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COVER STORY | PRODUCTION OF ELECTRIC VEHICLES

Safer battery concepts for electric vehicles through pultrusion
Batteries often have a very large mass in electric vehicles. For safety reasons and also for cost reasons, safe, accident-protected integration into vehicles is therefore essential. Together with several partners, Covestro therefore developed the so-called CoBE battery housing concept, in which a combination of materials is combined with a new structural concept to make the best possible use of the strengths of the individual materials.

Determining the technical automation effort
Automation is the keyword par excellence when it comes to reducing production costs. The term is commonly defined as the execution of a production step without human intervention. In order to advance automation economically, it is inevitable to strive for a product design adapted to the machine. Exclusively high quantities cannot lead to the goal here. Using the example of high-voltage plugs, a general procedure developed at the TU Bergakademie Freiberg is described with which the technical automation effort can be quantified.

DEVELOPMENT | ROBOTS

New mobile robot from Omron
Omron's LD-250 robot, with a payload capacity of 250 kg, is the strongest and newest member of the company's LD series of mobile robots. In combination with Fleet Manager, which allows several mobile robots with different payloads to be controlled by a single system, the robot contributes to more flexible and optimized autonomous material handling. It is suitable, for example, for transporting bulky objects such as transmission blocks, seats or cable harnesses in the automotive industry.

COATINGS

Reduced fine dust emission with hard coated brake discs
In urban areas, fine dust pollution repeatedly reaches levels that are detrimental to health. A considerable proportion of up to 25 % of emissions is due to abrasion of brake discs. New laser hard material coatings from Laserline now make it possible to realize wear and corrosion protection coatings on automotive brake discs. Abrasion and fine dust pollution can thus be effectively reduced and the service life of the brake system is lastingly increased.

PLASTICS PROCESSING

Continuous production of flat semi-finished products from fiber-plastic composites
Alongside electrification, lightweight construction has been one of the core issues in automotive development in recent years and remains the subject of current research. Particularly in automotive development, cost-effectiveness is one of the greatest challenges of lightweight construction. The continuous production of flat fiber-plastic composite (FRP) semi-finished products offers a very good approach to reducing the production costs for semi-finished products. The calender direct impregnation plant of Fraunhofer IWU in Wolfsburg enables this continuous production in a flexible manufacturing chain for the demand-oriented production of organic sheets in a wide range of variants.

ASSEMBLY AND HANDLING TECHNOLOGY

Linear modules on test systems for automotive electric drives
The start-up company MCW Systemtechnik has developed devices for automated end-of-line testing of electromobility components. Durable lubricant-free linear modules from igus are used on the axes, which take over the fast contacting and decontacting of the test plugs.

SOFTWARE

Software validity - Holistic approaches and automation in software testing
A luxury class vehicle produced today contains around 100 million lines of code. This leads to an increased risk of software errors with potentially serious consequences. To avoid these, it is necessary to put the software to the test as early as the vehicle development phase. Formel D provides a detailed insight into the work processes during software testing.

BIOMATRIALS

Natural fiber reinforced plastics as a building block of sustainable mobility?
For the first time in a production vehicle, Porsche is using the advantages of bio-based materials in production and application. The new 718 Cayman GT4 Clubsport features body components made of bio-fiber composites developed at the Hofzet Application Center for Wood Fiber Research at the Fraunhofer Institute for Wood Research, Wilhelm-Klauditz-Institut WKI.

RESEARCH | FOAMS

Technologies for the functionalization of particle foams
In order to be able to exploit the undisputed potential of particle foams in fields of application such as automotive engineering, adapted production concepts and new ways of thinking are required. To this end, new approaches were developed in an interdisciplinary consortium under the leadership of TU Dresden and successfully demonstrated using a concept for a vehicle door.

PLASTIC PROCESSING

Connection of inserts in fiber composite plastic components
If a high mechanical performance of the insert connection in components made of fiber composite plastics is required, the inserts must already be integrated into the textile before consolidation. For this purpose, new possibilities for the textile integration of metallic inserts into fibre-reinforced plastic components are currently being researched at the Institute for Textile Technology at RWTH Aachen University.

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Your Contact

Thomas Heusler
Media Sales
+49 (0) 611.7878 312
thomas.heusler(at)springernature.com