reduction not only leads to particularly positive financial benefits but is also the better choice in ecological terms. Companies that use the lightweight load carriers can improve their CO<sub>2</sub> footprint and conserve resources. What's more, purchasing such load carriers also offers users a multitude of diverse technical advantages such as lower signal attenuation, component protection and an increased fill level. The products additionally offer a unique modularity, which allows the load carriers to quickly be adjusted to meet new demands and suit new transport goods in a few simple steps thanks to a plug-in system. At the IZB, visitors can discover this impressive innovation live and in person.

## MEASURE TEN TIMES FASTER AND IN LAB QUALITY

**Lilian Labs GmbH**  
Hall 1 | Stand 1115

Lilian Labs GmbH has developed a worldwide unique mobile analysis system for testing water properties and quality for the professional B2B sector (see image). Environmental laboratories or industrial companies in particular benefit from the advantages in production or daily processes. It consists of the handy LILIAN measuring device, the replaceable SensoSticks for performing water tests and the LILIAN app for managing and checking the water values, as well as the online LILIAN Manager database for centralized monitoring of measurement values. With LILIAN, the user not only measures ten times faster and in laboratory quality, but time-consuming manual sample preparation is also completely eliminated. This means a high volume of savings for companies. Interested visitors can obtain more information from the Lilian Labs stand at the IZB.

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Battery pack

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High-current contact elements with positioning pegs –  
4580 04 and 4580 03

## PLASTIC SOLUTIONS FOR E-MOBILITY

**Lorenz Kunststofftechnik GmbH**  
Hall 3 | Stand 3311

In cooperation with other companies from the automotive, mechanical engineering and chemical industries, the plastics technology company Lorenz Kunststofftechnik has developed particularly high-performance and robust high-voltage battery housing (see image). The housing, which is made of glass-fibre-reinforced epoxy SMC or UP-SMC, stands out due to its very light weight. The exhibitor's battery cover also impresses users with its extremely high fire resistance and its optimal crash behaviour, as well as the fact that it meets all of the demands for EMC shielding required by the OEMs. The time and resource-saving one-shot manufacturing process allows the housing to be flexibly adjusted to suit different battery sizes and vehicle architectures. At this year's IZB in Wolfsburg, the plastics specialist is presenting particularly strong and robust **battery housing BMC and CIC solutions** for electric vehicles.

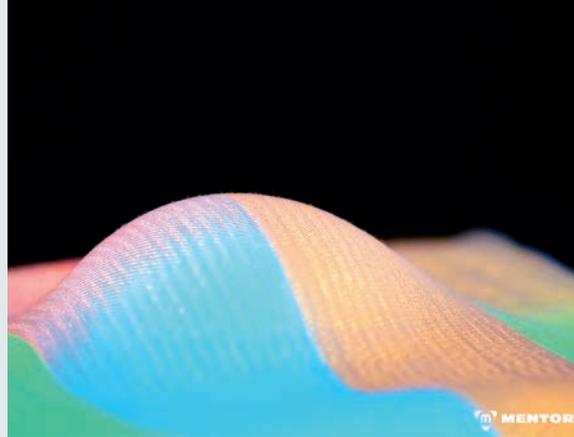
## A BOOM FOR HIGH-CURRENT CONTACT ELEMENTS

**Lumberg Connect GmbH**  
Hall 1 | Stand 1118

Lumberg has been producing customised high-current contact elements for automotive applications (see image) for more than 15 years. Its products are installed in millions of mechatronic modules and control units, especially in current electric vehicles. They are also recommended for use in industrial electric motors. In tight spaces in particular, the phase contacts, which are plugged into standard tab contacts, optimally connect PCBs that are on top of each other. The phase contact, which is SMT-soldered onto the PCB but can just as successfully be laser-welded onto a lead frame, makes vertical contact with a blade contact on the second PCB. Phase contacts with a plug-in area that is open on both sides are a special feature: here, the tab contact can optionally be inserted from above or, through the circuit board, from below. The exhibitor is presenting its **latest contact elements** at the IZB.

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*A textile lighting system*

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*The Intelligent Human Interface (IHI)*

## TEXTILE LIGHTING SYSTEMS FOR INNOVATIVE LIGHTING SOLUTIONS

**MENTOR GmbH & Co Präzisions-Bauteile KG**  
Hall 2 | Stand 2401

The technology of **textile lighting systems** (see image) offers great advantages for the realisation of innovative lighting solutions and creates possibilities for completely new lighting applications in a variety of vehicle areas. The lighting system can be formed into (almost) any shape and therefore offers particularly high flexibility in the use of installation space as well as fascinating possibilities for dynamic lighting scenarios in both textile and non-textile automotive applications. Due to the flexibility of the material, textile lighting systems can also be integrated into crash-sensitive zones. This allows the illumination of larger areas in vehicle zones that would not be permissible with other technologies. With regard to the trend of autonomous driving, textile lighting systems also offer numerous possibilities for intelligently integrating light into the vehicle interior, both as an ambience element and a communication component.

## INCREASED DRIVING INTELLIGENCE, SAFETY AND COMFORT

**Merit Automotive Electronics Systems**  
Hall 2 | Stand 2610

Merit's **Intelligent Human Interface** (IHI, see image) is designed to make the driving experience smarter, safer and more enjoyable. It features innovations such as a steering wheel that combines all functions within reach of the driver's fingertips, giving them the opportunity to personalise and embed their favourite items. By offering direct access to the most used commands, the steering wheel improves driving safety. Thanks to the reconfiguration approach, the functions of the lever are also implemented in the steering wheel. This simplified solution is style-oriented, lightweight and convenient for electric and autonomous cars.

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*Mechanical recycling (left) and recycling concept (right)*

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*A battery case*

## RECYCLING ALL KINDS OF ENGINEERING PLASTICS

**MKV GmbH Kunststoffgranulate**  
Hall 3 | Stand 3147

MKV GmbH Kunststoffgranulate is a company involved in the mechanical recycling of plastics. Founded in 1960, MKV has promoted the establishment and development of the circular economy since day one. It focuses on recycling all kinds of engineering plastics. Due to their special properties and longevity, engineering plastics play an important role in a wide variety of industries, including the automotive sector. Their advantages become apparent once the raw material is fed back into the loop, with recyclates providing benefits such as reducing the carbon footprint, increasing yield and becoming part of the circular economy. Innovations and trade fair highlights of MKV on display at the IZB include **mechanical recycling, recycling concepts (see image) and CO<sub>2</sub> savings by means of recyclates.**

## HIGH FLEXIBILITY IN MATERIAL DESIGN COMBINED WITH SUPERIOR TECHNICAL FUNCTIONS

**Muhr und Bender KG**  
Hall 4 | Stand 4209

With its solid foundation of system and technology expertise, Mubea is able to offer superior components for battery cases (see image) that can achieve significant cost savings of up to 50 percent and weight savings of up to 30 percent. The components offer high flexibility in material design combined with superior technical functions: The roll-bonded cooling trough made of high-strength aluminium forms the base of the case. Coolant connections are welded in either horizontally or vertically depending on the installation space, with the roll-bonding technology offering maximum scope for design for the cooling structure. The trough itself contains a TRB crash structure made of steel, in which the optimised thickness profiles lead to a weight reduction of up to 20 percent. The underbody protection and top lid of the case are available as low-cost steel models or weight-optimised GFRP/CFRP solutions.

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*The plant-based high-performance cellulose separator for EV Li-ion batteries*

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*A selection of products*

## A BATTERY SEPARATOR MADE FROM 100-PERCENT CELLULOSE

**NAGASE Europa GmbH**  
Hall 1 | Stand 1411

The world's first **plant-based high-performance cellulose separator for EV Li-ion batteries**, NAGASE, is being presented at the IZB 2022. The battery separator (see image) is made from 100-percent cellulose. This purely organic and environmentally friendly separator gives the battery high performance and stability. Compared to inorganic separators like PP film, it has low electric resistance, high capacity retention after galvanostatic cycling and better dimensional and thermal stability. These properties improve the battery's input-output characteristics and give it a longer cycle life for a quicker charging time, better low-temperature performance, a better high-rate charge and discharge and better suitability for high-voltage applications. In the battery manufacturing process, our separator can also help to improve production efficiency by shortening the drying time and electrolyte impregnation time.

## STRETCHABLE SILVER INKS FOR IME

**Namics Europe GmbH**  
Hall 5 | Stand 5320-04

Customers value NAMICS as a reliable partner for insulating and conductive materials (see image) with 70 years of experience in the field of semiconductors and passive components. The company is proud of its continuous efforts to launch environmentally friendly products, which allow it to actively contribute to a safe and green future. The highly thermally conductive die-attach materials from NAMICS are an ideal alternative to lead welding pastes, while the highly thermally conductive insulating foil materials are state-of-the-art solutions for power modules in all-electric vehicles. For in-mould electronics, NAMICS manufactures stretchable silver inks that are ideal for environmentally friendly vehicle interiors. The exhibitor is looking forward to working with interested parties on new projects and technical solutions.

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*Piston pins coated with the patented TAC-ON solutions from Nanofilm*

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*The upper part of the fronted carrier*

## ENABLING E-MOBILITY WITH INNOVATIVE NANOTECHNOLOGY SOLUTIONS

**Nanofilm Technologies International**  
Hall 2 | Stand 2605

Nanofilm Technologies is a deep-tech company and a leading supplier of nanotechnology solutions, which develops integrated concepts for the automotive industry and other sectors. The company's proprietary FCVA technology creates high-quality carbon and metal coatings with outstanding adhesion, electrochemical properties, ultra-high hardness, low coefficient of friction, and scratch resistance. These coatings are applied to electrolyzers, bipolar plates, combustion engines and brake components. The latest solution in the field of electromobility consists of high-throughput coatings for battery terminals used in electric vehicles. The company's nanofabrication division offers an all-round solution, from design, through lens and tool nanofabrication, right down to lens quality control. Nanofilm Technologies is able to produce micro lens arrays, and polymer and glass lens molds in large quantities.

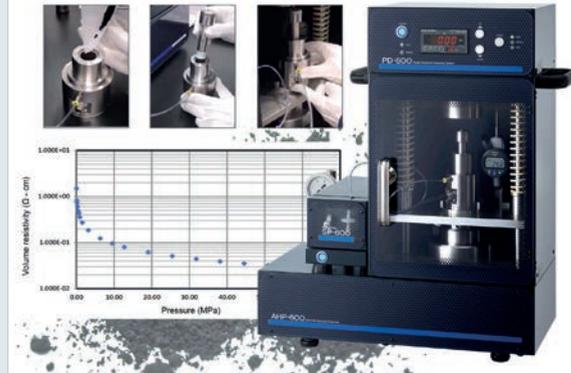
## A FRONTED CARRIER WITH 20-PERCENT MINERAL-FILLED POLYPROPYLENE COMPOUND

**nexeo Plastics Germany GmbH**  
Hall 3 | Stand 3240

Nexeo Plastics has helped a Tier 1 supplier to develop an **upper part of the fronted carrier** (see image) for a German OEM. The material of choice was Borealis MS64T20-9502, a polypropylene compound with a 20-percent mineral filling intended for injection moulding. This material has excellent balanced mechanical properties and is easy to process. It has been developed especially for the automotive industry, namely for cowl vent grilles and exterior and interior automotive applications. Several key factors contributed to the success of this project, especially the fact that the material was already validated by the OEM and that the Business Development Engineer Team at Nexeo Plastics provided its support extremely rapidly. Thanks to cooperation with Tier 1 and material suppliers and in-depth analysis of the material flows, the exhibitor has succeeded in integrating Borealis MS64T20-9502 into this project.

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The PD-600 powder measuring system

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## BATTERY RESEARCH WITH THE PD-600 POWDER MEASURING SYSTEM

World Premiere!

NH Instruments  
Hall 5 | Stand 5211

Improving the range, charging time and lifespan of lithium-ion batteries while simultaneously achieving resource-efficient use of production materials constantly requires new formulations. The new PD-600 powder measuring system (see image) presented by NH Instruments for the first time at the IZB 2022 allows users to determine the physical properties of powder substances via their specific resistance. The measurement is conducted by pressing the powder sample into the cylindrical form of the measuring head under a predefined pressure. The pressure ranges from 0.01 kN to 20 kN. The software automatically records the pressing power, the bulk density (sample thickness in mm) and the conductivity ( $\Omega$ ) of the sample in a table. After the measurement, the data can be transferred into a diagram that shows the electrical conductivity of the measurement sample depending on the pressing power.

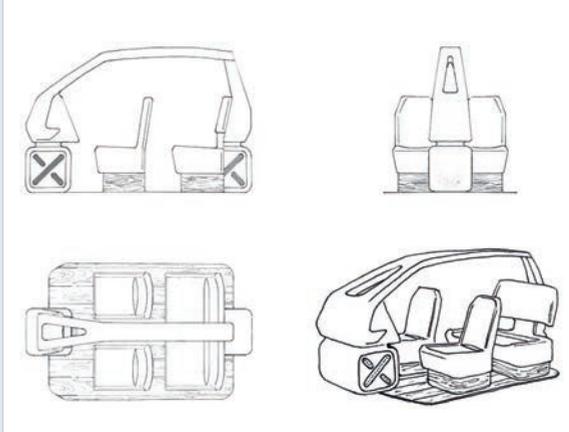
## PRODUCT DEVELOPMENT BASED ON ECO-FRIENDLY “GREEN TECHNOLOGY”

NIDEC GPM GmbH  
Hall 1 | Stand 1105

In recent years, there has been a trend of vehicles becoming increasingly fuel-efficient and highly value-added, with more than 100 motors installed in each automobile. NIDEC'S AMEC Business Unit develops its business on a global platform and makes concerted efforts to develop and manufacture its products to meet the needs of customers all around the world. Its current main products include electric power steering motors, which use Nidec's core high-performance brushless DC motor technology; electric brake motors; dual-clutch transmission motors; electric pumps and motors; a wide variety of compact-size brushed motors and traction motors for EVs and hybrid electric vehicles. NIDEC is especially focused on product development based on eco-friendly “green technology” and will be showcasing its **latest innovations** at the IZB.

**Press contact:**

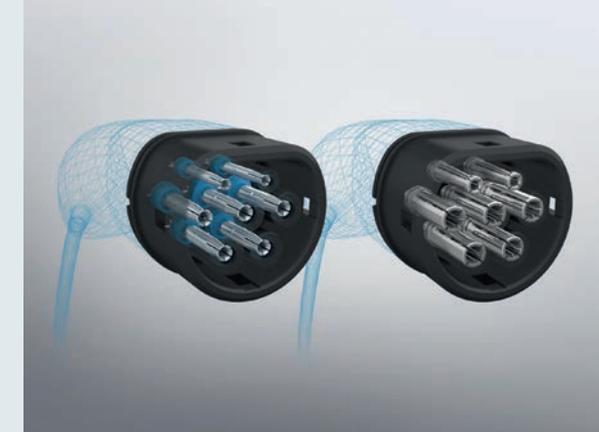
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*Drawings of the Cabin*

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*The ODU TURNTAC charging contact (right)*

## RADAR SYSTEM FOR 100 PERCENT RELIABLE MONITORING OF THE INSIDE OF A VEHICLE

**NOVELIC**  
Hall 1 | Stand 1211

**World Premiere!**

At the IZB, Infineon and NOVELIC will stage the first live demonstration worldwide of their joint development, a radar product for Automotive InCabin Monitoring (ACAM). ACAM meets Euro NCAP requirements with regard to child detection. Furthermore, additional functions have been developed on the same hardware platform: Detection of occupied seats in a vehicle, along with intrusion detection. The chipset for this module was developed by Infineon, a pioneer in the field of vehicle radar. The sensor features low-power modes, offers excellent thermal management, and is fully FCC compliant. NOVELIC harnessed its patented technology and 10 years of experience with short-range radar systems to develop algorithms that maximize the performance of the radar sensors. ACAM has been validated in numerous car models under actual driving conditions. At the IZB, ACAM will be used in a unique setup: a handmade model of a vehicle cabin.

## PERFECT COORDINATION OF DESIGN AND PRODUCTION METHOD

**ODU Automotive GmbH**  
Hall 1 | Stand 1207

ODU Automotive GmbH was founded in 2004 as a subsidiary of the company ODU GmbH & Co. KG. Since the early days of e-mobility, manufacturers have relied on the innovative connector and contact systems of this globally active specialist. Thanks to 80 years of manufacturing expertise, customers have been able to rely on ODU Automotive right from the start and make the most of its high vertical range of manufacture, even largely independent of world markets. The **ODU TURNTAC® charging contact** (see image on the right), for example, is ideal for charging plugs or charging cables. Thanks to the perfect coordination of design and production method, the contacts are suitable for high volumes and are manufactured with a correspondingly high output on high-performance lathes – in the usual ODU quality. Trade visitors can find the company at Stand 1207 in Hall 1 at the International Suppliers Fair (IZB) from 11th to 13th October 2022.

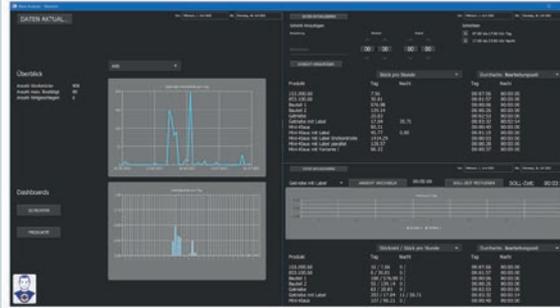
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*The Smart Klaus optical assistance system*

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<https://vsc.bike>



*A single-track cargo bike*

## RECORDING AND ANALYSING MANUAL PRODUCTION DATA WITHOUT MEDIA DISRUPTION FOR THE FIRST TIME EVER

**OPTIMUM datamanagement solutions GmbH**  
Hall 5 | Stand 5214A

**World Premiere!**

Up until now, the recording of data from manual production for analysis has been insufficient due to a lack of a suitable sensor that confirms when a work step has actually been completed. This information is often recorded manually on paper, and interruptions and idle time are not documented at all. This is where the “Smart Klaus” optical assistance system comes into play. The new version of the system can store visual data from the production process and, as part of the production data acquisition (PDA), map the data in the digital shadow (see image). Data such as quantities, the number of corrections or downtime are stored for each shift and can be displayed directly in the system on a simple dashboard or loaded into an ERP tool for further analysis. The integration of OEE-relevant data from the Smart Klaus assistance system enables comprehensive digitalisation of the shopfloor.

## MAKING TRANSPORT EASIER

**Pendix GmbH**  
Hall 5 | Stand 5301

Pendix GmbH and VSC Bike GmbH form the Pendix Group, which combines innovative drive technologies and industrial cargo bikes in one company. The Group’s largest customer is Deutsche Post AG, which uses its single and multi-track cargo bikes (see image). More and more companies are now also relying on Pendix’s robust factory bikes for internal transport, including Volkswagen AG sites. The cargo bikes, which can carry a total weight of up to 280 kg, are driven by a powerful motor. The products are complemented by a range of competent services, including UVV inspections on request. In addition to low downtimes, customers benefit from the low complexity of the cooperation. At the IZB 2022, Pendix is presenting its latest developments such as **cargo bikes with a higher transport volume** and the new **hub drive**, which is also available as a serial-hybrid variant.

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*The ASM 306 S helium and hydrogen sniffer leak detector*

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*An inductive position sensor for electric motors*

## A HELIUM AND HYDROGEN SNIFFER LEAK DETECTOR FOR EASY AND ACCURATE FULL-TIME SNIFFING OPERATIONS

**Pfeiffer Vacuum GmbH**  
Hall 5 | Stand 5305

With the **ASM 306 S** (see image), Pfeiffer Vacuum offers a state-of-the-art product that supports a variety of applications. The helium and hydrogen sniffer leak detector is designed for 24-hour use, even in harsh environments. With its high sensitivity of  $1E-07$  mbar l/s, it enables precise and error-free measurements that meet the stringent requirements of automotive applications. Designed to perform fast and repeatable measurements, this instrument offers short recovery times and in turn ensures maximum operational availability coupled with low maintenance and reduced service costs. Its compact design and small footprint, which are unique in the industrial sniffer market, make it easy to integrate into the production line, and it has proven itself in leak testing in the automotive sector in particular.

## MAGNET-FREE INDUCTIVE POSITION SENSORS FOR ELECTRIC MOTORS

**Piher Sensing Systems**  
Hall 1 | Stand 1324

When it comes to optimising the control and thus the effectiveness of electric motors, it is essential that the angle, direction and speed of the rotor position are recorded precisely. With their light weight, compact dimensions, stray field immunity and sample rate of up to 600,000 (el) U/min., the inductive motor position sensors (see image) from Piher Sensing Systems represent a cost-effective alternative to conventional resolvers. The sensor provides a demodulated sin/cos output signal, can be flexibly integrated with through-shaft, end-of-shaft or arc configuration and is suitable for safety-critical applications (ASIL-C / ASIL-D) A **series solution for 3, 4 and 6-pin motors** is already available, and customer-specific solutions for different OEMs are currently being developed. Piher Sensing Systems is a brand of the Amphenol Sensor Technology Group and can seamlessly progress from prototyping to large-volume series production thanks to its experience spanning several decades.

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Pöppelmann K-TECH

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PRYCHARGE AC and DC charging cables

## HIGH-QUALITY ARTICLES MADE FROM RECYCLED MATERIALS FOR THE AUTOMOTIVE INDUSTRY

**Pöppelmann Kunststoff-Technik GmbH & Co. KG**  
Hall 3 | Stand 3310

Two paths with one consistent goal: with their standardised, freely available plastic articles for the protection and mounting of compact connectors, corrugated tubes, cables and contacts made from post-industrial recyclates (PIR) and protective caps and protective plugs made from post-consumer recyclates (PCR), Pöppelmann K-TECH® (see image) and Pöppelmann KAPSTO® demonstrate how high-quality articles can be created from recycled materials for the automotive industry. These articles meet all technical requirements to the full extent, as well as effectively contributing to increased resource conservation and climate protection thanks to the sustainable use of plastic and CO<sub>2</sub> savings. Within the scope of the company-wide PÖPPELMANN blue® initiative, the plastics specialist develops products that represent true closed-loop recycling management for customers wherever possible.

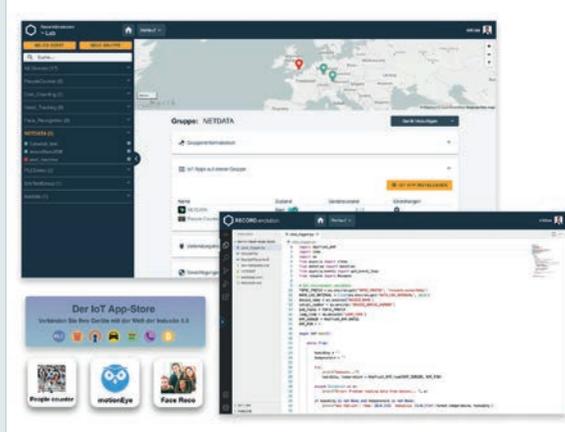
## ROBUST, FLEXIBLE AND EASY TO USE

**Prysmian Kabel und Systeme GmbH (Prysmian Group)**  
Hall 1 | Stand 1227

For the fast, easy and reliable charging of electric vehicles, the Prysmian Group has developed optimised charging cables that are both robust to withstand changing temperatures and years of use and flexible and easy to use – **PRYCHARGE AC** and **DC charging cables** (see image). Thanks to optimised cross-sections, both types of cable are lighter, more flexible and easier to handle than comparable products. In addition, they are extremely cold-resistant (to -40 degrees Celsius) and still remain highly resilient and user-friendly due to their specially cross-linked EVI-2 HEPR rubber power cable insulation. This special insulation additionally allows conductor temperatures and current-carrying capacities of up to 120 degrees Celsius for the DC variant. Cross-linked control cores increase the resistance of the cables to mechanical impact and give them a significantly longer service life.

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IoT Studio

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Red Hat and GM  
drive innovation for  
next-generation  
vehicles



## THE BASIS FOR EASILY IMPLEMENTING IOT PROJECTS

**Record Evolution GmbH**  
Hall 1 | Stand 1119A

The development of IoT solutions is often accompanied by complex and recurring challenges. The Record Evolution platform contains basic functions and offers a basis for easy implementation of IoT projects. Devices can be linked and managed in device swarms in a flash. Custom IoT apps can be programmed using the built-in development studio. Within a device swarm, users can install and remotely control these IoT applications on individual devices or groups of devices without having to be on-site. Using the IoT Studio (see image), users can: register multiple devices (IPC) simultaneously, remotely control and manage device swarms and their applications, program applications directly on the device in the IoT Development Studio, and manage user roles and access permissions in the enterprise.

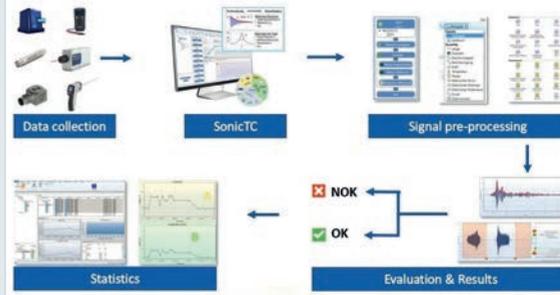
## BUILDING AN INNOVATIVE ECOSYSTEM

**Red Hat GmbH**  
Hall 1 | Software Marketplace

Red Hat, Inc., the world's leading provider of open-source solutions, and General Motors (NYSE: GM) recently announced a collaboration to help advance software-defined vehicles at the edge. The companies intend to build an innovative ecosystem around the Red Hat In-Vehicle Operating System, which provides a functional-safety certified Linux operating system foundation for the ongoing evolution of GM's Ultifi software platform. The collaboration between Red Hat and GM represents a significant milestone in the convergence of the transportation and technology industries. Red Hat's cloud-native open-source operating system will accelerate the development of GM's software-defined vehicle programs after Ultifi is launched. This will enable both companies to offer customers more valuable features in a fraction of the typical development time.

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*The SonicTC measurement and testing system*

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*A 3K thumbwheel produced without chromium(VI)*

## SONICTC – A MEASUREMENT AND TESTING SYSTEM FOR PRODUCTION 4.0

**RTE Akustik + Prüftechnik GmbH**  
Hall 5 | Stand 5307

Production 4.0 demands the digitalisation and networking of production facilities and testing systems. This networking in turn requires all established communication protocols to be incorporated into the automation (e.g. OPC-UA). This is precisely where the SonicTC measurement and testing system (see image) comes into play. The innovation is the new interpretation of signal processing and signal analysis in combination with automation and process data. It enables signals from different sensors and data sources to be synchronised and above all combined. This innovative data correlation is a prerequisite for process monitoring and control within the definition of Production 4.0. SonicTC is prepared for the IoT and cloud-based applications. It offers the option of communication with superordinate MES systems. What's more, the system also allows live tracking of statistical process monitoring via control charts.

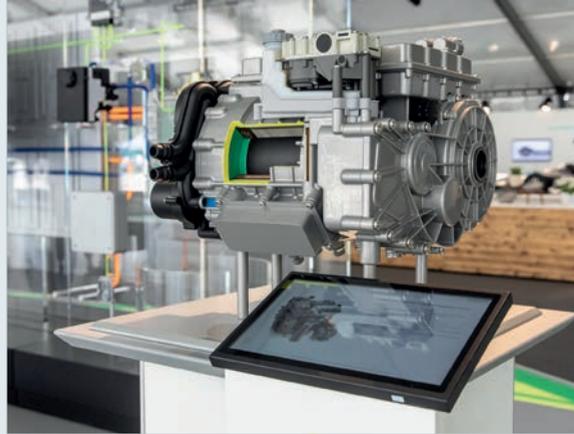
## ABS, ABS/PC AND PA PLATING WITHOUT CHROMIUM(VI)

**SAXONIA Galvanik GmbH**  
Hall 3 | Stand 3209

Due to the current REACH process in the European Union to ban the use of hexavalent chromium, it is necessary to substitute chromium(VI) processes in the long term. As an innovative company, SAXONIA Galvanik GmbH has already rebuilt some of its production lines so that it can **mass-produce plastic parts completely free of chromium(VI)** (see image) in parallel with its former production process. The deposition of the final layer from a chromium(III) electrolyte is already established on the market. The pre-treatment for both ABS and ABS/PC (single and multi-component parts) and polyamide has been in place for more than a year in the exhibitor's series production plants. Normal sampling of existing serial parts is possible without changing the parameters of the injection moulding. Approvals for this process have been received from various OEMs, especially AUDI, VW, Daimler and Stellantis.

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*The 4in1 electric axle*

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*The axial grounding contact – designed for use in wet (heavy oil load) and dry applications*

## MOTOR, TRANSMISSION, POWER ELECTRONICS AND THERMAL MANAGEMENT ALL COMBINED IN A COMPLETE SYSTEM

**Schaeffler Technologies AG & Co. KG**  
Hall 1 | Stand 1220

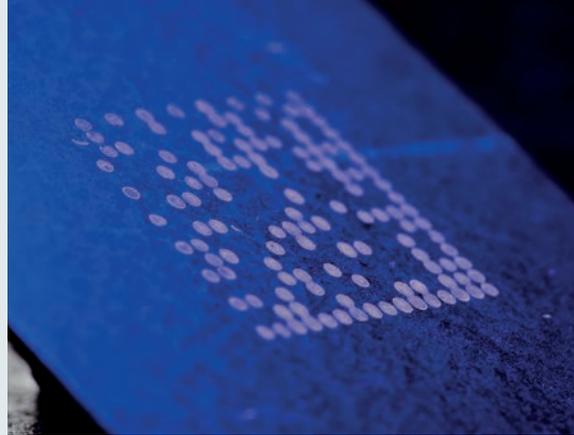
The focus of Schaeffler's appearance at the IZB 2022 is on innovations from the fields of electromobility and chassis systems. One example is the new 4in1 electric axle (see image). It combines the four components, motor, transmission, power electronics and thermal management all into an innovative overall system. The high level of integration of the subsystems in conjunction with an intelligent control system ensures that the existing thermal energy in the vehicle is used more efficiently. This means a longer range and greater comfort for vehicle passengers. The centrepiece of every e-drive involves electric motors. Schaeffler is introducing a new axial flux motor with which the company is achieving electric drives with a very high volumetric power density. In addition to CO<sub>2</sub>-efficient drives, Schaeffler is also showcasing new chassis applications, which, for example, enable highly automated driving.

## INNOVATIVE SOLUTIONS FOR SAFEGUARDING ELECTRIC POWERTRAINS

**Schunk Carbon Technology GmbH**  
Hall 1 | Stand 1315

The cHallnge: Originating from the power electronics (especially SiC), parasitic shaft voltages can be observed on the shaft. They cause severe sparking inside the bearings that lead to noise and – in the worst case – even broken bearings and broadband radio interference. The IZB exhibitor Schunk has developed a solution to this problem: the innovative Schunk shaft grounding contacts discharge the capacitive interference currents directly via a grounding contact. This technology offers effective protection against damage to the bearing and minimises the radio frequency interference emitted by the shaft. Schunk's latest development, the **axial grounding contact** (see image), has been designed especially for oil-based applications. This brand-new product achieves the best suppression rates in combination with an extraordinarily low wear rate.

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*A data matrix code*

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*The CCS2 charging cable*

## AN INDIVIDUAL FINGERPRINT FOR HOT-FORMED METAL COMPONENTS

**Senodis Technologies GmbH**  
Hall 5 | Stand 5126

On the basis of CeraCode® technology, Senodis offers a comprehensive solution for the continuous identification and recording of hot-formed (metal) components. The marking solution was designed specifically to meet the demands of the automotive industry and is based on a heat-resistant ceramic ink that was developed by Senodis in cooperation with a major German OEM. Components are printed with a machine-readable and heat-resistant data matrix code that can be scanned and recorded in all steps along the process chain. The printed DMC adheres firmly to the component, is resistant to extremely high temperatures (> 1,000 degrees Celsius), is insensitive to chemical influences and does not influence subsequent production processes (e.g. painting). CeraCode® enables the end-to-end digitisation of hot-forming production processes as required by Production 4.0.

## A CHARGING CABLE WITH A MODULAR DESIGN AND REPLACEABLE PLUG HEAD

**SINBON Electronics**  
Hall 1 | Stand 1314

At the IZB 2022, SINBON Electronics from Taiwan is presenting its **CCS2 charging cable** (see image) as a world premiere. This soft cable has small outer dimensions, measuring 283.5 x 141.5 x 73.5 mm. The non-liquid-cooled product is available for currents of 100 A, 150 A, 200 A, 250 A, 300 A and 350 A and is TÜV and CE certified. Other key features include its integrated modular design and replaceable plug head. Based on the same specifications, SINBON is able to produce customer-specific combinations, for example different currents and varying wire thicknesses. If the plug head is damaged by an external influence, it can be exchanged without the entire product needing to be replaced. The charging cable has additionally passed vehicle roll tests, meets the requirements for protection class IP 67 and has a low temperature rise of under 50 K. It is designed to be used for up to 30,000 insertion/withdrawal cycles.

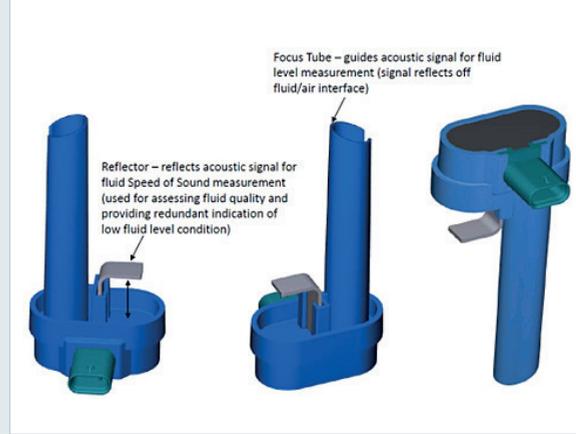
**World Premiere!**

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The UNIC2 interior car concept

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The LLC brake fluid and concentration sensor

## USE OF STRETCHABLE ELECTRONICS OF INFINITE SHAPES ON POLYMERS OR TEXTILES WITHOUT SINTERING STEPS

**SOPLAST**  
 Hall 4 | Stand 4107A-08

At the IZB 2022, SOPLAST will be presenting the UNIC2 interior concept (see image), which uses innovative and patented stretchable electronics for unlimited shapes on polymers or textiles without the need for sintering steps. For the first time, stretchable electronic circuits can be welded to SMD components with a unique "self-healing process" at room temperature. Sensors and touch functions on systems such as the steering wheel, centre console, seat adjustment or safety monitoring can now be made with a small footprint, 3D geometries and ultrathin stretchable circuits. In addition, the printed electronics are for the first time fully recyclable, for an eco-aware circular economy. The UNIC2 is a showcase concept for a technology that is fit for the future.

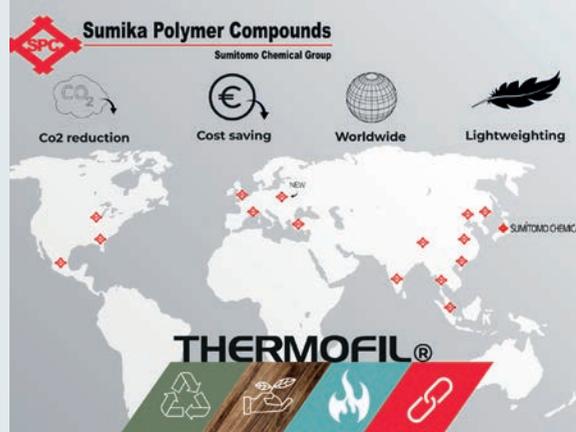
## MEASURING LOW FILL LEVELS AND BRAKE FLUID QUALITY

**SSI Technologies GmbH**  
 Hall 1 | Stand 1324

Autonomous emergency braking (AEB) is a safety system that is able to detect a potential collision and respond to it by autonomously activating a vehicle's brakes to slow it down before impact or make it stop to avoid a collision. In terms of technology, radars, cameras or LiDAR sensors are usually used to detect threatening situations. Furthermore, it is important to have an ASIL D sensor in the brake fluid reservoir to detect whether the fill level is too slow and to measure the quality of the brake fluid. SSI Technologies is currently developing such a brake fluid and concentration sensor (see image) and has already completed its feasibility study. SSI Technology is an Amphenol Sensors company and has been a leader in the customer-specific development of sensor solutions for a multitude of markets since 1982.

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*The advantages of THERMOFIL*

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*SurTec 650 protects the battery housing*

## A DROP-IN SOLUTION FOR MORE SUSTAINABLE CARS

**Sumika Polymer Compounds**  
Hall 3 | Stand 3301

The main range of Sumika Polymer Compounds is comprised of THERMOFIL HP®, a high-performance short-glass-fibre polypropylene (see image). The development and continuous upgrading of this range have made it the reference in terms of weight reduction and cost savings in automotive structural parts. What's more, technological breakthroughs have allowed the creation of related products such as THERMOFIL FR® flame-retardant high-performance compounds. At the same time, the company has also understood the necessity of developing alternatives to virgin compounds since 1992. Against this background, it additionally offers **THERMOFIL CIRCLE®** as a pioneer in the field of recycled short-glass-fibre polypropylene. This drop-in solution aims to replace new materials and contribute to more sustainable cars in the future.

## OPTIMAL CORROSION PROTECTION FOR THE BATTERY HOUSING

**SurTec International GmbH**  
Hall 3 | Stand 3127

SurTec offers cleaning technologies throughout the manufacturing process, high performance, light metal corrosion protection and decorative chrome plating for interior and exterior use. Choosing the right surface treatment technology enables the production of state-of-the-art lightweight battery housings with reliable and durable lifespans. The **power brand "SurTec 650"** is the chromium(III) benchmark pre-treatment technology at leading OEMs and Tier 1 suppliers. In combination with a gasket, it optimally prevents corrosive seal creepage of moisture into the battery compartment and ensures low electrical contact resistance (see image). The technology also provides electromagnetic compatibility and is therefore the perfect solution for surface treatment of, for example, battery pack housings and electronic control unit housings. Due to its best-in-class bare metal corrosion protection, additional e-coating applications of the battery housing could be considered redundant.

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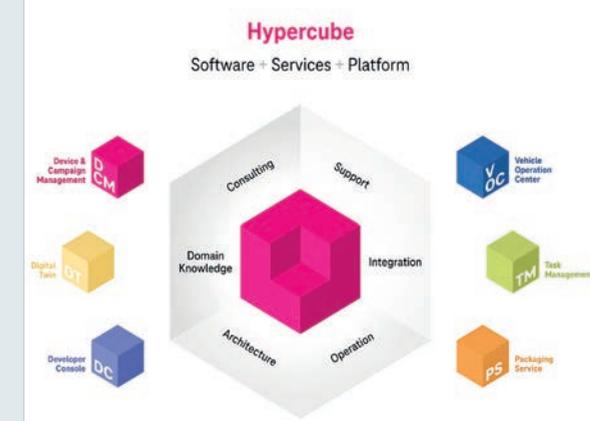
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*The Cross Charger electrified turbocharger*

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*The Hypercube*

## THE CROSS CHARGER TAKES A LOAD OFF COMBUSTION ENGINES

Swoboda  
Hall 2 | Stand 2106

World Premiere!

Combustion engines are facing increased demand for emission and consumption reductions with reduced development budgets at the same time. Swoboda's patent-protected electric turbocharger actuator, **Cross Charger** (see image), offers vehicle manufacturers a solution that enables them to achieve an increase in fuel savings of up to ten percent and cleaner and more powerful gasoline, diesel and hybrid drives without typical turbo lag. No other competitor offers the option of using or leaving out electrification from one and the same turbocharger. In test bench trials, a 2-litre diesel engine consumed up to ten percent less fuel and emitted 40 percent fewer nitrogen oxides (NOX). With the Euro 7 standard planned for 2025, the amount of NOX needs to decrease many times over, and after a much shorter engine warm-up at the same time. Swoboda makes it easier for all vehicle manufacturers to achieve these targets.

## A MODULAR SOLUTION SUITE FOR CROSS-DOMAIN AUTOMOTIVE SOFTWARE LIFECYCLE MANAGEMENT

T-Systems International GmbH  
Hall 1 | Stand 1219

At the IZB 2022, T-Systems is presenting the ultimate solution for counteracting limited capacities in software development and increasing costs for service and platform operations: **Hypercube** (see image) enables automotive manufacturers to make the most of the advantages of automation and standardisation for non-differentiating software components so that they can launch their new features on the market even quicker. The production-ready components of Hypercube form the backbone for cross-domain automotive software lifecycle management and facilitate the efficient operation of all functions throughout the entire lifecycle. All of the cubes are designed using a modular and configurable approach. Users can either choose selected cubes as enablers and accelerators to integrate them into their own platform or opt for an end-to-end product approach as a licence or managed service model.

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*A laboratory power supply from the GENESYS+ range*

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*A multi-material battery electric vehicle*

## PROGRAMMABLE POWER SUPPLIES WITH A HIGH POWER DENSITY

**TDK-Lambda Germany GmbH**  
**Hall 1 | Stand 1206**

The GENESYS+™ range of laboratory power supplies (see image) by TDK-Lambda in a 1U 19" rack model is available with the power ratings 1 kW, 1.7 kW, 2.7 kW, 3.4 kW, 5 kW and 7.5 kW and offers output voltages of up to 1,500 V and an output current of up to 500 A. The programming is standardised throughout the entire range. Several programming methods are available, including LAN (LXI 1.5), USB, RS-232/RS-485 and an isolated analogue interface (0–5 V, 0–10 V), all of which are integrated into the devices as standard. When it comes to interfaces, users can choose between EtherCAT, Modbus-TCP, IEEE (488.2) and an isolated analogue interface (4–20 mA). Special options with particularly fast programming times and an integrated current sink are available for selected models, which are suitable for test applications and numerous simulation tasks in the automotive industry.

## NON-CONDUCTIVE FEATURES, THE ABILITY TO MOULD COMPLEX SHAPES, SEALING FEATURES AND SHIELDING

**Teijin Automotive Technologies**  
**Hall 3 | Stand 3303**

Teijin Automotive Technologies has developed a **multi-material battery electric vehicle** (BEV, see image) enclosure that meets the most stringent static, dynamic and regulatory requirements while reducing overall weight. Additional benefits of this enclosure include non-conductive features, the ability to mould complex shapes, sealing features and shielding, less complexity in tooling, high strength, dimensional stability, corrosion resistance and reduced tooling costs. Furthermore, the glass-fibre composite materials allow for greater design freedom and parts integration compared to metallic options. Additionally, the seamless box structure is watertight and cost-competitive over an aluminium structure. Teijin Automotive Technologies is a leading global Tier 1 automotive supplier for light eight composite solutions with strong integration along the value chain.

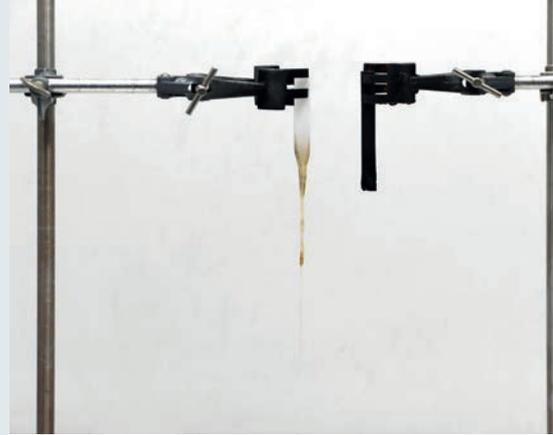
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*Right: the TIGITAL 3D-Set PPP material; left: a thermoplastic material after a fire test*

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*The membrane synthetic leather Parmia, filter media ELITOLON, polyester PEN film Teonex and composite material HAYATE*

## INNOVATIVE THERMOSET MATERIALS FOR SLS 3D PRINTING

**TIGER Coatings GmbH & Co. KG**  
Hall 3 | Stand 3138

With its “TIGITAL® 3D-Set” brand, TIGER Coatings manufactures high-performance thermoset polymers for SLS printing and is showcasing its innovations at the IZB 2022. While thermoplastics melt at high temperatures, thermoset materials harden after the first heat treatment (see image). As a result, components made from thermoset materials have already acquired their final physical and chemical properties and can no longer be influenced by further heating. Thermosetting plastics do not melt and are therefore able to withstand high temperatures without losing their structural integrity. These materials meet the requirements of the fire protection standards UL 94Vo, UN ECE R 118 and FMVSS 302. The main advantage of thermosetting plastics is the fact that they do not drip in case of fire. In comparison with flame-protected materials based on thermoplastic chemistry, such behaviour is extremely beneficial for the bus, rail and automotive industries in particular.

## EV MOTOR INSULATION, FUEL CELLS AND FLEXIBLE WIRE HARNESS APPLICATIONS

**TOYOBO Chemicals Europe GmbH**  
Hall 3 | Stand 3208

Toyobo is a long-established Japanese manufacturer that was founded almost 140 years ago. Over its long history, the company has cultivated its manufacturing expertise and developed its business by offering solutions for mobility and society. The company’s core technologies include polymerisation, modification and processing of polymers, which were accumulated from the development of synthetic fibres. The IZB, Toyobo is introducing its heat-resistant **polyester PEN film “Teonex®”** for EV motor insulation, fuel cell and flexible wire harness applications. It is additionally presenting its electrostatically charged **filter media “ELITOLON™”**, the porous **membrane synthetic leather “Parmia®”** and its carbon-fibre-reinforced **composite material “HAYATE®”**. Looking to the future, Toyobo aims to offer high-function materials that offer added value for the future of mobility, in line with its motto of “Ideas & Chemistry”.

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The MX Prime Seat with innovative features (left) and an MX 221 Concept vehicle (right)

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The Typhoon HIL Test Platform

## TIME AND SPACE QUALITY FOR YOUR JOURNEY

**Toyota Boshoku Europe N.V.**  
Hall 3 | Stand 3224

When a ride in the car becomes a life experience – with a mist and aroma generator, cloud swing seats and an intelligent individual audio system, discover **MX Prime concept** (see image) and see how Toyota Boshoku creates a personalised, safe driving experience. This concept was born to shape the future mobility of urban cities. Let's start with a smart seat with comprehensive features available directly via smartphone and add an exclusive interior space that fosters well-being to achieve a driving experience on a completely new level. MX Prime cares about comfort, health and safety. Need to sanitise your phone? No problem! How about comfort pneumatic functions? You can have it all! Want to relax while on the move? Enjoy the gentle swing-motion seats! This is what a cosy interior space is all about: new technologies and top-notch innovations.

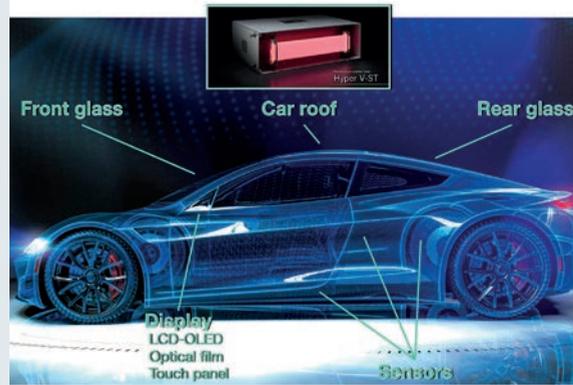
## EXTREMELY HIGH TEST ACCURACY AND TEST COVERAGE

**Typhoon HIL GmbH**  
Hall 2 | Stand 2403

HIL testing is the industry standard for the verification and validation of complex control systems from component to integration level. The highly dynamic operations of modern electrified drive trains demand the use of FPGA-based real-time platforms to achieve a high model reliability and test coverage. As a result, the preparation, operation and maintenance of the test systems are usually more complex, significantly more time-consuming and involve much more work. This doesn't have to be the case. The Typhoon HIL Test Platform (see image) provides extremely high test accuracy and extensive test coverage combined with rapid development and preparation of test systems. The company offers comprehensive, ISO26262-compliant turnkey test solutions for EV drive trains, on-board and stationary charging devices and BMS systems.

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RS volume sensor

## SURFACE TREATMENT, PHOTOBONDING AND GLAZING OF PLASTIC SURFACES

**Ushio Germany GmbH**  
Hall 5 | Stand 5320-11

When it comes to the automotive industry, Ushio offers solutions for a multitude of applications such as drying, curing, thermoforming and surface treatment. At the IZB, the company is focusing on applications that are based on its own Excimer radiation technology and facilitate new production processes, which in turn enable improved performance and sustainability. Such applications include glazing plastic surfaces to replace glass with plastic in components such as windows, car roofs and sensor covers while maintaining the scratch resistance of glass; activating and cleaning electrode surfaces to improve battery performance; photobonding of plastic, glass and silicon surfaces; a method to bond components without using heat or adhesives in order to create devices with superior optical performance; and activating and cleaning seals in fuel cells to improve the performance of the device.

## HIGH-PRECISION FLOW METER TECHNOLOGY

**VSE Volumenteknik GmbH**  
Hall 2 | Stand 2216

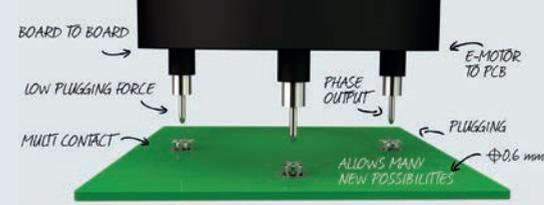
VSE Volumenteknik stands for high-precision flow meter technology. The product portfolio ranges from gear flow meters, pre-amplifiers, helical screw flow meters and turbine sensors, through electronic evaluation devices, right down to special solutions. Our RS helical screw flow meters impress with a low-resistance, high-precision, pulsation-free and measurement of the fluid with minimal shear, low pressure losses and highly accurate results. The latest product development is the IO.flow® Converter. The optimal solution for efficiently exchanging sensor data on the field level in industrial plants. The IO.flow® module allows for easy integration of all VSE flow meters (see image) into IO-Link systems. The result is a smart volume measuring device, which is either available as a complete system or can be integrated into existing systems as an upgrade/add-on.

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Sample plant from the inside

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**LF POWERBASKET**  
 Versatile applicable

- Multiple pluggable
- Lead-free
- High current capability
- Easy processing (SMT, THT, press-fit)
- Low insertion and extraction forces
- High position tolerance

The advantages of the LF PowerBasket SMD Powerelements

## PROGRESSIVE LASER PROCESSING FOR THE PRODUCTION OF BIPOLAR PLATES AND SHEET METAL ASSEMBLIES

**Weil Technology GmbH**  
 Hall 5 | Stand 5218

Weil Technology supports fuel cell applications with innovative system technology using laser welding and cutting for the production of metallic bipolar plates. The company's manufacturing solution for PEMFC, PEMEC, SOFC and SOEC relies on innovative laser scanner technology. The patent-pending **welding module** achieves process-reliable welding speeds of 1000 mm/s for high output in a compact installation space. The system (see image) is equipped with tool holders for interchangeable tools and offers high flexibility. For this purpose, Weil Technology has developed its own automated **clamping technology to control the welding process**. In the area of sheet metal assembly production, the exhibitor's flexible laser solutions ensure increased added value: variable system technology combines efficient laser welding and cutting of sheet metal assemblies with individual concepts and other manufacturing processes.

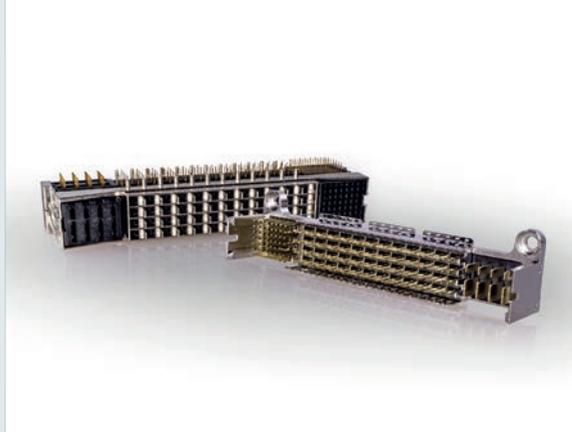
## PLUG INSTEAD OF SCREW – COMPLETELY LEAD-FREE

**Würth Elektronik ICS GmbH & Co. KG**  
 Hall 5 | Stand 5118

LF PowerBasket SMD Powerelements (see image) from Würth Elektronik ICS are designed to reduce the overhead required to assemble components. They can be quickly and economically processed in conventional SMT lines, are multi-pluggable and ideal for use in board-to-board connections. Compared to conventional systems, the special design of the contact blades significantly reduces the insertion and extraction forces. Due to the high position tolerance of up to 0.6 mm, several contacts can be plugged in at the same time. The high current contacts feature a high carrying capacity of up to 160 A at 20 °C. A special alloy makes it possible to use them at ambient temperatures of up to 150 °C. The Powerelements are totally lead-free and RoHS compliant – and thus unaffected by the exemption 6c of the RoHS Directive.

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*Yamaichi-Car-Computer-Connector (Y-CCC)*

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*Map in HD from ZENRIN*

## A CAR COMPUTING CONNECTOR FOR GROWING DATA STREAMS AND HIGH POWER PROFILES

**YAMAICHI ELECTRONICS Deutschland GmbH**  
Hall 1 | Stand 1327

In close cooperation with a large German OEM, Yamaichi Electronics has developed an interface that is above all equipped to deal with the significant growth of data streams within the vehicle and high power profiles. The interface is called the Y-CCC, which stands for **Yamaichi-Car-Computer-Connector** (see image). With this hybrid connector, it is possible to accommodate the requirements for power, signals and high-speed data in one receptacle size and transmit them accordingly. To meet the high demands of the automotive industry (with regard to vibration, shock etc.), the materials and the design were laid out and internally tested according to common automotive standards such as LV214 and VDA. The zinc die-cast connector housing can be taken as an example. It offers an optimal compromise in terms of electrical shielding properties (signal integrity) and the required vibration resistance.

## HIGH-RESOLUTION MAPS FOR AUTONOMOUS DRIVING

**ZENRIN EUROPE GmbH**  
Hall 5 | Stand 5320-08

Self-driving cars require high-definition (HD) maps for precise and safe positioning of the vehicle to navigate accurately down to the lane level. ZENRIN's contribution to the next generation of autonomous vehicles is to provide optimized and high-precision HD maps that comply with current traffic rules and laws and support safe, autonomous driving. ZENRIN is developing an efficient artificial intelligence-based data collection and maintenance system to continuously expand coverage for motorways and roads. The company's HD map (see image) enables accurate vehicle positioning, supports sensor recognition and provides predictive lane guidance for autonomous driving. In addition, ZENRIN's map in HD is already being used by some Japanese OEMs for autonomous driving on highways.

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