

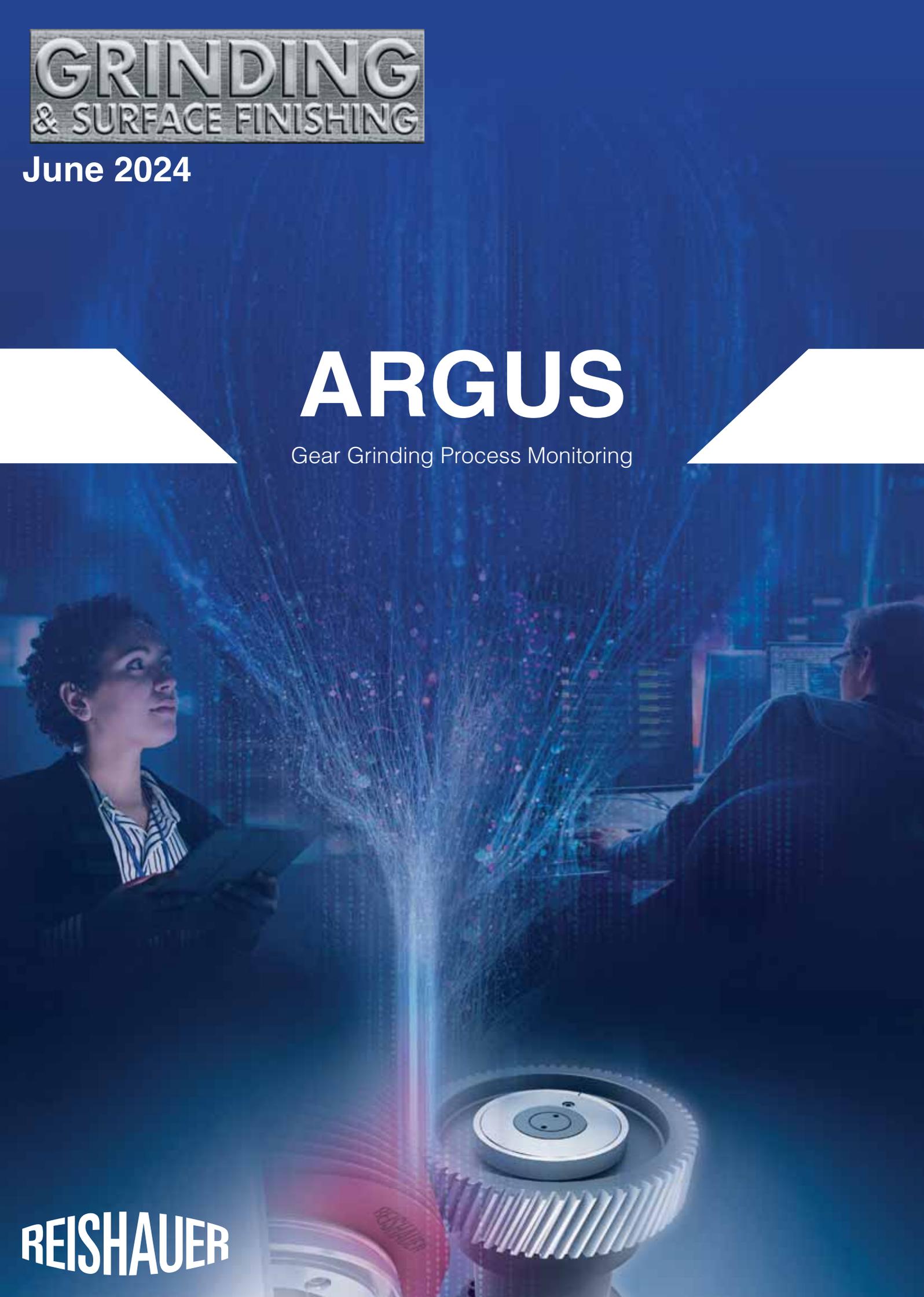
**GRINDING  
& SURFACE FINISHING**

**June 2024**

# ARGUS

Gear Grinding Process Monitoring

**REISHAUER**



Automatic Balancing Systems  
Acoustic Emission Monitoring  
In-Process Gauging  
Grinding Process Control



# GRINDING & SURFACE FINISHING

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## Digitisation of hard fine machining of gears in a production environment

Reishauer's ARGUS Process Monitoring System supports modern gear manufacturing by leveraging digital technologies. Integrating machines and production technologies into the digital realm, where machines connect to the cloud and algorithms assist in assessing machine statuses, has become standard practice for many of Reishauer's customers. Operators, planners and managers are continuously networked with all systems in real-time, enhancing collaboration and efficiency. Gear companies employ the ARGUS Monitoring System to digitalise their gear grinding machine tools. This summary highlights a few insights gained from digitisation.

This system enables the evaluation and optimisation of grinding process quality, as well as the precise monitoring of machine components' status and grinding tool wear. Companies collaborate with Reishauer to combine specialised production knowledge with the innovative capabilities of this digital solution, fostering continuous optimisation and mutual benefit.



*A view of the ARGUS production environment*

The ARGUS system ensures that 100 percent of all components are monitored directly, permanently and seamlessly in real-time, providing unprecedented quality assurance in modern gear production. By monitoring components continuously and ejecting potentially defective workpieces during the machining cycle, the system prevents quality issues in subsequent assembly stages of gearboxes. This proactive approach enhances process reliability and significantly reduces costs in later production stages. Process planners can react immediately to unexpected issues, such as frequency excitations and utilise the 100 percent control provided by the ARGUS system to see exactly how each component is ground, recognise machine conditions and identify problems in real-time. This capability allows for the ejection of faulty components or the blocking of critically identified parts before they are installed in gearboxes, preventing faults that previously led to costly dismantling.

For example, the ARGUS system efficiently detects grinding worm breakages caused by local overloads during pre-machining fluctuations and easily identifies rare, larger breakages due to collisions. One of the primary reasons many companies adopted the ARGUS system was to address challenging vibration problems. Shortly after implementation, with Reishauer's expertise, customers develop the ability to detect potential sources of vibration in specific working areas of the grinding worms. Process monitoring calibration is optimised to remove components that could potentially cause unwanted noise (NVH) in transmissions from the process chain.

For more information, don't hesitate to get in touch via our website: [www.reishauer.com](http://www.reishauer.com)

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# Process optimisation and a world first

Rollomatic focussed on the development of autonomous machines at GrindingHub, as well as new solutions for the Medtech industry and micro-tool production. Digital services for customers also took centre stage.

### Rollomatic Smart Factory: Striving for operational excellence

Rollomatic is committed to helping you fully automate the production by accompanying customers throughout the process. Maximising performance, delivering superior machining quality and guaranteeing dimensional repeatability on small and large production runs are Rollomatic's priorities when it comes to developing autonomous machines. To achieve this, Rollomatic reduces setup time by using automated assistance to enable the first part to be produced within tolerance, automates measurement in production, connects machines to their environment and creates a reliable network between production equipment, robots and company's management system. With the technologies developed by Rollomatic, combined with the know-how of EngRoTec Solutions GmbH, the goal of automating the entire production process can be achieved. At GrindingHub, Rollomatic presented a turnkey automated cell.

### A world first for orthopaedic applications

To meet the specific needs of the medical tool industry and orthopaedic drills up to 500 mm in length, Rollomatic has come up with a new solution that was unveiled in Stuttgart as a world first.

### Micro-tools solution

Rollomatic's DNA is characterised by an unrivalled expertise in the manufacturing of micro-tools. From the outset, Rollomatic has innovated with CNC grinding machines and laser technologies to meet the needs of micro-tool manufacturers. In this field, the requirements in terms of surface finish and repeatability are very high. Rollomatic technology ensures production within dimensional tolerance of less than 0.003 mm. From programming to machine preparation, including wheel selection and measurement, Rollomatic shares its expertise with its customers.

### Efficiency and productivity with the Lean process

Rollomatic puts its Lean process know-how to work in production technology by providing complete tool sharpening solutions, including blank preparation, sharpening and clearance recovery in a single clamping operation.

### Solutions for grinding cylindrical tools and non-round applications

Operations such as cylindrical grinding and blank preparation are all handled by Rollomatic machines, achieving dimensional tolerances and geometric accuracy of less than a few microns. Punch grinding and other non-round applications are achievable within tolerances of less than 0.002 mm with Rollomatic's patented SmartPunch™ peel



grinding process, during which two grinding wheels run simultaneously.

### Universal solution for special applications and reshaping

Strausak ONE, the most versatile ultra-compact machine on the market, demonstrated its vast possibilities for the production of inserts, special tools and reshaping, as well as its scalability to adapt to customers' needs.

### Programming to improve processes

Visitors at GrindingHub were also able to attend demonstrations of the latest innovations and features of VirtualGrind®Pro, ShapeSmart®Pro and Smart Program Generator software on Rollomatic machines and Numroto for Strausak models.

### Rollomatic digital services

At the show, a presentation took place of the training programme designed to help users achieve operational excellence thanks to the Rollomatic Learning Centre. This Centre bundles all of Rollomatic's knowledge on a digital platform and also improves the face-to-face training offerings. New courses and a complete training update based specifically on customers needs was unveiled at GrindingHub. The new myRollomatic customer interface offers a clear overview, simple and efficient operation, access to all Rollomatic services and direct communication with its Hotline.

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# Master Abrasives showcases its range at GrindingHub

Master Abrasives UK exhibited its full range of Master® products at the GrindingHub exhibition alongside its sister company, Master Abrasives Polska.

Representatives from both companies were available on its stand to discuss the complete range of abrasives from the Master brand and how these products can improve productivity in various applications. Products being exhibited included high-quality grinding wheels and a complete range of complementary dressings products.

Since last exhibiting at a European engineering show, Master has introduced a complete range of super abrasive products which includes the precision internal range of Master vitrified CBN wheels. Products include high performance wheels mounted on threaded or carbide shanks to suit the grinding of high precision components or those difficult to grind materials down to 1 mm bore sizes. The UK-owned company has been winning new business globally with this range of products and can fully support manufacturers with its long-established larger range of vitrified CBN and diamond wheels.

The range of Master burrs includes its newest release, the HD cut, ideal for working on aluminium and non-ferrous materials. They give excellent stock removal, are good for blending cast lines and have a low-vibration, smooth running performance. This range will be stocked in a range of



suitable sizes and were available to view on the stand at GrindingHub.

Master Abrasives have been experts in grinding solutions for many years and its display of grinding wheel options at GrindingHub were tailored to a variety of industries including aerospace, oil and gas and automotive. The company offers a full range of grades in vitrified and resin bonds and specially designed products such as SAWPRO grinding wheels for cool cutting action when sharpening circular saws.

Paul Batson, managing director of Master Abrasives group of companies, comments: "We visited the exhibition in 2022 and decided then that this would be part of our promotional and communications strategy for 2024. We exhibited at MACH 24 in the UK and STOM 24 in Poland, the location of our sister company and this will be the focus for promoting our message not only in mainland Europe but globally. I am really impressed with the list of exhibitors planning to be at the exhibition, it is great for engineering globally and for all us exhibitors to show off our portfolio. We have a strong product focus and will be looking to strengthen our network of agents especially in Germany and France. I would encourage any parties interested in representing a strong global brand to come and talk to us and I will be at the show all week with my colleagues so come over and say hello. I'm confident that we will come across even more opportunities this year to grow the Master brand even more internationally."

Now with a sister company located in Bielsko-Biala Poland, Master Abrasives Polska is ideally located to serve both the Polish and European markets for the Master group. Paul Batson adds: "Slawomir Klisiewicz is leading the new company in Poland as national sales manager. He has many years of experience in the abrasives industry and will be available to discuss customer requirements at the GrindingHub. The Polish company has just been appointed an official 3M precision product distributor for Poland which mirrors the UK company and we are all very excited about this opportunity. 3M's high technology grinding products sit very comfortably with our own Master range of products ensuring we continue to offer all our customers a complete solution for industry."

Paul Batson concludes: "After over 50 years of successful trading, we have the experience needed to match the application with the most effective process and products. We have used our knowledge to develop the products in the Master brand, which is now recognised internationally for high-quality abrasives. We look forward to working with new potential distributors on helping customers to improve productivity in other parts of the world following the GrindingHub exhibition."

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# New automation solution at GrindingHub



The United Grinding Group presented a new automation solution in the field of tool machining at this year's GrindingHub. The trade show appearance was held under the theme "Stay Connected" and focused on connectivity solutions.

Numerous visitors gathered at the UNITED GRINDING Group's trade show booth on the first day for the unveiling of the Walter innovation. At 10 am, the covers came off, revealing a mobile transport robot that moved autonomously between the HELITRONIC VISION 400 L high-end tool grinding machine and the fully automatic HELICHECK PLUS measuring machine. This innovative automation solution under the name "Automated Tool Production" (ATP) enables the automatic loading and unloading of cylindrical precision tools. The system consists of at least one robot cell accessible from the front and a mobile transport robot that transports workpiece pallets and individual parts between the storage and processing stations. The new system can be integrated easily into existing installations, not only to Walter machines but also to machines from third-party suppliers.

In addition, Walter surprised visitors with another innovation as it opened a new chapter in the history of tool machining by introducing laser technology based on the

new VISION LASER machine. The main application area for the new machine is machining cutting tools with inserts. Using an innovative, highly reliable, and industry-proven laser system paired with encapsulated optical modules enables very high machine availability in everyday operation.

In addition to this innovation, interested visitors could inform themselves about the Group's latest technologies displayed on a total of 12 machines from the areas of grinding, eroding, lasering, measuring and additive manufacturing. In the field of surface and profile grinding, BLOHM presented the tool changer for the PLANOMAT XT, a unique and cost-efficient solution for the automatic changing of grinding wheels in this market segment. Studer also exhibited its new automation system, insertLoad, which combines the advantages of standardisation and great flexibility and enables automatic loading and unloading of the S31 and S33 cylindrical grinding machines. Adjacent to this, IRPD also presented its revolutionary machine development in the field of additive manufacturing: the IMPACT 4530, the first industrial additive machine tool "Made in Switzerland" which is characterised in particular by a high repetition accuracy and user-friendliness for the manufacturing of metal parts. The machine also sets new standards in its market segment in accuracy, quality and scalability.

The trade show appearance was held under the theme "Stay Connected" and trade visitors were also able to find out about numerous connectivity solutions. These included various digital customer care solutions, the digital assistance systems from UNITED GRINDING Digital Solutions™



and the universal manufacturer independent umati data interface, which can be used to connect the Group's machines and third-party machines with their production environment.

The Group also held a press conference at GrindingHub, at which Stephan Nell, CEO of the UNITED GRINDING Group, provided insights into the state of business.

Stephen Nell stated: "The past year was one of the three best in the history of our Group," surprising the audience, consisting of invited representatives of the international trade press. Despite the challenging economic and geopolitical climate, the Group not only maintained its leading position in 2023 but also expanded it. However, the outlook for 2024 is less rosy for the industry: "Like the entire machine tool industry, we also have to expect a decline in sales in the current year," explains Stephan Nell. However, forecasts are difficult due to the unpredictability of global events. "We have little or no influence on the external factors that are currently shaping the market. Different dynamics within the regions and industries are making forecasting even more difficult. Overall, we are hoping for an increase in incoming orders towards the end of the year," concludes Stephan Nell, giving a cautiously optimistic outlook for the future.

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# “Centreless” solutions for the grinding of engine valves

by Claudio Tacchella

For the grinding of engine valves, the company Rettificatrici Ghiringhelli has provided cutting-edge solutions to a German automotive customer, increasing productivity and quality.

In the scenario of large-scale industrial production, where success is determined by the technology incorporated into the products and the innovative solutions offered, Rettificatrici Ghiringhelli of Luino (VA), Italy, stand out in the field of centreless grinding. This global record is based on the high performance and cutting-edge design of the machines manufactured. These qualities are widely recognised by those manufacturers operating in dynamic and innovative sectors such as automotive and transport, both direct and OEM and their satellite activities. Among the numerous technical challenges faced by Ghiringhelli in this specific sector, a recent machine installation stands out for a German customer, a global leader in the development, production and regeneration of high precision components for large displacement endothermic engines used in marine fields, commercial heavy vehicles, locomotives, high-performance racing engines and many more.



*The range of APG (Ghiringhelli's High Precision) centreless grinding machines is ideal for highly accurate and reliable grinding operations.*



*Ghiringhelli's top quality grinding of the engine valve stems ensures performance, efficiency and the lifetime of the engine.*

### Engineering challenges for engine valves

The customer needed to increase production capacity for centreless grinding of the stems of a wide range of engine valves with 100 percent control of the pieces. Valves represent “critical components” in endothermic motors, which are extremely stressed by mechanical and thermal fatigue during the operations. Continuous cycles of impact on the holding seats linked to the number of revolutions, very high axial pressures, for example to over 2,000 bar in injection on diesel engines, temperatures of over 900°C at the exhaust and 600°C at the intake, explain the reasons for which manufacturers constantly evolve these components with increasingly high-performing solutions. In addition to the development of new geometries to make the thermodynamic cycle used more efficient, special steels and alloys, nickel, titanium, ceramic, sodium-cooled hollow valves and special

anti-wear coatings, such as chrome, are looked for and developed. In this context, having a high-quality grinding process for the engine valve stems becomes essential to guarantee geometric accuracy down to the micron and surface finishes suitable for maximising performance, efficiency and the life of the engine.

#### Extended tool life

For the Ghiringhelli engineers, the starting point was to study and customise a centreless grinding system, fully automatic and equipped with a post-process gauging device, of the APG line, able to guarantee operational autonomy and optimised general performance. The APG range, Ghiringhelli's High Precision, represents the flagship of the company's production. It is ideal for highly accurate and reliable grinding operations while offering an unparalleled response to the high production needs of the sector. The APG models stand out for their extraordinary operational flexibility and customisation based according to the specific production requests. From this perspective, an implemented key innovation concerns the solution identified to extend the life of the grinding wheel, reducing setup times and further increasing the productivity and the performance of the machine. A new spindle



*The solution provided was configured as a robotic isle and the automatic feeding loaders are handled by a FANUC anthropomorphic robot.*

was therefore designed which allows the use of special wheels with a reduced bore compared to the standards, without changing the maximum external diameter. This allows for an increase in the lifespan of the wheel. If on an APG grinding machine with a  $\varnothing 610$  mm wheel, the change is necessary at  $\varnothing 440$  mm, with this solution the wheel can be used up to  $\varnothing 260$  mm. This innovation offers significant advantages, allowing the wheel to be used more efficiently and reducing waste and maximising productivity. Making full use of the tool also helps reduce the environmental impact of the disposal of the wheels at the end of their life. Ghiringhelli was able to increase the operational autonomy of the machine and reduce the general costs, thus decreasing wheel replacements due to wear.

#### A tailor-made robotic isle

The solution provided was a centreless grinding machine APG-S CNC6A model, configured as a robotic isle. This machine allows the grinding, for each group, of a wide range of valves with lengths from 100 to 350 mm and diameter of the head from 25 to 90 mm, of which the stem is ground. The machine has a special hydrodynamic spindle to mount  $\varnothing 610 \times L260$  mm grinding wheels with  $\varnothing 203$  mm bore, 30 kW power and constant peripheral speed up to 63 m/s. A CNC gantry-type loader with linear motors and double clamp for loading/unloading pieces via vacuum system is integrated. To complete the system automatic feeding loaders for raw

and ground pieces, managed by a FANUC anthropomorphic robot for the complete handling from the loaders to the machine, to the cleaning station, laser measurement and finally unloading. The CNC Siemens Sinumerik-ONE manages nine axes and three spindles, with Safety Integrated Plus module and Siemens IO-Link communication protocol. All software functions, from the interface to the robotic isle, to post-process measurement, remote monitoring, diagnostics, ordinary and predictive maintenance, are integrated into the Ghiringhelli-owned HMI.

#### Excellent results for the customer

The customer was fully satisfied with the solution provided. The goal sets were achieved with a 30 percent increase in productivity compared to the previous solutions used, also thanks to the possibility of using more of the wheel and achieving reduced frequency of the machine downtime for retooling, thus consequently cutting operational costs. The customer, already a user of the Ghiringhelli machines, was able to optimise the grinding cycles and the related floor-to-floor cycle times according to the requests. The final expected quality on the engine valves ground on the APG-S was fully respected in accordance with the pre-established specifications.

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*Siemens integrates PLC programming with the HMI Simatic Panel in a single environment to efficiently manage the automations.*

## Complete range of grinding solutions from Fives

GrindingHub 2024 represented the perfect opportunity for Fives to showcase its complete range of grinding solutions and to demonstrate its latest innovations developed to meet customers' needs and to support market requirements in terms of digitalisation and sustainability.

### Newly released Landis 18Ω for precision shafts including electric vehicle drive solutions

The automotive industry is facing unprecedented uncertainty in the manufacturing requirements for EV powertrain components. Investments need to go further to continue ICE production while simultaneously developing products and manufacturing capability for EVs. In response to customers' needs, Fives has developed the Landis 18Ω for precision shafts including electric vehicle drive solutions. This cylindrical grinding machine combines many benefits: higher output with lower energy consumption, leading power to size ratio, all with reduced floor space and man-power requirements plus the lowest total cost of ownership and at an affordable price point.



*Newly released Landis 18Ω for precision shafts including electric vehicle drive solutions.*

### Giustina VDD760 for new, low dust emission hard coated brake discs

From 2030, hard coated brake discs will be a critical element to comply with the recently-ratified Euro 7 automotive norms, which set limits on the air pollution from new vehicles sold in the EU. This technology significantly reduces particle emissions from brakes but creates challenges in manufacture.

In response to the requirements of the Euro 7 Standards, Fives has further developed a technology to grind hard coated brake discs. This new vertical double disc grinder benefits from Fives



*Giustina VDD760 for new, low dust emission hard coated brake discs.*

Daisho Seiki strong experience and proven industrial technology for conventional cast iron brake disc grinding that has been in production for many decades. With a reduced footprint, Giustina VDD760 features new working parameters and new abrasive wheel specifications, to offer optimised productivity and high-quality performance.

### Giustina XL-VSD for large bearings in the wind turbine market

Targeting the green energy sector, Fives has specifically designed the Giustina XL-VSD for grinding large bearings used in the wind turbine market. This extra-large vertical single disc offers an advanced range of sizes to grind bearings from 1 m up to 4 m and beyond, with exceptional parallelism and flatness.



*Giustina XL-VSD for large bearings in the wind turbine market.*

### Advanced digital solutions to track machine and process health and optimise machine parameters

To facilitate its leading role in the future of grinding technology, Fives provides an advanced digital solution. Fives CortX product range includes a suite of hardware and software solutions tailored to specific needs, with the capability to connect

seamlessly and agnostically with any control system to gather high-frequency CNC and PLC data. Solutions are available from simple dashboards, OEE tracking, energy monitors and condition-based maintenance modules to track machine and process health all the way to predictive maintenance systems and fully adaptive



*Advanced digital solutions to track machine and process health and optimise machine parameters.*

machine-learning solutions. These solutions automatically optimise machining parameters to improve quality based on auto-detection of the state of the grinding wheel or cutting tool.

At GrindingHub, Fives also showcased its large range of custom-engineered tooling solutions to ensure maximum abrasive performance, including CITCO cutting tools, natural, CVD and peerless diamond dressing tools and Gardner abrasive and superabrasive solutions for disc, fine, OD/ID and tool-cutter grind applications.

### With a strong heritage built on renowned technologies

Bryant, Cincinnati, Gardner, CITCO: Fives provides an extensive range of grinding solutions. From cylindrical to single and double disc, ID/OD, orbital, centreless, optics and a complete line of custom-engineered tooling solutions, its technologies serve a wide range of applications and materials for various industries. As a global partner with eleven grinding ultra precision facilities and localised service centres in Europe, North America and Asia, Fives is dedicated to its customers' success, wherever they are, from engineering, operation to support program and service throughout the entire life cycle of their installations.

**Fives**

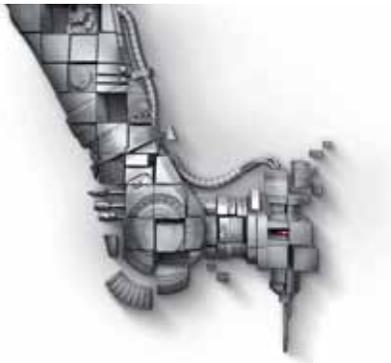
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# Milling, grinding and polishing tools for all vehicle parts

## Innovation and precision for the automotive industry

The automotive industry faces constant challenges, from optimising production processes to ensuring the highest levels of quality and safety. In this demanding environment, tool manufacturer LUKAS-ERZETT has established itself as a leading provider of state-of-the-art tool solutions with a clear focus on innovation and precision. With this focus and its long history of innovation, LUKAS sets standards in the manufacture of tools that fulfil the specific requirements of the industry.



From rough machining through to creating a mirror finish, such tasks are no problem at all with the LUKAS-ERZETT tool portfolio. As a company in the automotive industry or a supplier, it offers you high-quality, high-performance tools and process solutions that contribute to achieving better quality and greater efficiency. These include milling and grinding tools for machining engine, transmission, axle and body parts, for example, as well as LUKAS polishing tools with which any challenge that can arise when finishing high-quality surfaces can be reliably mastered.

Modern vehicles are made from materials that have to meet the most demanding requirements. The LUKAS product range focuses on innovation and performance in order to satisfy the needs of today's automobile manufacturers. As a long-standing expert in milling, grinding, polishing and cutting, LUKAS is a reliable partner for the automotive industry and its suppliers. With its tools and process

solutions, LUKAS enables high-precision machining of cast parts, engine blocks, pistons, transmission gears, turbocharger housings, crankshafts, aluminium rims and other highly complex components.

The expertise of the development department at LUKAS consistently comes up with new tools for exceptional performance. Among the most abrasive tools on the market are the LUKAS iQ series grinding discs. These include flap discs with a multi-layer design for a long tool life even after intensive use. Other discs achieve even more exceptional removal rates with their patented overlapping flap shape and arrangement. LUKAS has made a name for itself with its developments, especially wherever tools with unusual capabilities are needed.



"More than just milling" was the development department's aspiration with the LUKAS high-performance burrs. Machining aluminium requires special tools to obtain the best results. Fast-working, a long service life and infrequent tool changes. Applications such as deburring turbocharger housings or the large-scale machining of gears for use in transmission units are easily mastered with LUKAS deburring cutters which meet the most demanding requirements in terms of performance, dimensional accuracy and tool life. LUKAS offers tungsten carbide burrs with different coatings for applications requiring even greater efficiency. The LUKAS-ERZETT portfolio includes various high-performance burrs that are ideally tailored to aluminium machining applications.

Also available are naturally tools for processing plastics since these continue to play a growing role in automotive manufacturing. LUKAS-ERZETT offers the



full spectrum of powerful, highly efficient tools. Processing a wide variety of composite materials is no problem either. Machining carbon fibre milled parts or plastics in conjunction with glass fibre, carbon fibre or aluminium sheeting is easy with the right LUKAS tools.

From milling and grinding to polishing, every tool meets the highest standards. The focus is not just on technology, but also on efficiency. LUKAS-ERZETT products help to optimise production processes and at the same time enhance the quality of the end products.

With production and sales locations spread around the world, LUKAS is not just a supplier of tools, but a global partner. The plants in England, Spain, China, the Czech Republic and South Africa provide efficient supply chains to the automotive industry in various regions. Over 650 employees contribute to the company's success with their expertise and dedication. Proximity to its customers, combined with a deep understanding of the specific challenges of the automotive industry, makes LUKAS an indispensable player.

The automotive industry demands top performance in all its facets, for which LUKAS-ERZETT supplies the matching tools. With over 80 years of experience in the manufacture of high-performance tools and the development of individual process solutions for milling, grinding, polishing and cutting applications, LUKAS-ERZETT offers automotive manufacturers and suppliers the best prerequisites for completing all steps in metalworking reliably, precisely and efficiently.

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# Celebrations on the AGS stand at MACH

MACH 2024 was a huge success for Advanced Grinding Solutions (AGS) as it showcased the very latest in grinding and finishing technology to many engineers throughout the week on its 100 sq m stand.

AGS reported that, although visitor numbers were down on those that visited AGS at the MACH 2022 show, that was of course a bumper year after a 4-year hiatus and the 2024 enquiry level easily superseded that of the 2018 show.

There were many highlights throughout the show for AGS with the largest being the placement of another order for a Tschudin Cube centreless grinding machine by Gerard King the managing director of Smithstown Light Engineering (SLE). Chris Boraston of AGS comments that while there had been ongoing engagement with Smithstown over what has now been confirmed as its 4th Tschudin grinding machine, the order was not expected to be placed at the MACH show and therefore came as a very nice surprise. The order is the latest of many that Smithstown has given to AGS as it continues to invest in more Rollomatic and Tschudin grinding machines with Comat Filtration systems as it ramps up the production of medical components.

There has been and will continue to be, growth at SLE who are based near Shannon in Ireland as it focuses on producing the highest quality of medical components for its customers. AGS very much looks forward to continuing with its very close relationship with Smithstown and playing a small part in its huge success story as it continues to grow and be a recognised leader in the manufacture of medical parts.



*Michael Lawrence and John Brennan from Lawrence Engineering with Andrea Columbo and Nicola Negri from Comat and Chris Boraston from Advanced Grinding Solutions.*



*Florian Riedel and Thorsten Ziebuhr of Krebs & Riedel with Chris and Louise Boraston on the Advanced Grinding Solutions stand at MACH 2024.*

The major exhibits on the AGS stand were the latest Rollomatic NP50 cylindrical and special form grinding machine and Comat EVO Superfiltration system. Both of these were purchased by Lawrence Engineering with James Lawrence and many of his colleagues attending the show. Lawrence Engineering is another key existing customer of AGS who are involved in the mould and die industry and also the medical industry. Lawrence collaborates closely with its clients to offer them a full turnkey solution starting from mould and tool design all the way through to validation, manufacturing and the sub-assembly of highly precise parts of all kinds. James Lawrence says that the purchase of the Rollomatic grinding machine came in response to the growing demand for its high precision core pins. This latest investment in enhancing its capabilities with another Rollomatic NP50 ShapeSmart high precision pin and mandrel grinder will increase production capacity as it continues to grow rapidly. The purchase of the Comat Super Filtration system was driven by AGS suggesting that the filtration to various machines should be improved upon combined with a need for Lawrence to fully utilise very precious floor space. The Comat will be supporting several grinding machines and will provide filtration levels of under 3 µm with oil being kept cleaner than new virgin oil and to +/- 0.5 degrees. The Superfiltration system

can be monitored and controlled by Comat's engineers from the technical support centre in Milan ensuring that the filtration levels are optimised at all times.

AGS were also delighted that the managing director of Krebs & Riedel, Florian Riedel, was able to visit the MACH show for the first time to engage with many customers who showed great interest in the range of grinding wheels manufactured by Krebs & Riedel in Germany. Chris Boraston comments that this was certainly a record year in terms of the number of enquires for grinding wheels as many engineers seek to improved their grinding processes. The specialists at Krebs & Riedel will be kept very busy over the forthcoming weeks as the company has been tasked with a multitude of aims to reduce cycle times, improve surface finishes and overall surface geometry. The largest number of enquiries were received for the Krebs & Riedel grinding wheels with most interest being shown in the CBN and Diamond super abrasive wheels that they have long since pioneered. These include very small internal grinding wheels, small jig grinding wheels as well as larger wheels for gear grinding and only applications.

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## JAINNHER's JHPA-2003CNC achieves silver award for substantial achievements in sustainable energy efficiency

As a manufacturer of high precision grinding machine tools, JAINNHER has always been at the forefront of technology and focussed on being a sustainable manufacturer. This is reinforced as for nearly 10 years, the manufacturing facilities 11,000+m<sup>2</sup> roof has been adorned with solar panels with a capacity of 999 kWp.

RK International Machine Tools, a leading UK name in precision grinding solutions, is thrilled to share that the cutting-edge JAINNHER JHPA-2003CNC Plunge Angular Cylindrical Grinding Machine has been bestowed with the coveted award as part of its machine tool development program.

This recognition is part of the "Energy Saving Label in Machine Tool Industry" initiative, organised by the Taiwan Machine Tool & Accessory Builders' Association (TMBA) in collaboration with the TMTS 2024 exhibition.

The "Silver Energy Saving Label" award marks a significant milestone in JAINNHER's commitment to sustainable energy conservation. RK International believes that innovation and environmental responsibility go hand in hand.

### Energy-saving features of the JAINNHER JHPA-2003CNC:

#### Compact grinding footprint

A FANUC CNC control powers the fully enclosed JAINNHER machine with LEV and has a 200 mm dia x 300 mm component grinding capacity and an 80 kg work head load.

#### Plunge and angular approach

A plunge-type feed approach with a 60-degree angular wheel allows for simultaneous grinding of OD and shoulders in the same grinding cycle. This dual functionality streamlines the process, saving time and enhancing efficiency and optimised material removal rates.

#### Grease-lubricated bearings for reduced carbon emissions

The JHPA-2003CNC's grinding wheel spindle incorporates grease-lubricated bearings, effectively minimising carbon emissions associated with external lubrication and cooling systems.



*JAINNHER JHPA-2003CNC Plunge Cylindrical Grinding Machine.*

#### Intelligent standby mode for reduced power consumption

During idle periods, the system can be seamlessly switched to an energy-saving standby mode, significantly reducing motor power consumption.

#### High-efficiency IE3 and IE4 motors

JAINNHER machines proudly adopt high-efficiency, energy-saving IE3 and IE4 motors, ensuring optimal performance while minimising energy usage.

#### Servo system for axial movement

The axial movement motors utilise a sophisticated servo system, minimising energy wastage and enhancing overall efficiency.

#### Streamlined gap control system

The gap control system reduces energy consumption during the grinding process by minimising idle strokes, contributing to productivity and sustainability.

#### Precision in-process measurements

Automatic in-process gauging devices ensure that workpiece dimensions meet stringent requirements, preventing material defects and reducing energy waste.

#### Smart Energy Management System

The JHPA-2003CNC is equipped with an advanced "Smart Energy Management System," which allows real-time monitoring of energy consumption and carbon emissions.

"RK International Machine Tools has

enjoyed a 30+ year relationship with JAINNHER in the supply and support of grinding machines to the UK and Irish markets," comments Simon Rood, general manager at RK.

"With multiple JAINNHER installations, both RK and our customer base are already aware of the reliability and potential of the JAINNHER product range. Working towards a future green supply chain for manufacturing and machine tools reinforces JAINNHER as a market leader."

### Energy saving label in the machine tool industry

The machine tool industry aims to develop and apply energy-saving and carbon-reducing technologies in response to global changes and the need for sustainable practices.

In 2022, a key initiative from the Taiwan Machine Tool & Accessory Builders' Association (TMBA) recognised the importance of environmental responsibility. It took proactive steps to promote green transformation within the industry.

Later that year, the TMBA completed the "Handbook on Sustainable Operation of the Machine Tool Industry in Response to Carbon Reduction."

TMTS 2024 hosted the Green Machine Tool Energy Saving Label Assessment. This initiative encourages machine tool and accessory builders to actively invest in research and development of green energy-saving technologies and applications.

Additionally, it promotes the adoption of International energy-saving standards ISO. It enhances the willingness of TMBA members to invest in green technologies or green manufacturing processes. By observing the green transformation experiences of participating manufacturers, the goal is to achieve a green supply chain for machine tools.

For more information about RK International Machine Tools and its diverse range of machines, visit its website.

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# STUDER success in Barcelona

The Spanish TEMSA Metallurgical Group is one of the world's leading manufacturers of special tools for cold forming. The company has also been using cylindrical grinding machines from STUDER in its production for many years.

Wearing a white work shirt, Alfonso Vivar walks through a large hall that radiates a sense of order, despite its multitude of machinery, workstations with monitors and focused employees. Everything has its place, every work step is carefully planned and at its heart is a yellow robot arm working away methodically. Located in an 8,000 sq m, 86,000 sq ft, high-tech plant to the west of Barcelona, Spain. Production manager Alfonso Vivar knows every corner of the plant. His shirt bears the bright red logo of his employer, TEMSA Metallurgical Group, a leading global specialist in the production of high-precision tools for cold forming and an expert in powder metallurgy, sintering and fine cutting.



With cold forming, metal below the recrystallisation temperature is forced into a specific shape using high compressive and tensile forces. Compared to metal cutting operations, this allows for shorter processing times per workpiece, thereby reducing costs in series production. Cold forming also allows for high strength, complex geometries and excellent surface properties. Components produced using this method include those for high-tech industries such as aerospace and automotive. All can only be accomplished with the right special-purpose tools and skills, which is exactly where TEMSA comes into play.

Alfonso Vivar says: "Our team can manufacture special tools in a tolerance range of just a micron. Our expertise also helps us to accomplish short lead times. But that's only because we use the very best machinery."



### Confidence in the technology

Alfonso Vivar pointing to the CNC universal internal cylindrical grinding machine, painted white with blue accents says: "This is our new STUDER S100, which we acquired earlier this year, together with a favoritCNC." This colour combination is typical of STUDER's cylindrical grinding machines and is a familiar sight at the TEMSA plant, the company has been using the Swiss manufacturer's machinery in its production facilities for many years. The company operates several STUDER machines for grinding tasks, including the S131, a new generation CNC universal machine for internal cylindrical grinding. "We have confidence in the technology and value the positive relationship we have with the manufacturer," explains Alfonso Vivar of the decision to invest. In addition, the high level of precision, reliability and ease of operation offered by STUDER machines help to ensure that production is as efficient as it can be.

As an example, the S100 is a great all-rounder offering maximum precision thanks to its numerous options for internal, face and external grinding. The machine facilitates the production of a wide range of workpieces up to 550 mm, 21.65" in length. The favoritCNC is a CNC universal cylindrical grinding machine for individual and batch production of medium-sized workpieces with a length of up to 680 mm, 26.8". Both machines have an exceptional price-performance ratio, while at the same time offering premium technology, such as the machine bed of solid mineral cast Granitan® and optimal hardware-software interplay for ease-of-operation. The S131 for internal cylindrical grinding with

patented STUDERGuide® guide system, turret wheelhead with up to four grinding spindles and an additional C-axis is ideal for high-precision manufacture of flanged parts and smaller workpieces in a wide range of applications.

### Customer service with direct communication

In addition to the quality level of the machinery, Alfonso Vivar cites another important reason for opting for STUDER: "The customer service is outstanding and we have several contact persons who can speak Spanish," he explains. This helps to ensure easy and direct communication. He also values what STUDER has to offer in terms of preventive maintenance. This includes regular and routine inspections of the machinery by STUDER's technical personnel, designed to minimise the risk of production failures and improve their operational durability.

Standing next to Alfonso Vivar is Riccardo Delai, sales manager for Latin Europe at STUDER. He visits the plant in Barcelona at regular intervals and is often on the phone with TEMSA employees. He says: "The personal contact is extremely important as it helps me to know what is working well and what needs attention. STUDER has recently appointed a local service technician for Spain, allowing a faster response to customer inquiries. Riccardo Delai considers the southern European country an important market for future growth, not least because of the Spanish government's support, along with that of the European Union, for local companies with investments in high technology. "We are delighted with the





partner, having ample experience in customised and standardised automation solutions. As an example, the S100 can be equipped with a loader interface and automatic sliding door and thus integrated into an automated production line. The S131 also has a standardised interface for a loader and peripheral equipment.

Alfonso Vivar and Riccardo Delai continue their tour of the large TEMSA hall, passing robot arms, machinery

and focused employees: "I am delighted that TEMSA is happy with its two new STUDER machines," says Riccardo Delai and shakes Alfonso Vivar's hand to say goodbye. "And me too," laughs the production manager, adding: "See you next time."

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international success of TEMSA as a fully Spanish company and it clearly demonstrates what can be achieved with our machinery," emphasises Riccardo Delai.

### Investing in the future safeguards success

TEMSA's success story goes back more than 30 years when the fledgling company produced high-precision tools from tungsten carbide and steel. Through consistent investment in employees, expertise and state-of-the-art systems, the Spanish company has quickly been able to establish an excellent reputation around the world. Today, the company is a leader in special tools for cold-forming processes. "I am extremely proud of our team, we are one big family. We have many second-generation employees working with us and at Christmas we always have a meal together with the first generation," explains Alfonso Vivar, a TEMSA veteran of 25 years.

This appreciation for tradition is paired with foresight for the future and TEMSA was an early adopter of automation as a means to make production more efficient. One such example is the yellow, 360° operating robot arm here in the plant, which automatically sorts numerous tools and allocates them to the machine according to requirements and processing cycles. "We want to move automation up a level in the future, which is a real challenge," explains Alfonso Vivar. This is another area in which STUDER is a valuable



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# Kellenberger presents new robot automation for VOUMARD 30

The VOUMARD 30 internal grinding machine, which was launched in 2023, complements the high-precision internal grinding expertise of the Voumard brand with a machine for all industries whose main focus is on simple internal grinding operations in small and medium series. The VOUMARD 30 is designed for workpieces up to 150 mm in length and 150 mm in diameter. High-quality internal grinding spindles ensure the best grinding results with short cycle times. They are available with speeds from 45,000 to 120,000 rpm. Other outstanding features include the high-precision workhead and a high-precision X/Z cross table. With a footprint of 1.80 x 1.80 m, the VOUMARD 30 is particularly suitable for small and medium-sized companies. With its excellent price/performance ratio, it is also an ideal entry-level machine.

Kellenberger has now developed the REX robot cell, a tailored automation for the VOUMARD 30 with a very small footprint. Patrick Zünd, product manager, played a key role in realising this integrated automation: "Grinding was always the last process in production to be automated. Today, more than 25 percent of all enquiries are machines with automation. In the case of smaller standard machines, automation is often already included in the machine design."

The REX automation system was specially designed for the VOUMARD 30 and structurally anchored in the machine. It is very compact and increases the footprint of the VOUMARD 30 by just 500 mm in width. The loader is integrated into the machine panelling, but forms a separate mechanical unit. The double gripper, raw/finished part gripper, for inner diameters from 14.5 mm and outer diameters from 4.5 mm has gripper jaws with grid option and a blow-off nozzle.



*The REX loader automates the VOUMARD 30 without taking up much space. The loading access to the machine room is closed during processing.*

The machining area is separated from the automation system by a lockable loading hatch, which is open during workpiece changeover. The pallets are changed manually via a side door. To load and unload the pallet, pallet size: 400 x 600 mm, it is pulled out of the enclosure using a device.

The REX automation system is designed for chuck components  $\varnothing$  10-100 mm; L < 100 mm with a maximum weight of 2 kg. The workpiece changeover time is approx. 12s without clamping time. The Rex loader has its own control system with setup assistant for quick changeover to a new workpiece. In addition to the universal loaders, many other automation solutions are available in the Kellenberger portfolio. The design department at Kellenberger develops customised solutions for special requirements. The dressing options on the VOUMARD 30 have now been significantly expanded. In addition to the fixed holder, the standard solution for use with one spindle, a rotating holder for CBN and diamond wheels and a dressing bell for small diameters up to 30 mm are available.

The VOUMARD 30 is equipped with a FANUC 0i control system with the latest Kellenberger BLUE Solution software generation, which is now standard on all Voumard and Kellenberger grinding machines. The VOUMARD 30 can be equipped with automation and the automation is integrated into the machine casing.



*Compact machine, compact automation. The footprint of the of the VOUMARD 30 with robot cell is just 2.30 x 1.80 m.*

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# Grinding technology for the low-emission mobility of the future

Grinding is a key technology for the resource-saving and low-emission mobility of the future. Examples of this include electric drives, which place the highest demands on the precision and surface properties of transmissions and engine components, or brake discs with reduced fine dust and hard coatings that are difficult to machine. EMAG presented solutions for these machining requirements at Grinding Hub in Stuttgart.

In March 2024, the European Parliament adopted the EURO 7 standard. For the first time, it sets limit values for brake particle emissions for cars and light trucks. Irrespective of the drive system used, a switch to new brake technology is necessary. The most promising approach to reducing particulate matter in the braking system is currently the use of hard-coated brake discs. The friction layer consists of a soft matrix with carbides, e.g. titanium carbide. Due to the fundamentally different cutting behaviour of the two materials, the design and development of suitable grinding

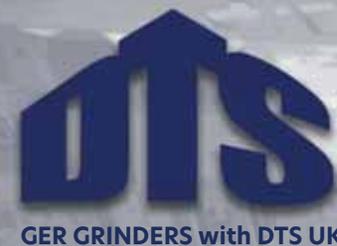
tools and the design of the static and dynamic machine properties as well as the spindle drives is very complex.

EMAG has a solution in the form of the VLC 450 DG, a double-sided surface grinding machine for hard-coated brake discs. This machine was developed with a focus on rigidity and durability in order to meet the high requirements of batch production. The vertical design ensures optimum removal of the hard material particles without damaging the machine axes and excellent accessibility for setup and maintenance work. Workpiece handling by means of a feed shuttle and pick-up spindle simplifies automation and offers short chip-to-chip times. The machine concept is based on decades of experience in the manufacture of vertical turning and grinding machines. An intelligent sensor concept enables adaptive process control. This makes the VLC 450 DG a reliable solution for brake disc production that meets the highest productivity levels and



workpiece quality requirements. During three years of successful prototype testing, the first double-sided surface grinding machine has already processed thousands of brake discs with a wide range of geometries and coating systems. EMAG currently produces prototypes of various designs and with different coating systems on four VLC 450 DG machines, optimising the grinding technology and the tools used.

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# A new level of flexibility in gear grinding

by Ralf Dremel, technical product manager at Kapp Niles

KAPP NILES, a globally operating group of companies providing solutions for finishing gears and profiles, has reached a new milestone thanks to the new KNG 350 machine series.

The KX 300 P gear centre was already a true success story. The fact that more than 500 machines have been sold proves how successful the concept has been, with a combination of high flexibility and productivity. This is where the new KNG 350 series story begins. When designing this new machine platform, KAPP NILES took a look back at previous developments. Tried-and-tested solutions were adopted and further optimised, while adding new capabilities.

This has led to a sophisticated modular system which provides a uniform basis for various machine concepts. Thanks to three different configurations for the tool and workpiece drive, KAPP NILES can perfectly cater to the customers' requirements.

### The machine concept

The KNG 350 series is based on a compact, optimised machine concept and is perfect for the job shop environment to large-scale series production of geared components with diameters of up to 400 mm. Thanks to the integrated ring loader, non-productive times are reduced to up to five seconds, and bore parts as well as shaft-type workpieces up to 600 mm length can be auto loaded.

The concept provides full flexibility when it comes to loading the components, from manual loading or simple pallet conveyors up to complex robot solutions.

The functional and ergonomic machine design paired with the user-friendly interface KN grind supports the user during setup and optimisation of grinding projects. A major aim was also to reduce non-productive times. Thus, the series is characterised by short setup times, which are achieved e.g. by means of intelligent components, smart tooling. Process monitoring, part tracing and inline quality assurance are available as an integral component for an industry 4.0 capable processing machine.

This gear centre impresses not only with its excellent design but also with its continuous further development with a view to energy efficiency. The hydraulic functions, which have been reduced to a minimum, are provided by a controlled pump unit and pneumatic functions have largely been replaced by electric drives. Moreover, when considering the entire lifecycle of the machine, the switch from a machine base made of cast iron to one made of polymer concrete reduces the overall CO<sub>2</sub> equivalent of the machine. These are aspects which are increasingly important to OEMs.

The assessment from our long-standing partner Scania in Södertälje, Sweden

provides an example. Anders Urefors, responsible maintenance technician, has followed the technical evolution since the KX 300 P. He recently was in Coburg to see the KNG 350 during the technical machine acceptance and was excited with the results. Things that previously had to be implemented upon individual customer requests, e.g. the height-adjustable operator panel, have now become standard. In addition, you are now much closer to the workpiece and tool axis when opening the operator door. Together with the quick-change systems for complete workpiece-dependent tooling, a new benchmark has been set for the machine setup. It is immediately noticeable that ergonomics and usability were heavily emphasised in the requirements specifications during the development of the machine.

### KNG 350 expert

The starting point for the new series was the expert machine, with an exclusive focus on the generating grinding of gears. The concept of a grinding spindle without counter bearing has already been proven in the DYNAMIC machines. The automatic HSK interface allows for a semi-automatic tool change, which is implemented consistently in both the expert machine and the other variants of this machine series.

The machine features high-performance technology options, for example bias-free grinding of gears or in order to meet greater surface requirements by using combined grinding worms. Thanks to selectable dressing methods, all requirements can be met in a cost-efficient way, from single item production, topological dressing, up to mass production, multi-ribbed dressing. An integrated measuring device is available for all machines of this family. The probe allows for a complete gear measurement within the machine and is also used to cyclically measure definable gear characteristics.

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# GER grinding solutions from DTS UK

GER has been manufacturing precision grinding machines since 1952. It has now strengthened its foothold in the UK with its newly formed partnership with DTS UK. In the competitive world of high-precision manufacturing, GER Maquinas Herramienta stands out as one of the undisputed players. With a trajectory spanning more than seven decades, GER has set a standard of excellence in the production of grinders, combining technological innovation with an unwavering commitment to quality.

GERmh who manufactures and builds machines in Northern Spain has been working in the UK for a number of years and now has started to increase its presence in sales and aftersales due to this newly formed partnership. DTS UK is very well known in the UK for its long history of working with Spanish machine tool manufactures in the UK and for having a large service network for its diverse product range.



GER offers a wide range of grinding machines designed to meet various industrial needs:

### External cylindrical grinders

They are known for their robustness and precision, capable of handling workpieces of different sizes and materials.

### Vertical grinding machines

These machines are ideal for grinding large and heavy components. Vertical grinders provide high precision and are particularly effective for applications that require high surface quality and tight tolerances for markets as aerospace and energy generation.

### Surface grinding machines

Designed for precision surface finishing, these grinders ensure highest flatness and geometrical accuracies. Two machine types are produced by GER, plane surface grinders with rotating table and the ones with the typical alternative table movement.

### Automated and special purpose grinding machines

Tailored turnkey machines are designed and built for challenging specific customer applications. The confidence this has given both new and existing customers has been astounding. There has already been projects of high value managed, from sales to installation, giving an added new value to GER grinders.



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# ANCA celebrates a half-century contribution to industrial progress through precision cutting tools

Family, fulfillment and a fascination with technology are all part of a formula that has seen ANCA lead the demanding niche of CNC tool and cutter grinders for a half-century. In its time, the Australia-based global business has made an enormous yet largely hidden contribution to the world, selling over 10,000 5-axis CNC machines to over 2,500 customers. Around 1.1 billion tools have been created using ANCA's grinders.



ANCA founders 1974

"You would be very unlikely to find any bit of advanced equipment, anywhere in the world, that hasn't been touched by a cutting tool which has been manufactured on one of our machines," explains co-founder Pat Boland, whose company's customers include Boeing, Rolls-Royce, Iscar, Sandvik, Sutton Tools and many other household names.

Pat Boland and Pat McCluskey, then an electrical engineer and an industrial electronics tradesman, met at a government-owned munitions factory at Melbourne in 1968. The two Pats started ANCA in 1974 in a spare room at Pat Boland's and wife Libby's home.

"It wasn't about money in the beginning and for me it's not about money now. I get my kicks out of designing new machines," explains Pat McCluskey. "Even before we started ANCA, Pat and I have always been driven by simply

wanting to get machines to do things better. My enduring philosophy in business is if you always do what you've always done, you'll always get what you've always gotten. New ideas and new thinking are the basis of our business."

ANCA's highly sophisticated CNC grinding machines are exported around the world, with 98 percent of its revenue being generated by exports. The ANCA Group also makes associated equipment and software, including robot arms, software and control systems and offers automation services and technology to OEM machine builders.

Leading the incredibly demanding tool and cutter market, where nanometre-level details matter, means a reinvestment of roughly a tenth of revenues back into R&D.

A near-obsession with solving customer problems has seen ANCA contribute a collection of world firsts to its industry, including the first probe for digitising tools, first modem for support and diagnostics in a machine, first full and true 3D simulation of the grinding process and many more.

Martin U. Ripple, who has been at the helm of ANCA as CEO since November 2022, reflects on the company's enduring legacy: "In all my interactions, I've observed a consistent

thread: Our customers invariably share fond recollections of their encounters with ANCA dating back to the 70s, 80s, and 90s. It's evident that there's a deep-seated loyalty and trust towards our brand.

"What is the secret ingredient that differentiates us from our competitors? What makes ANCA exceptional?" His answer is the involvement of family in the business, a fervent passion driving the company forward and a steadfast commitment to providing customers with the most innovative products. This blend, according to Martin U. Ripple, is the essence of ANCA's success and longevity."

Edmund Boland, son of Pat and ANCA CNC Machines' general manager, values ANCA's agility as a privately owned company which enables swift decisions to support ANCA's people and customers.

He says: "ANCA has always endeavoured to stay ahead of the curve, anticipating market trends and delivering cutting-edge solutions which enable our customers to thrive. With 50 years of innovation behind us, our product and technology portfolios are perfectly placed to meet the challenges of the future."

The delivery of technical and practical excellence has required a sharp focus on both vertical integration, creating everything from



Pat Boland & Pat McCluskey



the machines' motors to their polymer concrete bases to their sheet metal canopies and both trade and university-taught skillsets. ANCA has trained more than 60 apprentices and established its formal apprenticeship program in 2011. Pat McCluskey enthusiastically wrote the course material for this.

While being very particular with skill and technology development is one way to look at ANCA's story, Pat Boland also likes to zoom out to a very general view. The ANCA era runs 50 years and counting, touching countless lives, operating in the background.

It's shorter than but has similarities to the overall story of toolmaking: critical to industrial progress, even if it needs pointing out every now and then.

"For the vast sweep of history, the only evidence of homosapiens and our predecessors are cutting tools," says Pat Boland. And a number of the broad eras of human life are really named after cutting tools. So, the stone age, the bronze age, the iron age. What we're talking about is the technology of cutting tools as much as anything."

### **Celebrating a golden achievement across the globe**

To mark the occasion of ANCA's 50th anniversary, the company is hosting a series of Open-Houses, seminars, events and attending tradeshows world-wide. As innovation has motivated ANCA throughout the company's history, new products and

developments will be at the centre of the 50th year celebrations. At global tradeshows and ANCA Open House events, precision manufacturers can experience new hard- and software for micro tool and gear tool manufacturing, edge preparation, closed loop manufacturing and automation.

### **50 years of innovation at the ANCA UK Open House**



ANCA, marked its 50th anniversary with a momentous Open House event at its UK branch. The event, which showcased a range of grinding technology innovations and celebrated the decades of partnership with manufacturers and partners, attracted over 80 visitors from across the UK and Ireland.

The ANCA UK Open House featured an array of topics highlighting the company's latest innovations, including the AIMS automation system, the latest release of the cutting-edge ToolRoom software and the revolutionary ULTRA technology for top-quality tool production. Attendees also gained insights into micro tool manufacturing and single-setup tool manufacturing with integrated peel grinding, demonstrating ANCA's commitment to providing comprehensive solutions to meet the evolving needs of manufacturers.

The event's agenda was filled with live

machine demonstrations, informative presentations, and celebratory activities, offering attendees a firsthand look at the latest technologies for precision tool manufacturing in action. In addition, ANCA collaborated with industry partners CemeCon, coating technology, GDS, clamping technology, Tyrolit grinding wheels and oelheld fluid technology to provide attendees with access to experts across the manufacturing process chain, enriching the overall experience.

"We are thrilled to celebrate 50 years of innovation and success with our valued customers and partners," said Neil Kendrick, operations manager at ANCA UK. "The Open House event was an excellent opportunity for attendees to explore our latest advancements and gain valuable insights to enhance their businesses."

During the celebration dinner, attendees had the chance to reminisce and reconnect with ANCA's first-hour customers, reflecting on the company's journey and shared achievements over the past five decades.

In a significant development, ANCA UK announced a strategic partnership with GDS Präzisionszerspanungs GmbH from Ofterdingen, Germany. Under this partnership, ANCA will represent GDS in the UK and Ireland, bringing superior clamping solutions and combined expertise to the market.

Thomas Löhn, managing director at GDS, expressed enthusiasm about the partnership, stating: "The Open House was a perfect start for our partnership. Visitor feedback proved that there is a high demand for advanced clamping technology, like our new Shark or Hornet chucks. The ANCA team is skilled and experienced to support the customers in a perfect manner."

Neil Kendrick of ANCA UK echoed this sentiment, stating: "We are glad to have GDS on board, with their longstanding expertise and excellent product range. Our customer base relies on high-quality products to guarantee the best solutions in quality and productivity, which we can provide even better now."

The ANCA UK Open House exemplified the company's commitment to innovation, collaboration and customer satisfaction, setting the stage for continued success in the years ahead.

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# Exploring the versatility of abrasive cutting wheels across industries



Kayson Green, established in 1974 and is celebrating its 50th anniversary this year, is a leading abrasive manufacturer. It has witnessed firsthand the transformative impact these tools have across various industries. Here, the company explains how abrasive cutting wheels are used across multiple industries such as, aerospace, automotive and more.

In the aerospace industry, precision is paramount and abrasive cutting wheels play a vital role in achieving it. From shaping lightweight materials like aluminium and titanium to fine-tuning intricate parts, these wheels ensure that every component meets the stringent quality standards required for aircraft safety and reliability.

Abrasive cutting wheels are used to shape materials like aluminium and titanium for aircraft components. Their precision and efficiency enable manufacturers to create lightweight yet durable parts that meet the demanding requirements of aerospace engineering.

Whether it's cutting intricate patterns or refining complex shapes, abrasive cutting wheels deliver precise cuts with micron-level accuracy. This ensures that every component fits seamlessly into the aircraft's structure, maintaining its integrity and performance.

One of the key benefits of abrasive cutting wheels in aerospace is their ability to produce clean, precise cuts without compromising the integrity of the materials. This is crucial for ensuring the safety and reliability of aircraft, where even the

smallest imperfections can have significant consequences.

In the automotive industry, where efficiency and precision are essential for meeting production deadlines and quality standards, abrasive cutting wheels are indispensable tools. From cutting sheet metal for body panels to shaping components for engines and transmissions, these wheels play a crucial role in every stage of vehicle manufacturing.

Abrasive cutting wheels are used to cut sheet metal for body panels, chassis components, and other structural elements of vehicles. Their ability to produce clean, burr-free cuts with minimal heat generation ensures that every part meets the high-quality standards required in the automotive industry.

Whether it's shaping components for engines, transmissions, or suspension systems, abrasive cutting wheels provide the precision and efficiency needed to meet tight production tolerances. This ensures that every vehicle performs optimally and meets the expectations of consumers and regulators alike.

By reducing the need for secondary finishing operations and speeding up the production process, abrasive cutting wheels help automotive manufacturers stay competitive in a fast-paced industry. Their ability to deliver consistent results quickly and efficiently makes them invaluable tools in modern vehicle production facilities.

Precision and reliability are paramount in the medical industry, where patient safety is

non-negotiable. Abrasive cutting wheels play a crucial role in fabricating medical devices, surgical instruments and implants, ensuring that every component meets the stringent quality standards required in healthcare settings.

Abrasive cutting wheels are used to cut through materials like stainless steel, titanium and ceramics to create various medical devices, including implants, prosthetics, and surgical instruments. Their ability to produce smooth, clean cuts with minimal heat generation ensures that every device meets the highest standards of quality and performance required in medical applications.

One of the key benefits of abrasive cutting wheels in the medical industry is their ability to produce clean, burr-free cuts without contaminating the materials. This is crucial for ensuring the sterility and hygiene of medical devices, where even the smallest impurities can have serious consequences for patient safety.

Abrasive cutting wheels help medical device manufacturers meet the strict regulatory requirements imposed by government agencies and industry standards organisations. By delivering consistent results with precision and accuracy, these wheels enable manufacturers to produce high-quality medical devices that comply with regulatory standards and ensure patient safety.

As we've explored, abrasive cutting wheels offer numerous benefits, including precision cutting, reduced material waste and compliance with regulatory standards. Their versatility and efficiency make them indispensable tools for manufacturers in various industries, helping them meet production deadlines, maintain quality standards and ensure the safety of their products. Contact Kayson Green today for expert advice, training and a wide selection of abrasive cutting wheels tailored to your specific needs. We've got the tools and expertise to help you get the job done right.

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# New abrasives for complex processes

## Faster, more precise and more flexible grinding

3M presented new high-performance abrasives for a wide range of applications at the GrindingHub exhibition. At the event, 3M presented visitors with new developments in abrasive solutions. From precision grinding to finishing, 3M offers a comprehensive range of products to increase efficiency, quality and performance in a wide range of applications.

## New products

In addition, 3M is showcasing its new 6JGS/6JGM diamond dressing rolls for gear grinding at the fair. Also on display will be the ceramic diamond grinding wheel 6CVZ D93 for particularly efficient grinding of indexable inserts. A special highlight at the trade fair will be the additive manufactured ceramic CBN grinding tools 1PVP, which demonstrate the special advantages of 3D printing such as homogeneity and freedom of design. The newly tuned 3M Cubitron™ II ceramic grinding wheel 92VC also impresses with its homogeneous structure



for improved performance in surface and profile grinding. All new 3M abrasives can be individually adapted to customer needs in terms of both geometry and specification, grain size, type of grain, concentration.

## Innovative solutions

“GrindingHub offered us a valuable opportunity to connect with grinding specialists, share insights and showcase new solutions that 3M is known for,” says Wilbert van den Berg, precision grinding and finishing global business leader at 3M. “We look forward to introducing our technologies and collaborating with prospects and

customers to address their specific needs and challenges.”

## Optimal grinding processes

3M's participation in GrindingHub underlines the multi-technology group's commitment to continually developing advanced solutions for the abrasive industry. Visitors to the trade fair could get to know the latest products and find out how 3M can help them to successfully optimise their grinding processes.

The company has a solution for every challenge: cutting, grinding, cleaning, polishing and everything in between. 3M leads the way in high quality abrasive technology. 3M abrasives are ideal for heavy and high-pressure applications like weld removal, beveling and other heavy grinding applications. There's a 3M abrasive belt, disc or wheel that could help boost productivity and safety in almost every application.

## 3M Abrasives

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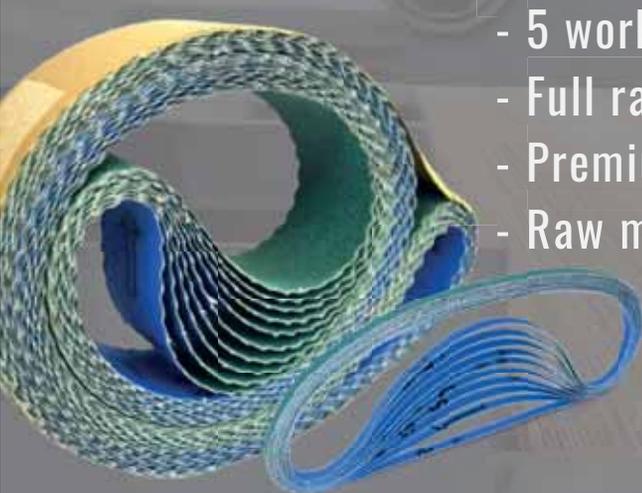
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\*based on raw material availability

# Mirka introduces new hybrid-bonded cup grinding wheels to deliver higher efficiency and productivity

Mirka UK is introducing the Mirka® Cafro E-Cup 11V9, a new set of hybrid-bonded cup grinding wheels which deliver higher performance, efficiency and greater sustainability when manufacturing tools.

By optimising the structure of the 11V9 hybrid grinding wheel, production and lead times are reduced, streamlining operations and increasing production cycles.

The improved version uses materials that have less impact on the environment including an innovative sustainable resin on the support rim and a lead-free metal alloy for the lower section, eliminating an environmental toxin.



The support rim of the new Cafro E-Cup 11V9 wears at the same rate as the abrasive rim so operators no longer have to stop the machine and disassemble the wheel to relieve the body, saving time and increasing total productivity.

Its diamond grains and hybrid bond ensure maximum precision while retaining the profile, and the grinding wheel delivers excellent stability during grinding operations due to its new materials.

Chris Brook, business sector manager transport & industry Mirka UK, says: "This latest product introduction is a testament to Mirka's ongoing commitment to invest in the

development of the most innovative, sustainable and powerful abrasives to serve the tool manufacturing sector."

### Mirka AutoChanger to enhance disc changing domain in automation market

The automation market is experiencing unprecedented growth and transformation, driven by customer demand for increased



efficiency, reduced downtime and enhanced productivity. To meet this requirement, Mirka UK is introducing its innovative modular AutoChanger System, which addresses a crucial aspect of industrial processes by offering a versatile solution for automatically changing abrasive discs in the automotive, aerospace, train manufacturing and other industrial sectors.

The Mirka® AutoChanger System enhances Mirka's existing robotic sanding programme by adding one more element to it. The flexibility of the modules allows easy integration with new or existing customer solutions, ensuring they can adapt their operations effortlessly to meet evolving industry requirements. Its user-friendly, reliable operation reduces downtime and boosts operational consistency when installed correctly by qualified integrators.

Chris Brook, business sector manager for Transport & Industry, Mirka UK, says: "Continuing Mirka's rich legacy of pioneering solutions for industrial applications, the Mirka AutoChanger System aligns seamlessly with modern manufacturing demands to offer a versatile, safe and efficient way of changing abrasive discs on robotics systems quickly and comfortably."

Mirka's history started almost 80 years ago in Ostrobothnia, Finland. Since then, it has been dedicated to the finish. With decades of experience, the company is a leader in surface finishing technology. It offers a wide range of solutions for surface finishing and precision sanding and specialises in total solutions in which the abrasives are supplemented by its



innovatively designed machines and polishing compounds.

The heart of Mirka's operations are its values: To be responsible, committed, innovative and respectful. It's vision: To be the responsible market shaper that inspires renewal and leads with innovation and its mission: To give people the opportunity to perform better.

All these three are epitomised in its slogan: "Dedicated to the finish". This is a promise which means the company are fully engaged in all details of a solution. It all starts with the question: "What is your challenge?"

With its knowledge and expertise, Mirka finds the right combination of abrasives, tools and polish for a specific purpose, but it also identifies the customer's needs. It forms a relationship with the customer and works in collaboration with them on every aspect, to understand and address the whole picture and give them the solution to reach that perfect end-result.

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# Innovative, sustainable and scalable industrial grinding solutions



Weiler Abrasives, a leading provider of abrasives and power brushes for surface conditioning, showcased its portfolio of industrial grinding solutions at Grinding Hub last month. Visitors to its stand were able to explore engineered solutions for spring grinding, gear grinding, roll grinding and metal conditioning to enable them to increase their productivity.

Partnering with Weiler Abrasives can help companies unlock their full potential. The Weiler Abrasives approach is built on the foundational pillars of partnership, technology and service, with the ultimate aim of providing innovative, sustainable and scalable industrial grinding solutions that are tailored to the specific needs of the customer and their industry. By merging Weiler Abrasives' advanced products with a global network of application engineers, product managers and sales experts, productions can propel their business forward and drive growth. Additionally, the Weiler Process Solutions (WPS) program

helps enhance and significantly boost a company's efficiency. The program delivers customised solutions based on specific application needs, leveraging the latest technology and on-site technical expertise to optimise production processes for customers. As a result, it helps reduce cycle times, eliminate production bottlenecks, reduce total cost per part, minimise rework, reduce waste, improve energy efficiency and sustainability and improve part quality and consistency.

Weiler Abrasives specialists scheduled meetings at its GrindingHub booth to help companies reach their full potential and secure a sustainable competitive edge with advanced industrial grinding technologies. As an industry leader and global manufacturer of surface conditioning solutions, Weiler Abrasives Group is dedicated to forging collaborative relationships with its customers in metal



fabrication and industrial production markets to tackle their toughest cleaning, grinding, cutting, deburring and finishing challenges.

As a family-owned business, it thinks and acts for the long term. It does business not to make a quarterly earnings number, but because it is interested in mutually beneficial partnerships. It knows where it is going, driven by impassioned spirit and investing to get there.

**Weiler Abrasives**  
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**www.weilerabrasives.com**

## 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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# Innovation and new technology

John Barber spoke with Martin Elliott, group managing director of delapena, at MACH, to discuss the company's history, progress and exciting new partnership.



**Can you briefly explain a little about the history of delapena. When and where the company was formed and how long it has operated in the UK?**

The company was set up in 1927 by Leslie delapena. He visited America and obtained two distribution contracts, one for Snap-on

Tools and one for Sunnen Tools. Right up until 1942, he sold distribution products. During the war years, Mr. Delapena set up his own manufacturing facility and became a multi-millionaire. He then decided to continue in manufacturing.

**What does the company specialise in?** delapena's core process has always been honing and honing machines, there are roughly 10,000 machines around the world.

**Watch the ProductionHone in action:**

<https://www.youtube.com/watch?v=LShnNxW8fZ0>



Over the past five to ten years, more people are requiring push button solutions. Therefore, we have developed our own software and our own range of machines. Within the group we have the honing company, we have delapena Sintered Products and then we have the distribution company, delapena grinding, where we have recently begun our association with e-tech. We serve most industries. Anybody that has a



bore and is looking for a fine tolerance from 1.3 mm up to 1,000 mm up to four metres in length, there is a whole range of machines to do that. So, having delapena Sintered Products has enabled us to offer a turn-key solution. We can tailor make an abrasive to fit the honing solution. Honing operators are hard to come by and a lot of companies have not got production engineering departments anymore, so we can deliver a solution to them and get them up and running straight away.

**delapena has recently announced an exciting new partnership with e-tech. How did this come to fruition?**

delapena grinding was set up in 2018. Sometimes you do not need to hone a bore but you can grind a bore. Grinding and honing are very similar where you are making the same abrasive in the grinding wheel as a honing steel. We met e-tech at an exhibition in India in 2019, but then COVID came about and everything was put on hold as no one could travel. The relationship was resurrected last year and, similar to what delapena is trying to do, there is a gap in the market and people are looking for grinding machines with push button technology and high-quality abrasive wheels. Wherever people are honing, they are grinding as well so we have the same customer base. In the UK we have 1,600 customers and all of these customers will be grinding too and so it made perfect sense.



**How can e-tech help delapena's customers improve their productivity?**

e-tech machines are very well made. The Mini-Genie is around 2,500 kg in weight and is very solid and very rigid. The company is growing rapidly and it is moving to a new facility in May and already has distribution in Germany, Italy and Spain. The new products that are coming to the market are different and I believe that is what innovation is all about, offering the market something new.

**Can you provide a brief description of the Mini-Genie from e-tech and some of its highlights**

The Mini-Genie is a cylindrical grinding machine and is also one of the best-selling models from e-tech. Mini Genie is a high-efficiency cylindrical grinding machine with a significant reduction in footprint. With a floorspace requirement of less than 3 sq m and 405/510 mm diameter grinding wheel, it is suitable for the machining of small workpieces. Distance between centre is

designed to be 200 mm, the centre height is 110/130 mm and the maximum weight of workpiece that can be processed is 20 kg. The Mini Genie is designed for shops with limited floor space in mind.

**I understand you have worked for delapena for a number of years. How has the company grown in that time and what have been the key developments?**

When I first started with the company it was in administration and I was able to bring a team of 14 people in that I had worked with at previous companies who were very knowledgeable on processing, auditing and quality systems. The last five or six years have all been about new technology and software is obviously key to that as well. We do spend a lot of time recruiting the right people and we strive to keep their skills in house. delapena is a small but very close-knit company and this year will be our best financial year for the past 25 years. Innovation is something we have been trying to focus on. The company was in somewhat of a holding pattern and it has to be new technology that continues to move us forward.

**Finally, what can your customers look forward to from delapena in the future?**

We spend roughly 10 percent of our budget on Research and Development (R&D) which is a sizeable amount of money, but with Industry 4.0, new smart factory technology, we have to stay current. Therefore, we will continue to innovate to ensure our customers continue to receive excellent service.



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# Sunnen receives 3rd president's "E" Award for exports

Sunnen Products Company has been awarded the President's "E Star" Award for Exports by the U.S. Department of Commerce in Washington, DC. Sunnen was one of 64 companies at the ceremony being recognised for their excellence in furthering U.S. exports and one of 13 entities to receive the prestigious "E Star" Award for Exports. This is Sunnen's second time receiving the "E Star" Award, having also received the honour in 1986.

The highest recognition available to a U.S. entity, the President's "E" Award, recognises companies who have made a significant contribution to the expansion of U.S. Exports. Sunnen first received the "E" Award in 1964. The "E Star" Award was later authorised by the Secretary of Commerce to recognise "E" Award winners' continued noteworthy export promotion efforts.

"Sunnen has demonstrated a sustained commitment to export expansion. The "E" Awards Committee recognises Sunnen's eighty-year history as an exporter with forty percent growth in export revenue over the past four years. The company's investment in ongoing technology and marketing innovations to support export growth into the future was also notable," said secretary of commerce, Gina Raimondo, in her congratulatory letter to the company.

Sunnen is celebrating its 100th year in business this year and is no stranger to supporting the U.S. and its manufacturing efforts. Sunnen, in October of 1942, was a recipient of the predecessor to today's award, the Army-Navy Production Award, at the time, it was popularly known as the "E" Award for excellence, for its contribution and excellence in the production of war equipment during World War II. President John F. Kennedy, in 1961, signed an executive order to revive the World War II "E" symbol of excellence to honour and recognise America's exporters.

Sunnen Products Company first began exporting into Canada and the Scandinavian countries. After World War II the company expanded exports all over Europe and into South America and Asia. Founder, Joe Sunnen, was an exceptional businessperson



who knew the importance of finding solutions to unmet market needs, which included making products available globally. Sunnen has since grown into a global powerhouse with 14 subsidiaries and over 35 international distributors around the world. One of the company's founding principles that is still a guiding force today is: "Better Products Make a Better World."

Sunnen offers fully integrated solutions to manufacturers in a wide range of industries, including those making components for aerospace, defense, hydraulics, oil and gas, medical and other applications. Typical solutions include honing or drilling machines plus the necessary fixturing, tooling, abrasives, cutting inserts, precision gages, coolants and the application support for successful part production.

Honing is typically the last machining process in part production and is critical for a component to function optimally for its end application. For example, honing is critical for components in landing gear, engine blocks and even surgical equipment such as cranial cutters. The precision needed for optimal safety and performance is only possible with the precision surface finishing and bore geometry provided by honing.

Sunnen's international sales director, Tom Dustman, attended the awards ceremony to accept the award, on behalf of Sunnen Products Company.

For more than a decade, he has been a champion of the company's exporting efforts. He is currently active in and a past Chair of the Missouri District Export Council. He has also been a Midwest Region Advisor for the National Association of District Export Councils (NADEC) and is co-chair of the Education and Outreach Committee for NADEC. He was recently appointed to the Board of Governors of the National Association of Small Business International Trade Educators (N.A.S.B.I.T.E.). "Sunnen is honoured to receive this prestigious award and carry on the company's long-time commitment to International trade," said Tom Dustman.

Known as a leader in honing technology, Sunnen has grown to be one of the largest integrated manufacturers of precision bore creation and finishing equipment. Headquartered in St. Louis, MO in the USA, Sunnen employs 650 people worldwide, with offices, manufacturing and technical support facilities in Europe, China, India, Brazil, Mexico and the US. The company's expansive international distributor network provides full global support for its multinational customer base.

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## A key element of Formula 1



Honing is a precision machining process that plays a crucial role in many areas of manufacturing and industry, but there are few applications more demanding than Formula 1. Unlike the engines used in conventional cars, F1 engines are exposed to extreme pressures and stresses that take them to the brink of what internal combustion engines are supposed to do. Components within an F1 engine can spin up to 20,000 times per minute, while the internal pressure can reach 1,500 psi a second. Nevertheless, Formula 1 cars must deliver exceptional and reliable performance to optimise the chances of victory and minimise the risk of mechanical defects and failures.

Hone-All uses honing to ensure highly functional surfaces on engine components to improve engine power, reduce friction and enhance reliability, durability and consistency all of which are vital in the high-stakes world of motorsport.

In terms of engine power and performance, honing is used to achieve extremely precise cylinder bore dimensions. By doing so, the piston rings can form an effective seal against the cylinder walls,

mitigating blow-by the escape of combustion gases past the piston rings and maximising compression. The meticulous sealing process is imperative to achieve optimum combustion efficiency which ultimately contributes to enhanced engine power output.

The reduction of friction is a key factor in the efficiency and durability of F1 engines. By creating a flawless surface finish on the cylinder walls, honing promotes oil retention and effective lubrication between the piston rings and the walls. This reduces friction and minimises wear, enabling the engine to operate with improved efficiency and reduced energy loss. Consequently, the engine not only performs to its best but also maintains its longevity even under the extreme conditions of the racetrack.

Reliability and durability are fundamental in Formula 1 motorsport, in which engines are subjected to extremes of temperature, pressure and force. Proper honing techniques play a key role in the manufacture of robust and durable cylinders that are able to withstand demanding conditions. The precise honing process ensures that the engine components function optimally and minimises the risk of failures during races.

Consistency in honing is not only critical for engine reliability but also for achieving consistent performance. A balanced engine is key to smooth operation and reduced vibration, resulting in a more predictable and controllable driving experience.

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## Bore Finishing Technology



For more than 35 years Engis has been at the leading edge of single-pass bore finishing technology. Known throughout the world for its application expertise, total system solutions and superior after-sales service, Engis offers a full range of bore finishing machines from the very small to the very large, configured to suit your specification and your process.

# Honing tools for XXL bores

Precision honing of large components is a special challenge. In some cases, the bores are large enough to fit a ball or even a person and the depth of the bores can be several metres. This is what the experts call tube honing. Gehring Technologies GmbH + Co KG, Ostfildern, Germany, has optimised this technology with the newly developed DH series of multi-strip honing tools.

With the Deephone series, Gehring offers specialised machines for honing large components. The machinable diameter range for these machines is between 37 and 600 mm, in special cases even larger. Typical applications include large hydraulic and pneumatic cylinders, precision tubes in general plant engineering, extruder housings, aircraft landing legs, moulds, etc.

In this concept, the tool body is mounted on a drive shaft that is matched to the machine spindle. The length of the drive shaft determines the depth that can be drilled. Gehring offers four grades: 1,500 mm, 3,000 mm, 6,000 mm and 10,000 mm. The bayonet connection allows for quick tool changes. Depending on the application, honing stones up to a maximum of 300 mm are available.

As the drive shafts are connected to the machine spindle via an adapter, the DH tool series has an extremely wide range of applications. "We are happy to help machining companies that have other, perhaps older, machines to adapt them," explains Holger Gehrung, sales manager for tools and cutting materials at Gehring. "The modular concept of our solution leaves many options open."



### More performance through internal cooling

Two features of the DH series are likely to be decisive for many users. The tools, including drive shafts, are optionally available with internal cooling and air metering. Internal cooling ensures that coolant is delivered precisely to the point of machining. This means higher performance and cutting capacity with better surface quality. It also aids chip evacuation and flushes the chip/oil mixture out of the hole, significantly reducing the risk of scoring from jammed chips.

The more effective internal cooling also outperforms conventional flood cooling in terms of coolant consumption, saving the user additional costs. Holger Gehrung on the increase in performance states: "We expect our new DH series tools to reduce machining times by up to 30 percent."

Air measurement is mainly used on conventional honing machines. In the field of tube honing, this type of quality assurance is rather uncommon. The advantages are obvious: air measurement

allows the diameter to be checked during the process. Without air measurement, the operator must stop the process and remove the tool from the deep hole. The bore may also need to be cleaned prior to measurement. An enormous amount of time.

But that's not all. Another highlight of the tools is the integrated linear feed of the honing stones. This solution reduces vibrations compared to the usual rotary feed via a rack. This not only makes the process quieter, but vibration-reduced machining also benefits workpiece quality, process reliability and tool life.

### Flexible tool loading

Gehring places great emphasis on flexibility when it comes to cutting tools. Depending on the application, diamond, CBN or ceramic honing stones are available, all of which are manufactured in-house.

Holger Gehrung adds: "We can look back on many years of experience with all types of cutting tools and in addition to honing tools, we also equip finishing and grinding tools of all makes and designs.

"We achieve maximum cutting performance and tool life thanks to the extreme hardness of the diamond and CBN cutting grains and their bonding and interaction, which we tailor precisely to the requirements."

As a cost-effective alternative, users also have ceramic cutting tools at their disposal, which also achieve high-precision, defined surfaces. They are suitable for machining almost all materials.



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# Honing machines from NAGEL

The Nagel product range offers solutions for the machining of bores in all lengths, up to 20,000 mm and diameters of 1 mm to 2,500 mm. This range includes different machine systems which can be individually adapted to meet customer requirements in relation to output, large-scale production or small batches and flexibility.

The MSU4 high-end honing control system which is used in all machines of the NAGEL company enables problem-free application of all types of honing processes.

## VARIOHONE honing centres

These honing centres are individual machines with one or two independent or linked honing stations and with up to four honing spindles capable of representing typical surgical sequences of honing machining.

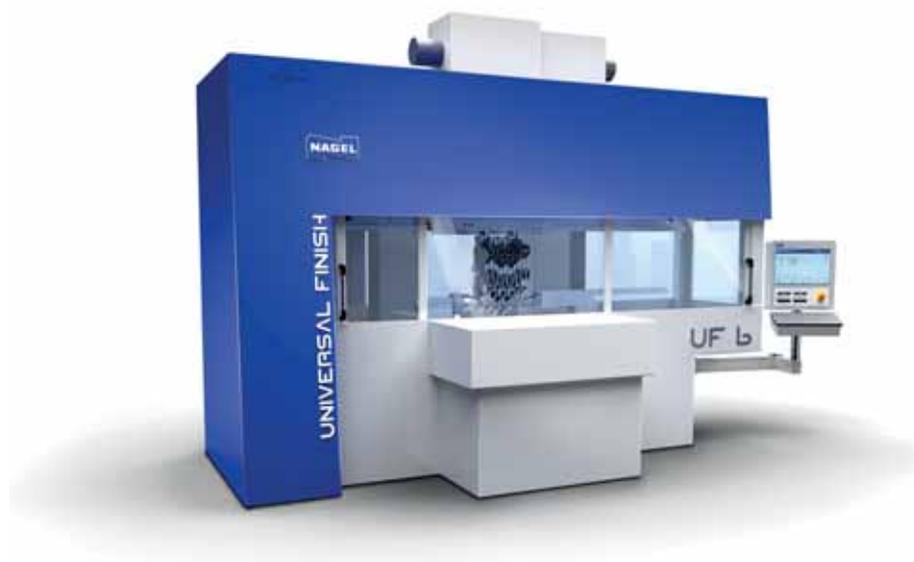
Thanks to the intuitive MS-U honing control, all conceivable honing processes can be implemented in no time at all. Modular in design and equipped with tool changers on request, these self-sufficient honing centres can completely finish machining workpieces with different bore dimensions. Of course, the VARIOHONE honing centres are also equipped with electromechanical honing spindles and the patented speed reduction in the reversing points.

VARIOHONE centres can be found in automotive series production as well as in the test and prototype production of NAGEL customers.

## Innovative machine concept for honing gears

Equipped with electromechanical honing spindles and the latest generation of the NAGEL honing control, the VARIOGEAR offers the greatest possible flexibility with the highest output rates at the same time.

The highly flexible fixture concept, which was specially developed for this task, enables the shortest possible changeover



times and thus maximises availability even with extremely varied part spectrums. This unprecedented flexibility also leads to a significantly lower need for fixture replacement parts and at the same time means that you are already equipped today for the workpiece generations of the future.

The machine concept of the VARIOGEAR allows post-process measurement after each of the maximum three honing operations, thus enabling effective feedback control of each individual process stage. A functionality that is a basic prerequisite for the greatest possible process reliability and optimal part quality.

The machine can be loaded both automatically and manually. The rotary table transport used ensures minimal non-productive times and thus enables maximum productivity. During the development of the machine, great importance was attached to good accessibility for your operating and maintenance personnel.

## Compact honing centre

For fast and precise machining of small parts, the RATIOHONE can be equipped with up to seven honing spindles, individual spindles can be retrofitted as required and the capacity grows with demand.

The range of parts that can be processed with the RATIOHONE is very extensive and includes gears, transmission parts, hydraulic parts, pump parts, compressors, bushings/rings, turbochargers, pneumatic parts, connecting rods, housings, valves,

sewing machine parts, rocker arms, parts for aerospace and small parts.

For this purpose, the machine's spindle unit has a working area that allows the honing of bore diameters between 8 and 40 mm and bore lengths of up to max. 150 mm.

The spindle speed is infinitely adjustable and the workpiece holding devices are placed on the rotary table. The expansion of the honing spindles is controlled by the feedback process. The hub is shifted on the basis of current measured values. A teleservice module is integrated as standard. Remeasuring stations, brush units and the option of ejecting SPC parts can be integrated as options.

## DEEPHONE

The DeePHONE is the standard machine series in the Nagel Group for diameters up to 1,150 mm. The main areas of application are hydraulic cylinders, tubes and extruders. The maximum honing length is 10,000 mm. A workpiece rotary drive is also available for this series.

## VL SERIES

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# Fine grinding and polishing tools for high-quality surfaces and functional surfaces



The trend towards fine and polished surfaces is increasing year by year. In the medical and food industry, fine surfaces are used to minimise bacterial adhesion. While in gear and drive technology, the focus is primarily on reducing noise, friction reduction is the main concern in engine construction. In traditional mechanical engineering, for example, durability is of high importance due to reduced notch effect. Thus, component design can be optimised accordingly.

In many areas, roughnesses  $\leq Ra\ 0.1\ \mu m$  are required. Due to the use of different materials, e.g. soft to hardened steels, ceramics or composite systems, the specification of fine grinding and polishing tools is crucial for surface results, productivity and tool life. Krebs PU bonding systems can be manufactured in different hardness grades and adapted to the respective application.

While material removal takes place in the grinding process, tips in the topography are mainly smoothed in the polishing process creating a new topography. The fine grinding or polishing process involves a certain amount of pressure. The dressing process can be carried out with both stationary and rotating tools.

### Typical applications

- Polishing grinding of gears for automotive, aerospace and general mechanical engineering.
- Tool polishing grinding e.g. chip flutes of carbide drills, form tools.
- Knife polishing grinding: industrial knives, scalpels, kitchen utensils.
- Glass and ceramic processing: protective glasses, lenses, wafers.
- Laboratory equipment, sample preparation.
- Jewellery industry e.g. watch cases.

### Advantages

- High-quality surfaces and functional surfaces.
- Comprehensive product portfolio for all fine grinding and polishing applications.
- Customised solutions with quality tools.
- Comprehensive customer service and support worldwide.
- Continuous development through R&D.
- On-time delivery, fast delivery times and flexibility.
- All products are "Made in Germany".
- Highest precision and excellent tool life.
- Disc diameter up to 800 mm.

Krebs & Riedel, the family-owned business, has been manufacturing in Bad Karlshafen, Germany, since 1895 and with its 250 dedicated employees and annual sales of over 31 million Euros, the company is one of the world's leading manufacturers of high-precision, state-of-the-art grinding tools.

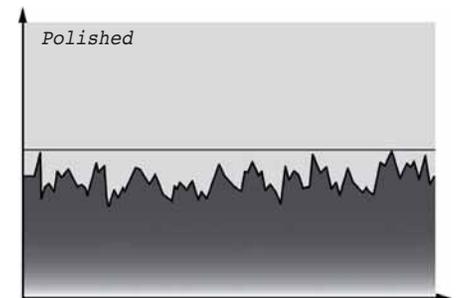
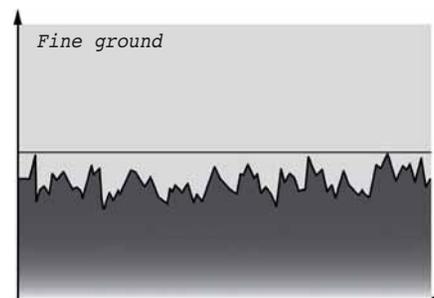
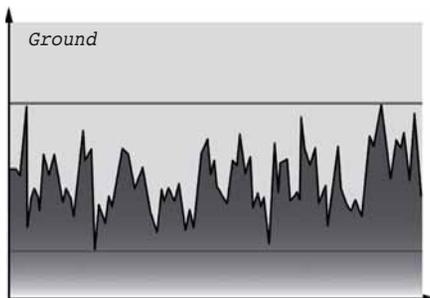
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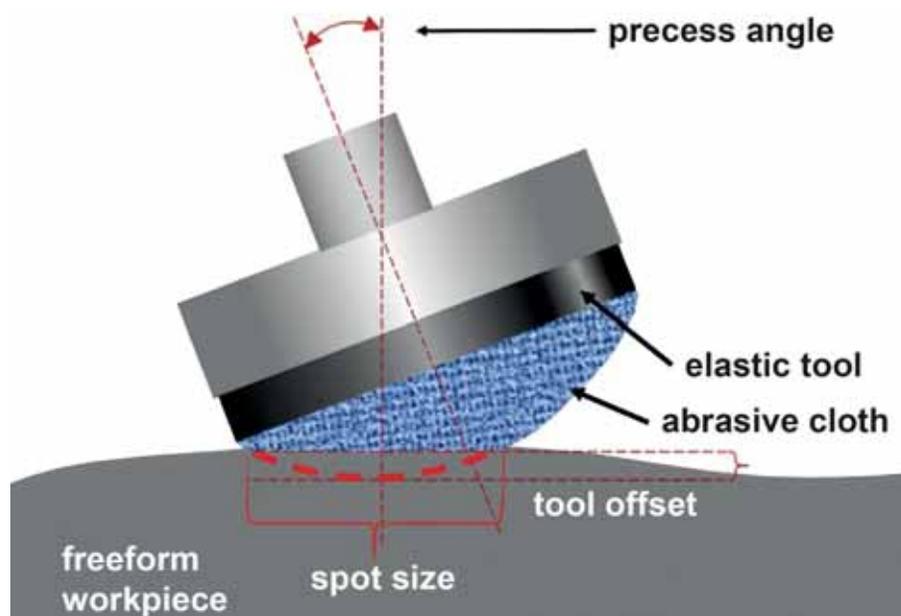
# Industrial polishing machine manufacturer is double King's award winner in 2024

Polishing machine manufacturer Zeeko, of Coalville in the East Midlands, is one of only five companies this year to win two King's Awards for Enterprise, one for international trade and the other for innovation. Founded in 2000, the company is an undisputed leader in the development and production of computer-controlled 7-axis CNC optics polishing machines for complex, ultra-high-precision freeform applications.

Glass polishing for astronomy and space exploration was the main target for Zeeko in the early days, which was followed by higher volume production of optics for defence, semiconductor and X-ray applications, as well as for consumer products such as camera lenses. Optical artefacts from three metres to 1.5 mm in diameter can be processed on Zeeko machines, whose intellectual property is protected by more than 50 worldwide patents. Each year the company spends a minimum of 20 percent of annual sales revenue on R&D.

The 2024 award for international trade is a result of a sharp upturn in these original specialist activities, plus additional sales in the last three years of both new machine platforms and tools for mainstream industrial use. The latter is referenced below in connection with Zeeko's second King's Award.

Exports account for about 98 percent of production, with key overseas markets being Japan, China, Taiwan and South Korea, followed by the USA, Canada, Mexico and continental Europe. Order intake is currently between £10 million and £12 million per year, compared with well below £2 million during the pandemic.



Zeeko is not only generating its best sales ever, but current growth figures are higher than anticipated. The King's Award for Enterprise in the category of International Trade was based on this performance.

The 2024 award for innovation stems from the chance discovery of a new process that could easily have been overlooked, but which turned out to be extremely effective for the polishing and finishing of metal, ceramic and carbide items such as turbine blades, orthopaedic implants, precision moulds and ball valve components. Called Shape Adaptive Grinding (SAG), the technique utilises a low-cost, robotic machining platform together with associated tools and software. It can also be deployed on any CNC machine, such as a milling centre or multi-tasking lathe.

Housed in a separate factory in Coalville, Zeeko Industrial is a new division that has been established to build and market these robotic polishing cells worldwide. To realise the project, a manufacturing line for producing polishing tools has been built, a CAM software package developed and a remote calibration instrument invented. Suitable for numerous finishing applications, the technology is especially well suited to polishing very hard materials, notably silicon and CVD-coated silicon carbide, as well as to finishing stainless steel and

the relatively rough exterior of additively manufactured components.

The technology behind the innovation is a ductile material removal process that utilises a flexible, diamond-impregnated pad, a compliant, dwell time grinding action and the use of abrasive-free, regular coolant. In this way a polished surface is produced instead of a dull grey one.

Richard Freeman, MD of Zeeko comments: "We are delighted to receive two King's Awards this year. Our highly skilled and innovative team deserves this recognition.

"A high-technology manufacturing business rarely leads its competition by more than 18 months, so we are continually researching and innovating, both to grow and to protect our lead. This is evidenced by our exciting new dwell time hybrid grinding and polishing technology.

"We will always be grateful to the engineer in our research centre in Japan who, after observing an unexpectedly shiny finish appear after grinding the surface of a piece of silicon carbide, refused to dismiss it as a random event but instead investigated the phenomenon further. The SAG process is the result of that investigation"

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# Deburring and part levelling machine in line at Suer Stahltechnik



With automation in mind, people are increasingly looking to improve operational processes. It becomes essential for the company of the future. Therefore, the increasing demand for a part levelling machine combined with a deburring machine is not totally unexpected. At Suer Stahltechnik in Raesfeld, Germany, KOHLER's 85P.1600 Peak Performer is in a production line with Timesavers' 1,600 mm wide 42 RB series.

Suer Stahltechnik is a young company and it was founded in 2020 by Leonard Suer. With a total of 12 employees, it provides high quality sheet metal work. From laser cutting to deburring, from edging to milling. All sheet metal processing is done in Raesfeld as a product that has gone through the laser cutter is not yet finished. Leonard Suer says: "We want to deburr it, mill it, galvanise it and so on. We take over all the processing for our customers, so they do not have to do it themselves anymore." The customers largely come from the same German state: North Rhine-Westphalia. They mainly work in machine construction, steel and hall construction, but also in railing and staircase construction or even the automotive industry.

### Growth

Suer Stahltechnik is committed to its customers. What sets it apart from others? It is still young and likes to take on challenges. Leonard Suer explains: "If a customer comes to us, tells us where they want to go and asks if we want to be their partner, we say: we'll do it." For example, it recently purchased a machine to meet a customer need. The customer wanted a product they could not initially make. Together, they discussed what needed to be done. That led to an additional machine.

### Deburring

Speaking to several abrasive belt and brush manufacturers, Suer was pointed in the direction of Timesavers International. At the time, the company decided on a 42 RB series with a working width of 1,350 mm. It was later replaced for the same series, but with a working width of 1,600 mm. The machine with rotating brushes is ideally suited for deburring, edge rounding to a radius of 2 mm, laser oxide removal and finishing. Oxide removal is crucial for coating and galvanising and the applied layer adheres much better to a clean surface. 1A-Maschinen GmbH, dealer of Timesavers machines, played a major role in the project. It provided the deburring machine in combination with AMI roller tables and Absaugwerk GmbH's dust extraction unit.

### Bended parts and plates

The German company had been working with Timesavers' deburring machine for two years. They were quite satisfied with it. Yet they kept running into the same problem. The parts they ran through in the deburring machine were not completely straight. When laser cutting, tension enters the sheet metal. When that tension is released, the metal deforms. This can happen during follow-up processes such as welding or assembly. The post-processing that is then required can lead to higher costs. To save such costs, the stress should be removed from the sheet metal. Hence the purchase of the Peak Performer 85P.1600 from KOHLER Maschinenbau.

### Levelling

The Peak Performer 85P.1600 features an advanced cleaning system. Here, the levelling rollers are moved out of the machine electrically. This simplifies the cleaning process. For Suer Stahltechnik, this is very important as it processes different types of metals. In addition, the machine has an electromechanical gap control. Different forces occur when the cross section of the material varies. The patented gap control recognises these and counteracts them immediately. The levelling gap remains constant for best levelling results. In addition, the part levelling machine is equipped with a barcode scanner, reversible levelling rollers for longer service life and more features such as overload and edge protection systems.

### All is one

To save space, Suer wanted to link the part levelling machine to the deburring machine. This way, it forms one process. The control panels of the KOHLER and Timesavers machine are integrated into one system, with three cameras on top. This allows one employee to manage and oversee the entire process. "It saves time, space and energy and it works very well," says Leonard Suer. KOHLER's part levelling machine ensures flat and low-stress sheet metal. Max Burgert, product manager at KOHLER, explains that levelling involves more than just straightening a sheet. By reducing and balancing the tension in the material, further work becomes more process





reliable and efficient. Next, the levelled part passes over the roller table into the deburring machine. There, deburring, edge rounding, oxide removal and finishing take place. At the push of a button, the conveyor belt reverses again. This way, the part is fed back to the front.

#### Cooperation

The companies KOHLER, Timesavers,

1A-Maschinen and Suer Stahltechnik can now look back on a pleasant cooperation. It went beyond just delivering a product. It was about offering the optimum process. Regular meetings were crucial during the development and completion of the production line. Raoul Knoop, machine operator and workshop leader says: "What I really liked was that they responded to every customer request. You could say: I would

like it to be this way and that way. Is that possible? And they also tried and realised it. Moreover, they worked very closely together on this. So, I really liked that and it turned out very, very well."

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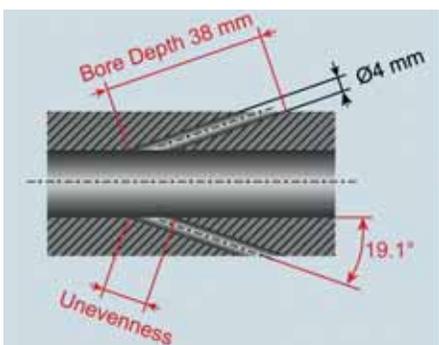
## Deburring starts at the design stage

The task of deburring is usually addressed once production of the workpiece begins however, the earlier the deburring specialist is involved in the project, the better the workpiece design can be optimised for deburring. This was the experience of two technical managers, one from the automotive industry and one from the energy sector.

Production of a new workpiece was running on the machine in the factory of a supplier to the energy sector, however, the quality control department quickly identified a serious quality deviation. Burrs were present on the edges of the bores. It is essential to remove these burrs before the following assembly process. The technical manager knew the company HEULE from previous deburring projects and contacted the local distribution point in Germany. He knew that HEULE does not only offer standard products, but also fully customised solutions: "Hopefully HEULE has a simple solution for this deburring problem".

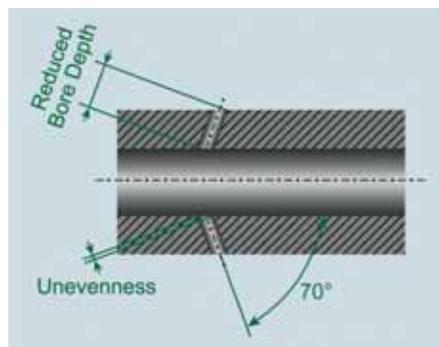
During the first telephone conversation, he described the technical situation and then sent drawings of the workpiece to HEULE for a more detailed analysis. Unfortunately, it quickly turned out that deburring tools also have their limits.

HEULE could cope with the unusually large drill depth of 38 mm at a diameter of 4 mm by using a special tool, but the large unevenness at the exit of the bore proved to be a challenge.



In principle, the blade of the deburring tool will follow an uneven bore edge, but with this large unevenness there is no chance to deburr the bore edge completely. This situation could not be solved with a standard HEULE catalogue item. The HEULE area sales manager made the recommendation to the customer that a change be made to the workpiece design so that the bore can be properly deburred.

The existing angle between the bore and the workpiece of 19.1° should be changed to 70°. As a consequence, the unevenness of the bore edge would be greatly reduced. In addition, the bore becomes much shorter resulting in a reduction in drilling time and increasing the life of the drill.



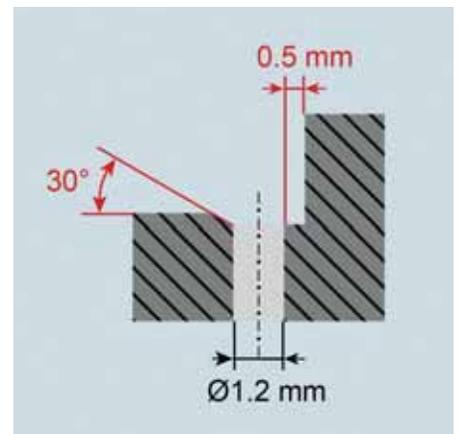
This new deburring situation could then be satisfied with a tool from the HEULE standard range, the COFA. The customer's technical manager discussed this suggestion with the design team. After a few successful internal tests, the design of the workpiece was changed as per HEULE's recommendation.

### Development of a completely new tool concept

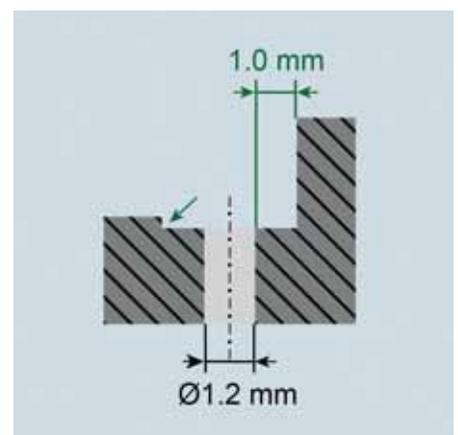
The situation was different for a customer in the automotive industry. A workpiece had already been manufactured millions of times prior to contact with HEULE. High operating costs due to electro-chemical deburring was a recurring issue. By chance, the responsible managers discovered the more cost-

effective, but nevertheless process-safe deburring solutions of HEULE and immediately contacted the headquarters in Switzerland. After a detailed analysis by the experts, the customer was asked if the workpiece could undergo some design changes.

With a short distance of just 0.5 mm from the edge of the bore to the side-wall, the blade of the deburring tool would collide with the side-wall and break.



Therefore, the wall distance should be increased to 1.0 mm to allow free rotation of the tool and avoid collision of the blade. On the left side of the bore there was a 30° angle, which represented an additional collision risk for the blade of the tool. This



problem could be solved by machining a flat recess instead of an angle.

Furthermore, the bore- $\varnothing$  should be changed to  $\varnothing 2.0$  mm, which was the smallest diameter HEULE could deburr at the time. If the customer had involved HEULE early on in the design stage of the part, these suggested changes would have been simple to implement, however, with an existing design, production process and produced quantities already running into the millions, it was not such a simple matter. During the discussion between HEULE's experts and the customer, it was quickly established that some, but not all of the suggested part design changes were possible. The angle to the left of the bore was replaced with a recess and the distance from the bore to the sidewall was increased. Unfortunately, the bore- $\varnothing$  of 1.2 mm could not be changed.

For decades, HEULE has been known for innovation and customised tool design and therefore took on the challenge of a tool design for this small bore. A tool design with extremely small dimensions, high concentricity, easy handling and a defined cutting edge made of carbide with a small

chip recess had to be created. It soon became clear that the existing deburring tool concepts could not be miniaturised, so a completely new tool concept was developed. The result was a design in which the blade also takes on the function of the spring. The DL2 (Deburring Less than 2 mm) series was born and the first tests proved to be very successful. The customer could now run the next multi-million series with reduced production costs due to the deburring process which could now take place on the machine and not through a subcontractor. Through this cooperation with the customer from the automotive industry, the DL2 is now part of the standard product portfolio covering bores ranging from  $\varnothing 1.0$  mm to 2.1 mm.

#### Standard solution thanks to early involvement of the deburring expert

So now back to the customer from the energy sector. For the commissioning of the tool, HEULE's service engineer provided full on-site support. The new manufacturing procedure was implemented and the deburring quality achieved to the full

satisfaction of the quality control department. By making the small correction to the angle of the bore the challenge of deburring the bore according to the original part design was eliminated and a standard tool from HEULE was used.

When it comes to new workpieces, the topic of deburring is often only considered at either a very late stage or when a problem arises. This is because at the development stage, the customer focuses on the functionality of the workpiece and not on its feasibility during production. If the deburring expert is involved in the project at an early stage, both the workpiece itself and the production processes can be analysed. The customer's conclusion was clear: "We are glad that we have now found a suitable solution. But if we had involved HEULE earlier in the process, we could have saved ourselves a lot of time"

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# Deburring success with the VG Edge Master from FINAIDS

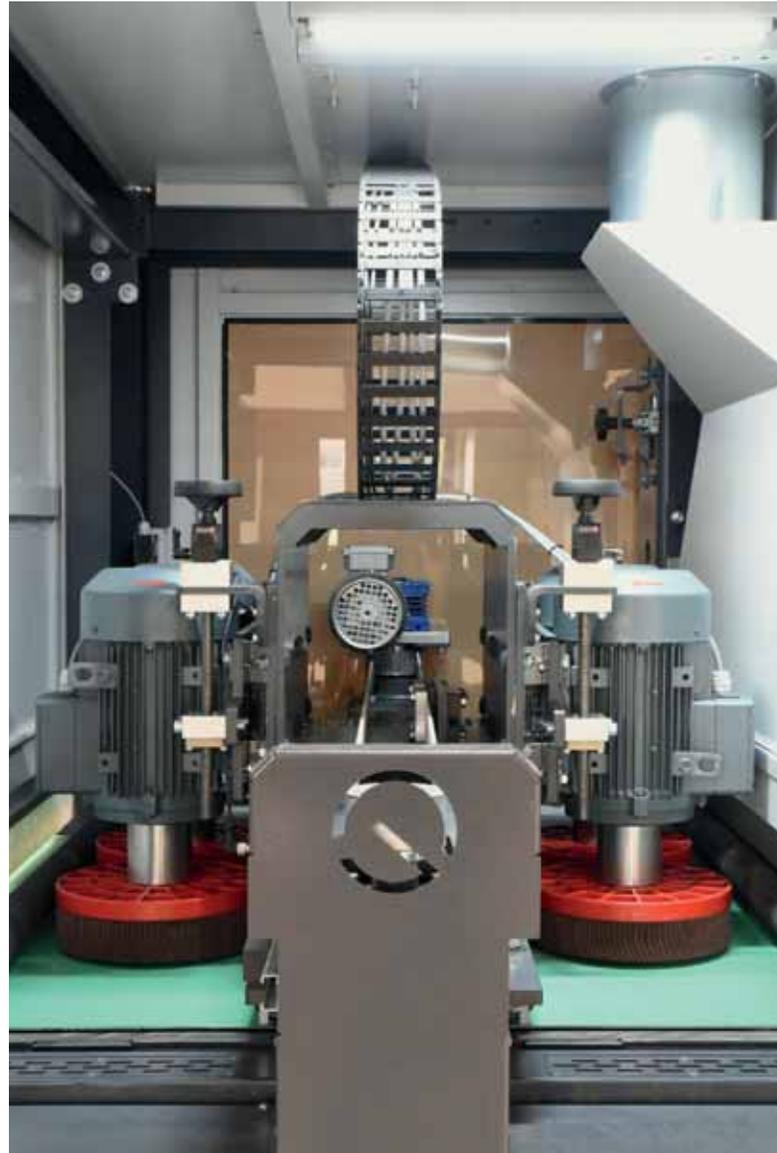
Our customers talked... and FINAIDS listened! Following the success of its stand at MACH24, Finishing Aids & Tools Ltd and VG Machines are now focussing on edge-rounding and deburring machinery that is tailored to the needs of UK customers. The latest model from VG, the Edge Master, is a 1,060 mm wide machine that boasts all (former) options as standard.



7" touchscreen controls, vacuum conveyor, quick-release brushes, variable speed abrasive belt, top-down deburring brushes and extra-sticky conveyor belt, (to secure smaller parts), are all included. FINAIDS also offer a range of wet and dry extraction units to suit your process and budget.

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With over 70 years of supplying abrasive and finishing products to UK industry and a number of international raw material manufacturers available like 3M, Starcke and Ekamant, FINAIDS staff receive world-class training in abrasive processes that maximise the performance of all wide-belt machinery. If you would like an on-site consultation from its technical sales team, please contact: [sales@finaids.com](mailto:sales@finaids.com)



Since 1955, Finishing Aids has specialised in supplying a full programme of surface finishing abrasive products for a wide range of industries including aerospace and automotive. Capital Machinery was added to the Company portfolio in 2021 and FINAIDS is now the sole UK agent for VG Machines, Lissmac and Kohler Part-Levelling among others. FINAIDS' vastly experienced technical sales team work together with customers to maximise all machinery capabilities to save overall running costs on abrasives long after the machine has been installed. Servicing, repairs and installation are also a key part of the support package that FINAIDS offers new customers, for technical information, quotation or to arrange a visit from one of the FINAIDS team please contact the Northern Branch on 0161 705 1300 or the Southern Branch on 01480 216060.

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# Why top manufacturers choose Midland Deburr & Finish for deburring services

For over 25 years, Midland Deburr & Finish, based in Lye, Stourbridge, has been a go-to firm for manufacturers seeking top-tier deburring services. We explore why successful manufacturers subcontract their deburring work to the company and the numerous benefits that deburring brings to their production processes.

Midland Deburr & Finish, under the stewardship of managing director Chris Arrowsmith, has built a reputation for precision and quality. He states: "Our commitment to excellence and advanced deburring techniques has positioned us as a trusted partner for manufacturers. We understand the critical role that deburring plays in enhancing the quality and performance of components."

Deburring, the process of removing burrs and sharp edges from components, offers a multitude of advantages that are crucial for high-quality manufacturing. Here's why manufacturers rely on Midland Deburr & Finish for their deburring needs:

Chris Arrowsmith explains: "Our deburring services guarantee that the surfaces are perfectly prepared for any subsequent finishing processes. A superior surface finish is not just about looks, it's about achieving the highest standards of quality. We prioritise safety, making sure that every component is free from potential hazards." This proactive approach prevents injuries and enhances the overall manufacturing process.

Chris Arrowsmith continues: "Our precise deburring techniques prevent unnecessary wear and tear, saving costs in the long run. By addressing potential stress points, we ensure that components perform better and last longer."

### Why subcontract to Midland Deburr & Finish?

Manufacturers choose Midland Deburr & Finish not only for their expertise but also for their commitment to quality and customer satisfaction. Chris Arrowsmith



explains: "We offer specialised techniques and advanced equipment that ensure precise and consistent deburring. Our goal is to deliver a superior finish, improved safety and enhanced performance for all our clients."

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# Comprehensive deburring

A machine that can deburr, grind, round off to a radius of over 2 mm, remove oxide layers and finish both in a linear and non-directional manner? Q-Fin attributes these capabilities to the SER1200. But that's not all, all five processing stations are software-controlled, which allows the machine to be operated almost independently of the operator.



In the dynamic and demanding world of metalworking, where precision and efficiency are key success factors, Q-Fin Quality Finishing Machines is constantly taking steps to push the boundaries of innovation. As a leading developer and manufacturer of high-quality finishing machines for the metal industry, Q-Fin is committed to providing advanced technological solutions that have a significant impact on production processes.

The company, which now serves customers worldwide, also offers machines for dust extraction and handling for finishing machines in its portfolio. "It's a strong offer," promises managing director Anton Bax. But Q-Fin doesn't leave it at that. Innovation is an indispensable pillar and is what the customer expects from him and his

team. It has therefore addressed the increasing demand for a non-directional finish and the growing requirement for a machine with a radius of over 2 mm for panels up to 1,200 mm wide, this was already possible with the SER600 up to a width of 600 mm. The desire for further automation of the finishing process was also addressed. Q-Fin very consciously incorporated these needs into the development of an all-in-one machine, which is now installed worldwide.

### Five stations, twenty engines

In the SER1200 Multibrush, as the machine is fully named, twenty motors control five stations. This enables an automated process for every possible finish, explains Anton Bax. This includes deburring,

grinding and rounding. This includes removing oxide layers, rounding with a radius of up to 3 mm and both linear and non-directional finishing. This makes the SER1200 a complete machine that, according to Anton Bax, requires very little effort from the operator: "The operator can receive a production sheet from the ERP system, scan the corresponding QR code and use it to set up the program. Almost everything then runs automatically. All finishes are pre-programmed with their specific parameters and the machine calibrates itself."



### Technical innovation and user-friendliness

The speed and completeness of the SER1200 Multibrush in deburring and finishing processes are second to none. Thanks to an innovative combination of disc and round brushes, Multibrush, also known as "the ultimate combination" as Anton Bax calls it, the machine can quickly produce a very large radius in a single pass. The disc brushes work from above to round off the product, while the round brushes work on the product from the side. This synergy ensures a fast and aesthetically pleasing radius.

The user-friendliness of the machine underlines Q-Fin's innovative approach. The easy-to-use touchscreen, the option to set programs in advance and the use of a scanner to read QR codes make the machine extremely accessible and efficient to use. Brushes and abrasives can be changed in a matter of seconds, which further increases productivity.

### Good experiences

Customer satisfaction and experience with the machines are at the heart of Q-Fin's



success, and initial reactions to the SER1200 Multibrush have been exceptionally positive, says the manufacturer. Customers particularly appreciate the advanced automation functions, which considerably simplify the operation of the machine. "One specific benefit that is regularly highlighted is how the machine improves the logistical processes within production," says Anton Bax.

This increase in efficiency is largely due to the ability to set programs in advance and integrate them with work preparation, which means a significant improvement in both production quality and operational flexibility. Teams can work more effectively and the range of applications around the machine is expanded.

One notable achievement is the delivery of the SER1200 Multibrush in the TwinLine configuration, two SER1200 Multibrush machines plus a reversing unit, to a major German customer. This innovative setup makes it possible to process products on both sides at high speed, which further increases productivity and efficiency.

**Halved power consumption**  
Q-Fin presented the SER1200 in October 2022 during Euroblech in Hanover. Having won an innovation award at the 2020 edition of Euroblech, the company once again competed for the same prize at the last edition. This time with the SER1200, for which Anton Bax has a concrete picture of market interest. He states: "We should achieve annual sales of around 15 to 20 units."

The SER1200 weighs around 6,000 kgs and is 4.1 metres long, 2.2 metres wide and 2.3 metres high. This is relatively large, notes Anton Bax. "But on the other hand, a company can use this machine to carry out all the machining operations for which it would otherwise need three or four separate machines. What's more, this machine consumes half as much electricity as those



from other suppliers." In response to demand for both non-directional finishing and a radius of 2 mm, the SER1200 Multibrush was ultimately developed into a

machine that offers much, if not everything, according to Anton Bax. He concludes: "In our opinion, it is the most comprehensive machine on the market. What we can expand on is mainly the handling around the machine. But the perfect machine itself? In our opinion, it already exists."

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# Drill sharpener purchase pays back in months and saves money for years

To the uninitiated, it may not be immediately apparent that owning a bench-top grinding machine for reshaping twist drills can save an enormous amount of money over the long service life of the equipment. 1st Machine Tool Accessories sole sales agent in the UK and Ireland for Darex electric drill sharpeners manufactured in the US, explains the advantages of reclaiming worn bits in-house using the four types of sharpener on offer.

One alternative to employing these purpose-built grinders is to try to sharpen drills by hand, which requires experience, is imprecise and produces variable results. Sending bits out to be resharpened is expensive, typically costing between 30 and 50 percent of the original purchase price each time, added to which a slow turn-around may impact production if a particular drill is out of stock. The third option, throwing dull bits away after a single use and buying new replacements, is wasteful and ecologically unacceptable.

All these choices are clearly substandard. 1st MTA advises manufacturers to use a Darex machine instead, preferably with an optional vacuum unit to extract the grinding dust and keep the working area clean. A key message is that a drill can be resharpened multiple times, saving money on every occasion. Provided there is sufficient flute remaining to evacuate chips, a drill can be repeatedly resharpened until its functional length becomes too short to produce the depth of hole needed. Most drills can be reground tens or even hundreds of times before they need to be discarded.

The other important takeaway is that the grinding units are easy for anyone to use after minimal training, without the need for specific drill sharpening skills or prior experience. Any machine tool operator can simply take a blunt drill to a Darex grinder, spend a couple of minutes restoring the cutting edges and walk straight back to continue production, with very little downtime.

### Three-step process

A drill is placed in a holding chuck and the length of protrusion is set at an alignment station according to the position of a cam at the rear. Carbide fingers enter the flute to fix the rotational orientation. The drill is tightened in that position by rotating the chuck clockwise, thus determining the amount of material that will be removed from the tip.

The grind motor is then started and, at a second station, the drill is sharpened while clamped in the same chuck. On the XT-3000iA, the operator pushes a button and the machine automatically oscillates the drill tip from side to side and feeds it forward to sharpen it against the wheel. The machine knows when the process is complete and the drill is retracted. Many parameters may be adjusted in the controller positioned at the right-hand side of the machine, including the number of spring passes.

As standard, bits from 3 to 21 mm in diameter are accommodated in the XT-3000iA. Symmetry of the lip height measured relative to the axis of the drill is



within 0.04 mm, an important parameter determining the lip angle and hence the amount of support provided to the cutting edge. A larger lip angle allows the bit to cut more aggressively under the same pressure but can cause binding, wear and eventual failure of the tool.

The correct amount of lip clearance is determined by the point angle at the tip, which can be set from 118 to 150 degrees without the need for a wrench or any other tool. 118 and 135 degrees are the most common angles, the latter being used for machining harder materials so that tight tolerances can be held by avoiding wandering and chatter.

In an optional last operation, the chuck may be removed from the sharpening fixture for point splitting at a third station. The chisel line or web at the centre of the drill connecting the two cutting edges is a non-cutting element of the profile,



detracting from the tool's performance. One side is ground away and then the other to split the point, with both motions reaching a predetermined stop each time. Two extra cutting edges are added, reducing by up to 50 percent the down force required for machining.

To extend the capabilities of the XT-3000iA, optional attachments are available that may be deployed at the second station by removing the automated sharpening fixture, giving the ability to retip many different drill-related tools. A popular choice is the countersink attachment. There is also an attachment for manually sharpening large bits up to 30 mm diameter. Left- as well as right-hand drills can be processed, as well as step drills, brad point drills and others with a 90-degree point.

The electroplated grinding wheel is supplied in 180-grit CBN for sharpening standard or HSS drills, or 220-grit diamond for carbide drills. The surface finish obtained is 16 RMS or better. A novel feature is the machine's ability to log the sharpening cycles it has completed and display the number on the LCD screen, allowing timely maintenance to avoid unscheduled downtime.

Available also is the XT-3000i without the automatic oscillation feature for manually sharpening both the standard and large drill sizes. Notable is that if someone invests in this machine and subsequently wants to automate it, 1st MTA is able to retrofit a controller. Below these machines is the entry-level Darex model, the V391, for sharpening drills from 3 to 10 mm in diameter having point angles from 118 to 140 degrees.

At the other end of the scale, for sharpening high speed steel, cobalt, solid carbide and coated drills from 51 to 254 mm

long and 3 to 16 mm in diameter, a 4-axis CNC sharpener, the XPS16i, can be programmed via an LCD touchscreen panel. On initiation of the sharpening cycle, three independent electronic sensors automatically detect the drill's length and diameter, locate the cutting edges and calculate the web thickness.

The start of the grind position can be adjusted in increments for efficient use of the abrasive and long wheel life, while high resolution motors improve surface finish. A grind motion control system detects if there is excess material on a blunt drill and adjusts the feed rate automatically to prevent burning and provide optimum sharpening performance.

Custom split point features and other complex points found on today's premium HSS and solid carbide drills may be ground. The latter material may also undergo honing and edge preparation. Point angle is from 118 to 150 degrees, 90 degrees being optional. The heavy-duty, highly productive unit runs unattended and has the ability to store the program files created.

## Conclusion

In the world of manufacturing, accuracy, repeatability and efficiency are paramount. Drill bits are ubiquitously-used tools and keeping them sharp is crucial to maintaining productivity. Regrinding them in-house has substantial financial benefits due to savings in sharpening costs and raised productivity, leading to rapid amortisation of investment in Darex equipment.



Yield is maximised and scrap minimised by being able to keep feeds and speeds at their optimum levels. That is because the cost of returning a dull bit back to its as-new condition is so low that there is little incentive to leave regrinding to the last minute and operate a blunt drill for longer than is desirable. Moreover, a manufacturer always knows they have at least one usable drill of a particular type and size on-site, provided it is not approaching the end of its life, so production is never compromised.

Additionally, the ability to customise the point angle and profile on the fly with a Darex sharpener allows a manufacturer, if they so choose, to adapt to machining different materials without the need to invest in a new set of drills for each application.

Safety on the shop floor is another consideration. Blunt drill bits are more likely to slip or cause materials to bind, leading to accidents and injuries. A sharp drill, on the other hand, reduces these risks by easily and consistently cutting through the workpiece material. The result is a safer production environment for employees, lessening the likelihood of mishaps.

Lastly, echoing the point made in the introduction, sustainable manufacturing practices are becoming increasingly important. Owning a drill sharpener contributes to environmental conservation by minimising waste. Extending the life of drill bits and lowering the number discarded ultimately reduces a factory's carbon footprint. The eco-friendly approach aligns a business with the principles of sustainability and responsible manufacturing.



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# ANCA launches revolutionary ToolRoom RN35 software to elevate productivity and performance

**RN35 release delivers advanced features to help manufacturers reduce cycle time by 20 percent**



ANCA has introduced RN35, the latest version of its cutting-edge ToolRoom software. This significant launch coincides with the celebration of ANCA's 50th anniversary, marking a half-century contribution to industrial progress through precision cutting tools.

The RN35 release presents a range of advanced features designed to boost productivity and ensure consistent tool quality, resulting in superior surface finishes. By enabling faster cycle times and enhancing tool performance, manufacturers can drive up their profits effectively.

### **ANCA's ToolRoom RN35 software offers:**

- Cycle time reduction of up to 20 percent with advanced features and functions, optimising feedrate, improving superior surface finish and extending wheel life.
- New developments including the integration of material removal rate calculations, allowing manufacturers to automatically set parameters for constant removal rates, plus air-time reduction.
- Statistical Process Control (SPC) software for statistical analysis and evaluation of manufactured part characteristics streamlines manufacturing processes.
- Profile fluting further enhancing the

popular flute from solid feature of the proprietary ANCA software.

Thomson Mathew, software product manager at ANCA says: "It is no secret that flexibility, user-friendliness and application diversity have always been key strengths of ANCA software. With our RN34 release, we launched high performance cutting tools of different tool types. Continuing from this, our RN35 release focuses on elevating the user experience, enhancing performance, boosting productivity and minimising cycle times all without compromising quality. "ANCA is the only tool and cutter grinder manufacturer in the world that designs and produces the complete machine in-house, including building the CNC, precision motors and spindles, and polymer concrete bases. Our dedicated software engineering team is focused on developing software with innovative enhancements, with the goal of making tool production easier, faster and more efficient for our customers. This level of vertical integration means we can consider the entire machine as a single system when developing new solutions," Thomson Matthew adds.

Established in 1974, ANCA has consistently delivered industry-first solutions that have reshaped cutting tool manufacturing. The introduction of the System 32 CNC software in 1991 marked a groundbreaking moment as ANCA applied advanced robotic software to the machine world, introducing novel concepts in tool grinding, including the innovative soft axis or soft machine kinematics, which simplified the grinding process for cutting tools. In 1998, ANCA was the first to introduce true 3D simulation technology for CNC tool and cutter grinding with the launch of CIM3D software.

### **Key highlights of RN35:**

**Feedrate optimisation:** RN35 includes feedrate optimisation, ensuring improved cycle time and increased productivity. The software facilitates stable tool quality with a superior surface finish, offering enhanced

performance for CNC tool manufacturing. **Improved cycle time and wheel life:** With RN35, manufacturers can experience improved cycle time and extended wheel life. The software provides uniform wheel wear on the surface of the grinding wheel, contributing to cost savings and enhanced operational efficiency.

**SPC (Statistical Process Control):** ANCA's revamped SPC software empowers users with comprehensive control of the production process during high-volume manufacturing.

**Profile fluting:** RN35 introduces profile fluting, providing the ability to control and maintain hook/rake angle along the trajectory of the cutting edge on a given profile. This enhancement increases cutting performance and extends the life of the tool due to uniform hook/rake angle along the edge.

**i3dg improvements:** ANCA has enhanced i3dg features, allowing for faster comparison of tools on the machine during small changes. The software also enables the measurement of features after changes, providing a seamless validation process.

**Profile software improvements:** RN35 introduces a new and easy way to define and modify profiles, saving time in the design stage. This improvement makes it easy for new starters to adapt to the software.

**LaserUltra enhancements:** LaserUltra enhancements allow for the measurement and compensation of more complex tools with line and arcs inside the machine. This feature saves customers cycle time and reduces the scrap rate, ensuring better tool quality independent of operator skills.

**Double corner radius enhancements:** RN35 brings advancements in manufacturing complex geometry tools for various industries, enhancing the versatility of CNC tool production.

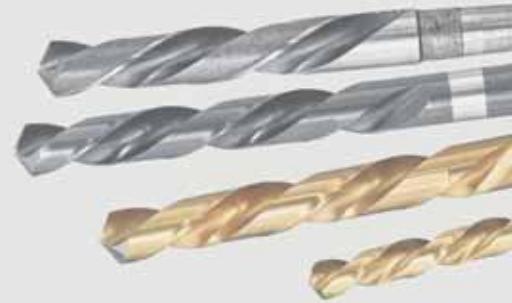
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# Allied has recipe for success

Over its 45-year history, family-run Allied Tooling has navigated its route to success with a reputation for quality and innovation that has foundations built by longstanding staff with unsurpassed expertise and leading technology from Vollmer UK. This bedrock of expertise, innovation and cutting-edge machine tools is now being driven forward by the next generation and the future has never looked brighter.

The foundation blocks have been laid for more than a generation, but in the last six years, the Poole-based company has more than doubled turnover to over £7m and growth is destined to continue at pace. Central to this expansion has been a company re-branding, the introduction of PCD round tools and saw blades, becoming the UK's exclusive AKE saw blade partner and also a rapid expansion of available product lines. This has all culminated in the Dorset manufacturer winning long-term supply contracts with prestigious brands such as Princess Yachts and Wren Kitchens to name just two.

With an increasing demand for its expanding product line-up, the ISO:9001 manufacturer now has nine drivers conducting daily deliveries the length and breadth of the UK while more clients are also signing up for consignment stock contracts. Consignment stock simplifies and expedites the supply chain that now sees Allied supply and service over 6,000 tools and saw blades each month. To accommodate this, the 60+ employee manufacturer for the woodworking and kitchen, marine, construction, composite, aerospace, automotive and motorsport sectors has ramped up its investment in grinding and erosion machines from Vollmer.

The first Vollmer machine arrived in the 1990s and the company has purchased more than 20 Vollmer machines over the years. In the last six years, the company's entry into PCD tool production has seen it acquire two Vollmer QXD250 6-axis disc erosion EDM machines with H5 loading stations, a CHD270 8-axis TCT circular saw blade sharpening machine, a VPulse 500 wire EDM with 5-axis simultaneous interpolation, a QR270 erosion machine for finishing the tooth tops of saw blades and the most recent installation, the Vollmer QM ECO Select. This investment adds to



*The Vollmer QXD250 and VPulse 500 with the CHD270 in the background.*

Vollmer machines that already include Loroch KBN and KSC HSS saw blade machines, a CHHF 21H TCT saw blade repair machine, TCT saw blade machines such as the Vollmer CHD250R2, CHD251 and CHD270 with ND340 automated loading, a CHX840 HS and a CP200. These machines manufacture everything from solid carbide and PCD tooling, TCT and HSS saw blades, bandsaw blades, drills, endmills and many more products.

Commenting upon the business growth, Allied Tooling managing director Wes Hacker says: "We have always endeavoured to cater for the diverse demands of the industry whilst building a high-quality brand with sustainable growth. This has seen Allied move away from 'cottage-industry' work like hand tools, planer knives, lawn mower blades and

stepping into more complex, higher value and higher volume solutions. This has seen us fill our factory with state-of-the-art machines to adopt greater levels of automation and technology. In the last five years, TCT saw blade servicing and sales are up 100 percent, carbide round tooling sales are up 100 percent and our diamond tooling that was once outsourced is now produced in-house with growth beyond 400 percent."

It's not a coincidence that Allied has been the exclusive UK dealer for AKE since 2019, or that it has won major contracts with multinational companies. It's the propensity to work tirelessly to deliver on its promises, pivot and invest when required. Take leading German brand AKE identifying Allied Tool as its UK partner, a factor not based on sales volume, but the



*TCT Saw blades on the QXD250 and HC4 chain magazine automation system.*



*The QXD250 eroding TCT saw blades at Allied.*

desire to deliver the same level of quality and service that AKE is committed to internationally. AKE saw blades are manufactured on Vollmer machines in Germany, so in true partnership fashion, Allied invested in the same Vollmer machines, adopted the same saw blade programs and also applied the same grinding wheels and erosion discs. The result is that more than 1500 AKE saw blades are supplied, serviced, repaired and returned to customers every week to OEM specifications and quality. Furthermore, by adopting the same Vollmer technology, complex new saw blade geometries developed by AKE are available for complete service and repair in the UK.

The 16,000 sq ft Allied facility is crammed with Vollmer machines, so Allied is adopting a 'one-in and one-out' policy until it finds a suitable facility for expansion in the North East to service Wren Kitchens. The latest tranche of Vollmer machines commenced when PCD tooling went from being an outsourced solution to a serious addition to the product range. Identifying the industry trend at an early stage, Allied

invested in two Vollmer QXD250's with the H5 28-tool automation solution in June 2018 and a VPulse 500 in March 2023. Its HC5 28 tool external workpiece storage system is also on the VPulse 500 machine that arrived in March 2023.

Allied Tooling has been supplying and servicing saw blades for more than a generation. However, the partnership with AKE has ramped up production and servicing for the South Coast company. With a selection of reliable and productive Vollmer and Loroach machines that are still in operation after more than 20 years of service, the saw blade division has undergone modernisation to embrace automation and increase throughput.

In October 2021, a Vollmer CHD270 sharpening machine with a four-station ND340 automation system was installed. Adding to their CHD251 and CHD250, the new arrival increased productivity by more than 30 percent. The success of the CHD270 was followed in January 2023 with a QR270 erosion machine for processing the tooth tops of PCD circular saw blades.

It is this strategic foresight that led Allied

to bolster its PCD saw sharpening technology with a Vollmer QM ECO Select machine that was installed in January 2024. While capable of processing PCD round shank and circular saw blades, this most recent arrival was acquired for saw blade servicing.

Wes Hacker concludes: "As a company, our growth is derived from our ability to deliver innovative high-quality products to the industry. Our position as the exclusive UK AKE tooling partner and more recently becoming a strategic tooling partner to Wren Kitchens is recognition of our service, support and creative approach to exceeding the expectations of our clients. The cornerstone of such partnerships is our longstanding team of expert staff and the technology we adopt and Vollmer is a key partner in providing the machine tool solutions that affirm our position as a market leader."

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# Unlocking the benefits of dust extraction in food processing

### Strengthened health and safety requirements in the food industry

As the global workplace safety landscape continues to evolve, we are starting to see tighter guidelines and stricter rules for business owners. The management of combustible dust poses a significant challenge, particularly in industries such as food processing where the dangers aren't as obvious and aren't understood as widely as other industries.

It's in industries like this, where the dangers lurk unseen, that proactive safety measures become critical. Nederman are experts in providing dust extraction products and monitoring tools that allow you to anticipate and address potential risks before they escalate. With its commitment to innovation and excellence, it empowers businesses to mitigate these risks effectively, allowing for the continued well-being of employees and limited disruption to operational processes.

### Understanding the hazards of combustible dust in food processing

In food processing facilities, combustible dust is a hidden but ubiquitous hazard. Small particles arise from various processes such as milling, grinding, mixing and packaging. Despite its seemingly innocuous appearance, food processing dust can lead to catastrophic consequences if a business does not have proper extraction products in its workplace. Even minor sparks can trigger explosions, endangering lives and disrupting operations.

### Proactive approach to combustible dust management

Nederman's knowledge and history as a leader in dust extraction gives it unparalleled expertise and insight into addressing the unique challenges food processing businesses face. It offers modern, customisable dust extraction solutions that meet international safety guidelines and are designed to detect and manage dust levels proactively. By utilising



our monitoring system, Nederman Insight, you can continuously monitor air quality and dust accumulation. Nederman systems provide early warnings and allow you to intervene swiftly before any potential hazards escalate.

### Harnessing our expertise: tailored solutions for each customer

One of the standout features it offers is its approach to individual solutions for each of its customers. Nederman can tailor its units according to your specific needs and it has extensive experience offering premium space-saving solutions in the confined spaces typical of food processing facilities. Its MCP Smartfilter and Explosion Isolation Flap Valve CARZ, are one of its specialist options that can be configured to deliver space-efficient dust extraction solutions without compromising on safety or efficiency.

### Premium safety and compliance features

Its products are specifically designed to meet the ever-changing and stringent combustible dust management standards. However, it is its commitment to sustainability that sets it apart. Its solutions are designed to operate efficiently and consume minimal power, which allows you to prioritise efficiency without sacrificing performance. When using the products alongside Nederman Insight, you can also

remotely monitor dust levels, which allows you to minimise downtime and maintain minimal operational interruptions.

### Achieving superior workplace safety and operational excellence in food processing

If you are a business that aspires to have continued success and compliance in the food processing industry, implementing robust safety measures is imperative, not only to ensure the well-being of your employees but also to ensure the continuity and compliance of your operations. The tailored solutions exceed industry standards and have international backing, offering you peace of mind in an ever-evolving regulatory landscape.

As we continue to learn more about the dangers of combustible dust and the hidden dangers of food processing, the integration of advanced dust extraction solutions in the sector is more important than ever.

Nederman's revolutionary dust extraction products, coupled with our industry experts and proactive approach, make us a trusted partner for companies within the food processing industry who are striving for operational excellence. Contact one of our combustible dust experts.

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# Contributing to a safer, more productive working environment



Many industrial processes produce airborne contaminants that have the potential to be harmful to human health.

The monitoring and regulation of such emissions is an important element in implementing effective atmosphere management strategies, with agencies responsible for setting or advising on workplace exposure limits for fume, dust and gases, including Volatile Organic Compounds (VOCs).

BOFA's portable systems are designed to help companies meet these health and safety obligations by filtering emissions and returning clean air into the work environment. But, of course, this is a constantly moving space, with production processes evolving through technology and new materials being developed.

As Brian Tefertiller, national account manager at BOFA, explains: "There are many industrial sectors and processes that look to local exhaust ventilation technologies developed by BOFA to help maintain a healthy working environment and enhance productivity.

"For example, while the laser industry continues to evolve in terms of process speeds, the need to filter laser-generated particles is widely understood across the sector both from an operator health perspective and to keep the laser lenses clean and free from contamination to safeguard code and mark quality.

"Of course, it's not always possible for emissions to be seen by the human eye, but the point is this doesn't mean they don't exist.

"In certain sectors, the presence of airborne contaminants is plainly obvious. This is the case for some printing processes, where the evaporation of organic solvents contained in inks creates an unpleasant odour. This is both a nuisance factor and potential health risk and it needs an appropriate extraction system to maintain a comfortable operating environment for workers."

## Evolving in step with innovation

What's also clear is that as technology evolves, it's important for manufacturers to stay abreast of the dust, fume and gases that are given off when they introduce new processes or work different materials.

For example, 3D printing is undergoing exponential growth, with new generation functional materials being developed all the time to create products with specific properties.

BOFA, as part of the Donaldson family, has at its disposal a global resource of in-house scientists and network of laboratories capable of providing OEMs with detailed analysis of the emissions associated with any given process and material to ensure a perfect fit with filtration architecture.

However, while many additive manufacturers do the due diligence to put effective filtration systems in place, BOFA's experience is that not all users of 3D print technologies as yet understand the need to analyse the type and volume of emissions, including nanoparticles and implement effective mitigation.

## Being a good corporate citizen

This is less likely to be the case for organisations in which occupational health is articulated through an Environmental, Social and Governance (ESG) strategy. This recognises a corporation's responsibility to be a good corporate citizen when it comes to sustainability, looking after their people and the communities within which they operate and developing a governance framework that supports these commitments through compliance with local regulations.

One practical example of the impact of an effective ESG strategy would be ensuring that portable extraction systems are in place to help filter process emissions and return clean air into the workplace, rather than venting fume and dust directly into the atmosphere.

Brian Tefertiller concludes: "The rate of innovation in the industrial landscape means that BOFA technology is itself constantly evolving to meet the needs of multiple sectors with our systems providing 24/7 extraction performance monitoring and reporting, smart airflow management, extended filter life and bespoke filter media design. As a result, we are playing an important role in helping to keep manufacturing environments safe for employees, while optimising productivity for businesses, by contributing to effective atmosphere management."

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# Industry dust and fumes

## How dangerous are they?



The dangers of dust and fumes in industry have been well documented, but did you know that invisible threats still pose a serious risk to health and safety? While you can easily see some hazards in the workplace, others can be hard to identify and accidents can be difficult to predict as a result.

When potential fire and explosion risks are hard to pinpoint, identifying the health implications of ordinary dust and fumes becomes even more challenging.

Laws such as the Workplace Health Safety and Welfare Regulations 1992 make it mandatory for employers to provide a safe environment for employees and visitors to the premises. The latest statistics from the Health and Safety Executive from January 2024 revealed 13,000 deaths annually in the UK were attributed to past exposure to harmful substances, such as dust and chemicals, at work.

An additional 672,000 employees were found to have a new case of work-related health issues in 2023, when 31.5 million working days were lost as a result.

Installing the best dust and fume extraction system you can afford to ensure good quality air is imperative, not only to comply with the law, but also to protect employee health.

### Understanding the sources

To minimise the risks of dust and fumes at work, first identify their primary source within every industrial setting. We can't usually see the most dangerous types of dust, as all particles measuring between 0.01 and 100 microns are classed as inhalable. Any particle that's smaller than 10 microns is also known as "respirable", which means it can penetrate deeply into the lungs and enter the circulation, causing a number of industrial diseases. As one-micron measures 0.001 mm, these particles are far too small to see with the naked eye.

The Control of Substances Hazardous to Health Regulations 2002 identifies potentially dangerous workplace fumes and dust. Employers can organise a professional dust risk assessment to determine the

sources of the dusts, including whether any are particularly hazardous and require special attention. If they're classified as a carcinogen or respiratory sensitiser, the level must always be kept as low as reasonably possible.

### Health impacts

From respiratory issues such as asthma and chronic obstructive pulmonary disease to severe conditions like lung cancer and neurological disorders, industry dust and fumes can cause a myriad of health problems. The most common are respiratory issues, with the construction industry being among the most hazardous. An estimated 4,000 construction employees have a work-related lung or breathing problem, according to data released in November 2023 by the HSE. Hazardous airborne dusts and fumes are both commonly found on building sites due to demolition work, welding, exhaust fumes from plant machinery, breaking concrete, ground works and more.

Out of 8,000 cancer deaths reportedly

connected to occupational health issues, 3,700 were attributed to working in the past on a construction site, equating to around 46 percent of the total fatalities.

Other serious respiratory issues include COPD and occupational asthma. Around 12,000 lung disease deaths annually in the UK have been linked to past jobs across all industrial sectors.

## Workplace safety regulations

Safety guidelines are set and controlled by the HSE in the UK and by its US counterpart, the Occupational Safety and Health Administration, with the onus being placed on employers to keep dust and fume levels within permissible exposure limits.

The COSHH dust exposure limits state that dust in the air can't be equal to or greater than 10 mg/m<sup>3</sup> of inhalable dust, or 4 mg/m<sup>3</sup> of respirable dust, over an eight-hour working day. Safety is at risk if the levels are higher and immediate action must be taken to rectify the problem.

Different kinds of dust may also have specific workplace exposure limits, depending on the potential danger their inhalation could cause. The legally safe exposure limits of more than 500 different substances are detailed on the HSE's EH40 document, known as the Workplace Exposure Limits (WEL) list, which is legally binding.

## Mitigation strategies

Dust and fume control is of the highest importance in every industry, with various mitigation strategies and technologies reducing the risks to employees. The most commonly used is a dust and fume extractor designed to help solve workplace dust, fume and mist issues in all sectors. This system is ideal for multiple industries including manufacturing, soldering, welding, grinding and many more. AirBench Ltd is a leading manufacturer of downdraught benches and cross draught extraction systems.

## Success stories

With more than 10,000 extraction systems in service in the UK and overseas, Airbench helps to solve workplace dust and fume problems.

Proptech Aero Ltd, a leading independent propellor manufacturer for aircraft, has installed five Airbench FN model downdraught benches in its workshop at Lee-on-the-Solent, where grinding and sanding are carried out, while Pro Alloy Motorsport is tackling aluminium dust using AirBench FN126784 units at its Haverhill site.

## Future technologies

Technology in the dust and fumes extraction sector is continually evolving, with many improvements being developed. These will include fan-blade redesign and enhanced compressors to make less noise and produce more power with cheaper running costs. New types of nanofibres are also being developed to collect larger amounts of dust before they need replacing or changing.

## About Airbench

Airbench dust and fume extraction systems and filtration products are built to order in its factory located in the East of England. All products are assembled from stock components allowing it to maintain short lead times. It also imports the AOF range of oil mist filters from its trusted partners in the Netherlands.

AirBench specialises in high air volume, low velocity extraction



systems, providing a demonstrable working extraction solution to a wide range of dust and fume problems.

It demonstrates its extraction systems on site prior to purchase where possible, to ensure both buyers and operators are confident that the products are the correct solution and are usable in day-to-day operation for their businesses.

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## Shot blasting and mass finishing for medical and aerospace applications

by Colin Spellacy, head of sales for Rösler UK

In the precision-driven realms of the medical and aerospace industries, the roles of shot blasting and mass finishing technologies cannot be overstated. These processes, crucial for achieving the high degree of surface perfection required in these sectors, are instrumental in ensuring both the reliability and safety of critical components. This article delves into the intricate world of shot blasting and mass finishing, exploring their application in the medical and aerospace fields and underscoring why these technologies are indispensable for maintaining the stringent quality standards that these industries demand. By examining their impact on product durability, performance and compliance with rigorous specifications, we gain insight into how these finishing processes are not just about aesthetics but are fundamental to the functionality and integrity of the components used in life-saving medical devices and high-performance aerospace systems.

### Shot blasting and mass finishing

Shot blasting and mass finishing are two distinct industrial processes used for surface finishing of components, each with its unique method and application.

Shot blasting employs the forceful projection of abrasive materials, such as steel or glass beads, against the surface of

the component. This high-energy process is excellent for cleaning, strengthening, peening, or roughening surfaces and is often used for larger, more robust components. Its aggressive nature makes it suitable for removing heavy scale, rust, or old coatings and it is commonly employed in industries like aerospace and automotive for preparing surfaces for painting or coating.

Mass finishing on the other hand, encompassing techniques like tumbling, vibratory finishing and centrifugal finishing, involves placing parts in a machine with abrasive media, where they are finished through a combination of mechanical and chemical actions. This method is particularly effective for deburring, smoothing, polishing and cleaning a large number of small to medium-sized parts simultaneously, making it ideal for intricate components with complex geometries. The gentle and controlled nature of mass finishing ensures uniform treatment of all surfaces, crucial in industries like medical, where precision and consistency are paramount.

The choice between shot blasting and mass finishing depends on the specific requirements of the application: shot blasting is chosen for its aggressiveness and suitability for larger, tougher components needing thorough surface preparation; mass finishing is preferred for

delicate, precision parts requiring uniform treatment.

Shot blasting, in the context of the aerospace industry, is crucial for preparing component surfaces for further processing and ensuring their structural integrity. This process is extensively used for cleaning, texturing, or peening surfaces of aircraft components made of metals and alloys. By removing surface contaminants, shot blasting enhances the adhesion properties of subsequent coatings, which is critical for parts that are exposed to extreme environmental conditions. Moreover, shot blasting is employed for stress-relieving and strengthening components through peening, a process that improves fatigue resistance and prolongs the lifespan of critical aerospace parts such as turbine blades, landing gear, and fuselage components.

In the medical industry, mass finishing, prior to final sterilisation in accordance with applicable medical regulations, is essential for ensuring the safety and effectiveness of various devices. The process is widely used to smooth and polish implantable devices, surgical instruments, and other medical tools. The primary objective is to eliminate any surface irregularities that could harbour bacteria or cause patient discomfort. For instance, mass finishing is vital in the production of orthopaedic implants, where a

smooth surface can significantly reduce the risk of tissue irritation and promote better integration with the body. Additionally, the process is used to clean and finish components of diagnostic equipment, ensuring that they are free of contaminants and safe for patient contact.

The importance of shot blasting and mass finishing in these sectors is underscored by their direct impact on safety and performance of safety-critical devices. In aerospace, the reliability and durability of components are non-negotiable, with shot blasting playing a pivotal role in ensuring these attributes. In the medical field, the precise and gentle finishing of devices ensures device efficacy. These processes not only contribute to the longevity and functionality of components but are also integral in complying with stringent industry standards and regulations, thereby upholding the highest safety benchmarks in these critical sectors.

### How to select a finishing supplier

To excel in providing top-tier shot blasting and mass finishing technologies, a company must possess a blend of advanced technical capabilities, extensive industry knowledge, and a commitment to innovation. At its core, the company should be equipped with state-of-the-art machinery and technology capable of handling a diverse range of materials and component geometries. This includes having a variety of shot blasting machines suited for different applications, from gentle peening to aggressive surface cleaning, as well as an array of mass finishing machines like tumblers, vibratory finishers and centrifugal equipment. Equally important is the company's expertise in selecting the appropriate abrasives for shot blasting, to achieve optimal results or the right media, whether it be ceramic, plastic, or metallic for mass finishing. In addition, the company should demonstrate an ongoing investment in R&D, ensuring that its technology stays at the forefront of industry advancements, thereby offering the most efficient, cost-effective and environmentally-friendly solutions.

In addition to technical prowess, the ideal company should have a strong customer-centric profile, marked by a deep understanding of various industry requirements and a tailored approach to each project. This means not just selling equipment, but partnering with customers to understand their specific needs, whether they are in the aerospace, medical, or any



other sector with stringent finishing standards. Such a company would offer comprehensive services, from initial consultation and process development to after-sales support, including maintenance and training. The ability to provide custom solutions and adapt technology to unique challenges is crucial, as is a robust global support network that ensures customers receive timely assistance regardless of their location.

By combining cutting-edge technology with personalised, industry-specific service, a company can truly deliver the best in shot blasting and mass finishing technologies, becoming a trusted ally in their clients' pursuit of excellence. This customer-focused approach should be backed by a strong commitment to quality and safety, ensuring compliance with international standards and regulations. A provider excelling in these technologies would also prioritise sustainability, continually seeking ways to minimise environmental impact, such as by developing eco-friendly media and optimising energy efficiency in their machines. Ultimately, the hallmark of a leading company in this field is its ability to merge technical expertise with a responsive and responsible service ethos, setting the standard for innovation, reliability and customer satisfaction in the realm of shot blasting and mass finishing technologies.

### The Rösler difference

Rösler AG, with its illustrious 80-year history, stands as a paragon in the field of shot blasting and mass finishing, particularly for the demanding applications



required in the medical and aerospace industries. This longevity is not just a testament to the company's enduring presence but also to the depth of experience and expertise it has cultivated over the decades. Being a family-owned business rather than a shareholder-driven entity, Rösler has the unique advantage of prioritising long-term goals and customer-centric strategies over short-term financial gains. This approach has allowed the company to build lasting relationships with clients, understand the evolving needs of the industries it serves, and adapting its offerings accordingly. Rösler's deep-rooted understanding of the nuanced requirements in the medical and aerospace sectors has positioned it as a trusted partner, capable of meeting the highest standards of precision, reliability, and quality demanded by these fields.

The global sales and service support infrastructure of the company is a critical component of its success. Its widespread presence means that it can offer localised expertise and support, understanding regional specificities and responding promptly to customer needs, regardless of location.

This global network ensures that customers receive consistent, high-quality service and have access to Rösler's expertise no matter where they are based. This aspect is particularly crucial for clients in the aerospace and medical industries, where time-sensitive projects and the need for rapid response to maintenance and support queries are common. Rösler's ability to provide such immediate and knowledgeable support is a significant advantage, reassuring customers that their high-stakes, precision-oriented projects are in capable hands.

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### Benefits of automated blasting cabinets

ActOn's automated blasting cabinets offer numerous advantages over traditional methods. Key benefits include:

- **Enhanced efficiency:** Automation streamlines the blasting process, reducing manual labour and increasing throughput.
- **Consistent quality:** Precision engineering ensures uniform surface treatment, delivering high-quality finishes every time.
- **Operator-friendly design:** User-centric controls and custom-built configurations make these systems easy to operate and integrate into existing workflows.



- **Versatility:** Suitable for a broad range of applications including deburring, descaling, corrosion removal, paint or rust removal, deflashing, polishing, shot peening and powder removal.

- **Full support:** ActOn provides comprehensive support from consultation to installation and beyond, ensuring seamless implementation and operation.

### ActOn's diverse range of automated blasting systems

ActOn Finishing offers a versatile array of automated blasting cabinets, each designed to cater to specific requirements:

**Wet blasting automated system:** Ideal for blasting shafts prior to coating. Featuring two blasting lines for shafts up to 70 mm in diameter, this system includes a water wash chamber to remove residue and an air drying stage, ensuring components exit clean and dry.



**Satellite blasting cabinets:** Perfect for processing complex parts without contact, preventing potential damage. Applications include die cleaning, removing rolling skin from forged parts, fine blasting and polishing.

**Drum blasting cabinets:** Tailored for small parts, these cabinets are essential in the 3D Printing industry. They can safely blast aluminum, titanium, PA, or PP parts with explosion-proof features like cell wheel locks and non-return valves.

**Transit blasting cabinets:** Designed for achieving matt, deburred, or rough finishes, these cabinets utilise oscillating nozzle movements for comprehensive coverage. They can be integrated with other machines and operate in batch or continuous modes.

**Turntable blasting cabinets:** Suitable for larger, heavier, often round components, these cabinets use a rotating turntable and oscillating nozzles for thorough blasting. Options include permanent in-cabinet turntables or external loading systems for ease of use with cranes or forklifts.

**Internal blasting cabinets:** Specially designed for hollow components such as gas cylinders and diving tanks. These cabinets ensure complete internal cleaning with rotational and vertical nozzle movements.

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