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Innovative fuel cell truck Nikola Two with MAHLE as thermal management partner

Stuttgart, September 17, 2018 – In the development of its fuel cell truck Nikola Two, the Nikola Motor Company has turned to MAHLE for its expertise in thermal management. The systems specialist based in Stuttgart/Germany is the development partner and supplier for the truck's entire cooling and air conditioning system.

When it comes to electric vehicles, the economical use of heat and cold flows is the basis for power output, cruising range, and service life. In order to address the various thermal requirements, coolant circuits at different temperature levels are required. The primary task of thermal management is to provide optimized media temperatures to meet the demand for the most efficient energy utilization.

The U.S. company Nikola is using MAHLE's extensive thermal management expertise in the development of the fuel cell truck Nikola Two. The tractor is designed to achieve a cruising range of 500 to 1,000 miles at a maximum power output of 1,000 hp—with zero local emissions. Its market launch is already planned for 2021. The development partnership between Nikola and MAHLE includes both the air conditioning system for the driver's cabin and the cooling systems for all drive components.

"With MAHLE, we have gained a highly agile partner for the development of our fuel cell truck Nikola Two. MAHLE provides a wealth of experience and is an important contributor of our project's success. MAHLE's holistic system competence and high degree of vertical integration in liquid and thermal management systems were crucial, allowing us to obtain single-source solutions

for a drive concept of the future," says Trevor Milton, founder and CEO of the Nikola Corporation.

Multiple cooling systems are being developed and produced for the fuel cell, the traction motor, the power electronics, and the battery with all relevant system components coming from MAHLE. These also include, for example, electric coolant pumps and fans. The air conditioning system for the cabin of the heavy semitrailer tractor is being developed and manufactured by MAHLE as well, and also comprises the complete system, including the 800V electric compressor.

"MAHLE has continued to advance innovative technologies for fuel cell drives in recent years—the complete thermal management system is a key part of this. We are therefore now in a position to confidently and competently support Nikola's dynamic development process and time-to-market. We are thrilled to be able to contribute our know-how to such a highly innovative vehicle, which promises new standards in performance, efficiency and operating costs for long haul transportation," says Arnd Franz, Executive Vice President Sales and Application Engineering on the Management Board of the MAHLE Group.

About MAHLE

MAHLE is a leading international development partner and supplier to the automotive industry as well as a pioneer for the mobility of the future. The MAHLE Group is committed to making transportation more efficient, more environmentally friendly, and more comfortable by continuously optimizing the combustion engine, driving forward the use of alternative fuels, and laying the foundation for the worldwide introduction of e-mobility. The group's product portfolio addresses all the crucial issues relating to the powertrain and air conditioning technology—both for drives with combustion engines and for e-mobility. MAHLE products are fitted

in at least every second vehicle worldwide. Components and systems from MAHLE are also used off the road—in stationary applications, for mobile machinery, rail transport, as well as marine applications.

In 2017, the group generated sales of approximately EUR 12.8 billion with about 78,000 employees and is represented in more than 30 countries with 170 production locations. At 16 major research and development centers in Germany, Great Britain, Luxembourg, Spain, Slovenia, the USA, Brazil, Japan, China, and India, around 6,100 development engineers and technicians are working on innovative solutions for the mobility of the future.

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