

# GRINDING & SURFACE FINISHING

APRIL 2026



# THE COMPLETE PRECISION GRINDING PARTNERSHIP



CURTIS MACHINE TOOLS

COBORN DIAMOND TECHNOLOGY

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- ✓ Proven performance in demanding tool production

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**ENGINEERING TOMORROW'S PRECISION - TODAY**

# GRINDING & SURFACE FINISHING

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- Automotive Report
- Abrasives, Wheels & Discs
- Filtration
- Deburring
- Dust & Fume Extraction
- Honing & Bore Finishing



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## Swiss made

The theme of the recent STUDER Motion Meeting was "Swiss Made". The leading grinding technology manufacturer is naturally proud of its tradition of quality and this is reflected in the range of cutting-edge grinding machines currently available, especially the S23 universal cylindrical grinding machine launched last September at EMO in Hannover. In just a few months, the new model has attracted huge interest across the globe and this is reflected in Studer's strong position in the market.



Speaking to the 80+ press representatives gathered at the meeting from all over the world, Fritz Studer AG CEO Sandro Bottazzo gave an update of the company's strong performance in 2025, especially in the Asian and

North American markets. The leader in cylindrical grinding machines continues to benefit a broad range of customers in the aerospace, precision engineering, automotive and its suppliers, medical, tooling and energy sectors. In 2025, the company added 44 percent new customers, a high market share and orders from 32 countries.

Sales in the North American market are at a record high for 10 years, while there has also been strong growth in Asia, especially in China and India, as well as specific markets in Europe. Studer's updated portfolio comprises entry-level to high end grinding solutions, while there has been a record growth in service and maintenance.

At the event, the gathered press were treated to a comprehensive presentation on the Studer's apprenticeship scheme, with an impressive proportion of past students now in key jobs in the company.

The second focus was on the recently launched S23 universal cylindrical grinding machine, with its outstanding features, such as high precision, flexibility and small footprint. Sandro Bottazzo was naturally very positive about the new machine and its capabilities: "Thanks to its high-quality features, precision and flexibility, the S23 complements our portfolio in the entry-level and premium segments," he explained.



The advantages of the S23 demonstrated at the Motion Meeting included: compact design; distance between centres of 650 mm/1,000 mm, 29.6"/39.4" and centre height 175 mm, 6.9"; automatically swiveling wheelhead, B-axis for two external grinding wheels and one internal grinding wheel or a production wheelhead; intuitive operation with C.O.R.E. and StuderWIN; Standardised automation with STUDER easyLoad and insertLoad, as well as customised solutions.

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GrindingHub | Hall 9 - Booth B50

# Pioneering grinding technologies at GrindingHub

**F**ully automated, data-driven, precise: Artificial intelligence (AI), sensor technology and smart production control are turning grinding machines into intelligent manufacturing partners today.

This results in productive, flexible and self-optimising systems. GrindingHub 2026 will bring together the industry's "who's who" in Stuttgart from May 5th to 8th to engage in direct dialog with trade visitors and present pioneering high-tech solutions. From unmanned closed-loop manufacturing, stream finishing and automated compensation to grinding for humanoid robot components, sensor technology and AI for stable precision processes, there are numerous highlights to discover.

## Redefining the standard for grinding

"With intelligent automation 4.0, we have long since heralded the change," reports Marie-Sophie Maier, managing director of Adelbert Haas GmbH in Trossingen. "Intelligent, fully automated complete manufacturing has overtaken traditional complete machining. Today, extremely high productivity and flexibility are essential, as is zero compromise on precision. Turnkey



grinding? That's no longer enough. We are in demand as a partner who has mastered end-to-end digitalisation and automation and is putting this into practice." Fully automated closed-loop manufacturing is standard at Adelbert Haas. Grinding, measuring and grinding to perfection: 21 shifts per week, unmanned, efficient.

**What about service?** Marie-Sophie Maier continues: "Service is not a reaction, but prevention. Our Customer Care Centre solves problems before they arise. AI agents analyse machine data in real time, detect anomalies and initiate measures before a shutdown threatens: automatic ticket creation, prioritisation of critical alarms, log files at the touch of a button. Rule-based programming is a thing of the past. Today, we learn from data and act proactively.

"This makes customer service an attitude and a real competitive advantage. GrindingHub 2026 in Stuttgart offers the ideal platform to discuss these developments: How grinding technologies benefit from automation and AI and how solutions from Adelbert Haas will shape the future of manufacturing."

## Step by step, everything right from the start

"At GrindingHub, in addition to presenting new products for stream finishing and the manufacture of indexable inserts and microtools, we will be focusing on automation and production control," reveals Martin Winterstein, managing director of ANCA Europe GmbH in Weinheim. "The goal is to help users manufacture competitively under their given conditions through high quality, low manufacturing costs, and creative solutions."

As an example of this, ANCA, headquartered in Melbourne, Australia, presents a server-based system for digital production control, including app-based worker guidance and automated measurement and compensation. Similar to a traffic controller for tool production, the system "tells" each pallet and each machine what to do next for each order and gives the operating personnel



step-by-step instructions so that everything is done correctly the first time. It builds on existing ANCA and Zoller machines, allowing operators to continue using the hardware they are familiar with but the entire workflow is organised, digitised and seamlessly traceable.

For operators, the biggest change is that the necessary work steps are described clearly and unambiguously. Digital work instructions on a PC or portable device show which pallet is to be loaded, which program is already prepared on the grinding machine, when measurements need to be taken and how to respond to the measurement results. This eliminates time-consuming file searches, avoids most manual data entry and makes compensation and quality checks significantly easier and more reliable.

A closed measurement loop and automatic compensation ensure that batches remain within tolerance without the operator having to calculate or remember offsets. At the same time, all data is stored centrally so that every step can be traced. The result: A skilled worker can independently oversee a larger number of machines than before, new employees are trained more quickly, waste is reduced and the entire shift runs more smoothly and predictably.

## High-precision grinding for the future of humanoid robots

Transmission elements in humanoid robotics are mechanical components that transmit movements and forces from a drive to a joint or other moving parts. They are crucial for the efficiency, precision and dynamics of movements. Linear and rotary drives are combined in complex robotic systems: for example, rotary drives in hips and shoulders and linear drives in fingers, arms and legs. The manufacture of these components requires grinding processes that ensure the necessary dimensional accuracy and surface quality in order to meet precision requirements and keep noise emissions to a minimum.

"Our grinding machines guarantee high



**Smart grinding: Sensors and AI for stable precision processes**

“Current developments in precision grinding show a clear trend toward integrated, closed control loops at machine and process level. Modern machine tools combine classic NC and path controls with real-time sensor monitoring, integrated in-situ measurement technology, and increasingly also with additional measuring cells directly next to the machine, for example with coordinate measuring systems,” reports Prof. Bahman Azarhoushang, head of the KSF Institute at Furtwangen University. The goal is to significantly increase process efficiency and productivity without compromising on dimensional and geometrical accuracy or surface quality.

Integrated sensor packages continuously generate process data. Examples of this include force and vibration sensors, as well as sensors installed in drive technology to monitor current and voltage, for example in the spindle. This data is used by AI models to predict wear on the grinding wheel or to detect unstable process conditions, anomaly detection. In addition, it can be used to predict component quality for automatic optimisation of cutting parameters, such as feed rate, cutting speed, or infeed. This data also forms a central “process database” in which process-related expertise is stored and continuously enriched. This gives companies the opportunity to build up internal process knowledge in the long term and keep it available despite the shortage of skilled workers, regardless of the individual experience of individual employees.

“Modern intelligent grinding machines integrate particularly dynamic drives, high-resolution measuring chains and adaptive control algorithms that continuously analyse and autonomously optimise the grinding

process,” explains Professor Bahman Azarhoushang. “In my opinion, intelligent grinding technologies represent a decisive step toward robust, self-optimising manufacturing systems. The combination of sensor technology, integrated measurement technology and AI-supported process control enables more sustainable, economical and, at the same time, more consistent quality precision machining.

“The main challenge lies in the complete integration of these technologies into existing production environments, both from a technical and organisational perspective.

“Looking at GrindingHub, it becomes clear: The future competitiveness of industrial manufacturing locations depends largely on how consistently grinding processes are digitised, automated and operated in closed control loops,” concludes Professor Azarhoushang. “Intelligent machine tools and Artificial Intelligence will play a key role in this.”

**Grinding reimaged**

Both suppliers and users are facing unprecedented challenges, and precision grinding is also undergoing fundamental change. Automation, end-to-end digitalisation and AI-supported control loops transform traditional grinding processes into highly productive, self-optimising manufacturing systems. Fully automated closed-loop processes ensure quality, flexibility and cost-effectiveness, even when requirements are particularly high. Sensors, intelligent production control and data-based service are shifting the focus from reaction to prevention. **GrindingHub 2026**, held in the heart of Europe, will uniquely demonstrate how these technologies are shaping the competitiveness of industrial manufacturing in the long term.

dimensional and geometrical accuracy, process reliability and flexibility with high output. Thanks to our many years of experience in thread grinding, we are able to offer customised grinding solutions for all types of threads,” explains Jan Schmid, head of engineering and project planning at Erwin Junker Maschinenfabrik GmbH in Nordrach. “Our expertise guarantees maximum precision and quality, even for complex requirements.”

For machining key components for humanoid robots, such as joints and drives, the Black Forest-based company offers specialised grinding solutions with ceramic and electroplated CBN grinding wheels and grinding pins: In “internal thread grinding”, threads are ground directly from solid material. Cone and ball threads as well as special profiles can be manufactured with precision. Even the smallest internal thread diameters smaller than 10 mm can be machined reliably. In addition, nuts with an unfavourable diameter/length ratio can be machined without any problems.

“When grinding threaded spindles, even threads with high pitch angles can be produced thanks to the flexible machine concept,” explains Jan Schmid. “In addition to cone and ball threads, we manufacture custom profiles that are precisely tailored to customer requirements. For maximum flexibility, we offer solutions for single-tooth machining and multi-tooth machining for particularly high output.”

When “grinding thread rolls”, the entire machining process is carried out in a precise and efficient manner. “The external geometry, thread and gear teeth are manufactured in a single clamping process. Come and see our grinding solutions for yourself at GrindingHub in Stuttgart,” Jan Schmid adds.



### Combined grinding processes for greater process efficiency

GrindingHub 2026 will present the current state-of-the-art of grinding technology with a focus on topics such as hybrid machining systems and cross-process efficiency increases. How can sophisticated individual processes such as grinding or eroding be combined for even greater output and precision? When does the use of laser technology make sense? The trade fair will showcase how users can achieve higher material removal rates, less downtime and maximum process stability with state-of-the-art processes. GrindingHub will set the technological benchmark for networked, resource-efficient and high-precision manufacturing of the next generation.

### More efficiency through numerous combinations

"Today's tool manufacturers are striving for ever more efficient ways to produce their tools to customer specifications and to do so on an automated basis", says Tobias Trautmann, managing director of Vollmer Werke Maschinenfabrik GmbH based in Biberach an der Riss, Germany. "We support this goal with various sharpening technologies that can not only machine ultra-hard cutting materials precisely but also optimise manufacturing processes thanks to digital solutions and AI applications."

At GrindingHub 2026, the Vollmer Group will be showcasing its portfolio of grinding, eroding and laser machines that allow customers to machine ultra-hard cutting materials such as carbide, PCD (polycrystalline diamond), CVD (chemical vapor deposition) diamond or PcBN (polycrystalline cubic boron nitride). When it comes to efficiency, hybrid machines are of particular interest for sharpening tools faster and with higher quality.



Grinding machines are used by tool manufacturers to sharpen all cutting edges made of carbide or PcBN with diamond wheels. However, if tools cannot be ground or can only be ground to a limited extent, eroding or laser machines are used. Lasers have the advantage that, in contrast to erosion, they can also be used on non-conductive materials. The wear that happens on grinding wheels does not take place on these systems because the cutting edges are machined without contact during eroding and laser grinding. The tool machining also takes place without significant thermal influence.

Regardless of the sharpening technology in question, Vollmer's philosophy is that its machines are always suitable for automated tool machining in 24/7 shifts. Central robot systems control loading trolleys, pallet loaders or chain magazines and monitor the fully automatic complete machining process. Digital solutions in particular are currently being used to increase efficiency in automation, which is why Vollmer equips its machines with IoT gateways as standard in order to network them with their digital environments. Data from different machines is recorded, processed and managed via a central IT platform. Supported by AI-based algorithms, a chatbot provides information on documentation or historical data to answer queries about machine utilisation, the number of tools produced or missing parts.

**Productivity increases of up to 70 percent**  
Studer's WireDress technology is an example

of intelligently combined hybrid technologies in the field of grinding technology. It is integrated into high-precision CNC grinding machines for external cylindrical grinding and now also for internal cylindrical grinding. The full integration of electro-erosive dressing technology eliminates the need to manually dismantle and reset the grinding wheel for the dressing process. Christoph Plüss, CTO of United Machining Solutions Management AG, based in Bern, Switzerland, describes the electrical erosion process as follows: "In the WireDress process, metal-bonded diamond or CBN grinding wheels are dressed, profiled and sharpened in the machine using a wire. The



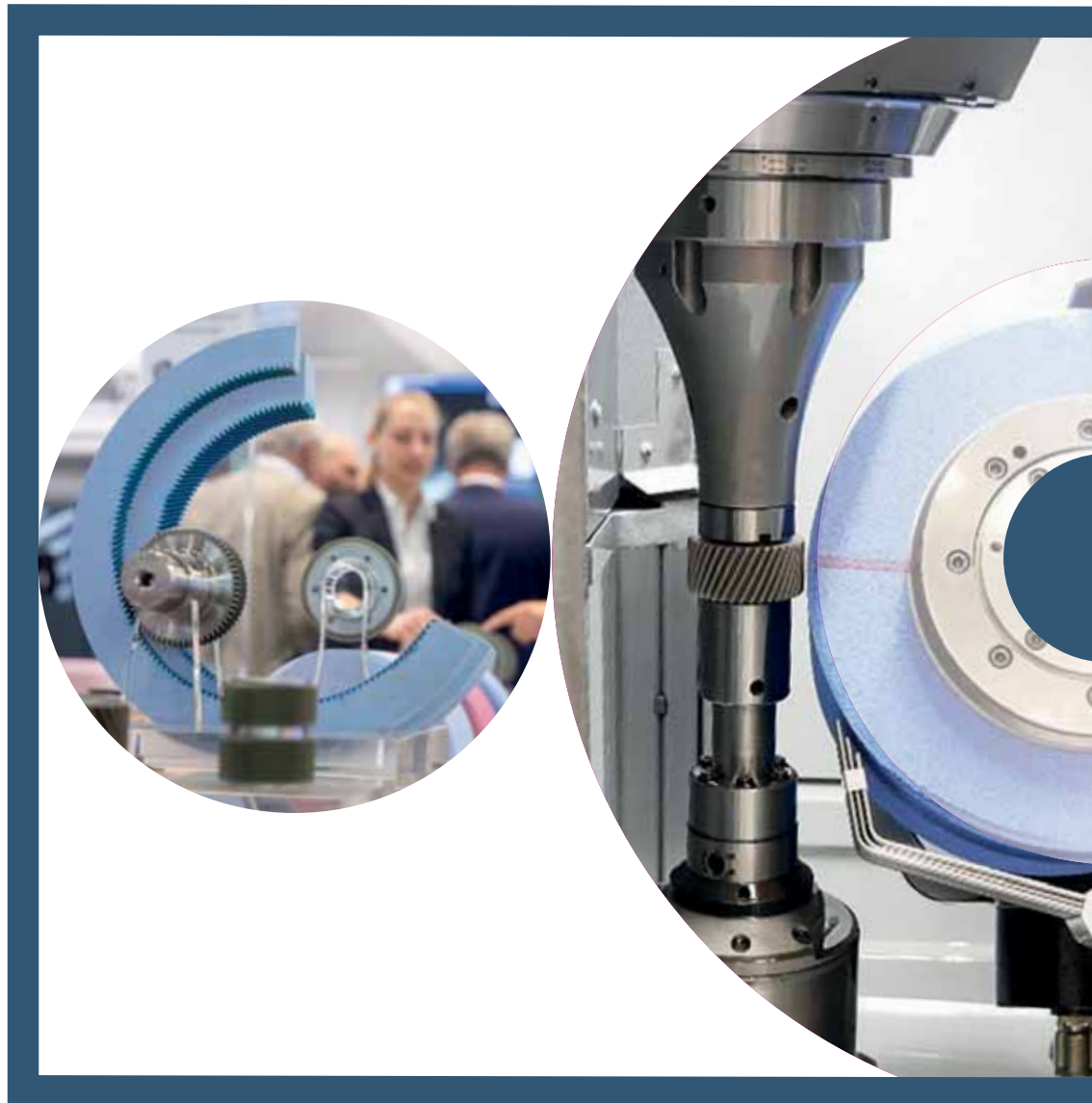
dressing process can be carried out at the full working speed of the grinding wheel. This massively reduces non-productive time. Especially when grinding high-alloy, hardened steels, carbides and ceramics, where metal-bonded grinding wheels are used, WireDress offers enormous advantages and provides productivity increases of up to 70 percent for certain materials when this technology is used."

The newly founded United Machining Solutions Group has now expanded its portfolio to include 15 brands in 2025, including Studer. The group is one of the largest machine tool manufacturers in the world with a total turnover of over 1.5 billion US dollars and, as usual, will be represented at GrindingHub and ready to engage in face-to-face discussions with its team of specialists.

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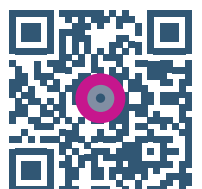
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# Grinding excellence: Engineering tomorrow's precision today

A strategic collaboration between Curtis Machine Tools Ltd and Coborn Diamond Technologies Ltd is bringing together more than 130 years of combined engineering experience in precision grinding.

The partnership unites two highly respected British manufacturers whose expertise spans complementary areas of the grinding sector. By combining their knowledge of high-volume cylindrical grinding and ultra-precision diamond tooling technologies, the companies aim to provide manufacturers with a broader range of solutions capable of meeting the increasingly demanding requirements of modern industry.

Across sectors such as automotive, aerospace, electronics, defence and advanced materials processing, manufacturers face constant pressure to deliver tighter tolerances, improved surface finishes and higher productivity. Meeting these challenges requires not only advanced machine tools but also a deeper integration of grinding technologies and process expertise.

This collaboration reflects that shift, combining specialist knowledge across multiple grinding disciplines to support the evolving needs of precision engineering.

## Engineering productivity in cylindrical grinding

Grinding has evolved far beyond its traditional role as a finishing process. Today it plays a central role in achieving final component geometry, surface integrity and dimensional accuracy in high-precision manufacturing environments.

One company addressing these demands is Curtis Machine Tools, a specialist in CNC grinding systems designed for production environments where reliability, consistency and throughput are essential.

At the core of the company's portfolio is the **Vector Series**, a family of compact cylindrical grinding machines engineered specifically for high-volume manufacturing.

The concept behind the Vector platform emerged from a market study conducted by

Curtis Machine Tools in 2005. The research revealed that more than 90 percent of cylindrical grinding applications involved parts with grinding lengths below 75 mm. This insight prompted the development of a machine platform optimised for the efficient production of smaller precision components such as fuel injection parts, turbocharger shafts and other high-accuracy automotive components.

The first Vector machine was launched in 2006, featuring a maximum grinding length of 100 mm and an integrated 3-axis automatic loading system. The inaugural installation was delivered to a diesel fuel injection manufacturer in India, demonstrating the concept's suitability for high-volume production.

Since then, the Vector platform has expanded into a comprehensive range of machines designed to deliver exceptional productivity, consistent accuracy and minimal downtime.

## A platform designed for production

The standard Vector machine offers a compact and efficient grinding solution suitable for medium- to high-volume manufacturing.

For even greater productivity, the Vector Twin incorporates a dual-spindle configuration housed within an indexing drum. This innovative arrangement allows grinding to take place simultaneously with loading and unloading operations, effectively eliminating idle time and enabling spark-to-spark cycle times of less than two seconds.

Further extending this concept, the Vector Quad features a patented four-spindle workhead capable of grinding two components simultaneously while additional parts are loaded and unloaded. This configuration significantly increases production throughput while maintaining high levels of process stability and precision.

Other machines within the Vector family address specialised grinding requirements. The Vector Pendulum offers enhanced flexibility through dual workheads positioned either side of a central grinding spindle, allowing different operations to be performed concurrently.

For ultra-precision applications, the Vector Nano delivers sub-micron accuracy through hydrostatic grinding and workhead spindles combined with advanced cooling systems and high structural damping. Such capabilities make it particularly suited to sectors including medical device manufacturing and advanced electronics.

Additional variants, including the Vector GFS (Grind From Solid), Vector Rotary, Vector Concentric and Vector Polygon, extend the platform further by enabling complex geometries, spherical profiles and high-concentricity grinding operations. Newer additions such as the Vector Thread/Worm and Vector XL continue to expand the capabilities of the platform to address specialised production challenges.



*Vector Quad grinding system: Designed for high-volume production, the four-spindle work head enables simultaneous grinding, loading and unloading operations to maximise productivity.*

## Expertise in ultra-hard material grinding

Coborn Diamond Technologies has established a global reputation for machines designed to process ultra-hard materials, including Polycrystalline Diamond (PCD), Polycrystalline

Cubic Boron Nitride (PCBN), Chemical Vapour Deposition (CVD) diamond and natural or synthetic single crystal diamond.

With a heritage of over 80 years in precision engineering, Coborn has developed advanced grinding technologies used in the manufacture of high-performance cutting tools for industries including Optical, aerospace machining, automotive manufacturing, defence, electronics and advanced materials processing.

## Planetary and reciprocating diamond grinding technologies

### The Planetary Grinding machine range, including the PG6 and PG3B systems.

The PG6 is an automatic ultra-high precision planetary grinding machine capable of producing extremely low waviness tools and complex geometries including elliptical, parabolic, hyperbolic and blended radii profiles. A closed-loop nano-stop system together with acoustic tracing technology ensures highly accurate finishing and process monitoring. The PG3B provides a semi-automatic alternative featuring a programmable pivot system controlled via touchscreen interface, enabling repeatable production of faceted tools and precision indenters.

Alongside these systems, Coborn also offers the RG Series, developed for the precision

grinding of PCD, PCBN, CVD diamond and other ultra-hard materials used in advanced cutting tools. The machines are widely used in the production of indexable inserts, brazed tooling and complex tool geometries.

Combining high-precision CNC control with high-speed grinding technology, the RG platform delivers excellent edge quality and dimensional accuracy while supporting both new tool production and tool reconditioning environments.

## Improving efficiency in diamond tool production

Among the company's latest developments is the TL1, a machine designed to support the preparation and finishing of single crystal diamond tooling.

The TL1 performs two important functions when used alongside Coborn's Planetary Grinding (PG) machines or third-party grinding equipment.

The first is the preparation of grinding wheels used in single crystal diamond grinding operations. Preparing these wheels can take up to three days, during which time high-precision grinding machines would otherwise be unavailable for tool production.

By transferring this process to the TL1, production machines remain operational,



*TL1 preparation and finishing system: Enables grinding wheel preparation and diamond tool lapping operations to be carried out offline, improving production machine utilisation.*

ensuring uninterrupted manufacturing. A single TL1 unit can prepare wheels for multiple grinding machines, significantly improving equipment utilisation.

The second function is table lapping, which produces the final cutting edge on new or refurbished single crystal diamond tools. By relocating this finishing process to a dedicated machine, manufacturers can maximise the productivity of their premium grinding systems.

## A broader capability for the grinding industry

By combining Curtis Machine Tools' expertise in high-productivity cylindrical grinding with Coborn Diamond Technologies' leadership in ultra-hard material machining, the partnership creates a powerful capability across the precision grinding sector.

Together the companies support applications ranging from automotive fuel injection and turbocharger components to ultra-precision diamond cutting tools. With more than 130 years of combined engineering heritage, the collaboration reflects a shared commitment to innovation, technical excellence and long-term customer partnerships.

As manufacturing industries continue to demand higher productivity, tighter tolerances and more complex component geometries, partnerships that unite specialised expertise are likely to play an increasingly important role in shaping the future of precision grinding technology.

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**GrindingHub | Hall 10 - Booth A60**



*Coborn PG6 ultra-precision planetary grinding machine: Designed for the manufacture of natural and synthetic single-crystal diamond tools with complex geometries and exceptionally low surface waviness.*

# Visit the **EMAG Group** at **GrindingHub**

EMAG will be presenting a comprehensive portfolio of grinding machines at the Stuttgart Exhibition Centre in Hall 9 - Booth B30. As an international trade fair for grinding and surface technologies, GrindingHub brings together experts from across the industry every two years.

In Stuttgart, EMAG will showcase solutions ranging from universal grinding and gear grinding to automated production cylindrical grinding. Experience its grinding machines live and talk directly to the experts about your manufacturing requirements.

## Exhibition highlights:

### **EMAG UG 400:** Universal grinding machine for internal, external and out-of-round grinding

The UG 400 universal grinding machine from the EMAG UG series is designed for precision internal, external, out-of-round and face-grinding in a single setup. Thanks to its rigid machine base and direct-drive motor spindles with up to 11 kW of power, the UG 400 achieves consistently high machining quality with minimal vibration.

The swivelling B-axis with a positioning accuracy of  $\pm 2$  arc seconds enables flexible grinding strategies even for complex geometries. A wide variety of spindle configurations are possible with external cylindrical, internal cylindrical and double-head grinding spindles. With a grinding length of 400 mm, the compact design of the UG 400 is particularly suitable for tool and fixture construction as well as gear manufacturing.

The FANUC control with dialog HMI ensures intuitive operation and high programming flexibility. Whether shafts, gears, or precision rings, the UG 400 covers a wide range of workpieces and combines flexibility with productivity at a good price-performance ratio. The UG machines are available with a grinding length of up to 1,500 mm.

### **G 500 HL:** Profile grinding of tooth profiles with maximum flexibility

The G 500 HL is built for profile grinding across a wide range of workpieces. Capable applications include straight and helical

external and internal tooth profiles, spline tooth profiles, custom XY coordinates shapes, worms, rotors and helical workpieces such as ball screws or trapezoidal screws with the corresponding nuts. With a module range of 0.5 to 22 mm and a maximum workpiece dia. of 500 mm, it covers a wide range of applications.

The quick-change spindles for internal and external gear teeth and the ceramic tool technology ensure short setup times and high process flexibility. The machine is also compatible with both electroplated and dressable CBN grinding wheels. The integrated measuring function for internal and external gear teeth ensures quality directly in the machine.

### **WPG 7 with automation:** External cylindrical grinding on just 4 m<sup>2</sup>

The WPG 7 external cylindrical grinding machine combines high precision with a minimal footprint. The entire machine, including the electrical cabinet, lubrication and cooling system, requires only around 4 m<sup>2</sup> of floor space. This makes it ideal for integration into existing production lines or workshop environments with limited space.

EMAG will be showcasing the WPG 7 with automation at GrindingHub 2026. Connection to a linear gantry enables short workpiece changeover times, for economical batch production of small shafts and pinions with a workpiece length up to 250 mm.

The powerful grinding wheel drive with speeds of up to 50 m/s and grinding wheel diameters of up to 500 mm ensures high cutting volumes while maintaining high surface quality.

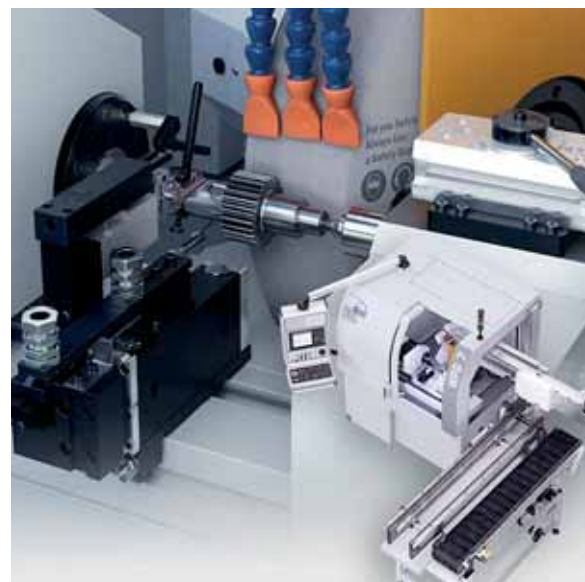
Experience the latest designs and developments live and see the performance and quality of EMAG machines for yourself. The company looks forward to welcoming you to its stand in Hall 9, B30 and working with you to find the best solutions for your requirements.

**EMAG Systems GmbH**

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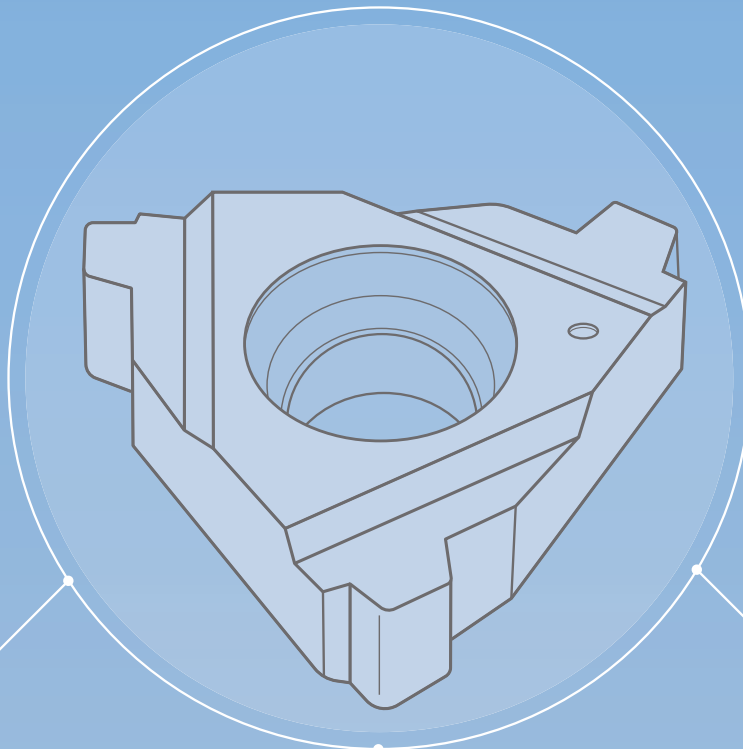
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# INSERTSPRO

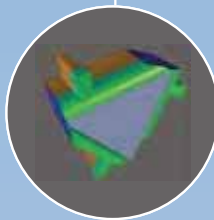
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**Rapidly ready for precision grinding**

# Vollmer increases efficiency in tool machining with automation and AI

At GrindingHub 2026, VOLLMER WERKE Maschinenfabrik GmbH will present itself as a competent partner for tool manufacturing. In Hall 7, Stand D71, the Biberach-based sharpening specialist will showcase its comprehensive portfolio of grinding, erosion and laser machines for the efficient machining of ultra-hard cutting materials such as PCD, CVD diamond, PcBN and carbide. The focus will be on automated production concepts, digital solutions and the targeted use of Artificial Intelligence (AI).

## Hybrid machine concept as the key to efficiency

With increasing demands for precision and cost-effectiveness, Vollmer is specifically focusing on the hybrid machine concept of the VHybrid 260, which combines mechanical grinding processes with contactless EDM technology and digital solutions in a single machine. The VHybrid 260 not only represents the combination of several sharpening technologies but also forms the basis for fully digitalised and automated production processes.

A central element is the Vpulse EDM generator, which enables the highly precise production of even the smallest micro-tools with diameters of 0.2 mm. During the erosion process, surface finishes of up to 0.05 µm Ra can be achieved. In addition, cutting edge radii of up to 1.5 µm can be produced. This can eliminate the need for subsequent grinding of functional surfaces, avoiding tolerance risks caused by re-clamping as well as additional process-intensive steps, thereby significantly reducing overall production costs.

At GrindingHub 2026, Vollmer will present its portfolio of grinding, erosion and laser machines that allow customers to machine ultra-hard cutting materials such as carbide, PCD, CVD diamond and PcBN. With a view to greater efficiency, hybrid machines in particular make it possible to sharpen tools faster and with higher quality.

This can be seen, for example, in full-head PCD tools with complex geometries: within a single clamping operation, contours can be ground in carbide while the cutting edges in the PCD head are eroded.

This approach not only shortens main and auxiliary processing times but also ensures a



virtually seamless transition between the PCD head and the carbide blank without irregularities or steps. The VHybrid 260 demonstrates particular strengths in cylindrical EDM. This contactless, highly precise process enables economical machining. Micro-tools in particular benefit from this, where dimensional accuracy, surface quality and reproducible processes are decisive. The combination of cylindrical grinding and cylindrical EDM enables the production of extremely small tool diameters with high precision, process reliability and efficiency within a continuous, automated process chain.

## Process for producing defined edge chamfers

For drilling tools, a rounded edge chamfer proves advantageous for several reasons. Sharply eroded cutting edges can lead to problems in various application scenarios, particularly in the area of PCD drilling tools. A cutting edge without a rounded chamfer can result in unstable cutting, increased wear, reduced tool reliability and deterioration in workpiece quality.

A rounded chamfer not only creates a defined cutting-edge contour with reduced chipping but also improves the stability of the cutting edge as well as the surface structure and roughness in the cutting-edge area. This leads to longer tool life, increased process reliability and improved workpiece quality. By integrating the

chamfering process into the VHybrid 260, users are able to perform complete machining on a single machine. Geometry machining and the production of the rounded chamfer, whether eroded or ground, can be carried out in one clamping operation. Through the integration of LaserCheck, a closed-loop process can also be implemented, eliminating the need for manual adjustments during machining.

## Automation and digitalisation for 24/7 production

Regardless of the sharpening technology used, all Vollmer machines are consistently designed for automated 24/7 production. Central robot systems handle loading via carts, pallet loaders or chain magazines and monitor the fully automated complete machining process.

A newly developed ND gripper with an automatically adjustable gripping diameter significantly expands possibilities in tool handling. Its flexible adaptation to a wide range of tool types increases both process reliability and versatility in operation. At the same time, the innovative solution helps noticeably increase efficiency in automated loading.

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# KAPP NILES to exhibit at GrindingHub

## Continuous generating grinding

For continuous generating grinding all tooth flanks of the workpiece are machined simultaneously during one stroke of the helical tool. This is accomplished with a synchronised constant rotation of the workpiece relative to the grinding tool. Due to the kinematics of this process, indexing and positioning times are greatly reduced, resulting in low cycle times. Therefore, it is a highly productive and cost-effective gear grinding process well suited for small and medium-sized gears. Both, dressable ceramic tools and non-dressable CBN tools can be used (in cylindrical or globoid design).

## Discontinuous profile grinding

Profile grinding of gears describes a process in which the tooth flanks are machined gap after gap with single or multi-ribbed profiled tools. This process offers the highest flexibility while still achieving optimum quality. Discontinuous profile gear grinding is mostly utilised for small batch series and prototype manufacturing. Dressable ceramic wheels as well as non-dressable CBN tools can be used for this grinding process.

KAPP NILES provides a wide spectrum of machine models suited to the processes of profile and generating grinding.

The innovative KN grind user interface allows intuitive parameterisation of the machining task. The user is guided and supported when entering the workpiece and technology data. A flexible machining sequence is then defined via a sequence control. The user can view and influence the status of the machining process at any time.

## Profile grinding machines customised for your requirements

KAPP NILES is one of the market leading manufacturers of profile grinding machines. It offers worldwide service and sales of machines for high-precision profile grinding of gears and profiles. Using KAPP NILES profile grinding machines, you are able to grind such workpieces as gears, shafts and profiles with the highest accuracy.

## Tools for special requirements

The new CBN pro tools from KAPP NILES are particularly well suited to aerospace applications. While standard CBN tools previously achieved surface qualities of  $Ra < 0.4 \mu\text{m}$ , these new grinding wheels enable



*With CBN pro, the new tools from KAPP NILES, surface qualities of  $Ra < 0.2 \mu\text{m}$  can be achieved on the workpiece.*



*Several grinding wheels can be used simultaneously on the grinding spindles of the VX machines.*

surface qualities of  $Ra < 0.2 \mu\text{m}$  on the workpiece. In addition, an optimised profile shape with  $ffa < 1.0 \mu\text{m}$  can be achieved on the tool. Improved reproducibility of surface finish and profile geometry reduces adjustment effort during tool setup and significantly increases process reliability for customers.

KAPP NILES is a globally operating group of companies with high-quality and economical solutions for finishing gears and profiles and is partner for companies from numerous industrial sectors in the mobility, automation and energy segments.

The perfect interaction between machine, tool, technology and metrology enables extremely precise machining to a thousandth millimetre.

## Digital solutions

Digital solutions from KAPP NILES are displayed in the software platform KN assist. Its digital products aim to generate the greatest possible added value for you. Quality, availability, efficiency, resources, user-friendliness and service play a major role here. The company focusses on the core areas of connectivity, production and support in order to master all current and future challenges together with you. The digital solutions thus stand for a perfect interaction of efficient processes around its machines.

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**GrindingHub | Hall 7 - Booth A40**



# Details make Perfection and perfection is not a detail

(Leonardo da Vinci)



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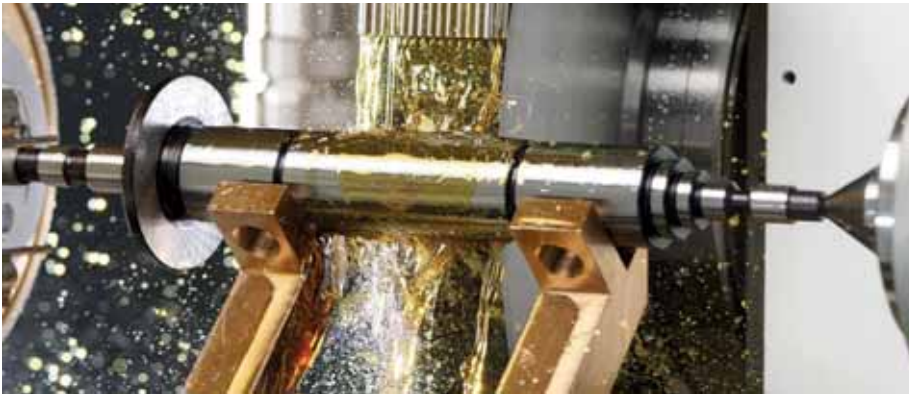


**GRINDING HUB**

Stuttgart, 05.-08.05.2026

Hall 10 Booth C27

# Grinding the future at GrindingHub



Innovative grinding solutions meet intelligent automation, customised software and digital services. This is what Erwin Junker stands for. Passion and innovative strength have always driven the company.

Its work produces machine concepts that combine efficiency and sustainability with technological expertise. The company thinks holistically, from individual grinding machines to turnkey complete solutions.

Its grinding solutions are key technologies for essential fields of the future: mobility in transition, the global energy shift and the next generation of intelligent robotics. Whether in the powertrain of combustion, electric, or hydrogen vehicles, in the machining of components for wind, hydro and solar power, or in the high-precision production of complex parts for humanoid robots, its technologies make a decisive contribution to progress.

## Experience the JUMAT 3S live at the tradeshow

The JUMAT 3S cylindrical grinding machine sets new standards in grinding high-speed shafts. See for yourself the uncompromising precision of this technology. Whether longitudinal grinding of diameters or highly accurate grinding of shoulders and shaft ends with CBN, the JUMAT 3S delivers first-class results.



## Versatile in every regard

Quality, productivity, availability, the JUMAT external and internal cylindrical grinding machine leaves nothing to be desired. Various

sizes and a large number of wheelhead versions offer unrivalled versatility. Paired with the concentrated expertise of JUNKER, each machine is specially matched to the customer's requirements.



## Grinding process

During external cylindrical grinding, the workpieces are clamped between tips or in a collet chuck. To increase productivity, grinding wheel sets are used for some applications. The JUMAT uses the straight and inclined plunge-cut grinding process. With straight plunge-grinding, the cutting and feed movement is carried out radially to the workpiece. The diameters are ground either in one feed or with several feeds and axial twisting.

With inclined plunge-cut grinding, the grinding wheel is at an angle and the wheelhead (B-axis) is swivelled. The X- and Z-axis interpolate. This makes it possible to grind the diameter and flat surfaces in a single feed. To grind grooves or to pre-grind threads, a galvanically bonded grinding wheel is usually used.

## External cylindrical grinding

Internal cylindrical grinding enables precise grinding of inside functional surfaces, such as drilled holes, cones or flat surfaces. High-speed grinding spindles are used to achieve the

desired cutting speed, despite the smaller grinding wheel diameter.

## Internal cylindrical grinding

The cylindrical grinding machines of the JUMAT series can perform both OD and ID grinding in a single clamping setup. CBN and diamond grinding wheels enable high-speed grinding, provide for high cutting performance and enable grinding of difficult materials.

## The economical multi-talent for any use

### Highlights

- High dimensional accuracy thanks to various measuring systems
- Long tool life through use of CBN or diamond grinding wheels
- Versatility due to a large number of wheelhead versions
- Minimised undulations due to grinding wheel balancing on two levels
- Fast changeover through patented 3-point mounting interface

## Centre drive

The centre drive is a special drive system which clamps the workpiece in the centre and drives it via a servomotor. This enables both workpiece ends to be ground at the same time.

## Grinding of steering rods

In the automotive industry, electromechanical, axially parallel power steering systems are increasingly used. The JUMAT grinds the outside thread of the steering rod in a single clamping from a solid blank. Pre-grinding is carried out with galvanically bonded grinding wheels and finish grinding with vitrified bonded CBN grinding wheels.

## Grinding of ball screw nuts

The double workpiece headstock, with two opposing clamping devices, minimises the downtime when grinding threads of ball screw nuts, while grinding is being carried out on one side, loading and unloading, positioning and clamping are carried out on the other. The only downtime, swivelling by 180° in less than three seconds.

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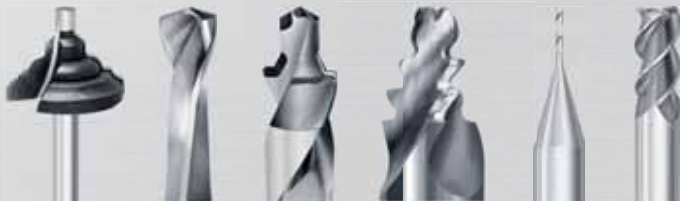
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**GrindingHub | Hall 10 - Booth C70**

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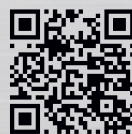
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Product-  
portfolio



# Advanced Grinding Solutions at the GrindingHub exhibition

No less than eight of Advanced Grinding Solutions (AGS) Principals are exhibiting at this year's GrindingHub event.

**Tschudin** (centreless grinders) will be displaying its Tschudin Cube grinding machine in **Hall 9 - Booth D50**. This has been designed for the production of parts from 0.1 to 20 mm in diameter. The Tschudin Cube centreless grinding machines enable end users to achieve significant productivity gains and the machines particularly quick and flexible changeover times minimise machine downtime. What sets the Cube machine apart is its very small size and radical open design for easy access.



**Comat**, who are in **Hall 7 - Booth B57**, are specialists in high-quality filtration systems for metalworking oils and emulsion, ensuring  $\leq 3 \mu\text{m}$  filtration quality for superior machining results. Its super-filtration technology extends



oil, tool and machine life; enhances component precision and reduces operating costs. Cost studies have shown that Comat systems are considerably cheaper to run than other systems that use candles, whose running costs are up to four times greater. It is no surprise that Comat is trusted by over 20,000 machines globally.

**Danobat** is using the GrindingHub event to showcase its latest machines. The Danobat group comprises of three leaders in their chosen fields: Danobat, Overbeck and Hembrug. The Danobat range includes internal grinding machines, external grinding machines and combined internal/external machines. It also

covers machines with multiple grinding spindles (up to four in the case of internal grinding) and machines that can also grind faces and radii, as well as OD and ID work. Overbeck manufactures a range of internal grinding machines for bores down to 1 mm in diameter. Hembrug is a Dutch leader in ultra-precision hard turning lathes and hybrid machines. Danobat are in **Hall 9 - Booth B70**.

**DLyte** machines use a patented dry electropolishing process, an innovative, non-abrasive technology that finishes metal parts without using liquid electrolytes. In a single automated step, DLyte can polish and deburr steel, stainless steel, cobalt chrome, titanium, aluminium, nickel and precious metals. Surface finishes below  $0.09 \mu\text{m Ra}$  are achieved with zero impact on part geometry. Ideal for components such as bone screws, implants, turbine blades and cutting tools, DLyte provides a flawless, scratch-free finish, even on complex geometries and without the micro-marks left by traditional polishing methods. DLyte are exhibiting at the sister Surface Technologies show and you will find the company in **Hall 1 - Booth A22**.

**Krebs & Riedel**: With over 100 years of expertise, Krebs & Riedel are leaders in high-performance grinding wheels. Its continuous innovation in grain and bonding technology drives performance across conventional, CBN and diamond wheels. Krebs specialise in gear and thread grinding wheels, with solutions for machines like KAPP NILES, Reishauer, and Gleason. CBN wheels range from 3 mm to 900 mm, with speeds up to 160 m/s. Jig grinding tools are also available. Krebs delivers reliable, high-precision performance. You will find the company in **Hall 10 - Booth C30**.

**Gerber** offers a range of brushed-based deburring and polishing machines for a large variety of components. With its comprehensive range of modern machines and over 60 years of experience in deburring, rounding edges and



polishing, René Gerber AG is also your reliable specialist when it comes to outsourcing work as it has a fully equipped workshop for processing parts on a subcontract basis for you. You will find Gerber in **Hall 10 - Booth D37**.

**Nova** is a leading manufacturer of high-performance CNC grinding machines, specialising in internal, external, and combined grinding applications, with a particular focus on



the bearing industry. Its machines are renowned for precision, speed, and uptime, featuring easy access for quick changeovers and maintenance. Nova is in **Hall 10 - Booth A67**.

**FLP** offers a wide range of high-precision twin and single-sided lapping and fine grinding machines, from compact 380 mm models to massive 4 m systems handling parts up to 100 tonnes. Alongside new machines, FLP also



supplies fully rebuilt machines, spare parts and retrofits for all makes and models. FLP also offers subcontract services, producing over 15 million lapped parts annually. FLP are in **Hall 10 - Booth C40**.

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# Kellenberger expands its grinding portfolio in the entry-level segment

The Swiss grinding specialist Kellenberger is presenting two new cylindrical grinding machines at the Grinding Hub fair in Stuttgart, the KELLENBERGER K8 and the KELLENBERGER K10, significantly expanding its machine portfolio for beginners and smaller companies.

Kellenberger cylindrical grinding machines are characterised by maximum precision, process reliability, productivity and flexibility. Until now, the range available to dedicated grinding professionals extended from the cost- and cycle-time-optimised, energy-efficient universal cylindrical grinding machine K10, through the flexibly configurable K100, up to the premium-class K1000 and VM1000. All Kellenberger cylindrical grinding concepts are optimally configured for their respective application areas and can be expanded with a wide range of options.

With the new KELLENBERGER K8 cylindrical grinding solution, Kellenberger offers an optimally configured standard machine in which advanced equipment options have been deliberately omitted. The K8 was designed for beginners and smaller companies looking for a cost-effective machine without having to compromise on Kellenberger's proven premium quality.

This includes the stability and rigidity required for a successful grinding process, ensured by the solid machine bed cast in a single piece. The V-flat guideways in the Z-axis also contribute to this, featuring a special coating to prevent friction losses. High-quality Fagor measuring systems with a resolution of 0.05 µm guarantee maximum precision throughout the grinding process.

The K8 is ideally suited for grinding workpieces in small and medium batch production.

With a centre height of 200 mm, a centre distance of 1,000 mm and a maximum grinding diameter of 380 mm, the K8 covers a wide range of parts. The grinding head can be equipped with an external grinding wheel and an internal grinding spindle. The FANUC 0i-TF control system and user-friendly standard grinding software for external, internal and shoulder grinding ensure excellent grinding results.

Unlike the K10, K100, K1000 and VM1000 series, the KELLENBERGER K8 does not have a loader interface. The KELLENBERGER K8 is distributed through its own sales structure,

which also integrates the service network in accordance with the Kellenberger standard.

## More features and a wide range of options: The new KELLENBERGER K10

In addition to the K8, the advanced universal cylindrical grinding machine KELLENBERGER K10 stands out with new features and an expanded range of options. These include, among other things, active longitudinal positioning, which enables precise position control of the workpiece during external, face and internal grinding.

The universal grinding head of the K10 accommodates two external grinding wheels, Ø 500/400 mm, as main and auxiliary wheels, as well as a directly driven high-frequency internal grinding spindle available in two speed ranges: 6,000–40,000 rpm and 10,000–60,000 rpm. The continuous Kellenberger table profile, already proven in the K100 and K1000 and suitable for all standard and optional configurations, is also used in the K10. A special feature is the low-maintenance energy supply via table interfaces. The dressing interface running along the entire rear side of the table reduces setup time and expands dressing options.

For extended machining capabilities, the KELLENBERGER K10 offers generous X- and Z-axis strokes, X = 365 mm/Z = 1,150 mm. The low-maintenance, high-precision linear guide in the X-axis and the V-flat slideways in the Z-axis are equipped with optical, absolute linear measuring systems. The B-axis is

designed as an automatic indexing axis (1°) with high positioning accuracy and a swivel range of +30°/-210°.

Like the high-performance machines K100, K1000 and VM1000, the KELLENBERGER K10 is equipped with the powerful FANUC 0i-TFP control system featuring a 19-inch touch control panel and Kellenberger user interface. The BLUE Solution software with Object Guide, ISO Guide and DXF import enables fast programming and setup, even for inexperienced operators. The BLUE Solution is continuously developed by Kellenberger's software experts and enhanced with innovative features for process optimisation. These features include the structure-borne sound sensor gTOUCH and the semi-automatic balancing system gBALANCE. The latest program enhancements for optimal grinding processes include the quality measurement control gMEASURE and grinding time monitoring gTIME. The newest BLUE Solution edition will be demonstrated at the GrindingHub. Visitors can also look forward to a presentation of the company's new in-house component manufacturing. In the future, Kellenberger will produce key machine components, essential for achieving the highest precision standards required by the company, at its Goldach facility. These include, among others, spindles and grinding heads.



At the GrindingHub, Kellenberger will also showcase its proven cylindrical grinding concepts for the highest demands: the KELLENBERGER K100, KELLENBERGER K1000 and KELLENBERGER VM1000. The Kellenberger 100 is available with centre distances of 1,700/1,000 and 600 mm and a centre height of 200 mm and is designed for workpiece weights of up to 200 kg. High grinding wheel drive power ensures high productivity, while the new Z-guide system delivers high profile accuracy. The C-axis with direct drive provides increased precision in non-cylindrical grinding. The K100 features a tandem grinding head with 10 grinding head variants.

The KELLENBERGER K1000 is equipped with hydrostatic guideways in all main axes for maximum form accuracy in grinding tasks involving interpolating axes. The CNC-controlled B-axis for the grinding head is hydrostatically mounted and therefore wear-free. It features a direct drive with a water-cooled high-torque motor and an angular measuring system with a resolution of 0.1 arcseconds.

The K1000 is optionally available with centre distances of 1,000/1,600 mm and centre heights of 200/250 and 300 mm. More than 30 different grinding head variants with external and



internal grinding spindles are available as standard, covering virtually every machining requirement.

The VM1000 is optimised for flexible, universal internal and external cylindrical machining of complex workpieces up to 300 mm in length. The range of workpieces includes the smallest individual parts for fuel injection systems in car engines, ball bearing rings, transmission components, hydraulic components and complex components used in machine tool construction.

The special feature of the VOUMARD 1000 are the two highly precise hydrostatic B-axes. The spindle turret on the B1 axis is equipped with a

uniquely compact grinding spindle head with a flexible spindle arrangement. This allows spindles and measuring sensors to be optimally positioned, enabling the machining of virtually any workpiece geometry as well as multiple internal and external grinding operations in a single clamping setup.

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# From edge preparation to coating performance

## Why Vapormatt should be on your GrindingHub must-visit list

At GrindingHub, the most valuable exhibition conversations are often about how a supplier can help solve a production challenge. That's likely to be the case with Vapormatt, whose presence at the exhibition should be of particular interest to tool manufacturers and surface finishing specialists looking to improve edge preparation, coating readiness and process consistency.

Vapormatt's presence at GrindingHub (Stand E23, Hall 9) is an opportunity for visitors to discuss their specific requirements with a specialist team that understands the demands of cutting tool manufacturing, insert finishing and precision surface preparation. Whether the objective is improved repeatability, more controlled edge honing, better preparation for PVD and CVD coating, or a more efficient route from manual blasting to automated processing, the stand offers a chance to explore the practical options.

That matters because wet blasting is no longer viewed simply as a secondary finishing process. In many tooling environments it's become a tightly controlled production stage, closely linked to tool performance, coating adhesion and consistency from batch to batch. As expectations rise around process assurance and repeatability, manufacturers increasingly need to evaluate not only what a machine can do, but which type of system is best suited to their own production volumes, footprint

limitations and automation goals. Vapormatt's role at GrindingHub is to help visitors have exactly that conversation.

In the field of round shank tools, discussions on the stand are likely to centre on three of the company's most relevant solutions: the Puma+, in vertical with satellites configuration, the Oncilla and the Oncilla Cub. These machines provide a useful framework for understanding the range of wet blasting options available to manufacturers seeking greater control over tool preparation.

The Puma+ represents a practical automated step for companies looking to move beyond manual blasting methods. It's a strong point of reference for visitors interested in more structured batch handling, greater consistency and a compact route into automated processing. For manufacturers who want to improve process control without immediately committing to the most advanced robotic platform, it is a highly relevant starting point for discussion.

For visitors with more demanding requirements around consistency, edge preparation and coating readiness, the Oncilla is likely to be a key talking point. Developed as a robotic wet blasting system for round shank tools, it reflects the increasing importance of precise and repeatable preparation ahead of coating. Its appeal lies in the level of control it offers, particularly for manufacturers working

in medium to high volume production environments where uniformity, traceability and process stability are critical.

Alongside it, the Oncilla Cub extends that same conversation to operations where footprint is a more important constraint. Compact, process-focused and suitable for both development work and production use, it's relevant to companies that require high levels of process control but do not necessarily need the scale of a larger automated system. That makes it especially pertinent to visitors balancing limited floor space with increasingly demanding technical expectations.

Vapormatt's relevance at GrindingHub, however, extends beyond round shank tools. For manufacturers of cutting tool inserts, the company can also discuss a well-established range of wet blasting systems developed specifically for insert finishing. These include the Tiger, Tiger+, Sabre and Jaguar, each of which plays a role in helping manufacturers address the critical stages of insert preparation and finishing.

The Tiger has long been associated with high-capacity insert finishing and is an important reference point for manufacturers looking at automated wet blasting as a means of improving consistency and throughput. The Tiger+ builds on that platform with additional process flexibility, making it particularly relevant where more complex insert geometries or multiple finishing stages are involved. In practical terms, these systems support discussions around edge preparation, surface conditioning, cleaning, post-coating





finishing and the overall drive for greater repeatability in insert production.

The Sabre and Jaguar add further breadth to that offer. Both are relevant where manufacturers need high consistency of processing, but with different emphases in terms of configuration, programmability and flexibility. For visitors involved in insert manufacture, this gives Vapormatt a broader platform for discussion: not a single prescribed answer, but a range of machine concepts that can be matched to part geometry, capacity requirements and the desired level of process control. That is especially important in insert finishing, where the relationship between edge condition, surface quality and downstream coating performance is too critical to be treated as a one-size-fits-all exercise.

There is also a strong reason for bandsaw blade manufacturers to visit the stand. Vapormatt's Profelis machine is designed for

continuous in-line wet blasting applications and is particularly relevant to bandsaw blade finishing. In this area, wet blasting can contribute to several important process objectives, including cleaning, edge honing to a specific K-factor, peening known areas of weakness and surface preparation for oils or coatings. For manufacturers looking to achieve a cleaner, more reactive and more uniform blade surface, Profelis provides a valuable point of discussion.



This underlines what makes the Vapormatt stand worth visiting. It's about arriving with a requirement and leaving with a clearer sense of the most appropriate solution. Some visitors may be assessing how to replace manual or inconsistent processes. Others may be looking at the relationship between edge preparation and coating performance. Some may be focused on insert finishing, others on round shank tools

or bandsaw blade applications. Vapormatt's strength is that it can frame those challenges against proven machine platforms and help visitors identify the route that best fits their application.

For the grinding and surface finishing sector, that makes the stand especially relevant. In a market where competitive advantage increasingly depends on process control and consistency, manufacturers need informed technical discussions as much as they need equipment specifications. GrindingHub provides the setting and Vapormatt offers the expertise to make those discussions productive.

#### About Vapormatt

Vapormatt pioneered wet blasting technology and supplies robotic, automatic and manual systems for precision industries. With more than 40 years of experience, its solutions help improve product performance, consistency and sustainability across manufacturing sectors.

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GrindingHub | Hall 9 - Booth E23





# Vapormatt

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Technical commitment

# First contact under control

## Measurably reducing gap time with acoustic emission

In grinding, every second of process time counts. However, variation in the contact point between wheel and part prevents an “ideal” cycle start: wheel wear, part runout, clamping conditions, tolerances and thermal effects shift the point of first contact, so the approach often has to be safeguarded with search windows and safety margins.

This air grinding is the most inefficient part of the grinding cycle. It consumes cycle time without removing any material. In addition, on older machines the first contact is sometimes still checked visually or audibly inside the machine, a practice that is no longer compatible with modern safety regulations.

Looking more closely at the air-grinding phase, it becomes clear that in many processes the dominant portion is not the rapid traverse itself, but the slow approach, or Gap, that follows. A large search window is used and the axis is moved a few seconds longer “for safety” until the first contact is clearly established. It is precisely this slow approach that consumes valuable time. As a result, this gap phase is often the part of the process where seconds per cycle are “hidden” and can be unlocked through optimisation.

### Acoustic emission enables early, process-proximate detection of first contact

For contact detection, conventional signals such as spindle current, power or axis load are of limited suitability in many applications because they typically respond clearly only once a more stable engagement has already been established. This requires a longer and slower approach phase.

Acoustic Emission (AE), by contrast, uses high-frequency structure borne signals that are generated as soon as contact begins in the



grinding zone. This makes first contact directly detectable as a discrete event, rather than something that must be inferred from a longer contact duration.

Instead of carrying several seconds of air grinding as a safety reserve, the search range can be limited to a clearly defined, smaller window. As soon as the AE signal reliably indicates first contact, normally within milliseconds, the process can transition to the next grinding cycle phase in a controlled manner without the additional approach speed seconds that are otherwise necessary simply because the contact point cannot be detected early enough or with sufficient certainty. The result is a valuable saving in cycle time.

### Controlled approach as an integral part of the grinding cycle

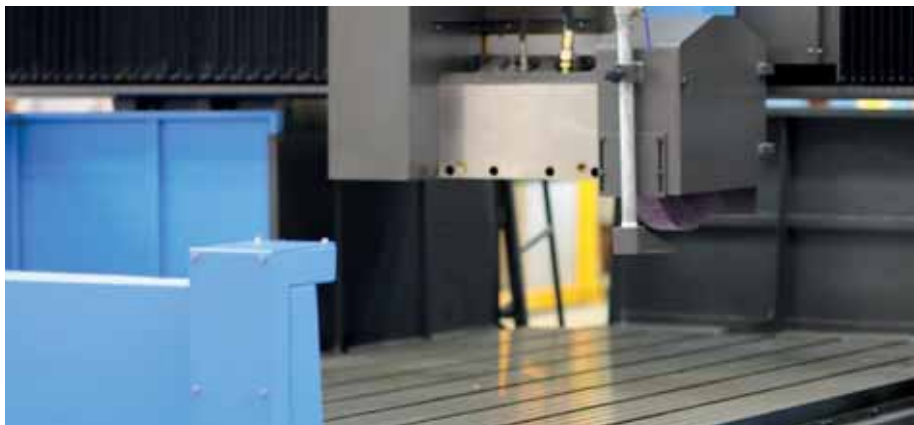
For AE-based contact monitoring to deliver its full potential in daily operation, it must be seamlessly integrated into the process sequence: clearly visible states, unambiguous

events, contact detected/not detected and rapid diagnostics when the signal pattern deviates from the expected profile.

Implementation therefore plays a decisive role.

AE/structure-borne sound monitoring should be integrated as part of modular in-process controller

architecture, including centralised visualisation and remote monitoring via connected clients. For gap reduction, this is particularly relevant because the approach phase does not simply become “somehow faster”; instead, it remains a clearly observable process segment. Contact windows, trigger events and deviations can be tracked and stabilised across shifts.



### Conclusion: Acoustic emission enables less air grinding and a more stable cycle start

AE-based contact monitoring provides a very direct lever for reducing the gap phase. This is not achieved through higher dynamics, but through a shorter search path and reduced safety margins during the approach phase.

If first contact can be detected reproducibly, the search stroke can be limited in a controlled manner reducing air-grinding time accordingly. At the same time, the cycle start becomes more stable after process interventions and less dependent on operator experience, an effect that often delivers faster returns in production than a rarely achieved “best-case cycle.”

**ACCRETECH (Europe) GmbH**  
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GrindingHub | Hall 10 - Booth E21

## Road to Automation

Rollomatic's flagship initiative, Road to Automation, offers tool manufacturers with an efficient path towards advanced automation.

Founded in the heart of Swiss precision and built on the heritage of cutting tool production, Rollomatic is renowned for quality and innovation. Years of experience in production processes enable the company to offer integrated solutions ensuring customer's sustainable profitability.

This program has been carefully developed based on years of experience in autonomous grinding and is designed for all our customers, regardless of their size and objectives. Road to Automation consists of six stages, throughout which Rollomatic supports its customers by offering its expertise in advanced grinding processes, specific training, and comprehensive support.

This approach delivers immediate benefits while preparing for the future, with the ultimate goal of achieving the factory of tomorrow: the SmartFactory.

- Enhance productivity with efficient grinding processes

- Benefit from increased machine autonomy for stable and high-precision production
- Operate within a fully controlled ecosystem for optimised workflows
- Focus entirely on value-added activities
- Enjoy easy access to information to ensure consistent and reliable output



*Rollomatic's Road to Automation initiative will be presented in an immersive way at GrindingHub 2026*

Rollomatic is a private Swiss company specialising in the design and manufacturing of high precision CNC machines for production grinding of cutting tools, cylindrical grinding and laser cutting of ultra-hard materials.

It is customer-oriented and it provides complete manufacturing solutions for the grinding of precision tools and parts, including wheel dressing and measuring finished parts.

Rollomatic's manufacturing methods and precision assembly are based on its passion for Swiss engineering and craftsmanship.

The philosophy is demonstrated by its teams in all stages over the life of the products, from design, through assembly and Lean Manufacturing and all the way to service and client advice and support. It strives to build a relationship of trust and cordiality with customers in a spirit of partnership.

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# Precision and **innovation** for more than 100 years

**EFFGEN**  
 Schleiftechnik  
**LAPPORT**



*Effgen G-Run II Hybrid Diamond and CBN grinding wheels.*

For more than a century, Effgen Lapport Schleiftechnik has been delivering customised solutions in grinding technology. Originally focused on tools for precise and cost-effective gemstone processing, the company quickly became a trusted partner for regional grinding businesses. Today, Effgen Lapport Schleiftechnik provides a comprehensive range of products for industrial grinding applications.

### High-performance products and outstanding service

The portfolio includes conventional grinding tools, high-performance grinding tools and dressing tools. It prioritises top-tier quality, innovative technology and exceptional customer service, ensuring efficient and precise grinding processes.

### Global Network and local expertise

With approximately 450 skilled employees at its German production sites in Herrstein and Enkenbach-Alsenborn, along with a Europe-wide sales network and worldwide distribution partners, the company is always close to its customers.

### Two strong brands with one common goal

The Effgen Lapport Schleiftechnik Group brings together two specialised brands:

■ **Effgen Schleiftechnik:** Your expert for superhard grinding, polishing and dressing tools made of diamond and cubic boron nitride.

■ **Lapport Schleiftechnik:** Your partner for conventional grinding tools made of aluminium oxide and silicon carbide.

By leveraging a shared sales and application engineering network, it maximises synergies to provide you with seamless, tailored solutions, all from a single source.

### Precision down to the finest detail

Effgen Schleiftechnik offers superhard grinding tools with electroplated, metal, ceramic and resin bonds. Depending on the application and product category, the diameter range extends from 0.08 mm to 1,600 mm. Dressing tools are

available as stationary or rotating variants, including high-precision form and profile dressing tools, also produced using the inverse manufacturing process for ultimate accuracy.

Lapport Schleiftechnik enhances its product portfolio with conventional grinding tools featuring ceramic and resin bonds, available in grit sizes as fine as F-1200. The range includes solid grinding wheels with diameters from 50 mm to 1,200 mm, segmented grinding wheels up to 1,600 mm with a reusable base body and grinding segments, honing stones and handheld tools such as dressing and sharpening stones in any desired geometry.

With innovation, precision and flexibility, it optimises grinding processes delivering the perfect solution for your needs.

### Grinding Hub 2026

Visit the company in Hall 9 - Booth C10 to meet with its team of experts to discuss your precision abrasive requirements.

### UK Agent:

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**Email: sales@tsh-esl.co.uk**

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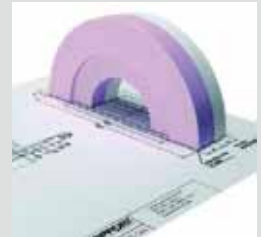


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[www.loroch.de/en](http://www.loroch.de/en)

# Protecting profitability in a **volatile** market

## ANCA showcases productivity solutions at GrindingHub

Innovation has never been more essential for business success. Rising carbide costs, geopolitical uncertainty, sustained competitive pressure and a cautious investment climate are forcing tool manufacturers to extract more value from existing assets rather than expand capacity.

ANCA has continued to invest in practical production solutions that improve efficiency, reduce scrap and increase precision helping customers protect margins while maintaining performance.

Across Europe and globally, tool manufacturers are balancing shorter lead times and increasing tool complexity with rising operating costs and continued pressure to reduce cost per tool.

Many operations must lift throughput without expanding floorspace, while protecting margins against sharp raw-material increases especially tungsten carbide where scrap and rework have a direct and immediate financial impact.

At GrindingHub 2026, ANCA will demonstrate how to turn these market challenges into measurable production outcomes by optimising the full manufacturing cycle not only the grinding pass.

Visitors will see a connected approach spanning machine capability, automation and software integration designed to improve utilisation, reduce handling, shorten setup times and maintain process control across shifts.

### Technologies on display at GrindingHub 2026 include:

#### AIMS (ANCA Integrated Manufacturing System):

Connecting planning, production control, measurement feedback and compensation workflows to support more autonomous tool manufacturing.

**MX7 ULTRA with InsertsPRO:** Automated, repeatable production grinding of complex profile inserts.

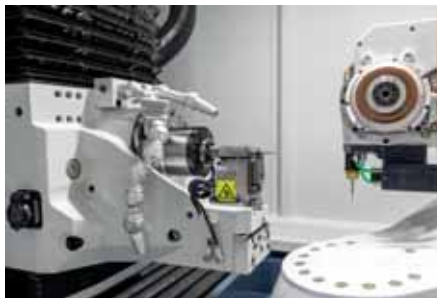
**EPX Stream Finish (EPX-SF):** Production-ready edge preparation and surface finishing with recipe-based control and traceability.

**FX ULTRA with new 3000 rpm S1 headstock:** Higher surface speeds, improved finishes and expanded peel-grinding capability within a single setup.



*ANCA's EPX-SF supports repeatable, recipe-based processing with documented traceability - increasingly essential for manufacturers seeking predictable coating performance and longer tool life.*

**Micro tool production:** Insight into MicroX Ultra performance.



*MicroX Ultra: purpose-built microtool platform brings real production advantages for manufacturers of micro endmills and drills. ANCA will present grinding results at the show.*

**ToolRoom RN35 with Performance+:** Feedrate optimisation and simulation-driven verification to reduce cycle time and scrap risk.

**RFID-enabled automation and mixed-batch handling solutions:** Supporting chaotic loading, collet-changing and reduced changeover friction.

**Robomate 2.0:** New robot loader for MX, TX, and EPX with faster tool load cycle time, native AIMS upgradeability and AIMS variants, improved ergonomics and larger capacity.

#### Turning insert complexity into controlled production

ANCA will highlight the MX7 ULTRA configured

with InsertsPRO for high-precision production grinding of profile inserts, where consistency is often limited by setup variation and compensation challenges.

InsertsPRO enables rapid creation of accurate grinding operations through parametric profile and relief definition, supported by integrated simulation for right-first-time results. The new Profile Insert Wizard streamlines setup by guiding operators through blank definition, profile import and wheel selection, automatically generating the required grinding strategy.

By bringing measurement feedback and correction closer to the grind, manufacturers can reduce handling, compress operations and maintain stable results across a batch. This is particularly valuable in mixed manufacturing environments where frequent geometry changes are the norm.

#### Edge preparation built for traceable production

ANCA will also demonstrate the EPX Stream Finish (EPX-SF), designed for controlled edge preparation, surface finishing and deburring in a production environment. Unlike laboratory-style processes, EPX-SF supports repeatable, recipe-based processing with documented traceability. This is increasingly essential for manufacturers seeking predictable coating performance and longer tool life. At GrindingHub, ANCA will show how a structured, traceable edge-prep workflow helps manufacturers standardise outcomes while retaining process know-how in-house.

#### Expanding grinding capability without expanding footprint

A major highlight will be the FX ULTRA with a new 3,000 rpm S1 headstock spindle, delivering up to five times the rotational speed of traditional 600 rpm configurations. For manufacturers producing a wide range of tools, surface speed on smaller cylindrical features is often the key limiting factor for premium finishes and competitive throughput. The 3,000 rpm headstock removes this bottleneck by achieving the required surface speed where it matters most, helping improve cylindrical surface quality while shortening cycle times.

Beyond speed alone, the headstock upgrade expands workflow capability by supporting peel grinding combined with tool grinding within a



*InsertsPRO enables rapid creation of accurate grinding operations through parametric profile and relief definition, supported by integrated simulation for right-first-time results.*

single setup. This allows manufacturers to reduce part handling, minimise re-clamping and streamlining complete-tool production with greater consistency and throughput. This way, manufacturers can increase output from the same machine footprint, lowering cost per tool without compromising precision.

**MicroX – purpose-built for micro tool production**

GrindingHub visitors will have the chance to see the latest grinding results from the MicroX Ultra. With nanometre-resolution control, ANCA Machine Intelligence and optimised kinematics that shorten grind paths in 5-axis interpolation, MicroX Ultra is engineered to deliver higher surface quality and cutting-edge consistency, helping manufacturers of micro endmills and drills improve tool performance while reducing variation across batches. Fast changeovers via the dual-ended grinding spindle and built-in ToolRoom/CIM3D capability support efficient setup and verification across a wide range of micro geometries, while in-process measurement and compensation, Motor Temperature Control (MTC) and an isolated grinder design increase thermal and vibration stability. This translates into lower scrap rates, shorter warm-up time and more predictable output in the demanding micro-tool segment.

**Mixed-batch agility and intelligent automation**

As tool catalogues shrink and batch sizes decrease, rapid changeover becomes critical. ANCA's automation portfolio addresses this through RFID-enabled loading, collet-changing solutions and flexible cell control that reduce operator intervention and work-in-progress.

These capabilities are further strengthened by AIMS, which connects production planning,

operator guidance and compensation workflows into a unified digital ecosystem. By centralising manufacturing data and reducing manual file handling, AIMS improves traceability, supports consistent decision-making across shifts and enhances practical OEE by reducing downtime drivers.

At GrindingHub, see how ANCA's connected workflow supports practical OEE by reducing downtime drivers such as manual checks, handling inefficiencies and repeated setup steps. This objective helps toolmakers keep grinders running productively for longer and to maintain process performance over time, not only at initial run-off.

**Software optimisation for cost per tool**

ToolRoom RN35 with Performance+ will be demonstrated at dedicated stations, highlighting feedrate optimisation and simulation-driven verification designed to reduce cycle time while maintaining controlled material removal.

With carbide costs amplifying the financial impact of scrap, simulation-first workflows help manufacturers achieve right-first-time results before committing high-value blanks to production.

Visit ANCA in Hall 7 - Stand A70 to see how integrated machine capability, automation and connected software operate as a single production system helping tool manufacturers reduce scrap, improve efficiency and safeguard profitability in uncertain times.

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**GrindingHub | Hall 7 - Booth A70**

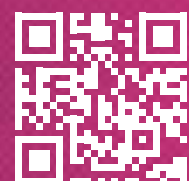


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# Ghiringhelli's M100 centreless grinding machine: Compact, flexible and collaborative

By Claudio Tacchella

For over a century, the Italian company Rettificatrici Ghiringhelli S.p.A. in Luino (VA) has been designing and manufacturing highly accurate centreless grinding systems, thus establishing itself on the market as 'Problem Solver' for engineered solutions.

The M100 CNC6A, to be exhibited at the international GrindingHub in Stuttgart, Hall 10, Stand C27, embodies the latest technologies: a very compact machine for medium-high batch grinding.

The grinding machine, with fast changeover, ensures time reductions above 20 percent and is highly competitive even in small series grinding. This flexible M100 is implemented into technologically advanced sectors: aerospace, automotive, medical, cycle and motorcycle, pneumatics, electric motors, tools and general precision engineering.

## Mineral casting frame for stability and sustainability

The machine rests on a mineral casting frame. This material provides: reduction of natural frequencies, smaller amplitudes in case of resonance and a fast reduction in vibrations. Basically, this results in a 25 percent improvement in the roughness of ground parts, longer wheel life and excellent resistance to the coolants' corrosive effects. The frame fully meets eco-friendliness requirements, being 100 percent recyclable while consuming 30 percent less energy for its production process.

## 6-axis CNC kinematics and grinding dynamics

The main working slides, V and Z-axes, are overlapped and slide on preloaded linear guides with extra-precise roller pads, through linear scales with a resolution of 1/10 micron. The grinding wheel head with hydrodynamic spindle support and wheels of  $\varnothing 450$  mm x L 135 mm is equipped with a motor with power up to 11 kW. Constant peripheral speed up to 50 m/s, 63 m/s optional and automatic wheel balancing. The control wheel head has precision bearing spindles, reinforced by a 3rd outboard bearing. Wheels:  $\varnothing 200$  mm x L 135 mm, motor torque up to 5 Nm. Stuck to the upper slide, the head can be tilted by +/- 5° to enable optimal adjustments in plunge cycles or maximise the pass speed in through-feed cycles. The wheel dressing is



The M100 integrates automatic machine feeding systems such as the FANUC CRX-5iA cobot.

controlled by NC orthogonal diamond dressing units, X/Y axes for the grinding wheel and X1/Y1 axes for the control wheel. The machine grinds components with maximum accuracy with diameters between 0.50 and 20 mm and lengths up to 135 mm.

## Collaborative automation with FANUC CRX-5iA

The M100 integrates automatic systems, from semi-automatic loading to turnkey robotic cells. One solution that will be showcased at the exhibition features the FANUC CRX-5iA cobot to machine feeding. This is a compact, anthropomorphic and collaborative robot, which works in a barrier-free environment. It is equipped with sensors that detect abnormal contact and immediately stop the arm, thus safeguarding the personnel. Its fluid motion

enables high-precision loading and unloading, thus maintaining the surface integrity of the ground components. The programming is intuitive thanks to the manual guide which enables the operator to physically move the robot's wrist to capture the gripping points, as well as to use a drag-and-drop interface on a tablet. This integration reduces setup times in the changeover and supports the steady, unattended grinding on a multi-shift basis.

## Ergonomics and layout

The M100 design embodies an 'easy to use' machine with streamlined dimensions. The electric cabinet is parallel to one side, thus providing safe access on all four sides. It is equipped with a mobile control panel with all functions already tested on the Ghiringhelli's APG grinding machines. The machine



*The CNC digital native Siemens Sinumerik-ONE with 'Safety Integrated Plus' module is controlled via Ghiringhelli's exclusive HMI interface.*

reconfigurable systems that are capable of supporting the production of different batches, even in small volumes. Our identity as "Problem Solver" is reinforced in this scenario and, where customisation is a requirement and no longer an option, Rettificatrici Ghiringhelli is the ideal partner to provide the right solution."

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**www.ghiringhelli.it**

**GrindingHub | Hall 10 - Booth C27**

*The M100 centreless grinding machine grinds components with diameters between 0.50 and 20 mm, lengths up to 135 mm, with the utmost accuracy.*

equipment has been redesigned to support the operator and boost the setup and the work area has enhanced internal LED lighting.

**IO-Link digitalisation, CNC Sinumerik-ONE and full customisation**

Compliant with Industry 4.0, the machine implements the Siemens IO-Link communication protocol, which allows direct data exchange among sensors, actuators and auxiliary devices for remote monitoring, diagnostics and predictive maintenance. The NC is the Siemens Sinumerik-ONE with 'Safety Integrated Plus' module, controlled via Ghiringhelli's exclusive HMI interface with all software functions. The grinding machine is highly customisable through a wide range of optional devices: feeding systems, unloaders, ejectors, pre-and post-process measuring devices, including laser technology, cleaners, extractors, wheel balancing units and cameras for part control and orientation.

"Our daily commitment," says Patrizia Ghiringhelli, CEO of Rettificatrici Ghiringhelli,

"is focused on developing built-in centreless grinding solutions whose flexibility meets the customer's changing needs. The current market's uncertainty and instability has made it a priority for users to find highly customised



*Thanks to its flexibility, the M100 is used in technologically advanced sectors: power tools and tools.*

# E line Generation 2: Compact high performance honing for maximum precision and productivity

The second generation of the E line marks a decisive step forward for KADIA toward even greater precision, productivity and technological density.



*The E line is a compact honing machine that requires just 2.8 m<sup>2</sup> of floor space*



Nearly ten years after the launch of the first E line, the machine has been comprehensively redesigned from the spindle concept and working area to the measuring and control technology. The objective is clearly defined: High-performance honing, superior quality and maximum productivity. This ambition shapes the entire series and precisely describes what the new E line delivers to manufacturing operations: Maximum accuracy and outstanding



*The three integrated stations ensure short transfer paths, streamlined processes and maximum precision directly within the machine.*

cost-efficiency within an ultra-compact machine concept. "The E line series is the cost-efficient entry into high-performance honing," explains Henning Klein, managing director of Kadia Produktion GmbH + Co. "From prototype production and small batches to economically optimised series machining, we now cover a very broad application spectrum." This includes honing bores starting at approximately 1.5 mm in delicate small components, as well as machining tasks up to 40–50 mm in diameter for example in hydraulic components or precision automotive parts.

### **Newly developed LH2x honing spindle**

At the heart of the new machine is the completely redesigned LH2x honing spindle, which consolidates experience from more than 1,000 LH spindles sold into an entirely new platform. Three direct drives for oscillation, rotation and expansion are housed within a highly rigid monocoque structure that minimises vibration and reliably absorbs high dynamic forces. Four patents underscore the technological ambition of this development. Compared to the previous LH2, the new spindle generation offers significantly higher cutting

speeds, increased material removal rates, greater versatility and improved serviceability. Larger volumes of material can be removed in shorter timeframes, machining times are reduced and cycle times decrease without compromising process stability. For components with demanding geometries, the improved temperature and power stability further enhances machining accuracy and reliability.

### **Enlarged working area and intelligent adaptation**

The working area has also been significantly expanded. The new rotary table provides approximately 30 percent more diameter for fixtures, substantially broadening the range of components that can be processed. The machine automatically detects the moving mass and adjusts transport speeds accordingly: heavier components are moved more gently, lighter ones more dynamically. This adaptive control reduces imbalance, extends the service life of mechanical components and lowers wear and maintenance costs over the machine's lifecycle. Additionally, access to the loading and unloading station has been widened by

12 percent, considerably improving manual loading ergonomics.

The machine bed is now 10 percent heavier and designed with a double-wall structure, increasing rigidity and further enhancing vibration damping. Despite these technical enhancements, the E line requires only 2.8 m<sup>2</sup> of floor space. The fully enclosed rear design and side access to all maintenance and electrical cabinets enable space-saving installation close to walls, a major advantage in production environments where layout compatibility and floor efficiency are critical.

**Integrated deburring and optimised process environment**

The E line remains a three-station machine in its basic configuration, consisting of a loading/unloading station, honing station and measuring station. For the first time, an integrated deburring unit can be incorporated into the loading and unloading station, including an automatic brush changer. This removes loose machining burrs directly after honing, increasing process reliability and component cleanliness. The coolant system remains fully integrated but now features significantly improved filtration fineness of 10 µm, previously 25 µm. This ensures more consistent oil quality, reduced tool wear and more stable machining parameters. Thanks to the double-wall bed design, external drip trays are no longer required. An optional extraction module efficiently removes coolant mist, keeping the working environment noticeably cleaner.

**The intelligence behind performance**

A key pillar of the high-performance concept remains the HMC100 control system, which together with the spindle technology forms the technological core of the machine. The latest operating system version significantly expands capabilities for complex applications.

Continuous contour scanning of the entire bore has now become the standard measuring method. The machine captures up to 500 measurement values per mm of bore length, generating an exceptionally precise representation of the geometry including areas that are difficult to access using conventional measurement techniques. This level of measurement accuracy substantially increases process reliability. In addition, fully independent three-stage honing processes can now be executed



within a single honing cycle, with individually adjustable in-feed impulses, speeds, accelerations and rotational speeds.

**The result:** reduced cycle times, higher throughput and optimised process design. With the software function Form Honing, defined contours such as tapering, funnel shapes, pre-expansions, or barrel forms can be generated directly on the machine. This opens new application fields and allows unfavourable design conditions to be actively compensated.

**Advanced measuring technology**

The measuring station has also been further developed. An optional rotary measuring axis can now be integrated. This system automatically detects the orientation of the

workpiece and positions the measuring probes accordingly, a significant advantage for components with longitudinal grooves or cross-bores. Orientation-specific loading is no longer required, making the loading process faster and less error-prone while simplifying and reducing the cost of automation solutions. Depending on the application, significantly shorter measuring probes can also be used, improving measurement accuracy and enabling further cycle time reductions.

**Designed for precision-focused manufacturers**

The E line is aimed at manufacturers requiring the highest precision in small to medium batch sizes, while simultaneously demanding economic efficiency, flexibility and a compact footprint. The machine is ideally suited for highly accurate prototype and sample production as well as economically optimised series processes in industries such as hydraulics, precision engineering, automotive and aerospace.

Henning Klein concludes: "With the second generation of the E line, we bring precision honing, flexibility and economic efficiency onto a common platform. The machine is more versatile, faster, more robust and still extremely compact. That was precisely our ambition."

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**GrindingHub | Hall 10 - Booth C40**

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# MACH 2026 will showcase a wide range of solutions, live and in action, making it the year to visit

**M**ACH 2026, the UK's national event for inspiring, innovating and connecting manufacturing, returns to the NEC Birmingham from 20th-24th April 2026. As the UK's longest-running exhibition of its kind, MACH brings together over 500 leading exhibitors to showcase the broadest range of manufacturing technology solutions in the country.

Its unique scale and scope make it an essential event for the sector, providing a platform for innovation, collaboration and industry insight. The five-day event provides attendees with a perfect opportunity to explore the latest cutting-edge products and services, which can improve the efficiency and sustainability of business operations.

The UK manufacturing industry plays a significant role in contributing to the success of the UK economy. There are over 325,000 small and medium-sized UK manufacturing and engineering enterprises, which are recognised as the backbone of the UK economy. This cross-industry event is specifically designed to address real manufacturing challenges, helping manufacturers navigate through issues such as rising operational costs, skills shortages, supply chain disruptions and geopolitical uncertainty. MACH 2026 offers plenty of opportunities to discover and explore solutions that will help manufacturers remain competitive in this challenging environment.

MACH 2026 brings together organisations from across the UK and beyond, attracting professionals from all areas of manufacturing, including design and engineering, production and operations, maintenance and asset management and supply chain management. This creates a valuable network of connections that operates in a wide range of rapidly evolving sectors, including aerospace, automotive, medical technology, chemicals,



pharmaceuticals, food, agriculture, defence, rail and transport.

As the UK's national showcase for the manufacturing community, MACH 2026 provides exciting developments for experienced machinery users to explore. At the same time, it provides those new to the industry with ample opportunities to learn, discover and engage with the innovative and thought-provoking world of manufacturing. The exhibition offers live technology demonstrations, expert-led insights and practical, sector-specific solutions. Attendees leave equipped with actionable knowledge and inspiration to enhance their businesses and drive innovation, helping them find solutions to their manufacturing challenges and prepare for the future.

MACH 2026 offers compelling reasons to attend this April. More than 500 exhibitors from across the manufacturing spectrum will showcase their latest innovations live and in action, from automation and robotics through to grinding, sheet metalworking and surface finishing. This will give attendees a first-hand experience of solutions that can enhance efficiency and performance within their businesses. The event also provides extensive networking opportunities, allowing attendees to connect directly with knowledgeable industry professionals.

In addition, MACH features an inspiring seminar programme led by leading industry experts, offering attendees the chance to gain insights, stay abreast of the latest industry developments and benefit from a wealth of practical knowledge and expertise.

Building on this learning and insight, MACH 2026 will also feature the improved Knowledge Hubs, offering attendees practical guidance and expert advice on the latest manufacturing technologies.

Strategically located across the show floor, the Knowledge Hubs will focus on key industry topics: automation and robotics, additive manufacturing and 3D printing, data and AI and machining and tooling.

MACH is owned and organised by the Manufacturing Technologies Association (MTA), which also encompasses a cluster of organisations, including Engineering Supply Chain UK (ESCUK), Additive Manufacturing UK (AMUK) and MTA Training.

James Selka, CEO of the Manufacturing Technologies Association (MTA), says: "Following the success of MACH 2024, the Knowledge Hubs return even bigger and better for 2026. These interactive hubs give manufacturers practical guidance on adopting new technologies, connecting them with experts and suppliers and providing insights that drive productivity, efficiency and competitiveness."

Register now to get your free pre-reg pack and start planning your visit today:  
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- **Make** confident, informed investment decisions at a time when technologies increasingly enable competitive manufacturing in the UK
- **Benefit** from unrivalled opportunities, ranging from high-value conversations and world-class showcases through to meaningful connections that drive innovation and collaboration across UK engineering and manufacturing
- **Join leaders**, innovators and the key decision-makers shaping the future of UK manufacturing, as well as around 30,000 industry professionals gathered in one place

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# Cleaning solutions for all industrial sectors



Whether solvent or water-based cleaning, coarse, intermediate and final cleaning or ultra-fine and high-purity cleaning, at MACH Ecoclean will be presenting a complete product and service range optimally tailored to the different cleaning tasks in all industries.

When it comes to cleaning components, companies in all industries today face an enormous variety of tasks. To meet the very different requirements in a process-reliable and cost-saving manner, cleaning that is optimally adapted to the application is required.

Ecoclean will be presenting corresponding solutions at MACH, Hall 20 - Stand 579, in Birmingham. In addition, the equipment manufacturer will be providing information on automation and digitalisation as well as on optimising the energy and resource efficiency of cleaning processes.

Whether solvent or water-based cleaning, coarse, intermediate and final cleaning or ultra-fine and high-purity cleaning, Ecoclean will be presenting a complete product and service range optimally tailored to the different cleaning tasks in all industries.

Due to new products, changing sales markets and modified manufacturing technologies and process chains, the range of tasks in component cleaning in virtually all industrial sectors is more diverse today than ever before. Cleanliness specifications range from oil- and/or particle-free to the removal of fine particles or minimal film-like residual contamination. On the one hand, these specifications must be reliably and consistently met. On the other hand, with a view to competitiveness, parts cleaning must be as cost-effective, energy-efficient and resource-efficient as possible. This must be achieved regardless of the dimensions of the workpieces and the material from which the components are made. In addition, the

automation and digitalisation of cleaning processes is becoming increasingly important.

As an experienced full-range supplier of future-oriented, flexible and energy-efficient solutions for industrial component cleaning, surface treatment and automation, Ecoclean will be presenting a product and service range optimally tailored to these requirements at MACH 2026.

### Whether modularly designed or individually constructed, always perfectly tailored to the respective application

For cleaning with solvents, modified alcohols and water-based media, the product portfolio includes modular cleaning systems such as chamber and ultrasonic multi-bath immersion systems. These solutions enable the cost-optimised design of cleaning systems for a very wide range of tasks. The company's individually designed special systems are used when company-specific requirements, for example due to very high throughput requirements or the dimensions of the components, cannot be met by modular systems.

With this complete range of cleaning systems, the plant manufacturer covers the entire spectrum of wet chemical processes for batch and single-part cleaning in virtually all industries. In addition, various application-specific process technologies, for example for spray, high-pressure, immersion, ultrasonic and plasma cleaning, steam degreasing, injection flood washing, Pulsated Pressure Cleaning (PPC) and ultrasonic plus, ensure that the required cleanliness specifications are achieved

quickly, consistently, reproducibly and resource-efficiently. Innovative developments for water-based cleaning processes also contribute to this.

These include the Lab-on-a-Chip (LOC) system for automated monitoring and control of cleaning quality, which can be integrated into both chamber and multi-bath immersion systems. Another example is the new Smart Drying technology, which enables AI-supported, intelligent control and optimisation of drying processes with hot air and vacuum.

### Services including contract cleaning for economical and needs-based cleanliness

Another topic that will be in focus at the Ecoclean booth is forward-looking service solutions. This includes, among other things, customised cleaning of components made of almost any material as a service, as well as predictive maintenance, customised service concepts, process analyses and plant modernisation. In addition, experienced employees will provide information on ways to make cleaning processes more energy and resource-efficient, as well as on the automation and digitalisation of component cleaning. The Ecoclean Academy's training program will also be presented.

**Ecoclean UK**

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**MACH2026 - Stand: 20-579**



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# Fintek showcase advanced OTEC surface finishing machines at MACH

Fintek will demonstrate its advanced post-processing and surface finishing technologies at MACH 2026 on stand 18-12. Aimed at manufacturers with demanding production and quality needs, it will highlight machines designed to deliver speed, capacity and precision. Along with Orbitool, an innovative device to easily deburr cross-drilled holes.

At the heart of the stand will be Fintek's range of OTEC Präzisionsfinish machines, for which the company is the UK agent. OTEC is globally recognised for its disc (CF), drag (DF), stream (SF) and electro-finishing (EF) technologies. All are engineered to achieve consistent, repeatable, precise, high-quality surface finishes across a range of metals and component geometries, from simple to complex.

A key focus at MACH will be Fintek's capability to support finishing of larger components. SF processing is now available for parts up to 900 mm in length and 900 mm in diameter. This reflects growing demand from sectors such as aerospace, motorsport and tooling. Component size is increasing but tolerances remain tight.

Superfinishing and mass finishing will also feature. OTEC stream finishing meets the needs of manufacturers for high throughput with precision. Surface roughness values are achievable down to Ra 0.01 µm, often in minutes. These systems enable manufacturers to meet stringent specifications while supporting efficient, scalable production.

OTEC SF machines can include their proprietary Pulsfinish technology. Alternating the direction of rotating heads, Pulsfinish generates intense relative motion between the finishing

media and workpiece. Rapid acceleration and deceleration increase finishing forces. This delivers faster cycle times and superior surface quality and it also preserves critical workpiece geometry.

Automation will be another major theme on the Fintek stand. Options range from chain-feed loading systems through to robotised loading and unloading. This enables seamless integration into automated production lines. These options help to reduce manual handling, improve consistency and support lights-out manufacturing.

All OTEC machines are Industry 4.0 ready. Offering connectivity and data transparency as standard. For manufacturers seeking deeper digital integration, an advanced package is available. This includes an industrial PC for enhanced machine monitoring, process optimisation and remote maintenance. It allows users to maximise uptime and process control.

Fintek is also the UK agent for the J W Done patented Orbitool, a technology for the in-process deburring of cross-drilled holes. Traditional off-line processes interrupt and slow down modern manufacturing flows. Fintek will show how Orbitool will save manufacturers time and cost when deburring cross-drilled holes.

Besides machine sales, Fintek provides a full subcontract surface finishing service. The company processes components for manufacturers in aerospace, motorsport, medical devices, implants and more. Subcon also allows customers to prove and validate a finishing process before committing to the purchase of an OTEC machine.

Fintek provides full support in the UK and operates to ISO9001 and AS9100 standards, underscoring its commitment to quality and reliability. It has brought together workpiece superfinishing methods into a one-stop shop for precision engineers. The company uses leading German made OTEC mass finishing and super finishing equipment and, as OTEC's official UK agent, it is able to draw on the company's in-depth surface engineering knowledge gained from designing



and building metal component finishing systems to global engineering and manufacturing companies.

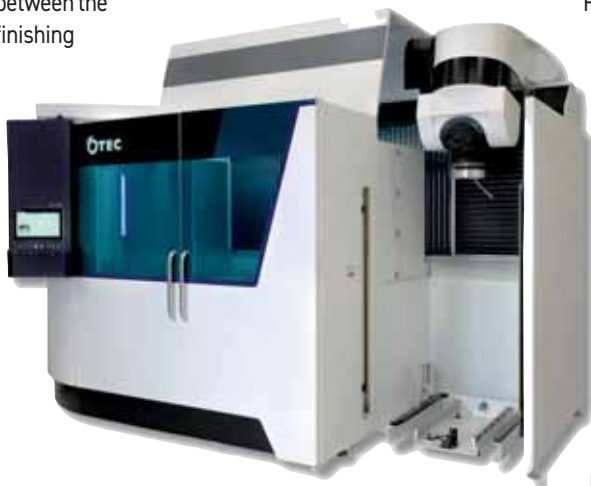
It sells the metal surface finishing process, including machine, process media, installation, support and training and can also finish your parts for you as a subcontract service, saving you the capital outlay. Fintek are certified to ISO9001 and EN9100.

For more than 40 years, it has helped customers in aerospace, autosports, automotive, medical device and other precision industries, to improve component surface quality for better part performance.

Fintek have been exclusive UK agents for OTEC in the UK from the availability of the first-generation machines in 1996 and is proud to use its advanced disc, drag and stream finishing machines to offer comprehensive subcontract services.

**Fintek**  
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**MACH2026 - Stand: 18-12**



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## Precision heritage meets robotic innovation

### delapena at MACH 2026

The delapena group brings over 95 years of precision heritage to MACH 2026.

This year, the honing division highlights the "de-skilling" of complex processes through modern robotics and intuitive software. The SpeedHone EAS demonstrates this shift by integrating FANUC robotics, removing the "stop-start" nature of manual operation to provide continuous reliability for high-volume batches. Managed via a Siemens digital HMI this setup allows operatives to be trained in under an hour with setup times often under 10 minutes.

For larger, heavy components, the PowerHone E vertical honing machine offers a diameter range from 25.4 mm to 740 mm diameter. It utilises revolutionary iHone software to automatically detect and correct bore abnormalities, resulting in setup speeds 50 percent faster than traditional methods. Its compact, space-saving design provides a versatile solution for through and blind bores across small to medium batches.



#### Grinding: Compact high-performance

In addition to its honing technology, delapena serves as the UK distributor for industry leaders like E-Tech and Dowell. On display at Stand 19/329 is the E-Tech MINI GENIE, a cylindrical grinder engineered for small, high-precision workpieces. Beside it, the Dowell 1224AND surface grinder offers uncompromised rigidity through high-quality P4 bearings and a direct-type spindle, ensuring the stability required for the most demanding toolroom or production tasks.



#### Driving competitive manufacturing

As managing director Martin Elliott notes: "The focus at MACH 2026 is on providing practical, reliable solutions that help customers remain competitive. By integrating automation and intuitive software, delapena is making high-end surface finishing more accessible and predictable than ever before. Visitors are invited to Stand 19/329 to see these machines in live operation and explore tailored solutions for their unique production challenges."

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**MACH2026 - Stand: 19-329**



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See our technology in action and find out how we can help improve your surface processing at MACH 2026 - **Stand 20-588.**

Or, contact us now using the QR code below to find out more.



## DK Holdings to participate at MACH

DK Holdings Ltd, ISO-certified UK manufacturer of precision-engineered diamond tooling, will participate at MACH 2026, the UK's national showcase for engineering and advanced manufacturing, at the NEC Birmingham.

As one of the longest-established manufacturers of electroplated, resin bond, metal bond, diamond and CBN tooling in the United Kingdom, DK Holdings will use MACH to highlight its comprehensive engineering capabilities and the breadth of industries it supports, from aerospace and automotive to precision engineering, medical components, robotics and subcontract machining.

Exhibiting on the Make UK Pavilion in **Hall 17 - Stand 541**, the company will present a selection of high-performance standard and bespoke diamond tooling solutions developed from its fully integrated manufacturing facilities in Kent, where every stage of production is completed under one roof.

"MACH has always been a cornerstone event for the UK engineering community," says John Emptage, Sales Director at DK Holdings. "It brings together manufacturers, innovators and problem-solvers who share a common aim: to

push precision, productivity and performance further. Our customers rely on tooling that delivers consistency and repeatability and MACH is the perfect platform for us to demonstrate how our capabilities continue to evolve to meet those expectations."

Visitors to MACH 2026 will have the opportunity to speak with the DK Holdings team about diamond tooling for grinding, cutting, drilling, polishing and profiling, including bespoke solutions developed through the company's research, testing and prototyping capabilities in its fully equipped R&D department.

DK Holdings delivers precision diamond tooling solutions engineered to meet exacting customer requirements. With more than 65 years of proven expertise and a commitment to innovation, it manufactures tools that excel in quality, accuracy and long-term durability.

Serving both domestic and international markets, its skilled team of sales and technical engineers supports a wide range of industries. Its tools are engineered for performance in demanding applications, working with materials such as FRP/GRP composites, optical glass,



processed stone and other hard-to-machine substrates.

In addition to the extensive standard product range, it provides fully custom-engineered solutions designed for specialist machining environments. Whether you're facing a complex grinding challenge or require consistent high-precision CNC results, DK Holdings are trusted by industry leaders to deliver tooling that performs.

**DK Holdings Ltd**

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**[www.dk-holdings.co.uk](http://www.dk-holdings.co.uk)**

**MACH2026 - Stand: 17-541**

## Providing specialist surface finishing tools and abrasives since 1955

At EuroBLECH, the two machine manufacturers Lissmac and Kohler showcased a jointly developed system. It demonstrates how the deburring and straightening processes can be optimally coordinated, thus generating significant efficiency gains for the overall process.

Grinding, deburring and straightening sheet metal parts are processes that usually go hand in hand. It's therefore advantageous when expertise in plant development is also combined. Against this backdrop, Lissmac Maschinenbau GmbH and Kohler Maschinenbau GmbH have jointly developed a deburring and straightening line. The system combination, which was presented at EuroBLECH, consists of the SBM-L G1S2 1500 grinding and deburring machine from Lissmac and a Peak Performer straightening machine from Kohler, according to a company press release.

The SBM-L series machines are fundamentally suitable for the double-sided machining of workpieces made of stainless steel, steel, aluminum, or non-ferrous metals, as

further stated. They were developed for double-sided deburring and edge rounding in a single operation and can be used for machining sheet metal parts, laser-cut parts and stamped parts.

The L-series is equipped with three units each on the top and bottom surfaces. According to the manufacturer, workpieces can be machined on the top, the bottom, or both sides simultaneously. "Both-sided sheet metal processing and edge rounding in a single operation enables time savings of up to 60 percent compared to single-sided grinding machines. Furthermore, seamless integration with automation solutions or production lines is possible. This is precisely what we have achieved with our partner Kohler," says Robert Dimmler, sales director metal processing at Lissmac Maschinenbau GmbH.

Kohler's integrated Peak Performer machine enables precise straightening, resulting in

stress-free and flat sheets and blanks. The system features a direct drive for the straightening rolls, which ensures greater energy efficiency, reduced wear and a larger cross-section that can be straightened. An enhanced cleaning system allows for easy cleaning of the straightening rolls and support rollers. Furthermore, the patented electromechanical straightening gap control ensures a reliably constant straightening gap, the patented reversible straightening rolls extend their service life and extra-wide support rollers provide exceptionally rigid support for the straightening rolls.

Finishing Aids and Tools Ltd is a supplier of surface finishing abrasives, tools and capital machinery including Lissmac, VG Machines and other sheet metal processing machines.

Visit the team Finids team at MACH to discover more.

**Finishing Aids & Tools Ltd**

**Tel: 01480 216060**

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**MACH2026 - Stand: 6-579**

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## 22 years for MecWash at the NEC

MecWash Systems will return to MACH to showcase its latest industrial component cleaning technology, exhibiting on **Stand 20-380** at the NEC, Birmingham.

MACH represents a milestone year, the 10th consecutive time exhibiting for MecWash and managing director John Pattison is anticipating a busy show:

"MACH is firmly established as the leading exhibition in the UK's manufacturing calendar. It always brings extra impetus to the year and provides the ideal platform to connect with our existing and potential clients to discuss the latest challenges and opportunities in manufacturing.

"This will be our 10th time at MACH and we will have the MWX300 and MWX400 systems on show. MecWash is well-known for delivering exceptional standards of cleanliness, alongside comprehensive technical support and long-term customer partnerships.

"Our detailed approach and unparalleled understanding of industrial contamination gives our customers confidence. Our parts washing systems represent the highest standard of precision cleaning available today and I am

excited to share our expertise with the attendees."

With more than 30 years' experience, MecWash works closely with manufacturers across defence, automotive, aerospace, medical and other precision engineering sectors.

In addition to its own systems, MecWash will be joined on the stand by representatives from Sugino, for whom MecWash is the sole UK agent. The Sugino team will be exhibiting the JCC high-pressure deburring washer, designed to deliver powerful and consistent deburring and cleaning performance for complex components.

Visitors to MACH are invited to join the MecWash team to discuss their component cleaning and surface preparation requirements.

To arrange a meeting at MACH at the MecWash stand, call 01684 271600 to discuss your industrial cleaning requirements.

Established in 1993, MecWash Systems Ltd specialises in the design and manufacture of a complete range of aqueous parts cleaning and degreasing systems for metal and plastic engineering components. Its capabilities include laboratory analysis of complex component



*John Pattison, pictured in 2022, is expecting a busy event at MACH 2026.*

cleaning issues and specifying or developing specialist detergents, plus the ability to design special processes and parts washers for particularly difficult cleaning challenges.

**MecWash Systems Ltd**

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**[www.mecwash.com](http://www.mecwash.com)**

**MACH2026 - Stand: 20-380**

## TextureJet to showcase breakthrough surface processing technology at MACH

Traditional surface processing methods are increasingly being put under strain as manufacturers continue to push component complexity, material performance and quality requirements.

Deburring, cross-hole deburring, surface preparation and part marking all remain essential operations but conventional approaches can introduce variability, tool wear, contamination and unwanted stress on high-value parts.

At MACH 2026, TextureJet will be showcasing Electrochemical Jet Machining, a surface engineering technology designed to deliver high-precision, repeatable results without the drawbacks of traditional processes.

Visitors to **Stand 20-588** will be able to see the system in action and learn its benefits for key applications including edge breaking, cross-hole deburring, surface preparation and part marking.

TextureJet's process is engineered to provide controlled, consistent feature modification, helping manufacturers achieve improved edge shaping and surface quality, even on delicate

components and advanced materials. By eliminating the need for traditional abrasives and reducing reliance on harsh chemicals, the technology offers a cleaner approach that supports both production consistency and sustainability goals.

A key highlight of the show will be the launch of a new part-marking system, alongside the latest evolution of TextureJet's flagship technology: the next-generation STAT<sup>®</sup> machine. The updated STAT system delivers enhanced performance in a streamlined, compact design, giving manufacturers greater flexibility, usability and control.

"We're proud to be showcasing our latest innovations at MACH this year. It's a fantastic opportunity to connect with industry leaders and demonstrate how TextureJet is helping manufacturers push the boundaries of surface processing," says Jonathon Mitchell-Smith, CEO and founder of TextureJet.

"Our technology is game-changing when it comes to modifying component features and surfaces with precision and control. By eliminating the need for traditional abrasives



and chemicals, our solutions offer a cleaner, more consistent and more sustainable approach to surface engineering."

MACH attendees will be able to find out how the technology supports production challenges in sectors where surface integrity, accuracy and repeatability are critical, particularly for high-value components and complex geometries.

To see the system live, visit TextureJet at **Stand 20-588**, or arrange a meeting in advance via: [texturejet.com/contact/](http://texturejet.com/contact/)

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MACH 2026 - Hall 18 Stand 310

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# Advanced Grinding Solutions at MACH

Coventry-based Advanced Grinding Solutions (AGS) will be showcasing its latest products on Stand 20-418 at MACH, with some receiving their UK debuts.

**Comat** is displaying for the first time its F130 Top Filtration System, a high-quality cartridge-based unit that delivers highly filtered oil to around 5um at 130l/min. Oil is kept at a stable temperature of +/- 0.5°C. It has an optional plug-and-play magnetic separator, does not require compressed air and has no IL viscosity limitations. It is perfect for the tool grinding market and can be configured to perfectly suit Anca, Walter, Rollomatic and any other make of grinding machine. In addition to very special show prices, Comat will also offer free delivery and installation on any order for a coolant system received within two weeks of the end of the show.



**Tschudin**, known for its ultra-compact, high-precision centreless grinding machines, will be present and its experts will be on hand to demonstrate how Tschudin machines deliver exceptional stability, a reduced footprint and simplified setups. Its machines offer flexible, precise and highly repeatable grinding solutions suitable for medical, automotive, tooling and both high- and low-volume production. Tschudin machines have the capability to easily load 10 or more parts at a time for plunge feed grinding operations, something difficult if not impossible, on traditional centreless grinding machines.



**Danobat**, who will be exhibiting at its first MACH exhibition since partnering with the AGS team, will be ready to discuss its OD, ID and combined grinding machines that serve the aerospace, automotive, energy, medical and railway industries, handling complex applications such as aero-engine components, automotive parts, hydraulic systems and much more.



AGS's automation partner, **Wick AG**, will give visitors to the AGS stand the chance to win one FANUC robot per day at the MACH show. Engineers will be able to try their luck on the spin & win machine and, if lucky, will win a FANUC CRX10 Robot, which will be supplied by Wick free of charge with any automation solution the customer purchases from them within one year of the end of the show. Wick excels in creating tailor-made automation solutions, including: automation systems integrating multiple processes such as part checking and measuring, washing, drying, laser marking, deburring and assembly. All can be included within a turn-key automated solution.



**DLyte** – Dry Electropolishing Technology from GPA Innova. It is rare for any machine to benefit from having a truly unique process, but DLyte has done just that. The leading dry electro-polishing technology is ideal for cutting tools, medical, aerospace, dental and precision engineering applications. DLyte can achieve consistent surface finishing on hard-to-machine materials with complex geometries, with no operator intervention and exceptional cost savings. DLyte will be with AGS and will be showing a machine for the very first time at the event.



**Advanced Grinding Solutions**

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**MACH2026 - Stand: 20-418**



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- Extensive range of options
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- Max workpiece weight 100 kgs
- Vertical table stroke 600 mm
- Rapid change from roughing to finishing
- Switch from flat table to handling device in seconds



AGS has decided to use the show to launch its first clamping product for the aerospace industry. Turbine Blade manufacturers will be able to see the new DiaClamp system being exhibited in the UK for the very first time. This new generation of fixed clamping is revolutionary, enabling immediate clamping of hard-to-hold parts such as turbine blades and vanes with the best possible accuracy and without vibration during heavy machining. This has been under development for several years and it is now fully proven in production environments, offering end users significant time savings when clamping parts.

**Krebs & Riedel** will be on hand to discuss its vast range of conventional vitrified and resin-bonded wheels, as well as its CBN wheels. Krebs & Riedel specialises in high-performance conventional, diamond, double disk and CBN grinding wheels, delivering innovative solutions for medical, gear and aerospace component grinding with over a century of expertise.

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# Columbia Gear expands grinding capabilities

**P**recision gear manufacturer Columbia Gear Corporation has expanded its grinding capabilities with the addition of a Danobat WT-72-1000-B8 universal OD grinding machine, installed and commissioned at the company's Avon facility in late 2025. The machine complements an Overbeck IRD-400 ID/OD grinder delivered earlier the same year, strengthening Columbia Gear's internal grinding capacity for high-value, precision components.

While both machines represent strategic investments, the WT-72-1000-B8 installation marked a particularly important step for Columbia Gear's external cylindrical grinding operations, supporting both current production requirements and long-term manufacturing flexibility.

### Engineering and quality driven machine selection

The WT-72-1000-B8 project was approved and sponsored by Columbia Gear's Executive Group. From the outset, the evaluation focused on process capability, integrated measurement and the ability to maintain consistent quality across a wide range of part sizes, part weights and geometries.

The Columbia Gear Project Team defined the technical scope of the project, evaluated machine concepts and were directly involved throughout the selection, factory acceptance, and final commissioning phases.

Columbia Gear participated in the factory run-off and pre-acceptance testing at Danobat, followed by final acceptance testing at Columbia Gear's Minnesota facility.

The Columbia Gear manufacturing team says: "Quality assurance has always been integral to our success. Columbia Gear being an early adopter of ISO 9001 and IATF 16949, to maintain a comprehensive quality system built around Six Sigma, Lean Manufacturing and Value Stream Mapping, drives how we evaluate new technology. The WT-72-1000-B8, combined with



its integrated measurement capabilities, supports the rigorous standards Columbia Gear maintains for our customers, including leading OEMs."

### Heavy-duty platform for precision OD grinding

Designed for large, high-value components, the Danobat WT-72-1000-B8 supports workpieces up to 1,000 mm (40") between centres, with a maximum swing of 1,040 mm (41") and workpiece weights up to 1,500 kg, 3,300 lbs. This capacity enables Columbia Gear to process a wide range of gear and shaft components on a single platform.

The machine is built on a stress-relieved cast-iron base optimised for rigidity and thermal stability. Hydrostatic slideways on both the X and Z axes provide smooth motion, high damping and consistent positioning accuracy, supporting tight tolerance requirements.

Columbia Gear continues: "From a manufacturing standpoint, the WT-72-1000-B8 gives us the flexibility we were looking for. The machine capacity, wheel head configuration and overall rigidity allows us to run a wide range of parts efficiently while maintaining consistency across setups."

One of the many defining features of the platform is its B8 swivelling wheel head, which provides automatic rotation from -30° to +210° with ±1.5 arc-second positioning accuracy. This enables multiple OD features, including shoulders, tapers and diameters to be ground in a single setup, reducing part handling and improving repeatability.

### Integrated part measuring system as a decisive factor

One of the most influential factors in Columbia Gear's selection of the Danobat platform was the integration of the MDM Multi-Diameter Measuring system.

The MDM system is an absolute measuring solution capable of pre-process, in-process and



post-process measurement of multiple diameters within a single setup. This allows critical features to be measured directly on the machine, supporting closed-loop control of the grinding process without removing the part.

"The integrated MDM measuring system was a key factor in our decision," states Columbia Gear's technical team. "Being able to measure parts pre-process, in-process and post-process directly on the machine gives us better control of critical features and greater confidence in the results we deliver to our customers."

### Installation & regional support

The WT-72-1000-B8 was installed at Columbia Gear's Avon facility in late 2025 following successful factory acceptance testing. On-site activities included machine alignment, system integration, operator training and validation grinding trials. Throughout the project, Columbia Gear was supported by Rey Technologies, the exclusive Danobat distributor for Illinois, Wisconsin, Minnesota and Iowa. Founder Daniel Rey worked closely with the Columbia Gear team alongside Jim Beavers, regional sales manager at Danobat Inc.

"This project was driven by Columbia Gear's engineering and quality teams from day one," Daniel Rey states. "They were very clear about the process capability, measurement requirements and long-term flexibility they needed. Our role was to help align those requirements with the right Danobat platform and ensure the execution matched expectations."

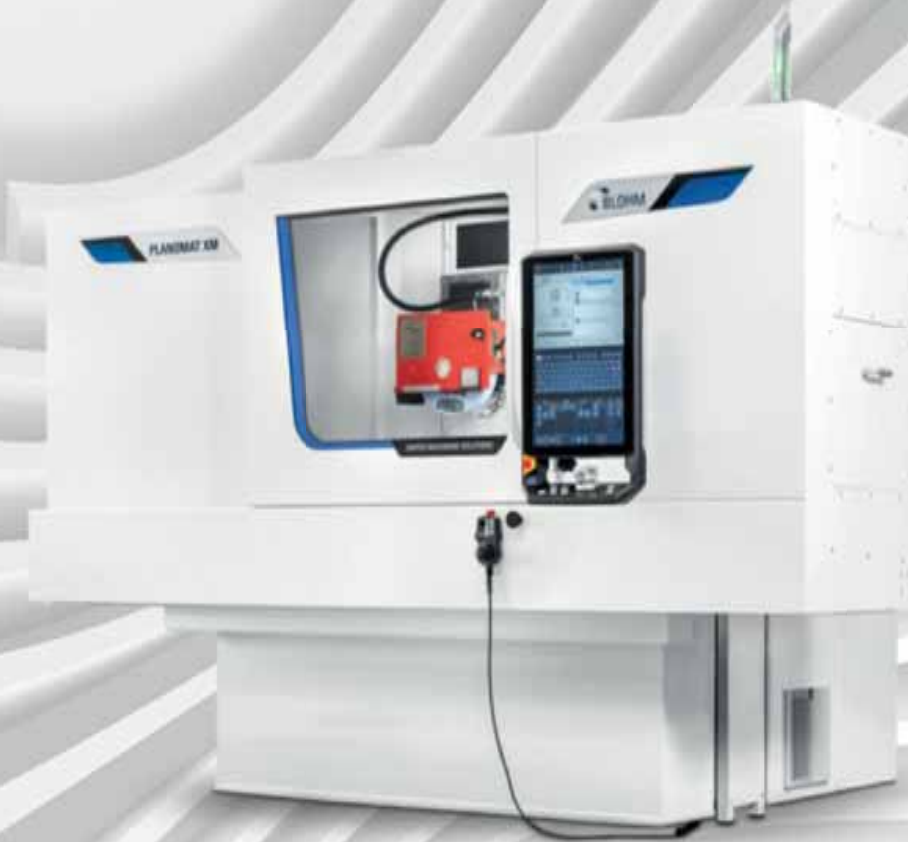
With the WT-72-1000-B8 fully commissioned, Columbia Gear continues to strengthen its position as a trusted manufacturing partner for high-value, precision components across industrial, OEM and defence markets.

**UK Agent: Advanced Grinding Solutions**

**Tel: 024 76 226 611**

**Email: [info@advancedgrindingsolutions.co.uk](mailto:info@advancedgrindingsolutions.co.uk)  
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## **Meet the PLANOMAT XM 408: big capability in a compact footprint.**

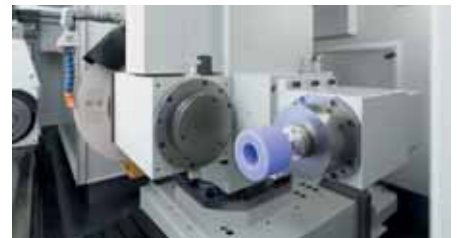
BLOHM's new PLANOMAT XM 408 brings surface and profile grinding performance into a space-smart, competitively priced package—delivering repeatable accuracy, intuitive C.O.R.E. operation, and digital-ready support to keep productivity high and downtime low.



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# Universal grinding machines for precision manufacturing tasks



Universal grinding machines in the UG Series from EMAG combine proven grinding technology with a cost-efficient machine base. They are ideal for users who are looking for a sophisticated solution for internal, external and out-of-round grinding and do not want to compromise flexibility, precision and process reliability.

The UG Series include machines with grinding lengths from 400 to 1,500 mm. This gradation covers a wide range of requirements, from compact workshop machines for toolmaking to universal production solutions for longer shafts and complex geometries whether clamped between centres or in a chuck.

This series is divided into four variants:

- UG 400 with 400 mm grinding length
- UG 630 with 630 mm grinding length
- UG 1000 with 1,000 mm grinding length
- UG 1500 with 1,500 mm grinding length

Linear guides in the X and Z axes, servo drives with recirculating ball screws and direct-drive motorised grinding spindles form the technical basis. The standard centre height is 175 mm and the maximum workpiece weight is 120 kgs (model UG 1000). Larger centre heights and workpiece weights are possible with additional equipment.

The grinding head is equipped with direct-drive motor spindles and the spindle power is up to 11 kws. As there is no belt drive, there are no sources of vibration and the torque is transmitted without loss. This leads to uniform power transmission and reduces vibrations during the grinding process.

The automatically swiveling B-axis enables infinitely variable positioning between -15° and +225° with an accuracy of 0.0005 degrees. This precision is required for surface and contour grinding, where the exact angular position of the grinding wheel determines the machining

result. The achievable peripheral speed of the grinding wheel is 50 metres per second, precision grinding spindles are used for internal machining. These spindles are characterised by high motor speeds and a robust bearing with oil-air lubrication, which is required for internal grinding of small bores.

The workhead is equipped with precision tapered roller bearings that ensure high rigidity, concentricity accuracy on the test workpiece is 0.5 micrometres. This accuracy is the result of the rigid bearings and the quality of the components used.

A swivel range of 0° to +30° enables various grinding strategies for cone grinding and the pneumatic lifting device facilitates setup and positioning of the workpiece. AE sensory equipment can be integrated as an option. These sensors detect the contact between the grinding wheel and workpiece and reduce idle times.

An optional workpiece spindle with C-axis is available for out-of-round and thread grinding. In this case, the workpiece spindle is designed as a motor spindle with rotary positioning. This enables synchronised movements between the feed of the grinding spindle and the rotation of the workpiece.

The standard tailstock is equipped with a quill with a diameter of 63 mm for MK4 centres. It runs low backlash in the guide, which enables precise centring of the workpiece. A fine adjustment of ±40 micrometres allow the correction of taper deviations and ensures concentricity of well under one micrometre.

Manual or hydraulic actuation systems are available. The hydraulic version speeds up workpiece changeover, as the quill is automatically retracted after machining. An integrated sensory equipment monitors the correct position of the workpiece tip and increases process reliability.

Various dressing systems are available for different requirements. Dressing is an essential part of the grinding process, as the geometry and sharpness of the grinding wheel significantly determine the surface quality and dimensional accuracy.

Table dresser with flexible positioning: The table dresser can be placed at any position on the top table. This flexibility allows it to be adapted to different workpiece geometries and grinding wheel diameters. The user can optimise the dressing position for specific workpieces, which shortens setup times for frequently changing production tasks.

Dressing spindle on the workhead: The dressing spindle is mounted at the rear of the workhead and enables automated dressing without manual intervention. This solution is suitable for batch production where constant dressing cycles increase process reliability. Integration into the machine structure reduces the footprint and shortens non-productive times.

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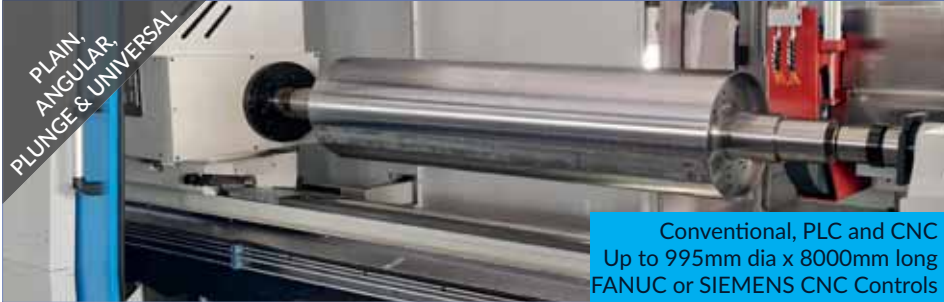
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RK has 30+ years experience in sensitive, high precision grinding applications and all projects are managed discretely.



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Factory Acceptance and Installed Acceptance trials is a common occurrence on the range of high precision grinding machines we supply.



**INSTALLATION:**

From full installation including foundation requirements, heavy lifting to generic offload and site, RK International manage the entire project.



**TRAINING:**

No matter the control or the level of the technology, the RK Int'l support team can provide you with the latest training on your machine.



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CNC Cylindrical Grinder is now  
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**SCAN FOR MORE INFO:**

RK International Machine Tools, a family-run business, has been a pioneer in supplying machine tools since 1951.

Our extensive product range includes one of the largest product ranges of grinding machines from a single supplier in the UK with local support by factory trained engineers.



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# RK International Machine Tools Ltd announces strategic partnership with Topping Technology

### Ultra-compact, high-precision grinding solutions to be introduced to the UK

Simon Rood, director and general manager at RK International Machine Tools Ltd, is proud to announce a significant new partnership with Topping Technology Co., Ltd., a premier grinding machine manufacturer based in Taichung, Taiwan. This collaboration marks a pivotal moment for the UK precision engineering sector, introducing Topping's advanced cylindrical grinding solutions, specifically the space-saving X-25 CNC, to RK International's extensive portfolio.

This partnership combines RK International's decades of expertise in supplying high-quality machine tools to the UK market with Topping's reputation for "Total Quality Control" and innovation in grinding technology.

### A union of grinding expertise

"We are thrilled to formalise this relationship with Topping Technology," says Simon Rood. "At RK International, we constantly scour the globe for machine tools that offer our customers a competitive edge. In the current manufacturing climate, where floor space is at a premium, but the demand for sub-micron precision is higher than ever, Topping's engineering philosophy stands out. Their machines are not just tools; they are comprehensive grinding solutions designed for the modern era of high-efficiency production."

Ms Pearl Lee, speaking on behalf of Topping Technology, comments on the venture: "Since our inception in 2007, Topping has been dedicated to researching and producing various precision grinding machines to meet the needs of the manufacturing industry. We have established a robust sales network spanning over 20 countries across five continents, earning the trust of the international manufacturing industry. Partnering with RK International allows us to deepen our presence in the UK, a major European industrial hub where we can provide our high-rigidity universal grinding solutions to a discerning market. We view ourselves not just as a machine supplier, but as a grinding solution centre and a reliable technical partner for our clients."

### Topping Technology

#### A history of innovation

Founded in 2007 in Taichung, Topping Technology quickly established itself as a leader in the field. From its origins in two-axis NC cylindrical grinders, Topping has progressively expanded its capabilities to encompass complex CNC CAM cylindrical grinding machines, hydrostatic centreless grinders and linear-motor-driven cross-slider machines.

The company boasts a professional R&D team committed to continuous innovation, ensuring their products find wide application in demanding industries such as aerospace, medical equipment, automotive and precision machinery. This heritage of experience and technology ensures that every machine delivered maintains the highest level of market competitiveness.

### Introducing the Topping X-25 CNC:

#### Maximum precision in minimum space

The focal point of this new partnership is the introduction of the Topping X-25 CNC Cylindrical Grinder to the UK market. This machine represents a paradigm shift in grinder design, specifically engineered for high precision and high technology within a remarkably compact footprint.

"The X-25 is the perfect answer for UK manufacturers facing space constraints," explains Simon Rood. "Unlike traditional T-type base designs, the X-Series utilises a revolutionary cross-slide structure. This design allows the X-25 to reduce floor space requirements by over 30 percent while significantly enhancing stability. It is a superior choice when space is limited, making it ideal for busy production environments where every square metre counts."

The X-25's architecture differs from that of standard grinders. The X-axis and Z-axis are designed as a cross-slider, meaning the work-table is permanently bolted to the machine base. This "travelling head"



configuration keeps the workpiece stationary with respect to Z-axis travel, while the slides move. This design significantly reduces machine space and shortens the required travel distance, improving working speed and precision stability.

The machine base itself is constructed from high-rigidity Meehanite cast iron, which has undergone annealing and ageing treatment to ensure material stability. The slideways undergo high-frequency hardening and precision grinding, resulting in a deformation free structure with outstanding wear resistance. Furthermore, the X and Z axes are protected by enclosed telescopic covers, which shield the high-precision linear scale and drive devices from grinding mist and coolant, ensuring long-term accuracy.



## REGO-FIX▲

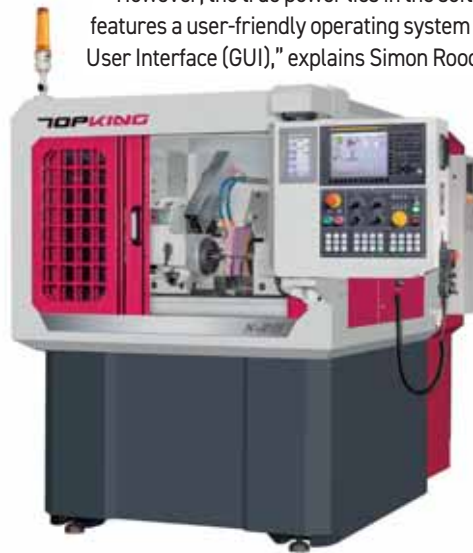


Despite its compact machine dimensions of just 1,800 x 2,310 x 1,800 mm, the X-25 packs industrial-grade capacity. It features a swing over table of  $\varnothing 270$  mm and a maximum grinding diameter of  $\varnothing 250$  mm, with a distance between centres of 200 mm.

The grinding capability is driven by a powerful 5.5 kW grinding wheel spindle motor. The wheelhead construction is a testament to Topking's metallurgical expertise. The grinding wheel spindle is manufactured from high-quality SNCM-220 alloy steel. The spindle undergoes a multi-stage heat treatment process, achieving a surface hardness above HRC 62 and ensuring long-term dimensional stability and resistance to deformation.

While Topking machines feature versatile control options, RK International is highlighting the X-25 equipped with the optional FANUC control system, specifically the FANUC Oi-TF. This integration brings world-class reliability and familiarity to UK operators.

However, the true power lies in the software overlay. "The X-25 features a user-friendly operating system with a built-in Graphical User Interface (GUI)," explains Simon Rood. "Operators do not need



to be experts in complex G-code or M-code programming. The system allows the operator to divide complex components into multiple grinding processes via graphical guidance. You simply fill in the numerical data for grinding and dressing and the machine handles the rest. It is an intuitive, 'fill-in-the-blanks'

approach that simplifies process editing significantly."

This flexibility allows operators to switch freely between the GUI for quick setup and traditional CNC programming modes for more complex, bespoke requirements. The control system supports multiple modes, including OD, end-face and profile grinding, as well as various dressing cycles, including straight, profile and radius.

RK International recognises that versatility is key for UK subcontractors. The X-25 is not limited to simple plunge grinding. It is capable of traverse grinding, oscillation and even shoulder grinding. The work head is driven by a servo motor with stepless variable speed, 10-300 rpm and the tailstock option includes hydraulic support for easy operation.

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# Weiler Abrasives introduces Fortis Mill Roll grinding wheels for hot and cold mill operations

Delivering up to 20 percent longer wheel life and peak productivity

**W**eiler Abrasives, a leading producer of abrasives and power brushes for surface conditioning, is excited to announce its new Fortis Mill Hot Roll Grinding Wheels and Cold Roll Grinding Wheels. These high-performance wheels feature advanced ceramic grain technology and formulations designed to maximise productivity and profitability for hot and cold roll mill grinding applications.

“Productivity and roll quality are the two most critical factors for roll grinding facilities and the new Fortis Mill wheels are engineered to deliver on both fronts,” says Inja Skrinjar, product manager. “By combining self-sharpening ceramic grain with our proprietary Ultralock retention technology, Weiler Abrasives has created a wheel that not only lasts longer but also aggressively grinds harder-to-process materials with greater consistency, for maximum roll life.”

The new Fortis Mill wheels address key challenges, primarily extending wheel life and increasing Material Removal Rates (MRR), ultimately reducing operational costs for end users.

Testing demonstrates that the wheels deliver up to 20 percent longer life and faster material removal rates compared to previous generations, drastically reducing the frequency of wheel changeovers and associated downtime. Mills can also partner with Weiler Abrasives for expertise and technical support to help unlock their full potential.

The Fortis Mill ceramic wheels are an upgrade to Weiler Abrasives' existing portfolio, incorporating innovative features that set a new standard for roll grinding:

- **Upgraded ceramic grain:** The advanced ceramic grain is designed to be self-sharpening. Grain continually fractures into sharp, aggressive cutting points throughout the grinding process. This leads to higher, more consistent material removal rates and shorter grinding cycles.
- **Ultralock technology:** A proprietary grain treatment technology enhances the retention of



the abrasive grain within the bond system. This advanced bonding significantly contributes to the wheels' durability, reducing consumable spend and changeovers.

- **Improved G-Ratio:** The new wheel formulation improves the G-ratio, the ratio of removed workpiece material volume to wheel volume consumed. A higher G-ratio signifies better value, delivering faster grinding with significantly less wear for increased efficiency.

The Fortis Mill wheels are available in formulations tailored to the distinct requirements of hot and cold rolling mills. For hot mill grinding, where substantial material must be removed and surface finish requirements are less stringent, the wheels use coarser grains for maximum MRR and efficiency on challenging materials. For cold mill grinding, where surface integrity is paramount, the wheels use finer grits to consistently deliver precision surface finishes, ensuring smooth, scratch-free surface roughness (Ra) as low as 0,05 while eliminating damaging surface defects like chatter marks or spirals.

Partnering with Weiler also provides access

to a team of experts around the world dedicated to providing ongoing support, so operations get engineered solutions tailored to their specific applications. On-site technical support and education help keep a mill's grinding process optimised and their people safe, while on-site testing and process documentation helps guarantee repeatable results.

Learn more about how the new Fortis Mill Roll Grinding Wheels from Weiler Abrasives can improve performance and productivity at [emea.weilerabrasives.com/catalog/industry/roll-grinding](https://emea.weilerabrasives.com/catalog/industry/roll-grinding)

As a leading global manufacturer of surface conditioning solutions, Weiler Abrasives Group is dedicated to forging collaborative relationships with its customers in diverse markets including metal fabrication, industrial production, maintenance and repair and operations, to help tackle their toughest cleaning, grinding, cutting, deburring and finishing challenges.

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## Security for the long-term future

Master Abrasives, which was founded in 1967 and serves sectors including aerospace, automotive, the medical industry and power generation, is continuing to operate from the High March industrial estate in Daventry after Tetra Real Estate, part of the Wigley Group, acquired the freehold of the site.

The 22,355 sq ft facility at 1-3 High March includes offices, warehousing and production space across three buildings on a large site fronting the A45, providing the infrastructure needed to manufacture and distribute a wide range of abrasive products.

After briefly owning the freehold itself, Master Abrasives opted for a sale-and-leaseback arrangement to retain security of tenure while allowing the business to focus investment on its core manufacturing and distribution operations.

Paul Batson, managing director of Master Abrasives, said the deal had given the business confidence about its future at the site.

He states: "This agreement gives us the stability we were looking for and allows us to concentrate on what we do best without worrying about managing the property ourselves."

"Working with Chris Parsons has been a really positive experience. It feels like a genuine partnership and having a landlord who understands manufacturing businesses and is based locally makes a huge difference to us."

Chris Parsons, managing director of Tetra Real Estate, felt the strength of the relationship was a key positive to the deal. He says: "Master Abrasives is a business with an impressive history and a strong reputation in demanding industrial sectors."

"We're delighted to have completed this deal and to be working closely with Paul and his team. Building good relationships with occupiers is a core part of how we operate and this is one we're particularly pleased with."

Master Abrasives continues to balance its global reach with a strong local presence and has sponsored Daventry Town FC for the past two years, reflecting its ongoing commitment to the community it has been part of for decades.

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# A consistent strategic focus on innovation

Overcoming economic challenges by taking performance and efficiency to the next level, new products from PFERD TOOLS provide a wealth of new solutions.

“To overcome challenges, we need courage, innovative strength and endurance,” explains Dr Ina Terwey-Scheulen, director of global marketing product management & PFERD TOOLS ACADEMY, summing up PFERD TOOLS’ strategic direction for the coming year: “When the economy falters, demand switches away from replaceable commodities to modern solutions that have been optimised for specific applications. This is the only way to keep costs down and work profitably.”

Over the past few years of economic crisis, this strategic direction has enabled PFERD TOOLS to help numerous companies work more efficiently and remain successful.

PFERD TOOLS intends to systematically continue this strategy, with innovations such as the CC-GRIND VIEW grinding disc, the RCK drive system, new automation solutions and a much larger range of solid carbide tools, including the Performance Line for ISO-M milling. In addition, automation projects are set to boost economic efficiency further for customers in 2026.

### An efficient tool that provides a clear view

The CC-GRIND VIEW grinding disc has proven to be a major commercial success, says Ina Terwey-Scheulen. Thanks to its built-in viewing windows, the disc appears transparent as it rotates, meaning users can work precisely and monitor the process more effectively. The innovative concept has created a real buzz: “We’re seeing very strong growth in turnover and sales volumes with the CC-GRIND VIEW,” she explains.

The RCK drive system also proved successful shortly after it was launched. Users have been particularly impressed by its smooth and quiet operation, low weight and consistent rotational speed, which significantly increases productivity. The RCK will be a cornerstone of PFERD TOOLS’ sales strategy in 2026, partly because “the expanded range with the new handpieces will tap into new applications and industries.”

### Focus on solid carbide tools and automated solutions

With its expanded range of solid carbide tools, PFERD TOOLS is aiming to take a more holistic approach to production processes: “That was our goal in conjunction with our focus on optimising processes, cutting costs and/or



increasing productivity.” All tools are manufactured in the company’s European centres of excellence and are designed with high precision, consistent quality and productivity in mind, aspects which make all the difference in modern production environments. Furthermore, the company sees a lot of potential in automated solutions. PFERD TOOLS doesn’t just provide tool solutions, it also helps its customers to analyse and optimise robot-assisted workflows. This offers great potential for improving efficiency and generating additional business, particularly against the backdrop of rising cost pressures.

### Find the perfect solution

PFERD TOOLS is also publishing the latest version of its Tool Manual, containing over 11,000 solutions for work on surfaces, cutting and machining. Alongside improved search and functions, it offers comprehensive information and multimedia content for every single product. The Manual can be downloaded in digital form or a printed copy can be obtained from trade retailers.

The new products and key areas for 2026 underline PFERD TOOLS’ consistent strategic

focus on innovation. They combine excellent real-world benefits, quality and economic advantages and pave the way for optimised workflows in manual and automated applications alike.

PFERD TOOLS is synonymous with high-quality, precise and innovative tools with the wow factor. It has been developing solutions for work on surfaces and for cutting and machining materials since 1799. Its vision is to pave the way for your success.

The company is independent, dynamic and forward-thinking, family-run with a clear focus on driving sustainable growth. It always puts the needs of its customers and the challenges of the international markets at the heart of what it does. With a global presence, PFERD TOOLS is there for you whenever you need it in more than 100 countries, both on site and digitally. With its innovative strength and expertise, it pursues a clear mission: to provide solutions that make a real difference to you and your projects.

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# WALTER Surface Technologies acquires Hermes North America

WALTER Surface Technologies, a global leader in productivity and safety solutions for the metalworking industry, has announced the acquisition of Hermes North America, a leading supplier of coated abrasives with a long-standing reputation for technical excellence and premium performance.

This strategic acquisition ensures business continuity and long-term stability for Hermes North America customers and employees, while expanding WALTER's existing expertise in coated abrasives. The addition of Hermes strengthens WALTER's position in key market segments, particularly in belted products that serve a wide range of finishing, robotic and automation applications.

"This acquisition is a long-term investment in growth and innovation as customers continue to automate their processes," says Marc-André Aubé, CEO of WALTER Surface Technologies. "It complements our product lines by expanding our abrasive solutions offer specially designed for our automation division and strengthens our ability to deliver high-performance solutions that help customers work better, faster and more efficiently."

Tony Sarles, general manager of Hermes North America, adds: "Joining WALTER represents a new chapter of strength and stability for Hermes North America. With WALTER's support, we will continue to serve our customers and partners with the same dedication and technical expertise they have come to expect, now backed by a stronger foundation for the future."

WALTER plans to integrate Hermes' high-quality abrasive products into its lineup quickly, ensuring customers have seamless access to a broader range of solutions across its distribution network. The Hermes European Group will continue to operate independently as a trusted partner and supplier. The transaction is effective immediately and activities for both customers and suppliers will experience no disruption in service.

WALTER Surface Technologies is a leader in high-productivity solutions for industrial metalworkers. The company delivers a comprehensive portfolio that includes abrasives, power tools, tooling, chemical solutions, safety products and automated material removal solutions. With a long-term growth strategy driven by innovation and strategic acquisitions, WALTER has completed eight successful integrations, building one of the industry's most robust and trusted product offers for industrial metalworking. Founded in 1952, WALTER operates in multiple countries across North and South America, with its international headquarters in Montreal and U.S. headquarters in Windsor, Connecticut. The company is recognised for its commitment to customer productivity, sustainability and leading technical expertise.



Hermes North America is a leading supplier of high-quality coated abrasives serving customers in the metalworking, woodworking, and composites industries. Recognised for its technical expertise, premium product performance and customer-focused service, Hermes North America has earned a reputation as a trusted partner for surface finishing solutions.

**WALTER Surface Technologies Tel: 001 8005220321**

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## A Practical Guide to Precision Grinding



This book has been written for the people who, figuratively speaking, put their noses to the grindstone every day. The book distills what the author, Walter Graf, learned during over 40 years in the abrasive industry: Travelling the industrialized world, optimising customers' grinding processes and giving grinding seminars.

372 pages, divided into some 20 chapters covering, among others, OD & ID cylindrical grinding, centreless grinding, surface and creep-feed grinding, gear grinding, how to run grinding tests, diamond dressing, giving practical advice on effectively running these processes. Excessive wordiness was consciously avoided and counterbalanced by graphics and simple formulas to make the contents understandable, digestible and actionable.

Anyone wishing a summary of the contents, with the first page of each chapter, please send a request to [info@adgrind.com](mailto:info@adgrind.com)

**Costs per copy: £71.00 with free delivery**

The book is now on stock in the UK at:

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# Precision lapping and polishing of wafers (Gallium Arsenide (GaAs) & Silicon)

**W**afer lapping and polishing are vital processes in semiconductor manufacturing, playing a foundational role in achieving the surface flatness, thickness uniformity and structural integrity required for high-performance devices. As modern technologies increasingly rely on multi-layer lithography and advanced integration techniques, even microscopic variations in wafer topography can cause defocus, misalignment, or process failure.

Lapping removes material, corrects bow and warp, and improves overall parallelism, while polishing refines the surface to atomic-level smoothness, eliminating sub-surface damage and achieving precise final thickness. These steps not only prevent defects such as delamination, voids and adhesion failures, but also enhance device reliability, electrical performance and manufacturing yield.

The importance of these processes becomes even more pronounced in advanced applications where both geometric precision and flawless surface quality are critical. Photonic devices like GaAs and InP wafers demand ultra-flat, mirror-like surfaces for optimal light propagation and optical clarity. MEMS and sensors rely on strict control of wafer thickness and parallelism for mechanical accuracy and sensitivity. In 3D packaging and wafer bonding, nanometre-scale planarity is essential to form robust, void-free interconnects. Similarly, power electronic devices, including high-voltage GaN and SiC components, require pristine surfaces to prevent premature breakdown and ensure operational stability. In all these areas, the precision achieved through lapping and polishing is not optional it is fundamental to enabling the next generation of semiconductor innovation.

### Lapping and polishing of Silicon Wafers

**Objective:** Achieve single-side lapping and chemical mechanical polishing (CMP) of a 4" diameter silicon wafer to a final thickness of 500  $\mu\text{m}$ , with a target surface finish (Ra) of 1–2 Nm.

**Material and equipment:** The wafer processing task involved a monocrystalline silicon wafer with an initial thickness of approximately

529  $\mu\text{m}$ . The objective was to reduce the thickness to a target value of 500  $\mu\text{m}$  while achieving an ultra-smooth surface finish in the range of Ra 1–2 nanometres. To meet these stringent requirements, two precision finishing processes were employed: an initial lapping stage using a water-based aluminium oxide slurry, followed by Chemical Mechanical Polishing (CMP) with Col-K(X) slurry.

**Lapping process:** The lapping operation was performed using a Kemet 15 lapping machine equipped with a Pyrex glass plate and a ceramic conditioning ring. The abrasive medium was aluminium oxide slurry, a water-based solution optimised for consistent removal rates. The wafer, wax-mounted onto a ceramic block, was processed individually using an applied load comprising a 1 kg ceramic block and an additional 1.8 kg stainless steel (SUS) weight. The plate operated at 15 RPM for a duration of 45 minutes.

The results of this step showed that the

incoming wafer thickness ranged from 0.526 mm to 0.529 mm and was reduced to 0.504 mm to 0.506 mm, yielding a material removal of approximately 0.023 mm. The resulting surface roughness was measured at 0.334  $\mu\text{m}$  and the Material Removal Rate (MRR) was approximately 0.0005 mm/min. While this process effectively achieved significant material removal and planarisation, the surface roughness remained well above the desired nanometre-level specification.

**CMP process:** To further refine the wafer surface and achieve the target thickness, chemical mechanical polishing was conducted at the second stage. This process also utilised the Kemet 15 machine, but with a SC1535 polyurethane (PU) polishing pad. The slurry consisted of Col-K(X), enhanced with 100 ml per litre of hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) to improve chemical reactivity. The same ceramic conditioning ring was used and the wafer was wax-mounted as before. However, this time a



higher load was applied: 1 kg ceramic block plus a 4.1 kg SUS block. The process ran at 15 RPM for 60 minutes.

This polishing step brought the wafer thickness down further, from an incoming 0.504-0.506 mm to an outgoing 0.500-0.502 mm, with a material removal of around 0.004 mm. The resulting surface roughness improved significantly to 0.008  $\mu\text{m}$  (8 nm) and the material removal rate dropped to 0.00006 mm/min. Although the final thickness met the 500  $\mu\text{m}$  target, the achieved surface finish still fell short of the desired 1-2 Nm specification.

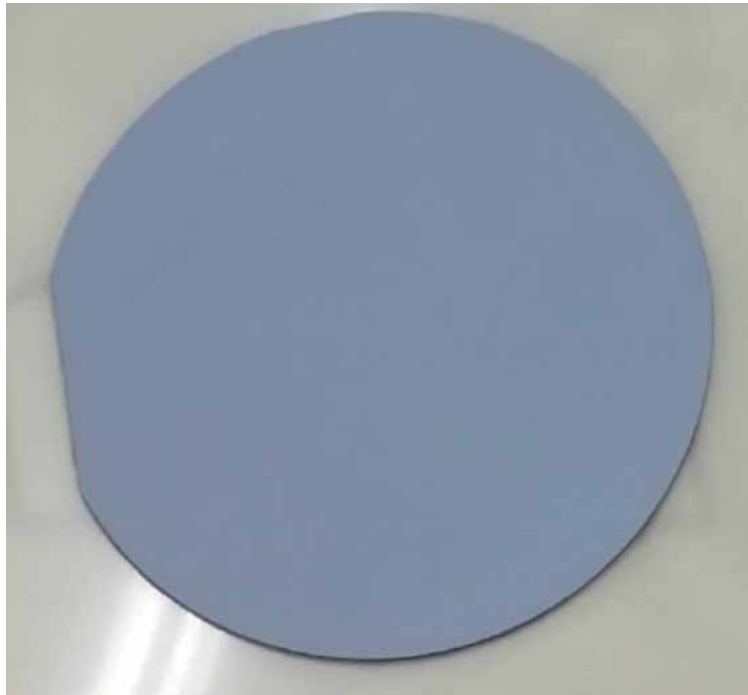
The combined lapping and polishing process successfully met the dimensional requirement, with the final wafer thickness falling within the 500-502  $\mu\text{m}$  range. However, the surface finish achieved was 8 Nm Ra, above the target range of 1-2 Nm. Further process optimisation may be needed to close this gap and meet increasingly stringent surface finish requirements.

Surface Finish (Ra) achieved 8 nm  
Final material thickness achieved 500-502  $\mu\text{m}$

### Surface finishing of Gallium Arsenide (GaAs) Wafers

Gallium Arsenide (GaAs) is a compound semiconductor known for its superior electronic properties, particularly in high-frequency and optoelectronic applications. However, its brittleness and sensitivity to mechanical stress present challenges during wafer preparation. The goal of this test was to process a 2" GaAs wafer to a high optical finish without scratches or residual sub-surface damage, using single-side precision techniques.

Objective: Perform single-side lapping and polishing of a 2" diameter GaAs wafer to achieve a defect-free, mirror-finish surface.



To meet the stringent surface and geometric criteria, the wafer underwent a three-stage surface preparation process. This included an initial lapping stage to remove material and planarise the surface, followed by a first-stage polish to eliminate sub-surface damage from lapping and finally a second-stage polish for fine surface enhancement and final finishing.

### Process details

**Single-side lapping:** The lapping operation was conducted on a Kemet 15 machine using a flat Pyrex glass plate and aluminium oxide as the abrasive. The wafer was wax-mounted onto a 1.2 kg ceramic block and subjected to an additional 3.5 kg of load. Operating at 30 RPM for 60 minutes, the process effectively removed approximately 0.76 mm of material. The resulting wafer exhibited excellent planarity, with achieved parallelism within 0.002 mm. No processing issues were reported, indicating a stable and efficient material removal phase.

**First polishing stage:** In the first polishing step, the same Kemet 15 system was used, this time

fitted with an ASR-H polishing cloth and slurry 1-WHVS2-PC-STR. The load configuration remained the same as in the lapping stage. The plate rotated at 15 RPM for 65 minutes, during which sub-surface damage from lapping was effectively removed. This stage preserved good parallelism, achieving a result of approximately 0.003 mm. It also significantly improved the wafer's surface quality in preparation for the final polish.

### Second polishing stage:

The final polishing stage was performed using a CHEMO PAD 7 (NC-HS) polishing cloth in combination with a 0.3  $\mu\text{m}$  Alpha Alumina slurry, enhanced by a 20 percent bleach additive.

No additional weight was applied in this stage. The process ran at 15 RPM for a brief two to three minute interval, aimed at enhancing the visual quality of the surface. While the wafer likely achieved a mirror-like finish as intended, parallelism decreased slightly to around 0.005 mm.

**Final surface quality:** Upon completion of the three-stage process, the GaAs wafer exhibited a visually flawless, mirror-like finish with no visible scratches or lines, based on visual inspection. Geometrically, the wafer retained high flatness and parallelism throughout most of the procedure, although a minor deterioration was observed following the final polish. Overall, the process proved effective in balancing optical quality and geometric precision, with particularly strong results in the initial lapping and first-stage polishing phases.

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## The Science behind

Lapping, Polishing, Grinding and Honing



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# Automation over abrasion:

## Why vibratory deburring is leading complex component finishing



In machine shops across the UK, deburring remains one of the most time-consuming and often underestimated stages of the manufacturing process.

Chamfer mills, rotary scraper blades, Scotch-Brite pads and grinding wheels have long been the default solution. Skilled operators can remove burrs from holes, edges and machined features with impressive dexterity. But manual deburring comes at a cost: lost machine uptime, inconsistent finishes, health and safety risks and, in some cases, scrapped parts.

For complex components in aerospace, automotive and defence supply chains, those costs quickly multiply. At Midland Deburr & Finish in Lye, managing director Chris Arrowsmith believes vibratory deburring offers a smarter, safer and more scalable alternative.

### The hidden cost of manual deburring

- Manual deburring might appear flexible, but it introduces several operational challenges.
- Machine downtime while operators step away to hand-finish parts.
- Inconsistent edge quality, especially on cross-holes and complex geometries
- Risk of over-grinding, leading to dimensional damage.
- Repetitive strain injuries and airborne abrasive exposure.
- Higher labour cost for low-value, repetitive tasks.

"You don't want highly skilled machinists spending valuable time scraping edges or

polishing cross-holes," Chris Arrowsmith states. "Their expertise should be focused on programming and production, not on laborious finishing."

In high-value sectors, a heavy hand with a grinder can destroy hours of machining in seconds. On thin-walled or intricate components, manual intervention increases the risk of distortion or rounding critical features. Vibratory deburring is controlled, repeatable and scalable. It replaces hand tools with controlled, process-driven finishing.

### Components are placed into vibratory bowls or tubs containing specialist media designed to:

- Remove burrs consistently across all edges.
- Smooth internal and external features simultaneously.
- Access hard-to-reach geometries.
- Deliver uniform surface finishes across batches.

Unlike hand methods, vibratory processes treat the entire component in one operation reducing the chance of missed features or uneven edges.

"For complex parts with multiple holes, pockets and intersecting features, vibratory finishing ensures everything is addressed in a single cycle," Chris Arrowsmith continues. "It removes variability from the equation."

### Protecting high-value components

Traditional deburring methods can be destructive when applied aggressively.

Excessive pressure on a grinding wheel or blade may compromise tolerances or remove more material than intended.

Vibratory deburring, by contrast, is carefully calibrated through:

- Media selection.
- Compound chemistry.
- Cycle time control.
- Process validation.

This allows Midland Deburr to deliver burr-free parts without compromising dimensional integrity, a critical factor for aerospace and automotive customers.

### Improving health, safety and productivity

- Manual deburring exposes operators to:
  - Sharp edges.
  - Abrasive grit.
  - Repetitive movements.
  - Noise and airborne particulates.

By shifting finishing to controlled vibratory systems, manufacturers reduce ergonomic risk while increasing throughput. Automation is about using people more effectively. Vibratory deburring improves consistency, protects workers and frees skilled staff for higher-value work.

### A strategic advantage for UK manufacturers

As defence and export markets demand higher volumes with tighter quality standards, scalable finishing solutions are becoming strategically important.

Manual deburring may still have a place for one-off adjustments or precision chamfering, but for production environments, particularly those handling complex machined or stamped components, vibratory deburring offers measurable gains in speed, safety and repeatability.

"In today's market, finishing needs to be engineered, not improvised," Chris Arrowsmith concludes. "Vibratory deburring allows manufacturers to eliminate a traditionally slow, risky process and replace it with something controlled, predictable and production-ready."

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## ARKU InfoDays 2026

From 19th - 21st May, ARKU will exclusively open its doors in Baden-Baden, Germany and invite users and industry professionals to the ARKU InfoDays 2026. For three full days, everything will revolve around the latest technologies in levelling, deburring and automation. Visitors can look forward to live demonstrations, personal consultations and a true showcase of innovation.

Under the motto "Deburring. Levelling. Automation." visitors will experience how modern machine solutions make production processes more efficient, cost-effective and sustainable. This year's focus is on the latest developments in deburring machine technology as well as coil laser systems for the flexible and material-efficient production of blanks and parts.

Among the highlights is the new deburring technology for fibre parts. Der EdgeBreaker® 3000 FIBER was specifically developed for demanding fibre sheet metal parts and delivers flawless edges and surfaces on both sides in just a single pass. For heavy-duty applications, ARKU will present the EdgeBreaker® 4000 NEXT, a deburring machine that reliably and powerfully removes even heavy burrs from flame-cut parts. With handling by ARKU, autonomous solutions for levelling and deburring will also be showcased, covering the entire process from small parts to fibre components.



In addition, visitors will experience live laser cutting directly from coil on site. ARKU Coil-fed laser blanking lines enable high flexibility in manufacturing and offer significant efficiency and material cost advantages.

During the InfoDays, visitors are invited to bring their own sheet metal parts and have them processed directly on the machines.

The ARKU InfoDays are known not only for their technical expertise, but also for their vibrant atmosphere and the opportunity to explore the latest industry trends while building valuable connections. Interested participants are encouraged to take advantage of this opportunity and see the newest developments demonstrated live.

### Highlights:

#### **New: Revolutionary deburring technology, perfect for your fibre parts**

Experience revolutionary deburring technology live at the ARKU InfoDays. Developed specifically for fibre laser sheet metal parts, the EdgeBreaker 3000 FIBER delivers flawless edges and perfect surface finishes. Bring your own fibre parts and ARKU will process them live on site.

#### **New: Unleash full deburring power for your flame cut parts**

The EdgeBreaker 4000 NEXT stands for uncompromising power and maximum deburring performance. Designed for demanding applications, it deburrs and rounds flame-cut parts on both sides in a single pass, efficient, powerful and reliable.

#### **New: Discover coil laser cutting live**

See how coil-fed laser blanking lines produce blanks and parts directly from the coil. Learn about the advantages coil laser systems offer for press shops and for the efficient production of your parts.

#### **New: Handling by ARKU**

Experience autonomous deburring live from small components to fibre parts, showcased on ARKU deburring machines. Test ARKU handling solutions on site.

#### **Smart line integration for flame cutting systems**

The EdgeBreaker® 9000 LINE removes slag and burrs from both sides in a single pass without the need to flip heavy parts.

#### **Next level laser part deburring with the EdgeBreaker 3000 NEXT**

This deburring machine takes double-sided deburring of punched and laser-cut parts to the next level. Discover the most cost-effective way to deburr and round edges.

#### **Welcome to the future of levelling**

How can you prevent pinched edges? How do you automate levelling? How do you measure flatness? Discover new and proven solutions for levelling technology.

#### **New: Full control of your fibre burrs from the very start**

The EdgeBreaker® 3000 FIBER tackles fibre burrs exactly where they are most demanding. Powerful abrasive belts and targeted edge rounding create the basis for durable surfaces and long-lasting components. One pass, both sides and up to 50 percent less processing time.

#### **New: Full deburring power for heavy-duty flame-cut parts**

The EdgeBreaker 4000 NEXT is purpose-built for removing heavy burrs after flame cutting. Where others reach their limits, this deburring machine shows its strengths. It confidently handles even stubborn burrs on thick laser-cut parts making it the machine of choice for demanding applications.



3000 NEXT. Double-sided and in a single pass, this generation is even easier to operate and maintain. With the EdgeBreaker 3000 NEXT, you work more cost-effectively, sustainably and efficiently.

**Visit the production facility in Bühl**

All of the deburring and leveling machines are built in the ARKU production hall. Experience state-of-the-art technology in action. During the InfoDays, you are invited to an exclusive tour, see, marvel and have all your questions answered directly by experts.

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**New: ARKU coil-fed laser blanking lines cut directly from the coil**

Sheet metal processors can now laser-cut sheet metal flexibly directly from the coil. Compared to conventional press lines and laser cutting from sheet metal blanks, ARKU coil-fed laser blanking lines save time and up to 30 percent in material costs. The result is maximum flexibility, high productivity and clear efficiency advantages in series production.

**New: Handling by ARKU**

This is how easy autonomous leveling and deburring can be. Experience it live on ARKU deburring machines with vision robots: Workee® for handling laser-cut parts and EasyBot® for autonomous deburring of fibre parts. Test the solutions directly on site with your own parts and experience handling by ARKU live.

**Perfect flatness for every part**

Get to reliable sheet metal processing faster: with ARKU leveling machines you achieve nearly stress-free, flat sheet metal parts up to 60 mm thick less scrap, less rework.

**Smart line integration for flame cutting systems**

More throughput, less effort, reproducible quality. The integrated EdgeBreaker 9000 LINE handles the complete processing of your flame-cut parts after plasma cutting in a single pass.

**Discover the EdgeBreaker® 3000 NEXT**

Deburr and round your fine sheet metal after laser cutting or punching with the EdgeBreaker



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# Why inserts are the smart, accessible solution for cutting tool manufacturers

**A**re you maximising the potential of your existing CNC machines? In a softer market, many cutting tool manufacturers are looking for ways to make better use of their assets, add new revenue streams and maintain profitability without major capital investment. At the same time, the soaring price of carbide is putting real pressure on margins, with the cost of solid tools fast becoming prohibitive for many manufacturers.

Across the industry, one application is emerging as both accessible and strategic inserts. By using far less carbide per cutting edge and enabling multiple indexes from a single piece, inserts offer a smarter way to leverage expensive carbide while meeting customer demands.

Whether you're facing reduced workloads, idle capacity, or just exploring ways to diversify, indexable insert production offers a high-value path forward. Thanks to advances in software and automation, getting started is easier than ever and the payoff can be significant. Here's why now is the perfect time to explore inserts and how ANCA's InsertsPRO solution makes it achievable for any manufacturer.

### 1. A profitability enabler in a high-carbide-cost world

Inserts manufacturing isn't just about adding capability, it's about improving margins in an environment where carbide prices are climbing. Because inserts use a smaller volume of carbide per cutting edge and can be indexed multiple times, they provide a far more efficient use of this increasingly expensive material than many solid tools.



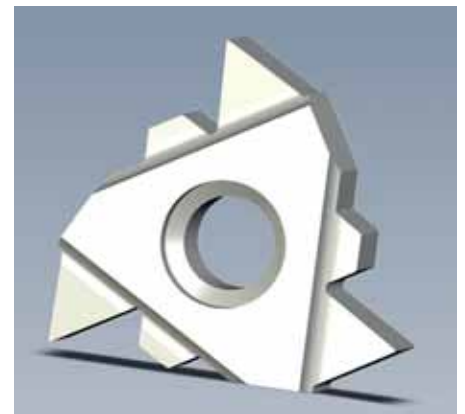
With InsertsPRO, fast setup, low production costs and intelligent technology ensure that every tool is made right the first time. With first-pass accuracy, less waste and reduced rework, manufacturers can achieve higher throughput and profitability, even in tighter market conditions and under carbides' rising cost pressures.

### 2. Turn idle capacity into profit

When market conditions shift, machines often sit underutilised. Inserts production is the perfect way to bring them back to life. Instead of letting valuable equipment idle, manufacturers can repurpose their existing CNC tool grinders to produce high-quality inserts, a product line with consistent demand across industries. For many ANCA customers, this means using the same MX machines that already produce round tools to also manufacture inserts. Rather than buying a dedicated insert grinder, you can

unlock a new product line from the assets you already own.

With InsertsPRO, it's easy to retrofit current machines or upgrade software to start production quickly. For many manufacturers, this means transforming downtime into new business opportunities without major investment. It's a practical, low-risk way to maximise asset use, improve ROI and strengthen resilience during slower periods.



### 3. Tap into high-growth industries

Even as some segments slow, industries such as EV components, aerospace, medical and micro-precision manufacturing continue to grow. Specialty inserts are key tools in these markets and are used for turning applications that demand accuracy, surface finish and repeatability.

By bringing insert production in-house, manufacturers can respond faster to emerging customer needs and diversify into these expanding sectors. Inserts aren't just another product, they're a gateway into advanced applications driving the next wave of manufacturing innovation.

### 4. Get started without disruption

A common customer challenge is how to utilise existing assets so that the same machines can efficiently produce both round tools and inserts, without disrupting day-to-day production. ANCA's solution is designed around exactly this need.

The move into inserts production is surprisingly simple. Existing ANCA machines, including the MX platform widely used for round tool production, can be upgraded with ToolRoom RN35 software, with only minimal



hardware changes required. InsertsPRO allows you to schedule round tools and inserts on the same MX machine, shifting capacity as demand changes rather than investing in a separate, dedicated insert grinder.

This makes it a low-barrier, high-impact opportunity for manufacturers wanting to expand capabilities quickly. No new factory floor layout or massive investment required and no need to sacrifice existing round-tool productivity.

## 5. Intuitive, high-performance operation

ANCA's InsertsPRO is designed for ease of use. Its fast, intuitive GUI and grind point velocity control simplify the process of achieving precision results, even with complex geometries. Operators can easily manage multiple cutting edges and relief designs without extensive retraining or specialist skills.

## 6. Bring production in-house

Outsourcing inserts can increase cost and complexity, especially in a market where carbide prices, lead times and logistics are all under pressure. InsertsPRO enables complete in-house control, reducing dependency on subcontractors while improving quality and turnaround.

Automated setup and simulation tools, including CIM3D, help you get it right the first time, every time. You gain greater control over carbide consumption, process efficiency and delivery performance.

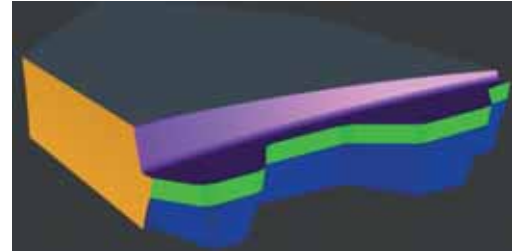
## 7. Future-proof and scalable

As an Industry 4.0-ready platform, InsertsPRO supports digital workflows, advanced simulation and flexible production. Whether you're running short batches or scaling to full production, the system grows with your business and keeps you competitive as technology and customer needs evolve.

ANCA's InsertsPRO solution seamlessly integrates with the ANCA AIMS ecosystem to enable fully unattended production.

## 8. A comprehensive solution without limits

From complex profile definition to multiple cutting edges, clamping orientation and relief functionality, InsertsPRO offers complete freedom in design and execution. It's a single, integrated solution built for precision, speed and flexibility with no hidden limitations. In a challenging market, adaptability is the ultimate competitive edge. Inserts production gives manufacturers a practical, profitable and future-ready opportunity to make the most of



their existing resources while positioning for growth especially as carbide costs rise and capital budgets tighten.

By exploring inserts now, manufacturers aren't just adopting a new product they're unlocking strategic advantages: better use of MX and other existing machines, smarter use of expensive carbide, faster time-to-market, higher margins and access to emerging high-growth markets.

With ANCA's InsertsPRO, you can turn capacity into capability and opportunity into lasting advantage.

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GrindingHub 2026: Hall 7 - Booth A70

## Change in management at VOLLMER UK

A change in management is taking place at the UK subsidiary of the Vollmer Group. After many successful years, Martyn Cross will step down from his role as managing director of VOLLMER UK Ltd in April 2026 and retire.

Martyn Cross has played a key role in shaping the development of VOLLMER UK and has significantly strengthened the company's market position in Great Britain. Through his strong commitment, extensive expertise and close ties with the Vollmer Group, he has made a substantial contribution to the company's success. The Vollmer Group would like to express its sincere thanks to Martyn Cross for his dedication and valuable work and wishes him all the best, good health and many new personal projects in this new phase of life.

In April 2026, Christopher Hellyer will assume the role of managing director of VOLLMER UK Ltd. After completing his apprenticeship, he began his professional career as a service technician before moving into sales, where he gained more than 33 years of extensive experience in senior sales management positions. He will take on his new responsibilities gradually and has worked closely with Martyn Cross to ensure a smooth transition. With his long-standing industry experience and in-depth market and sales knowledge, Christopher Hellyer brings excellent qualifications to continue the successful development of VOLLMER UK. The Vollmer Group considers itself well-positioned for the future with this management change and looks forward to continuing its successful collaboration with the team in Great Britain.

"The years at VOLLMER UK have been a very special and enriching time for me. Together with a dedicated team and in close cooperation with the Vollmer Group, we were able to continuously develop and strengthen our



Chris Hellyer (left) and retiring Martyn Cross (right).

market position in the UK. I am very grateful for the trust placed in me and the support I have received. I am confident that VOLLMER UK will continue to be successfully positioned under the leadership of Christopher Hellyer," adds Martyn Cross.

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GrindingHub 2026: Hall 7 - Booth D71

# Increasing throughput in metalworking through optimised cleaning

by Elizabeth Norwood, senior chemist, MicroCare LLC

In precision metalworking and surface finishing operations, productivity is closely tied to consistency. Dimensional accuracy, surface quality and cycle time are carefully watched across machining, polishing, blasting and finishing stages. However, one stage that directly influences both quality and output is often underestimated: cleaning.

Following machining or finishing, components typically retain cutting fluids, forming oils, polishing residues and fine metallic particulates. If these contaminants stay, they can compromise coating adhesion, plating uniformity, bonding strength or corrosion protection. The result may be visible defects, rejected batches or added inspection and rework, all of which reduce effective throughput.

For manufacturers looking to increase output without expanding capacity, cleaning presents a practical opportunity for improvement. When properly specified and controlled, it becomes a contributor to efficiency.

## Cleaning and stability

Surface finishing depends on consistent surface condition. Even when upstream machining parameters are tightly controlled, variability introduced during cleaning can disrupt downstream performance.

If surface condition differs between batches, coating behaviour may also vary. This can lead

to added checks, repeat finishing or cautious reductions in line speed to avoid defects. These incremental interruptions accumulate over time, affecting production.

Treating cleaning as an integral step strengthens control across the production process. Defined procedures, validated cycle times and controlled cleaning fluid quality help ensure that each batch enters the finishing stage under the same conditions. When cleaning performance is repeatable, finishing operations can continue without unnecessary hold points or corrective adjustments.

## Vapour degreasing

Vapour degreasing is still widely used in precision metalworking where consistent, high-performance cleaning is needed prior to coating, plating or finishing operations.

Vapour degreasing uses solvent vapour to clean and remove contaminants from metal components. The process relies on a two-sump system for thorough cleaning, rinsing and drying. The cleaning fluid is heated in the boil sump to create vapour, which condenses on the cooler surfaces of the parts, dissolving and lifting away oils, greases and other residues generated during machining or finishing.

Parts are then rinsed in the rinse sump with pure, uncontaminated fluid for complete cleaning. Afterward, they are held in the vapour to dry. In just eight to twelve minutes, parts



emerge clean, dry and residue-free, ready for immediate transfer to the next processing step.

As cleaning, rinsing and drying occur within a contained system, handling is limited and cycle times are clearly defined. This structure reduces variability and supports production planning.

Vapour degreasing is particularly well suited to intricate or precision components where uniform cleaning is essential. The condensing vapour reaches complex geometries and detailed features without mechanical abrasion. Cleaning fluids can be formulated to provide the strength needed to remove contaminants without affecting finished surfaces.

## Cycle time and throughput

In many metalworking facilities, cleaning becomes a limiting factor when processing times are inconsistent or when drying stages extend beyond planned intervals. Parts may queue between operations while surface



condition is verified or residual moisture is addressed. Even short pauses affect overall line balance.

Defined cleaning cycles allow processing time to be built accurately into production schedules. With vapour degreasing, cleaning and drying take place in a single sequence, reducing uncertainty between stages. Integrated solvent distillation helps maintain fluid purity, which supports stable cleaning performance over extended production runs.

The benefit is not just shorter processing time, but predictable processing time. This allows manufacturers to support planned output rates without adding contingency steps or added inspection to manage variability.

## Cost and efficiency

Improved throughput must also translate into measurable cost control. Coating failures or cosmetic defects often require repeat finishing, consuming labour, energy and consumables. In high-value metal components, scrap can carry significant financial impact.

Vapour degreasing systems are designed to minimise fluid loss while supporting consistent cleaning performance. Contaminants are separated from the cleaning fluid through distillation, extending the fluid life and helping keep cleaning effectiveness across multiple cycles.

Since the system is enclosed, emissions are controlled and fluid consumption is reduced compared with open processes. Fewer repeat cycles and reduced waste contribute directly to operational efficiency. Over time, consistent cleaning performance helps limit the hidden costs associated with rework and process variability.

## Fluid selection and compliance

Selecting a proper cleaning fluid is central to achieving consistent results. Formulations vary in their ability to dissolve heavy machining oils, lighter forming lubricants or fine particulates. Matching fluid characteristics to contamination

type ensures effective removal without unnecessary chemical strength.

Incorrect fluid choice can lead to incomplete cleaning, added processing or avoidable adjustments to cycle time. By contrast, a properly matched formulation supports stable, repeatable performance and reduces the likelihood of repeat cleaning cycles that interrupt production flow.

Material compatibility must also be evaluated to avoid affecting surface finishes or sensitive alloys. Careful assessment prior to implementation reduces the risk of unintended surface changes that could require corrective action downstream.

Modern vapour degreasing fluids are developed to follow environmental and safety frameworks including REACH and RoHS requirements. Many are non-flammable and formulated with lower toxicity profiles suitable for industrial use. Compliance reduces the risk of operational disruption linked to regulatory change.

Fluids with low global warming potential and non-ozone-depleting properties allow manufacturers to align cleaning performance with environmental goals while supporting process stability. In metalworking environments where uptime and planning accuracy are critical, selecting the correct fluid contributes not only to cleaning effectiveness but to sustained throughput.

## Process optimisation

Optimising cleaning for throughput requires structured evaluation rather than simple equipment choice. Contamination type, part geometry, basket loading and production volume all influence performance. Working with experienced cleaning specialists allows manufacturers to assess their specific application before changes are implemented. This may include reviewing contamination, evaluating cleaning fluid compatibility and conducting controlled trials to confirm cycle times.



In many cases, throughput improvements are achieved through refinement rather than major capital investment. Adjustments to process parameters, loading configuration or fluid choice can improve consistency and reduce repeat processing. A collaborative approach reduces implementation risk and helps ensure that the cleaning stage supports overall production goals.

## A strategic process step

In modern metalworking and surface finishing operations, incremental efficiency improvements can deliver significant competitive advantage. Cleaning directly influences surface readiness, quality consistency and production flow. When properly specified and controlled, vapour degreasing provides quick, repeatable cleaning and drying within a contained system. Integrated into the broader surface preparation strategy, it supports stable output, reduced rework and predictable scheduling. Rather than functioning as a background task, cleaning becomes a measurable contributor to operational performance. In environments where quality and productivity must advance together, optimised cleaning plays a vital role in sustaining throughput and supporting finishing standards.

## Author information:

Elizabeth Norwood is a senior chemist at MicroCare, LLC, which offers precision cleaning solutions. She has been in the industry for more than 25 years and holds a BS in Chemistry from the University of St. Joseph. Elizabeth Norwood researches, develops and tests cleaning-related products and currently has one patent issued and two pending for her work. For more information, visit [microcare.com](http://microcare.com)

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# Fat-free microfilters for the circular economy

## Solvent cleaning as the core of production process optimisation

3S manufactures screw barrels, spindles and spirals for plastic processing machines from high-quality chrome steel that is susceptible to corrosion. These include filter screens with laser-drilled micro-holes. 3S now carries out the heat treatment, which was previously outsourced to an external service provider, in-house, including the cleaning of these parts in a compact EcoCore solvent cleaning system from Ecoclean, purchased from MAP PAMMINGER. This has enabled the company to increase process stability and its own share of added value.

Plastics have been around for 165 years and have been conquering the world for 75 years. Today, they are an integral part of our everyday lives. For some time now, used plastic products have no longer been landfilled or incinerated, but returned to the production cycle. To do this, they are shredded, pre-dried and cleaned in recycling plants. In extrusion units, the waste material is gently melted and compacted and filtered with the highest degree of fineness. This results in high-quality plastic products once again.

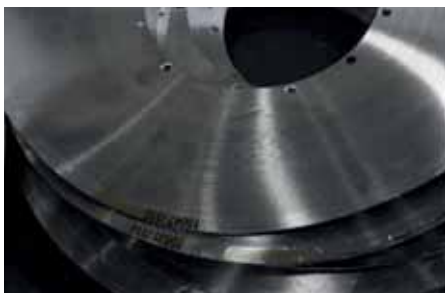
3S Schnecken + Spindeln + Spiralen Bearbeitungsges.m.b.H. (3S) specialises in the manufacture of extruder screws and filter screens for plastics processing. Founded in 1991, the company is part of the EREMA Group, which specialises in plastic recycling machines and systems and is a reliable partner to manufacturers of plastic processing machines and systems worldwide.

The products that 3S manufactures in Roitham with exceptionally high precision include chrome steel filter screens for laser filters. This high-performance filtration system reliably removes unwanted contaminants such as paper, wood, aluminum, or foreign polymers from the plastic melt. This enables a continuously high melt throughput.

3S manufactures the filter screens using a patented laser process on machines that were designed in-house and manufactured using standard CNC machining centres. After laser treatment and removal of the resulting residues, the filter discs are heat-treated. "Until recently, we had outsourced these process steps to a specialised service provider," reports Michael Danner, production manager Roitham at 3S Schnecken + Spindeln + Spiralen Bearbeitungsges.m.b.H. "To increase our added value and process reliability, we now do this



*Production manager Michael Danner talks to Gerald Leeb from MAP PAMMINGER and is enthusiastic about the cleaning results and the service life of the EcoCore.*



*3S manufactures chrome steel filter screens in Roitham for laser filters used to remove unwanted impurities from the melt in plastic processing machines.*

in-house." To this end, 3S installed a system from its previous service provider, which also acts as a plant manufacturer in this field.

### Micro-drilling as a challenge

This part of the process chain also includes cleaning the parts before heat treatment to remove dirt and emulsions. The filter screens pose particular challenges for the cleaning technology: the laser-cut holes in the particularly precise and durable filter components are so thin that they cannot be seen with the naked eye and that a drop of water cannot flow through them due to surface



*3S produces the filter screens using a patented laser process on machines that were designed in-house and manufactured using standard CNC machining centres.*

tension. Not only because of the high corrosion tendency of the chrome steel alloy, but also for this reason, water-based cleaning methods are not very effective. However, the same applies to many other processes that operate with low media pressure. Michael Danner therefore followed the recommendation of the previous heat treatment specialist, who had to overcome the same problem and turned to the manufacturer-independent cleaning technology specialists at MAP PAMMINGER GMBH.

### Compact, fast, ergonomic

MAP PAMMINGER recommended a compact EcoCore cleaning system from the German manufacturer Ecoclean. "In order to accommodate the filter screens optimally, the system is designed with an increased basket size of 670 x 480 x 400 mm," explains Gerald Leeb, managing partner of MAP PAMMINGER GMBH. "The baskets from the manufacturer Kögel have a lid that can be locked with one hand and spring-loaded compartment rods to separate the parts."

The modular system is particularly compact with a footprint of only 4,663 x 1,940 mm and offers operators a high degree of ergonomics and efficiency. A 7-inch colour display with



*Cleaning is carried out in 670 x 480 x 400 mm baskets from the manufacturer Kögel with lids and spring-loaded compartment rods to separate the parts.*

self-explanatory pictograms and parts visualisation ensures simple and safe programming and system operation. A roller conveyor, which is installed as standard, allows the baskets to be loaded and the cleaned parts to be removed for transport parallel to the cleaning process. The fact that, unlike other cleaning methods, no steam clouds are formed due to cleaning in a tightly closed system contributes to a high-quality workplace, as does the low noise level of the EcoCcore from Ecoclean.

### Combined cleaning methods

The filter screens are cleaned in an automated, multi-stage process. This consists of a coarse and a fine wash cycle using the degreasing agent JAEKOCLEAN™-H 61 S from CSC JÄKLECHEMIE GmbH & Co. KG in Nuremberg. At the same time, ultrasonic cleaning takes place, after which the parts are treated with cleaning agent vapour and finally vacuum dried. Nevertheless, the entire cleaning cycle per batch takes only eleven minutes. "The EcoCcore combines the advantages of a solvent cleaning system, intuitive operation, and a small footprint," explains Gerald Leeb. "In addition, it is particularly energy-efficient, among other



*The parts are cleaned prior to heat treatment to remove contaminants and emulsions in a compact EcoCcore solvent cleaning system from Ecoclean, sourced through MAP PAMMINGER.*

things, thanks to the heating of the flood tanks using heat recovery from distillation."

Due to the continuous treatment of the cleaning medium by distillation, it is also particularly economical in terms of solvent consumption and is maintenance-friendly and environmentally friendly. The automatic discharge of the oil with a reduced solvent content into an external collection container also contributes to this, keeping disposal costs low. The cleaning agent is expected to be replaced at intervals of three to four years. In addition, after a short training period, 3S's

in-house staff will be able to carry out routine maintenance tasks independently as required. For easy maintenance, the EcoCcore features large swing doors that ensure quick access to service-relevant components. "With an annual capacity of up to 20,000 filter screens, longer plant downtimes are out of the question, especially unplanned ones," adds Michael Danner. "The Ecoclean cleaning system meets our high standards for reliability and availability."

### Quickly productive, well supported

The system was commissioned in just two days in mid-2024. Since then, the EcoCcore has been operating smoothly in one to two shifts. "The cleaning results are impeccable, as is the support provided by MAP PAMMINGER," says Michael Danner happily. "In addition to the heat treatment systems themselves, this compact and easy-to-maintain system has enabled us to integrate a process that was previously unfamiliar to us, thereby significantly increasing our added value."

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# A bright outlook and renewed commitment to customers

MecWash managing director, John Pattison, shares his thoughts on manufacturing, component cleaning and MACH in 2026



**The new year always brings fresh impetus to the manufacturing industry and, with MACH on the horizon, there is added enthusiasm for the year ahead. We saw a positive 2025 at MecWash, with robust demand for our industrial component cleaning systems.**

In recent years, automotive has had a difficult time and an upturn in the sector would be welcomed. Both defence and aerospace are in a strong position due to a high demand and the expertise of UK manufacturers in these sectors.

Medical is a consistently important sector for MecWash and I expect this to continue. Medical regulations are notoriously stringent which serves us well as our parts washing systems have a reputation for satisfying the toughest of demands. We have also seen a rise in interest from customers in additive manufacturing. This is beginning to become an option in more mainstream manufacturing processes.

Our approach has always been to design a bespoke process, chemistry and system for each application put forward to us. This detailed

analysis of the requirements for each customer gives our team the ability to meet the varying contamination challenges set.

With high energy prices set to continue, I expect our customers will focus on optimising their industrial parts washing to even an even greater extent. The pressures of the market will force manufacturers to prioritise their investments and generate efficiencies wherever possible.

Speaking with our customers, there is a theme of reducing downtime as productivity is essential with high operating costs. MecWash component cleaning systems have always been built with durability and reliability at the core of their operation. Customers increasingly expect machines to be accessed remotely to diagnose problems swiftly, something we have offered for years.

With our programme of regular preventative maintenance, MecWash customers can expect a continued commitment to provide the highest standard of service throughout the lifecycle of the system. Also, our fully refurbished

machines have proved popular in recent years and have sold quickly once added to the market.

Even as market leaders, we are always searching for ways of improving our systems and our service. We will continue to innovate and lead the research of the latest cleaning advancements. The experience of our team is unparalleled and I am confident that we will continue to deliver the results for our customers from across industry.

The team understands the balance between the power of washing and drying with the delicacy of the components for each individual application. This knowledge gives us the ability to work alongside our customers to deliver efficient systems that will consistently perform. The growing number of systems that we build for longstanding customers is a testament to the quality of our approach.

With a bright outlook and renewed commitment to our customers, we are anticipating a busy year with MACH 2026 as the highlight in April. We consider MACH to be the marquee event in the British engineering calendar and look forward to sharing and discussing the very latest that UK and global manufacturing has to offer.

For more information, contact the MecWash team by phone on 01684 271600 or via email.

### World class parts washing technology

MecWash parts washers are used in the aerospace, automotive, defence, general engineering and medical industries. It specialises in achieving high cleanliness standards for components with intricate geometries, difficult substrates or tenacious contaminants. Its parts washers support the full range of engineering processes, including machined castings, forgings, turned parts, pressings, extrusions and mouldings.

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## Precision without compromise: Vixen's expertise in wet blast cleaning

As industries continue to demand cleaner components, extended service life and greater process consistency, surface cleaning technology has never played a more critical role. At Vixen Surface Treatments, wet blast cleaning is not an adaptation of existing processes it's a proven surface enhancement technology, engineered from the ground up to deliver controlled, repeatable results across a vast range of materials and applications.



Wet blast cleaning uses a water borne slurry of fine abrasive to remove corrosion, coatings, oxides and contaminants, while gently cleaning and conditioning the underlying substrate. The result is a uniform, contamination-free surface, free from dust and static build up.

From aerospace components and turbine blades to automotive parts, stainless

fabrications and precision tooling, Vixen's technology ensures every surface is prepared for its next stage whether that's inspection, coating, bonding or service. At the core of Vixen's portfolio is the Aquablast range, offering manual, semi automated and fully integrated cleaning systems. Each is engineered for efficiency, long service life and easy maintenance.

**Key features include:**

- Balanced slurry flow for even finish distribution
- High efficiency pumps for consistent media delivery
- Optional rinsing and drying stages for a complete cleaning cycle
- Custom tooling and fixturing for complex or delicate components

These systems are widely adopted in Maintenance, Repair and Overhaul (MRO) operations where precision cleaning is essential to recover and extend component life.

For high volume applications, Vixen provides inline and continuous wet blast cleaning systems, integrating cleaning, rinsing and drying into a single automated line.

This approach eliminates manual handling, shortens cycle times and ensures consistent, traceable results.

Every Vixen wet blast cleaning system is designed, built and tested in-house at the company's UK headquarters. This vertical integration guarantees total control of quality and performance, from system design to long term support.

Each solution is developed collaboratively, with sample processing and process validation ensuring the chosen system delivers optimum cleaning results from day one.

**Vixen wet blast cleaning brings measurable operational and environmental benefits:**

- Reduced chemical use compared with solvent or vapour cleaning
- Consistent parts cleanliness for downstream processes
- Lower maintenance costs and consumable use
- Improved workplace safety and cleanliness
- Repeatable surface finish quality and extended component longevity

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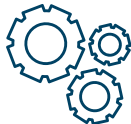
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# Ultrasonic systems and high-performance solvents for electronics manufacturing

**A**s a leading surface finishing company, with an established history in engineering premium solutions to renowned customers within the electronics industry, Guyson understand that safety, quality and meticulous attention to detail is not optional, it's fundamental.

From low volume operations, such as defluxing select PCBs, to high volume operations including mass hard disk drive component cleaning, Guyson proudly remains the trusted partner for numerous finishing applications, across the electronics industry.

### Ultrasonic cleaning technology:

#### High-frequency efficiency, reliable results

From manual small baths to large, automated multi-stage cleaning lines, Guyson produces a variety of ultrasonic cleaning equipment best suited to the needs and requirements of the electronics industry.

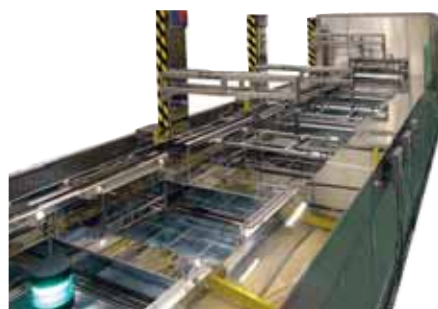


Included in Guyson's manual ultrasonic cleaning solutions are its Ultrasonic Clean-Rinse (UCR) and Clean-Rinse-Dry (CRD) Tanks. The UCR1500 Tanks are notably used for cleaning electrostatic filters, while the CRD Tanks perform highly efficient defluxing of PCBs.

Amongst Guyson's comprehensive selection of automated ultrasonic cleaning systems, are the highly-efficient Microsolve machines, designed to deliver the highest standard of precision cleaning, paramount for the durability of critical electronic components. Guyson's Microsolve Mono-Solvent Systems undertake a wide range of precision 'in process' cleaning routines on numerous fibre optic connectors

and interconnectors, while the Microsolve Co-Solvent Systems are used for removing no-clean solder flux residues from Insulated-Gate Bipolar Transistor (IGBT) power modules, for electric vehicles.

Established for high specification and high-volume cleaning applications, Guyson Supercleaners are favoured for working with computer disk drive (HDD) components such as base castings, top covers and Head Stack Assemblies (HSAs) for the world's leading Hard Disk drive manufacturers. Perfect for high-level cleanroom installations, the Supercleaners provide multi-stage aqueous ultrasonic cleaning, high purity deionised water rinsing, multi-frequency variable power ultrasonics and hot air drying.



### Solvent specialists: Guyson's one-stop-shop ultrasonic cleaning solutions

In addition to manufacturing precision cleaning equipment, Guyson supply a range of Inventec solvents compatible with its Microsolve mono and co-solvent cleaning systems, providing customers with a 'one-stop-shop' for all their advanced cleaning needs.

Included in Guyson's Inventec range is its cleaning and cooling fluids, perfect for the electronics industry. Inventec's hydrocarbon-based cleaning product, Topklean EL 20A, is a specialist solution for flux residue removal, which can be paired in a co-solvent process with Inventec's solvent cleaning and drying product, Promosolv DR1, mostly used for vapour-phase defluxing and cleaning complex electronic assemblies. Inventec's Cooling Thermasolv range consists of high-performance dielectric cooling fluids developed to safely and efficiently manage heat in electronic and electrical systems.



### Thermasolv & Guyson H&C: A powerful data centre cooling combination

The Thermasolv range can be used in tandem with Guyson's Hose & Couplings to provide a complete cooling solution for data centres. Further capabilities of the Thermasolv range include applications such as immersion cooling, direct cold-plate cooling and dielectric testing. The fluids offer strong thermal stability, excellent electrical insulation, recyclability and environmental safety.

The Guyson team recently attended Data Centre World, the world's largest and leading event for data centre professionals. The show provided a valuable opportunity for the team to engage in vital industry discussions while highlighting Guyson's transformative solutions.

### 'Try before you buy'

Guyson encourages prospective customers to experience first-hand the benefits that its machines can make to your surface finishing operations, by offering free 'try before you buy' blasting and ultrasonic cleaning trials, at its state-of-the-art blast and wash demonstration facility. To arrange your free component testing, contact Guyson today.

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## How automated blasting systems improve productivity



Surface preparation plays a critical role in manufacturing quality, coating performance, and production efficiency. As production demands increase, many manufacturers are integrating automated shot blasting systems into their operations to enhance throughput, consistency and process control.

Automation does not replace traditional blasting methods. Instead, it expands capability, supports higher production volumes and delivers structured repeatability within controlled environments.

ActOn Finishing supplies automated surface preparation systems that align with each customer's workflow, space and output requirements.

This guide explains how automated blasting systems improve productivity and where they create measurable operational advantages.

### What is automated shot blasting?

Automated shot blasting refers to blasting systems that operate using programmed controls, mechanical handling, or robotic movement to deliver consistent surface preparation.

The defining feature of automated shot blasting is process consistency. Key parameters such as pressure, media flow, exposure time and component positioning are standardised and repeatable.

### Efficiency through structured process control

Automation enhances efficiency by stabilising process variables.

#### Automated blasting systems

- Maintain consistent blast pressure.
- Deliver uniform media flow.
- Standardise exposure duration.
- Ensure full coverage of components.

This structured approach supports predictable cycle times and repeatable output quality, particularly in higher-volume environments.

### Repeatability and surface consistency

Surface preparation must meet defined roughness and cleanliness standards.

#### Automated surface prep systems ensure:

- Consistent surface roughness profiles.
- Uniform treatment across batches.

- Controlled anchor profiles for coatings.
- Reduced variability between components.

When integrated into quality-controlled environments, automation strengthens inspection reliability and coating adhesion performance.

### Cycle time optimisation

Cycle time refers to the total time required to process a component from loading to completion.

#### Automated shot blasting systems optimise cycle times by:

- Maintaining stable blasting parameters.
- Reducing variability in handling.
- Integrating loading and unloading systems.
- Operating continuously where required.
- Optimised cycle time improves overall production flow and supports predictable scheduling.

### Integration with production lines

One of the most significant advantages of automation is integration.

#### Automated blasting systems can be configured to operate:

- Inline with fabrication processes.
- As part of coating preparation stages.
- Within robotic handling cells.
- As standalone automated finishing stations.
- This integration reduces handling delays and creates a seamless manufacturing workflow.

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# VIXEN ADVANCED WET BLAST CLEANING FOR CRITICAL COMPONENTS

At **Vixen**, we design and manufacture advanced wet blast cleaning solutions that restore, refresh, and prepare components with precision. From compact manual cleaning cabinets to fully engineered systems, every machine is designed and built in-house for reliability and performance.

Our wet blast cleaning technology delivers fast, controlled, and highly effective surface cleaning-removing contaminants, corrosion, coatings, and residues without damaging the substrate material. This makes it ideal for maintenance, repair, overhaul, and a wide range of production environments.

## WET BLAST CLEANING DELIVERS:

- **Consistent**, uniform cleaning results
- **Repeatability** performance across parts and batches
- **Gentle yet effective** cleaning, even on delicate or complex components
- **No dust or airborne particles**, supporting a cleaner and safer workspace

[www.vixenaquablast.com](http://www.vixenaquablast.com)



Call us today on: **01642 769333**

or email us at [info@vixen.co.uk](mailto:info@vixen.co.uk)

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