

Topic Preview MTZ 12.2020

COVER STORY | ELECTRIC DRIVES

Development and optimization of electrical drive trains

The necessary reduction in CO₂ and particulate emissions is leading to an ever wider range of models with electrified powertrains. BorgWarner supports manufacturers in meeting the growing demand and uses its expertise in the areas of power electronics, transmissions and electrical machines to produce highly optimized components and systems for customers. There is no such thing as an off-the-peg solution here; a wide range of precisely tailored applications is required to meet the specific requirements.

48 V mild hybrid system for commercial vehicles

48 V mild hybrid systems offer significant fuel savings potential in city bus applications with a good cost-benefit ratio. MAN has therefore developed a crankshaft starter-generator for the Lion's City city bus. This electric machine converts mechanical energy into electrical energy during braking and supports the combustion engine when starting off.

Interview

In an interview, Matthias Tonn and Michael Geaney explain Ford's electrification strategy, which is to include 18 models in the coming year.

DEVELOPMENT | EMISSION

The ring catalyst as ultra-compact solution for Euro 7

Unrestricted, clean mobility is the goal of developing future drive systems. The focus is on robust exhaust gas aftertreatment throughout the entire engine map while simultaneously reducing CO₂ emissions, supported by electrification. Highly efficient, turbocharged combustion engines and catalyst technology are the basic prerequisites for achieving this goal. With the help of the ring catalyst, originally developed for truck and off-road applications, Vitesco Technologies Emitec realizes an extremely compact exhaust aftertreatment system as an integrated unit consisting of turbocharger and catalyst.

ELECTRIFICATION

The electrified diesel as a sustainable solution for the future

In order to ensure cost-efficient compliance with future CO₂ fleet targets, the diesel engine drive will continue to be an essential part of the vehicle fleet in the future, not least because of attractive real consumption levels. In order to be able to assess not only the fuel consumption advantages of an electrified diesel engine but also the limit potential regarding NO_x emissions, a concept vehicle was built by AVL and Hyundai Motors Europe for real-life testing in the course of last year.

MATERIALS

Additive manufacturing for modern combustion engines

In the LeiMot research project, FEV Europe and its partners are pursuing new approaches in the development of large-volume, additive-manufactured engine components as well as expanded use of plastics to reduce weight and improve functionality.

BATTERIES

Scalable battery housing for variant-intensive floor assemblies

The battery plays an important role in the design of electric drives: its integration is crucial to the technical performance of the vehicle and the manufacturer's profitability. A scalable, versatile and economical battery housing for large production volumes, which will enable the Edag Group and its development partners to reduce development costs, is intended to provide an entry point for future cooperation in engineering.

RESEARCH | CRANK DRIVE

Innovative actuation concepts for variable length connecting rods

At Heilbronn University, a hydraulic actuation system for variable-length connecting rods that is very easy to integrate was developed as an alternative to mechanical actuation and tested in the vehicle. A further system, based on electromagnetic actuation, allows infinitely variable length variation and was tested on the test bench.

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The special section on charging technology and network infrastructure is published in ATZelektronik 11/20 as well as in ATZ and MTZ 12/20.

The power grid for the mobility revolution

As the number of electric vehicles increases, so do the demands on the distribution network. Netze BW analyzes the typical charging behavior under real conditions, for example in rural areas or underground garages, and how it affects the power grid. Netze BW plans to develop a charging management system with a digital interface in four stages.

Standards for the implementation of Smart Charging

In order to implement Smart Grid, power generation and consumers must be networked via a communication system with specified and standardized interfaces. IAV describes the basis on which powerful smart grid applications can be developed.

Charging technology of the future: What is user acceptance

How do users see the concepts surrounding electromobility, what benefits do they expect, what kind of user behavior do they expect themselves and how do they deal with the issue of feedback? These and other questions are answered in this article, based on a broad-based survey. BMW and Passau University of Applied Sciences

Your contact person



Frank Nagel
Media Sales
+49 (0) 611.7878 395
frank.nagel(at)springernature.com

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