



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 HD, KERN Micro Vario, KERN Micro Pro, 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
Managing Director

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

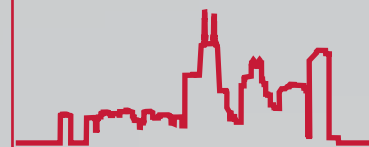
REVENUE (€): 10.7 M
EMPLOYEES: 82



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_{PRO}

2017

REVENUE (€): 30 M
EMPLOYEES: 185



EXPANSION

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

2018



MARKET LAUNCH

Market launch:
KERN Micro_{HD}
KERN Micro_{Vario}

2019



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
HEAD OF IT & SAP

“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.”



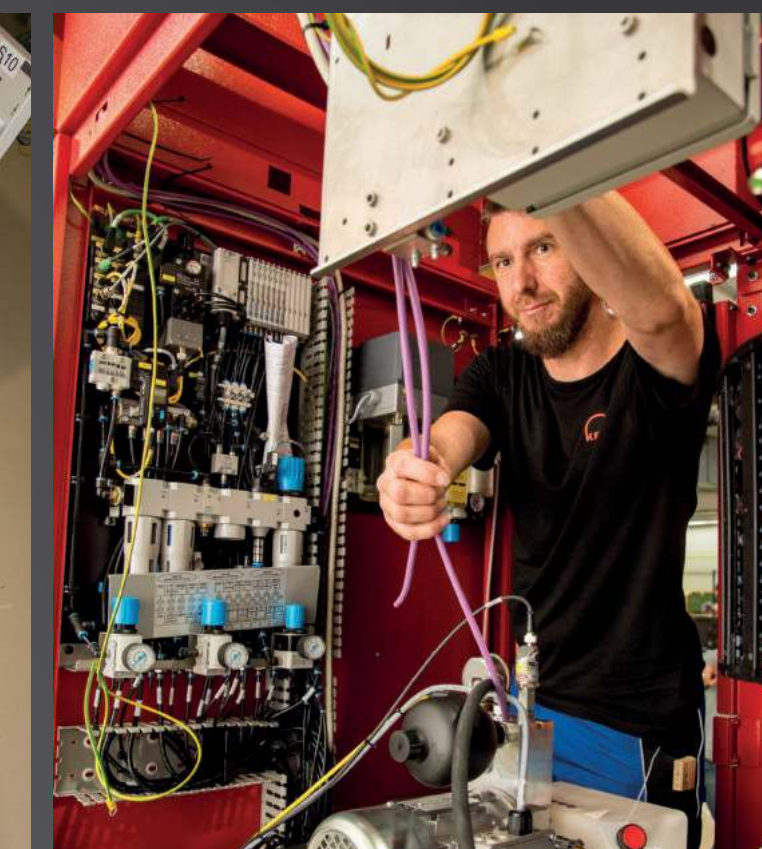
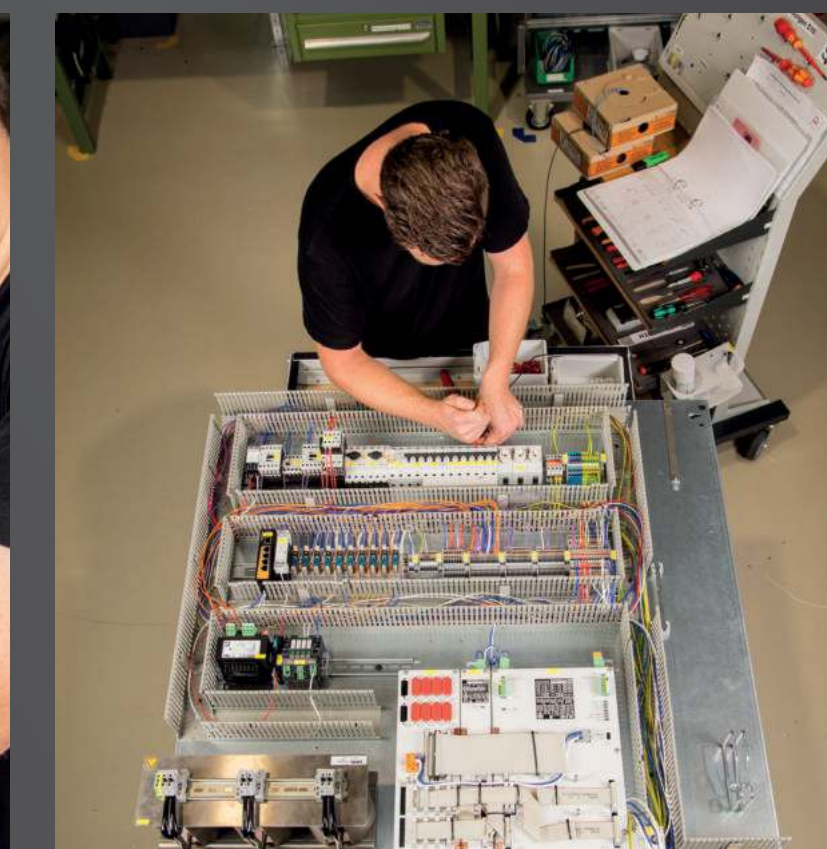
ROBERT BRANDL
APPLICATION TECHNOLOGY

“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 Microtechnik 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.



KERN Machine Engineering

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



Your area sales manager at Kern Microtechnik



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

Micro HD | Micro Vario | Micro Pro



KERN Micro HD

The new standard in precision manufacturing

The KERN Micro HD is the solution for high-precision serial – and prototype – production and when the question comes up whether production is still possible.

This system is based on the second generation of KERN Micro, which was launched in 2019, and relies on proven, high-quality KERN technology. It provides absolute reliability and stability over a long machine life. The new KERN micro-gap hydrostatics is combined with the powerful linear motor drives in the integral axis system. This combination creates a unique drive system that sets new standards in precision, stability, dynamics and freedom of wear. The KERN Micro HD works more accurate and more productive than other 5-axis milling machines when the demands become extreme. With hydrostatic, direct drives and a unique design this compact system can easily meet the highest requirements. This results in highest availability, maximum output rate and minimum reject rate, as well as low maintenance costs, versatile and flexible applications and a significant competitive advantage for the user.

AT A GLANCE

- Compact design and small footprint of less than 5 qm/54 sqft
- Supreme machine stability with advanced KERN temperature management
- High dynamics and productivity through integrated linear motor drives
- Best quality and wear-free due to innovative KERN micro-gap hydrostatics
- Multi-shift operation with no need for operator with integrated changer for up to 210 tools and a maximum of 60 workpieces
- Certified interfaces for additional accessories and automation systems
- Management and maintenance during operation without interruption while machine is running

KERN Micro Platform

New dimension of five-axis precision

Individual or series production – when it comes to maximum precision, the purchase of a machining centre from Kern Microtechnik is the right choice. Especially with the KERN Micro platform you can configure the optimum machine for your specific application spectrum. This platform provides the basis for three different models:

The KERN Micro Pro, the KERN Micro Vario and the KERN Micro HD.

With the KERN Micro Pro there exists a stable and reliable solution for efficient part manufacturing in a price-sensitive market segment.

The KERN Micro Vario is characterized by highest workpiece accuracy, reliability and many different options for the configuration, for example for graphite milling.

And the KERN Micro HD. This machine represents the latest development of our machines for high precision series production and is industry-wide unrivaled when it comes to long-term ultra-precision, the highest possible surface quality and, to date, the unmatched cutting performance.

The three micro models are built on one platform and all have a large number of identical components. This enables us to provide efficient service with immediate availability of spare parts.

The user friendliness and ergonomics of the machines, as well as the high level of technical availability and long-term precision guarantee a reliable work process.

With new developments and many possibilities of retrofitting, your KERN machine is always best prepared for your individual parts.

KERN Micro HD

Highest productivity without limits



KERN Micro Vario

Compact, extremely precise, incredibly powerful



KERN Micro Pro

Even more compact, even more efficient

Ever since it was launched the KERN Micro stood out in the milling industry with a combination of extreme accuracy, unrivalled flexibility and highest performance. The KERN Micro's successful machine platform is the basis of the KERN Micro Pro. This machine was further developed with a focus on the demands of the industrial environment and serial production of very precise parts.

Often the focus is not on achieving a sub-2µm accuracy on the part but rather on a machine's reliability and stability when running serial production. Important factors are of course how the machine can be integrated into an existing processes and the profitability of the machine. The slim KERN Micro Pro is designed to easily meet all these requirements.

In addition to high productivity and availability the KERN Micro Pro stands out with its very compact design and provides easy maintenance. With a strong focus on serial production the KERN Micro Pro combines productivity, efficiency and reliability like no other machine in the industry.

The system is based on proven KERN technology and ensures reliability and stability over the long life of this machine.

AT A GLANCE

- Small footprint of 4 qm/43 sqft
- Management and maintenance during operation without interruption while machine is running
- Attractive purchase conditions and maintenance costs
- High dynamics and productivity with proven components and processes
- Multi-shift operation without operators and with integrated tool-changer for up to 210 tools and max. 60 workpieces
- Certified interfaces for additional accessories and automation systems

KERN Micro Vario

Flexible platform for highest demands

The KERN Micro Vario is not a standard milling machine. It is ultra-compact, it provides effortless automation, hassle-free accuracy in the micro range and configuration and equipment can easily be individualized - just as our customers need it.

The KERN Micro Vario is the second generation of the KERN Micro and even more powerful, compact and resistant to external influences. It can be individually configured for the customer-specific application and can be integrated into the production line without any efforts.

With the sophisticated machine design, the unique KERN temperature management and the high-end components, the machine reliably delivers the well-known KERN precision and repeatability. The KERN Micro Vario is at home in the industrial environment. It is reliable, robust and durable - for every kind of application. Special editions for the perfect machining of graphite or for zirconia machining are also available on the basis of a KERN Micro Vario.

AT A GLANCE

- Compact design and small footprint of only 4 qm/43 sqft
- Supreme machine stability with the advanced KERN Temperature Management
- High productivity with unmatched accuracy
- Best quality, flexibility and competitiveness
- Multi-shift operation with no need for operator with integrated changer for up to 210 tools and a maximum of 60 workpieces
- Certified interfaces for additional accessories and automation systems
- Management and maintenance during operation without interruption while machine is running

KERN Micro Pro

Solution for precise serial production



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.

AT A GLANCE

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

KERN Pyramid Nano

Maximum precision for μ -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.

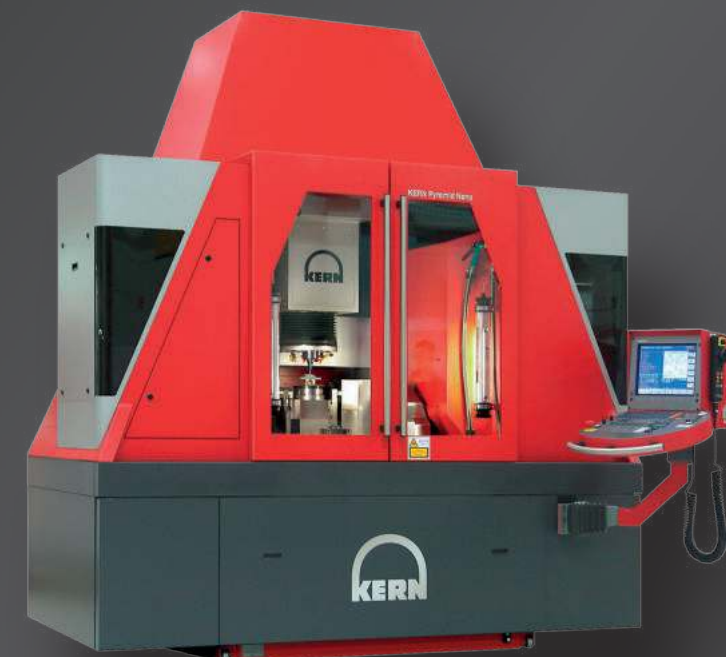
The optional jig grinding package allows efficient milling and grinding in a single clamping, making the KERN Pyramid Nano an incredibly productive milling and grinding solution.

AT A GLANCE






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

KERN Pyramid Nano

Perfection in every dimension



Machine comparison

Model range		KERN MICRO HD	KERN MICRO VARIO	KERN MICRO PRO	KERN EVO	KERN PYRAMID NANO
						
4th and 5th axis		Yes	Yes	Yes	optional	optional
Clamping weight max.	[kg]	50	50	50	35	250
Preference spindle power S1	[kW]	15	15	7	6	15
Nominal torque S1	[Nm]	5.9	5.9	3.4	1.1	5.9
Maximum speed	[min ⁻¹]	42,000	42,000	32,000	50,000	42,000
max. traveling distance X-axis	[mm]	350	350	350	300	500
max. traveling distance Y-axis	[mm]	220	220	220	280	500
max. traveling distance Z-axis	[mm]	250	250	250	250	400
max. feed/fast movement X-axis	[m/min]	60	30	30	16	30
max. feed/fast movement Y-axis	[m/min]	60	30	30	16	30
max. feed/fast movement Z-axis	[m/min]	60	30	30	16	30
max. acceleration X-axis	[m/s ²]	10	10	10	8	10
max. acceleration Y-axis	[m/s ²]	15	10	10	8	10
max. acceleration Z-axis	[m/s ²]	20	10	10	8	10
Amount of tools max. / type of tool holders		210/HSK 40	210/HSK 40	210/HSK 40	96/HSK 25	75/HSK 40
Control		Heidenhain TNC 640	Heidenhain TNC 640	Heidenhain TNC 640	Heidenhain iTNC 530	Heidenhain TNC 640
Length x width x height (without aspiration)	[mm]	2660 x 1634 x 2634	2660 x 1634 x 2634	2660 x 1585 x 2502	1960 x 1730 x 2190	2850 x 2830 x 3220
Weight	[kg]	5,500	5,200	5,200	3,000	8,000
Accuracy at the piece		< 2 μm	< 5 μm	< 10 μm	< 5 μm	< 2 μm
Automation		Internal/external	Internal/external	Internal/external	external	Internal/external
Drives / guidance systems		Linear motor/ hydrostatic guide	Ball screw/ bearing guide	Ball screw/ bearing guide	Ball screw/ bearing guide	Hydrostatic lead screw/ hydrostatic guide

Features

KERN Micro HD

With its innovative, practically wear-free micro-gap hydrostatics, linear drives and advanced KERN temperature management, the KERN Micro HD is the new benchmark in precision, long-term stability and dynamics. Together with the experience of KERN customers and the know-how of KERN application engineers, the KERN Micro HD is unbeatable. The optional coordinate grinding package allows efficient milling and grinding with only one clamping.



KERN Micro Vario

Re-designed and with many new developments, the second generation of KERN Micro sets new standards in terms of flexibility, precision and productivity. Great footprint, trimmed for productivity and precision, flexible and application-oriented, the KERN Micro Vario generates the decisive competitive advantage.



KERN Micro Pro

Since its market launch, the KERN Micro combines highest precision with an utmost of flexibility and highest performance. The KERN Micro Pro is the highly process-stable solution for the efficient serial production of precision parts. The ideal solution for getting started in precise machining.



KERN Evo

The KERN Evo is the result of years of consistent development work. The consequence of this continuous improvement is utmost precision and productivity, especially in the production of micro- and watch-parts. The Evo is a great benefit when milling higher quantities.



KERN Pyramid Nano

The KERN Pyramid Nano is designed for applications requiring the highest precision and surface quality. And the KERN Pyramid Nano is even suited for larger workpieces which require short machining times at the same time. The core of this machining center are the hydrostatically supported and driven axes, which provide virtually lifetime, free from wear, precision. The optional coordinate grinding package allows efficient milling and grinding with only one clamping.



Kern Microtechnik GmbH | Olympiastraße 2 | DE 82438 Eschenlohe
Tel: +49 (0) 8824 9101-0 | info@kern-microtechnik.com

Subsidiary Switzerland | Lerzenstrasse 4
CH 8953 Dietikon | Tel: +41 (0) 43 322 32 72

Kern Precision, Inc. | Subsidiary USA
1010 W Fullerton Ave | Addison, IL 60101 | Tel: +1 331 979 0938

Kern Asia Pacific | Sales and service location Shanghai
Unit 605-608, No Building 2, Xinglian Building | 1535 Hongmei Road, Xuhui District
Shanghai, China



CNC Machines Contract Production Production Processes Automation

www.kern-microtechnik.com

