

Press release

Stuttgart, July 21, 2026

MAHLE accelerates electrification of road transport sector

- IAA world premiere: new range extender system for heavy electric trucks facilitates transition from diesel
- Range extender electric trucks combine the sustainability of electric drive systems with the flexibility and range of the internal combustion engine
- Innovation can lower total cost of ownership over the vehicle life cycle and facilitate climate-friendly investments in the transport sector
- Range extender BEVs make a key contribution to achieving European carbon dioxide fleet targets
- With electrification products for commercial vehicles, MAHLE is among the market leaders in Europe and is expanding its presence with Chinese OEMs
- MAHLE CEO Arnd Franz: "With high-performance technologies and production-ready products for electrification we are aiming for further growth."
- Electrified. Efficient. Economical: at the IAA, MAHLE is showcasing high-efficiency products for greater sustainability and enhanced economics in the transport sector
- In addition to battery-electric trucks and hybrids, renewable fuels are also making a contribution to the defossilization of road transport

MAHLE is accelerating the electrification of road transport. With its new range extender system for heavy electric (BEV) trucks, the Stuttgart automotive component supplier is now paving the way for a faster changeover from diesel trucks, which currently dominate the road transport sector, to battery-electric trucks. Range extender electric trucks combine the sustainability of electric drive systems with the flexibility and range of the internal combustion engine. They assist the cost-intensive road transport sector to lower total cost of ownership over the vehicle life cycle and facilitate climate-friendly investments. In addition, range extender BEVs contribute to achieving European carbon dioxide fleet targets. With its electrification products for commercial vehicles, MAHLE is among the market leaders in Europe and is also expanding its presence with Chinese commercial vehicle manufacturers, who are increasingly entering the European market with battery-electric trucks. "With high-performance technologies and production-ready products for electrification we are

aiming for further growth,” said Arnd Franz, Chairman of the Group Management Board and CEO of MAHLE at a tech event held by the company in Stuttgart. At this year’s IAA Transportation, which is to be held in Hanover from September 15 to 20, MAHLE is exhibiting under the motto of “Electrified. Efficient. Economical.” The company is presenting its new range extender system as a world premiere as well as other high-efficiency products for greater sustainability and improved economics in the transport sector. In addition to products for battery-electric trucks and hybrids, the technology group is showcasing technologies for the use of renewable fuels for the defossilization of the road transport sector.

Forwarders and fleet operators face the challenge of making their business more climate-friendly despite steadily growing pressure on costs, without jeopardizing their economic viability or competitiveness. In this sector, the main obstacles to the growth of e-mobility are still the inadequate charging infrastructure for commercial vehicles in many regions and the limited ranges of battery-electric trucks. Flexibility and reliability are the key factors for business success in this sector. “Time and energy are limited, valuable resources, especially in road transport business; only operators who work economically can survive. With electrification products, MAHLE can help make heavy trucks more efficient and flexible at the same time as reducing operating expenses,” said Arnd Franz. “This is what we will be demonstrating to our customers, international vehicle manufacturers, and fleet operators at this year’s IAA Transportation.”

Range extender system – a range and flexibility booster for fleets

in Hannover, MAHLE will be showcasing its new range extender system for heavy electric trucks as a world premiere. This system provides a flexible range without any compromises and efficiency without restrictions. With this MAHLE innovation on board, a battery-electric truck can cover all the daily ranges required. “Our range extender is a smart “emergency power unit” that is activated at precisely the right moment and significantly increases the range available,” said Dr. Marco Warth, Vice President MAHLE Corporate Research and Advanced Engineering.

The key component of the new system is an efficient high-voltage generator with a continuous output of 110 kilowatts (kW) and a peak output of up to 130 kW, driven by a compact internal combustion engine. The high-voltage generator supplies reliable power to the electric drive system even on difficult trips with a full load. Its architecture can be adapted easily to the performance requirements of a variety of applications and regional markets.

Thanks to its newly developed advanced oil cooling system, the generator has a power density of more than 7 kW per kilogram, allowing a high power output with reduced weight and simplified interfaces.

MAHLE has developed its range extender system as an autonomous unit combining generator, internal combustion engine, thermal and fluid management systems, fuel tank, AdBlue tank and exhaust gas treatment in a compact “box”. This unit will fit into the normal battery installation space of a battery-electric truck and can therefore be integrated into existing battery-electric vehicle platforms without any problems. The system replaces about one-third of the present battery capacity of a battery-electric truck, allowing the truck to be equipped with a smaller battery. As a result, the rear axle load is reduced by about 400 kg and the total vehicle weight by about 600 kg. All in all, a range extender BEV truck can reach a total range of more than 800 km, with the battery providing about 400 km and the range extender the remaining 400 km.

Under real-life operating conditions, the truck emits about 80 percent less CO₂ in range extender operation than a truck with a conventional drive system. If the internal combustion engine, which is biofuel-ready thanks to MAHLE components, is operated with renewable fuels such as the advanced HVO100 bio-diesel, the truck has virtually zero CO₂ emissions.

A comprehensive thermal management system with 48 kW of high-temperature and 15 kW of low-temperature cooling capacity ensures stable operation of the range extender system under heavy-duty operating conditions.

For the internal combustion engine, MAHLE has continued the development of components to reduce fuel consumption and operating costs. For example, the new Power Cell Unit (PCU) features higher performance, a longer service life and greater efficiency. The new oil management system combining the oil filter, oil cooling system and bypass valve as well as other optional functions, also features improved efficiency and economics. Depending on the material used for the housing, the material cost can be reduced by up to 20 percent, the CO₂ footprint of the product by up to 50 percent and the weight by as much as 25 percent. In addition, this product has a longer service life, further reducing overall operating expenses. The PCU and the oil management module can also be used with other types of drive system and are being showcased for the first time at IAA Transportation.

“Our range extender is the key to disconnecting the market ramp-up of battery-electric trucks from the inadequate pace of infrastructure development,” said Marco Warth. “If the charging station is busy, or alternative routes are called for as a result of weather conditions or congestion and infrastructure reaches its limits, other fleets can be stranded; an e-truck with range extender just carries on. Operational availability is maintained, even under peak conditions.”

MCT electric motor for heavy commercial vehicles – free from rare earth elements, lighter and more efficient

As another world premiere at IAA Transportation, the company is showcasing a MAHLE Contactless Transmitter (MCT) electric motor developed for use on the electric drive axles of heavy commercial vehicles. This motor is not equipped with permanent magnets and therefore does not require any rare earth elements. Compared with a benchmark permanent magnet synchronous motor (PMSM), the MCT electric motor saves up to 3 kilograms of rare earth magnets per vehicle. The avoidance of rare earth magnets further reduces the environmental footprint of the electric drive system.

The new motor from MAHLE is 10 percent lighter and more efficient than permanently excited electric motors with magnets under real-life driving conditions. The advantage compared with the permanently excited variant is higher efficiency within a significantly larger operating envelope covering a variety of different driving situations. The MCT electric motor has a peak output of 370 kW and torque of over 900 Nm at 3,900 rpm. The motor efficiency in the VECTO cycle, an EU simulation tool for determining the fuel efficiency of new vehicles, is about 95 percent.

MAHLE is well placed with its customers and ready for growth with electrification

MAHLE has gained a leading position in electrification and the field of thermal management which is so important in this context. That applies to all business areas and fields of application, and especially to commercial vehicle business. The group offers components and systems for the electrification of vehicles ranging from cycles and two- or three-wheel scooters to passenger cars and trucks. Every year, MAHLE sells about 8 million electric drive systems and electric ancillaries to customers in the automotive industry, in the smart mobility field and in other sectors. From 2026 to 2029, more than 35 electrified vehicle platforms of leading passenger car and truck manufacturers will be launched based on MAHLE technology and products.

In Europe, MAHLE is present in every battery-electric and fuel cell truck. The company is the market leader for electric climate compressors and among the top three in the marketplace as regards electric pumps and fans. In China, MAHLE is working together with all truck manufacturers to expand its presence in electrified vehicles. The group intends to grow in the commercial vehicle sector, especially with thermal management modules, electric fans, charging connection boxes, battery cooling plates and traction motors.

Medium and heavy commercial vehicles account for about 20 percent of the group's business with the automotive industry. The group benefits not only from its development and production network in all major markets but also from its broadly diversified customer portfolio. MAHLE cooperates with more than 120 customers in the commercial vehicle and off-road sector. The group is especially well represented in Europe and the Americas. Orders received for commercial vehicle business in the first half of 2026 were significantly above the corresponding figure for the previous year, as in passenger car business. "We expect that we will grow more strongly than the market with our commercial vehicle products over the next five years," said Arnd Franz. MAHLE sees the greatest potential for growth in Asia.

The CEO mentioned structural challenges and uncertainties for the business environment, including poor prospects for the European economy, customs tariff developments that were difficult to plan and poor demand in North America as well as growing competitive pressure from Chinese imports in Europe, especially as regards battery-electric vehicles.

Renewable fuels need to be expanded

The internal combustion engine remains the dominant drive system for commercial vehicles throughout the world. The share of internal combustion engines in this sector is expected to fall only slightly from the current figure of about 83 percent to about 73 percent by 2035, while electric drive systems will continue to grow but will still play a secondary role.

Even if the ramp-up of e-mobility were to succeed as planned, the CO₂ emissions of the conventional fleet would still remain at the 2010 level, said Arnd Franz, referring to figures published by the International Energy Agency (IEA). "It is therefore clear that, in addition to electrification, supplies of sustainable fuels such as HVO100 and bio-LNG need to be massively expanded."

In this situation, MAHLE remains a reliable supplier of components for high-efficiency internal combustion engines which can make a considerable contribution to reducing carbon dioxide emissions in road transport with renewable fuels. In the market for medium and heavy commercial vehicles, MAHLE is among the top five suppliers of components for internal combustion engines for nearly each product group. In the case of piston assemblies, cooling modules, Visco fans and air conditioning systems, the group is among the top three suppliers or even the market leader.

Large quantities of biofuels are already available and these can help in effectively reducing carbon dioxide emissions immediately, also and especially with respect to existing vehicles. The MAHLE Global Biomobility Center in Brazil has been in operation for two years for the further development of biofuels, bio-materials and related applications. Currently, the research and development facility is working

on a wide variety of projects, for example for optimizing the efficiency of biofuel engines and multi-fuel engines as well as new, sustainable materials and their applications.

MAHLE also sees hydrogen and hydrogen derivatives as a key factor for the de-fossilization of the road transport sector and is therefore working on all the major hydrogen engine projects that are currently in progress.

The use of hydrogen for power generation in fuel cells is a further technology which is interesting for the future of the commercial vehicle sector. At the same time, this sector will be a key factor in developing a hydrogen economy in view of its size and existing structures. MAHLE is currently participating in a large number of major development projects in Europe and Asia. Arnd Franz: "It will only be possible to embark on the future of the hydrogen economy without hydrogen-powered commercial vehicles if massive, risky state subsidies are made available."

Technology needs reliable political conditions

Arnd Franz emphasized that the challenges arising in connection with climate goals could not be solved through technology alone. He said that reliable political conditions were needed.

As regards Europe, Franz called for an objective review of the CO₂ fleet regulation for heavy commercial vehicles. Ideally, this should be combined with the review of the AFIR (Alternative Fuels Infrastructure Regulation) by the end of 2026. The objectives should be ambitious but should be aligned more closely with market reality, infrastructure and technical feasibility. "Technological diversity will be crucial," said Franz. "Battery-electric vehicles, hydrogen and renewable fuels for internal combustion engines must be used together to reduce CO₂ emissions. Range extender systems should also be recognized pragmatically as a facilitator of electrification and taken into consideration in regulations.

Franz called for a reliable foundation for the market ramp-up of the various energy sources: charging infrastructure, hydrogen refueling stations and economically viable storage solutions were crucial prerequisites for the productive use of commercial vehicles.

He added that successful transformation was generated through the effective interaction of regulation, infrastructure, funding and industrial policy. Europe should turn more strongly towards an integrated approach, said Franz.

"The transformation to climate-neutral road transport is technically feasible and can also be accomplished economically," said the CEO. However, he added that this would only be possible if industry, government and customers acted together in a coordinated way. "At MAHLE, we contribute technological diversity and

comprehensive systems competence to actively forge ahead with the transformation. The truck of the future will operate with MAHLE!“

Note for journalists: The press release and accompanying images are available in the MAHLE Newsroom at: <https://newsroom.mahle.com/press/en/>

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Arnd Franz, Chairman of the Management Board and CEO of MAHLE



Dr. Marco Warth, Vice President MAHLE Corporate Research and Advanced Engineering



The MAHLE Group's new range extender system for heavy electric trucks combines the sustainability of an electric drive system with the flexibility and range of an internal combustion engine.



The key component of the range extender system is a high-voltage generator that provides a reliable supply of energy to the truck drive system even on demanding routes with a full load.



The new MCT electric motor from MAHLE for use on the electric drive axes of heavy trucks is not equipped with permanent magnets and therefore does not require any rare earth elements. It is lighter and more efficient than permanent magnet electric motors.



With high-efficiency components, MAHLE is forging ahead with its total systems approach to the electrification of heavy trucks.



Thanks to optimized pistons, the new Power Cell Unit (PCU) from MAHLE has higher performance, longer service life and greater efficiency than its predecessors. With sustainable fuels, it makes the operation of internal combustion engines possible with almost zero CO₂ emissions.



The new oil management system from MAHLE features efficiency and economics improvements including lower material costs, lighter weight and reduced carbon footprint.

Contact persons at MAHLE Communications:

Kerstin Lau

Head of Media Relations

Phone: +49 173 6180 956

E-Mail: kerstin.cynthia.lau@mahle.com

Manuela Hoehne

Director Communications and Public Relations

Phone: +49 173 3180 217

E-mail: manuela.hoehne@mahle.com

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 technologies to reduce carbon emissions, such as fuel cells or highly efficient, clean combustion engines that also run on synthetic fuels, renewable fuels or hydrogen.

MAHLE generated sales of €11.3 billion in 2025. Employing some 64,000 people at 127 production locations and 11 technology centers, the company is represented in 28 countries. (as at: 12/31/2025)

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