

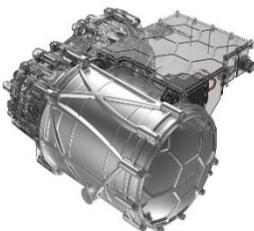
Press release

Stuttgart/Germany, May 5, 2021

MAHLE develops highly efficient magnet-free electric motor

- New development combines the strengths of different electric motor concepts in one product
- Advantages in terms of costs, resource security, and environmental compatibility by avoiding the use of rare earth elements
- High overall efficiency of 95%, previously only achieved by Formula E racing cars
- Wear-free thanks to inductive power transmission
- Suitable for use in all vehicle classes

MAHLE is currently developing a new kind of magnet-free electric motor that does not require rare earth elements. This not only makes production more environmentally compatible, but also brings advantages in terms of costs and resource security. The central feature of the new motor is the inductive and thus contactless power transmission—this allows the motor to operate wear-free and particularly efficiently at high speeds. The efficiency is above 95% at almost all operating points—a level that previously has only been achieved by Formula E racing cars. MAHLE has thus succeeded in combining the strengths of various electric motor concepts in one product. This new development is easily scalable, so it can be used in anything from subcompacts through commercial vehicles.



The new traction motor from MAHLE is wear-free, compact, and not dependent on rare earth elements.

“With our new electric motor, we’re living up to our responsibility as a sustainably operating company,” says Michael Frick, Chairman of the MAHLE Management Board (ad interim) and CFO. “Dispensing with magnets and therefore the use of rare earth elements offers great potential not only from a geopolitical perspective but also with regard to the responsible use of nature and resources.”

“Our magnet-free motor can certainly be described as a breakthrough, because it provides several advantages

that have not yet been combined in a product of this type,” says Dr. Martin Berger, Vice President Corporate Research and Advanced Engineering at MAHLE. “As a result, we can offer our customers a product with outstanding efficiency at a comparatively low cost.”

The new traction motor from MAHLE is highly efficient—at almost all operating points—and really demonstrates these advantages in segments where vehicles are mostly operated in real road traffic.

The new electric motor is also characterized by a high degree of durability, because the necessary transmission of electrical currents between the rotating and stationary parts inside the motor takes place without contact and is therefore wear-free. This makes the engine maintenance-free and suitable for a wide range of applications.

During its development, MAHLE uses an innovative simulation process in which various motor designs are adjusted along different parameters until an optimum is found. This approach is significantly faster and cheaper than conventional processes. In this way, MAHLE is helping to quickly create the necessary technical conditions in order to advance e-mobility in a sustainable manner worldwide.

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About MAHLE

MAHLE is a leading international development partner and supplier to the automotive industry. The technology group is now broadly positioned in the areas of powertrain technology and thermal management with a clear focus on future topics relating to mobility. As part of its dual strategy, MAHLE is working both on the intelligent combustion engine for the use of hydrogen and other nonfossil fuels and on technologies that will help the fuel cell and e-mobility achieve broad acceptance in the markets. The product portfolio of the company, which was founded in 1920, addresses all the crucial aspects of the powertrain and air conditioning technology. Half of all vehicles in the world now contain MAHLE components. #weshapefuturemobility

In 2020, MAHLE generated sales of approximately EUR 9.8 billion and is represented in over 30 countries with more than 72,000 employees in 160 production locations and 12 major research and development centers. (Last revised: 2020-12-31)