

New air duct products made from bio-based raw materials

Frankfurt, September 2013 – The plastics used in the automotive industry are primarily based on petroleum. In its search for alternatives, MAHLE tested various bio-based plastics and ultimately validated one material as ready for series production. This new bioplastic is first being used for air duct products.

Large quantities of various types of plastic are found in vehicles. Due to the limited availability and rising prices of petroleum-based plastics, it seems reasonable to investigate alternatives and develop them to readiness for series production. These alternatives should protect the environment and not represent an encroachment on the food chain, i.e., they should not be based on starch as a raw material, for example. Bio-based plastics must also be available in sufficient quantity.

As part of a predevelopment project, MAHLE, in conjunction with DuPont Performance Polymers, has investigated a bio-based blow mold material for pipes for unfiltered air as well as clean air, and validated it as ready for series production. Furthermore, a comparison with conventional petroleum-based blow mold plastics was performed.

Regardless of the material selection, the requirements for air ducts, such as unfiltered and clean air guides, continue to rise. The trend toward a modular system approach demands more flexible and lightweight components that can be employed even under very tight installation space conditions. Another challenge consists in the low-cost, effective production of what are often very complex shapes. The increasingly difficult installation and removal conditions for service purposes are central aspects in the development of current air duct products.

In an effort to validate the properties of the new bio-based blow mold material, first prototypes were initially produced without modifications to the sample and series production mold. In comparison with a conventional, petroleum-based material, the bio-based plastic is convincing, with improved machinability and excellent flow properties. Better surface quality means less air turbulence within the air duct system. Extensive validation work in accordance with typical OEM specifications demonstrates better flexibility of the blow mold parts due to greater motility of folds. The greater component flexibility not only allows more freedom in shape design, but also provides advantages in the installation and removal of air duct products at the customer and in maintenance service. After simulated aging, the components were tested for rigidity, elongation at fracture, deflection, and pull-off forces. All recorded values are at least as good as the comparable values from the conventional material that was evaluated in parallel. Flawless functionality is thus established in prototypes. Another positive aspect is the achieved weight reduction, which can amount up to 25 percent, depending on the component size.

About MAHLE

The MAHLE Group is one of the 30 largest companies in the automotive supply industry worldwide. With its two business units Engine Systems and Components as well as Filtration and Engine Peripherals, MAHLE ranks among the top three systems suppliers worldwide for piston systems, cylinder components, as well as valve train, air management, and liquid management systems. The Industry business unit bundles the MAHLE Group's industrial activities. These include the areas of large engines, industrial filtration, as well as cooling and air conditioning systems. The Aftermarket business unit serves the independent spare parts market with MAHLE products in OE quality.

In 2012, the MAHLE Group achieved sales of nearly EUR 6.2 billion (USD 7.9 billion); approximately 48,000 employees work at over 100 production plants and 7 research and development centers.

Further queries:

MAHLE GmbH

Ruben Danisch

Corporate Communications/Public Relations

Pragstrasse 26–46

70376 Stuttgart

Germany

Phone: +49 711/501-12199

Fax: +49 711/501-13700

ruben.danisch@mahle.com