# Topic Preview MTZ 06.2024

## COVER STORY | ENERGY STORAGE

Efficient Parametrization of Electrochemical Models for Lithium-ion Batteries
Lithium-ion batteries are the key element in the design of battery-electric vehicles. The virtualization of this component can shorten the development and testing phases considerably. However, the creation of efficient battery models is quite complex and requires a structured approach. AVL demonstrates, how the simulation tool Cruise M can simplify and accelerate the parametrization of the model.

Tank Control for Safe and Reliable Hydrogen-powered Vehicles and Machines
Storing hydrogen in tank systems is a challenge considering the high pressure and/or very low temperatures required to store it with sufficient energy density for mobile applications. To address this, FEV has developed a modular control software for pressurized gas storage tanks which includes comprehensive diagnostic functions and ensures safe and reliable operation as well as tank filling in compliance with current rules and regulations.

Interview with Dr. Linus Froböse, Chief Technology Officer and Managing Director at Skeleton Technologies, on the possibilities of using supercapacitors and hybrid batteries in the passenger car sector as well as the advantages and disadvantages compared to conventional lithium-based batteries.

### Dates

Advertising deadline 04/09/2024
Copy deadline: 04/15/2024
Publication date: 05/08/2024

## DEVELOPMENT | HIGH PERFORMANCE ENGINES

Development of a High-performance Hydrogen Engine
In a development project with Ligier Automotive, Bosch Engineering has created the prototype of a high-performance hydrogen engine that offers high peak performance, ample torque and utmost responsiveness. The engine hardware was adopted unchanged from an existing gasoline engine. Thus, the project paves the way for the development of future hydrogen engines to be used in high-performance sports cars or in motorsports applications.

The New Twelve-cylinder MAN E38 Gas Power Engine
The development goals for the E38 V12 gas power engine series from MAN were market-leading characteristics in terms of mechanical efficiency and mean effective pressure combined with a stable low-NOx capability. In addition to fundamental changes in the turbo charging system, Atkinson camshaft timings proved to be the best solution, fulfilling all the restrictions and premises specified in this development project. With the help of these measures, a high effective efficiency of 44 % and a brake mean effective pressure of 20 bar could be achieved.

## RESEARCH | FVV REPORTS

FVV's Hydrogen Research for Climate-neutral Mobility
The use of hydrogen in fuel cells or combustion engines does not produce any greenhouse gas emissions, in particular no CO2. If the energy used to generate the molecule comes from renewable sources, it is "green" hydrogen and completely climate neutral. Due to its enormous potential for the mobility of the future, the use of hydrogen as an energy carrier is a key pillar of FVV's research strategy.

## IN THE SPOTLIGHT

Micromobility – More Than Just Toys
Micromobility is set to change the urban landscape. For a few years now, the new electric scooters in particular have been causing a stir - both positively and negatively. On their routes, they are competing with the traditional bicycle or the cargo bike, another new addition to the scene.

### Contact

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