

News Release



World's first rear axle transmission crossbeam made of plastic in the S-Class from Mercedes-Benz

- **Joint development between ContiTech Vibration Control and BASF**
- **Engineering plastic Ultramid® A3WG10 CR saves 25% weight compared to die-cast aluminum design**

The world's first plastic transmission crossbeam in the rear axle subframe has been developed by ContiTech Vibration Control and BASF for the S-Class from Mercedes-Benz. It is made from the engineering plastic Ultramid® A3WG10 CR, a specialty polyamide from BASF which is particularly reinforced and optimized to withstand high mechanical loads. Compared to the previous beam made from die-cast aluminum, this highly durable component offers a weight saving of 25%, better acoustics as well as excellent mechanical properties even at high temperatures and conforms to the latest crash requirements. The design expertise of BASF's simulation tool Ultrasim® also made a major contribution to these properties.

The plastic load-bearing structural component meets all the requirements for the static and dynamic loads which act on a transmission beam: As a central component of the rear axle it supports part of the torque which is transferred from the engine to the transmission, and bears a constant share of the load of the differential. This is why the Ultramid® crossbeam is used in all the vehicle designs from Mercedes-Benz with all-wheel drive, with the exception of the AMG cars.

In order to replace the aluminum in this demanding, crash-relevant

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application, the plastic has to meet high mechanical requirements: The plastic Ultramid® A3WG10 CR (CR = crash-resistant), which is 50% glass fiber reinforced, shows optimum strength and rigidity and displays a low tendency to creep under constant loading. In addition, the material has to withstand high bending torques. The component shows good NVH performance (NVH= noise, vibration, harshness).

“The new rear axle transmission crossbeam is a milestone in the use of polyamides in the chassis. It has the potential to set a new trend in the automotive industry,” says Kai Fruehauf, head of the ContiTech Vibration Control business unit. “In order to replace metal with high-performance plastics, it is necessary to make optimum use of the material and adapt it to the particular load situations, as BASF has demonstrated in the development of Ultramid® for the transmission crossbeam.”

BASF used its Ultrasim® simulation tool in the early phase of development of the new crossbeam in order to determine the size of the component, optimize the component geometry and predict how the component would behave in injection molding and in operation: The simulation of ultimate loads, strengths under dynamic loading and crash safety reflected the real component behavior very well. ContiTech Vibration Control used Ultrasim®'s Integrative Simulation to model the entire manufacturing chain. Thus it was possible to define the component geometry at an early stage and reduce the number of prototypes.

Further information: www.ultramid.de

About BASF's Performance Materials Division

BASF's Performance Materials division encompasses the entire materials' know-how of BASF regarding innovative, customized plastics under one roof. Globally active in four major industry sectors - transportation, construction, industrial applications and consumer goods – the division has a strong portfolio of products and services combined with a deep understanding of application-oriented system solutions. Key drivers of profitability and growth are our close collaboration with

customers and a clear focus on solutions. Strong capabilities in R&D provide the basis to develop innovative products and applications. In 2014, the Performance Materials division achieved global sales of € 6.5 bn. More information online: www.performance-materials.basf.com.

About BASF

At BASF, we create chemistry – and have been doing so for 150 years. Our portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. Through science and innovation, we enable our customers in nearly every industry to meet the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring nutrition and improving quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future. BASF had sales of over €74 billion in 2014 and around 113,000 employees as of the end of the year. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information on BASF is available on the Internet at www.basf.com.