TRIDELTA CAMPUS
HERMSDORF

HIGH-TECH SITE

for Ceramics and Electronics in Central Germany

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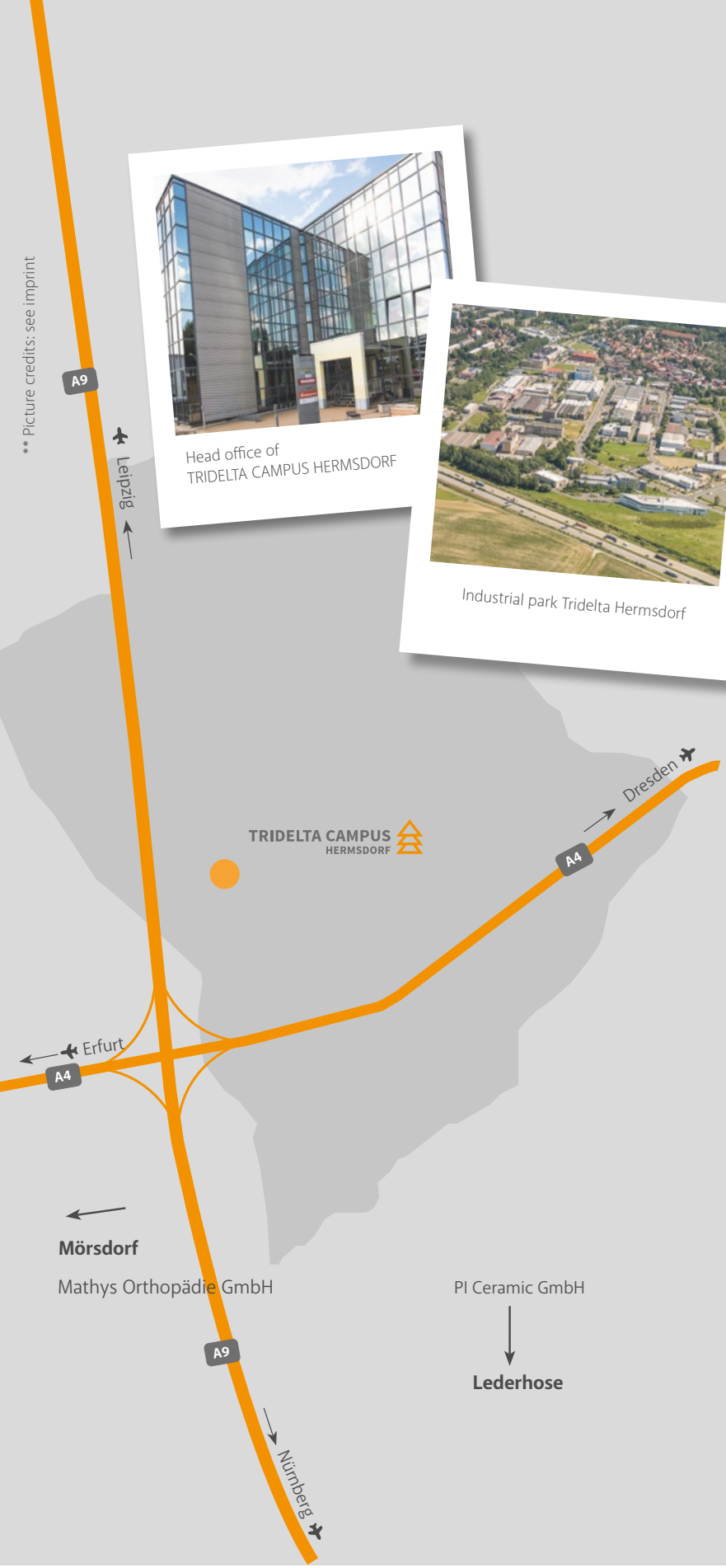
www.tridelta-campus-hermsdorf.de

** Picture credits: see imprint

Head office of
TRIDELTA CAMPUS HERMSDORF

Industrial park Tridelta Hermsdorf



Members / companies at the Campus (choice)

Bau-Consult Hermsdorf – Gesellschaft beratender Ingenieure mbH
CERA SYSTEM Verschleißschutz GmbH
designerei-Werbeagentur
Eberspächer catem GmbH & Co. KG
eropräzisa GmbH
Fraunhofer IKTS
H.C. Starck Hermsdorf GmbH
HAI Hermsdorfer Anlagen Instandhaltung GmbH
HEGAS GmbH
LCP Laser-Cut-Processing GmbH
Lust-Hybrid Technik GmbH
Mathys GmbH
marco Systemanalyse und Entwicklung GmbH
Micro-Hybrid Electronic GmbH
Micro-Sensor GmbH
PIEPER Oberflächentechnik Hermsdorf GmbH
PI Ceramic GmbH
Porzellanfabrik Hermsdorf GmbH
Siegert Thinfilm Technology GmbH
SCHMEISSNER GmbH
Schneider Engeneering Solutions GmbH
SomTec GmbH
TAMI Deutschland GmbH
Tenno GmbH
TRIDELTA GmbH
Tridelta Meidensha GmbH
Tridelta Thermprozess GmbH
Tridelta Weichferrite GmbH
TriWeFo Tridelta Werkzeug- und Formenbau GmbH
VIA electronic GmbH

CAMPUS *Café*

CAMPUS *Afterwork*

CAMPUS *Event*

TRIDELTA *Sensor Space*

TRIDELTA CAMPUS
HERMSDORF

RESEARCH & PRODUCTION

IN SYNERGIE

If you believe the media, we are on the brink of an era in which products will come straight out of the printer and industrial production in the conventional sense will no longer be necessary. That is not quite true. Printing is a forming process that offers exceptional freedom to design. Like all forming processes, however, it requires the basic material in the appropriate powder or suspension form. Even in the future, there will be no products without the right materials and substances.

In Hermsdorf, technology companies particularly committed to high-performance ceramics work together.

Maximum strengths, extreme temperature stability and wear resistance enable a wide range of applications in medical engineering, mechanical and plant engineering, and process engineering. Of particular interest are ceramic materials with electrical and magnetic properties, which can be found in almost every electronic device. This is the reason why electronics companies, active in the fields of measurement technology, sensor technology, energy technology and environmental technology, have established themselves very successfully in Hermsdorf. The TRIDELTA CAMPUS HERMSDORF unites these technology companies, numerous service providers and the Fraunhofer Institute for Ceramic Technologies and Systems (IKTS) in a unique way. There are close mutual relationships with customers, joint development projects, intensive scientific exchanges in the Campus Café, training and further education courses at the Hermsdorf-Schleiz-Poessneck vocational school, Ernst Abbe University of Applied Sciences Jena and Friedrich Schiller University Jena, and much more.

We are sure we have the right solution for you! Do you need a new material, a sophisticated product or a special combination of materials? Are you looking for a manufacturing partner or do you want to produce yourself and are you looking for a suitable environment? Are you looking for a professional challenge that also fulfils your personal and family wishes?

Please contact us: we are looking forward to seeing you here!

Prof. Dr. Ingolf Voigt
Deputy Institute Director Fraunhofer IKTS
Site Manager IKTS Hermsdorf

FACTS & FIGURES

Industrial park Tridelta Hermsdorf

Area: 52,2 ha

Number of companies: > 90

Employees: > 2500

Main business areas:

- Technical ceramics
- Microelectronics and hybrid applications
- Industrial services

International markets:

- Environment
- Mobility
- Safety
- Energy
- Communication
- Health
- Automation

Hermsdorf/Thuringia is proud to be the only small town in Germany with a Fraunhofer Institute site. Here, the research activities of the IKTS are particularly aligned to the market and industry and achieve ground-breaking results for new applications of technical ceramics.

HIGH-TECH SITE
for ceramics & electronics

Current global challenges are raising important questions and the companies of the TRIDELTA CAMPUS are providing a surprisingly large number of technological answers to these questions. The local high-tech producers have fascinating stories to tell about their products, applications and customer projects all over the world.

In the focus areas of ceramics and electronics, the companies of TRIDELTA CAMPUS are outstandingly positioned as international competitors and will hold their ground even more strongly in the future. In the age of digitalization, sustainable use of resources and internationalization, technological solutions for almost all industries and fields of application are created here at this site.

The answer to the question of what makes the TRIDELTA CAMPUS a HIGH-TECH SITE is as exciting as it is versatile and complex.

The local success formula cannot be explained solely by the special mixture of technology enterprises, industry-oriented service providers and research institutions. The range of the industrial cluster, which has grown historically and is focused on the future, is made possible not only by the intensive local networking, but above all by its exceptional, strategically favourable location in the heart of Central Germany.

In this way, TRIDELTA CAMPUS makes the region around the Hermsdorfer Kreuz motorway junction the economic focus of eastern Thuringia. In the regional competition for employees and inhabitants, TRIDELTA CAMPUS contributes significantly to enhancing the image of the Saale-Holzland district as an attractive place to live and work, in addition to the optical industry location Jena.

With this brochure we would like to introduce the hidden champions of electronics and technical ceramics and give potential, current and former employees, guests and residents of the region as well as business partners an impression of a location that will soon be more than just an insider tip.

The Board of the association TRIDELTA CAMPUS Hermsdorf e.V.

Daniel Störzner, Prof. Dr. Ingolf Voigt, Konstanze Hartmann, Benny Hofmann, Christian Jeske, Maren Thier

HIGH-TECH SITE for ceramics & electronics

Environment

Clean water – unique nanofiltration for the treatment of waste water and the opening-up of water cycles improves the worldwide availability of clean drinking water.
Clean air – sensor-controlled exhaust gas monitoring makes combustion processes more efficient and reduces the emission of harmful gases.

Communication

Fast Internet, automated manufacturing processes, smart electronics for home and household as well as efficient logistics and transport management – all this means communication from person to person, person to machine, machine to machine, or Internet of Things (IoT) and requires the electronic processing of huge amounts of data. Durable and reliable electronic circuits, also for high-frequency applications in communication satellites, come from here!

Mobility

Reliable and precise electronics, sensor technology & ferrite components for the automotive industry enable **comfort and safety applications in the vehicle sector** as well as future-oriented solutions for **autonomous and environmentally friendly driving**. Ceramic technologies such as piezo or hybrid technology are the basis for decisive application and competitive advantages.

Did you know that ...?

... Hermsdorf magnets are installed in every second car in Europe?

They operate about 80 different motors for windscreen wipers, window lifters and other electrical applications in the car.

... Hermsdorf sensors maneuver trains safely around curves?

Rail sensors from Hermsdorf individually monitor how trains run around curves and thus prevent accidents.

... high-performance chips are manufactured by using Hermsdorf electronics?

In the production of microchips, ceramic circuits ensure that nanofine conductor paths are created on semiconductor chips. This is the only way to make cell phones and other devices really smart.

Solutions for the global challenges of our time

Automation

Smart Factory, digitalization and Industry 4.0 are the keywords of the industrial development of tomorrow and after tomorrow. The implementation and realization of these strategies demand electronic solutions with the highest standards worldwide. The high-tech site in Central Germany provides the answer to these questions with its uniquely **versatile sensor technology portfolio and development know-how**.

Safety

Electronic systems and high-performance sensors monitor numerous physical parameters for the **safety of persons and machines** in industrial processes, in rail and air traffic as well as in the medical and IT sectors. They are essential for the **protection of property and material values**.

Energy

Ceramic-based components and systems for **efficient and resource-saving energy storages of the future, fuel cells and systems for the use of environmental energy** such as waste heat and motion (energy harvesting), thermal systems and process engineering for bioenergy.

Health

Biocompatible and durable **ceramic prostheses for artificial knee, hip and shoulder joints as well as bone replacement and dental implants**. Electronics and sensor technology for the production of devices for innovative medical technology and modern diagnostics.

...there would be no milk in the store without Hermsdorf ceramics?

During production, beverages such as milk, wine or juice are sterilized and cleaned from impurities by means of ceramic membranes from Hermsdorf.

...artificial joints made of high-tech ceramics are more durable?

High-tech ceramic surfaces are much harder than metal and cause less abrasion which can cause damage to the body.

...electronic systems from Hermsdorf protect art treasures in Ireland?

The National Museum in Dublin relies on monitoring systems and sensors from the high-tech site.

The TRIDELTA CAMPUS technology atlas

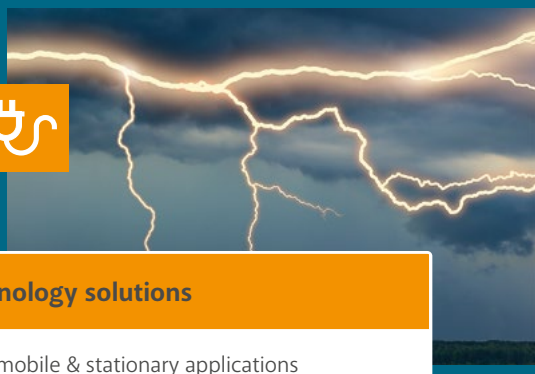
Environmental technology and agriculture

Assuring the availability of water by means of water treatment and water circulation closure is one of the most important topics in environmental technology. But also the reduction of greenhouse gases and safe processes in exhaust gas and exhaust air purification technology, municipal and industrial waste treatment plants, biogas plants, etc. require technological progress.

Technical applications and challenges	Our product and technology solutions
Water treatment & wastewater purification	Ceramic membranes for micro-, ultra- and nanofiltration
Conduction of corrosive and abrasive liquids	Ceramic tubes, tube bends and ball valves
Air conditioning, heat recovery	Ceramic heat exchangers, high-temperature heat exchangers
Gas concentration measurement	NDIR gas sensors for measuring CH_4, CO_2 and detecting leaks, monitoring growth and fruit ripening processes
Flue gas desulfurization	Catalysts, hot-gas filters, ceramic fittings
Resource recovery, water circulation developoment	Valuable substances from mining wastewater and nutrients from agriculture

Energy generation, storage and distribution

The conversion, storage and distribution of energy belong to the most fundamental issues of our future. Our lives depend on the provision of energy.
Regenerative energies are clearly on the advance. Fluctuations in availability must be compensated by suitable storage facilities.



Technical applications and challenges	Our product and technology solutions
Energy storages	Rechargeable batteries for mobile & stationary applications
High-voltage protection	Surge arresters
Energy self-sufficient systems with piezo elements	Piezo-based patch transducers
Pneumatic transport of flue ash	Ceramic fittings and tube wear protection
Coal gasification and liquefaction plants	Ceramic pressure release systems, partially ceramic and ceramic fittings with ceramic tube wear protection
Treatment of biogas	Ceramic membranes for CO_2/CH_4 separation
Dewatering of biomass fuel	Ceramic membranes for pervaporation / vapor permeation
Power-to-gas, power-to-chemicals	New process concepts with catalytic membrane reactors

Technologies & products for applications worldwide

Automotive, rail and air traffic

The peak of combustion vehicles becomes apparent.
Electric vehicles conquer the market and also the transport of goods on the rails are becoming increasingly important. Electromobility with battery and hydrogen storage systems and autonomous driving will change the face of road traffic in a few years. This change will require countless sensors to provide all the necessary data inside and outside vehicles.

Technical applications and challenges	Our product and technology solutions
Control and power electronics	Electronic components to be used in the comfort and safety areas of automobiles, for the control of functions inside the vehicle
Sensor technology and reliable mobility	Position sensors for identifying angles and roadways, magnetostrictive sensors for actuators, infrared sensors for indoor gas concentration measurement, detection of driver's breath alcohol
Wireless charging	Prototype construction of soft ferrite-based components for electric mobility
Independent vehicle heaters and auxiliary heaters for fuel-efficient vehicles	PTC heaters
Triggering of fuel pumps, DC motors and actuators, seat adjusters and fans	Magnet segments and ferrite powder
Vibration and oscillation measurement; curve measurement	Rotation rate sensors and vibration sensors for curve detection, anti-derail systems and predictive maintenance, data acquisition for digitalization in the area of mobility

Communication and high-frequency technology

From man to man, man to machine or machine to machine – no communication can be managed without data and its fastest possible transmission. For this purpose, smartphones, PCs and countless electronic devices are becoming increasingly smarter. Modern semiconductor technology is producing more and more efficient microprocessors for digital applications which have become an integral part of our everyday lives.

Technical applications and challenges	Our product and technology solutions
High-frequency technology	Steatite components and post insulators
High-frequency electronics and semiconductor production	Durable electronic circuits and LTCC-based electronic modules

Medical engineering and biotechnology

Modern medical devices for diagnostics and therapy have to meet particularly high demands in order to fulfill the requirements of patient individuality. Properties such as long-term stability, biocompatibility, radiation resistance and the highest level of innovation characterize the product solutions of the high-tech producers.

Technical applications and challenges	Our product and technology solutions
Prosthetics and implants	Biocompatible and durable joint implants, dental ceramics
High-resolution fiber scanning endoscopy	Miniaturized piezo tubes, electronic modules with optical sensors
Dosing of active ingredients, aerosol generation	Piezo actuators for pumping and dosing technology, nebulizers
Information on diagnosis and therapy	Reliable ceramic components (thick film, LTCC), infrared technology and piezo technology in dialysis machines, ventilators, miniature pumps et al.
Infrared spectrometry	Infrared sensors for point-of-care analysis and laboratory applications
Prosthetics and implants	Biocompatible and durable ceramic implants; miniaturized multilayer actuators with low energy consumption
CO_2 breathing gas analysis	IR components for breathing gas analysis devices, cell incubators, etc.
X-ray apparatus and computer tomographs	Radiation-resistant components of high-performance metals such as tungsten and molybdenum

Security technology and systems

In the field of security, the companies on the Tridelta Campus cover almost the entire range of applications, from protection against intruders to health and life safety in buildings and means of transport.

Technical applications and challenges	Our product and technology solutions
Force sensors	Piezoelectric sensors for measuring dynamic tensile, compression and shear forces
Room air, ambient air and gas leak detection	NDIR gas sensors for room air monitoring
Detection of imbalances on rotating machine parts	Vibration sensors
Reliable mobility	Crash detectors in the automotive sector, railroad sensors for measuring vibration and inclination
Showcase monitoring, image and object monitoring	Sensors, glass breakage detectors, piezoelectric monitoring, optical detectors, alarm evaluation, capacitive sensors for the contactless protection of objects, laser scanners
Room and building security	IR pyrodetectors for smoke and flame detection

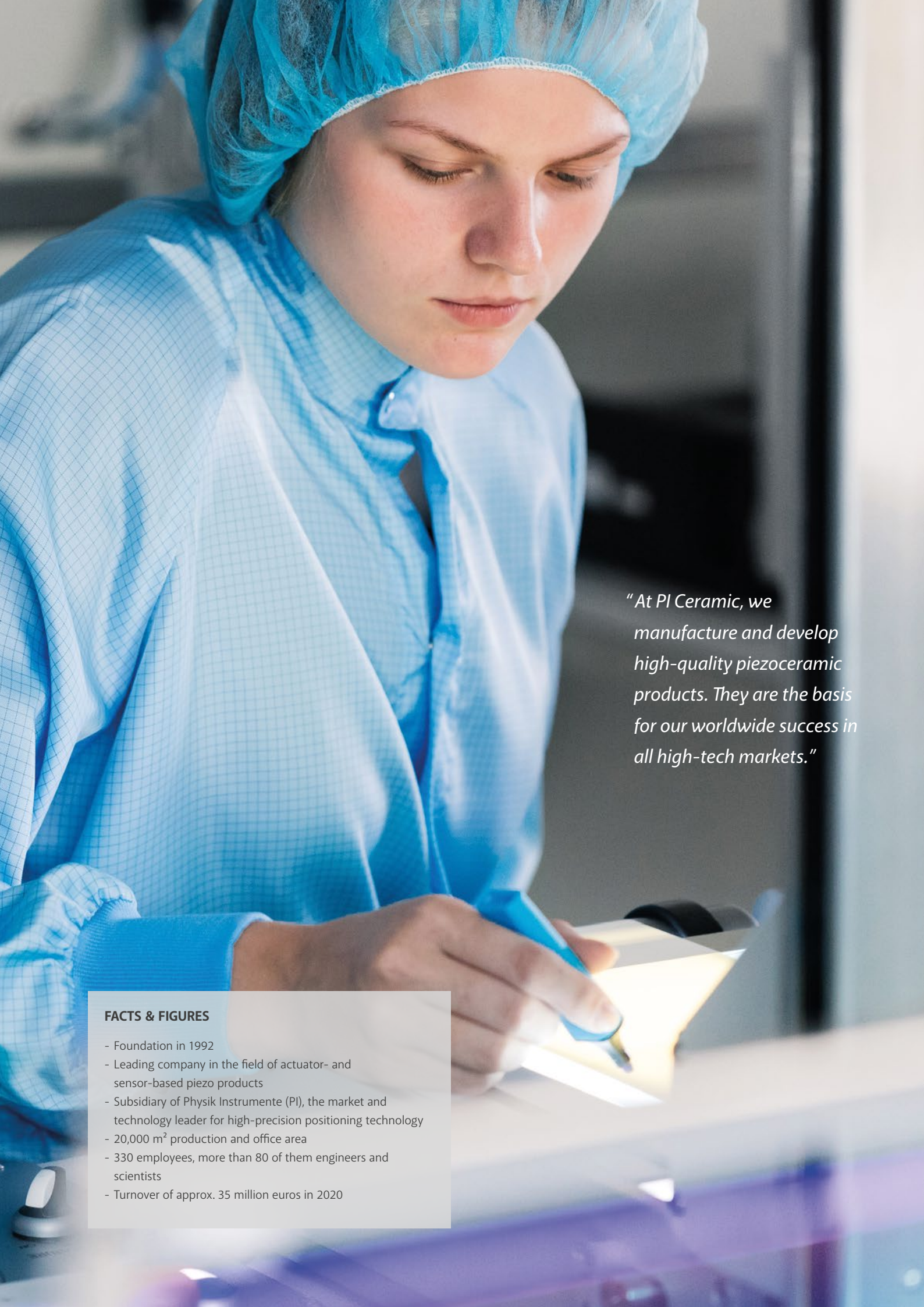
Industry and machine construction

Machines and systems must function reliably and be monitored even in harsh environments. There is no alternative to ceramics as the basic material of components and electronics in a wide variety of technological systems. TRIDELTA CAMPUS Hermsdorf stands for competence in ceramic technologies.

Technical applications and challenges	Our product and technology solutions
Wear protection of equipment and systems	Ceramic components, ceramic coatings
Measurement and signal processing of physical quantities	Electronic component groups for all fields of industrial electronics
Ultrasound technology	Piezoceramic components for ultrasound generation and ultrasound sensors
Precision metering	Piezo elements for membrane or peristaltic pumps
Furnace and machine construction	Silicon carbide components, tools and molds
Infrared measurement technique	Contactless temperature and gas measurement
Sensor technology	Pressure sensors, X-ray detectors, optical sensors, magnetic sensor technology
Thermal processes (drying, calcinating, kilning...)	Development and production of industrial, special and controlled atmosphere furnaces
Lacquer drying and hardening	UV and LED components
Heat exchangers	Ceramic honeycomb bodies
Power conversion in industrial electronics	Soft-ferrite-based components for coils and inductors
Test and screening systems, development test technique and software development for test systems	

On the following pages, you will find profiles of the technology companies of TRIDELTA CAMPUS. If you have any questions about companies, competences and opportunities, please contact the office of TRIDELTA CAMPUS | email: E-Mail: **info@tridelta-campus-hermsdorf.de**

We introduce: **HIGH-TECH PRODUCER & ORIGINAL SITE COMPANIES**



"At PI Ceramic, we manufacture and develop high-quality piezoceramic products. They are the basis for our worldwide success in all high-tech markets."

FACTS & FIGURES

- Foundation in 1992
- Leading company in the field of actuator- and sensor-based piezo products
- Subsidiary of Physik Instrumente (PI), the market and technology leader for high-precision positioning technology
- 20,000 m² production and office area
- 330 employees, more than 80 of them engineers and scientists
- Turnover of approx. 35 million euros in 2020

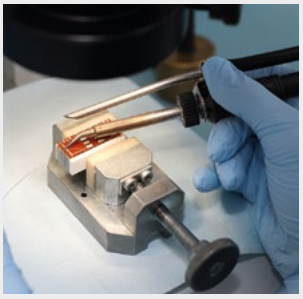
Becoming the market leader in sensor and actuator technology through innovations and investments

Entrepreneurial commitment meets piezoceramic know-how from the region

For more than 25 years, PI Ceramic has been developing and producing piezo components for actuator- and sensor-based applications at its Lederhose site in Thuringia and it is one of the market leaders in the field of piezo technology. In 1992, PI Ceramic was founded as a subsidiary of Physik Instrumente (PI) GmbH & Co. KG and started with five employees. Today, 330 employees manufacture piezoceramic elements, actuators and transducers for high-tech markets worldwide. The piezoceramic products are used, for example, in medical technology, industrial ultrasonics sensor technology or industrial precision dosing.

To be able to manufacture these sophisticated products and customer-specific OEM solutions, it is important to control the complete production process: from mixing, grinding, pressing and sintering to assembling technology. All process steps are controlled on site to achieve the best possible results. Assembly processes are mainly carried out in clean rooms and investments are made continuously in new machines and technologies.

In addition to its technological know-how, PI Ceramic always keeps an eye on economic efficiency. In order to continue to push the development in the future and to maintain and expand its leading position on the world market for piezo technology and to meet the increasing demand for piezoceramic products, the company is always looking for qualified and motivated employees who want to actively shape the future of the company. That is why people are the focus of the top employer in the district of Greiz – with performance-oriented remuneration, flat hierarchies, individual training programs, childcare allowance, company pension scheme, and much more.



1) Piezoceramic actuators 2) Piezoceramic components
3) PI Ceramic is a strong development partner for customer-specific solutions
4) Assembly of piezo components by gluing and soldering
5) Miniaturized piezo components, e.g. for applications in medical engineering
6) Company building at the Lederhose site, administrative district of Greiz

PI Ceramic GmbH
www.piceramic.de

Tridelta Meidensha GmbH – The arrester Company

Committed to the protection of electrical systems for decades

1) Exterior view of the company building
2) Varistors
3) Surge arrester in polymer housing
4) Transformer station

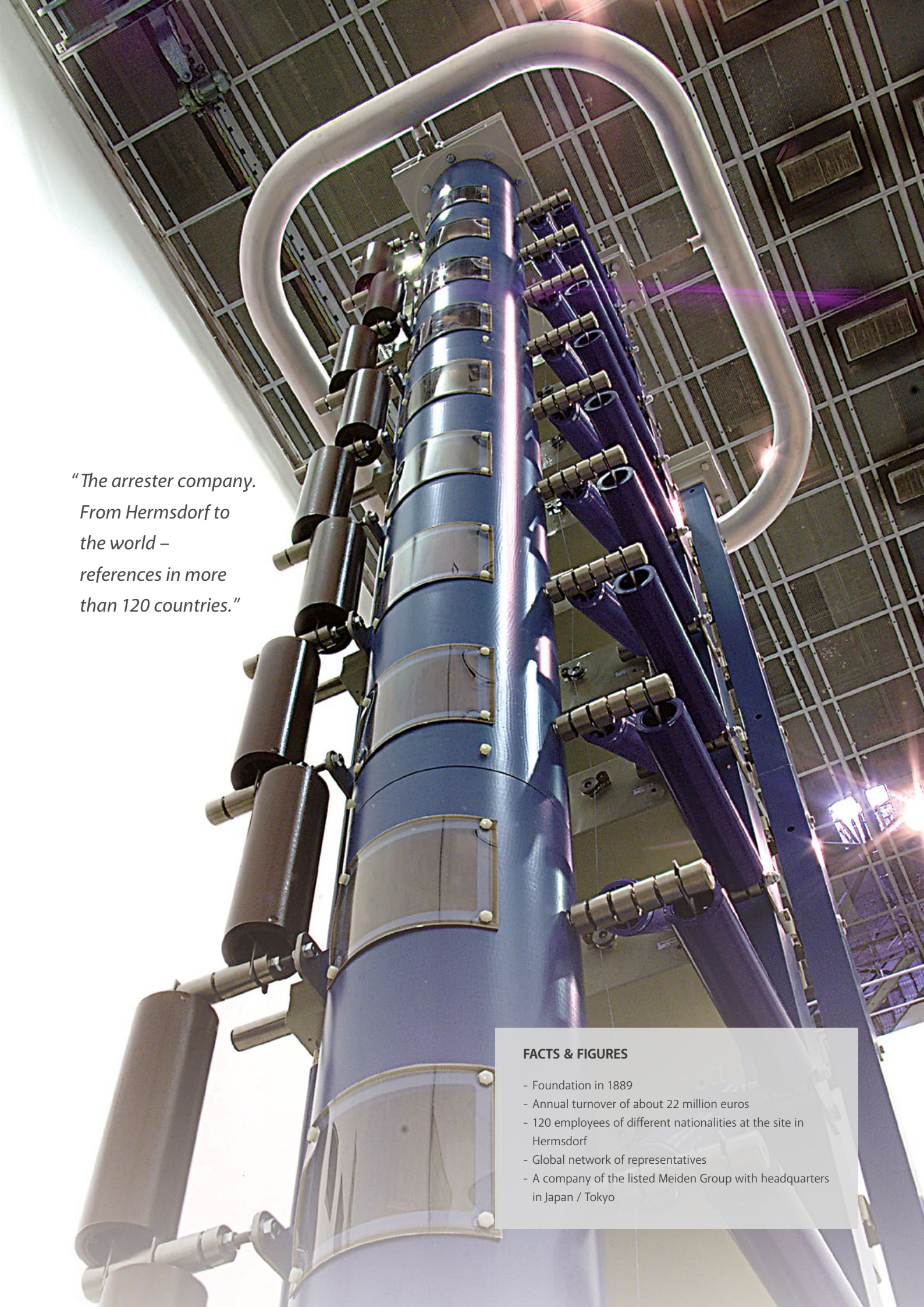
For more than 50 years we have been producing top quality surge arresters at our site in Hermsdorf. Initially, porcelain insulators for electricity distribution were produced on the basis of the ceramic tradition of the Saale-Holzland district. In 1961, the product range was expanded by the start of the series production of surge arresters. Arresters up to a rated voltage of 420 kV, later up to 800 kV, were produced very quickly, first in porcelain housings and later also in polymer housings.

Tridelta Meidensha GmbH is today one of the leading manufacturers of high and medium voltage surge arresters. We offer a complete portfolio to cover most of the demanding requirements in the electricity supply industry. Innovation is at the heart of our business.

Tridelta Meidensha has a global presence with surge arresters proving full satisfaction in more than 120 countries across the world. Our sales representatives and distributors in Europe, Africa, Asia, Australia and America will provide a proficient technical and commercial service.

We are proud of our international team, speaking more than 14 languages. Therefore, we offer interesting career prospects to trainees, skilled workers and engineers to support us in the execution of our challenging tasks.

Tridelta Meidensha GmbH
www.tridelta-meidensha.de



"The arrester company. From Hermsdorf to the world – references in more than 120 countries."

FACTS & FIGURES

- Foundation in 1889
- Annual turnover of about 22 million euros
- 120 employees of different nationalities at the site in Hermsdorf
- Global network of representatives
- A company of the listed Meiden Group with headquarters in Japan / Tokyo

"We love precision!"

FACTS & FIGURES

- Over 100 years of history
- Annual turnover of about 30 million euros
- Approx. 250 employees
- Sites: Hermsdorf and Dortmund
- Roots in the following four areas of competence
  - · Technical ceramics
  - · Magnetism
  - · Sintering technology
  - · Toolmaking

TRIDELTA

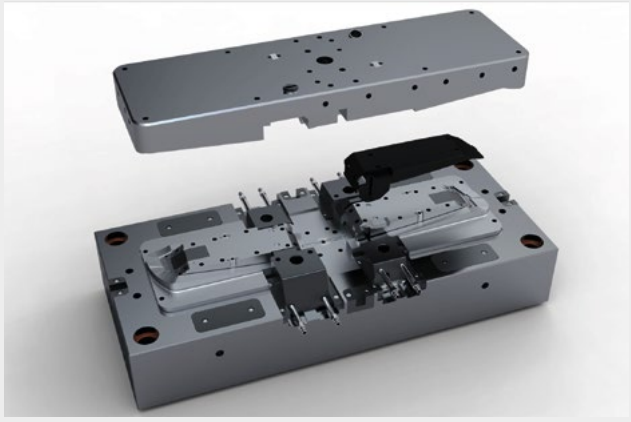
TRIDELTA group – Commitment to Excellence

Innovative and sophisticated products for special customer requirements – for automotive, electrical engineering, chemical industry, etc.

In the way in which our company has evolved from the porcelain factory founded in 1890 to today's innovative TRIDELTA business group, our products have also adapted to the progress of modern technology.
In the early 1950s, hard and soft magnetic ferrites were developed as further ceramic product lines in today's parent company TRIDELTA GmbH (formerly Keramische Werke Hermsdorf). Since then, the company has grown to a major ferrite producer in Europe.
The philosophy of TRIDELTA GmbH is based on the development of products and solutions which are innovative and individually tailored to customer needs.

- As the European market leader, we supply top quality magnetic powders and magnet segments.
- We develop permanent magnets and magnet systems for a wide range of applications.
- We build injection molds and pressing tools at the highest technological standard.
- We produce highly porous sintered materials that are all-rounders for highest demands.
- As a service provider, we offer IT infrastructure solutions.

At our company, the experienced employees have the perfect environment for their development and the chance to take on a high degree of personal responsibility.
That is why we are always looking for committed specialists. In this way, our business group will continue to stay on course for progress in the future.



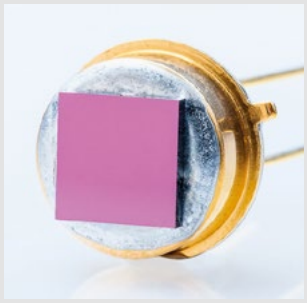
1) Production at TRIDELTA Hartferrite GmbH
2) Aqua spot of Tridelta Siperm GmbH
3) Hysteresis brake of Tridelta Magnetsysteme GmbH
4) Tool TriWeFo Tridelta Werkzeug- und Formenbau GmbH

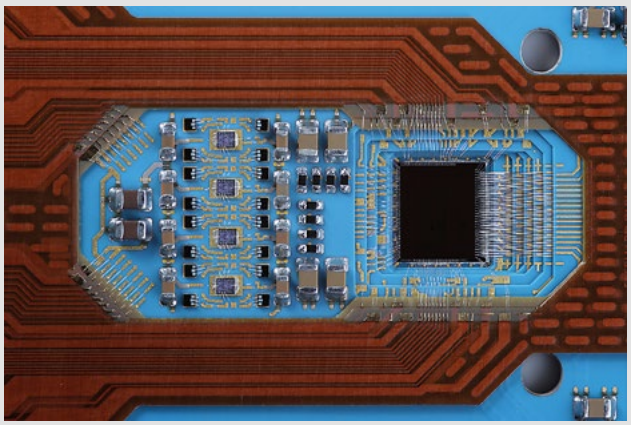
TRIDELTA GmbH
www.tridelta-hermsdorf.de

MICRO-HYBRID

Sensors for a better world

On the basis of 100 years of technical development at the site in Hermsdorf





1) UV LED module for use in printing technology
2) Hermetically sealed infrared emitter for gas analysis
3) Gas sensors for measuring carbon dioxide and methane
4) LTCC module – radiation sensor in satellite technology

The business was started as Micro-Hybrid Electronic GmbH i.G. on April 1, 1992, the official entry in the commercial register was made in May 1992. The engineers Karl Wisspeintner and Werner Baumgärtel jointly founded the company, which emerged from the eastern Germany state combine VEB Kombinat Keramische Werke Hermsdorf with a starting staff of approx. 30 employees. At that time, the scope of services comprised the design and manufacture of thick-film circuits on ceramic substrates.

Today, Micro-Hybrid is an internationally operating technology company. Global competitive advantages in the business fields of electronic microsystems, infrared measurement technology and inertial sensor technology drive an average annual growth rate of over 12 per cent. Sensors and components developed by Micro-Hybrid ensure the quality of mobile phones or take over important functions in the production of microprocessors. Modern patient monitoring systems and dialysis machines are based on Micro-Hybrid technology. Since 2013, the US company NOVA IR Inc. with its emitter technology protected by several patents has also been part of our company group.

Our strategy is focused on growth and internationality. Global megatrends such as Industry 4.0 or the Internet of Things and increasing demands on the safety and functionality of technical systems offer Micro-Hybrid above-average growth opportunities. The product range is being expanded and continuously renewed. Approximately 10 per cent of sales are invested in pre- and product development projects. Further investments of millions of euros have already been decided for the Hermsdorf site.

Micro-Hybrid Electronic GmbH
www.microhybrid.com

"Quality leadership and market-defining innovations will remain the goals of our sustainable growth path."

Dr. Knuth Baumgärtel, CEO Micro-Hybrid Electronic GmbH und Micro-Sensor GmbH

FACTS & FIGURES

Business fields:
Advanced electronic modules, IR components, Gas sensors, Inertial sensors

Total area: 9,100 m²
Production area: 3,500 m²

Employees: 215

Investments since the foundation in 1992:
41.3 million euros

Unique selling point:
- One stop shop for high performance electronics & OEM solutions
- Ceramic based electronic modules: thickfilm hybrid and LTCC
- MEMS based IR components & Gas sensors

"Tradition and innovation are an indivisible unit in the porcelain factory and show, as a practical example, ceramics through the ages."

FACTS & FIGURES

Range of products:

- Ceramic honeycombs as heat exchangers and catalyst carriers
- Components of steatite for high-frequency applications
- Regulating wheels and insulation parts of hard ceramics
- Ceramic grinding vessels with a capacity of up to 300 l and complete tumbling mills
- Kiln furniture in many different designs
- Special ceramics of slip casting in a wide variety of materials and shapes

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Employees: 125, among them 10 trainees

Education: industrial ceramist, industrial mechanic, industrial management assistant

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Certification: ISO 9001, 14001, 50001

What distinguishes us?

Due to our high level of flexibility and wide range of materials we are able to respond to special customer requirements at short notice. Our in-house mold and model construction enables us to solve customer-specific tasks.

PORZELLANFABRIK HERMSDORF GMBH
TECHNISCHE KERAMIK

Over 125 years of tradition in technical ceramics

Preserving and maintaining what is tried and tested – opening up new applications

The company Porzellanfabrik Hermsdorf GmbH was founded in 1890 as a branch of Porzellanfabrik Kahla. The factory, which was highly modern at that time, initially produced tableware. At the end of the 19th century, the production of electrotechnical porcelain was started parallel to the manufacture of tableware.

The close cooperation with customers and users finally led to an important invention in the field of electrical engineering in 1897: the Delta petticoat insulator. This petticoat insulator made Hermsdorf the "cradle of high-voltage ceramics".

With the refoundation of the porcelain factory in 1996, the production profile also changed. In addition to ceramic honeycomb bodies, the factory produces a wide range of special ceramics, wear protection products for apparatus engineering, equipment for casting and melting processes, large parts for machine construction and much more. In addition to the traditional portfolio products, the production program also includes new innovative products.

Research and development have always been of utmost priority. On the one hand, existing products and existing technologies must be continuously improved. On the other hand, the development of new products is an important part of the corporate concept. Development projects in cooperation with customers and research institutions are a guarantor for future and progress.

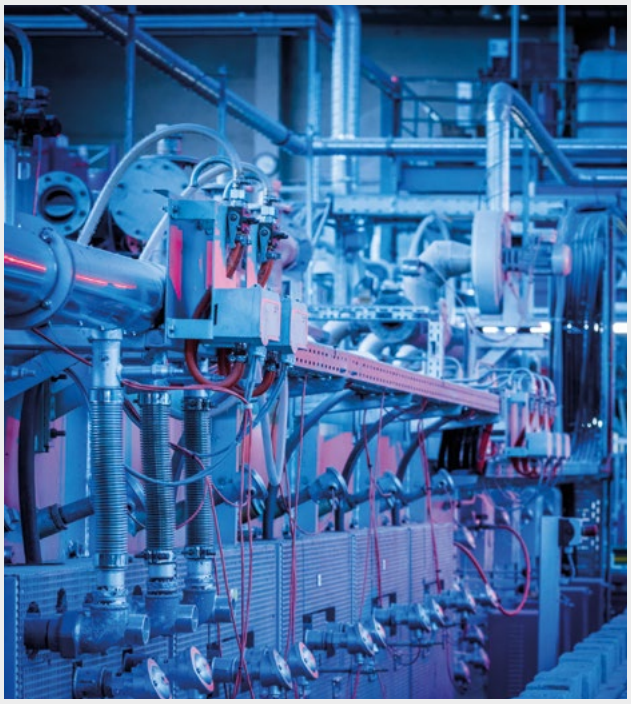
1) Product portfolio overview 2) Customer-specific ceramics
3) Employees during order processing 4) Company building in Hermsdorf

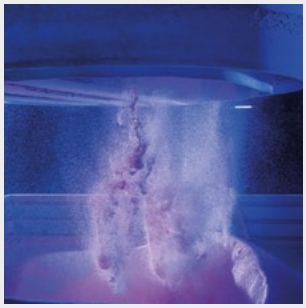
Porzellanfabrik Hermsdorf GmbH
www.pofahermsdorf.de

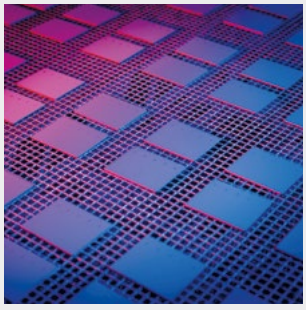
Eberspächer

Future technology from Hermsdorf

PTC elements for high-voltage heaters from Eberspächer catem







1) Transport of the PTC elements to the kiln 2) Granules for the production of the ceramic PTCs 3) Firing of the ceramic elements 4) The heart of the high-voltage heaters – the finished PTCs 5) Ensuring comfort at low temperatures – the PTC high-voltage heaters from Eberspächer

The trend towards electromobility increases the demand for innovative heating concepts for alternatively powered vehicles. Electric heaters generate the heat for tempering the passenger compartment and provide the usual comfort even at low outside temperatures. The heart of this technology comes from Hermsdorf, where Eberspächer catem produces PTC (Positive Temperature Coefficient) elements. Thanks to their properties, the ceramic elements contribute to the fact that electric current is converted to pleasant warmth.

The thermo specialist Eberspächer offers solutions for extremely high voltages typical in electric and hybrid vehicles. The demand is continuously increasing: In 2018, the world market leader in the field of high-voltage heaters produced the millionth water heater for electric and hybrid vehicles. To fulfil the increasing demand for PCT ceramics on the market, the company expands its production and development capacities and opens a new production facility in the industrial park Hermsdorf-Ost. In future, the about 80 employees will intensify the production-oriented development and implement a close-to-production testing of the latest generations at this site. "Our ceramics are a central component for thermal comfort in most modern vehicles. With our new plant in Hermsdorf, we are therefore investing in the mobility of tomorrow", says Dietmar Wunstorf, General Manager of Eberspächer catem. Eberspächer is planning to create further jobs at the Thuringian site. Eberspächer catem is an attractive employer with exciting future prospects for committed and qualified physicists or engineers from the field of materials technology.

Eberspächer catem

www.eberspaecher.com

"With our many years of know-how in PTC technology, we in Hermsdorf make a significant contribution to the automotive future."

FACTS & FIGURES

- Premises of Eberspächer catem
- Production and development of ceramic PCT elements
- Approx. 80 employees, expansion planned
- Core technology for heating electric and hybrid vehicles

Dietmar Wunstorf, General Manager Eberspächer catem

"Heat moves, heat shapes, heat fixes! We make sure that heat from raw materials is purposefully used to create products."

Dipl.-Ing. (FH) Frank Burgstedt, Managing Director

FACTS & FIGURES

What do we offer?

- Customized solutions in the field of thermal apparatus engineering
- High vertical range of manufacture with in-house construction
- Everything from one source - maximum customer and process orientation

Who are we?

- 35 employees and a production area of about 1,800 m²
- Skilled workers and engineers with over 25 years of experience in industrial furnace construction
- Complete-service provider from the offer to the acceptance report

What makes us so special?

- Plant construction from concept to production launch, precisely tailored to customer and process requirements
- Wide experience in the field of thermal processes
- Complete service for our own and third-party products

TRIDELTA
THERMPROZESS

Experience makes the difference

From kiln manufacturer for technical ceramics to supplier of innovative solutions for thermal process technologies

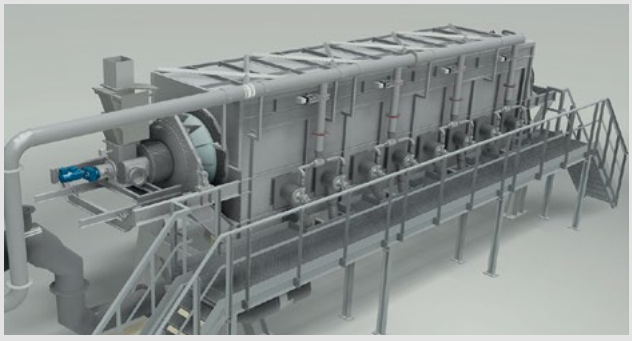
The historical roots of Tridelta Thermprozess GmbH are to be found in the more than 110-year history of the production of technical ceramics in Hermsdorf. Wood was used to generate heat and even though this fuel has had its day, kilns are still needed for the production of ceramics. Industrial furnaces "off the peg" are not our business. We develop special thermal plants which are orientated to the process and product.

PRECISION

In recent years, the requirements for thermal plants have increased considerably. Today, we are talking about accuracies in temperature distributions of up to ± 1 K in the product area and freely programmable gas compositions of, for example, nitrogen, hydrogen and other reaction gases. Temperatures of up to 2,000 °C are required to give today's high-tech materials the desired properties. Increased environmental demands require high precision in thermal insulation and emission treatment.

ENERGY EFFICIENCY

In addition to a precise process control, the efficient use of the energy input also plays a decisive role for our success on the market. For example, as much as possible of the energy used is directly fed back into the process via effective waste gas heat recovery systems. Above all, when cleaning the waste gas from the binder materials via catalytic or thermal afterburning, this energy can be used effectively for the process at waste gas temperatures of up to 800 °C.



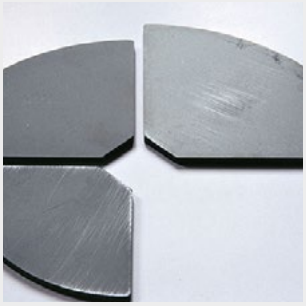
1) Company view
2) Hearth boogie kiln 3) Cooling H_2 kiln
4) 3D CAD rotary kiln
5) Foil dryer

TRIDELTA THERMPROZESS GmbH
www.tridelta-thermprozess.de

TRIDELTA Weichferrite GmbH

Speediness & flexibility in the development of innovative magnetically soft components

From the pioneer of ferrite production to one of the largest producers in Europe today



1) C-, roll- and mushroom-shaped cores
2) Toroidal cores 3) E and EF cores
4) Segments 5) Profiles

TRIDELTA Weichferrite GmbH, which emerged from the Keramische Werke Hermsdorf in the 1990s, developed in more than 70 years from a pioneer in ferrite production to one of the largest producers in Europe today.
Since 2008, Tridelta Weichferrite has been an independent company and we continue to grow in close cooperation with our customers, especially due to our highly motivated employees.

Proven know-how and flexibility enable us to optimally meet the demands of our internationally operating customers from a wide range of industries. The choice of material and design as well as of other parameters, such as air gap or AL value, are individually adapted to the specific application. With our production know-how, which has grown over many years, we see ourselves not only as a supplier of soft ferritic products, but also as a reliable partner for our customers worldwide in the development of new products and applications as well as in the effective use of application-oriented measurement technology. As a dependable partner, our company stands for highest quality even with short delivery times.

Our products made of soft magnetic materials are always the result of application-oriented planning and production processes as well as of innovative development work. On the basis of decades of experience in ferrite production, we develop and produce high-quality materials and different designs. Soft ferrites can be found in the most diverse areas, they are used for example in:

- contactless energy and data transfer systems
- coils and transformers for power electronics
- components for interference suppression and shielding
- filter coils and pulse transmission systems
- magnetic sensors
- magnetically soft products

Tridelta Weichferrite GmbH
www.tridelta-weichferrite.de

"More than 75 years of experience in the manufacture and development of soft magnetic cores and materials."

FACTS & FIGURES

Employees: 27

Certified according to:
ISO 9001:2015 and ISO 50001

This is what makes us special:
- Worldwide customers and service
- Manufacture of high-precision soft magnetic cores and components
- Specialized in machining custom parts and components made of ferrite (hard and soft), oxide ceramics, non-oxide ceramics, silicon (mono. / poly.), quartz glass and hard paste porcelain
- Production quantities: from sample production to large series

"Central Germany has the potential to develop to an economic heavyweight within the European Union."

FACTS & FIGURES

Business fields:
Thick-film hybrid technology | SMD mounting | COB processes

Employees: 100

Production area: 1,800 m²

This is what makes us special:

- Technology service provider at the interface between digitalization and the real world
- Development and production provider for the short-term implementation of product ideas in series production and commercialization
- Global supply chain, integration and use of network-based industry knowledge
- Implementation in a clean room production environment using state-of-the-art equipment
- Fulfillment of industry specifications by means of certified methods and process competence

LUST
HYBRID-TECHNIK
A member of Pankl-SHW Industries AG

Microsystems technology with success

Technology service provider from Hermsdorf at the interface between digitalization and the real world

QUALITY, INNOVATION AND RESPONSIBILITY IN HERMSDORF

The business idea of developing and manufacturing customer-specific microelectronic components led to the foundation of LUST Hybrid-Technik GmbH in Hermsdorf in1992. Since its foundation, the company has contributed to the progress of microsystems technology at the site and has achieved continuous growth successes. The limits of the space and production-related capacity utilization resulted in an extension building in 2014.

INVESTMENTS THAT ARE EFFECTIVE FOR EVERYONE

The expansion of production facilities and the associated investments in clean-room technology and manufacturing equipment improved the standards in all company divisions. Using state-of-the-art technologies, our about 100 employees contribute to meeting the high quality requirements of our customers every day. The product portfolio of today, specialized on complex, miniaturized electronics and microsystems technology, covers the business fields of industrial electronics, sensor and communication technologies, medical engineering as well as of the automotive sector.

HAVING ALWAYS OUR FINGERS AT THE PULSE OF THE TIME

LUST Hybrid-Technik GmbH is also setting itself ambitious goals for the coming years. The priority is to secure the location. In order to be considered an attractive employer of the region, the company wants to offer long-term stable employment opportunities and invest into the human resources of its employees. The challenges of the future are to be coped with by continuously optimizing operating processes and working conditions. The expansion of jobs and the active promotion of skilled and junior staff are also part of the future-oriented human resource strategy.

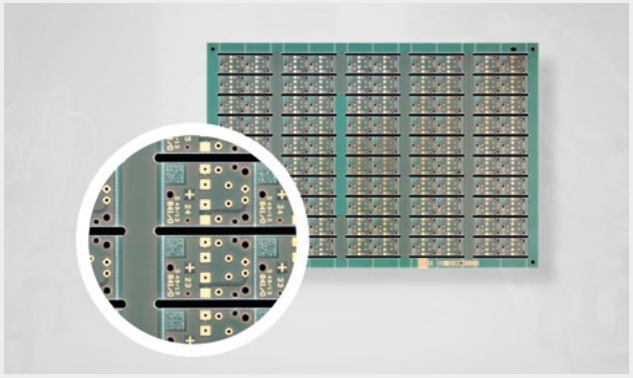
1) Quality assessment
2) Employees' discussion 3) Process control
4) Sintering process 5) Managing Director Thomas Walther

LUST Hybrid-Technik GmbH
www.lust-hybrid.de

LCP LASER CUT PROCESSING

The brand for LASER COMPETENCE

Agile manufacturing service provider and development partner for electronics manufacturers



1) Copper contact pins 2) Filigree small components made of non-ferrous metal and stainless steel foils
3) Laser-scribed ceramic panel with boreholes of Al_2O_3, AlN and LTCC
4) Flexible precision components of stainless and spring steel
5) Single ceramic components of Al_2O_3 with a thickness of 2.0 mm
6) Laser structuring / QR code marking on FR4 printed boards

Since 1993, LCP Laser-Cut-Processing GmbH – a family-run technology company with about 70 employees – has established itself as a laser application specialist for the production of individual and demanding high- and micro-precision components.

Being innovative, like the laser technology itself, the company – as a development partner and reliable manufacturing service provider – has a very high level of application competences in laser material processing. We focus on a wide range of special materials such as ceramics, glass, silicon as well as stainless and spring steels, non-ferrous and refractory metals, electrical sheets and various graphite, ferrite and plastic foils. We mainly address customers from the sectors of power electronics, sensor technology & systems, electromobility & energy technology as well as precision mechanics & apparatus engineering.

If the punching tool is too expensive, the etching template is too time-consuming or the material cannot be mechanically processed, we will have the right solution due to the flexibility and accuracy of laser precision machining. With our many years of experience, we offer our customers all services along the complete process chain: from technology development, sampling and prototype production to automated series production. Thanks to our strong R&D department, we have extensive process know-how, are well networked with universities and research institutes and continuously carry out project tasks in order to always optimize the current production basis and to be able to react agilely to future developments.

Our service provider concept, to exceed the demands of our customers quickly, pragmatically and reliably at the highest quality standards, is the goal of our employees' daily work. In order to continue to meet future challenges, we are looking forward to motivated, enthusiastic people who want to strengthen our team and shape the future together with us. We offer an attractive workplace in a family environment with flat hierarchies and demanding tasks.

LCP Laser-Cut-Processing GmbH
www.lcpgmbh.de

"Passionate about technology, customer-focused, competent – these qualities call for courage, good decisions and strong commitment every day."

FACTS & FIGURES

Our priorities:
Filigree components, demanding tolerances, complex geometries

Our technologies:
Laser fine cutting, laser drilling, laser scribing, laser structuring, laser fine welding, wafer DICING, precision mechanics

Our know-how:
Production of prototypes from 1 pc. up to automated serial production of 1 million pcs.

Our wide range of materials:
Stainless steel foils from 10 µm thickness, refractory and non-ferrous metals, technical ceramics, silicon, glass

Application examples:
Ceramic circuit carriers and panels, sputter masks, encoder discs, battery contacts, conductor lines, lead frames, flat springs, 3D bent parts

Dipl.-Ing. Falko Störzner, Managing Partner sr.;
Dipl.-VW. Daniel Störzner, Managing Partner jr.

"Founded on tradition
Committed to technical progress
Step by step with our clinical partners
For maintaining mobility
Together with passion."

FACTS & FIGURES

- Mathys AG is a developer, producer and distributor of surgical implants and instruments for artificial joint replacement
- In 2018, a turnover of 112 million euros was generated by with 523 employees and 12 subsidiaries worldwide
- Mathys Orthopädie GmbH as a German subsidiary has a staff of 140 employees at three sites, two production sites are located in Hermsdorf / Mörsdorf and one distribution site in Bochum

Hermsdorf site:

- Product development of shoulder endoprosthetics
- Production of shoulder implants and surgical instruments (shoulder, hip, knee)

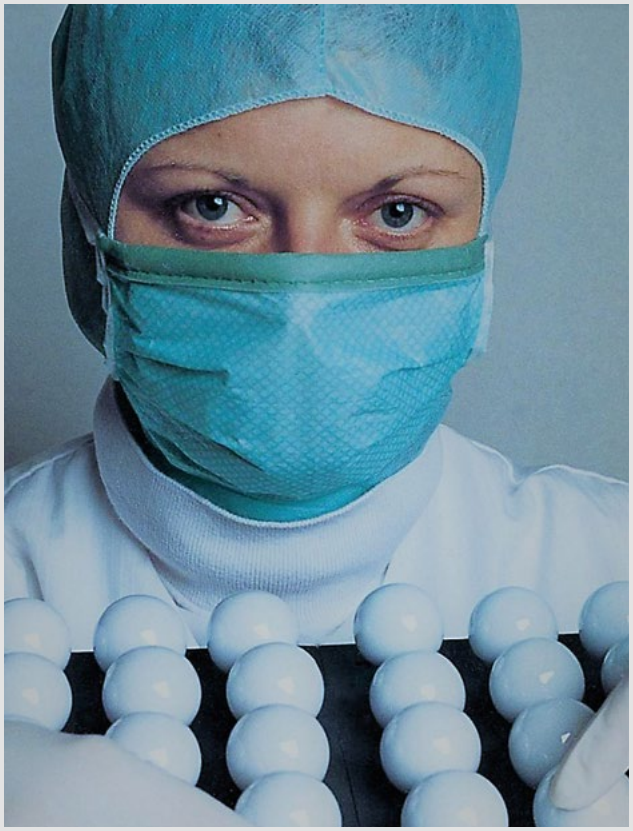
Mörsdorf site:

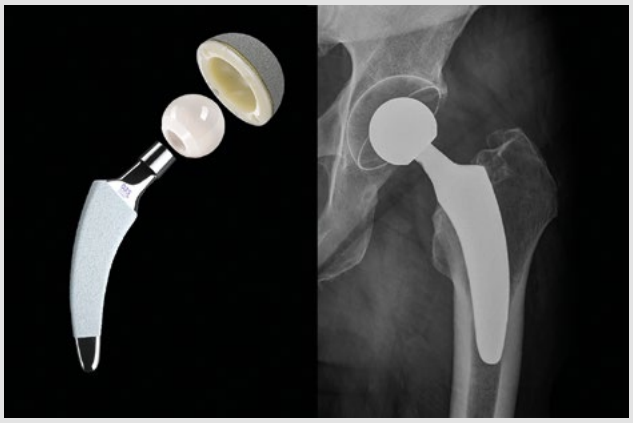
- Applied research in the field of ceramics
- Production of ceramic implants

MATHYS
European Orthopaedics

Ceramics – The core competence of Mathys Orthopädie GmbH

Bioceramics from the region of Hermsdorf for the benefit of patients for 45 years





1) The human being is the focus of attention – more than 400,000 ceramic heads have already been implanted
2) Modern short shaft prosthesis with ceramic head for maximum bone preservation, X-ray image by courtesy of Dr. Bosson

For more than 45 years, ceramic materials have played an essential role in the field of artificial joint replacement. Thus, bioceramic development began at the GDR state-owned company VEB Kombinat Keramische Werke Hermsdorf in 1972. The first implant was a ceramic tibial plateau prosthesis made of aluminum oxide. This prosthesis was implanted in the Clinical Center Eisenberg. Hence, the first ceramic knee joint in the world was made in Hermsdorf. In 1991, the company KERAMED Medizintechnik GmbH emerged from the field of bioceramics. In the course of the following years, the product portfolio of the company was expanded to complete hip, knee and shoulder systems, and KERAMED became an established player in the field of joint endoprosthetics in Germany.

In 2002, the company was taken over by the Swiss endoprosthetics group Mathys AG, and the German company was renamed Mathys Orthopädie GmbH. Today, ceramic implants still represent the core competence of the Thuringian site.

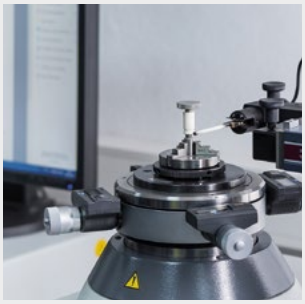
In close cooperation with German and European research institutions, new high-strength, low-wear dispersion ceramics have been developed, which have become an integral part of joint endoprosthetics over the last 10 years and have led to Mathys being placed among the TOP 3 ceramics manufacturers for joint endoprosthetics worldwide.
Since the foundation of the company, the annual production of ceramic components has increased tenfold. This increase in production volume has been achieved through the consistent implementation of automation projects in ceramic production. To date, more than 400,000 ceramic implants produced in Hermsdorf have been inserted – with an upwards trend.
As one of the leading European orthopedic suppliers, Mathys provides innovative services in cooperation with medical and scientific institutions for the benefit of the patient without losing sight of the tried and tested.

Mathys Orthopädie GmbH
www.mathysmedical.com

CERA SYSTEM®
more than ceramics

Market success with ceramic components, valves and pipes

From a historically grown oxide ceramics manufacturer to a supplier of system solutions in wear protection and chemistry



1) Staff in front of the company building in Hermsdorf
2) Final check of ceramic components 3) Roundness measurement in the µm range
4) Multi-axis CNC turning machine 5) Component handling with robot
6) Precision components made of oxide ceramics

CERA SYSTEM was founded in 1996 by the CERAM Group as an independent limited liability company (GmbH) through the takeover of the Wear Protection division from Tridelta AG with 46 employees. Afterwards, rapid growth was achieved and in the year 2000 the Chemical Ceramics division of the former KWH company was integrated as the base of our current department for the production of ceramic-lined valves and pipes.

CERA SYSTEM has grown to a renowned and internationally established manufacturer of ceramic series production components and ceramic-lined valves. Since 2012, CERA SYSTEM has been a 100 percent subsidiary of SAMSON AG. With around 130 employees, we are active wherever things are in a demanding flow. Our ceramic components and valves, regulate and control all kinds of liquids and solids. Wear protection against aggressive chemicals, against abrasive solids and resistance to high temperatures are our core business. Since 2013, Managing Director Thomas Meißner has been leading the company into the future.

SAMSON CERA SYSTEM

CERA SYSTEM, as a 100 percent subsidiary of SAMSON AG, is growing significantly in the international markets. Therefore, an expansion is pursued in the market segments in the USA and China.
Extensive further investments keep the jobs of our employees interesting and the manufacturing processes even more competitive on an international scale. The expansion of competence for the production of ceramic components and for the use of ceramic materials in valves, fittings and pipes is intended to strengthen and secure the market position of CERA SYSTEM in the future

Ceramics are our passion.

CERA SYSTEM Verschleißschutz GmbH
www.cerasystem.de

"CERA SYSTEM has evolved into an internationally operating company for ceramic components and ceramic-lined fittings since 1996."

Thomas Meißner, Managing Director

FACTS & FIGURES

CERA SYSTEM

- has currently more than 130 employees
- produces ceramic components in serial production and ceramic-lined valves and pipes in single-item production in two divisions
- produces more than 12 million ceramic components per year
- is a global player for ceramic-lined valves and fittings
- has been a subsidiary of SAMSON AG since 2012

HIGHTECH PRODUCERS & ORIGINAL SITE COMPANIES

www.tridelta-campus-hermsdorf.de

LCP LASER CUT PROCESSING

Fraunhofer IKTS

µS MICRO-SENSOR

µH MICRO-HYBRID

PI

eropräzisa PRÄZISION IM DETAIL

CERA SYSTEM more than ceramics

Eberspächer

SCHMEISSNER GmbH Sicherheits-und Kommunikationstechnik

SCHNEIDER ENGINEERING SOLUTIONS GMBH

TRIDELTA MEIDENSHA

LUST HYBRID-TECHNIK A member of Panki-SHW Industries AG

VIA ELECTRONIC

MATHYS European Orthopaedics

S-TEC SIEGERT THINFILM TECHNOLOGY

TRIDELTA

H.C.Starck High Performance Metal Solutions

TRIDELTA THERMPROZESS°

PORZELLANFABRIK HERMSDORF GMBH KWH TECHNISCHE KERAMIK

TRIDELTA Weichferrite GmbH

designerei+

SomTec GmbH Sondermaschinentechnik

HAT

BCH

TAMI DEUTSCHLAND

tenno

HEGAS GmbH

GEBR. PLÖTNER

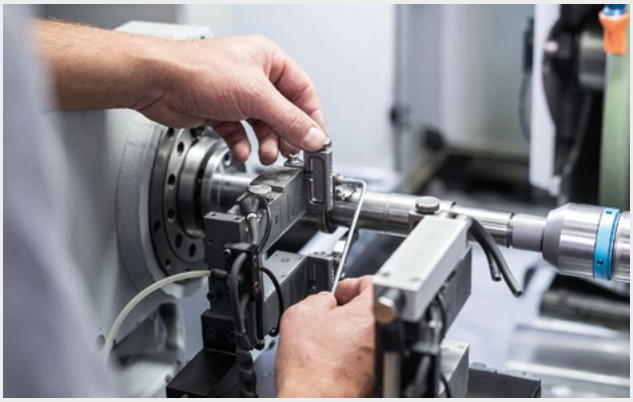
Here you can find information about offers and possibilities of TRIDELTA CAMPUS Hermsdorf for your company:

H.C.Starck

High Performance Metal Solutions

The world of high-performance metals

Innovative customer-specific components and semifinished products made of high-performance technology metals



1) Production
2) Shielding
3) Glass melting electrodes
4) Management team

After its foundation in 1961, the site was responsible for supplying the electrical industry, electronics and medical engineering sectors of the former GDR with semifinished products and components made of special materials based on silver, tungsten and molybdenum. After various changes of ownership, the site has been a member of the H.C. Starck Group since 2001.

We are almost the only company in the world which is capable to manufacture and process the basis of our products – extremely pure high-performance metals / materials – in-house with our electron beam melting furnace. This vertical integration, from raw material to finished components – combined with more than 50 years of experience in processing high-performance metals by applying subtractive and additive procedures at a high precision level, is unique. Qualified employees, modern CNC and measuring techniques as well as a safe workplace environment are the key factors for our success.

For the next years, we plan to continuously develop our site as an attractive employer. By means of investments, we ensure the maintenance and expansion of our modern machinery in order to continue to meet the high-quality requirements of our customers also in the future.

H.C. Starck GmbH
www.hcstarcksolutions.com

"We are a dynamic team which develops, manufactures and delivers technical solutions of highest precision and reliability worldwide."

FACTS & FIGURES

- H.C. Starck Hermsdorf GmbH is part of a world's leading company group and has about 140 employees at this site
- Specialized in the manufacture of customized parts and components made of refractory metals such as molybdenum, tungsten, tantalum and niobium
- Products are manufactured for medical engineering, aerospace technology, glass melting and automotive industries by means of machining processes
- Through consequent recycling and a sustainable and conflict-free procurement of raw materials, we make a significant contribution to the reduction of negative environmental influences
- We create added value for the region through a variety of initiatives

"As a European company, TAMI Deutschland combines experiences in ceramic production technologies from Hermsdorf and the knowledge about the production and application of inorganic membranes from France."

FACTS & FIGURES

Trading names
1994 – Filtration Ceramics division of Tridelta AG
1996 – POROCER Keramikmembranen GmbH
1998 – TAMI Deutschland GmbH

Employees: 15

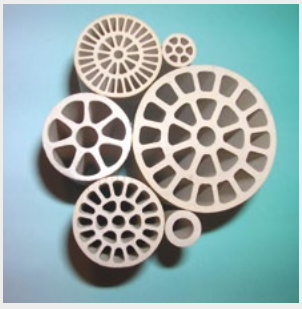
Innovative tubular ceramic membranes

With non-circular channel structures and coating technologies, TAMI launched a new generation of highly effective tubular ceramic membranes

The TAMI Industries group is specialized in the development and production of tubular ceramic membranes for cross-flow, micro-, ultra- and nano-filtration of liquid media. As the German subsidiary of TAMI Industries, TAMI Deutschland produces the large-pore membrane supports and distributes membrane filters in German-speaking countries, the Benelux countries, Northern, Central and Eastern Europe as well as in Russia.

The main fields of applications for the membranes are filtration and cut-off processes in the food and beverage industry, chemical process engineering, biotechnology, and water and wastewater treatment. The most popular application of TAMI products is the production of fresh milk with a longer shelf life. This milk is sterilized and preserved by gentle microfiltration, "cold sterilization" using tubular ceramic membranes. Bacteria and spores are cut off, while all valuable and healthy ingredients of the fresh milk are preserved. Dairies have the advantage of an energy- and cost-saving, sustainable mode of operation. TAMI developed and patented the ISOFLUX™ membrane product group especially for this application.

As a standard, TAMI sells multi-channel membranes with non-circular channel cross-sections. This design maximizes the active filter area per membrane element. The membranes under the brand name InsideCeRAM are offered in a total of 13 different cut-offs together with stainless steel housings in 7 different size classes.
The TAMI group is one of the world's leading manufacturers of tubular ceramic membranes.



1) Housing: modules with tubular ceramic membranes
2) Helicopter: special module for membrane test
3) ESL plant: plant for the production of fresh milk with longer shelf life
4) Housing cross-section
5) Inside CeRam: geometries of TAMI membranes

TAMI Deutschland GmbH
www.tami-deutschland.de

Fraunhofer
IKTS

Research on ceramics with passion

From nano to macro, from material to component and on to application

In 1992, the institute in Hermsdorf was founded as an independent, business-focused research institute. After 18 years of successful development, it was fully integrated into the **Fraunhofer Institute for Ceramic Technologies and Systems IKTS** in Dresden and became part of the Fraunhofer-Gesellschaft in 2010.

As a research and technology service provider, Fraunhofer IKTS Hermsdorf develops high-performance materials, industry-relevant manufacturing processes and prototype components and systems in complete production lines up to pilot scale. We also have extensive expertise in materials diagnostics and component testing. We see ourselves first and foremost as a partner for ceramics companies and enterprises that need or want to use ceramic components and systems. We react flexibly to customer inquiries and combine the necessary competences in project teams.

In the past few years, four main strategic development areas have crystallized at **Fraunhofer IKTS Hermsdorf**. Today we are one of the world's leading research institutes in the field of **membrane development** for water treatment, air purification and gas separation. A second important area of activity is dense, high-strength **oxide ceramics** for medical engineering, toolmaking and machine construction, automotive, lighting technology and optics. In this area, the high purity and small particle size of the initial powders (nano powders) as well as the know-how about their processing are decisive. Our third core field is **functional ceramics** for sensor and actuator applications, in particular using ceramic tape and multilayer technology (LTCC, HTCC). The most recent and rapidly growing priority area is the **battery development** for stationary and mobile applications. The focus is on ceramic sodium ion batteries, which are free of rare earths and other strategic raw materials and are characterized by high efficiency and cycle stability.

1) Technical center
2) cerenergy® battery module in test stand
3) Membrane test system
4) Transparent ceramics for optical applications
5) Membrane module

Fraunhofer Institute for Ceramic
Technologies and Systems IKTS
www.ikts.fraunhofer.de

"We have to understand the interrelations down to the nanometer scale to improve component properties."

Prof. Dr. Ingolf Voigt
Deputy Institute Director| Site Manager Fraunhofer IKTS

FACTS & FIGURES

Employees: 150
Operating budget: 13 million euros
Laboratory and technical center space: 6,200 m²
Low-contamination work areas, 2 clean rooms

Powder production and mass preparation:
precipitation, pyrolisis, grinding, mixing, granulation, kneading

Forming operations:
Tape casting, slip casting, injection and hot molding, pressing, extruding, plasma spraying, screen printing, CVD, sol-gel technique

Thermal treatment up to 1,750 °C:
Drying cabinets, climatic chambers, electrically and gas heated furnaces, tube, rotary, vacuum and inert gas furnaces

Material characterization and component testing:
Simulation and construction, powder and suspension characterization, thermal analysis, X-ray defraction, scanning electron microscopy/microanalysis, surface and porosity measuring methods, structure characterization, electric and dieelectric tests, high-voltage, vibration, environment and safety tests, mechanical tests, calibrations as well as many application-specific tests and checks

Certifications:
ISO 9001, 14001, 13485, 17025, IECEE "Certificate of acceptance"

"Thin film technology is the basis of the development and production of innovative electronic components"

f.l.t.r.: Dr. R. Koppert – Head of Research & Development | Axel Wottawa – Group Leader Engineering & Technologie

FACTS & FIGURES

Foundation of Siegert TFT GmbH in 1992
A total of 45 years of experience in thin film technology

Production area: 6,500 m^2

Employees: 135

Production quantities: from sample production to large series

Clean rooms: up to ISO 5 class

Certified according to:
ISO 9001:2015 and ISO 50001

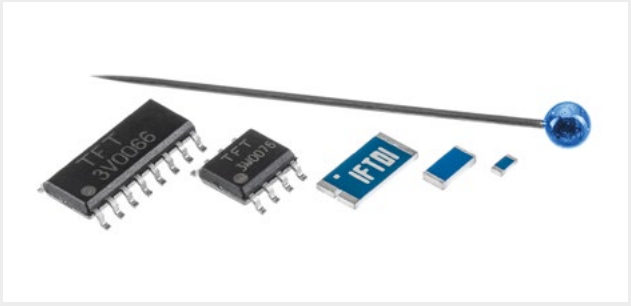
SIEGERT THINFILM TECHNOLOGY

Competence in thin film technology

Outstanding quality, superior reliability and highly-developed technology

As an interdisciplinary company, we produce high-precision electronic components and systems in thin film technology, starting from samples up to mass production. In addition, technology and product-focused development and research in the field of thin film and nano technology are also parts of our business. In our facility, which has a total size of 6,500 m^2, including 650 m^2 clean room, both standard products and customized components are produced in the fields of sensors (pressure, force, temperature and flow), precision resistor technology (individual resistors and networks) and special substrate coatings (circuit carriers). Our products are used in very different areas such as industrial automation, measurement and control technology, hydraulics, aerospace, and high-frequency applications.

Using outstanding equipment, 135 highly experienced employees in research, development and production are supplying excellent thin film components which fulfill the highest standards in quality, precision, functionality and reliability even in areas with extreme requirements.
Since its founding in 1992, SIEGERT TFT GmbH has been a highly innovative company. Due to our team of top qualified researchers and developers, we are setting standards with innovative technologies and trends for the future. Thanks to our close connections with other service providers, universities and research institutes, we have built up an extensive network providing a huge advantage to our valued customers by offering them high-quality products and services.



1) Pressure sensors
2) Pressure sensor cells 3) Circuit carriers
4) Resistors and resistor networks
5) Clean room

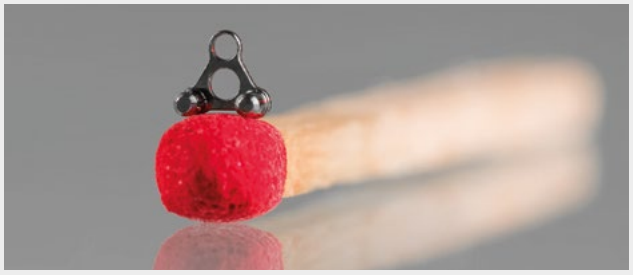
Siegert Thinfilm Technology GmbH
www.siegert-tft.de

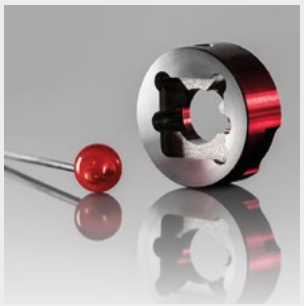
eropräzisa

PRÄZISION IM DETAIL

High-end precision solutions made of metal

Everything under one roof: precision manufacturing, machine systems and clamping systems.





1) Consultation at eropräzisa GmbH
2) Microprocessing / milling of a micro-precision part
3) Mold insert after die sinking / wire eroding
4) Cutting / die sinking of a precision component
5) Wire eroding machine Mitsubishi Electric *MP 1200 Connect*; HSC cutting machine OPS Ingersoll *High Speed Eagle V9*

eropräzisa GmbH was founded in 2002 with the aim of operating as a toll manufacturer in the high-end sector. In the beginning, the company produced more simple components, but the high-end business steadily gained momentum. The demand of our customers for increasingly complex components with higher quality required a continuous development in all areas.

Precision manufacturing at an absolute top level – that is what eropräzisa GmbH is today. Our competences go far beyond a mere manufacturing company. Our own construction department, innovative manufacturing processes and quality assurance up to surface technology enable us to meet customer requirements optimally and effectively.

Our customers come from industries in which every µ is of utmost importance: optical industry, medical engineering, semi-conductor finishers, precision and micromechanics, and aerospace. "In fact, some of the parts that were manufactured in our company are now floating in space."

In order to maintain the high level, eropräzisa GmbH invests in a new machine at least once a year. Moreover, all employees regularly attend training and further education courses. Today, eropräzisa GmbH is a technology developer in the high-end sector and pushes several projects forward. For example, current research is in progress to minimize surface damage and the entry of foreign material during wire eroding.
Thus, another piece of the future could soon come from eropräzisa GmbH from Hermsdorf.

eropräzisa GmbH

www.eropraezisa.com

"We manufacture a small part of future at the Hermsdorf high-tech site"

FACTS & FIGURES

Bundled innovations – 3 business areas

High-end precision manufacturing of complex components and assembly groups made of metal (steel, stainless steel, hard metal, Inconel®, Hasteloy®) as well as ceramics and Cesic®, manufacture in air-conditioned rooms, tolerances +3 µ, surface qualities to Ra 0.06; for hard metals, batch size1 up to small series

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Sales agency of high-end wire eroding and die sinking machines as well as HSC cutting machines of Mitsubishi Electric and OPS Ingersoll, comprehensive support in machine investments, in-house test treatment, on-site consultation, training courses, financing, after-sales application support

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Distribution of innovative original clamp systems of leading European manufacturers for eroding, cutting, turning and measuring machines; competent praxis-focused consultation for the procurement of innovative zero-point clamp systems, development, construction and manufacture of individual clamping systems

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Industries
Optical industry, precision and micro mechanics, aerospace, semi-conductor finishers, piezo technology, medical engineering, watchmaker industry

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20 competent and highly motivated employees
Production area of 550 m^2

Thomas Richter, Geschäftsführer

"Our daily challenge is safeguarding your efficiency and quality through solutions tailored to your needs!"

FACTS & FIGURES

- Foundation in January 2019
- National Instruments Alliance Partner
- Engineering service provider specialized in customer- and product-specific measuring, testing and automation solutions as well as system integration
- Software development e.g. under NI LabView and TestStand, databases, object-focused programming
- For electronics – mechatronics – mechanics
- Application of our solutions in development – climate tests – endurance tests – burn-in methods – production
- Networking of systems
- Modernization and optimization of plants

- Sectors: e.g. automotive, medicine, industry

Jens Schneider, Managing Director

SCHNEIDER
ENGINEERING SOLUTIONS GMBH

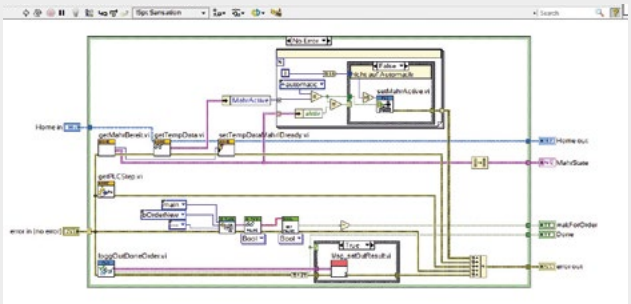
We safeguard your quality!

Individual development and realization of customer- and product-specific measuring, testing and automation solutions.

Schneider Engineering Solutions GmbH was founded in January 2019 and settled at the TRIDELTA Campus Hermsdorf. As a National Instruments Alliance Partner, the young team uses its many years of experience in the automotive supply industry to develop modular solutions for demanding customers. From the beginning, the well-coordinated team has been realizing complex systems for quality assurance, for example of vehicle components.

Now, the growing team consisting of experts with many years of expertise in the automotive and electronics manufacturing sectors is transferring its know-how to other industries. The young company supports its customers in increasing their efficiency as well as monitoring and optimizing product quality with systems for climate and durability testing, which ensure that the components continue to perform their function reliably even after many years, or with systems for testing each individual manufactured product to exclude further processing or even the delivery of defective parts.

Particularly in times of increasing integration densities, miniaturization and platform strategies, the demands on the sometimes very complex systems for handling and testing the products are also increasing. In addition to the integration of the most varied measurement techniques into one system, the future development of the products and the quantities to be produced must always be taken into account. This is the only way to create scalable and future-proof systems that ensure long-term advantages for the customer.

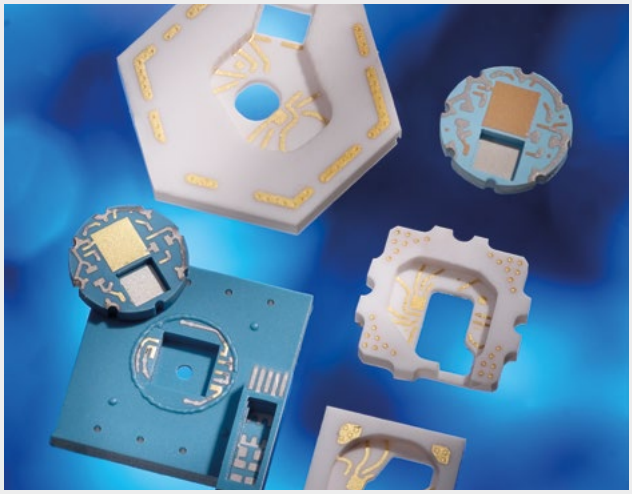


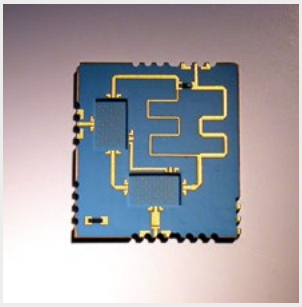
1) Equipment for modular test system solutions
2) Block diagram NI LabVIEW
3) Handling automation with robot

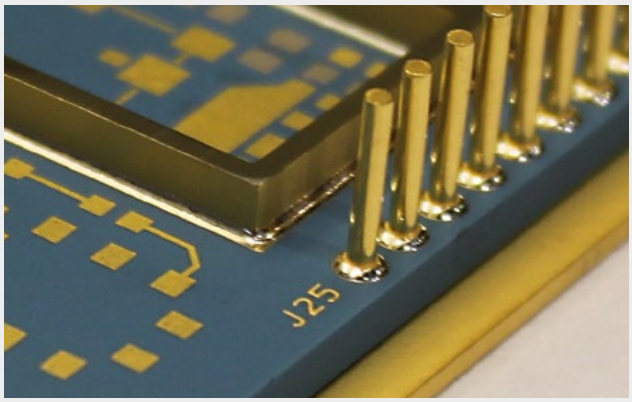
SCHNEIDER ENGINEERING SOLUTIONS GmbH
www.schneider-es.com

Customer-specific LTCC – multilayer ceramics

Development & economic production of small and medium quantities







1) LTCC sensor carriers
2) T-shaped LTCC for medical engineering 3) LTCC board for HF applications
4) LTCC module for satellite communication

In 1997, Franz Bechtold took the courageous step of founding a company in the newly-formed German states at the ceramics production site in Hermsdorf. With its early focus on special applications, scientific applications, intensive participation in research projects and contract development for industry, the company has been able to develop continuously over the last 20 years and establish itself as a sought-after development and production partner in the market. In the search for a solution to the problem of succession, contact was made with the Japanese company KOA, a manufacturer of passive components with a focus on resistors. With the decision to take over VIA electronic, KOA was able to initiate its plan to establish a European R&D site.

Complex and sophisticated designs in multilayer ceramics as PCB, package, system in package (SiP) or multichip module lead to tailored solutions based on LTCC, glass substrates or other ceramic materials. Our customers appreciate special solutions which enable the fulfillment of their wishes. The satisfaction of requirements in the field of connection technology or heat management are also part of our portfolio. The materials enable applications in UHV (ultra-high vacuum) as well as in the high and low temperature range up to solutions for aggressive media.

In the future, VIA electronic will position itself as a development and production partner for industry and science with a focus on LTCC multilayer ceramics. The connection to KOA Japan with its own LTCC factory and its own LTCC tape opens up new possibilities for potential customers due to short distances in Europe.

VIA electronic GmbH
www.via-electronic.de

"Developments need partnerships – globally and locally."

FACTS & FIGURES

- Foundation in 1997
- 27 employees
- Specialist for LTCC multilayer ceramics
- Implementation of more than 680 designs
- Development of own and customer-specific material systems
- Development partner for R&D

Markets

Industry, aerospace engineering, medical engineering, scientific applications

Applications

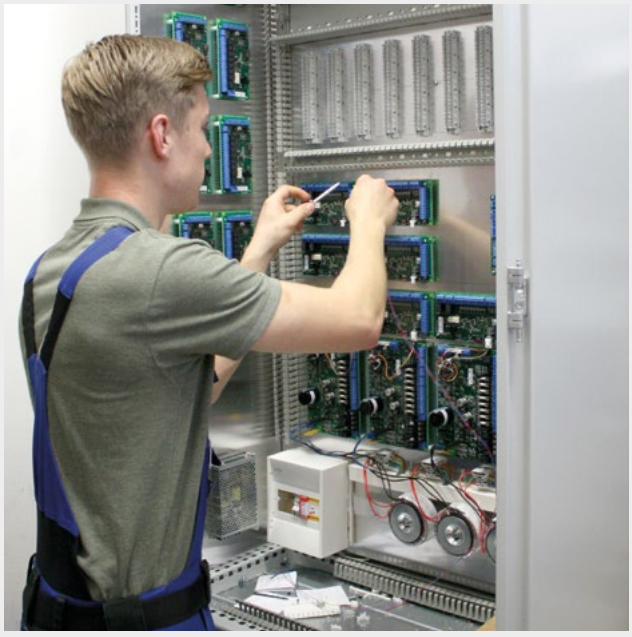
Sensors, high frequency systems, high temperature systems, fluidics, interposers, packages

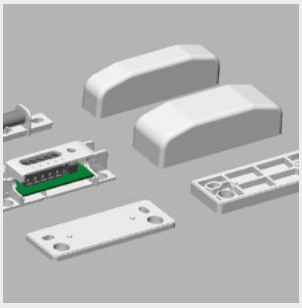
Mr. Yuji Iwasa / Vice President, Mr. Michihiro Komatsu / Managing Director Production, Franz Bechtold / Managing Director R&D, Harald Klaubert / Managing Director Business Development

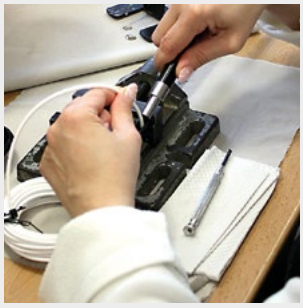
SCHMEISSNER GmbH
Sicherheits-und Kommunikationstechnik

Security technology at the highest level

From crafts enterprise to medium-sized family business with national and European charisma







1) Control cabinet installation 2, 3) Final assembly of products
4) Company building after 2012

After the security technology division of Tridelta AG was closed in 1991, Wulf-Dieter Schmeißner founded a crafts enterprise with two business areas in 1992:

- development and manufacture of components of intruder alarm technology
- planning and construction of security installations

The company started with three employees in rented premises of AGO/LEG. The company's office was initially in Münchenbernsdorf but was later moved to Hermsdorf. In 1998, AGO/LEG purchased real estate and converted the company into a GmbH (limited liability company).

Over the years, increasing numbers of well-known OEM partners from Germany and Europe have been won over to our products. With the acquisition of a small company, we also achieved substantial growth A considerable growth could also be achieved in the premises.

You can find our products in museums throughout Europe, e.g. in Dublin, Vienna, Moscow, St. Petersburg, Paris, and others.

Due to the growth of the company, an expansion investment was necessary in 2012. In 2017, the company had 35 employees. In addition, three apprentices and a BA engineer were trained.

Our main goal is focused on satisfied customers and employees. Therefore, we are constantly working on innovative and quality-compatible products. This strategy does not only secure jobs, but also creates new ones.

SCHMEISSNER GmbH
www.schmeissner-gmbh.de

Mit Sicherheit aus Thüringen

"For almost 50 years, security technology products for trade, museums and private customers have been developed and produced in Hermsdorf."

FACTS & FIGURES

Spin-off from Tridelta AG and refoundation in 1992, initially as a sole proprietorship; in 1998 conversion into a GmbH.

Business areas:

- Development and manufacture of components of intruder alarm technology
- Security technology for museums and galleries
- Planning and installation of security systems for trade, industry and private customers

35 employees work on an area of approx. 2,000 m².
Since 1992, over 2 million euros have been invested.

Uwe Schmeißner, Managing Director

GEBR. **PLÖTNER**

Individual wooden packaging for industry & trade

1) Handycraft since 5 generations
2) Individual markings
3) Assembly of a wooden box 4) Individual wooden box with cover
5-6) Individual wooden packages

Our passion is **individual wooden packaging for industry and trade** – already for 5 generations!
No matter what you want to pack and where your goods are to be shipped to – with our packaging your products will arrive safely. We know what is important. Therefore, our customers benefit from a treasure of expertise, competent consultation, reliable service, and a friendly team.

Our modern company has its own drying chamber in compliance with the IPPC standard. It is used to dry wood or wood packaging material in a standardized manner in such a way that it is suitable for worldwide shipping.

Furthermore, our customers can obtain sawn timber, chipboard, squared timber, blockboards, and plywood from us.

FACTS & FIGURES

Active
Since 1875 as owner-managed company, since 5 generations in Hermsdorf, directly at TRIDELTA CAMPUS

Team
2 Managing Directors, 16 employees

Production area
ca. 2,500 m²

How are we?
Site-loyal, reliable, down-to-earth

Gebr. Plötner GmbH
www.gebr-ploetner.de

Professional, individual IT solutions for small and medium-sized companies

TENNO Systemhaus GmbH was founded as a small computer shop by four students of computer science and an economist in Hermsdorf in 1993. From the beginning, our main goal has been to support small and medium-sized companies and public administration authorities in all questions and challenges of IT. Since then, we have been growing continuously. A new office building was built at the Hermsdorf site, further locations were added in Dresden, Weißwasser and Görlitz.

As an **IT system house**, we advise, plan and implement solutions in the software and hardware areas. TENNO Systemhaus GmbH is an authorized specialized dealer of Sage GmbH, one of the largest German providers of commercial software solutions. Our software development department implements projects based on C++, .net/C#, and php/js. With our own software solution SOFIA, developed for the mapping of early-intervention processes in the social sector, we are extremely successful with a basis installed at more than 350 institutions in the German-speaking area.

FACTS & FIGURES

Our areas of operation

- Hardware and network technology, service and support, various partnerships with manufacturers such as Microsoft, Fujitsu Computer, Tobit, WachGuard, VMware, and many others.
- Commercial software solutions of Sage GmbH (merchandise management, financial accounting, personnel software *www.sage.de*)
- SOFIA - Software for early-intervention processes – our individual software solution *www.mysofia.de*

Our philosophy

Working at eye level, reliability, competence, continuous product support, team spirit, permanent staff development, strong trainer & employer

Our team

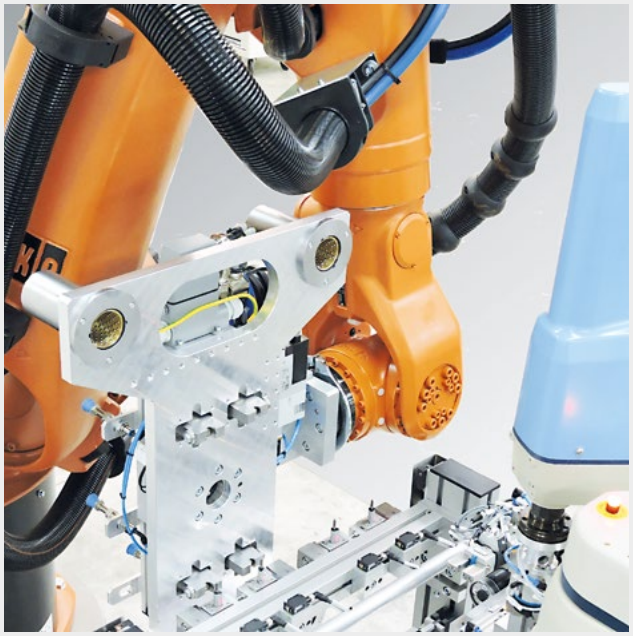
28 employees at 4 locations, 17 of them in Hermsdorf
We are a successful training company.

1) TENNO team, Hermsdorf site
2) Comprehensive consultation guarantees project success
3) Hardware configuration
4) Our partners

TENNO Systemhaus GmbH
www.tenno.com

SomTec GmbH
Sondermaschinentechnik

Machines and equipment for production automation



1) Assembly plant
2) Feeding robot of injection molding machine

Our highly qualified and experienced team of engineers, programmers and skilled workers develops and manufactures customized automation solutions based on PLC and IPC systems.
SomTec technologies are used in different enterprises worldwide to enable a cost-minimizing and optimum production flow.

FACTS & FIGURES

Who are we?
- 20 highly qualified skilled workers and engineers with expertise in special automation solutions
- 1993: foundation in Hermsdorf

What are our core competences?
- Special machines for production automation
- Assembly lines with revolving workpiece carrier systems
- Automatic rotary transfer machines with feeding technology
- Inspection and sorting processes with industrial image processing for quality assurance
- Development of robot solutions for the automation of production processes using Omron/Adept, Yaskawa, Kuka, and Fanuc
- Removal handling for automatic presses and machining centers
- Integration of autonomous mobile transport robots into company logistics processes

Where are our key sectors?
- Automotive supply industry
- Plastic parts manufacturer
- Electronic parts producers
- Technical ceramics
- Manufacturers of medical engineering products
- Machine construction
- Sanitary technology

SomTec GmbH
www.somtec.de

HAI ... WIR BEISSEN UNS DURCH
Hermsdorfer Anlagen Instandhaltung GmbH

Full range supplier with Hal tec ideas

Modern services for machines and plants

Hermsdorfer Anlagen Instandhaltung GmbH is a medium-sized family business and has been based in the Hermsdorf industrial park Tridelta since 1996. HAI emerged from the general mechanics sector of the Keramischen Werke Hermsdorf/Tridelta AG. In 1999, we moved into the new company building and today, having 22 employees, we are a respected partner for customers in Germany, Europe, and throughout the world.

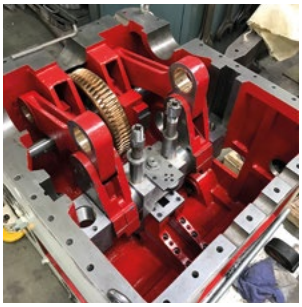
HAI's core competence is the maintenance and modernization of presses for ceramic and powder materials. HAI has distinguished itself through decades of experience with this technology acquired by its permanent staff and their up-to-date expertise in boosting productivity, assuring quality and increasing operational safety through cutting-edge electronics.

Our services
Maintenance
Modernization
Complete moves
Machining and spare parts production
Safety-realted inspections
Lubrication services

FACTS & FIGURES

What makes us special?
The implementation of customer requirements with high flexibility, speed, reliability and quality benefits the customer.

Who are we?
22 employees, comprising locksmiths / industrial mechanics, electricians / electronics engineers, cutting machine operators, lubrication technicians, commercial employees as well as trainnees who want to become industrial mechanics and cutting machine operators



1) Machine transport
2) Milling part for industrial furnace
3) Inside of press housing
4) Modernized automatic dry pressing machine
5) Sensor housing for microelectronics

HAI Hermsdorfer Anlagen Instandhaltung GmbH
www.hai-gmbh.de

designerei+

Consistent strategy to meet the target: marketing for small and medium-sized businesses

Full-service agency for strategy, marketing and communication design

We at the designerei team and our strong network see design as much more than just attractive creations. Our approach goes far beyond that. Or rather: it begins long before that.

Together with our customers – mainly from the fields of technology, health and social matters, many of them right next door at TRIDELTA CAMPUS HERMSDORF – first we analyze the company situation, general conditions and advantages over the competition in intensive workshops. On this base, we develop comprehensive communication concepts and precise marketing strategies with concrete action planning as a reliable foundation for your success. Once we have built this foundation, we develop the messages and design, and implement these consistently in all types of communication media.

For your peace of mind: we see ourselves as an agency well-versed in methodologies, which fulfills your needs in a reliably and flexibly, and meets the deadlines. With this concept, we have been developing lasting business relationships for over 15 years, characterized by trust, understanding and genuine enjoyment in working together. And we would love to work with you!

FACTS & FIGURES

Our core competences
Strategy | marketing | communication design | web design

Our character
Reliable & flexible | strategic & structured | long-term & holistic | creative

Our Team
Two Managing Directors | > 10 salaried and freelance creative colleagues

Our effect
Since 2004 | Hermsdorf, Thuringia and beyond that region

designerei+
Maren Thier & Anja Eglmeyer GbR
www.designerei-werbeagentur.de

Bau-Consult Hermsdorf
gesellschaft beratender ingenieure mbh

Engineers. Architects. Powerful for your project.

The combination of engineers, architects, technicians and construction draftsmen pools the specialist knowledge of our experts to form an effective team that can fully develop its strengths in the individual specialist fields as well as in overall planning.
Permanent further training ensures that our employees are always up to date with the latest technical and legal developments. This enables us to fully meet the diverse wishes and requirements of our customers.
Since our office was founded, we have been training young people in the multifaceted and interesting profession of construction draftsmen. We were able to take over a large part of the trainees into our team after they had successfully completed their apprenticeship.

Our guidelines
We set the highest quality standards – from the first consultation to the turnkey handover of your building project.
We offer all planning services in structural and civil engineering, in restoration and monument preservation from one source.
We offer expert knowledge, cost certainty and on-schedule realization

FACTS & FIGURES

Foundation: 1990

Competences:
Statics & structural design | architecture | prefabricated element planning | monument preservation | building physics | BIM

Employees: 76

Sites: Hermsdorf, Erfurt, Gera

1) Porcelain worlds on the castle Leuchtenburg
2) Reconstruction of the existing premises at Micro-Hybrid GmbH | Hermsdorf
3) Renovation of Tinz Castle | Gera
4) New building of Eberspächer catem GmbH & Co. KG | Hermsdorf
5) New building of the Getzner Textil Weberei GmbH | Gera

Bau-Consult Hermsdorf
Gesellschaft beratender Ingenieure mbH
www.bauconsult-hdf.de

Your team of experts for gases, pipelines and pressure vessels – throughout Germany.

1) He-GAS gas installation
2) Technical gases from He-GAS for industry customers
3) Pressure test
4) Welding operator at work

Our service spectrum ranges from the sale of technical gases to private and commercial customers to the planning, installation and maintenance of complex gas supply systems and pressure vessels for industrial customers in Hermsdorf and throughout Germany.
Via our pipeline network, we supply 19 industrial companies at TRIDELTA CAMPUS with compressed air and nitrogen around-the-clock. As a certified manufacturer of pressure equipment, certified welding company, specialist company according to the Water Resources Act and contractual installation company of the Thuringian energy networks in the field of natural gas, we have all the prerequisites to be active as experts in our field.
It is our aspiration to deliver at all times top quality with the highest technical safety.

FACTS & FIGURES

Business areas
- Distribution of technical and medical gases
- Supply of industrial plants with compressed air and nitrogen
- Maintenance and inspection of gas installations and pipeline systems
- Planning and installation of piping systems and pressure equipment

10 employees

Company management, technicians, office staff, salesmen, assemblers, welders

Certificates
- Pressure equipment manufacturer according to AD 2000 HP0 and TRD201
- Welding operation DIN EN ISO 3834-3
- Contracting installation company of the Thuringian energy networks (natural gas installation)

He-GAS GmbH
www.he-gas.de

LOOKING BACK & VISION 2025

Tradition & Innovation – Looking back on 130 years of development in Hermsdorf

The historical roots of Hermsdorf as an industrial site in the wooded Thuringian Holzland region go back to the end of the 19th century.

In the course of increased electrification, the industrial demand for products made of technical ceramics for high-voltage transmission rose dramatically, raising expectations of a promising economic development. As early as 1889, the stock corporation Porzellanfabrik Kahla of the Strupp group established a porcelain manufacture here, which started operation in January 1890. To improve the insulating capacity of high-voltage insulators for the transmission of electrical energy, Professor Robert M. Friese developed what was called Delta-petticoat insulator as insulator No. 358 in 1897 and protected it by patents in Germany and abroad. The delta-petticoat insulator is the first high-voltage overhead line insulator constructed on a scientific basis, which was consistently further developed in the following years to become the Tridelta insulator. The invention of the Delta-petticoat insulator was associated with a rapid boom of the Hermsdorf factory. Millions of these insulators were delivered to German and international customers. As early as 1901, a relatively extensive high-voltage test field was set up in Hermsdorf, and systematically expanded over the following years.

In the period up to the First World War, the factory developed into a large concern with almost 1,000 employees in 1914. In the course of extensive concentration processes in the Saxon and Thuringian ceramics industry, the HERMSDORF-SCHOMBURG-ISOLATOREN GmbH, or HESCHO for short, was founded on *December 15, 1922*.

From the beginning, the establishment of HESCHO proved to be a positive impetus for the development of its factories.

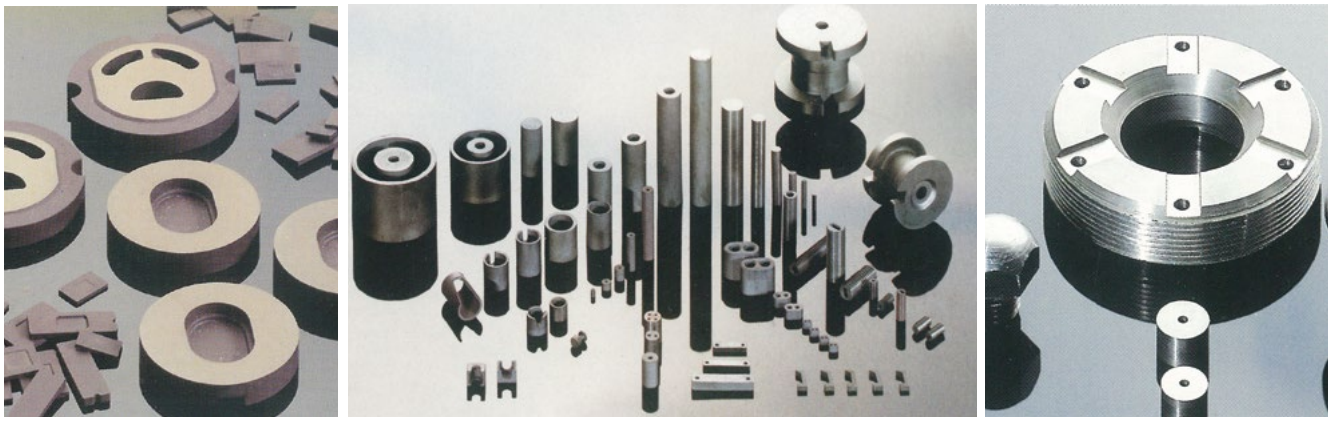
At an early stage, the versatile properties and application possibilities of porcelain led, alongside the development of insulators, to a large number of pressed and cast products from which a new Hermsdorf traditional line of chemical porcelain products was established about 1910. At the beginning of the 1930s, against the general background of the economic and technical development of the new decade (radio, telecommunications and HF technology, television, aviation, and shipping), the Hermsdorf factory underwent a structural change to become "Keramisches Werk" (a Ceramics Factory). In addition to the classic materials porcelain and steatite, a large number of special ceramic materials and components made from them, in particular ceramic dielectrics and later ferroelectrics, were introduced in the following years.

After 1945, a wide range of ceramic materials, technologies and products for applications in almost all industrial sectors was developed and produced in the Keramische Werke Hermsdorf:

high-voltage insulators and chemical porcelain, surge arresters, hard and soft ferrites, piezoceramic and ceramic semiconductor components, sintered metallurgical products and oxide ceramic packages. In addition to all these products, micromodule technology, based on ceramic technologies and initiated in the middle/end of the 1950s, made Hermsdorf the largest production site of the GDR for hybrid microelectronics, with some 800 employees.

In addition, the Hermsdorf site had all service and infrastructure facilities such as furnace construction, toolmaking and apparatus construction, gas and compressed air supply, maintenance, data processing, quality assurance, social services, and much more. As the parent company of the state combine Keramische Werke Hermsdorf, all central management and administrative divisions such as economics, sales, materials management and technology were also brought together here. At the end of the 1980s, the former Center for Research and Technology ZFT had about 800 employees. Here, research and development work was carried out for the Hermsdorf company, but also for other companies belonging to the

From left to right: ceramic pumps and valves, chemical ceramics, high voltage insulators | Source: Brochure Tridelta AG, 1990/91



f.l.t.r.: oxide ceramics, magnet ceramics, powder-metallurgical products | Source: Brochure Tridelta AG, 1990/91

state-combine. There were development laboratories for ferrites, semiconductors, piezoceramics, oxide and silicate ceramics, high-voltage ceramics with test field and surge arresters, electrical installations and a large process engineering division. In addition, cross-sectional areas such as chemical and physical analyses, information technology, patent and innovation systems, a central test workshop and a laboratory for quality and reliability were installed.

In fall of 1989, the state combine KWH, which was under the authority of the GDR Ministry of Electrical Engineering / Electronics, comprised 18 companies with approximately 23 thousand employees distributed over 21 districts and 12 counties of the GDR. With a broad range of about 60 thousand products, the KWH was a typical supplier combine and the sole manufacturer for many products in the GDR – thus responsible for satisfying the entire demand of the GDR economy for the respective product line. In addition, products of high-voltage ceramics, ferrites and oxide ceramics were exported to the Soviet Union, other socialist countries and to over 30 states of what was termed the non-socialist economic system. At the end of the 1980s, the total volume of what was called Industrial Goods Production IWP in the combine amounted to a little over 2 billion GDR marks. At that time, the Hermsdorf plant had about 7,300 employees. They achieved an annual turnover of more than 800 million marks. Important branches of the GDR economy, such as the radio and television industry, electric machine and apparatus engineering, communications electronics, electrical installation and lighting, mechanical, chemical and plant engineering, medical engineering and the automotive industry were supplied with ceramic components and parts, electrotechnical and hybrid microelectronic assemblies.

With the fall of the Berlin Wall on November 9, 1989, and the economic, monetary and social union with the Federal Republic of Germany and German reunification on October 3, 1990, completely new opportunities and perspectives opened up for Hermsdorf as an industrial site.

Access to internationally available raw materials and technologies enabled many visions for the future, particularly in research, development and innovation, to emerge and grow.

First, however, there were enormous challenges in adapting industrial structures to the conditions of the market economy.

From the mid-1990s onwards, the approximately 40 percent lower labor productivity compared to the western part of Germany (the former BRD), the high degree of wear and tear of the equipment, and the cascade-like breakdown of internal markets after the monetary union led to a fundamental collapse in production, combined with massive redundancies. The implementation of new products for new customers on the international markets was not achieved as quickly as required – not least in the light of the competitive situation.

Thus, in spring 1991, the ambitious project to privatize the company with Deutsche Bank, which was initiated under the leadership of the then Chairman of the Board of Management Andreas Montag, also failed. The original goal was to build up Tridelta AG with a balanced mix of mature, viable (high-voltage insulators, electrical installation) and innovative (wear protection and environmental technology) business fields, for which a potential sales volume of DM 0.8-1.0 billion for the year 2000 had been considered realistic. However, the concrete analyses had shown that no positive cash flow could be achieved in the short term and that only longer-term restructuring would assure a future for the business. The Treuhandanstalt (Trust agency), the owner of the company at that time, drastically intensified cuts in staff, with the aim of reducing operating losses by mid-1992, and announced that it would no longer make liquid funds available and would ultimately dissolve Tridelta. In order to avoid this, a privatization solution had to be found by June 30, 1992. At the end of this period, the number of employees at the Hermsdorf site had been reduced by about 85 percent.

As a result of feverish efforts by constructive parts of the supervisory board to save the Tridelta Group and with the support of the works council and the workforce as well as regional politicians and the state government, an agreement was reached in April 1992 between the Treuhandanstalt, the state of Thuringia and Jenoptik under Lothar Späth.

Demolition work 1990 in area 1 of KWH | Source: Gerd Pillau

With effect from July 1, 1992, Jenoptik acquired the operating business of Tridelta with the aim of privatizing it within the next three years.

The areas and the buildings not required for production at the Hermsdorf site were transferred to the state development company LEG for restructuring and commercial re-use in order to create new jobs. The declared aim was to transfer the employees into secure jobs, for which a restructuring package had been negotiated with the Treuhandanstalt. Thus, Tridelta and the Hermsdorf location in particular entered a new stage in the post-reunification period.

Späth – known as a man of vivid language with great powers of persuasion and enthusiasm –pushed forward the necessary restructuring and privatization steps under the motto "The dinosaurs are extinct; the insects have survived". From the point of view at that time, it was clear that Tridelta could not survive as a single large company and so the way was open for a multitude of new and spin-off companies that already existed as concepts.

As shown in the table (p. 64), it was possible to retain almost all technological core competencies at the Hermsdorf site or in the region and to transfer them into future-oriented and competitive business fields in the course of privatization.

In this process – in some cases extending over years and several stages – these companies that have proven to be particularly promising are those in which investors secured the special technological and material know-how of the former Tridelta companies and, on this basis, achieved, via their existing market access, both the market entry of ceramic products and the gradual refinement in assemblies or subsystems. Excellent examples of this are PI Ceramic and Mathys Orthopaedics. The acquisition of Cera System by the internationally active Samson Holding as a major valve system manufacturer, as well as the integration of PTC semiconductor ceramic production for heater applications in the automotive industry into Eberspächer catem also belong to this category. This opens up options for a stable future for the Hermsdorf site – especially with increasing added value through the completion of pure ceramics in subsystems.

In this regard, all successor companies in the field of electronic assemblies, in which in accordance with the trend predicted in the strategy formation the development of sensors through microsystems determine the profile today, can be considered particularly successful. In the course of the global market shakeout in this industry, the former Sinter Metals company is also in good hands under the umbrella of the internationally active H. C. Starck Group, as it manufactures special products in the form of semi-finished products and precision components of relatively high added value.

In some segments of the technical ceramics industry, drastic declines in sales had to be accepted initially. Here, it was particularly the joint innovation activities in the field of environmental technologies, with ceramic heat exchangers, filters and membranes, that led to the development of completely new product and market areas.
In retrospect, it must be realistically assessed that the development of the past 30 years would not have been financially feasible within the framework of a uniform group of companies. The expenses for restructuring (including staff reduction), investments, innovation and market launch were only possible by combining private capital of the new owners – were usually medium-sized companies – with extensive public funding from the European Union, the Federal Government and the Free State of Thuringia. This applies above all to the maintenance and reconstruction of R&D capacities in SMEs, the promotion of collaborative research, for example within the framework of the Regional Innovative Growth Cores pro-

gram and, in particular, to the establishment and expansion of an efficient and competitive R&D infrastructure. From a future-oriented core team of the former KWH research center, the Hermsdorf Institute for Technical Ceramics HITK was founded in 1992 as an economically independent, non-profit research institute, the business operations of which were spun off to inocermic GmbH in 1993. By 2009, total revenues had more than tripled and the volume of economic return had increased more than fivefold. Due to the successful economic development, future-oriented strategic positioning, good national and international integration and strong regional significance, the HITK was integrated into the Fraunhofer Gesellschaft in 2010 as part of the Fraunhofer Institute for Ceramic Technologies and Systems IKTS and is today an important success factor for the Tridelta Campus Hermsdorf.

The infrastructure of the industrial area of Tridelta has also developed in a remarkable manner. After the concentration of the areas necessary for production for the remaining operative core areas of Tridelta, the Regional Development Company LEG and its subsidiary AGO (Construction Society of east Thuringia) and TDA Real Estate Development Society (currently) developed the industrial area and adapted it step-by-step to the new challenges. On a total development area of 52.2 ha, the measures were taken over the period from 1994 to 2000.

Important milestones were the demolition of large parts of area I from 1990, the removal of the pedestrian bridge over the railroad line so that the complete old Naumburger Straße was reopened for traffic, as well as the demolition of the high-voltage test field with the aim of allowing a continuous traffic flow through the now open industrial area. The highlight of the urban development was the reconstruction of the old test field and its transformation into the Stadthaus 2000.

Stadthaus Hermsdorf 2000 | Source: HITK / IKTS

„Hermsdorf stands for the future!“

The economic beacon in the Saale-Holzland district scores both as an innovative industrial and scientific site and an attractive place to live. The friendly small town, located on the A4 and A9 federal freeways, has developed into an exemplary supply center with an established infrastructure and numerous leisure facilities. Hermsdorf and the spa town of Bad Klosterlausnitz form a medium-sized economic center in the region. Together, the communities of the Holzland region offer more than 11 thousand inhabitants a quality of life and accommodation that is unparalleled not only in Thuringia.

First mentioned in 1256, Hermsdorf has developed from a craft and farming village to an industrial location from the end of the 19th century. The production of industrial ceramics in the Hermsdorf porcelain factory contributed significantly to the worldwide electrification from 1890 onwards. Since then, urban development has gone hand-in-hand with the continuous growth of the local economy. After 1989/90, Hermsdorf was reorganized into the "city of short distances" in order to offer flexibility and quality of life to employees with short distances between their place of work, home and child care.
As a growing industrial location, Hermsdorf offers the continuously increasing population not only excellent childcare and educational facilities, but also a wide range of housing and building plots for privately owned homes.
The newly designated industrial area "Hermsdorf Ost III" offers ideal conditions for new business venture and further growth of industrial companies on an area of 56 ha with direct freeway connection. TRIDELTA CAMPUS and the city of Hermsdorf will jointly continue to promote this development in order to make the up-and-coming region in the heart of Germany better known and even more attractive.

Benny Hofmann
Incumbent mayor of the city of Hermsdorf

Continuous development at the site since 1990 (extract)

Areas / companies of the former company Keramische Werke Hermsdorf / Tridelta 1990	Privatization / new establishment after 1990	Current company name
Oxide ceramics / bioceramics research	1991 keramed Medizintechnik GmbH (Gesellschaft für Elektrometallurgie GfE Nuremberg)	**Mathys Orthopädie GmbH**
Research in actuators / sensors complex test engineering / component / Piezolan	1992 marco Systemanalyse und Entwicklung GmbH Dachau, branch Hermsdorf	**marco Systemanalyse und Entwicklung GmbH**
Competences / single persons, components / Piezolan and multilayer condensers Gera	1992 new establishment of PI Ceramic GmbH Lederhose (Physik Instrumente PI Waldbronn)	**PI Ceramic GmbH Lederhose**
Ceramic semiconductor components on PTC and ZnO basis	1991 Thermik Keramische Bauelemente GmbH (Thermik Pforzheim) | 2002 takeover by Rauschert group Pressig / Steinbach	**Eberspächer catem GmbH & Co. KG**
Ceramic / high-voltage insulators	1996 Porzellanfabrik Hermsdorf GmbH (CERAM group Austria) 2000 stop of insulator production	**Porzellanfabrik Hermsdorf GmbH**
Oxide ceramics / housing shells, sealing washers	1996 Cera System Verschleißschutz GmbH (CERAM group Austria)	**Cera System Verschleißschutz GmbH**
Chemical ceramics	Takeover by cerpraecis Triptis | 2000 (re)integration into Cera System Verschleißschutz GmbH	**Cera System Verschleißschutz GmbH**
Development / ceramics	1994 business area filtration ceramics / Tridelta | 1996 new establishment of Porocer Keramikmembranen GmbH	**TAMI Deutschland GmbH**
Technology / sintering technique	1993 Tridelta Thermprozess GmbH spin-off | 1996 Association under Tridelta Technische Keramik GmbH	**Tridelta Thermprozess GmbH**
Technology / toolmaking	1993 TRIWEFO GmbH spin-off	**TriWeFo Tridelta Werkzeug- und Formenbau GmbH**
Technology / special machine construction	1993 SomTec GmbH spin-off	**SomTec Sondermaschinentechnik GmbH**
Technology / maintenance	1993 DIW Deutsche Industriewartung GmbH & Co. KG spin-off	**HAI Hermsdorfer Anlagen Instandhaltung GmbH**

Aerial view of industrial park Tridelta Hermsdorf, 2016 | Source: State Development Corporation of Thuringia, Fotograph: Heiko Wagner, Erfurt

Areas / companies of the former company Keramische Werke Hermsdorf / Tridelta 1990	Privatization / new establishment after 1990	Current company name
Ferrites	1997 takeover by the investment company | 1998 establishment of Tridelta Magnet Holdings Ltd. | 2001 takeover of Tridelta group by a family-run company	**TRIDELTA GmbH**
Surge arresters	Analog and together with ferrite	**Tridelta Meidensha GmbH**
Powder metallurgy	1996 sale of Tridelta Pulvermetallurgie GmbH to Molypress Deutschland	**H.C. Starck Hermsdorf GmbH**
Hybrid microelectronics	1992 new establishment of Micro-Hybrid Electronic GmbH with participation of Micro Epsilon Group	**Micro-Hybrid Electronic GmbH**
Hybrid microelectronics / thin film technology / R&D	1992 new establishment of Siegert TFT GmbH	**Siegert TFT GmbH**
Hybrid microelectronics / ASICs	1992 establishment of Lust Hybrid-Technik GmbH	**Lust Hybrid-Technik GmbH**
Hybrid microelectronics / laser technology	1993 establishment of LCP Laser-Cut-Processing GmbH in Oberndorf 1999 resettlement at the Hermsdorf site	**LCP Laser-Cut-Processing GmbH**
Security technology	1992 establishment of a crafts enterprise in Münchenbernsdorf | conversion to another type of corporate organization (GmbH), resettlement at the Hermsdorf sitedorf	**SCHMEISSNER Sicherheits- und Kommunikationstechnik GmbH**
Research / development	1992 establishment of the HITK Hermsdorfer Institut für Technische Keramik e.V. as an independent nonprofit industry-focused research institute | 1993 establishment of the inocermic GmbH as a 100%-subsidiary	**Fraunhofer Institute for Ceramic Technologies and Systems IKTS**
Oxide ceramics Auma	1992 Boart Ceramics GmbH | 2006 Barat Ceramics GmbH	**QSIL Ceramics GmbH**

The TRIDELTA CAMPUS vision

Our high-tech site is growing – with an extra 56 hectares for the new Ost III industrial estate.
With this newly acquired area, we have a vision in mind: to foster enthusiasm for the high-tech site among growing and opportunity-oriented companies, especially from the **industrial ceramics and microelectronics sectors,** and to offer them room for growth and investment. Regardless of the size of the company – whether start-up or SME (small or medium-sized enterprises) – the new industrial park enables individual business developments in a future-oriented environment. The decision to create the Hermsdorf Industrial Park OST III, with direct access to the A4 freeway, represents the economic power of the location and the future of our region in Central Germany.

Our unique selling proposition:
Surrounded by an intact natural landscape and a family-friendly and culturally appealing environment, our site offers internationally leading SMEs, top technological research and agile manufacturing service providers with special know-how in the fields of ceramics technologies, microelectronics, and sensor technology.

Our TRIDELTA CAMPUS vision:
The TRIDELTA CAMPUS Hermsdorf will develop into the leading location for high-performance ceramics in Europe by 2030. A CAMPUS-style work-and-life feeling has been established for all employees and companies:
cooperative & uncomplicated – agile & visionary – family- & life-friendly

An agile and visionary living and working environment offers experts and skilled workers the opportunity to discover themselves both in their professional and private lives in an authentic infrastructure in the Saale-Holzland district. Our high-tech site stands for a family-friendly environment, and a straightforward and cooperative manner of behaving and working, and thus offers the ideal framework for the recruitment and long-term retention of skilled workers.
TRIDELTA CAMPUS Hermsdorf e. V. is the ideal local partner for **manufacturing and research, working and living.**

FACTS & FIGURES

New industrial areas "Hermsdorf Ost III"
Gross area: 56 ha
Net area after development: 46 ha

Site description:
The industrial area is located approx. 1 km east of the Hermsdorfer Kreuz freeway junction directly at the exit Hermsdorf Ost on the boundary of the city of Hermsdorf

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Federal freeway (BAB)
A 4: exit Hermsdorf-Ost
(A 9 – 5 km, exit Bad Klosterlausnitz)
Highway
11.0 km | B 7 (B 2 - 18 km)
Cargo handling point
4.5 km | railroad station Hermsdorf
Airport / commercial airport (VL)
74.0 km | airport Leipzig / Halle
84.0 km | airport Erfurt / Weimar
24.0 km | commercial airport Gera / Leumnitz

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Job and career of the high-tech producers of the TRIDELTA CAMPUS

Work-life balance – our Thuringian Holzland district offers pure nature.

TRIDELTA CAMPUS
HERMSDORF

WORKING & LIVING

AT THE HIGH-TECH SITE

Home is where your family is – where your family can be happy and develop. The search for a place to live that can meet this demand is today more complex than ever before.

Profession and career, family and leisure, education and culture, health and care – and all this in harmony! The region around the TRIDELTA CAMPUS boasts conditions that meet all these needs and guarantees a high quality of life for all ages.

The area around the TRIDLETA CAMPUS itself offers many solutions to life's challenges, such as the search for suitable housing, a kindergarten place, elementary school or the appropriate high school. In Hermsdorf, you can find all educational institutions up to and including the various types of high schools, as well as a vocational school. The nearest universities and colleges in Jena and Gera are only 20 minutes away from Hermsdorf by train. For families, attractive priced real estate, whether to rent or to buy, makes this high-tech site an ideal place to live.

Here it is easy to combine a career as a skilled worker, scientist or engineer in a high-tech company with family life and leisure time enjoyed in the surrounding countryside. With its well-developed network of hiking and biking trails, romantic woods, valleys and mills, our forest, which gives the region „Thüringer Holzland" (Thuringian wood land) its name, forms a backdrop for all those who love recreational sports, hiking and nature lovers.

The nature-orientated approach to life is supported by a large number of regional producers such as makers of goat and sheep cheese, breweries and country inns offering with game and other specialties from the surrounding area.

Local health and care services include medical specialists, general practitioners, nursing homes and therapy practices. The nearby hospitals in Jena, Gera and Eisenberg are among Germany's most prestigious hospitals and ensure health care that meets every need.

The wide range of clubs and associations offers a variety of opportunities and events for both sports fans and culture enthusiasts. An open-air swimming pool, thermal bath, municipal library, skater park, readings or concerts, as well as traditional festivals and sporting events such as the Holzland run, are all right on the doorstep. Only 20 minutes away by train, the cultural and leisure highlights of the cities of Jena and Gera await you. Experience the Cultural Arena, museums, shopping or a night out at the pub without having to look for a parking space, and be back home quickly.

Here, you feel 100 percent at home.

** Picture credits: see imprint

FACTS & FIGURES

Hermsdorf
Area: about 749 ha (as of: 12/2019)
Including woodland: about 108 ha

Inhabitants: about 8100

Schools & kindergartens: Holzland high school, secondary school, state vocational school center, school for children with special needs, 2 elementary schools, 3 day care centers

Clubs and associations (extract):
SV Hermsdorf
Handball, soccer, badminton, athletics, basketball, table tennis, and much more
Igel e.V. (educational support)
Adult education center Saale-Holzland district
Volunteer fire department
Technical collection (history of industrial site)
AWO (worker's welfare organization) – Youth & Senior Citizens' Work
Culture and folk association Holzland

Art & Culture:
Regular readings
Library in the Stadthaus
Music events
Art exhibitions in the Stadt-Galerie
Annual city festivals

Other facilities:
Municipal open-air swimming pool Railroad station
Diverse shopping facilities
Wide range of health care by medical specialists, pharmacies, therapists

Further information about clubs and associations, leisure activities and destinations for excursions can be found under the following link

www.vg-hermsdorf.de/vereine.html

Library, art and culture in the Stadthaus

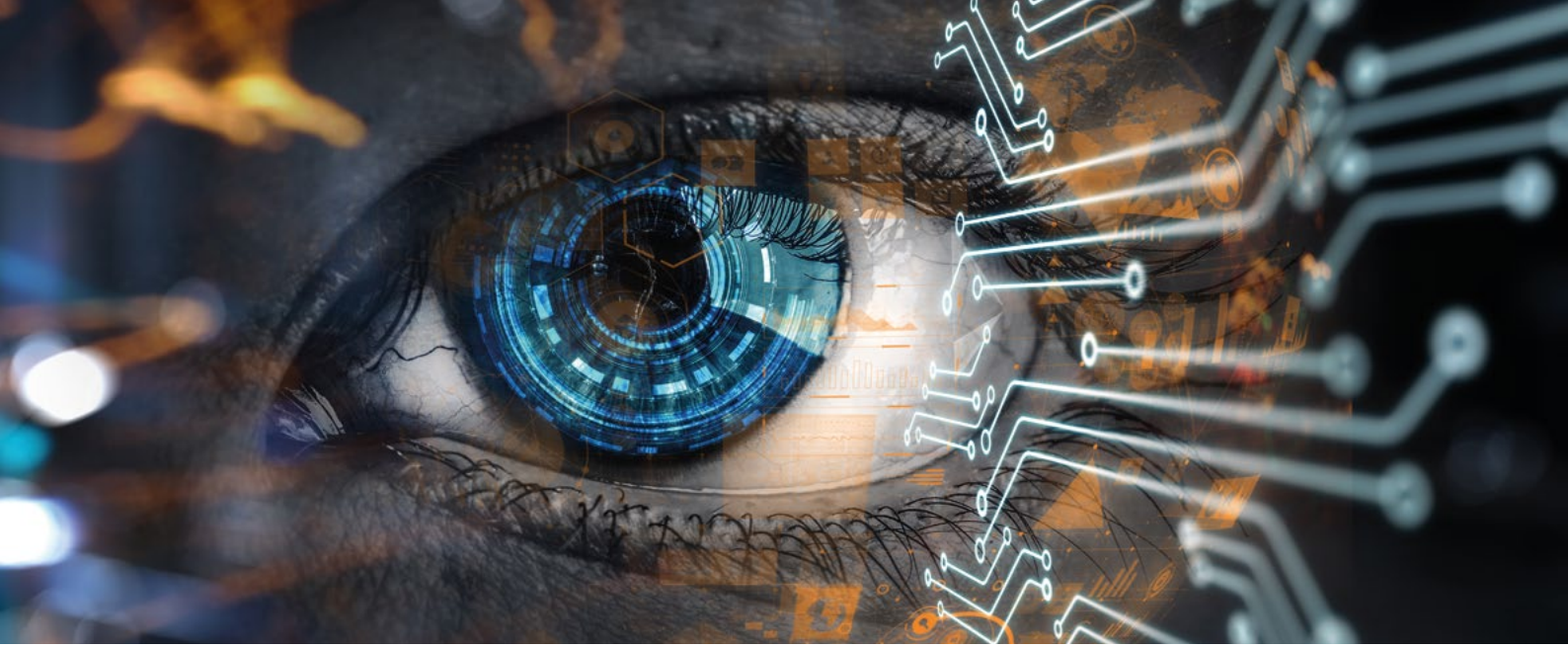
Mobile by train – good connections for commuters and long-distance travelers

Popular tradition „Maypole erection"

Open-air swimming pool – popular with young & old

Sports ground / SV Hermsdorf

Recreational fun – skateboarding track



IMPRINT

Publisher:
TRIDELTA CAMPUS HERMSDORF e.V.
High-tech site for Ceramics and Electronics -in Central Germany
Heinrich-Hertz-Str. 10 | 07629 Hermsdorf | Germany

Editorial office (layout & design):
designerei+ | www.designerei-werbeagentur.de

Content-related additions and notes:

** picture credits:

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All information on Tridelta Industrial Park, TRIDELTA CAMPUS HERMSDORF and the companies correspond to the information status of March, 2020.

Print shop:
Druckhaus Gera GmbH, Jacob-A.-Morand-Str. 1 | 07552 Gera
printed: March 2021

TRIDELTA CAMPUS HERMSDORF

With the friendly support of:

Sparkasse Jena-Saale-Holzland
www.s-jena.de

LEG Thüringen
Landesentwicklungsgesellschaft Thüringen mbH
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