

Press release

Hanover, September 16, 2024

Electrification and hydrogen: MAHLE technologies for transportation of the future

- At IAA Transportation, MAHLE is showcasing innovations for the rapid decarbonization of the commercial vehicle sector
- Fuel cell truck exhibit with fuel cell peripherals, thermal management and heavy-duty electric axle demonstrates the group's systems competence.
- Further world innovations: extremely quiet, bionic high-performance fan and fuel-saving evaporative cooling for fuel cell and electric trucks
- CEO Arnd Franz: "We are committed to shaping a sustainable transportation sector with a view to strengthening the foundations for economic growth."

Climate protection cannot be successful without the transportation sector. In view of an expanding global economy and population growth, road transport volumes are expected to grow by over 40 percent by 2030, compared with 2019. This will make commercial vehicles a key lever for carbon-neutral mobility. "We are committed to shaping a sustainable transportation sector with a view to strengthening the foundations for economic growth," said Arnd Franz, Chairman of the MAHLE Management Board and CEO, on Monday at IAA Transportation in Hanover. The technology group develops components and systems for battery-electric and fuel cell vehicles and is making the internal combustion engine fit for the use of hydrogen and other renewable fuels. At this year's international commercial vehicle show, MAHLE is showcasing for the first time a complete system for a fuel cell truck with fuel cell peripherals, thermal management and a fully functional heavy-duty electric axle. Other product innovations include a high-performance, fuel-saving evaporative cooling system for demanding fuel cell and electric vehicles as well as a bionic fan that makes an electric truck considerably quieter at full load or during rapid charging by halving the sound pressure level. All electrified trucks now available contain significant volumes of MAHLE products and the group is involved in all major development projects for fuel cell vehicles and hydrogen engines currently in progress.

Speaking to journalists, Arnd Franz emphasized that the growing electrification of the transportation sector offered considerable potential for the company. He said that the volume of MAHLE components per vehicle was twice as high in the case of battery-electric trucks as with conventional internal combustion engine trucks and would be doubled once again in the case of fuel cell trucks. The sustainable commercial vehicle sector is a significant business area for MAHLE. The group's customers currently include more than 120 international commercial vehicle brands in the on-highway and off-highway segments. The commercial vehicle sector accounts for about one-fifth of MAHLE's OEM business and the share is growing.

Factors such as use cases, the distances traveled, payloads and the infrastructure available differ considerably throughout the various regions of the world. "We are committed to technological diversity with a view to decarbonizing the transportation sector, with its wide range of requirements, as rapidly as possible. MAHLE offers the technologies needed," Arnd Franz added. "Our products are developed, tested and ready for volume production."

Systemic approach for a fuel cell truck

The conversion of hydrogen into electricity in the fuel cell places high technical demands on the vehicle. At Hanover, MAHLE is showcasing its systemic approach to a fuel cell truck with fuel cell peripherals, thermal management and a fully functional heavy-duty electric axle to visualize the interaction and interdependencies between individual product groups.

Heavy-duty electric axle with SCT electric motors and liquid management

MAHLE has fully integrated two SCT electric motors with liquid management systems (without external piping and tubes) in the heavy-duty electric axle. This technology demonstrator highlights MAHLE's system competence and the production maturity of its innovations for the electrification of heavy-duty commercial vehicles.

The SCT (Superior Continuous Torque) electric motor is the endurance champion among the electric motors. Its continuous output of 480 kW and efficiency of 92 percent make it the ideal electric drive system for heavy-duty traffic in battery-electric trucks and fuel cell applications. With the electric axle, MAHLE can deliver 35,000 Nm of torque to the wheels. A 35-tonne fuel cell truck could therefore cross the Brenner pass from Innsbruck to Bolzano with a time saving of 3.5 minutes or 10 percent faster than a diesel truck.

Further details of the SCT electric motor:

- Can deliver high power for an unlimited time
- Unprecedentedly small, light, and efficient
- Available without rare earths, if requested by the customer
- Suitable for cars, commercial vehicles, construction machinery and tractors
- SCT can be combined with the principle of the MCT (Magnet-free Contactless Transmitter) electric motor

World innovation: evaporative cooling

A key component for thermal management is the newly developed evaporative cooling system that MAHLE is presenting to a wider public for the first time at IAA Transportation. This system uses the cooling effect of evaporating water. Water is sprayed onto the coolant cooler via a grating, ensuring optimum temperature control for the fuel cell.

Further product details:

- Up to 50 kW more cooling performance in the same installation space
- Allows the fan rating to be reduced; for a 300 kW fuel cell truck this results in a smaller fan motor and additional propulsion power of 25 kW or plus 8 percent.

World innovation: bionic high-performance fan

To reduce loud fan noises of commercial vehicles that may create a nuisance under full load or during recharging at night in residential areas or at rest areas, MAHLE has developed a bionic fan. The engineers took the feathers of an owl, one of the most silently-flying birds, as their model. It has been shown that the feathers of an owl have a noise-reducing effect.

Product details:

- The fan noises of a truck are reduced by up to 4 dB(A) – more than halving the sound pressure level
- 10 percent efficiency improvement
- 10 percent weight reduction
- Rating range from 300 watts to 35 kW
- Broad range of applications from small electric cars to especially demanding commercial vehicles with fuel cells and battery-electric drive systems.

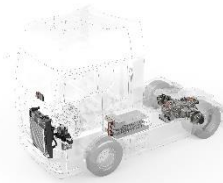
IAA Transportation is being held in Hanover from September 17 to 22. The MAHLE stand is in Hall 12.

Note: The digital press folder for IAA Transportation with further information and images is available in the MAHLE Newsroom:

www.mahle.com/IAAtransportation2024 or using this QR code



Image copyrights: MAHLE Group



At IAA Transportation, MAHLE is presenting its systematic approach to a fuel cell truck with fuel cell peripherals, thermal management, and – for the first time – a fully functional heavy-duty electric axle.



The technology demonstrator for an electric axle highlights MAHLE's systems competence and the production maturity of its innovations for the electrification of heavy-duty commercial vehicles.



Thanks to its high continuous output, the SCT (Superior Continuous Torque) electric motor from MAHLE is the ideal electric drive system for heavy-duty traffic in battery-electric trucks and fuel cell applications.



The new evaporative cooling system ensures optimum temperature control for a fuel cell. It combines improved cooling performance with reduced hydrogen consumption.



The newly developed bionic fan makes vehicles with demanding fuel cell and battery-electric drive systems significantly quieter.



Arnd Franz, Chairman of the Management Board and CEO of MAHLE at IAA Transportation in Hanover

Contact persons at MAHLE Communications:

Kerstin Cynthia Lau

Head of Media Relations

Phone: +49 711 501-13185

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

Manuela Höhne

Director Communications & Marketing

Phone: +49 711 501-12506

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 CO2 emissions, such as fuel cells or highly efficient, clean combustion engines that also run on renewable fuels such as hydrogen. Today, one in every two vehicles globally is equipped with MAHLE components.

MAHLE generated sales of almost EUR 13 billion in 2023. Employing more than 72,000 people at 148 production locations and 11 technology centers, the company is represented in 29 countries. (as of 31.12.2023)

#weshapefuturemobility