FCT Systeme GmbH
FCT Group

OUR VALUES

Expertise, Quality and Reliability

KNOWLEDGE IS THE TRUE ASSET OF A COMPANY

Heinz U. Kessel
Founder and Managing Director

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OUR STORY

Our comprehensive experience and knowledge in the field of manufacturing high-performance materials as well as engineering ceramics puts our customers in the leading position.

Since the first enterprise called KCE Sondermaschinen GmbH was founded more than 30 years ago, FCT has evolved into a group of 3 independent companies with a total number of approximately 180 employees, who address themselves to engineering high-performance ceramics every day. Throughout FCT's history, expertise has gradually expanded. Thus, FCT was not only dedicated to solve plant specific and procedural issues, but also engaged in the development of material engineering in the fields of sintering and hot pressing technology. Thereby, classic plant engineering soon expanded to the processing of ceramic components. Thus, an entire process chain from the primary product to the finished component was established step by step. FCT Systeme GmbH thereby continues its tradition as innovative plant manufacturer. At our location in Frankenblick - in the Thuringian Forest - we conceptualize and manufacture high-temperature plants for the production of state-of-the-art high-performance materials, particularly for nonoxide engineering ceramics.

Milestones in the history of our company

- **1982** Foundation of KCE Sondermaschinen GmbH
  Development and manufacturing of sintering plants for the production of engineering ceramics
- **1985** FCT Fine Ceramics Technologies
  The technology venture to KCE: During the 1980's, KCE and FCT made their mark by manufacturing the so far largest induction-heated sintering plant (1985) and the most powerful hot press (1989) to date
- **1994** Foundation of FCT Hartbearbeitungs GmbH
  Development and finishing of components made from engineering ceramics
- **1996** Foundation of FCT Ingenieurkeramik GmbH
  Manufacturing of ceramic high-performance materials and composites
- **1996** Foundation of FCT Systeme GmbH
  as direct successor to KCE Sondermaschinenbau GmbH
- **2002** Development of the first HP D-Plant
  a new and powerful plant type based on the technology of field assisted sintering (FAST)
- **2003 bis 2011** Development and shipment
  of 68 customized plants for the manufacturing of solar-grade silicon for leading solar companies
- **2012** Development of the most successful hybrid concept
  FAST and hot pressing combined in one plant

FCT Systeme GmbH - TODAY

From planning to realization: we offer the know-how for your high-temperature sintering plant from primary product to operational component.

FCT Systeme invests extensively in research and development. The consequent improvement of best practice concepts is thereby as important to us as the development of new plant types, particularly regarding the increase in efficiency.

Our employees are continually devoted to improve and redevelop trendsetting plant concepts and sintering processes in our in-house technical center.

To our project partners, who come from industry and research, we offer the opportunity to concentrate and use combined knowledge in confiding collaborations.

Thereby and due to a directed development of new technologies as well as close collaboration with our sister companies and project partners, we are able to offer comprehensive system solutions - from material testing in our in-house technical center to the finished sintering plant.

In the close collaboration with our clients, project partners and sister companies we rely on the innovative power of our R&D department and our in-house technical center.

Thus, we head well prepared for the future.

TECHNICAL CENTER

We foreground the practical implementation of new ideas.

The efficient production of ceramic components is carried out with in-house developed sintering units optimized to meet each customer's requirements. Our highly-trained specialists and our well-equipped in-house technical center are available to you for the consistent implementation of your product idea. Furthermore, we provide you with advisory service in all matters related to sintering technology and offer comprehensive support with more complex tasks as well. Next to the practical work, these tasks also include simulations through FEM calculations (i.a. regarding tool design).

The adjacent sintering units are available to our customers at our in-house technical center for commission orders as well as for the development of customer specific concepts and test series.

FP W 90 - Gas pressure sintering furnace

- Usable volume: Ø 350 x 700 mm
- Max. temperature: 2200°C
- Max. pressure: 100 bar(g) (10 MPa)
- Working gases: N_2, Ar, H_2, He
- Vacuum: 5 x 10^{-2} mbar(a)
- Combined processes (debinding + sintering)
- Options for gas mixing and gas analysis

H-HP D 25 - Sintering furnace for FAST (SPS) hybrid heated

- Max. diameter of component: Ø 100 mm
- Max. temperature: 2400°C
- Working gases: N_2, Ar, He
- Vacuum: 5 x 10^{-2} mbar(a)
- Max. pressing force: 250 kN
- Option: flash sintering

HP W 50 - Vacuum hot press

- Max. diameter of component: Ø 150 mm
- Max. temperature: 2400°C
- Max. pressing force: 500 kN
- Max. pressure: 10 bar(g) (1 MPa)
- Working gases: N_2, Ar, He
- Vacuum: 5 x 10^{-2} mbar(a)
- Combined processes (debinding + sintering)

H-HP D 250 - Sintering furnace for FAST (SPS) hybrid heated

- Max. diameter of component: Ø 300 mm
- Max. temperature: 2400°C
- Max. pressing force: 3200 kN
- Working gases: N_2, Ar, He
- Vacuum: 5 x 10^{-2} mbar(a)

RESEARCH & DEVELOPMENT

Constant research and development ensure the compliance with ever-expanding quality standards and requirements we demand of the thermoprocessing equipment developed and manufactured by us.

FCT Systeme GmbH has already conducted numerous R&D projects in close collaboration with scientific institutions, R&D departments as well as manufacturers and end-users of high-performance ceramics and powder metallurgy.

Continued project work leads to a steady improvement in operational know-how, which is reflected in the optimal functionality and effectiveness of the plants as well as in consequential distinct competitive advantages. In addition, new fields of application for our plants are compiled within those projects and new types of plants with innovative functions are developed.

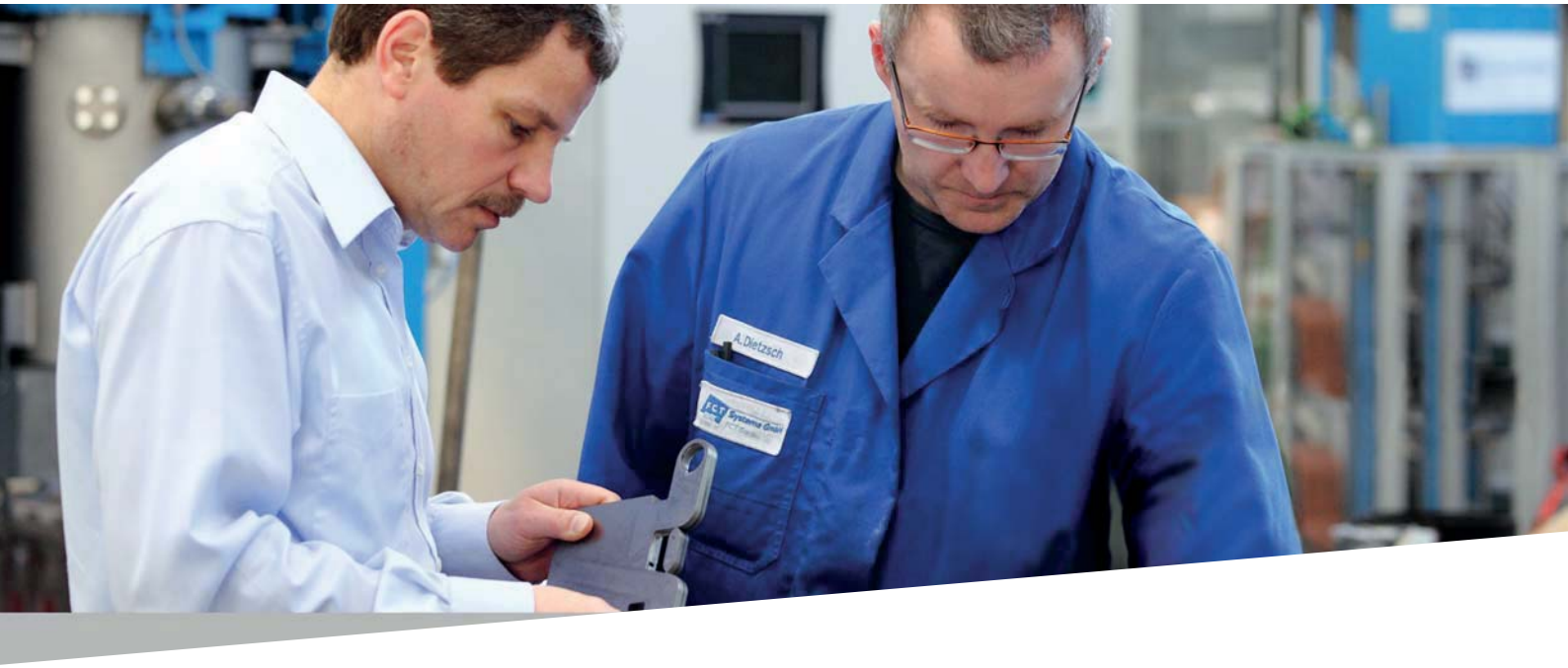
The projects mentioned above are mostly bilateral customer projects particularly oriented towards the requirements of the respective partner. Joint research projects with several project partners are on the other hand also formed, which are partly government-funded on a national or European level.

A list of research projects, scientific articles on FAST/SPS-plants by FCT Systeme GmbH as well as further information on matters regarding thermoprocessing technology can be found on our website.

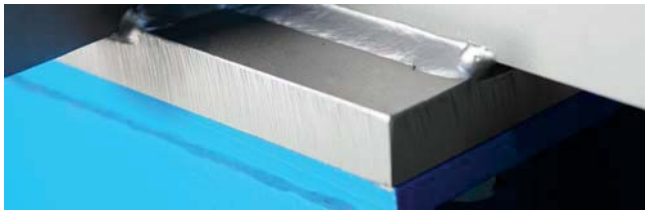
The consistent R&D activity at FCT Systeme GmbH is reflected in the fact that 30% of our current employees are working in the department of research and development.

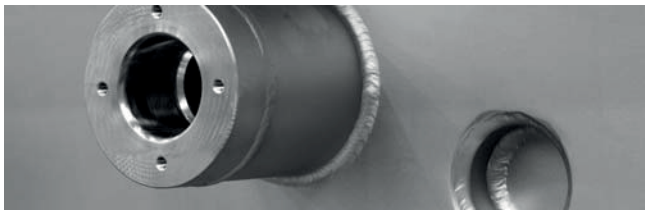
QUALITY

Our asset: deep-seated quality awareness and the active responsibility of our employees towards our customers and the environment.



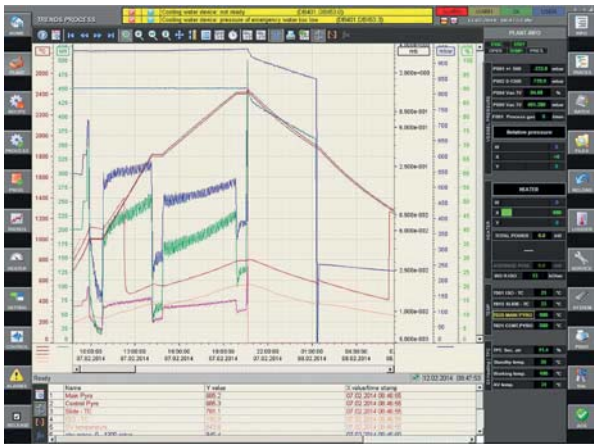
Our quality requirement consists not only in the high demands we make on the materials and components for our plants. The know-how about the options of sintering technology and the knowledge regarding their realization in the field of special purpose machinery manufacture together with our longtime experience within this sector constitute further criteria which contribute to the excellent quality and high reliability of our products. The active involvement of our customers in the entire processes of development and realization enables us to transform a simple idea into a customized and individual solution that meets all specifications and demands of our clients.





USABILITY

User-friendly interfaces as well as efficient and reliable process performances support you during your day-to-day operations.



Process display and execution take place on a fully graphical interface (available in several languages) wherein the self-explanatory navigation is realized via touch-screen. Alphanumeric entries are carried out via an on-screen keypad. As an option, the plant can also be operated via mouse and keyboard.

Additionally to the process screens and plant diagrams, there are e.g. various trend logs and serial interfaces available for evaluations and the export of process data onto external storage devices to organize the process analysis as effectively as possible.

Process screens, plant diagrams, image animations and dynamic sampling realized by color gradients and text or value output are furthermore used to make the provided information on processes and plant states easier to read.

SERVICE & MAINTENANCE

We support you in all matters around the life cycle of your plant - made-to-order and with the highest quality.

Whether it concerns user support, software updates or maintenance: many of these tasks can easily be performed through the safe remote maintenance service offered by FCT Systeme GmbH. The ever-expanding cross-linking of computers and machines via the Internet continuously extends the options for remote maintenance. Therefore, diagnostics and troubleshooting can be carried out directly via the industrial router at the plant. Our customer's advantage: they safe time and money, because our service technician can access the system to be maintained directly and without delay.

Subsequent to the delivery of the plant, we are able to provide our customers with a multitude of service features through our extensive after-sales services.

Our service features include:

- On-site assembly and commissioning of and training at the plant through our experienced and highly specialized service technicians
- Optional remote maintenance service for continuous support including failure diagnostics and fault correction via an industrial router, which can be activated and deactivated by the customer as needed
- A 10-year-delivery guarantee for prompt supply and delivery of wear and spare parts through our customer support
- Constantly available, worldwide contacts through our extensive network of representations abroad

CONTACT US

Break new grounds: Our know-how and longtime experience provide you with the necessary competitive advantage.

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◀◀◀ The adjacent QR code guides you to our contact site with a listing of our representations abroad including the respective contact information.