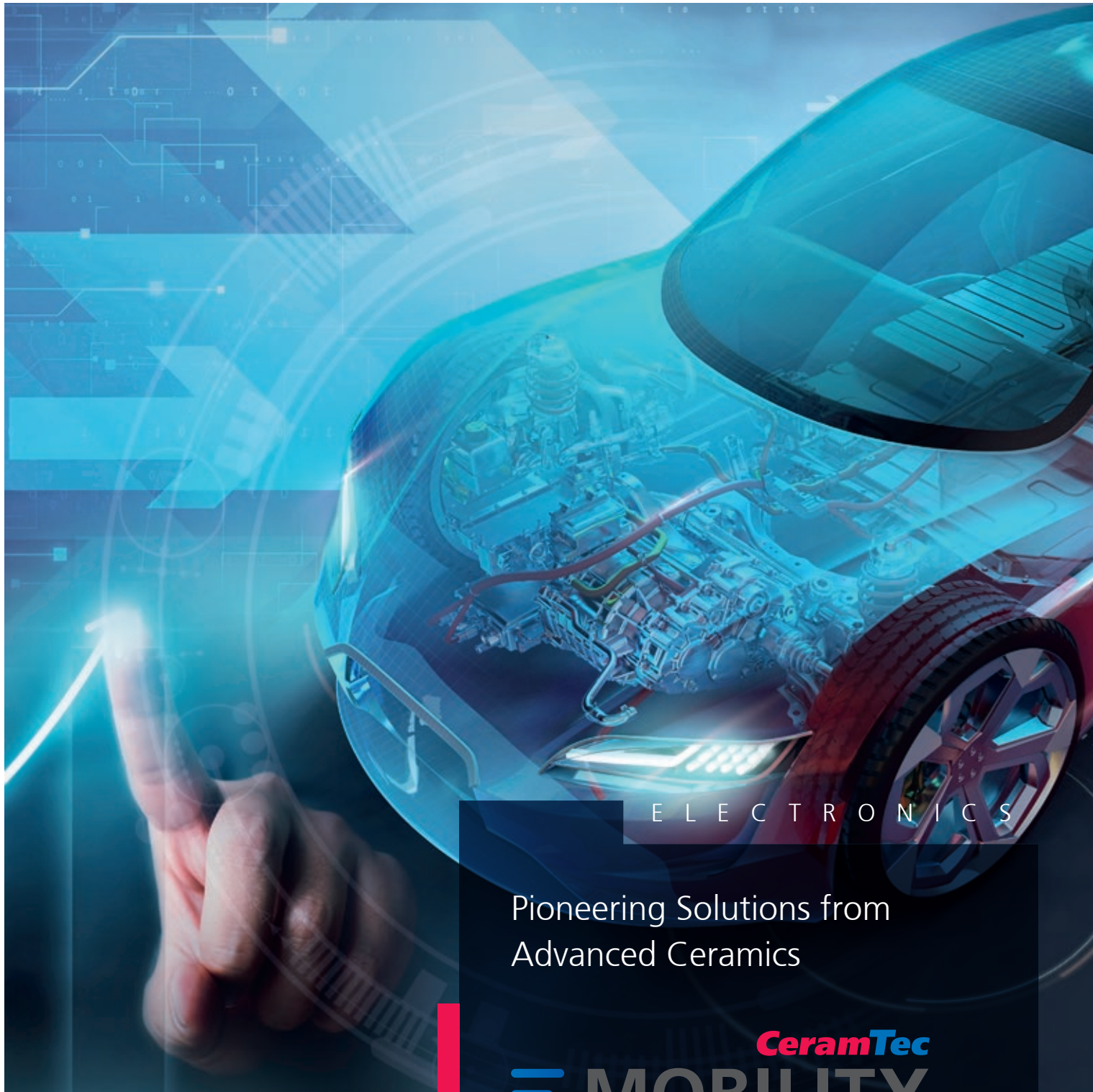


CeramTec



ELECTRONICS

Pioneering Solutions from
Advanced Ceramics

CeramTec
E.MOBILITY

T H E C E R A M I C E X P E R T S



Advanced ceramics: the material for innovative eMobility solutions

The objective is to ensure mobility through environmentally friendly, sustainable and yet economically efficient technologies. As a partner of the international automotive industry, CeramTec actively drives eMobility developments and uses its comprehensive automotive competence in the field of technical ceramics to offer innovative solutions for all types of drive concepts – from optimising of hybrid drives to pure electromobility and providing the required infrastructure. Innovations need creative minds, new thinking and extremely powerful, exceptional materials: advanced ceramics from CeramTec. Pointing the way to the future.

The development towards electrification and eMobility presents growing challenges for automotive manufacturers, suppliers, energy producers, infrastructure partners and the manufacturing industry. The further development of alternative drive technologies and new systems for production, storage, transmission and distribution of energy has to be pursued at full speed. The electrical infrastructure for mobile and stationary applications has to be created. These complex tasks require materials which meet extreme requirements. Innovative advanced ceramics from CeramTec provide a crucial contribution to progress:

- Together with customers, we develop technical ceramics solutions which have unique functionalities and a customised characteristics profile to allow visionary concepts.
- They are superior where conventional materials such as metal and plastic reach their limits.
- They support more environmental protection, economic efficiency, safety, durability and user comfort.
- They provide more efficiency and productivity in manufacturing processes.
- They are hard to replace in many applications, such as electrified transport vehicles, charging stations, energy generation, energy storage and energy distribution.
- Solutions from CeramTec cover the entire range of eMobility applications: from eCars, eTrucks, eBikes and eMotorcycles as well as locomotives and other electrically driven mobility solutions – on land, on water and in the air.

-  **Piezo-ceramic discensing elements** used within ultrasonic parking assistance systems
-  **Cyrol® ceramic bearing roller elements** for wear-resistant, electrically insulating bearings and preventing electropitting
-  **Integrated membranes** for pressure sensors in brake control systems, gearbox controls and other sensor applications
-  **Preforms** for material reinforcement and for lightweight design
-  **Switching spark gap** for xenon lights
-  **Piezo-ceramic sensors** for flow rate and fill level detection
-  **Ceramic bearings** for control valves
-  **Substrates** as hybrid circuit for control devices, e.g. gearbox control
-  **Electrical insulation components** in PTC high voltage heaters for interior heating or fluid heating
-  **Ceramic elements** for regulating and dosing fluids
-  **Ceramic bearing elements** for durability and wear resistance under rough conditions
-  **Piezo-ceramic sensor components** for flow rate and fill level detection in fluids to airbag detection systems
-  **Resistor cores** for resistors in electronic circuits
-  **Ceramic circuit carriers** for LED and laser light technology

Efficient production processes

Temperature management

Regulating fluids and gases

Bearings

Electrical insulation

Lightweight design

Sensor systems

Inductor Cores for Inductors in electronic circuits



Protective ceramic plates for vehicle armoring



Insulation rings for thermal management in brake callipers



Face seals in coolant pumps



Socket and insulation tubes for electrical insulation in halogen and xenon lights and for vehicle-independent heaters



CeramCool® heat sinks for inverter and converter cooling, drive control and brake energy recovery



Components for electrical insulation in electric and electronic systems pumps



Hermetically sealed assemblies for sensor applications, connectors and conduits for electrical systems



Manufacturing: Casting cores for complex cast components with undercuts, channels, etc.



Manufacturing: Welding centring pins and gas nozzles for MAG welding in car body making



Manufacturing: Risers and nozzles for casting engine and suspension components and aluminium rims



Manufacturing: Tool systems and cutting materials SPK® for turning and milling cast iron and hardened steel components



Manufacturing: Porous cells for chrome plating



Manufacturing: Setter plates for manufacturing of MIM-parts



Fields of application for technical ceramics from CeramTec are used in numerous areas of application: In sensor systems, our sensor components capture and process a variety of values with high precision. In power electronics, ceramic high-performance materials and solutions meet a variety of requirements with a high level of reliability, even under immense demands. For temperature management, advanced ceramics from CeramTec combine optimum thermal dissipation and insulation. For fluid and gas regulation, ceramic components from CeramTec help to ensure a high level of reliability. Our technical ceramics play a key role wherever electrical insulation is required. In all types of bearings, our solutions play out their strengths in the long term. Our materials exhibit immense resistance in the handling of aggressive media. Whether innovative design solutions, lightweight design concepts and miniaturisation, material reinforcement or efficient production processes – the unique range of properties of advanced ceramics from CeramTec offers crucial added value and benefits in all these areas.

High-Performance ceramics*: Powerful for eMobility

- Electrical insulation
- High dielectric strength
- Electromagnetic compatibility (EMC)
- Freedom from partial discharge
- High thermal conductivity
- Corrosion resistance
- Thermal insulation
- High heat resistance
- Low friction
- Chemical resistance
- Impact resistance
- Wear resistance
- Low weight
- UV resistance
- Resistance to temperature shock

* Depending on the material, advanced ceramics have different properties



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