

Oil-free: MAHLE air compressor components

- MAHLE technology enables oil free compressor design
- Teflon piston ring and antifriction piston coating provide for smooth operation and high durability

Stuttgart, August 14, 2018 – The new MAHLE components for the design of oil-free compressors represent a small revolution in the production of compressed air for commercial vehicle brake systems. Thanks to the use of a Nikasil[®]-coated cylinder in combination with a special teflon piston ring and a sliding lacquer piston coating on the piston skirt, oil lubrication—previously a crucial step—can be omitted without any impact on the service life.

The advantages are evident: clean, oil-free compressed air flow, low maintenance costs, low weight, and low frictional resistance because no oil control ring is necessary. MAHLE offers the piston, piston ring, and cylinder as a complete unit. For the compressor manufacturer, this means minimal systems weight thanks to the use of aluminum pistons and cylinders, optimal temperature control of the perfectly harmonized components, and high durability. Taking it a step further, the new components make it possible to physically separate the compressor from the gear drive of the combustion engine and power it via an electric 48-volt MAHLE drive that can be controlled to meet demand. This not only minimizes background noise but also achieves a measurable reduction in CO₂, depending on the driving situation.

This is ideal for future use in battery electric vehicles, which cannot draw on an existing engine oil reservoir like vehicles with a combustion engine. The Nikasil[®] coating, PTFE piston rings, and sliding lacquer piston coating on the piston skirt also offer advantages for manufacturers who would like to continue using oil-lubricated compressors for the time being, because they reduce the compressor's oil consumption, friction, and weight.

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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