

Preview ATZelektronik 12.2024

ELECTRIFICATION

Battery management with AI for better and safer batteries

Artificial intelligence is on the verge of revolutionizing battery management. The precise prediction of a battery's remaining lifespan and aging process is crucial for extending its useful life, and the early detection of cell failures increases functional safety. As Eaton shows, battery management systems with artificial intelligence can significantly improve the performance, safety and longevity of battery-powered vehicles while reducing costs and increasing efficiency.

Selectivity in electronic fuses in low-voltage wiring systems

In the short-circuit protection of supply paths in low-voltage energy wiring systems, selectivity refers to the property that a fault only triggers the fuse element for the affected supply path. The mechanisms for providing selectivity are fundamentally different for electronic fuses than for conventional fuses, and more parameters must be taken into account. In addition, the replacement of lead-acid batteries by lithium-ion batteries has a profound effect on the selectivity properties. Dräxlmaier provides an overview of the challenges and solutions.

Effectiveness of cable ferrites and nanocrystalline sleeves as interference suppression measures for electrified vehicles

The electrification of the powertrain is intended to make vehicles more environmentally friendly. This increases the demands on electromagnetic compatibility. It can be significantly improved by using cable ferrites and nanocrystalline sleeves. With a specially designed laboratory setup from Würth, the effectiveness can be backed up with measurement data.

FUNCTIONAL SAFETY | SIMULATION

Scenario reconstruction for the development of automated driving functions

At present, testing and validation is the limiting factor in the introduction of driver assistance systems and automated driving functions. This bottleneck can only be overcome with the help of simulation, which significantly reduces the number of real test kilometers required. To do this, the simulation must reflect the complexity and diversity of real-world traffic. IPG Automotive and DeepScenario describe a holistic approach that shortens the development time of advanced driver assistance systems and automated driving functions while also increasing their robustness.

DEVELOPMENT METHODS | PROCESSES

Tool-driven homologation support for automated lane keeping and future driver assistance systems

For the type approval of automated driving functions according to SAE level 3, the UN/ECE regulation No. 157 describes specific scenarios and objective system requirements for automated lane keeping systems for the first time. In this paper, AVL presents an end-to-end tool chain to support homologation based on real measurement data.

HANSEN REPORT

As a source for technology and business trends in the global automotive electronics industry, Paul Hansen highlights current industry topics within the framework of ATZelectronics resp. ATZelectronics worldwide, Paul Hansen highlights current industry topics.

ATZEXTRA TEST BENCHES AND SIMULATION

Advertising deadline: October 31, 2024

Testing driver assistance systems on qualified test tracks

Driver assistance systems are becoming increasingly complex, meaning that they must not only be tested in detail using computer simulations, but also on test benches and test tracks. FEV presents a three-part method for validating these passenger car systems. The key points here are the testing characteristics of the various systems on suitable proving grounds, for example in Morocco, as well as the requirements placed on such a facility.

High-precision 6-component wind tunnel balance for aerodynamics development and homologation

With the introduction of the WLTP, there was a need to be able to measure the aerodynamic drag and other driving resistances of larger vehicles such as SUVs, vans and light trucks with high accuracy. Horiba has developed a globally unique, movable wind tunnel balance with which the forces occurring in the wind tunnel can be precisely measured under real road conditions.

Simulation of cyclical pressure changes on liquids for testing cooling components in electric vehicles

A new method for testing cooling components for hybrid and electric vehicles enables the simulation of cyclical pressure changes from positive pressure to negative pressure on liquids. As Poppe + Potthoff describes, the test simulates the load on the tested components due to fluctuations in the coolant pressure, as well as conditions during the reheating phase and the negative pressure filling of the cooling system - at a wide range of ambient temperatures and with high repeat accuracy in narrow tolerance ranges.

ATZEXTRA TEST BENCHES AND SIMULATION

Test bench and process for cost-efficient testing of high-voltage batteries

For long-term testing of traction batteries, there is an increased need for cost-effective testing equipment. IAV has developed its own so-called Pack2Pack test bench, which is suitable for long-term tests thanks to the use of standard components and energy management. Up to ten test specimens can be tested with different programs and the required energy can be shifted back and forth. A comprehensive safety and fire protection concept with an aerosol extinguishing system is used.

Dates

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Contact



Rouwen Bastian

Sales Management

+49 (0) 611.7878 399

[rouwen.bastian\(at\)springernature.com](mailto:rouwen.bastian@springernature.com)