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When it really matters

Plochingen, September 2024

High-performance ceramics from CeramTec with unique material properties opens up huge performance potential for applications in medical technology.

- **Wide range of applications for piezoceramics**
- **Ultrasonic transducers and sensor solutions**
- **Structural ceramics: the right material for every application**

State-of-the-art medical applications in surgery, diagnostics and medical therapies are often based on assemblies and components made of high-performance ceramics. CeramTec provides components and solutions, supporting next generation ultrasonic surgery, bubble detection sensors for dialysis and infusion pumps and key ceramic materials, used in various applications from RF ablation tips to bipolar surgical insulators.

Versatile Ultrasonic Solutions

Piezoceramics convert forces, pressure and accelerations into electrical signals – or transmit electrical voltages into vibrations or deformations. Key materials in ultrasonic surgical applications such as laproscopic surgeries, phacoemulsification and bone drilling. They are the key sound generators used in lithotripsy, as well as controlling precision drug dosing within ultrasonic nebulization. As an expert in piezo ceramics, CeramTec offers both highly automated mass production and the manufacture of special components with complex shapes in small quantities. Piezoceramics in different geometries and variable sizes are possible.

Piezoceramics for sensors and ultrasonic transducers

CeramTec not only offers piezoceramic parts, but also specializes in the development and manufacture of in-line sensors. These sensors detect gas bubbles, pressure changes and liquid levels in soft, flexible tubes or other containers non-invasively. They are used in medical devices such as infusion pumps, enteral feeding pumps and dialysis machines.

CeramTec is also an expert in ultrasonic transducers and its range of services includes the design, development and manufacture of customized high-power transducers. These are required, for example,

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for ultrasound therapy devices for cutting and drilling bones. Special Langevin power transducers are used in cell disruption and cell lysis. And ultrasonic transducers generate cavitation for precision cleaning. CeramTec also has a standard high-power transducer with 40 kHz in its range.

Wide range and many years of experience

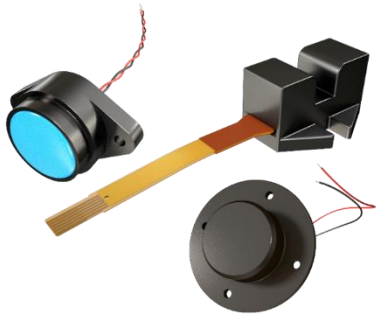
With a variety of over 40 structural ceramic materials, CeramTec can produce ceramic components for individual requirements: Traditional silicate ceramics or oxide ceramics such as alumina in various degrees of purity and zirconia are produced in both small and large quantities. Non-oxide ceramics such as silicon carbide, silicon nitride and aluminium nitride are available in large quantities. For most shapes and sizes, CeramTec can work with the customer to define a suitable material and design based on their individual requirements. “With over 100 years of experience in technical ceramics and more than 40 years of expert know-how in medical technology, we offer our customers globally networked engineering and solution expertise,” emphasizes Amir Mirza, Sales Director Medical Equipment.

On September 25 and 26, CeramTec will be presenting its portfolio of solutions in the field of medical technology at Medical Technology Ireland in Galway (stand number 85).

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Picture Material

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CeramTec_medical-sensors.jpg

Medical sensors can be chosen from our standard portfolio or designed according to customer requirements. Typical applications include dialysis machines, infusion and insulin pumps, injectors for contrast agents, inhalers and liquid dosage forms.
Source: CeramTec



CeramTec_Piezo.jpg

Piezoceramic components in different shapes and designs, also available as lead-free options .for certain medical applications such as ultrasonic bubble detection or high-power applications.
Source: CeramTec



CeramTec_tubes.jpg

High precision components made of ceramic materials can be manufactured in different shapes and geometries - depending on customer requirements, e.g. as wafer-thin tubes for endoscopy applications.
Source: CeramTec

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With their unique material properties, high-performance ceramics from CeramTec open up huge performance potential for applications in medical technology.

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About CeramTec

CeramTec has been a manufacturer and supplier of technical ceramics with a focus on advanced ceramic (HPC) solutions since 1903 and specialises in the development, manufacture and distribution of parts, components and products made from ceramic materials. With more than a century of development and production experience in the HPC industry, CeramTec is a world leader in the manufacture of advanced ceramics and develops these materials for use in a wide range of applications. CeramTec's advanced ceramics are used in a number of areas, including medical applications such as hip prostheses, other orthopaedic implants, dental implants and medical devices, as well as in the mobility and electronics industries, and also in other industrial applications. With production sites and subsidiaries in Europe, North and South America and Asia, CeramTec has a global presence as a manufacturer and supplier. CeramTec's headquarters are located in Plochingen near Stuttgart. In 2023, CeramTec generated revenue of more than 817 million euros. CeramTec employs more than 3,800 people worldwide, including around 2,000 in Germany.

More info: www.ceramtec-group.com

