

**MAHLE presents highly efficient 48-volt vehicle concept at IAA**

- MAHLE develops a demonstrator vehicle for urban mobility
- Modular platform concept for a wide range of vehicles
- Overall systemic approach improves efficiency and increases vehicle cruising range significantly

Stuttgart, August 3, 2017 – MAHLE has developed a highly efficient 48-volt vehicle concept for urban mobility, which can be transferred to a wide range of platforms owing to its modular approach. “MEET” (MAHLE Efficient Electric Transport) will celebrate its world debut at IAA Cars 2017 in Frankfurt/Germany.

Increasing urbanization, a shortage of parking spaces, and a move away from the conventional buyer model to car sharing schemes: these are just some of the factors that make completely new mobility and vehicle concepts essential: compact and agile, convenient, intuitive, connected, and particularly efficient—but still economically viable. Vehicles of this kind have sophisticated specifications.

MAHLE has developed a highly efficient 48-volt vehicle concept that demonstrates how these core values can be realized through a holistic systems approach.

**MEET—MAHLE Efficient Electric Transport**

In the urban application area, the technical focus of MEET is on maximum energy efficiency. The meshing of different energy-saving technologies in the areas of the powertrain and thermal management increases efficiency and significantly enhances the cruising range of the vehicle—even and especially at low external temperatures.

The low vehicle mass and the maximum speed of around 100 km/h, optimized for city requirements, only call for lower drive

power and improve the degree of efficiency at the same time. Extensive test drives undertaken by MAHLE on a typical city route under different conditions and with different drivers, formed the basis for the power output design. The result was a maximum requirement of around 20 kW. In order to also account for journeys at higher speeds, MAHLE in a first step selected a systems power output of 28 kW for its demonstrator vehicle. This allows a voltage level of just 48 V.

As the voltage level is below the threshold of 60 V, there is no need for cost-intensive protective measures against electrical hazards. Consequently, systems costs are considerably lower than for high-voltage applications with the same driving performance. Furthermore, MAHLE is systematically exploiting areas of synergy. According to the company, all of the technologies employed can be carried over into large-scale production—thus generating further cost benefits through economies of scale.

### **First look at the highly efficient MAHLE 48-volt drive**

The MAHLE IPM (Interior Permanent Magnet Synchronous Motor) traction drive is an extremely efficient combination of a synchronous motor with permanent magnets and integrated 48-volt electronics. The motor provides maximum efficiency and dynamics in a wide speed range. To begin with, the MEET demonstrator vehicle was equipped with a MAHLE drive unit consisting of two motors each with 14 kW of mechanical continuous output and 36 Nm of torque. At IAA the next evolutionary stage with 20 kW and 80 Nm per motor will be presented. The motors drive the rear wheels via a central transmission.

This solution combines several advantages:

- The structure is modular and can be easily modified according to the application, for example for other performance levels.

- The existing 48-volt architecture of hybrid vehicles allows for an easy and cost-effective integration, for instance as a drive unit/electric axis or for an electric all-wheel system.
- The functional safety is increased by means of redundancy in the electric powertrain.
- Maneuverability and agility can be improved with torque vectoring functionality.
- As a result of the wide speed range of the motors, a gearbox is not necessary; systems efficiency is increased through the elimination of switching losses.

MEET and its overall concept will be presented for the first time at the IAA 2017 at the MAHLE stand C40, in Hall 8.0. We look forward to seeing you there!

### **About MAHLE**

MAHLE is a leading international development partner and supplier to the automotive industry as well as a pioneer for the mobility of the future. The MAHLE Group is committed to making transportation more efficient, more environmentally friendly, and more comfortable by continuously optimizing the combustion engine, driving forward the use of alternative fuels, and laying the foundation for the worldwide introduction of e-mobility. The group's product portfolio addresses all the crucial issues relating to the powertrain and air conditioning technology—both for drives with combustion engines and for e-mobility. MAHLE products are fitted in at least every second vehicle worldwide. Components and systems from MAHLE are also used off the road—in stationary applications, for mobile machinery, rail transport, as well as marine applications.

In 2016, the group generated sales of approximately EUR 12.3 billion with about 77,000 employees and is represented in 34 countries with 170 production locations. At 15 major development centers in Germany, Great Britain, Luxembourg,

Spain, Slovenia, the USA, Brazil, Japan, China, and India, 6,000 development engineers and technicians are working on innovative solutions for the mobility of the future.

**For further information, contact:**

MAHLE GmbH

Ruben Danisch

Corporate Communications

Pragstraße 26–46

70376 Stuttgart

Germany

Phone: +49 711 501-12199

Fax: +49 711 501-13700

[ruben.danisch@mahle.com](mailto:ruben.danisch@mahle.com)