



automotive testing expo

★ EUROPE ★

JUNE 4, 5 & 6, 2024
MESSE STUTTGART, GERMANY

automotive
testing
technology international
awards

To be presented live
at Automotive Testing
Expo Europe 2024!
Details inside

SHOW PREVIEW

Learn about the latest industry developments,
explore new products and
meet new suppliers

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INTERNATIONAL
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400+
 INTERNATIONAL EXHIBITORS



Reasons to visit

1

Stay abreast of industry developments and explore cutting-edge test, evaluation and quality engineering technologies

2

400+ international exhibitors gathered in one venue – meet new and existing suppliers working across automotive testing, validation and development

3

Three halls of exhibits to help every vehicle and component manufacturer achieve high levels of fidelity and new test requirements

4

See the latest advances in simulation, AI, data analytics, HIL, durability testing, reliability analysis tools, electric and hybrid powertrain testing tech, crash testing, ADAS and AV testing, battery and range calculation and much more



The only show truly dedicated to the latest technologies and services within the world of automotive testing, evaluation and quality engineering – reduce development time, increase quality and decrease product failures at the testing community’s annual gathering in Stuttgart

WORDS BY CHARLOTTE IGGULDEN

Staying ahead of the curve – the critical mission that everyone faces. Automotive Testing Expo 2024 is the unrivaled opportunity to address groundbreaking innovations, meet industry experts and share insights with fellow professionals. Find out more over the next 18 pages.



5

New Automotive Testing Technology International Awards Forum, featuring panel discussions, fireside chats and an awards ceremony to recognize the industry’s achievements over the past 12 months

6

60+ speakers on the two Technology Presentation Stages, where leading industry experts will discuss topics at the heart of today’s automotive testing industry

7

Everything you need to develop a software-defined-vehicle: **150+** ADAS/AV exhibitors across Automotive Testing Expo and the adjoining ADAS & Autonomous Vehicle Technology Expo, which has its own conference*

8

Network with your community of test and evaluation engineers, R&D managers, technical directors, heads of research and chief engineers at the awards and opening day drinks party

*80+ speakers; conference rates apply





NEW HIGH-END DATALOGGER AND EMBEDDED DATA ACQUISITION SYSTEM

Dewesoft

Dewesoft will be at the expo to showcase its new Obsidian high-end datalogger and embedded data acquisition system, which can act like a standalone datalogger, a real-time control system and a signal conditioning front end. It can perform these tasks separately or simultaneously. High-performance multichannel signal amplifiers are available for voltage, current, IEPE, thermocouple, RTD, strain gauges and more. Obsidian can run for months completely unattended. It can be remotely monitored and controlled via ethernet, wi-fi or a smartphone

app, and is ideal for fleet applications and long-term vehicle tests of all types.

Dewesoft will also present its new DC-CT current transducer, ideal for EV and HEV tests on electromotors, inverters and charging systems. DC-CT provides all the advantages of a zero-flux current transducer but with lower power consumption and a more compact design. Dewesoft's sensor offers a broad measurement range, high bandwidth, excellent linearity, high accuracy and minimal temperature drift. The company's DAO instruments record analog sensor and digital data from CAN 2.0, CAN FD, FlexRay, GNSS, IMU sensors and video cameras.

Applications include combustion, EV/HEV, noise testing, EMC chamber, durability, vehicle dynamics and ADAS.

Booth 8514



IN-DUMMY DATA ACQUISITION

DTS

Converting to Slice6 in-dummy DAS significantly reduces test setup times and improves data quality and reliability. With today's higher channel counts and requirement for more crash test dummies per test, these efficiencies in time and money are proving more valuable than ever.

DTS looks forward to showing expo visitors its turnkey Slice6 integration kits, which support the full family of ATDs including THOR, Hybrid III, WorldSID, BioRID II and the Q-Series. Whether the requirement is for a full-service integration or an in-house retrofit, each in-dummy DAS kit is customized to support users' exact channel counts and configurations.

Booth 8402



MEASURE 500+ TEMPERATURE POINTS WITH ONE CABLE

CSM

Exact knowledge of thermal behavior and temperature curves is particularly vital for the development of high-performance high-voltage battery systems. The acquisition of temperatures between cells and other vital points throughout the battery must be done safely to protect personnel and equipment. Often this is done at several hundred points at the same time.

CSM will display its HV DTemp measurement system, which was developed for the accurate, digital and thus interference-free acquisition of up to 512 temperature measurement points via a single

cable connection to the HV DTemp-P central unit, without the need for further modification of the battery housing. The complete system, which is HV safe up to 1,000V DC, offers a measurement accuracy of $\pm 0.1^\circ\text{C}$ to $\pm 0.25^\circ\text{C}$, allowing for exact tracking of temperature curves.

The minute temperature sensors can be applied precisely yet flexibly using a variety of methods, including using an ultra-thin, flexible circuit that can be customized for the application. The compact, robust design enables measurements to be taken at all levels (cell, module, battery).

Booth 1414



**REGISTER NOW
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NEW CHILD PRESENCE DETECTION DUMMY

Messring

Messring will showcase a new child presence detection dummy designed to replicate a six-year-old child. Direct sensing will be mandatory from 2025 onward to achieve a maximum rating in the Euro NCAP child presence detection (CPD) category.

Equipped with metal- and electricity-free actuators, the dummy replicates a forward-facing six-year-old child seated on a booster seat with a three-point belt.

Whether asleep or awake, the dummy mimics limb movement patterns crucial for assessing the effectiveness of CPD systems. Its respiration

rate, matching that of a sleeping six-year-old at 18 breaths per minute, ensures precise evaluation under various conditions. Moreover, the dummy's ability to simulate natural movements such as head yawing and limb waving or kicking aligns with the NCAP protocol requirements.

To meet the protocol requirements, the brand-new dummy also integrates advanced functions such as randomized breathing and motion patterns and full compatibility with the battery-powered control and supply unit of the newborn CPD dummy.

Booth 8112





ENVIRONMENTALLY FRIENDLY REFRIGERATION

Peter Huber Kältemaschinenbau

The Unimotive GL temperature control system is designed for applications in the automotive industry and for direct operation with water-glycol. Typical applications are temperature simulations, material tests and temperature-dependent stress and load tests for automotive parts and functional components. The GL (Green Line) model series operates with carbon dioxide (a natural refrigerant) and offers a 100% environmentally friendly alternative to units with synthetic refrigerants.

Huber's heating and cooling systems operate in a climate-friendly way using CO₂ as a refrigerant. CO₂ is a colorless gas that liquefies under pressure. It has no ozone depletion potential (ODP=0) and minimal global warming potential (GWP=1). It occurs in very large quantities in nature and therefore does not have to be produced at great energy expense. Furthermore, it is non-flammable, non-toxic and chemically inactive. Find out more at the company's booth.

Booth 1049

INNOVATIVE KNOCK SENSOR CALIBRATION FOR F1

Spektra

Faced with stringent FIA regulations, one engine manufacturer wanted to gain a competitive edge by testing knock sensors early to meet future requirements. Spektra's customized solution, featuring the CS Q-Leap calibration system and the SE-09 high-frequency vibration exciter, exceeded expectations. Complying with FIA standards and the specifications set by Bosch, the system ensured accurate testing and calibration of knock sensors, crucial for engine performance.



This collaboration not only met immediate testing needs but also laid the groundwork for future sensor advancements. Find out more about the solution at Spektra's booth.

Booth 8010

HIGH-SPEED CAMERA SOLUTIONS FOR AUTOMOTIVE SAFETY TESTING

Photron

Photron will be showing its high-speed camera solutions for onboard and off-board safety testing at the expo.

New for 2024, the Photron Fastcam Mini R5 offers 4K resolution at 1,250fps and full HD (1080p) resolution at more than 5,000fps. Compact and rugged (rated to 100g), the Mini R5 camera is ideally suited for applications including sled, car-to-car, pedestrian impact, rollover, barrier and curtain airbag testing, due to its high image resolution, light sensitivity and image quality.

To complement the Fastcam Mini R5 (off-board), the Fastcam MH6 (now with the option for six full HD (1080p) camera heads or 12 miniature ST heads [SVGA]) enables



automotive test engineers to obtain critical camera views in confined areas of the vehicle, such as areas around the seat, the footwell or in the engine bay.

Finally, the Photron 6D-Marker is a motion analysis system approved by Euro NCAP for whiplash testing. Based on proprietary tracking marker technology and without the need for complex and time-consuming calibration, the 6D-Marker instantaneously tracks multiple positions on a vehicle and/or dummy to accurately report x, y, z, roll, pitch and yaw from a single camera view.

Booth 8502



NEW ADAS DYNAMOMETER

Rototest

Rototest will be at the expo to talk about and show its expanding range of powertrain dynamometer technology with models specifically designed for advanced driver assistance systems and university applications.

The new Energy a62 system is equipped to handle high dynamic braking for AEB testing – a typical ADAS application. It boasts a high transient torque and power capability, handling individual wheel torques up to 4,000Nm and system powers up to 1.2MW. The model features Rototest's floating

solution, minimizing infrastructural requirements by only needing a flat floor and power supply connection. It is also prepared for Rototest's Natural Steering solution.

The Energy u14 model is specifically designed for universities and educational establishments. Based on the same technology as its larger siblings, it is more accessible due to its limited number of options and functional modules, making it suitable for budget-constrained institutions.

Booth 1234



HIGH-VOLTAGE MEASUREMENT TECHNOLOGY

SAB Bröckskes

SAB Bröckskes and its technology partner CSM have introduced a measuring system for high-voltage e-mobility components. The system – consisting of sensor cable, plug, socket and measuring module – enables the use of uninsulated sensors up to 1,000V DC operating voltage. It is safety attested according to DIN EN 61010 and designed for mobile use in electric and hybrid vehicles as well as stationary installations to measure current, voltage and power directly in high-voltage lines. The equipment is equally suitable for measurements on electrified municipal vehicles and mobile forestry, agricultural and construction machinery.

SAB Bröckskes high-voltage sensor cables – such as HV two-channel analog measuring cables (90V), HV four-channel voltage measurement cables (90V) and four-channel voltage measurement cables (1,000V) – ensure a reliable measurement chain from sensor to data acquisition. These also enable common low-voltage sensors to be integrated into HV applications. CSM has cooperated with the German automotive electronics specialist Vector Informatik to develop a scalable e-mobility measurement system for vehicles and test benches that enables datalogging and measured value management in high-voltage and low-voltage environments. The decentralized measuring system enables, among other things, synchronous acquisition of measured data from measurement modules, vehicle buses and control units; direct measurement of current and voltage in high-voltage lines with up to 1MHz; and also multichannel real-time power analysis.

Booth 1312



AUTOMATION SOFTWARE

ZF Test Systems

ZF Test Systems will be at the expo to display Tescon, which provides a powerful configuration environment, customizable operation and visualization views, real-time framework and a data post-processing and analysis tool. The configuration environment enables users to easily integrate DUTs or other subsystems with its interface definitions for various protocols. Parameter management, data recording and monitoring definition and a graphical/tabular test program editor are also

included. The real-time, futureproof framework offers task execution frequency up to 10kHz and model and simulation support.

Tescon can be operated on single and distributed HW platforms. The system can perform on 19in PCs and embedded PCs.

Standardized and ready for use, Tescon is applicable for brake, powertrain R&D and battery test systems.

Booth 1542

DIGITAL INPUT AMPLIFIERS FOR VIBRATION TESTING

Acutronic Switzerland

At this year's expo, Acutronic will showcase its cutting-edge digital input amplifier and new shaker series. Unlike traditional analog systems, a digital input amplifier leverages digital communication for unparalleled clarity and precision, ensuring reliable command transmission and a smooth vibration profile.

Designed for scalability and flexibility, the digital input amplifier features multiple power modules, allowing users to tailor testing setups to their exact requirements. Integration of the

EtherCAT communication protocol enhances usability, enabling seamless communication between remote PCs, controllers and shakers. State-of-the-art SiC components ensure durability and efficiency, even with third-party shakers.

Paired with Acutronic's new iMPulse X-Wings35 shaker series, featuring robust construction and advanced features, this is a comprehensive configuration for all vibration testing needs.

Booth 1422

MEASUREMENT SOLUTIONS FOR PHYSICAL QUANTITIES

Texys Group

Texys Group designs, develops, manufactures and distributes embedded and laboratory solutions for the measurement of physical quantities (pressure, load, temperature, current, inertia), using various technologies such as infrared, fiber optics and wireless communication.

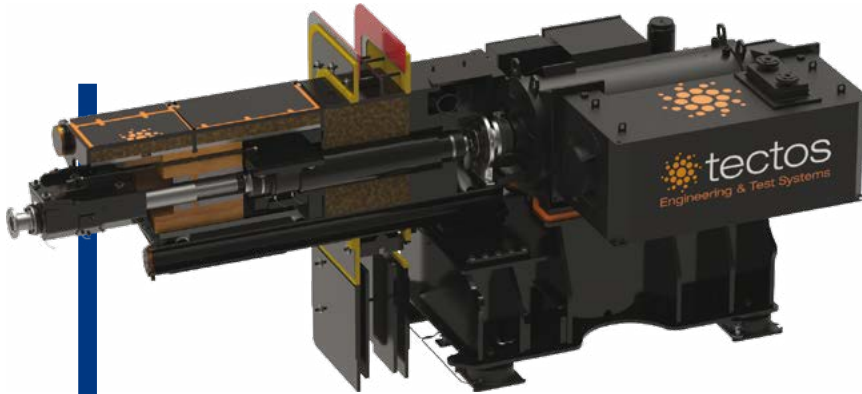
Texys subsidiary Optel-Texys specializes in advanced optical sensing solutions. At the expo this year, the company will highlight the OF-C2T,

an embedded tool for torque calculation combining fiber-optic tachometers and a dedicated proprietary algorithm.

It also offers fiber-optic angular velocity sensors, which have proved to be highly accurate tachometers to analyze complex rotating parts. The lightweight, embedded 152 G7-E was specifically developed for in-vehicle measurement on land, at sea or in the air.

Booth 8456





TECHNOLOGIES FOR SUSTAINABLE MOBILITY

Tectos

Tectos works with its customers on technologies for sustainable mobility. It focuses on analysis, research, development and production of customized solutions in NVH and related topics for the powertrains of electric,

hybrid and combustion engine test benches and vehicles.

The company will be showing a selection of its technologies in Stuttgart.

Booth 1318



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YEAR-ROUND WINTER TESTING

Arctic Falls

Arctic Falls has been at the forefront of tire and vehicle winter testing since it pioneered the discipline in 1985. Following the inception of its first indoor facility in Piteå in 2016, the company has reduced product development timelines by offering year-round winter testing, even during the summer months.

Representatives are looking forward to telling visitors about the company's forthcoming expansion, which will provide customers with extended capacity for winter testing. Arctic Falls' investment in year-round winter-climate testing is a crucial enabler of sustainability goals.

Booth 1260



TESTING FRAMES FOR E-MOBILITY

Durcrete

Durcrete, a cement-bound mineral casting specialist in mechanical engineering, will be exhibiting its mixture for machine beds and test frames, which it developed together with Dyckerhoff using specially treated aggregates. The ultra-high-performance Nanodur E80 concrete has a modulus of elasticity of over 80,000MPa and is therefore 50% more resistant to deformation and stiffer than the classic mineral casting formulations based on epoxy resin. It enables machine deformations to be significantly reduced and natural frequencies to be drastically increased.

The base frame forms the solid foundation of any measuring device. If vibrations need to be significantly dampened and high thermal inertia is required at the same time, solid-cast materials such as epoxy resin-bonded mineral casting or cement-bonded ultra-high-performance concrete (UHPC) are ideal for the

manufacture of machine beds. This new material doubles the rigidity of components while minimizing deformation and maximizing the natural frequency.

This new material enables manufacturers of e-mobility test benches to bring the natural frequencies of the test rigs beyond 25,000rpm, as seen in the drives of electric engines in cars.

Booth 8300



GLOBAL EV RANGE TEST DRIVER

Stähle

Stähle's state-of-the-art robots enable a driving cycle to be executed optimally and repeated with the same performance, again and again, whatever the day, the environment or the vehicle. The performances measured according to the regulations of SAE J2951 are delivered as calculated values for energy rating and driving index. This makes verification traceable and, in certain regions, driving robots are part of the homologation process.

Electric vehicles have specific requirements, including increased pedal sensitivity and higher dynamics,

coupled with hysteresis for energy recovery. The controller designed by Stähle meets each of these expectations. It offers functionality in repeating cycles, making it possible to repeat different cycles in a loop to test the vehicle under all its states of battery charge or temperature over long periods.

The integration of the Hioki power analyzer and the ability to generate full test reports extends the scope of application and usability in testing. Find out more at the expo.

Booth 1314



TESTING TECHNOLOGY FOR MODERN DRIVES

KS Engineers

KS Engineers will present its testing technology for modern drive concepts. Tech on show will include battery systems, fuel cells, H₂ and e-fuels, as well as the latest add-on to the KS-R2R vehicle-in-the-loop test bench, which enables the testing of ADAS/AD functions with the entire vehicle in the loop.

This combines environmental simulation with a range of stimulation units for the various active/passive sensors used in modern ADAS. The state-of-the-art KS road-to-rig technology and the operation of the vehicle under climatic conditions from -30°C to +50°C enable realistic,

reproducible and safe testing of various ADAS functions.

Combined with a GNSS simulator and an in-house-developed charging unit that supports all charging standards, it enables comprehensive tests in the field of e-mobility, such as the planning of charging stops under different load, temperature and road conditions.

The KS-R2R is accredited in line with EN ISO/IEC 17025:2017 for power measurement at the wheel hub and enables the determination of EV power according to standards such as UN GTR 21 and SAE J2908.

Booth 1256



POWER ELECTRONICS AND REAL FUELS TESTING

Sonplas

With over 30 years' experience in assembly and testing technology, Sonplas manufactures a wide range of solutions for the automotive industry.

Its modular end-of-line (EOL) testing systems for products in power electronics – such as inverters, chargers and DC-DC converters – are ideal for customized quality control. They enable flexible adaptation to various product types by using base machines and specifically selectable test adapters, enabling efficient and cost-effective testing of product characteristics including leaks, flashing of calibration data, operating systems and communication via interfaces such as CAN or ethernet. Critical parameters such as currents, powers and efficiencies are measured and the rotational speed is captured.

Sonplas also offers solutions for component testing with hydrogen, methanol, e-fuels, gasoline, diesel, alternative fuels and more.

The company's test benches are tailored to customer needs in functional and durability testing. Its in-house fluid laboratory includes a hydrogen test center and various other test benches to analyze the function and durability of components.

The IAV Cross Injection Analyzer family, which enables determination of flow characteristics, completes the portfolio. Find out more at the Sonplas booth.

Booth 1668

ACCURATE NVH MEASUREMENT

PCB Piezotronics

Long-standing expo exhibitor PCB Piezotronics designs and manufactures sensors for various types of automotive testing. Its latest models include the 357A67, a high-temperature charge tri-axial accelerometer; the 356A19, an ICP tri-axial accelerometer; and the 378A08, a low-noise microphone.

The 357A67 high-temperature (up to 260°C), low-mass/size, case-isolated, tri-axial accelerometer offers a simplified cable solution. All three charge outputs are transmitted via one low-noise, high-temperature cable, reducing setup time, cabling and overall sensor size and enabling installation in tight spaces.

The 356A19 ICP tri-axial accelerometer allows for accurate vibration measurements across a broad frequency range from 0.6Hz to 15kHz, ($\pm 10\%$) at up to $\pm 500g$ (sensitivity 10mV/g). The

small size and broad frequency range make the 356A19 ideal for use in automotive ICE/EV powertrain development and vehicle systems NVH.

The 378A08 low-noise pre-polarized microphone features a 22dBA noise floor and sensitivity of 50mV/Pa. This 6mm free-field microphone is suitable for NVH, electric automobile components and end-of-line testing. Find out more at the company's booth.

Booth 1548



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DOUBLE ACTUATOR MOBILE TEST RIG

Magna Powertrain Engineering Center Steyr

Magna Powertrain Engineering Center Steyr will showcase a double actuator mobile test rig for e-drives at the expo. The wide application spectrum provides fast and adaptive testing options on, for example, e-drive housings and LV and HV connectors with static and dynamic loads.

Alexander Luger, sales manager of engineering services, says, "Besides showcasing this specific test bench, we would like to present our state-of-the-art testing infrastructure, featuring fully

automated engine and powertrain test benches, a fatigue laboratory and a 4WD chassis dynamometer for functional, NVH and emissions optimizations for complete vehicles. On our 40ha on-site proving ground we can cover on- and off-road overall vehicle testing scopes and up to 450 scenarios in terms of ADAS and autonomous driving."

The proving ground has recently been modernized in cooperation with Digitrans. Highlights are the new rain simulation plant that makes it possible to test vehicles in

different weather conditions, as well as the City Zone and the digital twin of the test track.

Johann Deinhofer, expert engineer for vehicle testing/proving ground, explains in more detail, "The digital twin of our proving ground offers a comprehensive solution for virtual testing and validation of test maneuvers. It enables the reproduction of complex traffic scenarios and real recorded test maneuvers."

Booth 1110





INCREASED TEST LAB PRODUCTIVITY

Moog

Moog has expanded its hydraulic component range with the Modular Hydraulic Service Manifold, available in 400- or 1,000-liter sizes. The manifold can be customized with options such as a safety manifold, pilot stage and additional station blocks based on test requirements.

The company has also updated the design of its high-performance EM/EP motion systems for test applications. These electromechanical and electropneumatic motion systems work seamlessly with the Moog test software

and hardware portfolio. Standard systems are available for a wide variety of tests. When higher-performance or specific needs arise, Moog can provide tailored motion systems.

The New Generation Test Controller is now available for small- and large-channel automotive test applications. Moog's Test Software Suite is equipped with powerful control loop technologies, enabling precise control of test specimens. Customers can use the New



Generation Test Controller hardware with Moog's proven Software Suite for faster, more efficient testing with advanced features.

Moog has made numerous improvements to its Moog Test Software Suite, including block-based recording, support for new hardware devices, enhanced signal monitoring in vibration and improved complex test monitoring with sine sweep software.

The latest test controller hardware and software will be at the expo.

Booth 8132



AD, ADAS, AV, CYBERSECURITY AND CONNECTIVITY TESTING

AstaZero / Research Institutes of Sweden (RISE)

AstaZero will showcase its testing capabilities within cybersecurity, ADAS, connectivity and automated vehicles at the expo.

Testing can be done either by the client or by AstaZero test engineers, who offer services ranging from testing on the proving ground to integrated teams of engineers working full time for customers, embedded in development projects.

The testing can also be linked to various test environments such as EMC, powertrain testing at SEEL or cybersecurity testing at the Cyber Range in uninterrupted test chains

for shorter time-to-market and more efficient R&D support.

AstaZero can also support simulation-based R&D processes with realistic models of the proving ground and integrated test scenarios for physical and virtual testing.

There is also a research department focusing on novel testing technologies. AstaZero can be part of joint research projects, both on a national research funding level as well as, for example, the Horizon Europe level.

Booth 8028

CYBERSECURITY FOR V2G

UTAC



UTAC offers a range of penetration tests to ensure customers will be safe from hackers and help them understand their products' exploitation risks and validate their security measures. Testing can be carried out on the whole vehicle, equipment and now V2G – vehicle to grid. The company can help with various scenarios such as a hacker trying to access a vehicle or driver's bank account details while they are connected to an EV charging station. Find out more at the UTAC booth.

Booth 1178

NEW TECH FOR ADAS AND VEHICLE DYNAMICS TESTING



OxTS

OxTS has recently updated its RT-Range solution with several features to make configuration and testing simpler. Customers can use more of the company's GNSS/INS devices in hunter and target vehicles, giving them more flexibility with their ADAS setups (and budgets).

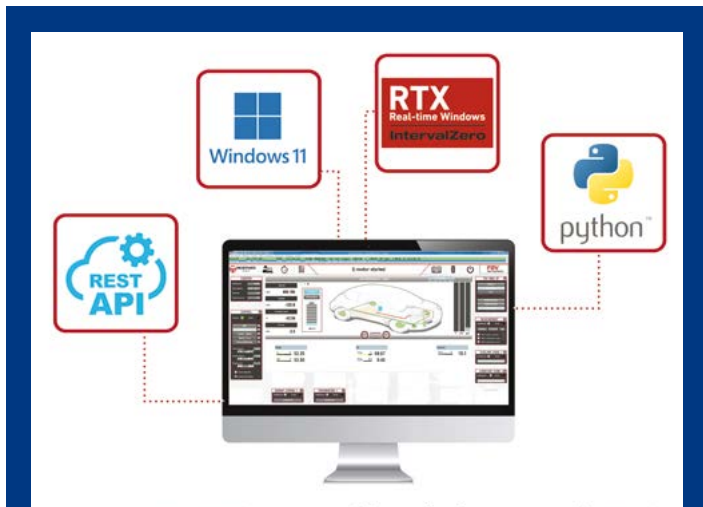
The OxTS GAD Interface provides the ability to feed external sensor data into a GNSS/INS to improve

position accuracy – ideal for open-road tests that travel through GNSS-poor environments.

Also debuted is its latest GNSS/INS, the RT3000 v4. Using the latest IMU10 technology, the RT3000 v4 is a commercially viable alternative to FOG navigation systems, providing centimeter-level accuracy in the toughest environments.

Find out more in Stuttgart at the company's booth.

Booth 8345



E-MOBILITY TEST AUTOMATION SYSTEM

FEV Test Systems

➤ A new version of Morphee, Morphee 4, the automation system for e-mobility testing, will be unveiled at this year's expo. This latest version offers new levels of adaptability and efficiency in automation. Engineered with native Python language support, Morphee allows developers to easily create complex automated testing procedures. Compatibility with Windows 11 ensures a seamless experience across the latest PC platforms. Workstations featuring the very latest chipset technology enable the system to achieve excellent performance.

Morphee 4's integration of the robust RTX4 real-time operating system kernel means that even the most resource-intensive tasks are executed with precision. This enables users to push the boundaries of automation, achieving faster and more reliable results. The introduction of the Morphee Rest API transforms system connectivity, opening up new possibilities for remote monitoring, control and compliance management.

With these advanced features, Morphee 4 offers an open system that is versatile and user friendly.

Booth 1218

BIDIRECTIONAL TEST POWER SUPPLY WITH 1,500V DC

Gustav Klein

➤ There is an increasing need for testing with higher voltages. This affects internal components such as drivetrains, inverters, charging boosters, batteries and fuel cells to the same extent as the charging infrastructure.

Gustav Klein's I-TS-3872 Infeed Test System is a scalable, bidirectional test power supply available with continuous power ratings from 300kW to 1,200kW (up to 1,380kW peak power). Thanks to the three-level technology, it offers an adjustable voltage range of 10-1,500V with a center tap. The current range of the I-TS-3,872 is $\pm 1,000A$ or $\pm 2,000A$.

As standard, the power supply has protection class IP54 with direct water cooling of the components and a small



footprint. Decoupling the internal cooling circuit from the external cooling water circuit using water to water heat exchangers protects the system components, increases reliability and reduces the demands on the external cooling water circuit.

The test power supply has a high safety level with Performance Level PLD (ISO 13849-1/EN60204-1), optionally PLe, as well as an integrated control concept with various interfaces.

Booth 1402

MASS PROPERTY MEASUREMENTS

Resonic

➤ Mass properties (mass, center of gravity, moments/products of inertia) are fundamental parameters for predicting and characterizing the behavior of moving objects and are therefore of great importance in automotive engineering, testing and benchmarking.

Resonic's air bearing pendulum is a highly accurate system that works with various platforms and efficiently measures components and subassemblies up to 80kg.

Resonic F is an innovative solution that measures full mass properties in a single, upright test object position with minimal platform movements.

It is ideal for subassemblies and complete vehicles and is compatible with a specific vehicle adapter.

Due to the intuitive Resonic software, operating the systems requires no expert knowledge –

human errors are unlikely and can easily be detected through various quality indicators in the software. Find out more at Resonic's booth.

Booth 8636



HAPTIC TESTING, ACOUSTIC ANALYSIS AND MORE

Göpel Electronic

➤ Göpel Electronic will provide a multifunctional demonstration that will combine low-voltage differential signaling (LVDS) test equipment, haptic testing, acoustic analysis, robotics and industrial image processing.

The Video Dragon with intuitive Dragon Suite software will be exhibited as a modular solution demonstrating the

ability to test camera and display applications. As a test tool for LVDS applications, Video Dragon supports the GMSL, FPD-Link and APIX video transmission standards, including support for sideband protocols.

Series 62 multibus communication controllers will also be demonstrated, primarily used for residual bus

simulations and testing and programming control units of any complexity. They support a variety of bus interfaces, including CAN, CAN-FD, LIN, FlexRay and automotive ethernet. The residual bus configuration tool Net2Run is used for the convenient generation of residual bus simulations of heterogeneous networks.

Company representatives will also discuss the availability of the 10Base-T1S ethernet multidrop topology through the Series 62 communication controllers. This technology is being introduced in auto electronics and will be demoed using Göpel's Series 62 controller.

Booth 1355

REMOTE CONTROLLER FOR ADAS TESTING

AB Dynamics

➤ AB Dynamics' new GTC Remote is a handheld device that improves the efficiency of ADAS analysis by enabling test operators to control ADAS platforms without the need for a static base station.

The GTC Remote is ideal for vulnerable road user ADAS tests where only one target is required. It streamlines test setup, enabling engineers to spend more track time testing. It consolidates typical static base station components into a handheld unit, and its portability, combined with simplified software workflows, significantly reduces the time required to get test scenarios up and running.

"Many ADAS testing scenarios typically involve just a single ADAS target," explains Jack Hines,



a project engineer at AB Dynamics. "Using the new GTC Remote from AB Dynamics, test technicians can set up these relatively simple scenarios more quickly to optimize track time."

The remote incorporates a user-focused design, a ruggedized weight-balanced housing that integrates a seven-inch color touchscreen, a powerful processor and a long-lasting battery. It features interchangeable radios for use with AB Dynamics' radio options and other communication infrastructure. It also includes AB Dynamics' industry-leading safety system, which provides failsafe communication monitoring. Find out more about AB Dynamics' solutions from company representatives at the expo.

Booth 8634



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LAMBDA SENSOR FAULT SIMULATOR

IAV

➤ IAV has updated its lambda sensor fault simulator with a new hardware design and inner workings that will enable future lambda sensors and control units to be added via software updates. IAV Primero 2.0 can be used to manipulate the OSIC (Oxygen Sensor ASIC) lambda sensor driver module from Bosch. Furthermore, in addition to the more robust hardware, the developers have made the IAV Primero 2.0 much easier to use.

Many authorities accept IAV Primero as a fault simulation tool in homologation, as signal manipulation takes place without active ECU intervention. IAV Primero is a genuine all-rounder in the entire vehicle development process: from function development and calibration on the test vehicle through to demonstration to the authorities, testing is completely automated and documented. The fault simulator generates reproducible results of consistent quality without any additional documentation effort, regardless of who is doing the testing. Find out more at IAV's booth.

Booth 1404



NEW AUTOMOTIVE COMPONENT TESTING PLATFORM

Sinotest

➤ Sinotest has developed an innovative automotive component testing platform using state-of-the-art technology to enhance the performance and reliability of automotive components.

Equipped with advanced controllers, the platform enables precise control and data processing. Through CAN communication technology, it efficiently communicates with ECUs in vehicles, ensuring accurate data transmission and rapid response. It also incorporates the AK protocol to simulate vehicle behavior under different dynamic



conditions, enhancing the authenticity and accuracy of testing. Sinotest's new-generation automotive component testing platform comprises three mature products: the Electronic Brake System Performance Test Bench, Durability Test Bench and ECAS Air Supply Unit Performance Test Bench.

Booth 8604

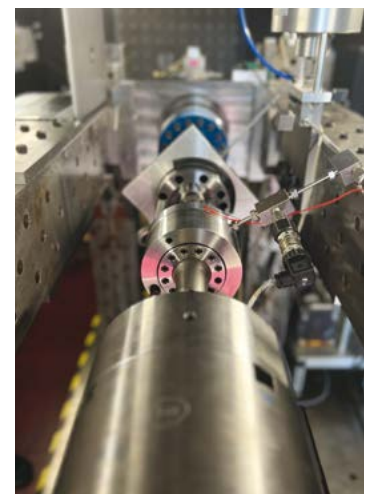
TESTING TECHNOLOGY MEETS HYDROGEN

SincoTec

➤ SincoTec will present its newly developed, patent-pending hydrogen test cell in Stuttgart. The test cell enables tests in hydrogen atmospheres of up to 1,000 bar without any moving seals. This has advantages in terms of friction and wear, control accuracy and possible test frequency.

The company's wide range of testing applications includes pipelines/crack propagation up to 200 bar; tank materials up to 1,000 bar; quasi-static tear tests for gas (petrol) station technology at -60°C; materials for fuel cells under humidity; and materials for hydrogen burners at up to 900°C.

Booth 8114



TURNKEY DAQ SOLUTIONS FOR VEHICLE DYNAMICS AND IN-CABIN ACOUSTICS

Axiometrix Solutions

➤ Axiometrix Solutions offers advanced test solutions for road tests and test bench evaluations of electric vehicles and components. The company's test solutions offer precision at every step, helping to validate and optimize prototypes, facilitate process monitoring and give insights from measurement data, thereby accelerating project timelines and improving product quality. The imc WFT-Cx wheel force transducer and GRAS microphones provide excellent accuracy and meet complex testing needs.

The imc WFT-Cx wheel force transducer offers precise, robust, easy handling for vehicle dynamics testing, wheel force and torque measurement, mobile load data acquisition (RLDA) and torque

vectoring tests. Its seamless integration into a modular DAQ system, alongside other sensors, ensures comprehensive and synchronized data recording, simplifying test setups.

Gras measurement microphones are useful for a wide range of acoustic testing in EV, HEV and ICE vehicles. From standardized tests to in-cabin noise assessments and braking noise evaluations, these microphones ensure superior sound quality analysis. The Gras 46BL-1 ¼ microphone offers industry-leading low self-noise and is endorsed by the Audio Engineering Society (AES).

See these solutions for yourself at Axiometrix Solutions' booth.

Booth 1446



AI-POWERED WEARABLE FOR REAL-TIME MONITORING OF CONNECTOR ASSEMBLY

iNDTact

➤ iNDTact will be displaying its wearable smartClick system in Stuttgart. smartClick improves the efficiency and quality of manual assembly procedures, for example the connector assembly in automobile production lines. One of the largest US car manufacturers estimates that the number of vehicles that do not pass the end-of-line tests at the first attempt can be halved by using smartClick. This leads to significant cost savings due to less reworking efforts.

The system uses iNDTact's sensor technology and proven signal processing platform in combination with the latest AI-powered analytics to recognize the correct latching of connectors. If required, the information obtained can also be transmitted to central OT/IT systems. It is also possible to use the data to analyze frequency and sequency at a station.

Typically, workers wear smartClick under their normal work gloves – any type of glove can be used. To ensure a comfortable fit, the system is available in different sizes and the low weight makes it easy to use all day long.

Booth 1014

NEW DEVELOPMENTS IN FLOW METERING TECHNOLOGY

VSE

➤ VSE will present its latest developments in the field of flow metering technology, including the Cal.flow portable calibration system and the Log.flow datalogging system. These USB devices, including the associated PC software, expand the traditional product range of flow metering technology and evaluation electronics. Also on show will be the IO.flow converter, which greatly improves the integration of flow meters in Industry 4.0 applications.

The new Cal.flow calibration system enables precise flow calibration and is aimed at users who want to carry out regular, independent checks of their measuring devices. Thanks to its portability and ease of use, Cal.flow offers a flexible solution for direct on-site calibration. This

makes it attractive for companies with their own test benches, as they can ensure the functionality and accuracy of their devices without the need for external services.

The Log.flow system is an advanced solution for the detailed recording and visualization of measurement data. In combination with the EasyGraph software, it enables comprehensive data analysis.

Log.flow is ideal for use in the field to detect and document dynamic flow phenomena, making it much easier to diagnose and analyze systems.

Booth 1502



WIRING HARNESS INNOVATIONS

Wiretronic

➤ Wiretronic develops and produces tools and measurement systems as well as wire harnesses in small series, for automotive and aviation customers. Its customers are automotive and aviation OEMs, mainly in Europe but also in the US and Asia.

The company's engineering helps customers design electronic distribution systems and provides an advanced fault tracing system for wires, using time domain reflection – the Smart-R product. The company will showcase and demonstrate several innovations at the expo.

Wirevision is an advanced AI-based system for identifying spare parts and components. For



example, by taking a picture of a connector and using AI to identify it, it can provide the part number with the right repair instructions and tools.

The company will also exhibit Smart-R, its electrical wiring faults localization unit. Pinpointing permanent and fugitive electrical defects from a distance is essential to reduce troubleshooting and overall downtime.

In addition, Wiretronic will demonstrate its maintenance and repair kit for wiring harnesses and connectors, based on its ultra-precise design tools. The company's connector pin terminal extractors ensure a smooth and fast operation.

Booth 1112



DATA ANALYTICS AND AI FOR IMPROVED PRODUCT QUALITY

Werum Software & Systems

A leading provider of IT solutions in the field of test data management, Werum Software & Systems has integrated data analytics and AI into its software to provide powerful new functions for product quality validation.

Werum's HyperTest Boost test data management platform supports seamless integration with JupyterLab, which enables data analysts to carry out in-depth analyses of the measurement data. The results are returned to HyperTest Boost to manage them in the context of the test.

The company also uses AI approaches based on large language

models and deep neural networks, for example, to recognize patterns and anomalies in data sets, support optical data capture, extract data from test reports or find test data using natural language.

To effectively use the billions of measurement data available to improve product quality, Werum has designed a data analytics integration solution that overcomes departmental boundaries, conflates data silos and offers a fully automated workflow for data processing. Find out more about Werum's systems at its booth.

Booth 1322

SHOCK TEST CHAMBER WITH FIXED TEST CHAMBER

ThermoTEC

To ensure feasibility of shock tests with very heavy test specimens, ThermoTEC has an energy-efficient single-chamber shock chamber in its TSA series (air-to-air) for three-zone shock tests with a fixed test chamber without mechanical impact (vibration, acceleration) on test specimens. This reduces possible sources of error during the test and makes external control and supply much easier.

The temperature shock test chambers in the TSA series can be used to perform two- and three-zone shock tests. The temperature range extends from -70°C to +200°C and, depending on the model, up to +300°C (optional). Thanks to the new eco mode (AI control), the system heats or cools optimally and therefore has a high energy efficiency.

Booth 1384



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DEVELOPMENT AND TESTING OF EV CONTROLS

Speedgoat

Speedgoat and MathWorks have developed a system that simplifies the development and testing of EV motor, powertrain, battery and fuel cell controls. Engineers can start with a model-based design of their EV component and its controllers in Simulink and prototype their control designs on a Speedgoat real-time test system. They can stay in the same environment and test their embedded controllers using an automated hardware-in-the-loop (HIL) testing solution. Simulink and Speedgoat test



systems foster requirements-based testing and allow compliance with any certification workflow for validating functions and safety, such as ISO 26262 and IEC 61508.

Visit Speedgoat's booth to check out the BMS HIL demo showcasing testing BMS control algorithms, which include state of charge (SOC) and state of health (SOH) estimation under normal and fault

conditions. Also see the EV powertrain HIL demo and a PMSM demo showcasing the design and testing of motor controls.

Booth 1752



TECHNOLOGIES TO STREAMLINE TESTING

Lauda Dr R Wobser

Lauda will exhibit state-of-the-art testing solutions designed to enhance efficiency in testbed facilities. The company will showcase its integral process thermostat for temperature control in testing environments, accompanied by two advanced accessories designed for minimal footprint, maximum output and automation: the MID 80 flow control unit and the FD 50 filling and drainage unit.

The MID 80 and FD 50 are engineered to be stackable, enabling a minimal footprint. For facilities looking to upgrade, Lauda provides a retrofitting kit so that existing device owners can easily stack these units.

The Lauda Filling and Draining Unit (FD 50) drastically reduces the time between battery tests thanks to its automated filling and draining system. This speeds up the test cycle, reduces downtime and increases efficiency while providing a safer and more consistent process – leading to cost savings and higher output.

Booth 1730

RELIABLE COUPLINGS AND TORQUE LIMITERS FOR HIGH-SPEED APPLICATIONS

Mayr Power Transmission

Drive axles in the high speed range require reliable couplings and torque limiters for overload protection and to compensate for shaft misalignment. At the expo, Mayr Power Transmission will be showing its new developments for test bench technology.

Based on the proven ROBA-DS steel multiplate clutch, Mayr has developed a weight-optimized version made of aluminum with the same power density. This is customized for high-speed applications, for example in the field of test bench technology.

Shaft couplings are a crucial accessory in test benches because they minimize the



disturbance variables acting on the measuring flange. These so-called parasitic forces are often caused by misalignment in the drivetrain. Offsets between the input and output sides occur in almost all applications. Shaft couplings are therefore used together with the measuring flange.

However, reliable overload protection at high speeds is also crucial for high-speed applications. If the torque in a test bench exceeds the limit value set on the torque limiter, the clutch disengages and separates the input and output within fractions of a second. At worst, the measuring shaft must be recalibrated after an overload but the safety clutch reliably prevents expensive damage to the drivetrain or test specimen. The EAS-HSE safety clutches from Mayr Power Transmission transmit torques backlash-free and with high torsional rigidity. They are also compact and have a low mass moment of inertia with a high power density.

Booth 8126



**REGISTER NOW
FOR FREE ENTRY!**

CALIBRATION AND EVALUATION TOOL FOR PEDESTRIAN PROTECTION TESTS

measX

measX will present a specialized software solution, X-Pedpro, for pedestrian protection tests and calibration of test specimens (ATDs). It bundles all pedestrian protection evaluations contained in the Crash and X-Crash ATD software systems for passive safety and the calibration of ATDs.

The ATDs currently supported by X-Pedpro are Free Motion Headform, Adult Headform 4.8kg, Adult Headform 4.5kg, Child/Small Adult Headform 3.5kg, Child Headform 2.5kg, JASIC Headforms, Upper Legform, Flex-PLI and aPLI, AIS 100, FMVSS 201, FMVSS 202a, KMVSS 102, TRIAS 63, UN-R12, UN-R17, UN-R21, UN-R44



and UN-R127, plus ANCAP, Bharat NVSAP, C-NCAP, Euro NCAP and Latin NCAP are all supported.

Together with X-Crash (passive safety) and X-Zero (active safety), X-Pedpro supports the demands and developments of the vehicle market.

In addition to software for automotive safety, measX will showcase its recent solutions for customer-specific test evaluation in other industries as well as customized test systems and solutions for test automation. The company's solutions use NI LabView, NI DASyLab, NI DIAdem, X-Frame, Beckhoff and other standard software and hardware systems.

Booth 1536

LASER VIBROMETRY FOR NON-CONTACT MEASUREMENT

Optomet

Optomet will be at the expo showcasing its in-house-developed and manufactured range of digital laser-Doppler vibrometers for precise non-contact measurement of vibrations at single points and across entire surfaces. Its modular systems are ideal for a variety of applications ranging from highly reflective and low-reflective materials to microstructures and entire buildings.

The Smart series offers seamless synchronization and excellent quality and precision, enabling users to capture vibrations with unprecedented accuracy. The system is equipped with a 7in touch display coupled with intuitive software, extensive connectivity options and advanced data acquisition functions.

Booth 1456





INTELLIGENT TEST BENCH SOLUTION

Instron

➤ Instron cooperates closely with customers to further the development of its products. This collaboration has resulted in the Tower ml, an intelligent solution for test benches that enables the simultaneous operation of up to four control channels and provides outstanding functionality and performance.

The Tower ml can accommodate two processor control modules (PCMs). For a two-channel solution, an EtherCAT-PCM can also be installed if required. In addition to a variety of interfaces (hydraulic connection units, bearing oil pumps, servo valves, analog and digital inputs and outputs, measuring amplifiers, etc), it provides the necessary computing power.

With the feature-rich multichannel remote control, manual settings can be made for various channels, making it easier to set up a test bench and enabling more efficient work processes.

Individual connections and terminals for analog or digital inputs and outputs can be flexibly installed and provided at the test setup or directly at the workstation.

Thanks to its compact design, the Tower ml is particularly suitable for a laboratory environment with limited space and can be used at different workstations in the lab. Find out more at the Instron booth.

Booth 8530



STRAIN MEASUREMENT IN HIGH-PRESSURE HYDROGEN GAS ENVIRONMENTS

Kyowa Electronic Instruments

➤ The movement toward the realization of a hydrogen energy society is accelerating, including fuel cell vehicles and the construction of hydrogen production and refilling stations. As hydrogen energy is stored and used under high pressure (tens to hundreds of MPa), research and development of hydrogen embrittlement of the metals used is required, and strain measurement is indispensable. Conventional strain gauges are affected by hydrogen penetration into the metal resistive foil, making stable strain measurement

impossible because the electrical resistance changes under no load in a high-pressure gas environment. Kyowa's KfV strain gauge is a user-friendly product as it is installed in the same way as general-purpose foil strain gauges.

As a result of Kyowa's research and development programs, it can measure strain even in high-pressure hydrogen gas environments, making it possible to directly measure and monitor the stress of a test piece. Find out more at the company's booth.

Booth 1500

HIGH-PERFORMANCE DATALOGGER

Ipetronik

➤ Thanks to its Intel i7-9850HE processor, Ipetronik's Ethos 2 has a performance index of 11.572, meaning the continuously increasing measurement requirements for CAN FD, LIN and ethernet networks can be carried out quickly and effectively. Two hot-plug slots for removable storage drives of up to 2TB ensure

maximum write speed and data security at the same time.

With its 28 CAN FD inputs, eight 1GB ethernet interfaces, an SFP+ interface and eight LIN and two FlexRay inputs, the Ethos 2 meets the ever-growing requirements in vehicle development. It is particularly suited for the validation of large vehicle network

architectures during fleet testing and test drives, making it a powerful mobile development and validation tool for vehicle network analysis and challenging ADAS applications.

The Ethos 2 user interface has been tested and optimized to fulfill future measurement tasks. When Ethos 2 is combined with the ingest station, the data can be very quickly transferred to the local network infrastructure.

Visitors to the show can find out more about how this keeps the availability of development vehicles high and their downtime low during expensive tests and gives the development team direct access to the measurement data for quick and efficient analyses.

Booth 1212



COMBINED VIBRATION AND ENVIRONMENTAL TEST SYSTEM

Labtone Test Equipment

➤ Combined vibration and environmental testing is playing an increasingly important role in the automotive industry. Simulating the vehicle vibration environment in transportation and actual work to identify design defects and improve vehicle durability and reliability is vital for quality assurance in different stages of development.

The combined environmental test system from Labtone Test Equipment comprises a test chamber and vibration test system. It applies different temperatures (high/low temperature), humidity, vibration (sine/random) and electrical



stress to the sample for a pre-set time to carry out the 'environmental simulation' of temperature, humidity and vibration. Compared with the single-factor test, this method can more truly simulate the transportation and use environment of the product. It is an important way of evaluating the adaptability of products to environmental changes, revealing product defects and assisting in the development, identification and mass production of new products.

See how Labtone meets this testing need at the company's booth in Stuttgart.

Booth 1448



REAL-TIME CHALLENGES FOR POWER

Dewetron

The demand for so-called 'real-time' power analyzers for electrical powertrain testing has increased in recent years. Use cases include HIL testing and the development of advanced inverter control strategies. The term 'real-time' is standardized and means that the computing system ensures the results are available within a specified timeframe.

Transferring this definition to the practical use of power analyzers results in the demand for a low I/O delay between the measurement signal input and the calculated data output to a testbed controller. The typical definition for a real-time-capable system is an I/O latency <1ms but in the context of power analyzers a latency <10ms is normally accepted.

The challenge is that normal operating systems do not support such small latencies but can at best reach 200ms. Real-time-capable power analyzers are normally realized in two ways: computing the power values on the data acquisition board by using performant FPGAs, and using an operating system that provides a real-time kernel for the power calculation.

Dewetron follows the second approach and equips its real-time-capable power analyzers with a real-time operating system

and a real-time power application software. The Dewetron solution outputs its data with a typical delay of 2ms (max. 4ms) via ethernet UDP or EtherCAT. No dedicated real-time data acquisition hardware is required, with the additional benefit that existing power analyzers can be easily upgraded via software.

The real-time power analyzer is not the only innovation from Dewetron. A new power analyzer for EOL and production testbeds is under development, as well as a current input that will futureproof power analyzers for upcoming challenges in inverter design.

Booth 8332



ADAS TESTING FACILITY

ATP Automotive Testing Papenburg

ATP Automotive Testing Papenburg, an accredited testing laboratory and designated technical service, operates a manufacturer-independent proving ground for passenger and commercial vehicles in northwest Germany. The facility offers excellent conditions for comprehensive vehicle testing, with access to test tracks and fully equipped workshops. National and international automotive customers benefit from these services, receiving full project support on request from the qualified engineering team.

In collaboration with its holding company Akkodis, ATP also offers testing facilities for advanced driver assistance systems. Using

the available Euro NCAP vulnerable road user targets, ADAS protection assessments can be conducted in accordance with recognized testing procedures as outlined in current Euro NCAP protocols and general safety regulations.

From pedestrian, bicycle and motorcyclist detection for assistance systems to complex intersection scenarios, various configurations can be tested in ATP's Vehicle Dynamics Area, which comprises a 300m-diameter circular plate, an adjacent trapezoidal area and tangential access points. Lane support systems, including solid and dashed lines, and road edge scenarios, are also available.

Booth 8314

MEASUREMENT TECHNOLOGIES, SIMULATION AND SAFETY

AVL

AVL will have a prominent presence across two booths. At Booth 1530, visitors can see cutting-edge measurement technologies in the latest-generation testing solutions, and methodologies spanning from battery to powertrain to complete vehicle.

The new PerformanceLine solutions, tailored for battery and powertrain testing, will be on show. In addition, AVL experts will spotlight innovative test solutions for hydrogen ICEs alongside software for data analysis and electrical/electronic (E/E) integration, complementing the company's offerings in BEV technologies.

The outdoor exhibition will feature technologies for test run optimization, brake wear and thermal management, offering insights into relevant areas of automotive testing.

At Booth 6510 at the co-located ADAS & Autonomous Vehicle Technology Expo, AVL's ADAS and AD experts will unveil the latest developments in testing and development in simulated environments and real-world scenarios. Safety remains a core focus, with emphasis on standards such as NCAP and GSR (Global Safety Regulation).

Booth 1530/6510



POWER SUPPLY UNIT WITH ULTRA-HIGH POWER DENSITY

Itech

The Itech IT6600C bidirectional, programmable DC power supply redefines the concept of high power density. It can output up to 42kW in a 3U unit, saving considerable space and enabling a benchtop solution for high-performance and high-power testing. It is also well suited for system integration.

The design concept of the IT6600C series bidirectional DC power supply breaks the limitations of traditional DC power supplies. A single 3U IT6600C unit can output 21kW from each of two channels. Each channel has a completely independent isolation design and can be controlled and

measured separately. The IT6600C has both source and load functions. Channel 1 (Ch1) can provide power output and Channel 2 (Ch2) can be used as a load. It can truly be used as two units. The two channels can also be connected in series or parallel to increase the output range and cope with various test requirements.

With its breakthrough design and high reliability, the IT6600C bidirectional DC power supply provides strong support for R&D and verification in automotive electronics, renewable energy, battery energy storage and other industrial fields.

Booth 1430



TECHNOLOGY PRESENTATION STAGES – FREE TO ATTEND

Automotive Testing Expo Europe 2024 will feature two Technology Presentation Stages, where leading industry experts will discuss topics at the heart of today's automotive testing industry. Confirmed speakers include:



A toolbox for efficient EV range development and certification
Dr Björn Ebel, head of system line management, AVL Zöllner



Accurately testing 4D imaging radars with CATR technology
Asish Jain, solution planner, Keysight Technologies



OpenDAQ – unlimited data access via one software development kit
Nils Röttger, CTO, Blueberry



Using K&C hybrid simulation to accelerate active chassis development
Thomas Stachel, principal staff engineer, MTS Systems



Vehicle security: shifting left with HIL-based testing and penetration testing
Ilya Dubnov, onboard security research team lead, Argus Cyber Security; Thomas Brandt, senior consultant, dSpace



Battery production test – from cell to module and pack
Manuel Hofmann, chief solution marketer, battery test, NI (Test & Measurement at Emerson)



Overcoming challenges for early system validation of automotive driving functions
Dr Thomas Bauer, business area manager, Fraunhofer IESE



Charting new routes: innovations in open road navigation for testing
Jonathan Deacon, product manager, OXTS



Fatigue damage estimation using an engineering/data science approach
Thomas Kemmerich, technical software expert, HBK – Hottinger, Brüel & Kjær



Simcenter Testlab RT for XIL test rigs and simulators
Ludo Gielen, senior director innovation and incubation testing solutions and smart vehicle technologies, Siemens Simulation & Test Solutions



Intelligent labs – the future of development
Steve Whelan, program director, Horiba Mira



Advance controller development with a pragmatic digital approach
Dr Mathieu Lu-Dac, application engineer, Speedgoat



The transition from domain to zonal network architecture for SDV
Felix Ottofuelling, business development manager EU, Intrepid Control Systems



Smart charging – from conformity to interoperability
Dr Raphael Pfeil, senior product manager, Vector Informatik



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Check the website for the preliminary program





AUTOMOTIVE TESTING TECHNOLOGY INTERNATIONAL AWARDS FORUM 2024

Now in their 17th year, the ATTI Awards are to be presented formally at Automotive Testing Expo Europe 2024 in Stuttgart, Germany. Cementing ATTI's long-standing affiliation with the exhibition, the ceremony is scheduled to take place in Hall 8 on Day 1 of the three-day event, which will run June 4, 5 and 6, 2024.

Before the awards ceremony, a brand-new forum will offer an afternoon of high-level content covering current key topics including the application of AI in testing, connectivity, big data, software engineering, AV testing and alternative powertrain analysis.

The ATTI Awards are meticulously judged by a 16-strong panel of esteemed industry specialists who have a wealth of knowledge and experience between them. Their expertise covers the entire vehicle development and testing process, from vehicle dynamics to powertrain testing to proving ground development to software engineering to virtual analysis.

When casting their votes, they look for innovation, strategic thinking and creativity – and of course, demonstrated results.

Here ATTI canvasses the insights of three awards panelists on the existing paradigms in their respective fields.

Please note: None of the judges can take part in the competition and any conflicts of interest must be declared

The program features several keynotes, fireside chats, a panel discussion involving distinguished technical executives from the awards judging panel and the ATTI Awards ceremony. It's the perfect chance to source partners, gather ideas and exchange knowledge with like-minded professionals. The awards ceremony itself will be a fantastic networking opportunity to meet with winners, nominees, judges and VIP attendees.

Each year, Automotive Testing Expo attracts a global audience of industry specialists including scientists, researchers, academics and technicians from the OEMs and, of course, the Tier 1 and 2 suppliers. The forum is going to be a fantastic event and a truly valuable experience for you and your team. Make sure you've saved your seat.

JUDGE Q&A JAHEE CAMPBELL-BRENNAN



Director, Wavey Dynamics

Jahee Campbell-Brennan has a master's in engineering. With an interest in various realms of automotive and motorsport, his background includes leading roles at Ford and McLaren Auto. Aside from working as director at Wavey Dynamics, an automotive and motorsport engineering consultancy specializing in vehicle dynamics, aerodynamics and engineering design, he is a technical contributor to *Racecar Engineering* magazine. Furthermore, Campbell-Brennan is a Professional MotorSport World Awards juror.

Please tell us about your background in vehicle development.

My background is in automotive and motorsport engineering. At my company, we work with vehicle dynamics and aerodynamics, which involves a lot of simulation work. The development cycle of course involves some validation of simulation, so we're working with instrumentation to support this and have recently been experimenting with machine learning tools to help us process data and draw powerful conclusions.

What's been the biggest impact on automotive testing in your engineering field recently?

The main thing that comes to mind is the democratization of what are some really powerful simulation tools; for example, CFD resources moving toward cloud-based HPC systems. This makes it much more reasonable for smaller companies such as ours to access very powerful tools. To quote another example, the commercialization of thermomechanical tire models to support vehicle dynamics simulations has also allowed very powerful and

previously proprietary insights to be gained by the wider motorsport and automotive community.

What's the biggest challenge you currently face?

Maximizing the utility of the data gathered, past and present, and using it to gain the advantage. This could be in the form of achieving design targets with less testing time or to steer architectures. This is where AI and machine learning are providing meaningful improvements for us in our work.

What advice would you give to people who are just starting out in today's vehicle testing landscape?

Be meticulous, be open to new ideas but trust one's instincts and always refer to common sense. On a personal level, it has been proved time and time again that looking at a set of data or a particular engineering problem after a good night's sleep enables me to develop the most meaningful insights. Don't rush. Employers must protect their employees from time pressure as much as possible by setting reasonable deadlines.

What are the long-term consequences if developers do not transition to new testing hardware and software tools?

In the automotive industry I think it comes down to losing ground to competitors and not providing customers with the best product, or – if nobody wants to invest in the latest technology – a stagnant market. Good, current testing methodologies and tools can also reduce the impact of perceived risk in trying something different and innovative.

Do you have any advice for further learning?

Setting time aside in the pursuit of learning and staying up to date is vital. We always aim to have a research project running in collaboration with universities or industry because knowledge transfer is important. It keeps us current and engaged with our work. A friend of mine, Mike Law, wrote a great book titled *ACE Thinking: Life Lessons From Engineering the Ultimate Racing Cars*, which draws on his experience making decisions as a leader in F1 and how they can be applied to the wider world. I highly recommend it.



JUDGE Q&A CARL PERRIN



CEO, Institute for Clean Growth & Future Mobility, Coventry University

The Institute for Clean Growth & Future Mobility in the UK drives innovation in CAVs, cybersecurity and electric and hybrid powertrain solutions as well as advanced manufacturing and design. Carl Perrin is a chartered engineer. Before joining Coventry University, he was head of technology at Rolls-Royce and R&D director at Dana Glacier Vandervell.

What do you predict will have one of the biggest impacts on vehicle testing in the next 10 years?

There will be more testing in the virtual world. Digital twins, which involve the creation of a virtual model of what the product or technology will look like, will play a much bigger role in the whole development, validation and commissioning cycle.

What's the greatest hurdle in clean mobility development at present?

Battery testing takes a long time and there is currently insufficient capacity available to meet the demands and the acceleration of product development. A large amount of data is also produced in testing, and processing that volume of information can often be difficult and time-consuming. Finally, achieving test cycles that can be trusted to accurately represent real-world driving and vehicle conditions will need to come into play soon. There is only so long that motorists will settle for achieving 80% of the miles that are supposed to be available to them.

What are some of the common misconceptions about alternative powertrain, ADAS and AV testing?

People think that the route to wider adoption of these technologies is wholly a technology challenge. However, a user-centric approach to testing and validating the robustness and safety is also required to ensure trust and confidence in the tech.

Is there anything you wish the sector would have done differently during your tenure?

We face a shortage of the right skills to accelerate EV development and manufacturing supply chains, and we are now playing catch-up.

There are some good initiatives to reskill the existing workforce and bring in new talent, such as Coventry University's Institute for Advanced Manufacturing & Engineering. The truth is, we should have invested in co-developing the skills and capability of the workforce, in parallel with technology development, so we were ready to take the lead on implementing and commercializing new technologies.

What's your advice to people who are just starting out in today's vehicle development landscape?

Technology is advancing fast. Make sure you keep up to date with developments by attending conferences, reading journals and listening to experts in the field. The focus of your work will need to change over time to keep pace with new technology introductions. You must maintain awareness of the developing opportunities and not be afraid to step outside your current area of expertise. Test the boundaries and be an early mover in new and developing fields.

Do you have any pointers for further learning?

In the UK, the Electric Revolution Skills Hub (www.ershub.co.uk) is one of the biggest things to happen to the sector for a while. This intuitive resource provides a self-assessment tool and a body of knowledge. It connects learners with skills providers, job seekers with vacancies and employers with candidates.

What's the one thing you hope the audience will do as a result of this discussion at the expo?

I hope they will engage and collaborate more on the development and implementation of new testing standards and practices.

FORUM PROGRAM

Tuesday, June 4, Hall 8

14:00hrs – Welcome note from ATTI and opening keynote

14:20hrs – Fireside chat

14:40hrs – Panel discussion

15:20hrs – Presentations

16:00hrs – Awards ceremony

17:00hrs – Celebratory drinks

JUDGE Q&A ALEX LAI



Technical manager, Transport for New South Wales' Future Mobility Testing and Research Centre

The Transport for New South Wales Future Mobility Testing and Research Centre is a state government resource in Australia. Alex Lai was involved in setting up the center and continues to lead testing operations. He also coordinated the delivery of Australia's first official Safety Assist Test program for ANCAP. Alex's experience covers vehicle crashworthiness testing, occupant injury assessment, biomechanics of ATDs, real-world crash investigation, road safety and vehicle safety research and development, infrastructure and product testing, assurance and validation.

How does Australia's automotive landscape differ from other regions of the globe?

Australia is a big country with great variations in road quality and even rules across the country. The low population density means slower uptake of new technology.

What is the biggest hardship currently in your testing field?

More and more complicated ADAS test scenarios requiring more and more advanced test equipment. Euro NCAP protocols are changing greatly every three years, and there are big step changes that require more scenarios and equipment and training to execute new scenarios. As such, we are busy. OEMs need more and more support to keep on

top of the changes and validate their developments.

What's the greatest challenge in your day-to-day work?

Physical track testing is slow – executing highly synchronized maneuvers of targets and test vehicles is complicated stuff.

What are the long-term consequences if test facilities do not transition to new testing hardware and software?

We need better and better test equipment to keep up with the pace of change in Euro NCAP protocols. If we don't improve, we won't be able to meet the expectations of OEMs and NCAPs. Costs and timelines will blow out. ◀

The ATTI Awards Forum is **FREE** to attend – scan the QR code to register for your place



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testingexpo
NORTH AMERICA
October 22, 23 & 24, 2024
Novi, MI, USA

automotive
testingexpo
EUROPE
June 4, 5 & 6, 2024
Stuttgart, Germany

automotive
testingexpo
INDIA
April 8, 9 & 10, 2025
Chennai, India

automotive
testingexpo
KOREA
March 18, 19 & 20, 2026
Seoul, Korea

Testing Expo
CHINA
AUTOMOTIVE
August 28, 29 & 30, 2024
Shanghai, China