

Innovative manufacturing process for common mode chokes

Smart-Coil - High attenuation at low cost

Hanau - The number of electric cars on the roads is steadily increasing worldwide. The resulting further development of the charging infrastructure leads to considerable network disturbances (EMC), which require complex EMC filters. For this purpose, VACUUMSCHMELZE's patent-pending smart coils are used, which enable significantly higher attenuation, especially at high frequencies.



Smart-coils are produced cost-effectively in an innovative manufacturing process. Instead of the commonly used massive wire winding, shaped copper bars are attached to the core. This reduces the mechanical stress on the core during winding considerably, thus increasing attenuation. The typically used nanocrystalline VITROPERM cores show high permeability and low losses with excellent thermal properties.

Smart-coils are used as common mode chokes (CMCs), which are characterized by improved attenuation at high frequencies ($f > 1$ MHz), minimized winding capacity and 10-fold improved impedance at 10 MHz. The new design is ideally suited for applications with load currents higher than 50 A at high power. Possible diameters for the copper bars are 4.5 mm, 6 mm and more, a patent for the newly developed process is pending.

"The attenuation behaviour in the high-frequency range is significantly better with smart coils compared to conventional massive wire winding. We are pleased to be able to offer a cost-optimized solution for numerous industrial applications," says Susanne Ganz, Product Manager Energy Conversion and Automation at VAC.

VACUUMSCHMELZE (VAC) is among the world's most highly innovative developers of magnetic materials, inductive components and other related products. With a global network of Sales and Field Application Engineers, VAC designs and manufactures tailor-made solutions for a wide variety of industries, comprising renewable energies, automotive, industrial automation installation technology, and aviation.

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