Joint news release of ABC Group, Magneti Marelli and BASF

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BASF's heat-resistant polyamide Ultramid® Endure on the 2017 Alfa Romeo Giulia

Collaboration with ABC Group and Magneti Marelli for innovative parts on the 2.0-liter turbocharger system

Corbetta, Italy, Toronto, Canada, and Ludwigshafen, Germany, May 9, 2017. BASF is introducing its heat-resistant polyamide Ultramid® Endure in two new powertrain applications on the 2017 Alfa Romeo Giulia: the air intake manifold with integrated charge air cooler and the hot-side turbo duct. As heat under the hood increases, Ultramid® Endure with its high heat-aging resistance up to 220°C enables automakers to achieve engine downsizing and turbocharging without sacrificing performance. The Ultramid® Endure grades offer good processability, excellent weld line strength and are available globally.

Hot-side turbo duct by ABC Group made of Ultramid® Endure D5G3 BM

BASF collaborated with the automotive supplier ABC Group, Canada, to develop the hot-side turbo duct for the Alfa Romeo Giulia. For this application, ABC Group decided on BASF's Ultramid® Endure D5G3 BM, a 15 percent glass fiber reinforced blow molding grade, which has a high hose strength and shows good swelling.

ABC Group leveraged BASF's joining technology expertise to optimize the infrared (IR)

welding parameters for this part. It was crucial to achieve strong weld lines to ensure the long-term durability of the duct. “After conducting numerous resin trials through molding, welding and rigorous validation testing, we were able to meet the significant demands on this application,” said Mary Anne Bueschkens, CEO of ABC Group. “The part requires many weld connections. Our engineers worked closely with BASF’s material and joining experts to understand the unique requirements, allowing us to fine-tune our IR welding technology, and assuring success of the welding process for this demanding high-temperature duct.”

Air intake manifold with integrated charge air cooler by Magneti Marelli made of Ultramid® Endure D3G7

BASF worked with Magneti Marelli, a business of Fiat Chrysler Automobiles (FCA), to develop the air intake manifold with integrated charge air cooler for the Alfa Romeo Giulia. The need for a material to withstand a 200°C continuous use temperature made this air intake manifold a prime candidate for Ultramid® Endure D3G7, a 35 percent glass fiber injection molding grade. The air intake manifold also required an excellent burst pressure performance; therefore, Magneti Marelli needed a material that offered reliable weld strength at elevated temperatures.

With BASF’s design, material and processing expertise, Magneti Marelli could achieve the required burst strength and durability for the assembly. “BASF’s technical support was useful for us to ensure the application met the burst requirements,” said Marcello Colli, Product Manager Throttle Bodies at Magneti Marelli. “BASF’s welding experience enabled us to apply this heat-resistant material and meet long-term durability targets.”

The Ultramid® Endure grades are suitable for many powertrain applications of the turbocharged system including air intake manifolds, charge-air ducts, resonators, intercooler end caps and throttle bodies. They can achieve long-term service temperatures of 220°C, and withstand peak temperatures of 240°C. The notable heat aging behavior results from an innovative stabilization system by BASF, which greatly

reduces oxygen attack on the polymer surface.

Further information: www.automotive.basf.com.

About BASF
At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 114,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of about €58 billion in 2016. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (BAS). Further information at www.basf.com.

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About ABC Group Inc.
Founded in 1974, ABC Group Incorporation is one of the world's leading, full-service automotive suppliers of thermoplastic components and systems to Original Equipment Manufacturers (OEM's). Our global headquarters is in Toronto, Canada, with 36 domestic and international locations across Canada, United States, Mexico, Brazil, Germany, Spain, Poland, Japan and China. For further information about ABC Group Inc., please visit www.abcgroupinc.com.

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About Magneti Marelli
Magneti Marelli designs and produces advanced systems and components for the automotive industry. With 86 production units, 12 R&D centres in 19 countries, approximately 43,000 employees and a turnover of 7.9 billion Euro in 2016, the group supplies all the major car makers in Europe, North and South America and the Far East. The business areas include Electronic Systems, Illumination, Powertrain, Suspension and Shock Absorbing Systems, Exhaust Systems, Aftermarket Parts & Services, Plastic Components and Modules, Motorsport. Magneti Marelli is part of FCA.

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