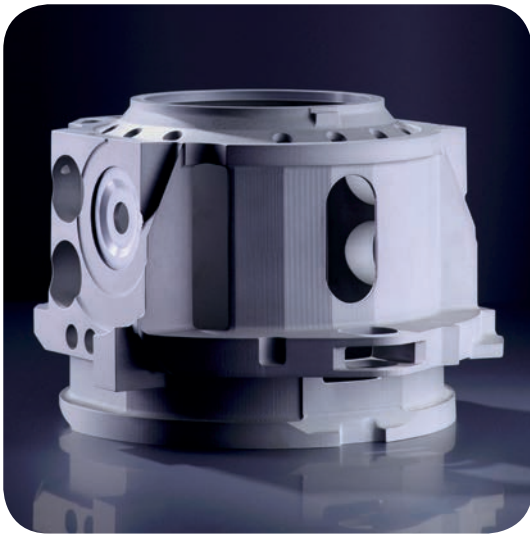


# HIGH PERFORMING CERAMICS FOR VARIOUS APPLICATIONS



**FCT** Ingenieurkeramik GmbH





## High Performing Ceramics as a Solution

Many times the smallest parts have a great and sustainable effect! Are you looking for a convenient component which will improve your process or your facility? You require a custom-fit manufacture which bears up extreme conditions? We will discover your solution!

Together with you we will develop your requested component and will manufacture it for you. It doesn't matter if it will be a prototype a smaller series or a mass product.



- 1 Preparation of the greenmachining
- 2 Greenmachining

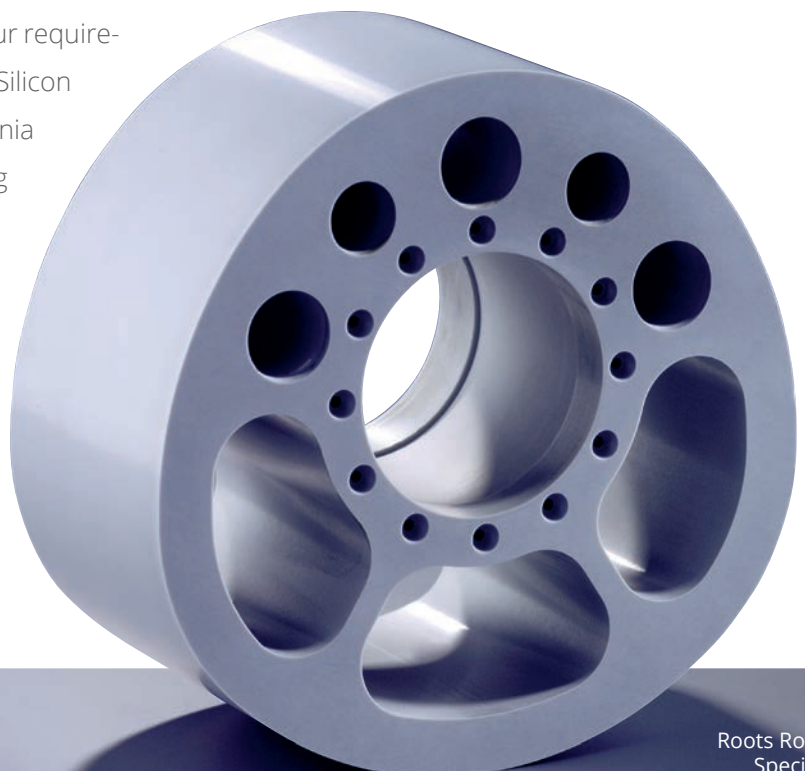


## COMPETENCE IN ADVANCED CERAMICS FOR MORE THAN 30 YEARS

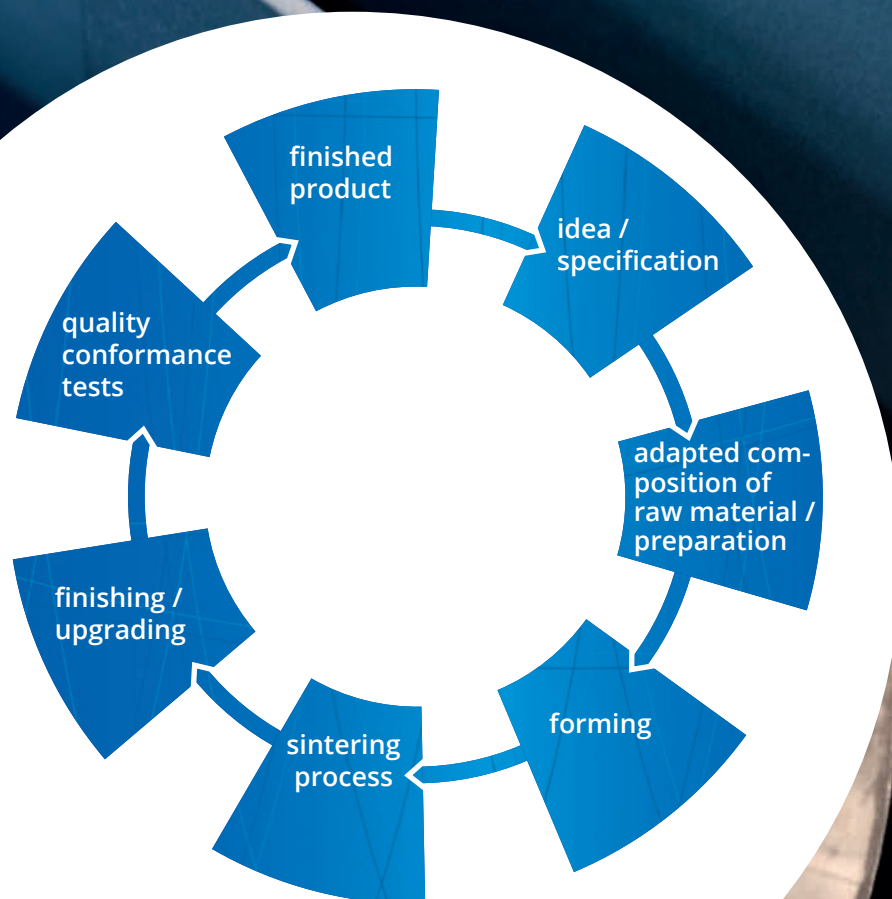
### Competent Development Partnership

For more than three decades we develop and produce unique ceramic components especially for applications with extreme hard conditions. To be able to meet your requirements we prepare our materials Silicon Nitride, Silicon Carbide, Zirconia and further Composites according to own formulations.

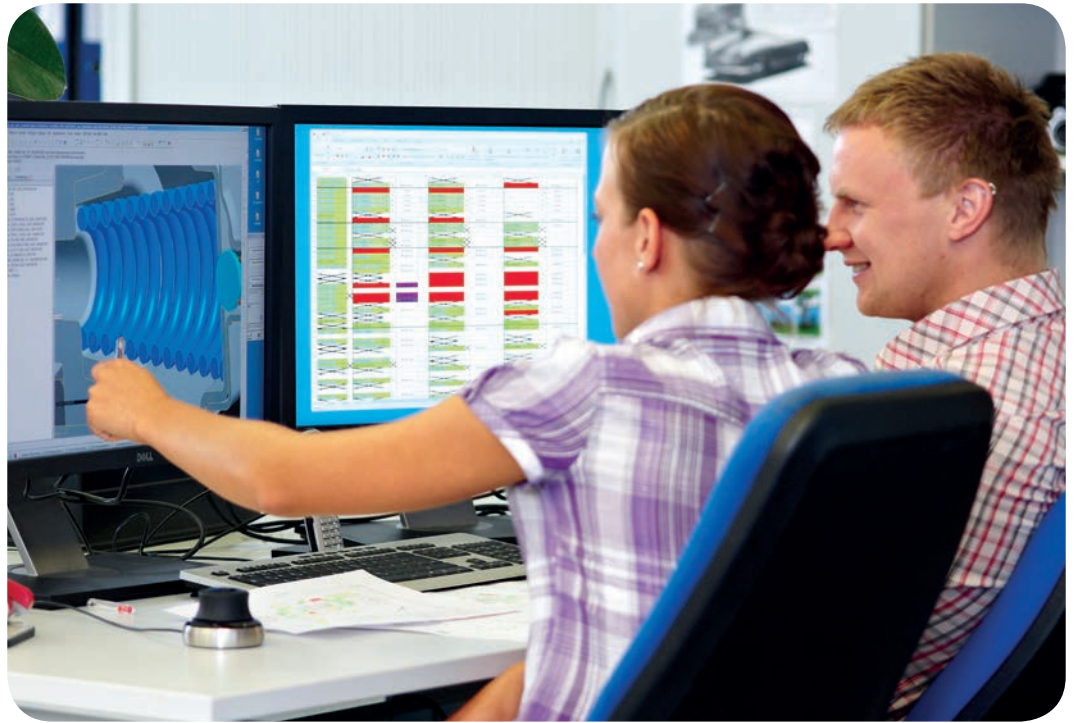
Going this way, we ensure to find a precise and custom-fit product for you! We would be pleased to establish prototypes or special units for testing and qualification of your facility or your process.



Roots Rotary for a  
Special Engine



Design of a component  
considering ceramic  
compatible layout.



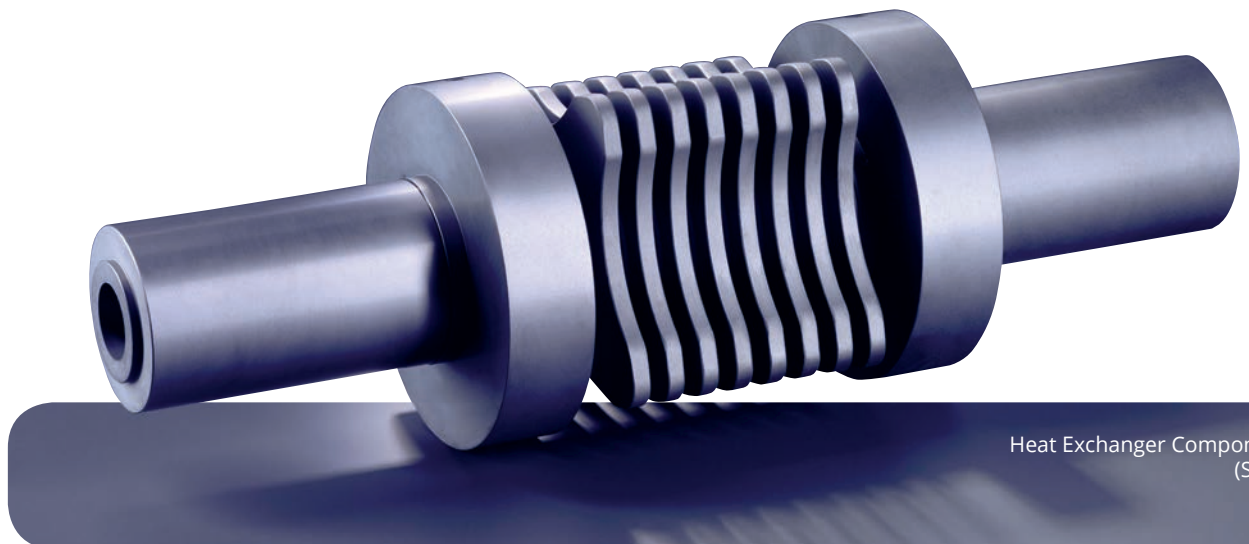
## FROM AN IDEA TO THE PERFECT COMPONENT ...

### Finding solutions ...

Together with you we will find the right custom-fit ceramic solution for your individual requirements.

Our team of scientists, engineers, technicians and special educated skilled workers is willing to face each challenge.

The beginning is a thought and the next step is an analysis of the stress of the part during the use. This will be followed by the best suitable ceramic composition. Our goal is the ready to be installed part in nearly each requested size and number of parts.



Heat Exchanger Component  
(SSiC)



## Quality is our most important target.

Even during the manufacturing process different parameters are controlled to ensure a remaining high quality level.

In advance of the shipment the customized components will finally be inspected. During this process we evaluate – as well down to microns – the dimensions as well as the requested material properties.



## Various Ways of Manufacturing

- cold-isostatic + uniaxial pressing
- greenmachining
- slipcasting
- injection molding
- debinding / pyrolysis
- sintering, gas-pressure sintering
- hotpressing
- hot-isostatic pressing
- final machining (grinding, lapping, polishing, special treatments)



Left: Setting of a Furnace

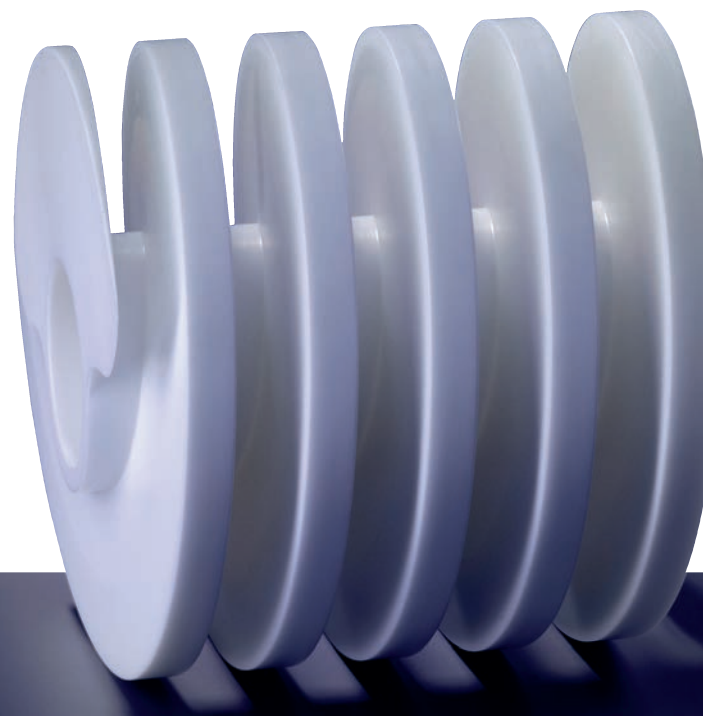
Right: Control of the height of a part during uniaxial pressing - 3D-measurement with coordinate measuring equipment



## COMPETENCE ALL ALONG THE LINE

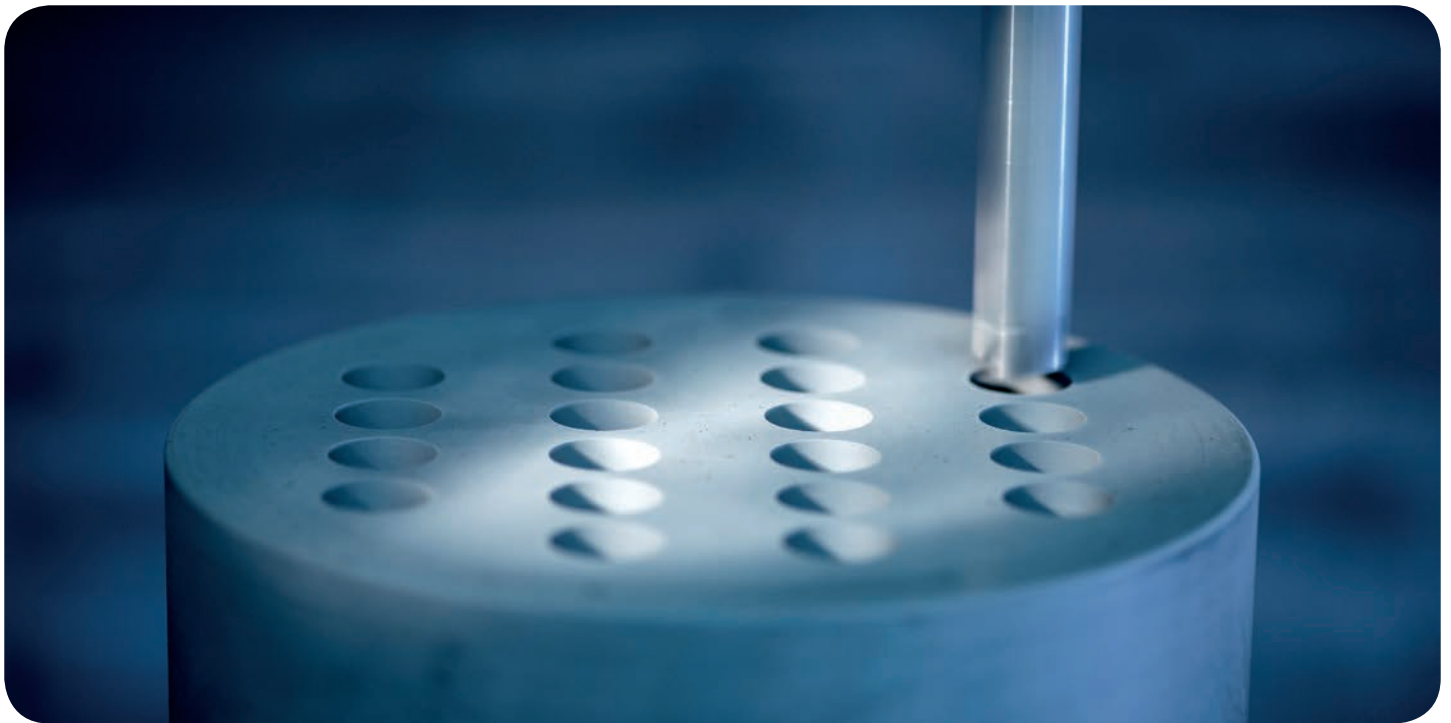
### Competence of manufacturing

Due to your specifications we will make green parts out of our materials silicon nitride, silicon carbide and zirconia. We will do that very exactly so that after sintering the part a final machining might be redundant. With our state-of-the-art machining equipment we will generate a high-precision product with the requested specific properties. We will drill, grind, lap, polish or hone the components down to microns so that they will fit without deviations to your facilities, machines and equipment. As a result they will fit perfectly to your manufacturing processes

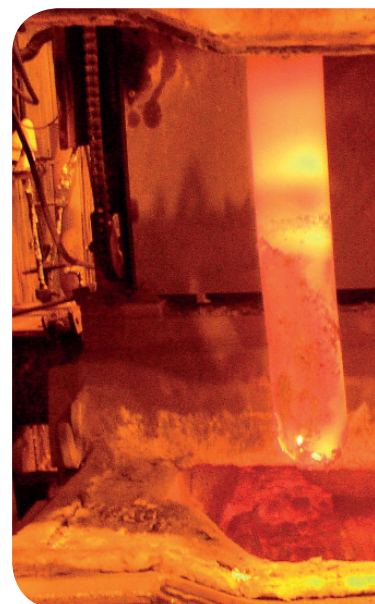
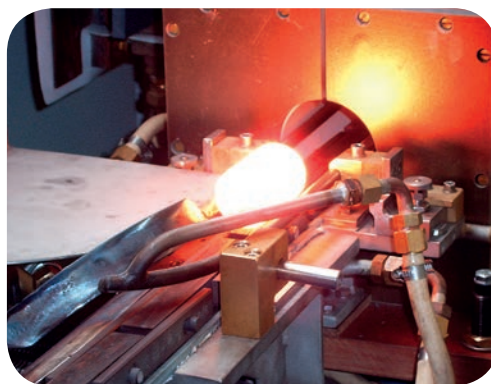


Screw element for double screw pump





THAT SPEAKS IN ITS FAVOR FOR ...



### Everywhere applicable

Our products find their operation in many sectors. If in space and avionics especially in the satellite construction, in the foundry industry or in electronics as well as in mechanical, chemical and thermal process technology, even the smallest part of advanced ceramics results in enduring success.

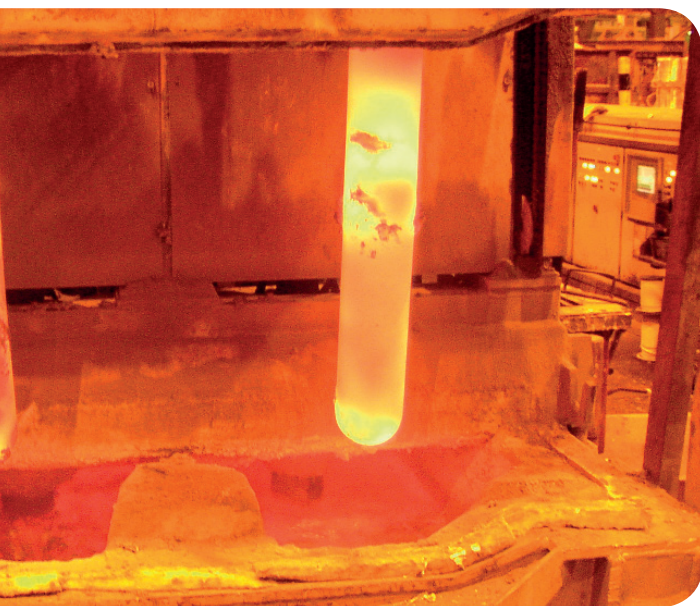




Measurement  
control during  
the grinding process



## ... THE INDIVIDUAL CERAMIC COMPONENT



Our materials are successfully field-tested in many industrial sectors, facilities and manufacturing processes.

### **Performances of our ceramics:**

- Extreme wear-, corrosion- and oxidation resistance
- High stiffness in correlation with high bending-strength
- Very high stiffness and in the same time a low density (approx. 40 % of steel)
- Extreme good thermal shock resistance
- Increase of life-time during process conditions
- Resists to extraordinary high chemical, thermal or mechanical impacts
- Absolutely no low temperature embrittlement
- Very low thermal expansion coefficient low thermal expansion
- High permanent stability
- Low tendency of adhesion against melts of non-iron Metals and Aluminum

## Our solutions in the application

- Mechanical and chemical engineering
- High-temperature engineering
- Forming tools for steel plants
- Wafer processing and evaluating
- Forming of industrial parts



## MATERIALS FOR THE FUTURE

- Lightweight for space and avionics
- Silicon nitride and composites
- Borides, Carbides and Nitrides
- C / CSiC
- Zirconia and Alumina Composites
- Tailored ceramic materials









ACHIEVING A COMMON PURPOSE



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