

Topic Preview ATZ 03.2021

COVER STORY | LIGHTWEIGHT DESIGN | MATERIALS | BODY

Global Sensitivity Matrix for a Complex Car Development

Car development processes are becoming more and more complex, many disciplines are involved and influence each other in technology and work. Porsche, the University of Wuppertal, divis intelligent solutions and the University of Leiden take the design of a body-in-white as an example to illustrate the qualitative and time-related effectiveness of a global sensitivity matrix with regard to optimized values for side crash, stiffness and front crash.

Interview: "We can reduce strongly the environmental burden by using recycled aluminum"

Seiichi Hirano, Member of the Board of the UACJ Corporation, a Japanese aluminum components supplier with the world's third largest production capacity, talks about the properties that give aluminum advantages over steel and CFRP in CO2 emissions, as well as which expertise was used in the Mazda MX-5.

First Body-in-White Made from Composites for a Chinese Electric Car

Forward Engineering and KDX Design Center jointly developed a CFRP-intensive body-in-white for the Chinese automotive OEM Changan. This multi-material structure obtained a five-star rating in the China-NCAP assessment. Thus, the Eado ET passenger car is China's first battery electric vehicle with extensive applications of carbon fiber composites, aluminum and steel in safety-critical structures.

DEVELOPMENT | DOORS

Organic Sheet Door Technologies for Stricter Crash Requirements

The use of door modules with innovative carrier materials can help meet stricter crash test guidelines while saving weight and costs. The possibilities offered by the carrier plates used by Brose made of continuous glass fiber-reinforced thermoplastics, so-called organic sheet, are promising.

HMI

Virtual Driving Tests of Powertrain Systems in the Driving Simulator

The subjective evaluation of driving maneuvers in the early stages of development is a challenge. At the TU Darmstadt, a special driving simulator was developed to address this task. The results obtained show how subjective driving impressions of test subjects can be examined and evaluated early on.

Holistic, Context-sensitive Human-machine Interaction for Automated Vehicles

Situations in road traffic can quickly become confusing due to their high complexity and dynamic development, especially if one does not concentrate. DLR is investigating how this challenge will become more acute due to mixed traffic situations with new types of vehicles, new mobility options and increasing connectivity and automation.

ELECTRIC MOBILITY

Vehicle Dynamics of Battery Electric Vehicles

The share of battery electric vehicles in the overall portfolio of vehicle manufacturers will continue to grow in the coming years. AVL presents a method for defining a vehicle concept that both ensures cost efficient design and reduces development time.

Technical Aspects of High-Performance Electric Vehicles

An increased market penetration of battery electric vehicles could be achieved by extending their range. Magna is investigating an improvement in shortening the charging process by increasing the charging power, which can be achieved for example by using rapid charging systems with up to 400 kW.

RESEARCH | SECURITY

Safety in Autonomous Driving – Evaluation by Maximum Entropy

Autonomous driving is considered one of the key technologies of future mobility. High demands are placed on driving safety in particular, and proof of safety is therefore a central task. In a research project of the Fernuniversität Hagen and the University of Applied Sciences Esslingen, new concepts for safety analysis and evaluation on a simulation basis are being developed.

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In the Spotlight

Smart Grid

Guest Commentary

Marco Philippi, Audi

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