

**Press release**

Hanau, 5 March, 2019

**Mass production with amorphous metals**

**The injection molding machine manufacturer Engel Austria and the technology company Heraeus are at the Hannover Messe 2019 to symbolically kick off the mass production of high tech components with amorphous metals. Possible fields of application are for example automotive, aerospace, medical technology, industry, lifestyle and electronics sectors.**

The new Amloy range of amorphous materials by Heraeus uses injection molding to create products with properties that were previously mutually exclusive. Reduced cycle times, by up to 70 percent, and unattainable standards of product quality are opening up many new areas of application.

Zirconium-based Amloy alloys and copper-based materials are leaving the successful pilot phase and are ready for mass production. Amloy from Heraeus is a new line of amorphous metal alloys that are optimized also for injection molding. At the Hannover Messe 2019, Heraeus and Engel will be demonstrating live the Amloy brand's potential for delivering components that combine high mechanical durability with high reliability, low wear, scratch resistance and reproducibility. They will be producing Amloy screwdriver bits multiple times each day from April 1-5, 2019 at Booth E32 in Hall 3.

Amorphous metals get their name from their randomly arranged – amorphous – molecular structure. Amloy components are hard yet highly elastic, and have a low wall thickness while remaining durable, light and robust. Amloy is highly resistant to corrosion and is biocompatible in line with ISO 10993-5. With this combination of properties, Amloy is superior to steel, titanium and many other materials and opens a broad spectrum of applications. Fields of application include break-proof lightweight frames for portable electronic devices, durable instruments for minimally invasive surgery, stable suspensions and wear-resistant drivetrain components for the aerospace industry, premium decor elements for automobiles, and abrasion-resistant watch components. Heraeus is currently working on additional Amloy alloys based on titanium, iron and platinum.

### **Fit-for-purpose in a single step**

Amloy components are made in a fully automatic production process using Engel's newly developed AMM injection molding machine from the hydraulic victory series. The injection speed is 1,000 mm/s as standard and makes very small wall thicknesses possible. The cycle time is up to 70 percent shorter than with previous amorphous metal injection molding solutions, and the required heating power is reduced by 40 to 60 percent. In a single step, one or more fit-for-purpose components are produced from Amloy blanks in 60 to 120 seconds, depending on size and geometry. With a surface fineness of 0.05 µm Ra, manual reworking or further surface finishing are not necessary for most applications.

Injection molding of amorphous metals is also superior to MIM (Metal Injection Molding) and CNC machining. MIM processing of metal-plastic powders requires further work steps, such as debinding and sintering. The higher material shrinkage impairs reproducibility. CNC machining requires considerably more time and generates a large amount of waste.

### **Available without a license**

With this cooperation, the partners Engel and Heraeus are expanding their amorphous metal expertise. In 2015, Engel presented its first injection molding solution for the processing of amorphous metals. Heraeus has been conducting research and development on amorphous metals for about three years. With this cooperation, Heraeus is closing a production gap and is the only provider worldwide capable of fully processing amorphous metals: melting and forming, 3D-printing, injection molding. All Amloy materials and the Engel victory AMM injection molding machines are available without a license.

Hannover Messe 2019  
Engel and Heraeus at one booth  
April 1-5, 2019 in Hanover, Germany  
Hall 3, booth E32

### **More information**

[AMLOY – Amorphous Alloy Technologies](#)

[ENGEL AMM – ready for the amorphous metal moulding revolution](#)

#### **About ENGEL AUSTRIA GmbH**

ENGEL is one of the global leaders in the manufacture of plastics processing machines. Today, the ENGEL Group offers a full range of technology modules for plastics processing as a single source supplier: injection moulding machines for thermoplastics and elastomers, and automation, with the assurance that individual components are also competitive and successful in world markets. With nine production plants in Europe, North America and Asia (China and Korea), and subsidiaries and representatives in more than 85 countries, ENGEL offers its customers the excellent global support they need to compete and succeed with new technologies and leading-edge production systems. [www.engelglobal.com](http://www.engelglobal.com)

#### **About Heraeus**

A globally leading technology group, Heraeus is headquartered in Hanau, Germany. Founded in 1851, it is a family-owned portfolio company which traces its roots back to a pharmacy opened by the family in 1660. Today, Heraeus combines businesses in the environmental, energy, electronics, health, mobility and industrial applications sectors. In the 2017 financial year, Heraeus generated revenues of € 21.8 billion. With approximately 13,000 employees in 40 countries, the FORTUNE Global 500-listed company holds a leading position in its global markets. Heraeus is one of the top 10 family-owned companies in Germany.

With technical expertise, a commitment to excellence, a focus on innovation and entrepreneurial leadership, we are constantly striving to improve our performance. We create high-quality solutions for our clients and strengthen their long-term competitiveness by combining unique material expertise with leadership in technology

**Media Contact Heraeus**

Andrea Schlepper  
Heraeus Holding GmbH  
Heraeusstraße 12-14  
63450 Hanau, Germany  
Phone: +49 (0) 6181.35-4478  
E-Mail: andrea.schlepper@heraeus.com

**Media Contact ENGEL**

Susanne Zinckgraf, Manager Public Relations  
ENGEL AUSTRIA GmbH  
Ludwig-Engel-Straße 1  
4311 Schwertberg, Austria  
PR-Office: Theodor-Heuss-Str. 85  
67435 Neustadt, Germany  
Phone: +49 (0) 6327.97699-02  
E-Mail: susanne.zinckgraf@engel.at