Press Release

Rapid prototype and small series production: the Bosch Rexroth foundry manufactures molds using 3-D printing

Realizing the Connected Industry 4.0 goal of manufacturing versatility in molding and casting techniques

Through customized cast cores made with 3D printers, the Bosch Rexroth Foundry reduced delivery times and costs for individual castings and small series.

Be they replacement parts for older cars or engines, prototypes for new products, or small batches, the Bosch Rexroth foundry accelerates casting component production using 3-D printers. They "print" custom casting cores and molds, minimizing the foundry's delivery times and the cost of individual castings, thus marking an important step towards Industry 4.0.

In many cases the most cost-efficient method is the tool-free manufacture of components via the casting process. Until now the costliest and most time-consuming step of the core-shooting process has been the manufacture of a negative mold made from sand. Traditionally, an elaborate process is used to manufacture individual tools that in turn give shape to the sand, making this process economical only when a higher quantity of units is produced.

Using two 3-D printers, Bosch Rexroth in Lohr conclusively simplifies this step of molding and casting. "We concentrate on providing our customers with a quantifiable technological edge," affirms the commercial plant manager of the
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Bosch Rexroth foundry, Florian Müller. Customers simply send the CAD data for the desired component and the 3-D printers manufacture the corresponding sand core or mold according to the additive principal, also in sophisticated shapes. If no data is available it can also be generated using an optical measurement system. This eliminates the need for developing and manufacturing individual tools to produce molds, which reduces the unit cost considerably for prototypes and small series and also shortens the processing time between arrival of the CAD datasets and the finished molded product. "Many of our customers are already convinced of the advantages of this innovative process for rapid, tool-free manufacturing," Florian Müller emphasizes.

Furthermore, in the development of prototypes the 3-D printers can easily readjust the shape without the cost of tools. The printers used handle various degrees of firmness and levels of intricacy. By these means the foundry advances the goals of Industry 4.0, producing small batch sizes for the cost of large-scale series production.

In addition to molding machine casting, the spectrum includes chilled casting, strand casting, and glass mold casting as well as special casting types for processing spheres and lapping wafers. As one of Europe's most modern foundries, Bosch Rexroth processes cast iron with lamellar and spheroidal graphite, special alloys, and other materials as well as compound casting.

Bosch Rexroth Molding and Casting Techniques at the 2015 Hannover Trade Fair:

Exhibit Hall 5, Booth D30
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Economical, precise, safe, and energy efficient: drive and control technology from Bosch Rexroth moves machines and systems of any size. The company bundles global application experience in the market segments of Mobile Applications, Machinery Applications and Engineering, Factory Automation, and Renewable Energies to develop innovative components as well as tailored system solutions and services. Bosch Rexroth offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology all from one source. With locations in over 80 countries, the company generated sales of 5.6 billion euros in 2014, according to preliminary figures.
To learn more, please visit www.boschrexroth.com

The Bosch Group is a leading global supplier of technology and services. According to preliminary figures, its roughly 290,000 associates generated sales of 48.9 billion euros in 2014. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its more than 360 subsidiaries and regional companies in some 50 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. In 2014, Bosch applied for some 4,600 patents worldwide. The Bosch Group’s strategic goal is to deliver innovations for connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is “Invented for life.”
Additional information is available online at www.bosch.com, www.bosch-press.com and http://twitter.com/BoschPresse

Contact for Journalists:
Bosch Rexroth AG
Susanne Herzlieb
97816 Lohr a. Main
Tel.: +49 9352 18-1573
Fax: +49 9352 18-1812
susanne.herzlieb@boschrexroth.de