Press Release

EPUMENT mineral casting – high-performance material with outstanding ecological credentials

Low-energy production of vibration-damping machine beds and machine bed components

Wangen (near Göppingen), January 30, 2018. EPUMENT, RAMPF's epoxy resin-bonded mineral casting, has long since established itself in highly dynamic mechanical engineering for machine beds and machine bed components thanks to its outstanding damping properties and extremely high thermal stability. The global trend toward more sustainable and environmentally friendly industrial production is bringing another advantage of this innovative material to the fore – its excellent ecological credentials.

EPUMENT, RAMPF's epoxy resin-bonded mineral casting, is used for machine beds and machine bed components with the highest demands in terms of vibration damping, precision, and thermal stability.

Ecological factors are playing an ever-increasing role in industrial production around the globe. Several thousand companies closed in China last fall because they failed to comply with environmental regulations. In the United States, meanwhile, a broad alliance of states and major cities has formed to oppose President Donald Trump's decision to withdraw from the Paris climate accord.

"Environmental pollution, overuse of finite resources, and the generation of waste and wastewater are all increasingly impacting production processes," says Dirk Haumann, Managing Director of RAMPF Machine Systems, the market-leading development partner and system supplier for complete machine bed solutions and machine systems based in Wangen, near Göppingen, Germany.

EPUMENT reflects this development. Developed and produced by RAMPF, this epoxy resin-bonded mineral casting is used for vibration-damping machine beds and machine bed components in highly dy-

namic mechanical engineering, and is renowned for its resource-efficient manufacture and environmentally friendly disposal and recycling:

> EPUMENT is cold cast in molds made from wood, steel, or plastic. As a result, up to 30 percent less primary energy is used in its manufacture compared to other materials.

> Its high casting precision, combined with the highly accurate RAMPF in-house replication technology, saves the transportation to external processors that would otherwise be needed, and reduces / eliminates the use of processing machinery.

> Over 90 percent of EPUMENT mineral casting consists of naturally occurring minerals and stones, and a binding agent based on epoxy resin. This high proportion of minerals and the environmentally friendly resin compound mean that the material can be disposed of in the same way as normal construction waste.

> Reducing mineral casting components to chippings in large-scale shredder plants and separating out integrated metal components has been tried and tested. Chippings from mineral casting can be used as recycled construction material in road building, industrial construction, landfill surface sealing, and creating green spaces.

EPUMENT also poses no health risk. The material is therefore safe for effective antibacterial use in food-related areas such as the food and packaging industries. EPUMENT is approved under the German Foodstuff and Consumer Goods Act (LMBG) and Consumer Goods Ordinance (89/109/EEC and 90/128/EEC) and the Code of Federal Regulations, Food and Drugs (FDA).

Outstanding damping properties ensure the highest level of dynamic stability

EPUMENT mineral casting from RAMPF Machine Systems consists of selected minerals and stones and high-quality epoxy resin-based binding agents. From a materials point of view, the key advantage over gray cast iron and welded constructions is the considerably enhanced damping, which ensures the machine bed structure has greater dynamic stability in ultrafast and high-precision production machinery. Comparative measurements of the logarithmic decrement as a damping parameter show that mineral casting has a material damping capacity that is eight to ten times greater than metal materials.

Laboratory tests were conducted in Japan by Ono Sokki, a leading manufacturer of measuring equipment. These compared the damping properties of EPUMENT mineral casting 145B and gray cast iron FC 300. FC 300 is comparable with HT 300 in China, No. 45 in the United States, and GG 30 in Germany. EPUMENT mineral casting came out as the clear leader in this comparison:

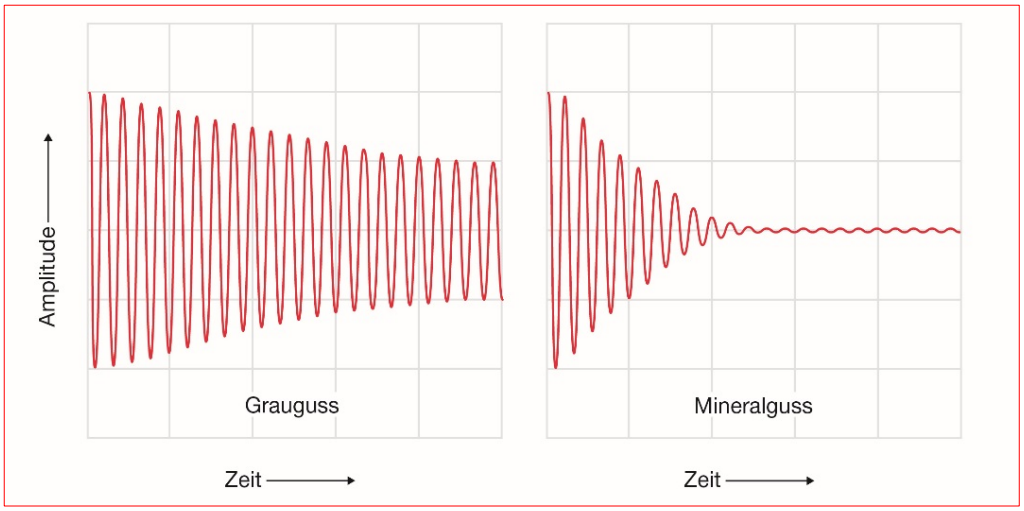

Figure 1 (Zeit = Time; Grauguss = Gray cast iron; Mineralguss = Mineral casting)

A comparison of the decay curves for cast iron FC 300 and EPUMENT mineral casting reveals the outstanding damping properties of the epoxy resin-bonded material (Figure 1). As a result, the step and feed rates can be increased, for example, positioning accuracy is higher, tool service lives are longer, and the surface quality that can be achieved is also improved.

Further benefits of EPUMENT mineral casting

> Low thermal conductivity, ensuring high thermal stability
> High isotropy and homogeneity prevent load-related deformation of machine beds
> High media resistance
> Unconventional bed and variant structures thanks to flexible modeling, non-cutting replication, and innovative bonding technology
> Lower machine cover/cladding costs thanks to the surface and design functionality

As a result of these positive material properties, the alternative machine bed material is used in numerous technological fields. Alongside conventional machine tool construction, these include applications in the semi-conductor, laser, medical, and packaging industries.

Production facilities in Germany and China

“The material properties and ecological credentials of EPUMENT are unbeatable,” says Fabian Werner, Managing Director of RAMPF China, RAMPF’s Chinese subsidiary. “We provide our customers around the world with a clear competitive advantage, while also helping to protect our environment.”

EPUMENT mineral casting is produced in Germany and in China (for the Asian and NAFTA markets). Production standards are the same at every location, ensuring the highest quality and a constantly high level of availability.

Exceptional dynamics from sustainable and environmentally friendly production – the machine bed of a high-speed milling machine made from EPUMENT mineral casting, with high-precision replicated surfaces manufactured using non-cutting processes for mounting guide rails, measuring systems, and drive components.

www.rampf-gruppe.de

RAMPF Machine Systems GmbH & Co. KG, based in Wangen (near Göppingen), Germany, is the leading supplier and development partner for system solutions, trunk machines, and basic machines, as well as multi-axis positioning and moving systems based on high-precision machine beds and machine bed components made from alternative materials.

The portfolio of high-performance materials includes mineral casting, ultra-high performance concrete (UHPC), natural hard stone, metal foam, and fiber composites. These materials provide a solid basis for ultra-precise and high-performance machine beds and machine bed assemblies.

The full range of services provided by the company includes everything from engineering to production, as well as assembly, system solutions, customer-specific multi-axis positioning and moving systems, and basic machines – from single-piece to series production in customized supply chain solutions.

Using innovative casting, grinding, and lapping processes, as well as high-performance assembly and testing equipment in temperature-controlled production environments, exceptional accuracy of machine bases and basic machines is guaranteed.

RAMPF Machine Systems is a company of the international **RAMPF Group** based in Grafenberg, Germany.

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