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Press Information

Ceramic components for innovative e-mobility solutions

CeramTec presents new ceramic power module for drive inverter at PCIM Europe

Plochingen, 4 May 2021 – CeramTec is presenting its ceramic cooling solution for a power module for use in drive inverters in e-mobility for the first time at PCIM Europe. The trade fair for power electronics and intelligent drive technologies, which is currently taking place as a virtual event until 7 May, offers the ideal stage to showcase the increasing importance of ceramic materials in innovative drive concepts.

As a strong partner for the automotive industry, CeramTec drives solutions in e-mobility and offers comprehensive and long-standing automotive expertise in the field of technical ceramics. At this year's PCIM Europe, the company is showcasing a new ceramics-based power module (power semiconductor module) that plays an important role in cooling power electronics in the powertrain.

Thermal management essential in driver inverters

To drive electric motors in the powertrain, drive inverters convert energy from the vehicle battery. During this process, inverters are exposed to high thermal loads. Inverters should be made of components that are as

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light, compact and resistant to high temperatures as possible in order to achieve optimum efficiency and generate maximum electrical power.

Semiconductors based on silicon carbide (SiC) optimally combine these properties and ensure an improved power spectrum with higher switching frequency while simultaneously saving energy. CeramTec has now developed a ceramic cooler with applied metallisation for the thermal management of the drive inverter. The metallisation allows the semiconductor chips to be applied directly to the ceramic cooler (chip-on-heatsink). CeramTec's power module ensures the efficient cooling of the SiC chip so that its surface area can be optimally utilised.

Advanced ceramics enabling innovative e-mobility solutions

Lightweight technical ceramics are resistant to corrosion, temperature changes and chemicals. They have low friction properties, excellent thermal conductivity as well as electrical insulation. Thus, advanced ceramics are true all-round talents and can be used in many ways in e-mobility. This includes the management of power electronics, for brake control systems and transmission control in sensor technology or the regulation and control of fluids.

"Advanced ceramics is a very innovative material that can be used in numerous areas of e-mobility. As a strong partner, we aim at helping our customers master the challenges of electromobility. We want to

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make an active contribution to securing the expansion and future of e-mobility through environmentally friendly, sustainable and at the same time economical technologies. The development of a ceramic cooling power module is an important step in this direction," says Richard Boulter, President Industrial of the CeramTec Group.

The ceramic power module for drive inverters in e-mobility was developed in the context of a joint project with the Fraunhofer Institute for Integrated Systems and Device Technology (IISB).

Further information on CeramTec's advanced ceramics range for e-mobility applications is available for download at <http://insights.ceramtec-group.com/demonstrator>.

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Notes to the editor

About CeramTec GmbH

CeramTec is a world-leading manufacturer of technical ceramics and is specialised in the development, manufacturing and sale of parts, components and products made from ceramic materials. With over a century of developmental and production experience, CeramTec is a global leader in the manufacturing of advanced ceramics and engineers these materials for use in a wide variety of applications. Advanced ceramics from CeramTec are used in a range of industries, including medical engineering, the automotive industry, electronics, energy and environmental engineering, as well as equipment and mechanical

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engineering. The current portfolio comprises well over 10,000 products, components and parts made from technical ceramics, along with a wide variety of ceramic materials.

With production sites and subsidiaries in Europe, the UK, North and South America as well as Asia, CeramTec maintains its presence around the globe as a manufacturer and supplier. The company is headquartered in Plochingen, near Stuttgart. In 2020, CeramTec generated close to €553 million in revenues. CeramTec employs more than 3,500 staff worldwide, around 2,000 of which are in Germany.

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