Topic Preview ATZ Issue 06.2024

COVER STORY | CHASSIS SYSTEMS

Torque Vectoring Control for More Driving Fun
To meet the considerable challenges of developing a good vehicle motion control for electric passenger cars, AVL relies on digital front-loading for twin-motor drive units. Validated vehicle models in a homogeneous simulation environment enable a cost-effective reduction in development time on MiL and HiL test beds.

Regulation of Non-exhaust Particulate Emissions and Trends of Future Chassis Development
Non-exhaust particles sources such as brake and tire wear have already surpassed exhaust emissions of vehicles with combustion engine. Consequently, the European Parament has voted for a future regulation of non-exhaust emissions within the Euro 7 framework. As IAV shows, these new boundary conditions will require additional homologation and reduction measures for brakes and tires leading to new challenges for chassis development.

Interview: "Trends in Chassis and X-by-Wire"
In an interview with **Peter Holdmann**, the Head of the Chassis Solutions Division of ZF, ATZ discusses which of the three drivers - electric mobility, automated driving and particulate matter regulation (Euro 7) - takes up most of the engineering teams' working time, but also why the cubiX management software is suitable as a coordinator for vehicle dynamics control.

DEVELOPMENT | COMMERCIAL VEHICLES

Weighing Technology for Laden and Unladen Light Commercial Vehicles
An on-board weighing system counteracts truck overloading. This benefits road safety and the environment, protects the roads and serves to ensure fair competition. Streparava presents its so-called OBWE system with suspension travel sensors, which uses a combined strategy to reliably determine the loading and load distribution in the vehicle in just a few seconds and with an accuracy of ±5%. The vehicle mass is calculated on the basis of an algorithm.

AUTOMATED DRIVING

Functional Testing of ADAS/AD Along the Vehicle Life Cycle
In order to ensure functional safety and customer acceptance of increasingly complex Advanced Driver Assistance Systems (ADAS) and systems for Automated Driving (AD) over the entire life cycle of a passenger car, virtual validation methods are essential in addition to real test drives. dSpace shows how vehicle-in-the-loop simulation with over-the-air sensor stimulation enables efficient, safe, and reproducible testing of ADAS/AD.

SPECIAL | ATZextra BATTERIES

Published in our german edition (print plus eMagazine).

Battery management system without microcontroller
Modern high-voltage batteries are being pushed ever closer to their operating limits in order to increase their range. This maximises the most expensive component in the vehicle and improves the cost-benefit ratio. However, the peripherals can also help to reduce the absolute costs. Vitesco Technologies is presenting a battery management system with a simplified architecture.

Electronic design and functional safety in wireless battery management systems
Current trends in automotive development show that the use of wireless technology is becoming increasingly relevant. In battery development, it enables efficient data exchange within the components of the battery management system. AVL is analysing the challenges of electronics design and functional safety that need to be considered when implementing wireless communication.

Hybrid and solid-state lithium cells - market, potential and challenges
Hybrid and solid-state cells are being hailed as the next "big thing" for electric cars. They have the potential to achieve higher levels of safety, energy density, range and service life. As an example of this new technology, FEV presents the integration of a hybrid cell in a vehicle that achieves a range of 1000 km, the highest published range on the battery-powered vehicle market.

Second battery life in sustainable solar storage
Even after their first life in an electric vehicle, battery systems have an economic and ecological value that can be utilised in the sense of a sustainable circular economy. Second-life battery storage systems are one way of continuing to use traction batteries from electric vehicles in stationary applications. Edag has developed and built a corresponding solar storage system.

RESEARCH | LIGHTWEIGHT DESIGN

Polyethylene for the Cost-effective Production of Fiber Composites for Lightweight Construction Applications
Carbon fibers offer great potential for weight reduction of optical, semi-structural, and structural vehicle components due to their good mechanical properties combined with low density. However, 50 % of the production costs are attributed solely to the raw material. Additionally, due to limited availability, composite materials made from commercial carbon fibers have been only sparingly utilized in the automotive industry. Therefore, at RWTH Aachen University, the use of polyethylene as an alternative cost-effective material for carbon fiber production is being researched.

IN THE SPOTLIGHT

Micromobility – More than Just a Toy
Micromobility is preparing to change the cityscape. For a few years now, the new electric scooters in particular have been causing a stir – both positively and negatively. On their routes, they compete with pedestrians, traditional bicycles, and cargo bikes, which have also entered the picture.

GUEST COMMENTARY

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