

**From tap to tank—MAHLE makes water injection suitable for everyday use**

- Components from MAHLE make it possible to use tap water for engines with water injection
- Combination of activated carbon filter and ion exchanger yields compact design and long life cycles

Stuttgart/Germany, May 29, 2019 – Water injection in a gasoline engine protects components at high engine speeds and loads by preventing mixture enrichment and reduces pollutant emissions in partial-load operation. Existing systems use a water tank that must be regularly refilled with de-ionized water. To facilitate this refilling process for the driver, MAHLE is developing a combination of activated carbon filter and ion exchanger. This treatment module allows the dedicated tank in the vehicle to be filled with tap water, which is then treated on board for injection in the engine.

The compact design means the treatment module can be installed at various locations in the vehicle. It can also be integrated in the infeed to the tank, but this has disadvantages in terms of the contact time between the tap water and the filter and ion exchange medium during the filling process. Inline installation as a bypass of the water pump or in the tank, or as an inline element upstream of the injectors, has proven to be promising. The latter variant, in particular, has palpable benefits in terms of costs and serviceability.

The concept of filling the tank with tap water presents tough requirements, especially considering local markets, as water quality and composition vary greatly around the world. MAHLE benefits from its global expertise in the areas of filtration and engine technology and incorporates the results of regional tests in the development. As part of the ongoing tests, MAHLE is also

investigating the treatment of water that is obtained on board during vehicle operation. Water sources include the air conditioning system and the exhaust gas flow, which has a water content of about 13 percent for stoichiometric combustion.

**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 2018, the group generated sales of approximately EUR 12.6 billion with more than 79,000 employees and is represented in more than 30 countries with 160 production locations. At 16 major research and development centers in Germany, Great Britain, Luxembourg, Spain, Slovenia, the USA, Brazil, Japan, China, and India, more than 6,100 development engineers and technicians are working on innovative solutions for the mobility of the future.

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