Press release

Compact, low-noise, low-loss:
Chokes from SMP for medical technology applications

Graben-Neudorf, Germany, June 2021. SMP Sintermetalle Prometheus GmbH & Co KG (SMP), German manufacturer of soft-magnetic materials and inductive components, offers chokes for medical technology applications. These inductive components are used in Magnetic Resonance Imaging (MRI) or Computed Tomography (CT), for example. Designed as filter or mains chokes they are not only compact, low-loss and energy efficient but also exceptionally quiet in operation – essential qualities for demanding medical technology applications.

In MRI scanners, the components are installed in the "gradient amplifiers", which supply output voltages and currents and control the gradient coils that encode the resonance signals for subsequent image reconstruction. The filter and mains chokes are designed to ensure a clean sinusoidal waveform and low-loss feedback of the unused energy.

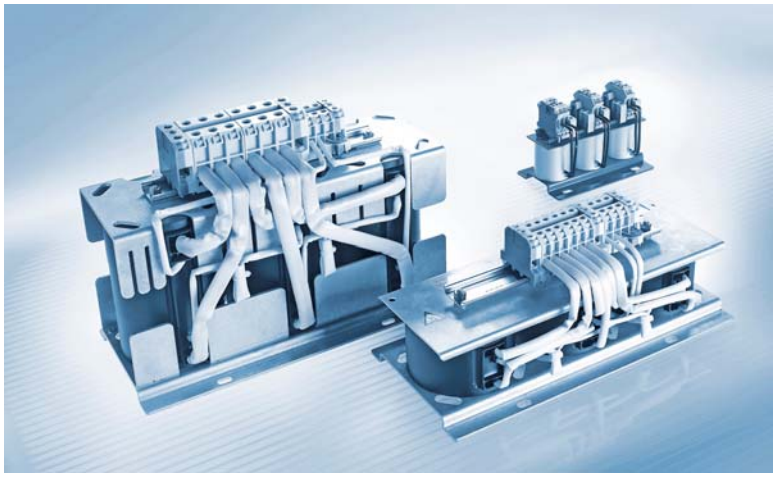
Special magnetostriction-free materials, which SMP develops and produces according to individual customer specifications, ensure that components run very quietly. The powder composite materials feature low eddy current and magnetic reversal losses. The components are noted for their low loss balances and optimal EMC properties. They are also maintenance-free. The three-dimensional isotropy of the materials enables compact, lightweight structures, because the magnetic circuits are minimized. This also lowers the magnetic field strength, and the quantity of winding material used can be significantly reduced. The materials have a high saturation induction of up to 2 Tesla. The oscillation behaviour of the choke can be adjusted specifically by using certain materials or appropriate, magnetically coupled designs with multiple coils.

SMP components are designed for currents of up to 3000 A and for frequencies up to the gigaHertz range. The components can be produced with dimensions from 19 mm to 300 mm and weights from 0.05 kg to 130 kg. All components are RoHS and REACH compliant and CE and EAC certified, and the materials used are UL-listed.

Besides medical technology, the filter systems and inductive components are used in industrial applications in the power electronics, automation and signal processing sectors, in drive applications for railway engineering, electromobility and marine engineering, in renewable energies and power supply, and in the aerospace industry.

Picture:

Inductive components from SMP



Company information:

SMP Sintermetalle Prometheus GmbH & Co KG develops and manufactures inductive components, filter systems and magnetically soft materials mouldings. The products are marketed worldwide with an export quota of over 50 percent. The company was founded in 1982 by material science expert Dr.-Ing. Vasilios Gemenetzis for the purpose of manufacturing sintered metals in a process he had developed himself. Since 1994, SMP has shifted its focus to manufacturing electrical components. Material science remains an essential factor in the development of ultra-low loss inductive components: The powder composite materials used for the components are specially developed and produced for each application. In the course of the years, the family-owned company has become one of the key global suppliers of magnetically soft materials for industrial applications. In order to be able to control the full production cycle, in 2008 a further factory was founded for the proprietary development and manufacture of powder composite materials. In 2011, SMP expanded its production capabilities with an injection moulding facility, so that the company itself can develop and manufacture coil carriers and insulation systems for the components. With the addition of a EMC laboratory, SMP carries out measurements of both conducted and radiated emissions.

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TPR International would be grateful for a sample copy of the publication with this article.