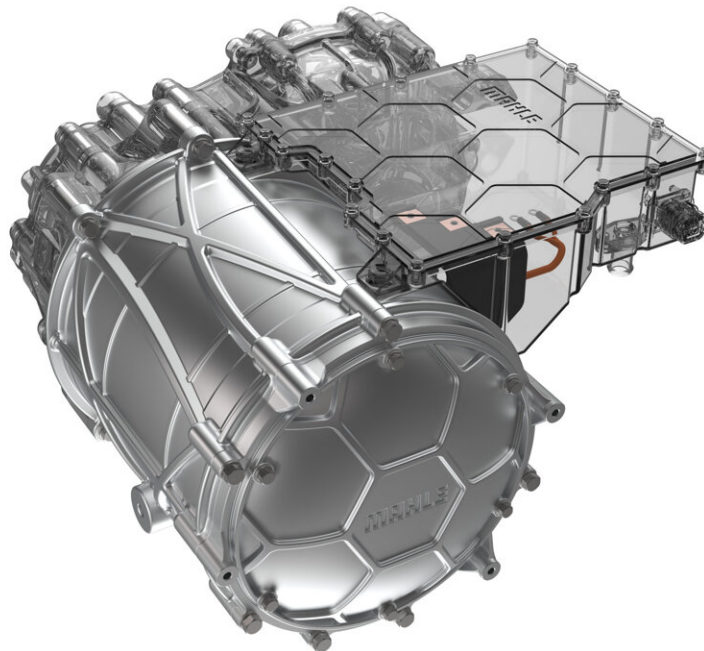


Mahle developing magnet-free electric motor that does not require rare earth elements

May 18 2021, by Bob Yirka



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

German car parts company Mahle [has announced](#) that it is in the process of developing a magnet-free electric motor that does not require rare earth elements. Company reps report that the new motor is efficient and extremely durable.

As many of the big-name carmakers begin switching from gasoline-powered vehicles to those that run on [electric motors](#), the issue of rare earth metals has taken on added urgency—China produces approximately 90 percent of the rare earth metals used in electric motors, and China is the only country that currently has the processing capacity to handle them in mass quantities. This situation has forced car makers around the world to rely on Chinese suppliers, making them nervous.

In response, carmakers and other entities have begun looking into developing electric motors that do not require magnets, which in turn means they will not need rare earth metals. Most of those developed thus far have relied on rotating contact devices that transfer electricity to copper coils in a rotor. The new [motor](#) by the team at Mahle has done away with these contacts, making the motor both more efficient and more durable since it has removed one of the stress points. The new motor instead uses powered coils in its rotor, transferring power to the spinning rotors using induction, which means they never have to touch and that the motor has no surfaces that will wear out.

Officials with Mahle note that the motor will be less expensive to produce without the rare [earth](#) metals. They also note that the design allows for tuning and changing [rotor](#) parameters, which in turn allows for improving efficiency. During testing, they found the design was 95% efficient, which they note has to date only been achieved by Formula E race cars. They further note that the increased efficiencies can be achieved at different speeds, which would help car batteries last longer. They expect mass production of the new motor to begin in approximately two and a half years, which suggests the company has already forged a partnership with an as yet unknown automaker.

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