Preview ATZheavyduty Issue 01.2024

COVER STORY | DRIVE TECHNOLOGY OFF THE ROAD

Challenges of battery-electric work machines in terms of competitiveness and profitability
The market for battery-powered work machines will grow significantly in the coming years. The development of competitive solutions will therefore be a key task for off-road manufacturers. FEV Consulting presents the most important technical, commercial and organizational aspects for defining a successful battery electric vehicle portfolio.

Electric drive system for mobile machines
Deutz has developed an electric drive system with a modular design that is suitable for various mobile applications. In addition to charging performance and battery conditioning, including capacity planning, the requirements of functional safety have also been taken into account.

Interview with Rolf Brück, Emitec Technologies GmbH
Even off the road, the focus is increasingly on reducing pollutant emissions. ATZheavyduty talks to Rolf Brück, Managing Director of Emitec Technologies GmbH, about the possibilities of dispensing with combustion engines in the off-highway sector, the role of alternative fuels and the effects of such a switch on exhaust gas aftertreatment.

Dates

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DEVELOPMENT | SIMULATION

Virtual product optimization in the development process of cyclone pre-separators
A better understanding of physical relationships is crucial for product development and optimization. Simulations provide a deeper insight and help to speed up the development process. However, simulations of complex phenomena often require high computing capacities that can exceed local resources. Mann+Hummel shows how external computing capacities can be used to optimize filter systems for heavy machinery.

HYDROGEN

Designing hydrogen tank systems holistically and safely
Hydrogen plays a key role in the energy transition of the mobility sector, as battery electric drives are not ideally suited for all areas. This is particularly true for commercial vehicles and work machines. The safe storage and controlled release of the highly flammable gas and the refueling process pose enormous challenges when designing a hydrogen tank system. ITK Engineering shows how safety concepts for such systems can be optimally designed.

LIGHTWEIGHT CONSTRUCTION

Lightweight construction in agricultural machinery technology - carbon chassis for forage harvesters
The use of fiber composites in the lightweight construction of structural components such as the chassis can significantly reduce the weight of agricultural machinery. This brings advantages in terms of approval, CO2 emissions and torsional rigidity, as Leibniz Universität Hannover has discovered together with project partners from Krone, M&D Composites and Clausthal University of Technology.

DRIVING DYNAMICS

Lateral acceleration behavior of commercial vehicles for load securing
In order to ensure the safety of the load, commercial vehicles must drive within certain lateral acceleration limits, which are defined in standards and guidelines. In the CargoSec research project, Dortmund University of Applied Sciences and Arts has investigated vehicle behavior in dynamic tests and presents exemplary results as well as suggestions for changes to existing regulations.

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