

Press release

Stuttgart/Germany, November 24, 2020

MAHLE opens new test bench for electric drives

- MAHLE invests around EUR 3 million in new test bench in Stuttgart
- Testing and development of e-axles and e-drive units for electric and hybrid vehicles
- Successful completion of first customer project
- MAHLE's head of development, Martin Berger: "With this new test bench, MAHLE continues the targeted expansion of its global range of services for e-mobility."

MAHLE has commissioned a test bench for electric drives in Stuttgart/Germany. This equipment will be used to develop and test e-axles and e-drive units for a wide range of electric and hybrid vehicles. The first test on a unit was successfully performed on behalf of a customer just a few days ago. MAHLE has invested around EUR 3 million in the new facility. The e-test bench marks another milestone in MAHLE's technological transformation.

"With the commissioning of the test bench, MAHLE continues the targeted expansion of its global range of services for e-mobility," says Dr. Martin Berger, Vice President Corporate Research and Advanced Engineering at MAHLE. "Both our customers and our developers can now benefit from an ultramodern facility, which is one of only very few in Germany."

In future, the new e-test bench in Fellbach will be used on behalf of international customers to carry out functional development work, simulate highly dynamic, transient modes of operation, perform efficiency measurements and torque vectoring, and simulate wheel slip scenarios. Operating map application and data population, testing of high- and low-voltage systems, and the investigation of thermal influences are also among the scope of services. Also, MAHLE components can be tested in the context of a whole system there.

The test facility includes an e-axle unit consisting of two oppositely mounted load machines equipped with permanent-magnet synchronous electric motors. Thanks to a nominal power handling of 350 kW per dynamometer and an impressive peak torque handling capacity of 8,400 Nm (7,000 Nm continuous torque), the setup boasts formidable performance data. Separate battery simulators for applications ranging from 48 V to 1,000 V and a high-speed power analyzer system allow for performance mapping, performance characterization, and efficiency studies to be carried out.

In addition, the new facility has a high-performance thermal conditioning system that provides a temperature range from -30°C to $+130^{\circ}\text{C}$ for the accurate simulation of vehicle operating conditions. This ensures that the drives tested in the facility will function reliably under the widest variety of climatic conditions around the world. The time an e-drive spends on the test bench depends on the specific customer requirements and ranges from around 200 hours to test individual functions through to a whole year when endurance testing is required.



MAHLE Powertrain's test bench facilitates the accurate testing of electric drives, ensuring that electric vehicles are safe and reliable.



All the key data from the test setup is collected in the control room.



Mounted between two load machines, the e-drive is tested under real driving conditions.

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About MAHLE

MAHLE is a leading international development partner and supplier to the automotive industry. The technology group is committed to playing an active role in transforming the mobility of the future by further optimizing the combustion engine, driving forward the use of alternative fuels, and laying the foundation for the worldwide introduction of e-mobility and other alternative drives, such as fuel cells. The group's product portfolio addresses all the crucial aspects of the powertrain and air conditioning technology.

In 2019, MAHLE generated sales of approximately EUR 12.0 billion and is represented in over 30 countries with more than 77,000 employees in 160 production locations and 16 major research and development centers (last revised: 2019-12-31).

About MAHLE Powertrain

MAHLE Powertrain is a specialist in providing engineering services for the design, development, and integration of advanced internal combustion engines and electrified drive systems. As a recognized expert in these fields, MAHLE Powertrain is engaged in the extensive research, development, and application of new conventional and innovative drives in cost-effective, production-feasible solutions for enhanced efficiency, improved fuel economy, and lower emissions.

As a services subsidiary of the MAHLE Group, MAHLE Powertrain has eight Technical Centers strategically located in the UK, Germany, the USA, China, and Brazil, and is well placed to provide solutions around the globe. It operates independently of the main group in the selection of components or technologies.