Press Release

Stuttgart, February 08, 2023

MAHLE climatic wind tunnel “goes electric”

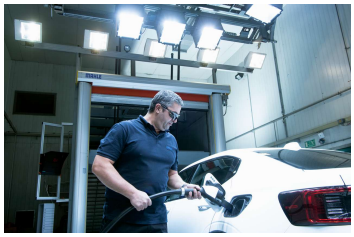
- Commissioning of a fast charging system for electric vehicles
- Expansion of the range of services at the state-of-the-art facility in Stuttgart
- Testing of the effects of fast charging on sensitive Li-ion batteries under a wide range of possible climatic conditions

Over 40 degrees Celsius heat, the sun burning on the car, hardly cooling wind. These are difficult conditions for the temperature-sensitive Li-ion battery. If an e-car is then charged quickly, the battery can become too hot and be damaged. To be able to test this realistically, MAHLE has now equipped its climatic wind tunnel in Stuttgart with a direct current fast charging system. The test engineers there can charge electric vehicles with up to 350 kilowatts in under five minutes for a 100-kilometer cruising range—under all climatic conditions, even in extreme heat. The measured data provide information about the effects on the Li-ion battery and passenger comfort and thus provide important findings for vehicle development.

“By expanding the range of services offered by our climatic wind tunnel in the direction of e-mobility, we will be able to support our customers even better in the development of their e-cars in the future,” said Jumana Al-Sibai, a member of the MAHLE Management Board and responsible for the business unit thermal management. “The battery is particularly demanding, and MAHLE can make a valuable contribution here with its distinctive system expertise in temperature management.”

Fast charging with up to 350 kilowatts of charging power places a large heat load on the Li-ion battery. Especially when the e-vehicle is charged in high heat and lots of solar load. The battery must always be kept within the optimum temperature window of 15 up to a maximum of 40 degrees Celsius. The vehicle’s thermal management system, i.e. the complex interaction between the cooling and air conditioning systems, ensures that the sensitive battery does not overheat and ultimately takes damage. At the same time, it must not get too hot in the driver’s cabin.

The facility in Stuttgart was built in 1937 as the world's first wind tunnel for the automotive industry. In 2000, it was completely modernized as part of a new construction. MAHLE has continuously developed the measurement section as a pioneer in this field to this day. The facility enables realistic, precise and repeatable measurement and test conditions—so it literally brings the road into the laboratory.



With the new fast charging system, charging processes can be tested under real climatic conditions in the MAHLE climatic wind tunnel.

Responsible for the business unit thermal management and the climatic wind tunnel is Jumana Al-Sibai, member of the MAHLE Management Board.

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About MAHLE

MAHLE is a leading international development partner and supplier to the automotive industry with customers in both passenger car and commercial vehicle sectors. Founded in 1920, the technology group is working on the climate-neutral mobility of tomorrow, with a focus on the strategic areas of e-mobility and thermal management as well as further technology fields to reduce CO_2 emissions, such as fuel cells or highly efficient combustion engines that also run on e-fuels or hydrogen. MAHLE already generates over 60 percent of its sales independently of the passenger car combustion engine. This should increase to 75 percent by 2030. Today, one in every two vehicles globally is equipped with MAHLE components.

MAHLE generated sales of around EUR 11 billion in 2021. The company is represented with over 71,000 employees at 160 production locations and 12 major research and development centers in more than 30 countries. (Last revised: 12/31/2021)

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