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Press Information

Piezoceramic components key for modern medical applications

CeramTec with innovative service suite for high power ultrasonic surgery transducers

Southampton/Plochingen, 16 March 2021 – When it comes to ultrasonic transducers for medical applications, there is no one-size-fits-all solution. With vertical integration from manufacture of advanced piezoceramics to the assembly of ultrasonics sensors and transducers, technical ceramics specialist CeramTec meets the increasing demand for specified high power Langevin transducers with a full-service offer including design, development and manufacture of transducers for different medical applications.

Customisation and customer collaboration providing added value

“A dedicated focus on expanding our R&D capabilities now enables us to support our customers with highly customised products. Our approach focusses on really understanding their specifications, such as the desired displacement for the transducer or a certain frequency, to then design and manufacture matching ultrasonic transducers,” says Charles Dowling, Sales Director Medical Equipment at CeramTec’s UK subsidiary in Southampton. “In this context, using finite element analysis software to digitally model and design the transducers not only speeds up the prototype process but also allows us to evaluate existing designs of customers and recommend improvements.”

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Enhanced R&D capabilities also enable CeramTec to interface with customers' electronics in a more detailed and collaborative manner: "The challenge for our customers in the medical device sector is to make their high powered drive systems work with the ultrasonic transducers," explains Charles Dowling. "We can assist in detailing the design of the transducer to match with their electronics and also provide them with information that can help them relate the two entities, which can be complex."

Rapid, patient-friendly procedures drive use of ultrasonic transducers

CeramTec's ISO 13485 certified expert team concentrates on the key markets of ultrasonic surgery and tissue aspiration, molecular diagnostics as well as drug delivery systems. The continued prominence of ultrasonic transducers in surgery is driven by the benefits they offer in comparison to traditional techniques, including increased safety, precision, faster healing and more comfort for the patient: Ultrasonic surgery is minimally invasive and precise enough to, for example, enable surgeons to remove diseased or damaged tissue without affecting surrounding areas, which results in swifter recovery. Phacoemulsification (cataract removal) in particular is a major application of high power transducers, but also ligament repair and bone drilling, where the piezoceramic-enabled highly precise movement allows for a very quick and soft cutting of bones.

In the molecular diagnostics field, the company manufactures high power transducers and piezoceramic components for mechanical cell lysis, used to enable rapid diagnosis of diseases. With Covid-19, these molecular

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diagnostics applications saw increased interest. In addition, a complimentary technology using piezoceramics in the context of precision dosing in drug delivery systems has gained added importance: The ventilators, which are so vital for many critically ill Covid-19 patients, are also used to deliver atomised or nebulised liquid medications for increased efficacy in comparison to conventional dosing methods, with ultrasonic piezoceramic transducers as key components in such atomisation systems.

For more information, please see <https://www.ceramtec-medical.com/en/medical-equipment>

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Notes to the editor

Image:



Langevin transducer, copyright: CeramTec

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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 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, America and Asia, CeramTec maintains its presence around the globe as a manufacturer and supplier. The company is headquartered in Plochingen, near Stuttgart. In 2019, CeramTec generated over €620 million in revenues. CeramTec employs more than 3,500 staff worldwide, around 2,000 of which are in Germany.

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