Press release

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MAHLE is Set for the Future: Production-Ready Innovations for Sustainable Mobility

- At IAA Mobility, MAHLE is presenting innovations for electrification and further sustainable powertrain solutions
- New range extender system and thermal management module extend the range of electric vehicles and relieve customers' range anxiety
- MAHLE supplies components for efficient ethanol engines which help in leveraging the tremendous potential of biofuels for climate protection immediately and effectively
- Technological diversity is and remains the strategic approach of the globally active group
- MAHLE CEO Franz: "Europe needs technological diversity for climate protection, to strengthen its competitiveness and to safeguard employment in Europe."

At this year's IAA Mobility in Munich, MAHLE is presenting innovations for electrification and further sustainable powertrain solutions to reduce CO_2 emissions in road traffic. "Our products are not just visions. They are ready for series production and offer genuine solutions to genuine challenges faced by our customers," said Arnd Franz, Chairman of the MAHLE Management Board and CEO, speaking to an audience of journalists at the IAA. He added that MAHLE's highly efficient new range extender system with its high-voltage generator could extend the range of battery-electric vehicles to as much as 1,350 km, making it the "motor of e-mobility". A compact thermal management module with integrated heat pump can extend the range of electric vehicles by up to 20 percent even at low temperatures. In addition, MAHLE is showcasing components for internal combustion engines that can be operated on up to 100% ethanol, massively and immediately reducing the carbon dioxide emissions of the existing vehicle pool. "MAHLE is doing its homework and working on the decarbonization of road traffic in all areas of technology. Europe must now follow the other major world markets and allow competition between all technologies in its CO_2 regulation," said the CEO. "This is not just a matter of climate protection but also of Europe's competitiveness and safeguarding employment." IAA Mobility is being held from September 9 to 14, 2025. The MAHLE stand is in Hall A1.

“Efficiency in Motion” is the mission of the MAHLE Group. Under the heading of “Efficiency³”, the company is presenting at the international motor show innovations from its three strategic areas of electrification, thermal management and sustainable internal combustion engines. “Our customers expect quality, reliability, a good price-performance ratio, and efficiency,” said Arnd Franz. “And that is what MAHLE delivers.”

Range extender system – the motor of e-mobility: compact, resource-conserving drive package

In addition to pure battery-electric vehicles, MAHLE’s strategy is based on range extender technology to boost acceptance of e-mobility by relieving customers’ range anxiety. It is forecast that the market for electric vehicles with range extenders will grow by 15 percent per year up to 2030; strong demand is already evident, especially in China. The new system from MAHLE allows the cost-effective right-sizing of the battery and reduces charging times on longer trips.

Technical specifications:

System performance:

- Maximum range with one battery charge: up to 1,350 km (WLTP) depending on vehicle model and battery size
- Rated continuous output: 85 kW
- System voltage: 800 V

High-voltage generator:

- Peak efficiency: over 97 percent
- Continuous performance density: over 50 kW/liter
- Permanently excited electric motor with fully integrated cooling system
- Direct rotor cooling reduces the need for rare earths used in permanent magnets

Internal combustion engine:

- Efficiency: over 42 percent
- MAHLE jet ignition combustion technology
- Turbocharging
- Miller valve timing for efficient combustion
- Quiet operation
- Developed for the use of biofuels

System benefits:

- Compact, lightweight design
- Easy integration in vehicle platforms
- Minimized material and space requirements

Thermal management module: the efficiency and range booster

The new thermal management module from MAHLE resolves the key challenge of e-mobility – the loss of range caused by heating at low temperatures. As the central interface for the entire cooling and refrigerant cycle of the vehicle, it ensures that each component of the drive and energy storage system is maintained at the right temperature at all times under all climate conditions at the same time as ensuring a comfortable climate in the passenger compartment. The problem of the lack of waste heat in electric drive systems is elegantly solved by integrating a high-efficiency heat pump. Additional heating systems are no longer needed.

Technical specifications:

System performance:

- Range increased by up to 20 percent compared with systems using electric heaters
- Air-conditioning compressor, heat exchanger, coolant pumps, sensors and valves are integrated in a compact unit
- Reduction in number of coolant pumps per vehicle from four to three
- Start of series production within the next two years

Refrigerant compatibility:

- Current standard: R1234yf
- Future-proof thanks to unproblematic change-over to R290 (propane)
- Without comprehensive design modifications to existing vehicle platforms

System benefits:

- Reduced space requirements thanks to compact, modular design
- Lower development costs for OEMs
- Cost optimization through integrated solution
- Perfect harmonization of key components as a result of in-house development by MAHLE
- Future proofing of present vehicle platforms

Ethanol Power cell unit: reduces CO_2 emissions and saves fuel

Specially developed engine components (power cell unit - PCU) for ethanol operation underscore MAHLE's commitment to sustainable, high-efficiency internal combustion engines. This technology can increase the share of renewable fuels in road traffic and accelerate the decarbonization of the transport sector with immediate effect.

Technical specifications:

- Specially developed pistons and optimized piston pins and rings for ethanol requirements
- Adapted valve sets
- Holistic system optimization of all components

Material properties:

- High wear resistance
- Increased corrosion resistance
- Improved heat resistance
- Minimized lubricating oil consumption

System benefits:

- Lower greenhouse gas emissions; life cycle analyses indicate a CO_2 reduction of up to 70 percent with E100 operation – on the basis of sustainable bio-ethanol production, almost carbon-neutral E100 operation is feasible
- Conservation of valuable resources; additional fuel saving of up to 2 percent
- Can be used immediately on the existing vehicle fleet without any compromises in terms of performance or reliability

Bionic radial blower: penguin makes for efficiency

With a view to further improving the efficiency of its products, MAHLE has repeatedly been inspired by nature. The most recent example is a revolutionary bionic radial blower for vehicle air conditioning systems. In this case, the development engineers at MAHLE took their inspiration for the design of the blower blades from penguins' flippers. They were supported by an in-house AI tool. MAHLE refers to the process of engineers guiding AI and providing data as "superhuman engineering". This approach allowed more than 30 million virtual designs to be generated within a very short space of time and the first prototypes were rapidly produced. The innovative blower can be used in a wide range of passenger cars and commercial vehicles and sets new standards for the sector.

System benefits through optimized design:

- 4 decibels quieter (-60 percent) than conventional components
- 15 percent higher energy efficiency
- The compact, symmetrical design of the air conditioning unit creates more space for other components, a key advantage especially for battery-electric vehicles.

MAHLE is also presenting solutions for smart charging on its stand. MAHLE chargeBIG has become an established player for professional, scalable cable-connected charging infrastructure. Several thousand charging points have already been installed in Germany and France. Since the summer of 2025, the latest product generation has been available. This makes the electrification of customer parking spaces even easier. chargeBIG includes the smallest wallbox in the world. It now also offers a mobile solution that can be used immediately on construction sites and at events without complex installation work.

MAHLE's inductive charging system paves the way for the rapid, area-wide introduction of this attractive alternative to cable-connected charging. The convenient positioning system offered by MAHLE, which has been recognized as a global standard by American standardization Institute SAE International, ensures that the vehicle is aligned in the optimum position above the infrastructure unit, maximizing the efficiency of energy transmission – over 92 percent are possible under everyday conditions.

At IAA Mobility, MAHLE is showcasing products for the targeted, fast and efficient maintenance of electric vehicles including its E-HEALTH Charge battery diagnostics unit. This unit can measure the performance of the high-voltage battery in an electric vehicle within only 15 minutes.

In the test drive area of the show, visitors can see for themselves how MAHLE controls and trains the air conditioning system of a vehicle individually for each occupant using artificial intelligence and takes active cabin air purification to a new quality level.

Also in the test drive area, visitors can view the MAHLE Workshop Heroes Van. This van, from the company's Aftermarket business unit, is currently touring vehicle repair shops in Europe to present new service equipment from MAHLE Lifecycle and Mobility for vehicle diagnostics, calibration, refrigerant cycle maintenance, air conditioning service and battery diagnostics, allowing customers to test these products at their own facilities.

Note for editors: The digital press kit for IAA Mobility with additional information and image material is available in the MAHLE Newsroom at https://newsroom.mahle.com/press/de/events/iaa-mobility-2025/ or via this QR code:

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Arnd Franz, Chairman of the Management Board and CEO of MAHLE at IAA Mobility in Munich.

IAA world premiere: The range extender system from MAHLE consists of a highly efficient high-voltage generator driven by a small internal combustion engine.

IAA world premiere: The new thermal management module from MAHLE with integrated heat pump allows 20% more range for electric vehicles.

MAHLE's power cell unit designed for E100 operation drastically reduces carbon dioxide emissions and lowers fuel consumption.

IAA European premiere. The flippers of a penguin were the model for the aerodynamic, slightly curved shape of the blades of the bionic radial blower for automotive air conditioning systems.

Slim parking space design: MAHLE chargeBIG smallBOX – the smallest wallbox in the world.

Inductive charging with user-friendly positioning system from MAHLE.

AI ensures an individually controlled good climate in the vehicle thanks to MAHLE A.I. Climate Control.

The MAHLE Active Air Purifier ensures first-class air quality in the vehicle interior.

The MAHLE Workshop Heroes Van brings new service equipment from MAHLE to repair shops where it can be tried out in practice.

Vehicle diagnostics made more efficient and intuitive than ever before: the MAHLE TechPRO® tablet for workshops.

Battery diagnostics in 15 minutes – with MAHLE E-HEALTH Charge.

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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 technologies to reduce carbon 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 €11.7 billion in 2024. Employing just under 68,000 people at 135 production locations and 11 technology centers, the company is represented in 28 countries. (as at: 12/31/2024)

#weshapefuturemobility