

Press Release

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MAHLE Powertrain supports heavy-duty hydrogen combustion engine development

- MAHLE Powertrain begins testing and calibration work on heavy-duty hydrogen combustion powertrains
- £9.8m APC-funded project will deliver fast-to-market solutions designed to help decarbonise the haulage industry
- MAHLE Powertrain's alternative fuel experience and dedicated Northampton hydrogen testing facility play a crucial role

MAHLE Powertrain has entered the testing phase of a key project that will drive hydrogen fuel use in existing heavy-duty truck engines. Project Cavendish, a £9.8m government-funded programme facilitated by the Advanced Propulsion Centre UK (APC), will deliver fast-to-market solutions and a clear upgrade path to enable hydrogen combustion using current platforms and infrastructure, thereby accelerating the decarbonisation of the haulage sector. Crucial to the project is the use of MAHLE Powertrain's flexible testing facility in Northampton, combined with the company's experience with alternative fuels such as hydrogen and methanol.



First hydrogen tube trailer delivery at MAHLE Powertrain Northampton site

“Hydrogen combustion engines (H₂-ICE) are well-suited to heavy-duty, long-distance applications that are hard to electrify. Its use allows industry to take advantage of years of development and investment as a means to accelerate the transition towards net zero,” said Jonathan Hall, MAHLE Powertrain's Head of Research and Advanced Engineering. “Our facilities have

been designed for this type of advanced work with a dedicated hydrogen supply, inhouse-developed monitoring and safety systems, and high-torque dynamometers that are ideally suited to the testing and calibration phase of this project.”

The EU's recently revised CO₂ standards for heavy-duty vehicles, as part of the EU's "Fit for 55" legislative package, require a 45% reduction in CO₂ emissions by 2030, rising to 65% by 2035 and 90% by 2040. Meeting this accelerated timetable, which now also applies to a broader range of vehicles, represents a significant challenge.

In response to this legislation, the UK Government has committed GBP 8.3bn in Great British Energy to invest in the hydrogen industry and up to GBP 21.7bn for the carbon capture industry to pave the way for large-scale infrastructure projects. The technology will complement fuel cell electric vehicles in driving a common requirement for hydrogen infrastructure that will be used for many decades. The potential for hydrogen use extends beyond highway transport into rail, aviation and maritime applications.

Project Cavendish draws on the experience of a number of partners including PHINIA, BorgWarner, Cambustion, Hartridge and MAHLE Powertrain to develop novel fuel-injection systems and supporting turbocharging technology that can be ready for high-volume production in time to meet EUVII/US27 legislation.

MAHLE Powertrain's recently expanded Northampton facility has the capacity to hold two tube-trailers on-site with rapid switch-over between them to ensure a near-continuous supply of hydrogen. Upgraded engine dynamometers with a 900 kilowatts (kW) / 4,000 Newton meter (Nm) nominal capacity can support key heavy-duty demands, while inhouse-designed control systems and software ensure safety.

Help for editors: Photo material for this press release is available at <https://newsroom.mahle.com/press/en>.

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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 electrification and thermal management as well as further technology fields to reduce CO2 emissions, such as fuel cells or highly efficient combustion engines that also run on hydrogen or synthetic fuels. Today, one in every two vehicles globally is equipped with MAHLE components.

MAHLE generated sales just under EUR 13 billion in 2023. The company is represented with approx. 72,500 employees at 148 production locations and 11 major research and development centers in 29 countries. (as of 31.12.2023)

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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 powertrain systems. As a recognized expert in these fields, MAHLE Powertrain is engaged in the extensive research, development and application of new traditional and advanced drivelines into 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 six technical centers strategically located in the UK, Germany, USA, and China with approx. 450 employees in total and is well-placed to provide solutions around the globe. It operates independently of the main group when considering choice of components or technologies.