



TOGETHER  
TWO STEPS  
AHEAD

THINK BIG. THEN TAKE  
CARE OF THE DETAILS.

KERN Microtechnik GmbH has been successfully providing renowned Made-in-Germany innovative products and services for over 50 years. One principle is firmly rooted in our culture: Our customers, with their unique challenges and ideas, always come first. They are our motivation and our drive. In this way, KERN has succeeded in making a name for itself in two major areas of activity:

- **KERN Machine Engineering:** development and production of probably the highest-precision machining centres in the world — KERN Micro, KERN Evo and KERN Pyramid Nano.
- **KERN Contract Manufacturing:** manufacturing of parts for series production of demanding key components with KERN machines.

Instead of simply purchasing a machine, on request our customers also receive the complete know-how they need to produce extremely high-quality parts in an efficient manner. Our Machine Engineering division is closely linked to our in-house Contract Manufacturing business, enabling a continuous exchange of knowledge, which in turn guarantees advanced process expertise and constantly improving machines. As a result, we not only differentiate ourselves as a machine builder and part manufacturer, but also help our customers to stand out in their markets. Quality, reliability and the constant urge to push the limits of what is feasible are thus the cornerstones of our commercial activities.



**Sebastian Guggenmos**  
Chief Operations Officer  
Machine Engineering

**Simon Eickholt**  
Managing Director

**Mathias Fritz**  
Head of Innovation  
and Development

**Sebastian Wühr**  
Chief Operations Officer  
Contract Manufacturing

## KERN INTERNATIONAL



■ Company headquarters: Eschenlohe | Murnau

■ Subsidiaries: Zurich | Chicago | Shanghai



# MILESTONES

Towards a groundbreaking future

## FOUNDATION

The company KURT KERN KG FEINWERK-TECHNIK is established in Munich-Obermenzing in April 1962

1962



## NEW TECHNOLOGIES

The company purchases its first Agie wire eroding machine (the first in Bavaria), as well as its first CNC-controlled milling machine

1975

## WESTRIED

Establishment of the Murnau-Westried site for the Microtechnology division. The importance of the Machine Engineering business continues to grow

1987



## MACHINE ENGINEERING

KERN receives an enquiry from IBM for the production of test membranes made from Vespel for microchip production. As no suitable machine is available, KERN develops and builds a high-precision CNC drilling machine. This project leads to the birth of KERN Machine Engineering

1983



## APPRENTICESHIP

KERN starts its apprenticeship program

1981

## TAKEOVER

Günter Kern retires. Ekkehard Alschweig takes over the business and consistently builds the company into a technology business

2000

REVENUE (DM): 18.8 M  
EMPLOYEES: 85



## MICRO-DRILLING

The legendary "hole in the hair" experiment cements KERN's reputation as a pioneer in the field of micro-drilling. A 30 µm motor winding wire is threaded through a 50 µm hole in a human hair in collaboration with the company Maxon Motor

2001



## CERTIFICATION

to DIN EN ISO 9001  
Market launch: HSPC

1996

## MARKET LAUNCH

Market launch of the KERN Evo and KERN Pyramid Nano

2005

REVENUE (€): 10.7 M  
EMPLOYEES: 82



## EXPANSION

Relocation of the Machine Engineering division to the Eschenlohe plant. This 15,000-square-metre facility makes industrial production of the KERN machines possible. The company also strengthens its international focus by founding the subsidiary KERN Precision Inc. in Chicago, USA

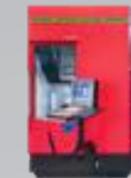
2007



## MARKET LAUNCH

Market launch:  
KERN Micro

2011



## FRESH FOCUS

Contract Manufacturing consistently focuses on key components and complex series parts. An increasing number of orders are received from the medical technology/optics sector

2013

REVENUE (€): 18.4 M  
EMPLOYEES: 131



## EXPANSION

Subsidiary opens in Zurich, Switzerland

2016



## MARKET LAUNCH

Market launch:  
KERN Micro<sub>PRO</sub>

2017

REVENUE (€): 30 M  
EMPLOYEES: 185



## EXPANSION

New sales and service location in Shanghai, China:  
KAP - KERN Asia Pacific

2018



## OUTLOOK

The consistent further development of Machine Engineering and Contract Manufacturing will be realised via technology projects

2020

OUR ENVIRONMENT  
CONSISTENTLY  
SHOWS US  
THE TRUE SCALE OF THINGS



**MATHIAS KUBENKA**  
HEAD OF PRODUCTION

“The cutting-edge technology at KERN fascinates me every day. To be able to make a significant contribution here, combined with the advantages of working for an owner-run, high-tech company in my home country, is just perfect for me.”



**BERNHARD UHR**  
DEPUTY HEAD OF DEVELOPMENT

“My daily work involves turning thoughts into reality. The first time an idea works in practice — it's an amazing feeling!”



**GÜNTER DÜNNWALD**  
HEAD OF TECHNOLOGY

“In the course of 36 years at the company I have experienced a lot. What makes KERN so special is our enormous capacity for innovation that stretches back over decades.”



**TINA SIPPEL**  
DEVELOPMENT

“For me, KERN machines represent the fulfillment of the highest technical expectations, with individual customer requirements always at the forefront.”



**CHRISTIANE HOFFMANN**  
ORDER PROCESSING

“My field of work interfaces with many other departments and puts me in daily contact with a wide range of international customers. This makes my work at KERN so varied.”



**ALEXANDER STAUDER**  
HEAD OF APPLICATION TECHNOLOGY

“I've been with KERN since the start of my apprenticeship as a mechatronics technician in 2002. Since then I've become an engineer and am still fascinated by my work. We simply don't make standard products, instead we constantly push back the limits of what is technically possible.”



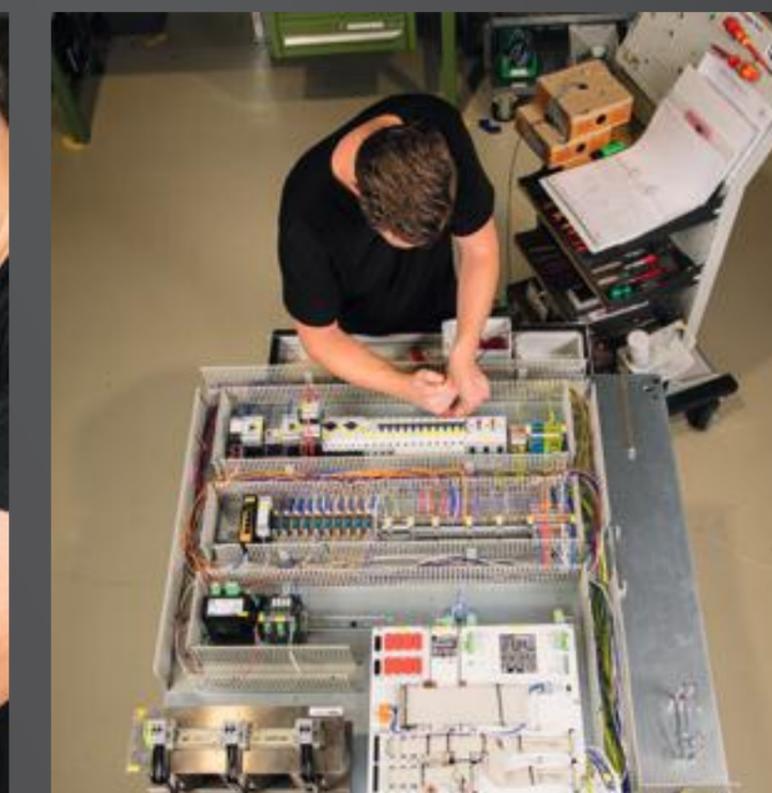
**ROBERT BRANDL**  
APPLICATION TECHNOLOGY

“During my first year of work here in 1995, I was able to gain more experience than in the preceding six years of my career — with customers in a wide range of fields and different countries. This variety continues today.”



**HEIKE DIEGEL**  
DEVELOPMENT

“When a machine is loaded by the forklift, it's like when a ship leaves the shipyard for the first time. We've achieved this all together! It's an unforgettable experience every single time.”



KERN Contract Manufacturing

## Your partner for high-precision series parts

We are one of Europe's biggest parts manufacturers in the field of high-end machining and EDM.

### KERN expertise

At KERN Contract Manufacturing, our internally developed CNC precision machining centres deliver optimum results in the most demanding machining assignments — around the clock, seven days a week. During this process, our Contract Manufacturing division, which is based at our Murnau plant, draws on the know-how acquired by our Mechanical Engineering team in Eschenlohe. Conversely, our many years of experience gained in manufacturing practice continually flow into the ongoing improvement and optimisation of our machines.

This close interlinking of Contract Manufacturing and Machine Engineering is what makes KERN Micro-technik unique!

### Diverse manufacturing technologies

We offer a wide range of technologies for the production of your high-precision key components:

- HSC milling and hard milling from 3 to 5 axes
- Micro-milling and micro-drilling
- Wire and die-sink EDM
- Lapping and polishing
- Laser marking

### Mastering new challenges

For complex geometries we use our highly versatile CAD-CAM systems. These range from traditional 3-axis machining to EDM and even 5-axis simultaneous milling.

By using wire and die-sink EDM as well as lapping we can deliver components produced by using diverse technologies from a single source, complete with the associated measurements and documentation. We also provide a range of additional manufacturing processes and surface treatments via our partners.



## KERN — More than just a supplier

### No measurement, no "μ"

Our focus is always on achieving stable, series production of complex components in the μ range — naturally, by manufacturing under controlled conditions.

Our quality assurance process uses the latest 3D coordinate measuring machines and enables us to accurately track and document all specifications. Our component spectrum ranges from microparts measuring just 0.5 x 1.5 mm to high-precision parts with dimensions of approx. 200 x 200 x 100 mm.

### Wide range of materials

Benefit from our many years of experience. We can process a wide variety of materials for you — in fact, our material spectrum is virtually unlimited:

- Steel alloys (even hardened varieties)
- Copper alloys
- Aluminium alloys
- Titanium materials
- Carbides and heavy metals
- Nickel-based alloys
- Ceramics (machinable or hard sintered)
- Plastics (in particular Vespel)

### Strong partnerships

Intensive support for individual customer relationships is a priority for us. Our long-term partnerships with our customers are characterised by:

- Individualised advice and support
- Design support
- Selection of suitable materials
- Delivery of complete components
- Process solutions from A–Z

### A KERN machine in your production hall

Should the time come when you decide to purchase your own KERN machine, we will of course fully integrate our proven processes into your production line — complete with custom-designed automation devices.



## Flexible machines for future-proof production

Our sales organisation is not just about machines, but also about the processes that make it possible to produce sophisticated parts efficiently. Ultimately, it is the well-balanced combination of the operator, machine and process expertise that makes the difference. We contribute to creating the best conditions in all three areas.

### Three machine platforms

For its machine platforms, KERN relies on flexible series production, which allows the efficient implementation of customer requirements and individual solutions with the highest quality levels. The basic machine offers high production stability and cost-optimised processes.

When it comes to consulting, our focus is therefore on finding the optimal solution to produce demanding parts in a highly productive manner, thus generating enduring competitive advantages for our customers.

### Always at the forefront

To ensure that this advantage is maintained for as long as possible, KERN machines can be retrofitted to fulfill special requirements. In addition, thanks to ongoing updates we are always able to stay at the top of our field, especially in the event of rapid technological changes — even for machines purchased many years before.

**“ We build machines with unmatched productivity and precision for the most demanding applications. Our machine and process expertise, our outstanding teamwork and effort to always find the best solution play a decisive role here. ”**



Simon Eickholt  
Managing Director  
Head of sales and marketing



### KERN Application Technology

## More successful together

We believe we can make an important contribution to our customers' success and further development by using our personality, experience, commitment, integrity and team spirit to continually push back the boundaries of what is possible.

This is how we are able to build unique productive and precise machines for our customers, manufacture sophisticated key components and pass on our valuable know-how.

This KERN principle applies not only to our application technology activities, but also to all departments and employees within our company.

**“ It never ceases to amaze us to discover what is actually possible with our machines. We want to pass on our skills and passion and share this with our customers. ”**

Alexander Stauder  
Head of application technology



### The customer in focus

As application engineers, we truly understand our customers and their requirements, because we face the same challenges every day. We seek out and value personal contact as the optimal way to collaborate and find the right answers to your questions.

This enables us to help develop new processes, optimise existing ones and solve difficult problems, thereby increasing both our own and our customers' success and continuously expand the boundaries of what is feasible.

### KERN family

For the life of the machine, every KERN customer enjoys the support of our application technology specialists, who are ready and waiting to offer advice and assistance.



## KERN Service Serious about service

### Trust in focus

Our clear goal at KERN Service is maximum reliability, worldwide. Whether for previous purchases or new KERN machines — in an emergency, in case of changes or new developments, you can always rely on us.

More than 20 qualified service experts are here to assist you and process your query without delay — so that your machine always delivers maximum productivity!

### Behind the scenes

Your customers expect maximum professionalism from you every day. You can expect exactly the same from us.

In order to live up to your expectations, we continually update our processes and systems and align them to the latest standards.

When you contact us by phone or e-mail, we respond as follows:

- Your personal service ticket is created
- Our service team quickly finds a solution
- If required, we carry out an on-site service call

**“ The high level of training of our service technicians, their affinity to our company, as well as their honesty and not least their personality — these are the basis for our promise to offer far more than the market standard. ”**

Gilbert Ullmann  
Head of service



## KERN Apprenticeship + Careers

# The future market for microtechnology

Qualified employees are the foundation on which our company's success is built. At KERN, we strive to ensure that each individual fits in with our corporate philosophy and also develops an emotional bond with the company. In this way, we are trying to counteract the problems caused by the current shortage of skilled specialists.

### Proven apprenticeship company

For decades, we have paid particular attention to our apprenticeship program. We started in 1981 and our first ever apprentice still works at KERN Microtechnik. What starts out as an apprenticeship almost always ends up in long-term, dedicated employment. As a result our staff is extended with qualified industrial mechanics and mechatronic technicians every year.

### Qualified staff

From day one, our apprentices begin to assimilate KERN's unique know-how and expertise. Our qualified and committed employees are a key success factor for KERN and our customers. This is why we invest sustainably in the apprenticeship and further education of our staff.



Michael Albrecht and Josef Finsterwalder:  
After their apprenticeship as tool mechanics in 1989,  
they still are an important part of KERN today

## KERN — a perfect fit!



# KERN Micro Platform for the highest demands



## KERN Micro

### The high-performance machining centre for broad-based production

The KERN Micro is anything but a standard milling machine. It is ultra-compact, highly automated, precise right down to the micro-range, and as flexible in terms of equipment and applications as you need it to be.

With the KERN Micro platform, you can configure the optimum machine for your specific application spectrum and integrate it into your production environment. Thanks to a mature machine design, the unique KERN temperature management system and the use of high-quality components, each machine reliably delivers the proverbial KERN precision and repeatability, time after time.

The KERN Micro is at home in the industrial environment, it is resilient, robust and durable — regardless of the application.

Technology models based on the KERN Micro platform are available for optimised machining of graphite or zirconium.

#### Features and advantages:

- Compact and powerful
- Optimised for the specific application
- Maximum productivity and precision
- Flexible and competitive

## Market-proven technology — constantly updated

Practical technology in daily use — ever since the launch of the KERN Micro in 2011, the platform's components have been continuously tested and improved.

The new generation of KERN Micros feature some core optimisations that make this machine the undisputed price/performance champion.

#### Customer benefits:

- Optimised equipment for the requirements of series production. High efficiency and active cost management result in a unique price/performance ratio
- Weight savings, a shorter design and full integration of the units into the machine result in an installation area of less than 4m<sup>2</sup>
- Unique stability and durability during the entire service life of the machine
- Simple and inexpensive servicing thanks to standardisation and customer-oriented optimisations

## Fully integrated 4th/5th axis

Powerful and highly dynamic pivot/swivel axis for 5-axis machining — market-tested and continuously optimised. The intelligent arrangement of the fully integrated 4th and 5th axis allows optimum utilisation of the working space.

#### Customer benefits:

- Fast, precision-optimised machine kinematics and thus extremely precise and highly productive work processes
- Large machining range due to powerful torque, high stiffness and a large pivot range for efficient machining
- Excellent air-gap sealing enables a wide range of applications using all common cooling lubricants without affecting the longevity of the axis system
- Highest mechanical precision in terms of concentricity and axial run-out ensures unmatched accuracy in combination with active temperature control of the bearings and motors

## Flexible throughout the machine's service life

Standardised interfaces and a vast scope of research and development make the machine's platform a highly flexible and productive system, which can be further developed if the market and new technologies require so.

#### Customer benefits:

- High flexibility thanks to a standardised interface to external automation solutions for all common variants and manufacturers
- High security of investment through adaptability and continuous updates
- Continued high competitiveness thanks to ongoing development, including updates and upgrades to many functions of the machine

## COMPACT DESIGN

Thanks to its compact one-box design, all units are integrated into the machine itself. Large tool and workpiece capacities allow unmanned multi-shift operation without external attachments, and all within a footprint of less than four square metres.

## INTEGRATED TOOL CHANGER

The integrated tool changer can manage and change up to 209 tools fully automatically. When combined with the integrated and external automation systems, the possibilities for unmanned operation are virtually unlimited.

## INTEGRATED WORKPIECE CHANGER

Fully integrated machine control and workpiece changer in the tool magazine means no additional space requirements. Maximum of 30 workpieces up to 75mm x 75mm x 150mm and 5 kg.

## EXTERNAL AUTOMATION

Standard interface for external automation devices.

# KERN Evo

## The result of intelligent evolution



### KERN Evo

## Cutting-edge technology for maximum precision

As the name suggests, the KERN Evo is the result of many years of consistent development. This constant improvement process has enabled us to achieve maximum precision and productivity in the milling process with high and medium part quantities. The machine's design allows maximum running stability and excellent surface quality, even with high acceleration values and travel speeds.

The short distances between the components and drives help to minimise angular errors, while our high-resolution, direct position-measuring systems guarantee maximum repeatability. As an option, the KERN Evo can be equipped with a 4th and 5th axis without sacrificing the stability and precision of the basic machine.

With its high-quality components and a compact machine design, the KERN Evo has established itself in a wide range of industries. The KERN Evo is the first choice when the application demands high productivity and series-tested precision on the workpiece. Its variability and excellent performance make the KERN Evo the price/performance benchmark in the field of high-precision machining centres.

#### Features and advantages:

- Ultra-high precision on the workpiece
- Outstanding surface quality
- Optimal ergonomics
- Flexible and fully automatable

### KERN Pyramid Nano

## Maximum precision for $\mu$ -precise series production

The KERN Pyramid Nano is designed for applications that demand the highest precision and surface quality, even with large workpieces that require short machining times.

With the integrated workpiece changer, the KERN Pyramid Nano can also be used in unmanned operation, even for 5-axis simultaneous machining assignments.

At the heart of the machine are the axes, which are mounted on hydrostatic bearings and therefore promise virtually wear-free precision throughout its lifetime. In addition, the hydrostatic system enables high acceleration with excellent vibration damping, bringing productivity and precision into perfect harmony. In combination with KERN's proprietary temperature management system, an optimally

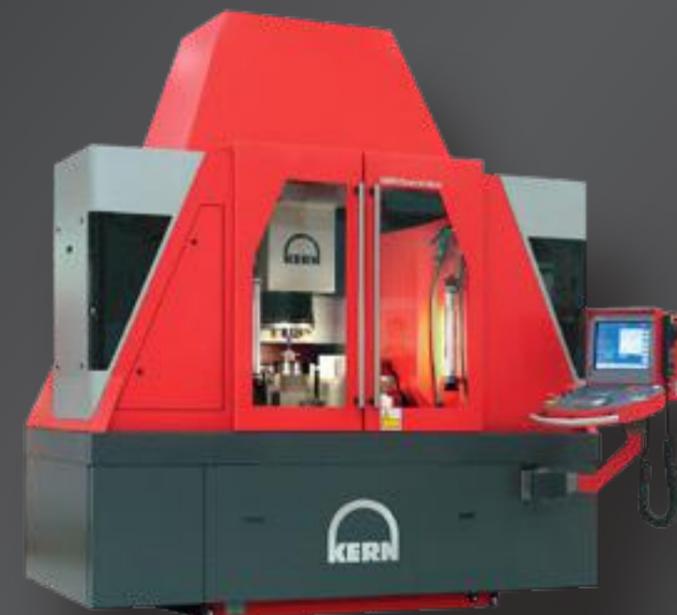
configured machine system is guaranteed at all times. This uncompromising alignment makes the KERN Pyramid Nano one of the most precise CNC machining centres in the world — which is why it is widely used for the most demanding tasks both in industrial applications as well as research and development. The optional jig grinding package allows efficient milling and grinding in a single clamping, making the KERN Pyramid Nano an incredibly productive milling and grinding solution.

#### Features and advantages:

- Maximum productivity and precision
- Life-long precision
- Optimised for specific applications
- Automation and productivity

## KERN Pyramid Nano

### Perfection in every dimension



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