

Topic Preview ATZ Issue 10.2024

COVER STORY | LIGHTWEIGHT DESIGN

High-performance Vehicle with CFRP Chassis and Hydrogen Engine

In a development project, Bosch Engineering and Ligier Automotive have built a lightweight sports car with a CFRP monocoque chassis structure and hydrogen petrol engine as a demonstrator. The vehicle's multi-stage safety concept and innovative tank system consist of a combination of active and passive measures.

Child Seat Shell Made from Bio-based and Natural Fiber-reinforced Plastics

Bio-based and natural fiber-reinforced plastics can be used to produce sustainable lightweight components that could also be used in large-scale automotive production via hybrid injection molding. Edag and the Fraunhofer IMWS are developing a child seat shell in multi-material construction as a prototype in the BMEL research project RegScha.

Interview: „We are currently

experiencing a material revolution“ In an interview with Marília Biill, the head of the CMF design team Kia Motors, ATZ discusses the development and production of plant-based materials and the opportunities offered by organic production. For example, eucalyptus extract can be used as a leather substitute for the seats in the interior of the Kia Niro.

Dates

Advertising deadline: 08/30/2024

Copy deadline: 09/05/2024

Publication date: 09/27/2024

GUEST COMMENTARY

Prof. Andreas Wagner, IFS / Uni Stuttgart / FKFS

DEVELOPMENT | BODY

Lightweight Design and Sustainability in the Body Development of an Efficiency Vehicle

By using the combination of flax fiber usage and lightweight technologies for cars, the CO2 footprint is reduced, and the efficiency is increased. The Hydro2Motion team of Munich University of Applied Sciences provides an insight into CFRP body development and manufacturing process of the Pegasus efficiency vehicle. For example, the total weight of the new tubular lattice frame has been reduced by 60%.

INTERIOR | HMI

Health Features in the Software-defined Vehicle

Health and comfort are figuring ever more prominently at work and at play - and lately also on the road. Indeed, smart software and in-vehicle sensors can monitor occupants' health metrics. And that could help prevent accidents triggered by medical issues. ITK Engineering shows ways in which illness-related accidents can be avoided in the future.

Actuators Made of Electroactive Polymer for Interior Elements

Datwyler is currently working on the industrial production of a new generation of actuators made of electroactive polymer, which is characterized by a large and fast stroke, low weight, low mechanical complexity and consequently simple integration, low energy demand and intrinsic sensor technology. The first pilot production line on an industrial scale will go into operation in 2024. Typical areas of application include interior elements and HMI components for haptic feedback or shy-tech modules, as well as actuators for valves, pumps and locks instead of piezo actuators.

SIMULATION | TEST

Cost Reduction Through Virtualization – Particle-based Simulation of Water Wading

Smoothed Particle Hydrodynamics (SPH) simulation is a promising mesh-free CFD technology that has revolutionized water wading analysis in recent years. AVL and Magna present a validation study that demonstrates predictive capability and efficiency of SPH-based virtualization. Leveraging virtual passenger car testing, development time and reliance on physical prototypes can be significantly reduced.

IN THE SPOTLIGHT

New Variety in Hybrid Drives

The transformation toward all-electric passenger cars has slowed down. However, interest in hybrid drives is growing in Europe and North America. Which types of hybrid drives will gain in importance? There are new developments in both parallel hybrids and series-parallel solutions.

Contact



Rouwen Bastian
Sales Management
+49 (0) 611.7878 399
rouwen.bastian(at)springernature.com

AUTOMATED DRIVING

Automated Valet Parking – Simulation-based Driving Corridor Validation of a Trajectory Planner

Low-speed functions for passenger cars such as automated valet parking in parking garages have been prevalent in the market for several years. Here, the Technical University of Darmstadt and IPG Automotive describe the driving corridor validation test of a trajectory planner. Based on a global reference trajectory, this assistance system calculates local sub-trajectories and subsequently travels them. Testing of this concept is based on simulation using a requirement and scenario catalog.

RESEARCH | IT | SOFTWARE

Gaia-X 4 AI – An Ecosystem for Data and Services

Gaia-X is currently developing a secure federated data ecosystem that gives data owners digital sovereignty. The focus is on trust and basic concepts for interoperability. DLR, Fraunhofer ISST and IAV, together with other partners, have researched core components of the technology in the BMWK project “Gaia-X 4 KI” and examined them in the context of automotive applications - for the transition from big data to better data.