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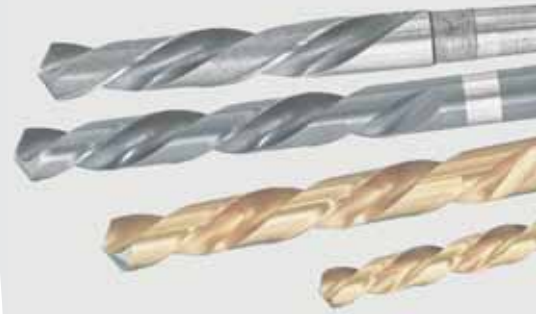
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Drill sharpener paid for itself in five months

In July 2023, site drilling equipment manufacturer Archway Engineering bought a US-manufactured Darex XT-3000 drill sharpener from sole UK sales agent, 1st Machine Tool Accessories. The savings from not sending worn drill bits out for resharpener and stopping discarding others meant that the in-house sharpening machine paid for itself before the end of the year.



It is able to regrind carbide and high-speed steel drill bits to as-new condition. Some bits are resharpened a dozen times or more, depending on their length, with no loss of tip quality. It takes about one minute to sharpen a point, or maybe a little longer if it is necessary to grind past a chip on a cutting-edge.

1st MTA demonstrated the XT-3000 in Archway Engineering's Elland factory before the company purchased the unit, together with an attachment to enable bits up to 30 mm diameter to be resharpened. Left- as well as right-hand drills can be processed and further attachments are available for sharpening step drills, countersink and spot drills and others with a 90-degree point.

Bits are resharpened in a three-step process. A drill is placed in a finger chuck and the length of protrusion is set at an alignment station. Carbide fingers enter the flute to fix the rotational orientation and the drill is tightened in that position by rotating the chuck clockwise.

The grind motor is then started and, at a second station, the drill is sharpened on both sides while clamped in the same chuck. In an optional last operation, the chuck holding the sharpened drill is presented to a third station for point splitting to shorten the chisel line and lessen the force required for drilling components.

Danielle Toner, production manager at the Elland site says: "The savings that the Darex XT-3000 brings make it an obvious investment. We just wish we had bought it much earlier. Now that the sharpener has paid for itself, the ongoing monthly savings are continuing to add to the profit margin on all jobs that require drilling operations, which is most of them."

Find out more by telephoning 01725 512517 or emailing: enquiries@1mta.com and asking for a demonstration.

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Precision perfected

DK Holdings' innovative metal bond tooling for grinding optical glass

DK Holdings' sales & marketing director, John Emptage and Crystran Limited's managing director, Mark Middleton, recently sat down with Grinding & Surface Finishing magazine to discuss why Metal Bond Tooling is ideal for the precision grinding of optical glass and how communication is key to maintaining long-term partnerships.

Thank you both for joining us today. Let's start with you, John. Could you tell us more about DK Holdings and its range of Metal Bond Diamond Tooling?

DK Holdings Ltd is a leading manufacturer of diamond tooling solutions for a wide range of industries and applications, based in the Southeast of England. This year, we proudly celebrated our 65th anniversary, a milestone that reflects the resilience, innovation and dedication of our team in delivering high-quality diamond tooling solutions to our global customers.

The glass processing industry has always been a key partner for us, with our Metal Bond Diamond Tooling being particularly suited to the demanding task of grinding optical glass. We recently exhibited at glasstec in Düsseldorf, one of the largest and most prestigious tradeshows in the world for the glass processing industry. Our metal bond tooling, including some bespoke grinding tools manufactured specifically for



Crystran, garnered tremendous interest at the event.

Mark, it's great to meet you. Could you tell us a bit more about Crystran Limited? What is the company's core focus, the markets you serve and any recent innovations or key projects you're working on?

We're an optical component manufacturer based in Poole, Dorset, specialising in precision-polished lenses and prisms made from exotic crystalline materials that offer high UV and IR transmission.

Our products are used across a variety of sectors, including defence, medical instrumentation, security, fire and rescue and academia. One of our most recent projects involved the design and manufacture of high-precision Zinc Selenide compound wedges, 100 mm x 80 mm x 20 mm, with surface form precision within 0.03 µm and angular tolerances better than 10 arc seconds.

These wedges will be incorporated into a thermal imaging system within a satellite, which is an exciting milestone for our team.

John, your career commenced in the metal bond, resin and grinding production team many decades ago in DK Holdings. Can you walk us through the process of developing a metal bond tool for a specific application, like the grinding of optical glass?

Developing a metal bond tool starts with understanding the specific requirements of the customer's application, much like any of our other diamond tooling ranges. For optical glass, we assess factors like the glass composition, the desired surface finish, the grinding speed and the equipment that will be used. Based on this information, we select the appropriate diamond grit size and concentration, along with the hardness of the bond. During this process we work very closely with our customers, for example in Crystran's case our technical



engineer for the South West of the UK regularly visited Crystran to ensure that Mark and his team were satisfied with the tooling solution developed.

Mark, what differentiates DK Holdings from other suppliers you work with?

One of the standout qualities of DK Holdings is their consistent delivery of reliable, high-quality tools, even when we require highly bespoke solutions. In our line of work, where precision is paramount, the ability to create custom machine tools that perfectly match the demands of our optical components is critical. DK Holdings has a proven track record of meeting these stringent specifications.

What truly sets them apart, though, is their approach to communication. They don't just take a list of requirements and run with it. Instead, their team works closely with us throughout, helping align our tool design with their manufacturing capabilities. This collaborative approach ensures that the final product is not only fit for purpose but optimised for performance. Whether it's refining tool specifications or discussing material selection, DK Holdings' ability to offer technical guidance ensures we get the best results every time.

Last question for you John, What advancements in metal bond tooling technology have you seen recently and how are these shaping the future of precision grinding?

One of the most exciting advancements is in the development of more sophisticated metal matrix compositions. We're constantly experimenting with new bond compositions that provide longevity, hence making a tool more economical for the customer and improving the quality at the same time.

Another key area of development is our ability to tailor diamond tooling solutions for specific machines and processes. Whether it's high-speed grinding or ultra-precision machining, we're finding new ways to adapt our tooling to ever changing customers needs.

Looking ahead, we expect continued innovation in this field, especially as industries demand ever-higher precision and performance. For instance, with the rise of automated machining and robotics in



manufacturing, having highly durable, precise tools like our metal bond diamond tooling will be even more essential.

Our vision is to continue leading precision tooling for challenging materials like optical glass, and with our fantastic workforce and ISO-certified facilities, we can achieve this. I'm excited to see what the glass processing industry does over the next five years and continue working with Mark and the team.

Final question for you, Mark. What do you see on the horizon for the optical glass sector? Are there any emerging trends or developments that will impact the industry, and how will this affect tooling requirements?

High-precision lenses, like aspheres, are becoming commonplace, but the optics market is now shifting towards freeform components, irregular shapes that reduce the size of end products and the number of parts needed, thus lowering manufacturing costs. These innovations will impact various sectors, with one of the most active areas being VR and AR headsets/glasses.

We will continue to use DK Holdings' tooling to manufacture material blanks, unpolished components and the accuracy of their tools helps us minimise correction time, reducing labour and waste. As freeform optics grow in demand, the need for even more precise, custom diamond tooling will be essential to keep up with these complex shapes and tighter tolerances.



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BEP Surface Technologies launch employee development programme to tackle manufacturing skills challenge

In a decisive response to the growing challenge of retaining skilled talent in the manufacturing sector, BEP Surface Technologies, a leading electroplating and surface finishing specialist, has launched an employee development programme, 'Be Better', to advance the personal and professional growth of employees.

Developed in partnership with the HR Dept, a human resources consultancy specialising in advice and support for small and medium-sized businesses, the initiative aims to build a robust employee engagement and development framework that addresses the skills gap while fostering personal and professional growth among employees.

The programme also includes workshops on financial well-being, career development and building positive habits, laying the groundwork for comprehensive employee growth. 'Be Better' will also develop a behavioural competency framework, outlining the 'softer' but critical skills for recruitment, day-to-day interactions and development. This framework focuses on the 'how' of employee behaviours, not just the 'what' of task execution, promoting a culture of continuous improvement.

BEP Surface Technologies, which has operated from its Radcliffe facility for over five decades, has long been at the forefront of plating solutions in the UK. But like many in the manufacturing sector, the company faces the growing challenge of accessing and retaining a skilled workforce.

According to a report by WorldSkills UK, part of a global movement of over 80 countries helping elevate skills for employees and students, the manufacturing sector's struggle to access a skilled workforce is growing. Almost three in five manufacturers, 57 percent, cite significant difficulties finding qualified talent. The challenge is particularly acute in both advanced and traditional manufacturing skills, where shortages are reported by 55 percent and 61 percent of manufacturers, respectively.

These gaps highlight the urgent need for robust employee development initiatives, like BEP Surface Technologies' 'Be Better' programme, to equip the workforce with the necessary skills to meet current and future demands. This proactive approach ensures



Andrew McClusky, managing director, BEP Surface Technologies and Jill Bottomley, director, HR Dept. Trafford and Warrington.

that companies remain competitive while fostering a culture of continuous learning and innovation.

"For more than half a century, BEP has worked hard to remain at the leading edge of the surface engineering sector through our investment in people, processes, and products," says Andrew McClusky, managing director of BEP Surface Technologies. "But like the rest of the engineering and manufacturing sectors, recruiting and retaining skilled talent has been a battle.

"The 'Be Better' programme is a step forward in overcoming this challenge to maintaining our legacy. This programme aims to offer our valued team members a pathway to continuous personal and professional growth opportunities and for potential recruits to see the benefits of working for BEP. We aim to build a more dynamic, committed workforce, driving long-term sustained business success."

'Be Better' is crafted to be holistic and adaptable, designed to meet the business's and its employees' diverse needs. It tackles multiple facets of personal and professional growth, including: empowering employees to support their families, friends and colleagues more effectively; promoting physical and mental well-being through healthy lifestyle choices and resilience-building; offering guidance on career development and achieving work-life balance; enhancing financial literacy to prepare for life beyond work; fostering an

inclusive culture that values diversity and emphasising a commitment to environmental sustainability and workplace safety.

With voluntary participation, the programme allows employees to engage in areas that align with their personal and career aspirations.

Jill Bottomley, director of the HR Department in Trafford and Warrington, collaborated closely with BEP to align the programme with the company's strategic objectives.

She explains: "We aim to develop a sustainable strategy that supports the attraction, growth and retention of key talent within BEP. The programme has been developed based on data and inputs collected over several years to help identify and nurture emerging leaders. By understanding what drives each individual and focusing on their unique strengths, we build a more engaged and future-ready workforce."

The 'Be Better' programme further adds to BEP's dedication to fostering local talent through its comprehensive apprenticeship programme, which spans various disciplines, from skilled machinists and maintenance teams to commercial and administrative roles.

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Revolutionising medical device design



The role of advanced thermal solutions

Original Equipment Manufacturers (OEMs) are increasingly seeking out sophisticated thermal solutions to improve the performance of medical devices. With over 2 million different medical devices across the global market, according to WHO, the design of these critical devices must be perfect. In this article, Andy Selvy, chief systems designer at industrial heating technology manufacturer Watlow, delves into the transition from traditional heaters to advanced, layered heater technologies in medical device design.

The critical role of thermal management in medical devices

Thermal management within medical devices, clinical diagnostics instruments and analytical instruments involves the sophisticated control of temperatures to prevent overheating and ensure devices operate within their optimal performance range. Proper thermal regulation is vital because even the slightest of deviations can lead to device failure, diminished treatment effectiveness, or serious risks to user safety.

Effective thermal management is crucial for devices that generate significant heat during operation or that use heat as part of therapeutic treatments. Examples include maintaining body-temperature fluids in dialysis machines and regulating the temperature of surgical tools to avoid tissue damage. This precise temperature control is essential for the success of treatments and the safety of patients.



Addressing the challenges

The introduction of sophisticated heating technologies into medical devices brings a set of complex challenges that must be carefully managed. Advanced heating solutions must not only provide effective temperature control but also ensure safety, requiring rigorous testing and adherence to international safety standards such as IEC 60601-1-11. This regulatory standard outlines specific safety requirements for medical electrical equipment.

Achieving high thermal efficiency is essential to prevent overheating, enhance energy efficiency and minimise operational costs. This involves optimising heat transfer capabilities, improving insulation and selecting materials that exhibit excellent thermal properties. Each of these factors plays a critical role in the development of safe and effective medical devices.

Furthermore, the development of cutting-edge thermal solutions can be both complex and costly. Manufacturers must balance these factors with the need to produce affordable medical devices. This balance is crucial to ensure that advanced medical technologies remain accessible to healthcare providers and patients alike. Balancing cost and complexity requires innovative design strategies, efficient manufacturing processes and careful material selection to ensure the final product is both effective and economically viable for the market.

Layered heater technology

The move to advanced heater solutions is motivated by the demand for medical devices that are not only compact and energy-efficient, but reliable and consistent in operation.

Traditional heating solutions have long relied on nichrome element wires embedded within magnesium oxide insulation. These products, such as cartridge and tubular heaters, have been foundational yet come with inherent limitations. They often struggle with heat distribution and temperature stability, leading to energy inefficiency and environmental risks due to high operating temperatures and potential insulation breakdown. They must also operate at lower watt densities leading to larger physical sizes for the same power level.

Layered heater technology marks a significant leap forward, employing meticulously deposited thin layers of heating elements. These layers, often as thin as a fraction of a human hair, are engineered to achieve optimal thermal performance. By stacking layers with precise control, these heaters provide unmatched temperature uniformity and quicker thermal response times, allowing for precise thermal expansion matching, which is crucial for maintaining structural integrity and functional reliability under varying thermal conditions.

The materials used in layered heaters, such as aluminium nitride or other

advanced ceramics, play a crucial role in their performance. These materials are selected for their high electrical insulation and superior thermal conductivity, crucial for safe and efficient operations.

Ultimately, layered heater technology not only represents a significant technological advancement but also a paradigm shift in thermal management that is set to redefine standards and expectations within the MedTech industry. The ongoing push for greater efficiency, miniaturisation and safety points to broader adoption of these heaters.

As medical technology continues to advance, the role of sophisticated thermal management systems will remain crucial. Ongoing innovations in heater technologies promise to enhance device performance, improve patient safety, meet the complex

demands of next-generation medical devices and facilitate the development of new and effective medical treatments. Looking to the future, the integration of advanced thermal



solutions will continue to be a critical area of focus, promising significant impacts on the future of healthcare technology. Watlow manufactures a range of heating technology solutions for medical devices. Founded in 1922, Watlow strives to be a leading provider of thermal solutions for the world's most demanding applications. Utilising its advanced technology, leading companies apply its thermal systems which are ideally suited for

vital applications such as clean and environmentally-friendly energy systems and processes, front-end semiconductor processing and lifesaving medical and clinical equipment. Since 1922, Watlow has grown in product capability, market experience and global reach.

The company holds more than 1,100 patents and employs 6,000 team members working in 12 manufacturing facilities and five advanced technology and development centres in the United States, Mexico, Europe and Asia. Watlow covers 95 countries through sales and distribution offices around the world. The company continues to grow, while the commitment remains the same: to provide its customers with superior products and services for their individual needs.

Watlow

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Precise surface finishing for medical device manufacturers

At the recent Medical Technology exhibition in Ireland, Fintek showcased a range of automated mass and super finishing processes. The company provides a full subcontract service along side sales of OTEC Präzisionsfinish GmbH, drag finishing and electro-chemical finishing machines for in-house production.

The medical device industry seeks continual improvements to ensure the safety and effectiveness of surgical instruments, tibias, femoral shafts, prosthetic sockets, bone screws bone plates and more. Surface finishing is a critical post-process in the manufacturing of these devices, that enhances their performance, safety and longevity in use.

With over 40 years' experience, not just in medical but across aerospace, F1 and other precision industries, Fintek bring a wealth of knowledge to the surface finishing of devices made from stainless steel, cobalt chrome, titanium, and ceramics. Using advanced drag finishing and electro-chemical technology, they achieve surface smoothness values to Ra 0.01 µm easily and with repeatable precision and quality. These superior results eliminate the inconsistencies often associated with hand finishing.



The company also provide a range of other machines and processes such as disc finishing and stream finishing which can be used in medical applications. Whatever surface improvements you require, Fintek technicians will advise on the best machine and process to produce optimum surface quality, cost effectively.

Improving surface finishing significantly

improves the biocompatibility of medical devices, by creating a smoother and more uniform surface. This is crucial for implants and prosthetics, which are contact with body tissues for extended periods. A smoother surface is less likely to harbour bacteria therefore lowering the risk of infections in surgical settings.

Medical devices made from stainless steel, cobalt chrome and titanium are often exposed to harsh bodily fluids and sterilisation processes. Better surface finishing enhances their corrosion resistance, ensuring they remain durable and safer over time.

High-precision surgical instruments and implants are subject to friction and wear. Again improving surfaces lowers friction and promotes wear resistance, extending lifespan and maintaining device usefulness. Surface finishing processes can also enhance the mechanical properties, such as fatigue strength, ensuring the devices can withstand the stresses they will encounter within the human body.

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Tschudin unveils another world-first in grinding

At the recent AMB exhibition Tschudin presented a genuine world-first; Grinding and regulating spindles made from carbon fibre.

From machine beds made from natural granite to grinding spindles made of Invar; Tschudin has been working consistently for over three decades to reduce the heat generated by its grinding machines and to improve thermal stability. The last piece of the puzzle has now been put in place with the new and highly sophisticated carbon fibre spindles. The Tschudin Cube centreless grinding machine "is the first grinding machine with little or no heat transfer," explains Urs Tschudin. "With this spindle concept, we are underpinning our status as an innovator and offering our customers a new dimension of accuracy and stock removal rates."

The carbon fibre spindles developed in collaboration with Carbon-Drive GmbH have been tested and adapted for more than six months with very successful results. How materials react to heat has a major influence on precision manufacturing. The temperature resistance of carbon fibre is particularly high and carbon spindles prevent thermal expansion in the machine. They are also much more dimensionally stable and have higher bending stiffness, which means they can run at higher in-feeds, which in turn means a much

Tschudin Cube with optional Robot Loader.



higher cutting performance. In a series of tests, the carbon spindles have proven to be up to twenty percent more effective than steel spindles reports Nikolas Ernst, head of design at Tschudin.

Carbon-Drive emerged from a research project at the Technical University of Darmstadt. Co-founder and managing director Dr Ing. Martin Klimach explains:



Carbon fibre spindles on the Tschudin Cube machine.

"Spindles made of carbon fibre have various advantages, first and foremost minimal thermal expansion. Depending on the type of fibre and fibre orientation, we can produce carbon fibre spindles with different properties and thus respond to the needs of Tschudin's grinding process."

Urs Tschudin and Martin Klimach met at an industry event in 2019. At the time, Carbon-Drive GmbH was working on milling spindles made from carbon fibre and the idea of using carbon fibre spindles in the grinding sector was one that both experts couldn't let go of. The first grinding spindle was ready at the end of 2023 and has been tested and refined ever since.



Chris Boraston of AGS with Martin Klimach of Carbon-Drive.



Gerard King of Smithstown Light Engineering looking at the new spindles at the AMB show in Stuttgart.

The new carbon grinding spindles offer numerous advantages. By minimising the transfer of heat production with a consistent high accuracy is guaranteed at all times. A time-consuming warm-up of the machine, for example on a Monday morning after the weekend, is no longer necessary. "Even if the machine stands still for a weekend, it can produce immediately within a maximum dimensional deviation of only 1 µm," says Urs Tschudin. What's more, all parts can be produced to the exact dimensions, even with multi-track grinding. The grinding wheel and regulating wheel remain parallel because thermal displacement is prevented. This allows the cube to work autonomously for a very long time throughout unmanned shifts. Previously after machines had been stopped for a change-over or for a longer period of time it was always important to cycle the machine without producing any parts until it was warm and the heat transfer had taken place but this is no longer necessary with the new carbon fibre grinding spindles. You can simply start the machine and begin production again straight away. For those making parts in

small and medium batch sizes this is a real game changer.

"The high grinding quality with full grinding gap coverage was already a quality feature of our machines. With the carbon spindles, we are further optimising this aspect and pushing it to the maximum," emphasises Urs Tschudin. The introduction of carbon spindles is another step in a decades-long development process.

Tschudin has been using linear motors for more than 30 years and over 25 years ago, machine beds made of solid natural granite were introduced, which only heat up extremely slowly. In a further step the grinding spindle slides were also made from granite blocks, the vertical stop surface for the spindles led to a drastic reduction in heat transfer. On the Tschudin ecoLine 400, a spindle made of Invar was implemented ten years ago and has ensured a ten percent reduction in heat transfer. The carbon fibre spindles, for which Tschudin has applied for a patent, have now reduced the heat transfer to an absolute minimum.

The Cube is the latest Tschudin centreless grinding machine that is designed to produce parts up to 20 mm in diameter and to plunge grind parts up to 150 mm long. It is also equally adept at the thorough feed grinding of parts. It can be equipped with various automatic loading options and pre and/or post-process gauging and offers the best possible efficiency with a small footprint. The changeover time of the grinding and

regulating wheels can be done in just six minutes and the next series of workpieces can then be produced seamlessly. The compact centreless grinding machine has a base of just 2.60 m x 1.70 m and has been developed specially for machining small components. Its ergonomic design is unique and the machine can be operated from both the left and the right side. The standard version of the CUBE 350 will continue to be equipped with steel spindles. The carbon spindles are available as an option.

Chris Boraston of Advanced Grinding Solutions sums up the benefits of the new grinding spindles: "All grinding machines suffer from changes in temperature and machine designers have forever been fighting for better thermal stability to overcome that. Whilst that might not be critical if you are working to tolerances of 10 µm or more; as soon as you start to consider under 5 µm it becomes challenging and with Tschudin, depending upon the application, you can consider grinding to 1 µm tolerances or even less. Here heat change becomes a major enemy. Most of the heat and vibration of course comes from the powerful grinding spindles. Here, the use of carbon fibre has been shown to drastically improve thermal stability to such an extent that it will no longer be an issue for most applications.

For anyone looking to increase productivity to be able to do without lengthy warm-up cycles is a huge benefit. Further benefits will come by operators no longer having to fight to control the grinding process as machines heat up. Finally with Tschudin already seeing cycle time reductions in the range of 10-20 percent as compared with traditional steel spindles, not only can you start grinding straight away you can also grind substantially faster when you do.

Martin Kilmach of Carbon-Drive concludes: "Advanced carbon composites have an unbeatable stiffness-to-weight ratio and offer up to 100 times better damping compared to steel. They can be designed to have no thermal expansion and are of course very light and this offers clear advantages over steel solutions, especially in the machine-tool sector."

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Optimising the ‘finishing touches’

Since 2008, Thyssenkrupp Rothe Erde has received six Dörries CONTUMAT vertical turning and grinding machines from Starrag. Satisfied with the results, the experts in large-diameter anti-friction bearings that are used in wind turbines has now ordered the same model again but with two modified and optimised features.

Without large-diameter anti-friction bearings and rings from Thyssenkrupp Rothe Erde, many wind turbines would not be turning. These parts are used in the drives of nine out of ten wind turbine manufacturers worldwide. The industrial company is continuously working on improvements to its production to maintain and expand this leading global position.

Continuous optimisation and innovation are therefore part of everyday life at Thyssenkrupp Rothe Erde Germany GmbH in Lippstadt, which manufactures large-diameter anti-friction bearings. The finishing of the bearings is now carried out on seven Dörries CONTUMAT vertical turning and grinding machines.

In 2021, the company took delivery of a larger Dörries CONTUMAT VC 6300/500 MC F. This machine has also proven to be an instrumental addition. Dipl.-Ing. Hubert Erz, senior consultant for sales renewables at Starrag says: “Despite a fundamental satisfaction with the familiar machine concept, the experts in Lippstadt

understand that new technological challenges require modifications.”

The plant in Lippstadt therefore ordered the machine with some important new technical details that Starrag has improved. For example, the portal of the machine is designed to be larger than is currently required. The newly installed base supports a base table which holds a magnetic chuck with a 5 m diameter. The base table can be extended to 6 m using ring segments. This allows it to support a larger magnetic chuck. “The machine can be adjusted in size. It therefore fits in with the current trend towards ever larger wind turbines and thus larger anti-friction bearings,” explains Hubert Erz.

For future machines, there are even conversations of an extension to 7 m. Although the basic machine configuration corresponds to the predecessor model, the supports have been completely revised at the customer's request. Starrag installed a new grinding support on the left with a centrally positioned motorised grinding spindle. Instead of a separate motorised drilling spindle, the turning/drilling support on the right-hand side was fitted with an integrated drilling spindle with HSK 100-A toolholder. This sits between the two turning tool holders from Kennametal. Customer advisor Hubert Erz continues: “We have designed the toolholder of the



Dr Matthias Töfke, head of series production (left) at thyssenkrupp rothe erde, and his TB9 operations manager, Henning Brinkhus, in the working area of the new Dörries Contumat.

right-hand support in such a way that the modular size KM63 turning tools and the rotating HSK 100 tools can be picked up directly from a pick-up magazine, meaning an additional drilling unit is no longer required.”

Feedback from operating personnel was also the impetus for numerous improvements. For example, Starrag changed the dressing position to eliminate the previous bottleneck to the protective cover. Now, grinding wheels of all types up to a diameter of 650 mm can be easily dressed on the left and right. “It is a significantly optimised, universal dresser. The multiple dressing positions allow operators to precisely adjust the dressing process to the grinding operation,” emphasises Hubert Erz. Another point of potential improvement concerned the machine enclosure. Starrag therefore commissioned a new manufacturer for the complete enclosure, whose construction and assembly, according to Hubert Erz, are distinguished by: “The fact that the company delivers the enclosure ready for assembly and pre-tested and sets it up very efficiently.”

This optimisation was not only well received by management in Lippstadt. Hubert Erz concludes: “The machine operators Eduard Abt and Walerij Fabrizius, who have been using the predecessor machines for several years, responded positively and were satisfied with the new addition.”



Plant fitter Laura Patrzek and machine operator Walerij Fabrizius check the completely revised grinding support.

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Completely renewed

Studer cylindrical grinding machines provide many years of high performance and precision. A machine overhaul by Studer breathes new life into an old cylindrical grinding machine and provides the same precision as the day it was delivered. There are also numerous options available for expanding and modernising machines.

Whether in small series or high-volume production: If cylindrical grinding machines have performed at a high level for many years, their precision will, eventually, at some point, deteriorate. With intensive machine use or when working with aggressive materials or certain cooling lubricants, this is often the case even sooner. Thankfully, a comprehensive overhaul can breathe new life into an old machine and restore it to the same condition as the day it arrived.

A machine overhaul can be a worthwhile option, especially if a company intends to grind the same workpieces as before and does not necessarily want a technological upgrade. "The cost is around 50 to 60 percent of the purchase price of a new machine," explains Marcos Cotarelo, head of customer care sales at Fritz Studer AG. In addition to the complete overhaul of all sub-assemblies, Studer is the only machine manufacturer to completely replace and renew the guideways according to original specifications with the Granitan® S200 guideway coating. Consequently, the geometry after installation of the sub-assemblies will correspond to that of a new machine and offer the same precision and accuracy as when it was first delivered.

Customers are often surprised and delighted by this transformation as they now have an as-new machine again, with a great price-performance ratio. In addition to overhauling the entire machine, overhauling individual sub-assemblies, such as the workhead, wheelhead and tailstock is also an option.

One major benefit of a global company like Studer is its many years of experience and expertise at an international level. After all, delivery and return transport of a grinding machine weighing several tonnes, as well as managing the necessary permits and customs formalities is no mean feat. As a Studer customer, you can be confident that wherever you are in the world, once



STUDER wheelhead before and after.

you have contacted the company, a customer care consultant will visit your premises to provide individual advice based on your requests and requirements. If, once you've considered the relevant factors, you decide that a machine overhaul is what you need, the overhaul team will get to work.

A team of more than 25 employees takes care of various machine and sub-assembly overhauls each year. In addition, specialists from the new machine production, electronics or mechanics, as well as import-export, logistics and customs ensure that everything runs seamlessly, whether in Europe or elsewhere in the world. They help to keep the complex logistics and technical processes of a machine overhaul as simple as possible. This includes delivery and return shipment, as well as commissioning of the overhauled machines. Before shipment, all machines undergo a function and geometry test in the manufacturer's plant and are issued with a new original manufacturer certificate.

After a machine overhaul, companies can enjoy a one-year warranty and support from an outstanding technical service team. It takes Studer an average of 12 to 14 weeks to complete a full overhaul. During the overhaul, companies can take advantage of a machine on loan to prevent production standstills. It is not uncommon in the course of an overhaul, that customers opt



Marc Baumgartner, Christian Breitenbaumer and Christian Josi (from left) with the UNITED GRINDING Group's Production Monitor.

for a modernisation or expansion of the range of parts that they would like to manufacture. This could mean retrofitting a measuring head, an additional internal grinding spindle, new spindle cooling, a hydraulically swiveling dressing unit, or a new workhead there are countless options available. Importantly though, a machine overhaul can bring new capabilities to a trusted system.

A significant improvement in production efficiency can be achieved with a subsequent automation solution if desired. This would allow a supposedly "old" machine to process workpieces independently and automatically, giving employees the flexibility to spend time on other tasks once the loader has been replenished. In addition, a software update can facilitate assistance systems for monitoring or maintenance purposes.

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RK International announces exciting new 'special relationship' with DCM Tech, Inc

RK International Machine Tools, a leading supplier of high-quality machine tools in the UK and Ireland, has announced a new partnership with DCM Tech Inc., a renowned US-based machine tool manufacturer. This collaboration will bring DCM Tech's advanced surface grinding machines to the UK and Irish markets, enhancing RK International's capabilities and offerings.

With over 40+ years of experience supplying and supporting grinding applications, RK International Machine Tools has established itself as a trusted partner for industries requiring precision engineering solutions. The company's extensive knowledge and expertise in grinding applications have served diverse sectors, including aerospace, automotive, power generation and high-precision component manufacturing.

A legacy of excellence in grinding applications

"Since its inception in 1951, RK International Machine Tools has been committed to providing the finest machinery from world-class brands. With a 30+ year relationship with ROBBI & JAINHER and a nearly 15-year partnership with DELTA, and PERFECT, RK's dedication to excellence is reflected in its comprehensive range of grinding machines, which includes surface grinders, cylindrical grinders, internal grinders, and centreless grinders. RK International's ability to offer CNC, PLC and manual models ensures that they can meet the specific needs of our customers," mentions Simon Rood, general manager at RK International.

Introducing DCM Tech's surface grinding machines

The partnership with DCM Tech marks a significant milestone for RK International. DCM Tech, Inc. is renowned for its innovative IG Series surface grinders, which are designed to deliver superior performance, high material removal rates, precision and reliability. These machines are equipped with advanced features such as:

- **User-friendly interface:** Simplifies

operation and reduces the learning curve, making it easier for operators to achieve optimal results. Many operators are efficiently running parts on day one.

- **Variable speed spindle and table control:**

Allows for precise adjustments to match the specific requirements of different materials and applications.

- **Automatic down feed:** Ensures consistent and accurate material removal, enhancing the quality of the finished product. Programmable maximum spindle load to prevent part damage.

- **Automatic part detection:** Reduce process time by avoiding "grinding air."

- **Wide-ranging workholding solutions:**

These provide secure and stable workholding, which is essential for achieving high-precision grinding. They include electromagnetic chucks, vacuums, and nesting-style fixtures.

- **Closed loop coolant filtration system:**

Integrated coolant and air mist systems to help manage heat and maintain the integrity of both the machine and the workpiece.

Benefits of DCM Tech's surface grinding machines

DCM Tech's surface grinders offer numerous benefits that make them an excellent choice for various grinding applications:

Enhanced precision: The advanced control systems and robust construction ensure high-precision grinding, resulting in superior surface finishes and tight tolerances.

Increased productivity: Features like automatic down feed and variable speed control streamline the grinding process, reducing setup times and increasing overall productivity.

Versatility: These machines can handle various materials and applications, making them suitable for diverse industries, including non-ferrous applications.

Ease-of-use: The user-friendly interface and intuitive controls make it easy for operators to achieve optimal results, even with minimal training.



The DCM Tech IG 482 SD rotary surface grinding machine with a 1,220mm diameter.



DCM grinders outperform conventional surface grinders on a wide range of materials and applications.

Durability and reliability: Built with high-quality components and designed for long-term use, DCM Tech's grinders offer reliable performance and low maintenance requirements.

"UK Manufacturing has a legacy of large, heavy surface grinding machines with vertical grinding spindles and segmented wheels. As with other grinding equipment we supply today, we often find ourselves replacing grinding machines dating back to the 1970s or earlier," comments Simon Rood, general manager at RK International. The DCM IG range provides capacities to 1,220 mm diameter rotary tables with a maximum swing of 1,320 mm diameter.

Built across two control platforms, the IG 80 Series provides the basics for rotary table surface grinding. The enhancements on the IG 82 Series include additional grinding options such as regrind and continuous grind, along with servo precision-controlled X and Z-axes with home positioning.

The IG 82 Series is equipped with additional features, including automatic part detection and available auto-dressing with selectable dress frequency. The 82-Series grinders are also supplied 'robot ready' and can be integrated with third-party robotic arms for a fully automated loading and unloading grinding process.

Jennifer Rutz, president of DCM Tech, Inc, expresses her enthusiasm about the partnership: "We are excited to collaborate with RK International Machine Tools to expand our advanced surface grinding technology presence in the UK and Ireland. RK International's extensive experience and commitment to customer satisfaction align perfectly with our values. We believe this alliance will benefit UK customers significantly, offering cutting-edge solutions for their grinding needs."



DCM-Tech has over 40 years of experience in designing and manufacturing rotary surface grinders.

Enhancing capabilities and customer support

Through this partnership, RK International will expand its product portfolio and enhance its ability to support customers with innovative grinding solutions. The company's team of factory-trained technical specialists will provide comprehensive support services, including installation, maintenance and training, ensuring that customers can maximise the performance and longevity of their new DCM Tech machines.

Commitment to customer satisfaction

RK International Machine Tools has always prioritised customer satisfaction by understanding each application and installation's unique challenges and requirements.

The company's approach to delivering customised solutions

has it a reputation for reliability and excellence in the industry. Adding DCM Tech's surface grinders to its product lineup further reinforces RK International's commitment to providing the best possible solutions to its customers.

For more information about RK International Machine Tools and its new partnership with DCM Tech, visit: <https://www.rk-int.com>

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Quality requirements fulfilled to the best

The product portfolio of Liebherr-Verzahntechnik GmbH, based in Kempten, Germany, is impressively diverse. It covers gear cutting technologies such as gear shaping, gear hobbing, gear peeling, gear and profile grinding, chamfering and deburring for the production of any type of gear. The high-precision machines are used in sectors such as aerospace, the automotive industry and its suppliers, the wind power and mining industries, as well as robotics and medical technology. Applicable to all sectors, the customers have enormously high requirements regarding quality. Circular grinding operations on machine parts are consequently carried out on universal grinding machines from Swiss manufacturer Kellenberger.

The Liebherr modular system contains thousands of different parts. Each basic machine series can be equipped with components for customer-specific machining, thus turning each machine into a special purpose machine. Liebherr engineers often develop solutions for customers' machining tasks that are not available on the market.

Grinding is the supreme discipline of machining, making the Liebherr grinding shop something like the nucleus of maximum precision for core components. Since 2013, this production department has been housed in a new air-conditioned hall; a decisive factor for high precision in machining. As in all areas of production at Liebherr, only specialised experts work at the machines in the grinding shop. Grinding shop supervisor Gerd Eising, his colleague and deputy Jürgen Rimac and the ten employees work in two shifts to ensure that the high demands of quality control are met.

In 1995, the first Kellenberger cylindrical grinding machine KEL-Varia went into operation at Liebherr. A second machine with a Kelco 120 control was procured in 2010 and used specifically for non-circular grinding. Two additional KEL-Varia machines followed in 2014, one of them as a replacement for the first KEL-Varia. The parts that are ground on the machines measure from 5 to 1,500 mm.

The universal cylindrical grinding machine KEL-Varia is the predecessor model to the current premium



For Jürgen Rimac, Gerd Eising and Jörg Bachmeyer (from left to right) the Kellenberger 100 scores points thanks to automation with pallet loader.

Kellenberger 1000 series and, like the latter, stands for the highest machining and surface quality. Over 1,500 machines of this series are in operation worldwide. The machine owes its success to its high static and dynamic rigidity and stability, both decisive factors for high precision and productivity. The performance spectrum of the Varia meets with the quality requirements of precision production of prototypes as well as small and medium-sized series.

The KEL-Varia machines are designed with centre widths of 1,000/600 mm, centre height 200 mm and for workpiece weights up to 150 kg. The machines are equipped with hydrostatic guides in all main axes for highest form accuracies when performing grinding work with interpolating axes. The B-axis has a direct drive. The turret grinding head thus swivels about three times faster and positions with an accuracy of less than one angular second. Particularly when machining requires the swiveling in of different grinding wheels, this reduces non-productive times and increases productivity.

For Jörg Bachmeyer, a trained grinder, the simple programming of the Kellenberger machines has clear advantages: "In terms of tolerances, things never get boring here in the grinding shop. Good programs make the work immensely easier." The newer KEL-Varia machines include the programming features KEL-Soft and KEL-Assist, useful for the adaption of existing programs to changing machining requirements. Various ready-made software packages are included as

standard or can be added as an option. They cover simple workpieces, complex workpieces in the shortest machining time, and complex contours and profiles.

Automated Kellenberger 100 for smaller parts

The most recent addition to the grinding shop, the Kellenberger 100 universal cylindrical grinding machine, uses intuitive operator guidance. The machines are equipped with the latest FANUC 31i CNC control with 19 touch-screen with a choice of newly designed cycle programming or workpiece-based graphic programming. Kellenberger has been a part of Hardinge Inc. for more than two decades. The platform concept of the Kellenberger 100 is a new modular system which also incorporates other proven Hardinge machine concepts. A wide variety of configurations are possible for a wide range of grinding operations. To keep non-productive times low, most of the programming of the Kellenberger 100 is done externally. Jürgen Rimac also programs non-circular contours and all



Kellenberger 100, automated with Wenger WeFlex pallet loader. Machine travels: Z-axis: 1150/750 mm, X-axis: 365 mm.

contours that have to be dressed in grinding wheels at an external workstation.

The Kellenberger 100 is available in centre widths 1,000/600 mm and centre height 200 mm and is designed for workpiece weights up to 150 kg. The high drive power of the grinding wheel provides for increased productivity, while the newly developed Z-guide ensures great profile accuracy. The C-axis with direct drive brings higher accuracy for non-circular grinding.

Technical highlights of the Kellenberger 100

The technical highlights of the Kellenberger 100 include an innovative compact grinding head, 10 grinding head variants, 11.5 kW drive power, 500 mm wheel, up to 63 m/s, HF spindles for internal grinding incl. diagonal and tandem arrangement, a collision-free universal head with three tool positions and one measuring position and a new measuring probe arrangement without swivel mechanism for increased measuring accuracy. A synchronous tailstock allows complete machining of shafts without a driver, so the workpiece can be completely machined over its entire length.



Grinding between centres of a table section screw for a Liebherr BK2 machine.

Customised pallet automation

Automation is a major topic in the grinding shop, as at least half of the two shifts are operated unmanned. The Kellenberger 100 meets this requirement thanks to the WeFlex automation solution, which Swiss automation specialist Wenger has specially adapted to this machine. The resulting flexibility played a decisive role in the purchase decision. The loader for chuck and shaft parts holds 40 to several hundred parts and is controlled separately. In the grinding shop, batch sizes range from 1 to 100 pieces, in rare cases up to 200 pieces.

The WeFlex loader enables automated processing of shaft parts. Interchangeable

gripper heads facilitate quick changeover between shaft and chuck parts.

In the stacking module, eight pallet spaces of size 400 x 600 mm are available. Inserts for shaft or chuck parts can be inserted in the pallet frames. The machine is loaded via a telescopic line gantry. An automatic hatch closes off the machine room during machining to ensure the thermal stability of the machine. Directly at the infeed, electricity and compressed air are recorded, which allows the energy consumption of the WeFlex to be recorded and visualised.

To reduce energy consumption, the speed of the WeFlex is automatically adjusted to the cycle time of the processing machine. An image-guided setup wizard assists the operator when changing over to a new workpiece.

DF Precision Machinery are the exclusive agents for both Kellenberger and Wenger for the UK market.

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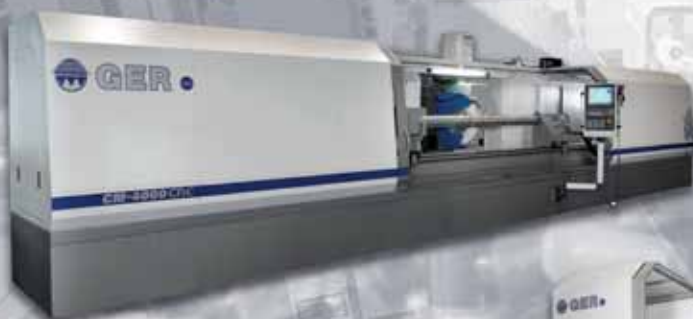
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Solutions for the most demanding of grinding tasks

In the heart of Germany's gemstone region, there is a unique systems provider for grinding and dressing tools: Effgen Lapport Schleiftechnik.

For over 100 years, Effgen Lapport Schleiftechnik has been offering its customers individual solutions for the most demanding grinding tasks. Initially, the company developed tools which allowed gemstones to be processed more accurately and cost-effectively than ever before. However, before long, it made the transition from producing these tools for its own use to selling them to nearby gemstone polishers. Today, Effgen Lapport Schleiftechnik offers grinding applications for almost every sector of industry. Outstanding customer service and technical support are included. The company's product portfolio extends from conventional and high-performance grinding tools to dressing tools. This comprehensive product range and service ethos make Effgen Lapport Schleiftechnik a true systems supplier.

Effgen Lapport Schleiftechnik employs around 450 qualified and dedicated employees at its German production sites in Herrstein and Enkenbach-Alsenborn. Sales offices in France, Ireland and Switzerland, as well as a world-wide network of representative offices and trading partners ensure excellent customer service and support.

The Effgen Lapport Schleiftechnik Group comprises the brands Effgen Schleiftechnik



and Lapport Schleiftechnik. Effgen Schleiftechnik is your partner for grinding, polishing and dressing tools made of diamond and cubic boron nitride. Lapport Schleiftechnik is your partner for conventional grinding tools made of aluminium oxide and silicon carbide. A shared network of sales and application technology maximises synergies that benefit you as a customer as well as providing systematic consulting services from a single source.

Effgen Schleiftechnik's product portfolio includes grinding tools with electroplated, metal, vitrified and resin bonds. The diameter spectrum ranges from 0.08 to 1,600 mm, depending on the application and product category. Effgen Schleiftechnik manufactures both stationary and rotary dressing tools. Rotary dressing tools can be

supplied as form and profile dressing tools, the latter also in a reverse plated version for the highest precision applications.

Lapport Schleiftechnik complements the product range with conventional grinding tools using vitrified and synthetic resin bonds and grain as fine as F-1200. Diameters range from 50 mm up to 1,200 mm for solid grinding wheels and up to 1,600 mm for segmented designs, bonded to reusable bodies. Grinding segments, honing stones, and manual tools, such as honing stones, whetstones and sharpening stones in any desired geometries, complete the product range.

To enhance the support and delivery of its products into the United Kingdom, Effgen Lapport recently partnered with TSH Engineering Services Ltd. With 35 years' experience in the abrasives industry, including sourcing, application engineering, business development and sales, TSH Engineering Services can offer support and guidance for all your precision grinding applications.



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Weiler Abrasives introduces new Metalynx MAX Ceramic flap discs

Enhanced abrasive cloth and flap configuration offers superior life and grinding speed

Weiler Abrasives, a leading provider of abrasives and power brushes for surface conditioning, has announced its new Metalynx MAX Ceramic flap discs. The flap discs feature enhanced abrasive cloth and improved flap configuration to provide users with longer product life and greater efficiency, removing up to 40 percent more material.

"The new Metalynx MAX Ceramic flap discs are engineered to deliver superior life and grinding speed," says Uroš Filipič, product manager for Weiler Abrasives. "This allows users to remove more metal in less time, so they can get more done."

Metalynx MAX Ceramic flap discs feature advanced ceramic alumina grains that maintain a high cut rate. The flap configuration has been improved to optimise the exposure of new abrasive cloth, maximising the disc's effectiveness. The innovative design increases disc life and enhances performance, removing more material and reducing change-overs. In



addition, Metalynx MAX Ceramic flap discs have a topcoat that grinds cool, protecting high-value parts from heat discoloration. The flap discs contain less than 0.1 percent of iron, sulphur and chlorine, for contaminant-free grinding of stainless steel and other high-value metal parts.

Metalynx MAX Ceramic flap discs are available in standard F27 and F29 styles as well as a unique angled shape. Metalynx MAX Ceramic angled flap discs are designed for grinding fillet welds, T-joints and other hard-to-reach areas. The 90° angled flap design optimises flap-to-metal contact for improved user control and feel while grinding.

Learn more about how the new Metalynx MAX Ceramic flap discs from Weiler Abrasives can improve performance and productivity at [emea.weilerabrasives.com /Ceramic_advantage](https://emea.weilerabrasives.com/Ceramic_advantage)

As a leader and global manufacturer of surface conditioning solutions, Weiler Abrasives Group is dedicated to forging collaborative relationships with its customers in diverse markets to tackle their toughest cleaning, grinding, cutting, deburring and finishing challenges.

In 2015, Weiler proudly expanded its footprint in Europe by acquiring SwatyComet. Today, operating under the unified brand Weiler Abrasives, it continues its legacy of excellence, innovation and commitment to providing top-notch abrasives worldwide.

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Highlighting the safety of abrasive tools

In October, Organisation for the Safety of Abrasives (oSa®), launched the #oSaSAFTEYDAYS campaign designed to highlight abrasive tool safety and accident prevention in the workplace.

In accordance with the 'European Week for Safety and Health at Work', oSa supports its abrasive members in their promotion of safe products and practices. The campaign was designed to reach workers and decision makers purchasing abrasives, to make the safe choice. By increasing recognition and understanding of the oSa symbol, it's hoped users will choose certified brands whose products have undergone rigorous performance and quality testing.

Proud to be a founding member of oSa

Safety requirements for abrasives are not yet globally binding and unsafe abrasive products do exist, presenting a serious danger to life and limb. That's why Saint-Gobain Abrasives are proud to be a founding member of oSa, manufacturing abrasives to the highest level of safety.

Accident prevention and productivity are key drivers in its quest for continuous improvement. Whether it's cutting discs or grinding wheels, flap or fibre discs, diamond blades or bonded wheels, it pays the utmost care and attention to safety and quality testing.

This ensures every product shipped from its manufacturing sites reaches end users in the best condition, giving peace of mind when using a Saint-Gobain product.

Rigorous product testing and monitoring

Using the oSa symbol on products and often their packaging identifies they have been through thorough testing procedures.

Bonded testing

The requirements differ by product family, for bonded abrasives, products undergo burst speed testing, side load impact testing, balance testing and dimensional measuring and weighing according to EN 12413 regulations.

Diamond blade testing

Superabrasive/diamond products are speed tested, bend tested, shear tested, portable and tensile tested. Diamond wires and blades also undergo tension testing according to EN 13236 regulations.



Coated testing

Coated abrasive products also undergo speed testing and dimensional weight and measuring but also humidity testing in accordance with EN 13743.

Ensuring quality and safety

In addition to product testing, manufacturing monitoring and controls are also vital to ensure standards are maintained and developed in accordance with technological and methodological advances.

All oSa member companies must pass strict auditing procedures to certify quality management and documentation of processes. This documentation enables traceability to the manufacturer, meaning any bonded, diamond or coated abrasive featuring with the oSa trademark can be traced back to the exact plant and batch at any time.

Not only does being a member of oSa mean products are tested to ensure they're safe, it also means Saint-Gobain abide by ethical standards within business and manufacturing processes. As such, it complies with all local and national

environmental health, welfare and safety legislation.

More information about EHS and quality conformity can be found on the oSa website: www.osa-abrasives.org

The importance of abrasive safety cannot be underestimated, as Christian Bako, general manager for central Europe at Saint-Gobain Abrasives and member of the oSa board of trustees explains: "Given the high speed of rotation, equalling the speed of Formula 1 cars in some cases, accidents with abrasive tools can have serious, sometimes fatal consequences.

Unfortunately, on a worldwide level there are still too many of those accidents caused by abrasive tools. That's why we are heavily involved, together with oSa, to provide safe abrasive tools to all users of our products. This is also perfectly embedded in our vision to: "Engineer a safer, better and greener world."

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Master Abrasives installs Supfina's attachment 110 at major manufacturer

Following its appointment as Supfina's UK representatives in 2023, Master Abrasives team has been working to meet its customer's high-precision needs to improve efficiency and surface finish. In one case, a global bearing manufacturing group has installed the superfinishing attachment 110 for the finishing of bearings.

Explaining the application benefits for this machine, Ian Meredith, Master Abrasives' applications engineering manager explains: "We are seeing how Supfina's decades of tool building experience, combined with our application process knowledge, can meet high-precision needs for our customers and help them to improve profitability, improve part finish and reduce process time."

The pneumatic superfinishing attachment 110 is suitable for mounting on small and medium-sized carrier machines for finishing ground and turned surfaces. In addition to cylindrical components, the attachment can also be used on flat, lightly convex or lightly concave surfaces and bores.

Supfina's superfinishing attachments were displayed at MACH exhibition earlier this year with Supfina's expert, Johannes Weiss, on-hand for visitors to discuss requirements with. The German manufacturer provides a broad range of solutions, whether you're flat finishing, fine grinding, double disk grinding, superfinishing or looking for high-tech automated solutions.

If you would like to explore the potential benefits of working with Master Abrasives and Supfina's high-quality equipment, contact its applications engineering team to take the first step to improving your productivity: grindingmachines@master-abrasives.co.uk

Master Abrasives is a Daventry-based independently owned company that has built an enviable reputation for quality and service that is as strong today as it has always been. The well-known trademark of 'Master' is on much of the product range and services offered by the company in the UK



and world-wide. Supfina Grieshaber provides solutions and services for high-precision abrasive machining, with locations in Germany, USA, and China. The company has decades of process know-how and machine tool building experience to meet high-precision needs and improve efficiency and profitability.

Master Abrasives

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Enhanced metal finishing for orthopedic implants and surgical instruments



As surgeries and implant procedures get more advanced, so are the finish-related quality standards for orthopedic implants and surgical instruments. As a result, manufacturers now search for a partner with unique expertise in sanding and finishing and moreover with products that can save both time and costs. This is where Cibo Abrasives, an abrasives manufacturer, comes in with a complete production facility focused on producing products specially designed for orthopedic manufacturing applications.

Cibo Abrasives focuses on producing unitised products for the finishing of titanium, stainless steel and other special alloys. These are mainly used for the finishing of surgical instruments and all sorts of implants such as, knee-hip joints, spine discs, hooks, screws, plates etc. Its unitised wheels have the lowest lifetime cost, the highest finishing quality and an unparalleled cut rate. Because of the special production process, these wheels create less heat on the workpiece and provide optimal comfort for the operator at the same time.

Eliminate red tape in the decision-making process

As a family-owned company, Cibo Abrasives has been in the abrasives industry for almost 75 years, giving it an edge over most competitors. Its extensive expertise forms the backbone of the benefits that the company brings to its products and its customers. The organisation is also horizontally structured which eliminates red tape in the decision-making process. There's a direct communication line between the head office in Belgium, the production facility and the sales and local warehouse in the US. This ensures a quick response to customer inquiries and minimum lead times. The Rebel One unitised products from Cibo Abrasives is a popular grinding wheel used in various medical manufacturing processes



for finishing titanium, stainless steel and other special alloys with the finest detail. As mentioned, the different unitised production process of Cibo Abrasives translates into reduced heat on the workpiece and in more comfort for the operators. The Rebel One unitised material is part of the recent 3D abrasives.

Entirely free of solvents and animal derivatives

An important factor for Cibo's growth in the medical industry is the fact that all its wheels are entirely free of solvents and animal derivatives. During the creation of conventional wheels, the evaporation of solvents results in smog formation, adversely affecting the ozone layer and posing a risk to human health. To overcome this problem, ingredients of synthetic, mineral and vegetal origin are used to create the unitised abrasives.

Challenges faced by orthopedic manufacturers are solved by catering to their demands and adapting to their production process. Cibo Abrasives is bringing a sustainable change to the industry with its eco-friendly, efficient and cost-effective finishing products.

One of the many companies that Cibo worked with stated that using its wheel cut

their costs in half, saving them 50 percent without sacrificing quality.

"The lifetime gains were mainly the result of the fact that our wheels are easy to redress. When grinding on titanium a black crust forms on the wheels after a certain amount of time. Operators always must remove that crust before they can start grinding again. It's in that process that they can gain a lot of lifetime with our products, just because of the fact that the wheels open up easily while redressing," says Nicolas Decraemer, business development manager at Cibo Abrasives.

Cibo Abrasives equips the evolving orthopedic industry with the finishing capabilities it needs. While many established businesses remain relatively stagnant in their innovation journeys, Cibo focuses on continually improving the quality and longevity of its products. In its quest to write success stories, Cibo Abrasives is steadily pursuing its objective of elevating the best-finishing products for the orthopedic industry in all its upcoming endeavours.

Cibo Abrasives

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For all your abrasive needs

Founded in 2002, Abtec is a family-owned business spanning three generations, with offices across Cambridgeshire and Norfolk. Originally established as a local business, but since the launch of its website in 2002 it has expanded its reach globally, achieving international success.

As a family company, it is committed to delivering a high level of personal service, a core value that defines its approach to customer relationships.

Its team of experts are dedicated to delivering a smooth, reliable experience from product selection to after-sales support for each of its customers.

Whether you're a large business or a small operation, Abtec will ensure you receive expert guidance, technical advice and tailored solutions whenever you require.

The company specialises in supplying high-quality abrasives and related products to industries worldwide. It works with businesses of all sizes, focusing on developing the right abrasive solutions tailored to each customer's unique needs.

Abtec specialises, in conjunction with its supply partners, in formulating the right abrasive product for customers based on the following criteria:

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

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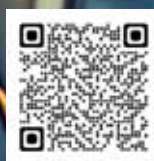
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Dust control techniques in F1 and Autosport racing teams

Do you think about dust control when it comes to Formula 1 or autosport racing teams? It's probably not the first thing that comes to mind. However, from the precise engineering of the vehicles to the efficient operation of workshops, dust control solutions are increasingly important for ensuring safety.

Why dust control matters in Autosport racing

Dust control may seem more relevant to construction sites, but in autosport even the smallest speck of dust can cause big problems.

Whether it's in a Formula 1 garage or on an Autosport track, dust can interfere with engine performance, damage sensitive components and even affect the aerodynamics of a car.

Fine dust particles can clog air filters, reduce cooling efficiency and lead to overheating. This can be catastrophic in an environment where fractions of a second count.

Moreover, the dust created during the machining and fabrication processes in workshops can settle on equipment and workspaces, causing safety hazards that may impact the team's ability to operate at full capacity.

Autosport teams must prioritise dust control to avoid these issues and to ensure their vehicles and workspaces are kept clean and fully operational.

Common dust sources in Autosport

Dust in the Autosport industry comes from a variety of sources. Here are some of the key areas where dust control is key:

1. Workshops and garages

The manufacturing, assembly and repair of race cars often involve cutting, grinding and sanding materials such as carbon fibre, metals and plastics. These processes generate fine dust particles that can be



harmful if not properly managed.

Centralised vacuum systems are often used to capture and contain dust directly at the source.

2. Tracks and testing

When autosport cars hit the track, dust and debris from the road surface can become airborne. This is particularly common on gravel or unpaved surfaces, where large amounts of dust can interfere with the performance of vehicles. Specialised track cleaning equipment is used to manage this issue and keep the race environment as clean as possible.

3. Pit stops

Pit crews work in high-pressure environments where quick and precise actions are needed to refuel, change tyres and repair cars. Dust can easily interfere with tools and equipment, making pit stops less efficient and potentially causing malfunctions.

Therefore, maintaining a dust-free pit area is critical to smooth operations.

Dust control solutions in Autosport racing

F1 and Autosport racing teams can deploy a variety of advanced dust control solutions to mitigate dust and debris-related issues.



Here's a closer look at some of the most common techniques to use in the industry:

1. Centralised vacuum systems

In workshops, centralised vacuum systems are among the most effective dust control solutions.

These systems capture dust directly at the source, such as during the sanding or

machining of car parts and transport it to a filtration unit where it is contained. This prevents dust from becoming airborne and settling on other surfaces.

A high-efficiency system can remove up to 99.97 percent of dust particles, ensuring a clean and safe working environment for mechanics and engineers.

2. Mobile dust extractors

For areas where a centralised system may not be practical, mobile dust extractors provide a flexible and effective solution. These machines can be positioned directly where dust is being generated and are ideal for use in workshops, garages and pit lanes.

They typically feature powerful suction and HEPA filters, ensuring that fine dust is captured and not recirculated into the air. The mobility of these extractors makes them perfect for autosport teams who need to relocate their operations frequently during the racing season.

3. Air cleaners

In addition to extracting dust directly at its source, air cleaners help improve overall air quality in larger spaces by filtering out airborne dust and particulates. This is particularly important in high-dust environments, such as race car garages or workshops. This is because multiple processes may be generating dust simultaneously.

Air cleaners work in tandem with other dust control measures to ensure a dust-free atmosphere, improving both air quality and safety for the team.

4. Track cleaning equipment

Maintaining a clean racing surface is vital to the performance of autosport vehicles. Track cleaning equipment is used to sweep and vacuum up debris, including dust, from the track.

This is especially important for teams who frequently test on gravel or off-road circuits where dust levels can be high. The cleaner the track, the better the grip and performance of the tyres. This allows drivers to push their vehicles to the limit without the risk of losing control.

The benefits of effective dust control

With effective dust control solutions, autosport teams can expect a wide range of benefits that positively impact their overall performance:

Improved vehicle performance

By keeping engines and filters free from dust, teams can ensure their cars run at peak efficiency. This reduces the risk of mechanical failures during races.

Safer work environments

Cleaner workshops and pit areas mean fewer safety hazards for team members. Dust-free surfaces reduce the likelihood of slips and accidents, while clean air minimises respiratory risks for workers.

Longer equipment lifespan

Dust can be abrasive and damaging to sensitive equipment. By controlling dust levels, teams can extend the life of their tools and machines, saving money in the long run.

Enhanced precision and focus

In a sport where precision is everything, keeping tools and workspaces clean ensures that engineers and mechanics can focus on their tasks without distractions. Effective dust control techniques are essential for maintaining the high standards required in F1 and Autosport racing.

Autosport teams should try to use a combination of centralised vacuum systems, mobile extractors, air cleaners and track maintenance equipment. This can help keep their workspaces clean, equipment in peak condition and cars performing at their very best.

Whether in the workshop or on the track, dust control is an integral part of modern autosport. It allows teams to focus on what really matters: winning.

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An advertisement for Filtermist extraction systems. It features two images: one of a grinding wheel creating a large amount of sparks, and another of a polishing process. The text 'ON-TOOL EXTRACTION' is overlaid on the top left, and 'DESIGNED FOR THE DAILY GRIND' is overlaid on the right. The Filtermist logo is at the bottom left, and contact information is on the right.

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Advanced LEV monitoring from Vent-Tech – LEV made smarter

Unfortunately, an issue can occur with your LEV system at any time and we are all aware that sometimes engineering controls fail. Waiting for the results of your 14 monthly LEV Tests before you are aware of and begin rectifying problems can be harmful to health.

The problem is that manufacturing processes create harmful emissions including aerosols (mist), fumes, noise, particulates (dust) and volatile organic compounds.

The solution:

Vent-Tech can provide the means to monitor changes in and around your system with live data 24/7. Alerts can be set up so you know if anything has fallen above or below your preset parameters.

What is this?

This is a 24/7 automated monitoring and reporting platform developed to help companies better understand the health of their LEV systems, pre-empt issues, reduce downtime and, most importantly, keep staff safe from harmful emissions.

The technology is Cloud-based and can be used directly on the premises or from anywhere in the world.

The system provides real-time data, stored data and a live dashboard with adjustable alerts (audio, email and SMS)

The system is easy to install and like all the best technology, all the wizardry is done behind the scenes, so you are left with a simple and easy-to-use platform.

What can be monitored:

The list of things that can be monitored with this sensor technology is almost limitless, here are a few of our favourites:

- Power Usage
- Compressed Air conditions
- Noise levels
- Filter Health
- Airflow
- Pressure differentials
- Temperature
- Humidity
- Differential Pressures
- Static Pressures
- Vibration
- VOC's & Particulates

What can I do with this information:

Apart from the obvious peace of mind, you get from knowing that your LEV is working correctly and keeping workers safe. You can use this information for real-world practical applications such as setting alarms for full bins or a sudden surge of contaminants in the air. You can reduce running costs, for example, when a sensor is connected to the inverter controlling the fan, fan speed can be automatically reduced when full power is not required. You can determine clearance times based on the air quality rather than a preset time. The possibilities are endless.

Who is it for:

We believe this technology will soon become commonplace for LEV systems and benefit everyone.

- It is perfect to monitor airflow in ducting at height.
- Great for anyone in charge of multiple LEV systems or multiple sites.
- LEV systems in remote locations e.g. oil rigs, can be monitored from anywhere.
- Anyone who works in an environment where downtime is extremely costly. Pre-empting when filters need to be changed, or issues arise will mean that parts can be ordered and engineers booked to work around you. Clearance times can be minimised.

A common-sense approach to turn maintenance and health & safety challenges into positive actionable insight.

The containment or removal of emissions from manufacturing processes is required by law to help reduce exposure risk to employees which may affect their health and safety.

The Health and Safety Executive (HSE) Workplace Exposure Limits (WEL) apply to specific hazardous substances and may require personal exposure monitoring to be undertaken. However, these tests are typically undertaken occasionally and provide no evidence about daily variations in emissions, and variations in emissions across a factory. This creates a significant knowledge gap about emissions sources and whether sources of emissions are being controlled.

The HSE requires Local Exhaust



Ventilation (LEV) systems to be 'Thoroughly Examined and Tested' (TExT) at least every 14 months but these checks may provide little evidence about the gradual deterioration in LEV performance which can occur more quickly than expected depending on circumstances.

Airflow indicators, commonly installed in LEV systems, monitor changes in air flow rate as the filter media begins to block. If this media is blocked, filtration efficiency is reduced and process emissions can increase.

Ad-hoc testing will not reveal the changes that can occur to air quality from emissions when engineering control systems start to deteriorate, or other parameters are modified.

There is consistent evidence from public health and occupational health studies that poor air quality e.g. from dust particles, soot particles, microorganisms and volatile organic compounds causes acute and chronic illness. Those with pre-existing conditions such as asthma are much more likely to develop acute respiratory reactions when they are exposed to these emissions. Long-term chronic exposure is also associated with an increased risk of developing conditions such as asthma and Chronic Obstructive Pulmonary Disease (COPD). Chronic exposure to hazardous chemical emissions can also increase the risks for lung cancer and other types of cancer.

The future of LEV is here. Enquire today to find out how Vent-Tech can help you.

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SAVEing the industry with Nederman



Effective dust and fume collection is a critical process for modern manufacturers. Traditional dust and fume collection systems face challenges that lead to sub-optimal performance resulting in wasted energy, poor extraction, health-related air quality issues and increased risk of fire and explosion with combustible dust applications. Now, Nederman tackles the challenges faced by manufacturers with its new Nederman SAVE system.

Manufacturers face a vast array of issues with dust and fume extraction in the workplace and failure to be diligent and comply with regulations can prove catastrophic. The issues stem from existing dust and fume systems being set up to provide constant airflow regardless of the mix of active and inactive machines. The result is energy waste, elevated noise levels and increased system wear and tear. Additionally, extraction is not always a constant requirement and dust and fume collection system requirements change as filters collect particulate, dampers are adjusted, or machines are added or removed resulting in inconsistent extraction and increased worker dust exposure.

The result can often be fume and dust accumulation in ducts that can lead to fire risks. The concerns are real. Inadequate attention can lead to catastrophic failure. Luckily, Nederman has the solution with SAVE, the flexible technology that adapts to new and existing dust and fume collection systems to breathe life into underperforming systems and create capacity for machine expansion. Including SAVE in the design and implementation of your new dust collection system creates optimisation from day one. With energy savings and Industry 4.0 technology, manufacturers can future-proof the safety of their factories.

What is SAVE?

Nederman SAVE is an intelligent airflow control system that consists of a controller, modules locally connected to machines, autogate dampers, sensors and Nederman Insight; a Cloud-based interface that remotely monitors the performance of the system and your factory floor.

The dust and fume collection process initiates with sensors installed on machines that detect their operational status and indicates the need for extraction. The sensor readings are gathered by the SAVE modules and transmitted wirelessly to the central SAVE controller, where the system requirements are compiled and analysed. Instructions are then sent to variable frequency drives that control each fan and the dampers on each machine to optimise airflow and pressure for the system. The system incorporates airflow sensors to monitor and ensure proper operation, recording valuable data on energy consumption, process parameters and machine operations that can all be accessed for real-time monitoring through the Nederman Insight platform.



With the ability to monitor system status, accumulate significant energy savings and gather machine operation data in a user-friendly dashboard, manufacturers can view and monitor live utilisation data for all machines connected to the SAVE platform. With regular energy-saving reports delivered via email, alarm notifications on performance and service tracking features, the system enables efficient planning and troubleshooting and it avoids costly downtime. All this is critical to maintaining a safe and environmentally-friendly workplace for employees.

Safe, efficient and EU regulation compliant

ATEX directives and NFPA standards for combustible dust are stringent and place heavy emphasis on employers to comply. Now, your business can be compliant, environmentally efficient and cost-effective with significant cost reductions to your business with Nederman SAVE. Process and production equipment must meet the regulations concerning technical and legal standards and a mandatory EU equipment directive applies to all machines sold in the European market. This stipulates the manufacturer's responsibilities regarding ignition prevention and the minimisation of explosion effects if you can simplify the process for your staff, you can minimise the risks for your business.

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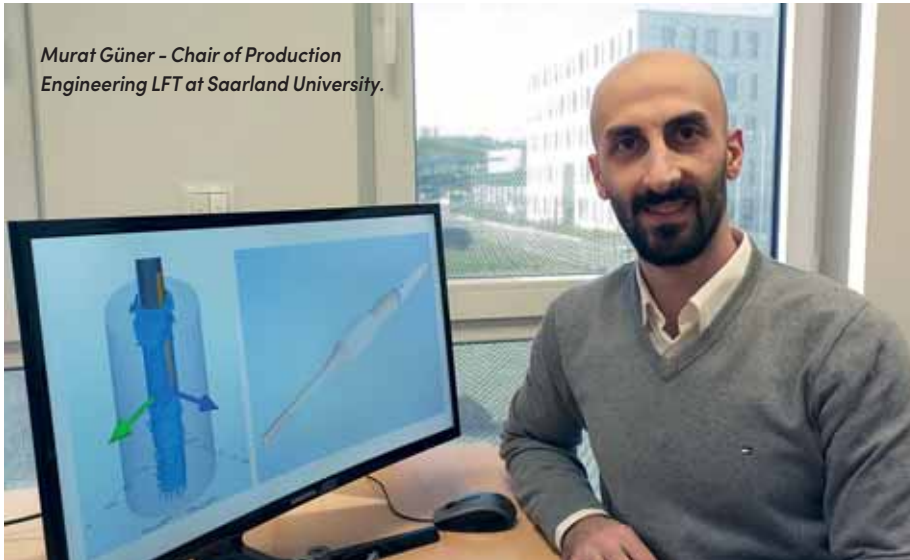
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Stable honing process thanks to internal cooling

In conversation with Murat Güner, chair of production engineering LFT at Saarland University and Jochen Brandstetter, Kadia



Murat Güner – Chair of Production Engineering LFT at Saarland University.

In many machining processes, internal cooling through the tool is now the standard. Not necessarily in honing. Most honing processes are cooled by flooding. However, if the tightest tolerances have to be maintained, especially with very deep bores, this conventional cooling method is rarely sufficient. KADIA Produktion GmbH + Co., a specialist in high-precision honing, therefore equips all its machines with the internal cooling option as standard.

Flood cooling or internal cooling? This question is almost never asked by the honing experts. When internal cooling through the tool is used for honing, it is usually in combination with flood cooling. "One cooling method cannot replace the other," affirms Jochen Brandstetter, development manager for tools and fixtures at KADIA. "Above all, flood cooling dissipates the heat from the workpiece. The internal cooling also ensures that a sufficient amount of honing oil arrives exactly at the machining point. In addition to cooling the tool, lubrication is improved and chips are flushed out of the bore. Consequently, the surface quality can be improved with internal cooling."

One could cite other advantages of

internal cooling: Reduction of friction to increase tool life, increase in process reliability and protection against corrosion. The whole package of functions and effects is not always guaranteed with overflow cooling, because the honing oil has to find its way past the tool shank to the honing stones. Finding its way is an apt expression, especially when complicated workpieces such as hydraulic valve housings are to be machined. These often contain transverse holes and webs that favour premature drainage of the honing oil. In such cases, the cooling, lubricating and flushing effect decreases more and more the deeper the honing tool is immersed. In the worst case, the honing stones can run dry. The result: the surface quality at the bore entry is different from that at the exit, in the high-precision range with precisely defined surface requirements, this is a criterion for rejection.

Constant surface quality

The highest demands on bore quality are found, for example, in hydraulic components, gear wheels for internal combustion and electric vehicles, in fuel cells or in aviation and medical technology.

These are often bores with diameters of only a few mm, but with depths of more than $10 \times D$. The machining of such bores is, among other things, KADIA's profession. The Nürtingen-based company develops and produces honing solutions in the range of 1 mm to approx. 60 mm, with larger diameters occasionally occurring. According to KADIA, internally cooled honing tools are available for machining diameters as small as 2.5 mm. "Our honing machines have all the equipment details for internal cooling on board as standard, e.g. the corresponding pumps and rotary distributors. Our LH honing spindles are also designed for internal cooling as standard," continues Jochen Brandstetter. "It is rather the exception for us that a customer does without the option of internal cooling."

In addition to a high and consistently high surface quality, the head of development mentions another important argument for internal cooling: thermostability. In series production, when the honing machine is in 24/7 continuous operation, for example, a constant temperature level must prevail on the workpiece, tool and in the bore in order to be able to comply with tolerance requirements of a few micrometres. Jochen Brandstetter says: "A thermally stable process can only be achieved with controlled internal cooling by the honing tool."





Compared to many other cutting tools, the design of honing tools is comparatively complex. Simply drilling a cooling channel is not possible. If the honing stones are adjustable, which is usually the case, there are corresponding inner workings. The challenge is to reconcile the fluidic aspects for the coolant with the design necessities. "We leave nothing to chance when solving such problems," emphasises the development manager. "That's why we commissioned the specialists from the Chair of Production Technology LFT at Saarland University to carry out an investigation into the design of the internal cooling ducts." When it comes to scientific investigations on the subject of honing, KADIA and the Chair headed by Prof. Dirk Bähre have been working together for years.

Fluidic investigations

For Murat Güner, research assistant and doctoral student at the LFT, the first question to be clarified was: What exactly happens to the honing oil when it flows through the honing tools? The use of a flow sensor system to clarify this question was out of the question. The installation or mounting in/on the tool bodies would be an immensely high cost factor. "The alternative method to looking inside the coolant channels is to simulate the flow processes with appropriate software," says Murat Güner. However, before the simulation tool could be used, extensive preliminary work had to be done: the validation of the method.

Murat Güner and his colleagues carried out a large number of flow measurements with different boundary conditions on a replica test tool with a nominal diameter of 8 mm. They varied the number, diameter and arrangement of the outlet holes, took measurements with open as well as partially closed holes and so on. After a comprehensive test plan had been worked through, it was finally clear that theory, simulation and practice, experimental flow measurements, matched with sufficient accuracy. The CAD data of the various series tools could therefore be entered into the software. "The simulations applied to real constructions showed us where stalls typically occur in the tools," Murat Güner continues. "High losses, i.e. strong turbulence and turbulence, occur, for example, in the area of compression springs through which the medium must flow, or at angular transitions."

Special attention was paid to the outlet holes. The simulation gave indications as to where these could be made larger or smaller. In one example, it was shown that the flushing effect is still given if the frontal outlet responsible for this is drilled smaller. On the other hand, the outlets next to the honing stones can be drilled larger. This means more honing oil and a better cooling and lubricating effect exactly where the chips occur.

Among the most important results of the LFT, some of which can be traced back to student work, are the visualisations of the coolant flow in the various tools and thus also at problem areas such as angular transitions.

It is also possible to visualise the honing oil wetting at the machining points. This

provides a basic understanding of the flow processes. Informative data are, for example, the flow speeds, which can rise to values of up to 45 m/s, as well as the flow rates depending on the tool position in the workpiece or at the individual outlets. With this knowledge, the honing oil distribution can now be specifically adapted, taking into account the feasibility of the production process. The bottom line is that a more efficient, loss-reduced use of the expensive medium is possible. At the end of the day, this is not only a cost issue, but also an environmental one, as Murat Güner emphasises. Jochen Brandstetter concludes: "We now have valuable insights into how we can further optimise the flow of the coolant and its distribution in the mould. The knowledge gained at the LFT helps us to provide our customers with even better tools."

Partner for production engineering



*Professor Dr.-Ing.
Dirk Bähre - Chair of
Manufacturing
Technology LFT at
Saarland University.*

The Chair of Manufacturing Technology LFT at Saarland University, headed by Professor Dr.-Ing. Dirk Bähre, has been a research and development partner for the production industry for many years. The main areas of research are in the technological fields of machining technology, manufacturing processes and additive manufacturing. The focus is on the machining of metallic materials and the production of precise and highly demanding components. The research activities follow an integral approach of methodology and planning, machines and systems as well as technologies and processes.

For KADIA Produktion GmbH + Co., the experts around Prof. Bähre investigated possibilities for optimising the flow behaviour of honing oil in internally cooled honing tools. Among other things, they simulated the flow processes inside the tools.

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From Hupmobile to high-tech bore solutions

Sunnen innovation turns 100

Founder Joe Sunnen's quest to sell his honing inventions started 100 years ago with cross country sales calls made from the back of his 1916 Hupmobile. Today, Sunnen technology is used worldwide to make performance engine parts, energy exploration equipment, aerospace components, gears, fuel injectors, fluid-power components and more.

In 1924, a young auto mechanic Joseph Sunnen saw the need for a tool to help repair cylinder heads without injuring his fingers. His spirit of innovation drove him to develop a unique valve compressing tool which made the job quick and safe. Soon after he started a mobile business, selling his new tools out of the back of a converted 1916 Hupmobile where he and his wife also camped. Early success led him to develop and patent a manual cylinder hone for auto garages. Decades later, this basic honing device has evolved into a highly capable CNC machining process by the company he founded. Today, St. Louis, Missouri-based Sunnen Products Company is the world's largest vertically integrated manufacturer of precision honing systems, operating sales, service and manufacturing facilities in 14 countries worldwide.

"As we celebrate our 100th anniversary, Joe Sunnen would be proud to see that his spirit of innovation lives on in our drive to develop new products and techniques," says Tom Dustman, Sunnen director of North American sales. "The Hupmobile remains on display at our St. Louis headquarters and it reminds us not only of where we came from, but also what we can accomplish."

Honing for precision

The success of Joe Sunnen's first tool fuelled his imagination and in 1928 he designed the first manual cylinder hone, establishing Sunnen's roots in precision bore solutions. Ever since, Sunnen experts have conceived, developed and delivered a continuing line-up of advanced honing systems, tools and abrasives. The company has also branched into lapping, deep-hole drilling, and skiving/roller burnishing furthering its reputation as a provider of total bore solutions.

Automotive, marine and air race winners learned in the 1930s that their engines got a

significant performance boost from precisely sized and finished cylinder bores made with Sunnen hones. Today, the desire for more speed, power and accuracy with lower noise, emissions and fewer maintenance problems is leading manufacturers to employ Sunnen bore solutions for an ever-expanding range of products, in more industries than ever before.

The company's latest generation of automated honing systems provides a unique capability to control hole size with accuracy of ten millionths of an inch, 0.000010"/0.25 µm, correct geometric errors in the bore and produce a specific surface finish to enhance lubrication and sealing properties.

The results produce gearboxes and transmissions that run quieter, smoother and longer; hydraulic systems that are more precise, responsive, efficient and leak resistant; chainsaws and weed trimmers that deliver higher power densities with lower emissions and firearms that are more accurate and easier to clean. Sunnen controls all R&D, manufacturing, service and support of its products, including specialised abrasives and tooling. This dedication allows for development of end-to-end processing systems that are custom designed and single-sourced to ensure they meet customers' required quality and production levels.



Sunnen's roots are in the USA, but its reach extends around the world. In addition to its USA headquarters, it has operations in Switzerland, Germany, Austria, France, Italy, UK, China, India, Brazil, Belgium, the Czech Republic, Poland, Mexico and Canada. A worldwide network of over 30 authorised distributors assures that the sun never sets on Sunnen's global sales capabilities.

Innovation drives business

"To this day, Joe Sunnen's story of commitment and reliance reminds us of how far we've come and inspires us to push to boundaries of what's possible," adds Tom Dustman. "What began in the back of a Hupmobile has grown into a massive operation bringing innovative machinery and advanced tooling to some of the world's greatest manufacturers. We are excited to carry the Sunnen legacy forward."

See an expanded timeline of Sunnen's history at www.Sunnen100.com

For additional information on Sunnen Products Company, visit: www.sunnen.com

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delapena - Honing the future

In the realm of precision manufacturing, the honing process has become paramount. However, the introduction of harder materials like ceramics, chrome and Inconel has posed significant challenges for conventional honing abrasives. delapena sintered products has risen to this challenge, developing innovative super abrasive solutions that redefine the possibilities of honing.

One such innovation is Chromestone, a revolutionary honing stone designed specifically for the hard chrome materials. Utilising advanced sintering technology, Chromestone dramatically reduces honing

times, saving manufacturers valuable time and money.

A customer of delapena was using a delapena PowerHone to resize chrome plating in cylinder using a conventual silicon carbide abrasive. The downside to using conventual abrasive is the abrasive wear quickly and the honing machine needs constant adjustment to maintain size. The customers honing process averaged 60 minutes depending on the depth of the chrome layer.

Chromestone developed by delapena sintered products was then introduced and reduced this honing process to 10 minutes. Another advantage that the customer also gained was that traditionally the worn chrome plating was stripped overnight in chemical tanks. Using a rougher Chrome bond abrasive, Chromestone, allowed the cylinder to be honed prior to the plating process in a little under 20 minutes negating the need to chemically strip the cylinder.

As industries like aerospace and automotive push the boundaries of material science, the demand for precise honing capabilities intensifies. delapena's expertise in developing honing stones for a diverse range of materials, including chrome,

Inconel, titanium, and ceramics, positions the company as an industry leader.

delapena's commitment extends beyond product performance. The company invests heavily in research and development to optimise manufacturing processes and reduce costs. This dedication translates to significant savings for customers, making super abrasives a more attractive option compared to traditional methods.

delapena sintered products facility is equipped with cutting-edge machinery and technology, ensuring the highest quality standards in the production of its super abrasive products. The ability to tailor products to specific needs, coupled with a commitment to innovation and quality, has solidified delapena's reputation as a trusted partner in the manufacturing abrasives industry. As the manufacturing landscape evolves, delapena's super abrasive solutions are poised to play a pivotal role in shaping the future of precision finishing.

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HIGH PERFORMANCE HONING

Highest Quality. Maximum Productivity.



How much should deep hole drilling, boring and honing cost?

Have you ever paid over the odds for drilling, boring or honing? If so, you're certainly not alone. Drilling, honing and boring costs are notorious for being something of an arcane secret for people who aren't 'in the know' about the process involved. Hone-All has attempted to shed some light on the world of pricing in its latest downloadable e-book: *The Guide To Deep Hole Drilling, Boring & Honing Costs*.

With a focus on tubular component manufacture, but also dealing with CNC machining more generally, Hone-All explains the different factors that contribute to the quotes you receive and why in some circumstances the final bill may be more than you originally expected. If you seek out five quotes for deep hole drilling, boring and honing, the likelihood is you will receive five wildly different figures. Why is that, when the process and technologies used are very similar?

Precision machining pricing variables

The reason is the number of variables involved in pricing and this is an area where, unfortunately, some companies are less than transparent.

There are some solid reasons for differences in price, of course. These include the complexity of the component, the materials used and the order volume; standard factors. Compliance is also a factor. For instance, parts used in the aerospace manufacturing industry have to comply with EN 9100 procedures for all components, whereas this is not obligatory for other sectors. This can affect price due to the administration and inspection requirements but can at times enormously increase the quality and reliability of the final product.

The problems with standard quoting

Other factors are not so easy to predict at the quoting stage, which is why standard quoting is not always the best approach for deep hole drilling, boring or honing services. It is natural for businesses to want to standardise their quoting mechanism. Many



quotes you request will be quickly generated on a standard spreadsheet. However, this rarely takes into account the issue of drill wander, which can be accounted for but never avoided entirely. When you have ended up paying more than you had initially thought for your job, chances are it is due to unforeseen expenses occurring from drill wander. You may have also experienced delays with that job for the same reason.

For a standard quote to work accurately, it also assumes that your technical drawings are pinpoint accurate. Unfortunately, this is not always the case. Incomplete or inaccurate technical drawings will adversely affect the accuracy and suitability of the final product, adding cost and time to your work.

Bespoke quotes for drilling, boring and honing

These are the reasons that Hone-All does not have a standard quoting policy. Every quote is bespoke. The company likes to sit down with you, or chat through your requirements on the phone and will never issue a comprehensive quote until it is sure your technical drawings match your required outcome. This is something it can help you with. It has decades of experience working with industrial components of all

varieties and can help get your technical specs up to speed, so you can use them again and again without issue for many years to come, whether with Hone-All or an alternative supplier.

By closely examining the technical specs and carrying out a contract review process on the enquiries it receives, the company are better placed to predict and compensate for those variables that always occur during the machining process itself, drill wander being the most obvious example.

Transparent, accurate pricing

So, if you have been frustrated with boring, honing and drilling prices, take a look through the e-book. It explains the quoting and pricing mechanisms of the precision engineering industry in clear detail and gives you the information you need to expect and receive accurate pricing on all your quotes. Hone-All has a unique way of working with its customers, based on your specific performance requirements, budget and timeframe.

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Hybrid precision bore honing machine

High precision, tight tolerance and low cost per part

This single-step system, designed for high-volume production of hydraulic cartridge valves and servo valve bushings, can finish hundreds of thousands of bores annually, transforming rough bores into finished products more efficiently and with greater throughput.

This innovative machine tool combines the benefits of conventional multi-stroke honing and Engis' single-pass technology

The Hybrid solution streamlines the workflow by integrating single-pass bore finishing with a multi-stroke honing process in a single machine, thereby reducing the number of steps required to achieve tight tolerances and high precision when finishing bored components. It also produces sharper, burr-free corners on cross holes and metering edges within the part.

This new model's custom multi-stroke head uses a set of expanding honing stones to semi-finish bores. The programmable expansion amount is verified by a subsequent gauge station, allowing the

machine controls to automatically compensate for tool wear. Additionally, this unique system incorporates a separate column with three single-pass spindles for the final finishing process.

The components are loaded into part holding fixtures arranged around a rotary index table, maximising productivity. This setup allows all operations to occur simultaneously, producing a complete finished part with each cycle. Operators can load and unload the parts manually or use a custom robotic automation package.

Engis hybrid bore honing benefits:

- Full CNC controls
- Higher precision (bore size control within 1 µm)
- Sharper corners on cross-holes and metering edges
- Increased efficiency and production rates
- Less manual intervention
- Automatic gauging and size compensation of the roughing process
- Reduced floor space requirement
- Lower overall cost per piece



Custom fixtures are available.

Standard equipment:

- Remote Diagnostic Capability
- Industry 4.0 configured
- 12-month warranty
- Light curtain with walkaway functionality

Optional equipment:

- Air Management System
- 400-480 VAC, 50/60Hz supply
- Integrated stack light and machine illumination system

Engis (UK) Ltd

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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.

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Hyprez precision lapping and polishing slurries

As part of its complete solution, Engis manufactures a complete line of precision-graded diamond slurries, colloidal silica polishing slurries and aluminium oxide powder with lapping oil for achieving flatness control and excellent surface finish on a wide variety of materials.

Hyprez consumable formulas are the result of Engis' complete understanding of diamond and its application in the lapping process. Its expertise on how to mill, shape and grade diamond of various types and friability is unmatched.

Coupled with this experience is its knowledge of chemistry, compounding techniques, carrier formulations and concentrations which provide superior efficiencies and results. Its ISO9001 certified quality system has made Hyprez the most trusted name in diamond consumable products throughout the world.

Why diamond?

- Reduce lapping times from hours to minutes
- Reduce slurry usage and waste from gallons to pints
- Achieve a reflective finish in a single step, eliminate hand polishing
- Cleaner process, cleaner parts
- Process a wide variety of materials

Why Engis?

Engis is a microniser, it purifies, precision grades, disperses and custom formulates its slurries. It is unequalled in its ability to precisely characterise and control Particle Size Distributions (PSD).

Applications expertise

Its engineers can provide the full process recommendation for your part/material, not only the best slurry formulation but also the polishing machine, lap plate or pad, accessories and process settings.



Engis diamond slurries

Engis provides a broad range of diamond slurry formulations:

Oil based slurries

The S1313 is recognised as the workhorse slurry for a broad range of lapping applications. It provides superior plate wetting and highly reflective finishes.

Water based slurries

When part clean-up is a concern, water-based slurries are widely used. Hyprez formulation S4889 is available in a range of abrasive sizes and offers superior results in finishing a myriad of materials.

Emulsion slurries

S841 is a good choice for final polishing steps. S841 maintains good particle dispersion of the diamond without settling for long periods of time. This slurry offers the benefits of oil while still being easy to clean.

Suspensions

The S4243 water-based slurry requires no stirring to maintain abrasive particle dispersion. This high viscosity suspension is useful when using a polishing pad on double side applications where it is important to fully wet and cover the lap throughout the work cycle.

The **Science** behind

Lapping, Polishing, Grinding and Honing

Engis

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Engis colloidal polishing slurries

Hyprez P2 and P5 colloidal polishing slurries are specifically designed to bring out the final finish on a wide variety of electronic components and metals.

Supporting a clean environment

The environmentally-friendly Ecolap slurries provide excellent performance on a wide variety of materials such as hard ceramics, metals and plastics. Available in both oil based, Ecolap 1001 and water based, Ecolap 2000, formulations. They can be formulated with a wide variety of diamond sizes and types.

Ultra-precision lapping and polishing

Maintaining a flat and evenly textured composite lap plate is critical for stable lapping performance. Traditionally this is achieved with a diamond plated conditioning ring, requiring a high level of operator experience and skill. To improve this process, Engis has engineered a solution that helps take the 'art' out of lapping, the facing/grooving device.

Using a diamond tool bit, this innovative device removes the top layer of the composite plate, making it flat to within microns. A groove pattern can be machined in a second pass. It is even possible to create a tapered plate to produce slightly convex/concave surfaces. When the device is not in use, it retracts out of the work zone.

Plate facing advantages

- Consistent plate shape, flat or tapered
- Long lasting, consistent plate texture
- Increased stock removal rate
- Improved lapping performance stability



• Improved ergonomics, no need to lift heavy rings

With predictable plate surface topography, groove pattern and controlled velocity and pressure, the entire lapping process becomes easier to manage and results are more repeatable. Also, this unit is operator-friendly and eliminates the strain of lifting conditioning rings onto the plate.

The facing/grooving device is an option that can be added to most Hyprez lapping machines at the time the machine is ordered.

Having problems with variable lapping rates?

Control plate flatness and texture

The lapping plate is a key component of any lapping system and is often overlooked as

an important variable. It is the shape of the lapping plate that influences the geometry of the parts being processed and contributes to achievable surface finish and lapping rates. Plate flatness is key to part flatness.

Lapping plates provide support in applying abrasive to the surface of the work piece in fixed, semi-fixed or free lapping modes. Predictable, repeatable plate texture is vital to abrasive action.

Controlling the groove pattern, macro texture and lands, micro texture of the plate surface allows for greater consistency in removal rates and surface finishes. A consistent bearing ratio means consistent unit load.

Engis Corporation is a third-generation privately-owned US-based manufacturer of high-performance superabrasive lapping, grinding, honing and polishing products and related machinery and accessories.

The company began in 1938, with offices in the US and UK, as a trading company for precision measuring equipment and industrial machinery.

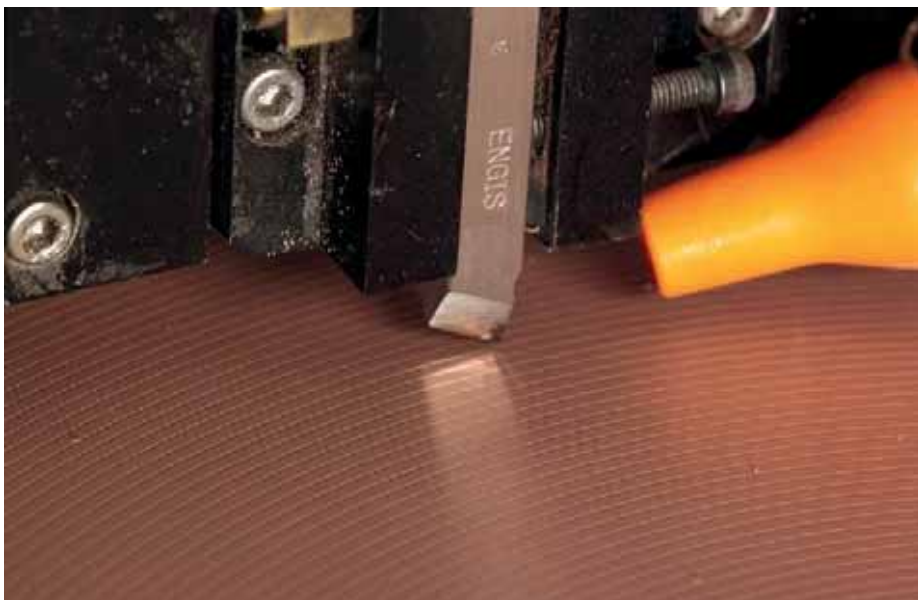
The company entered into the abrasives market in the 1940s with the development of its Hyprez Diamond Compounds for precise polishing of critical components for defense and aviation industries. Since that time, Engis expanded its range of superabrasive products, applications and industries served to be recognised as a leader in superabrasive finishing systems.

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A deburring process with many possibilities at Steel Constructions

Crash barriers along motorways are a crucial part of road safety. Delivering a bad product is not an option and Steel Constructions in Geldermalsen, the Netherlands know this well. Here, the company has two Timesavers 42 RB series machines in line with a turnover unit between them. It is an unusual set up. One that suits the diverse requirements of its products, from machining rectangular tubes to making a uniform radius of 2 mm.

The Geldermalsen-based company is one of the largest and most modern producers of guardrail. This is another word for crash barriers. Steel Constructions also make other traffic facilities, logistics equipment and scaffolding material. Its strength lies in the large stock and fast delivery time. If the company is lacking a certain product then they will make it. As Steel Constructions designs and produces the standardised and customised products itself, they are very flexible. There is a special line for making guardrails and they arrive as sheet material on large coils. The material first goes into the decoiler and through a straightener. Further down the line, the product code is engraved and the holes punched. Then the rollers press the shape of the guardrail into the sheet metal. At the desired distance, the machine cuts the guardrail and a robot stacks the product.

Quality demands

Each type of product has its own quality requirements. Marco Hage, manager of operations says: "Guardrail has to meet many requirements. Everything is inspected



Deburring of the guide rails.

and tested so that it fits withing the standards. That makes it specialised work. Just like many other things related to road safety, we make steel tubes for road signs and recently traffic signs too. We cut and paste those ourselves." In addition, a radius of 2 mm is required for railing parts and products that are powder-coated or wetcoated. The radius contributes to a longer service life.

Innovation

Steel Constructions is constantly innovating. Marco Hage says: "We used to deburr everything by hand. This was done the traditional way with an angle grinder which is very labour-intensive and the results were not always accurate enough. Our customers wanted a certain radius on the sheet material." Ludo Vermeulen is responsible for technical services and training the machine operators. He still remembers how several operators

manually machined metal parts. Besides the fact that it was intensive work, it also released a lot of dust particles.

Search

Steel Constructions search for the perfect deburring solution began. It looked at several suppliers and at one supplier, the sheet material became very hot during the process. This was the deciding factor for choosing Timesavers instead as its brushes gently stroke the steel. Resulting in less wear on the rollers and lower maintenance costs.

42 RB series

Steel Constructions has chosen two Timesavers RB series with a 1,350 mm working width. The deburring machines feature eight rotary brushes that deburr and round off edges. Depending on the speed, they apply a nice, uniform radius of 2 mm on the metal. Thanks to the special magnetic table, it is possible to deburr and brush steel rectangular tubes, guardrails and steel sheets in all sizes. For brushing, they have several types of brushes. One is better suited for flat parts, the other for parts with embossing.

The Timesavers machines are very user-friendly. According to Ludo Vermeulen, anyone can set up the touchscreen panel after a short instruction. After that, you can operate the machine without additional instructions. He particularly likes the function where you can save programmes. With one minor step, you bring up the settings of a previously made product and can immediately start production.



The return table for the smaller parts.

Turnkey solution

Installation consists of a deburring machine, a return table, a turnover unit, a second deburring machine and a powerful dust extractor. The turnover unit ensures that Marco Hage and his colleagues need to turn a product as little as possible. At most, steel rectangular tubes have to be machined on four sides. A huge advantage, considering that some parts are up to six metres long and therefore incredibly heavy. Ludo Vermeulen states: "For smaller material, we have another solution. Anything less than 400 by 400 mms cannot pass through the turnover unit. Those parts come into a small turnaround."

Experience

Marco Hage explains: "Productivity increases and that with fewer people. But just as importantly, production is cleaner for the employees. For the customers, we can achieve a good radius. The product is also super-clean before it goes to the welder and if it has to be galvanised, the zinc layer will also adhere better."

Ludo Vermeulen concludes: "As a maintenance engineer, I have very little to do at the Timesavers line. Once, someone



Timesavers Machine at Steel Construction.

accidentally bumped into a sensor. Other than that, I have had very little maintenance on it. I am happy about that, because I have plenty of other work."

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The turnover unit and the second Timesavers machine.



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Lissmac automates grinding and deburring technology with partners

Automated processes ensure efficiency in sheet metal processing. Take, for example, the automated ejection unit that Lissmac Maschinenbau GmbH presented at EuroBLECH. It is used to separate laser components that are attached to micro bars on the sheet metal panel. Four separately controllable gripper units equipped with a vacuum suction cup selectively remove the laser components from the scrap grid after the micro-bars have been separated by the ejection process. The components are then placed on a conveyor belt for the next process steps: deburring and edge rounding. The system does not require optical image processing as it is based on the geometry data of the cutting plan and automatically determines the required number of suction pads. It can be flexibly adapted for different sheet sizes and thicknesses. The possible component sizes in the current system version range from DIN A5 to Euro pallet format. Sheets with thicknesses from 1 mm to 8 mm and a maximum weight of 90 kg can be processed. Time-consuming manual clearing is no longer necessary. The process is decoupled from laser cutting thanks to a buffer space in the warehouse. The ejection unit can be retrofitted to existing cutting systems or high racks and can be used regardless of the manufacturer.

The automation unit, which the Bad Wurzach-based machine manufacturer developed together with J. Schmalz GmbH, automates the loading of Lissmac grinding machines. The cell relies on robotics technology as well as AI software and 3D vision sensors from the automation technology manufacturer. The components are identified with the help of visual 3D component recognition from Schmalz in order to pick up unmixed components from a pallet. They are then placed on a conveyor belt using a matrix gripper. They can then be deburred in the next process step.

The combination of loading robots with the vacuum grippers from Schmalz and the connection to the sanding system ensures more efficient production processes:



Manual loading is reduced so that a deburring machine can be operated by a single person.

The SBM-L Evo series was also presented as a pre-series model for the first time at Euroblech. On show was the SBM-L 1000 G1S2 Evo, a deburring machine for deburring and edge rounding on both sides of punched, laser-cut and fine plasma-cut sheets in a single work step. The new top model of Lissmac's double-sided deburring machines has been available as a series machine since April 2024.

From the Lissmac product range of single-sided and double-sided grinding and deburring machines for thin and thick sheet metal processing, the SBM-L 1500 G1S2 for highly efficient double-sided deburring and edge rounding of punched, laser or HD plasma-cut parts was also on display at Euroblech. Alongside it was the SMD 35 REER (S-Edition) for uniform edge rounding on all edges up to a radius of 2 mm as well as for a non-directional finish and small parts and thin sheet metal processing. The SMD 123 RE will also be presented, which can be used for deburring and uniform edge rounding on all edges as well as for surface processing of workpieces made of steel, stainless steel and aluminium. Also on show was the SBM- XS 300 G1E1 Alu Mix for

deburring and even edge rounding of small parts in a single operation.

Finishing Aids and Tools Ltd have supplied the industrial market with surface finishing and polishing abrasives since 1955. The company has specialised in a wide range of abrasive products and portable machinery covering numerous applications and industries for over 60 years and has recently added capital machinery equipment sales in order to continue supplying customers with everything they need to manufacture finely finished products.

Excellence in manufacturing

FINAIDS' production facility, located in Bury, Lancashire, produces belts, sheets, discs and rolls in standard coated abrasives, surface conditioning materials and 'exotic' ceramic products using state-of-the-art machinery, offering prompt service and excellent value for money.

FINAIDS are the sole UK and Ireland agent for Lissmac grinding and deburring machines.

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Deburring tools from Kemet

Kemet offers expert technical support to assist customers in selecting the ideal brushes for their specific deburring challenges. Its team is dedicated to understanding your unique needs and recommending the most effective brush solutions to achieve optimal results.

During most machining operations, components become burred and sharp edges or material compression occurs. This affects the quality of the part and can create issues with assembly and also failure of parts due to break off of material during working life. Removal of burrs is often critical to many of the lapping and polishing processes Kemet develops for customers, to prevent damage to lapping/polishing support materials and extend their life.

Kemet is always monitoring technical developments around the world and are delighted to be able to offer a comprehensive deburring solution in the full range of Xebec deburring and polishing products. These cater for either hand use or for in process, CNC/robotic use, with

tailored products for the full range of deburring challenges.

The Xebec deburring range include special tools for a range of deburring applications. Kemet has been supplying Xebec ceramic and diamond abrasive stones for many years within its precision engineering tooling division. These deburring brushes and cutters offer the same ground-breaking performance now available in the UK from the country's largest surface finishing solutions company.

XEBEC Burrless Chamfering Cutter™

This innovative chamfering tool revolutionises the machining process by eliminating the generation of burrs and consequently eliminating the need for an additional deburring step. The groundbreaking tool not only saves valuable time but also reduces tool costs, making it a game-changer in the manufacturing industry.

With its unique design, this chamfering tool achieves a finished chamfer without



leaving any secondary burrs, eliminating the necessity for a separate deburring process. This breakthrough innovation not only streamlines production cycles but also enhances overall efficiency. Extensive tests and evaluations have demonstrated that this cutter boasts a remarkable tool life, lasting at least twice as long as conventional chamfering cutters. This exceptional longevity significantly reduces tool replacement frequency, resulting in substantial cost savings and increased productivity.

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LISSMAC SBM-L



BOTH SIDES. ONE PASS

- Save up to 60% on the cost of processing by simultaneously deburring both sides of the workpiece.
- Smart extraction system can improve existing working conditions.
- Deburr and edge-radius laser/plasma/water cut and stamped parts in one pass on interior and exterior edges.
- Fast and simple tool change system reduces downtime.
- Modern design, small footprint. Can be integrated into existing automated lines.
- Comprehensive list of spares.
- Servicing and repairs offered by Lissmac certified engineers.



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333 hours saved by combined deburring



If machining operations are combined, the total process time can be massively reduced. In addition, process reliability increases significantly. BURAG AG benefits from this too, having recently started using a tool from HEULE Precision Tools that combines drilling and deburring into a single operation.

BURAG AG has been active in metal and tube machining for 80 years. The highly specialised company in Eschlikon, Switzerland, processes steel tubes into tube fittings and tube formed parts. Threads are rolled, moulded and cut. Tube ends are drawn, expanded, rolled and profiled and where necessary, the tubes are also drilled.

BURAG AG's customers include leading companies in sanitary and fastening technology, the machine industry, heating and combustion manufacturing as well as agricultural machinery. The highest levels of precision, quality and flexibility are required. Efficient manufacturing processes are developed for customers in the production halls and wherever possible, the processes are fully automated. The goal is

to implement processes that run without human intervention.

Combined drilling and deburring as a solution

This type of automated production was also required to produce connecting pipes for a machine in the agriculture industry. The aim was to produce 25,000 workpieces per year as efficiently and reliably as possible. The engineers at BURAG AG developed a customised production strategy and produced the first series of tubes for the customer to their complete satisfaction. However, the BURAG AG team was not satisfied with the process for the four bores in the pipe. Due to an unreliable drilling operation, a lot of time had to be invested in monitoring the drilling result. In addition, the process time was very long, as a second tool was used for deburring the front and back bore edges after drilling. All in all, it was an unstable process that repeatedly pulled on the nerves of the people in charge.

As HEULE tools were already in use at BURAG AG, the Swiss deburring specialist was contacted again to find a solution. During an initial on-site visit by Eisenbart GmbH, the HEULE sales partner for Switzerland, various options were discussed and passed on to HEULE for a feasibility study. The result was an application-specific drilling combination tool that combines drilling with deburring on both sides of the bore in one operation

and promises a reliable deburring result even with uneven bore edges.

Process reliability as a major benefit



The special tool from the VEX combi tool range first drills the bore. The spring-loaded COFA deburring blade then removes the burrs on both sides of the bore in a single operation. Thanks to this tool, BURAG AG saves one tool change and thus significantly reduces the cycle time. It also eliminates the risk of the deburring tool breaking, as both operations are carried out in a single pass. The workpiece is made from two tubes of different materials pressed into each other, which makes the machining operation even more demanding. This is why the experts at HEULE provide the carbide deburring blade with a high-quality coating and finish the drill head with a rounded cutting edge and a customised coating.

Today, HEULE is synonymous with solving deburring problems. Heinrich Heule established his company in 1961 as a contract manufacturing company. One of his first commissions was challenging: It was to chamfer the insides of a fork piece in full-scale series production quickly and economically. At the time, there was no suitable tool for that purpose. He therefore created one himself, filling a gap in the market. The cornerstone for a flourishing enterprise was laid.

Over the last 60 years, HEULE Precision Tools has been setting the benchmark in the development and manufacture of tools for front and back machining of bores in a single pass. Ulf Heule now manages the company and the third generation is already working for HEULE. Everything is in place for the next 60 years of company history.



HEULE Werkzeug AG
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Power, speed and precision in a compact form

The new F250 from Q-Fin is designed with the customer in mind and offers a solution that perfectly matches their daily challenges. Specifically developed for deburring, edge rounding and finishing small sheet metal parts, the F250 delivers power, speed and precision. This successor to the F200 is more than just an upgrade, it is the new standard for finishing small sheet metal products. With the F250, Q-Fin brings the advanced technology of its larger machines into a compact format, suitable for the smallest products yet capable of delivering great performance. This machine can process small parts at a speed five times higher than comparable finishing machines. This is due not only to mechanical improvements, but also to the smart software integrated into the machine. The F250 represents a new standard in finishing small sheet



metal parts. With its universal design, it's a machine that grows with your needs. From finishing the smallest cut parts, to fully integrating the machine into your production line with your ERP system. Whether you want to optimise existing processes or expand your production capacity, the F250 is the solution you need for deburring, edge rounding and finishing the smallest sheet metal parts.

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ZC - Deburring and Edge Rounding



Z - Deburring



2C - Double sided edge rounding



DC - Slag Removal and Edge Rounding

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Unblocking the bottlenecks with vibratory finishing

Midland Deburr removes bottlenecks with vibro finishing

Midland Deburr & Finish is busy growing the field of metal finishing with its advanced vibratory finishing techniques. Under the expert guidance of managing director Chris Arrowsmith, the company is addressing one of the most persistent challenges in metalworking in the region; deburring of parts.

Vibratory finishing is a process that has come to the forefront as an efficient solution for deburring, which is the removal of rough edges and excess material left on metal parts after machining. This process improves the aesthetic appeal of the parts and enhances their functionality and safety.

Chris Arrowsmith states the critical role of vibratory finishing in modern manufacturing, noting: "Deburring is often an overlooked step in the production process, but it is essential for ensuring that components meet the required standards of quality and performance."

Midland Deburr & Finish has invested significantly in the latest vibratory finishing equipment to streamline this crucial aspect of manufacturing. The company's state-of-the-art machines use a combination of abrasive media, water and compound solutions to effectively polish and smooth metal parts. This technology enables it to handle a wide range of materials and part sizes, making its services versatile and highly sought after in the industry.

The benefits of vibratory finishing extend beyond mere surface improvements. By automating the deburring process, Midland Deburr & Finish has been able to reduce production times and costs for its clients. This efficiency not only enhances productivity but also helps in unblocking the bottlenecks that often slow down manufacturing operations. "By removing the manual element from deburring, we can achieve consistent, high-quality results faster and more cost-effectively," says Chris Arrowsmith.

One of the standout features of Midland Deburr & Finish's approach is its ease of customisation. Each project is evaluated individually to determine the most effective combination of media, compounds and



machine settings. This tailored approach ensures optimal results, regardless of the complexity or specificity of the parts being processed.

Chris Arrowsmith also highlights the environmental benefits of the company's vibratory finishing processes: "We are dedicated to minimising our environmental impact. Our systems are designed to be as eco-friendly as possible, reducing waste and utilising recyclable materials whenever feasible," he explains. This commitment to sustainability is an integral part of Midland Deburr & Finish's business ethos."

The company's expertise in vibratory finishing has made it a trusted partner for a diverse range of industries, from automotive to aerospace and beyond. Its ability to deliver precise, high-quality finishes has cemented its reputation as a leader in the field. "Our clients depend on us to provide solutions that enhance the performance and longevity of their products. It's a responsibility we take very seriously," Chris Arrowsmith asserts.

Midland Deburr & Finish's success is also attributed to its ongoing investment in research and development. By staying at the cutting edge of technology and continuously improving its processes, it ensures that it remains ahead of the curve



in a competitive market. "Innovation is at the heart of what we do. We are constantly looking for new ways to improve our techniques and deliver even better results for our clients," Chris Arrowsmith adds.

Midland Deburr & Finish celebrates 25 years of success in Stourbridge

In the heart of the West Midlands, nestled amidst the industrial landscape, Midland Deburr & Finish stands as a testament to the spirit of entrepreneurship, innovation and unwavering determination. As the company commemorates its 25th anniversary this year, directors Chris and Sue Arrowsmith reflect on the remarkable journey that has shaped their lives and the landscape of metal finishing in the region.

The story of Midland Deburr & Finish begins in April 1999 when Chris

Arrowsmith, armed with a wealth of experience from leading operational management roles in the manufacturing sector, embarked on a journey to redefine industry standards. Frustrated by the inflexibility of larger corporations and inspired by the potential for innovation within the sector, he took a leap of faith and incorporated the business, laying the groundwork for what would become a premier Midlands based metal finishing specialist.

"From the outset, I was driven by a vision for change," recalls Chris Arrowsmith. "I saw an opportunity to challenge the status quo, to carve a niche for ourselves in an industry ripe for innovation."

With a keen eye for branding and a grand vision for the future, Chris Arrowsmith branded the business as "Midland Deburr & Finish," reflecting aspirations for regional prominence and growth. Armed with determination and a meticulously crafted plan for expansion, he set out to establish Midland Deburr & Finish as a beacon of excellence in the field.

The early years were marked by challenges and triumphs alike, as Chris

Arrowsmith navigated the complexities of entrepreneurship and the ever-evolving manufacturing landscape. However, it wasn't long before his efforts began to bear fruit. Midland Deburr & Finish quickly gained traction, earning a reputation for quality, reliability and innovation.

Four years into the journey, Chris's wife, Sue Arrowsmith, brought her extensive corporate expertise to the table, joining the company as director and HR specialist. Departing from a prominent role within the NHS, her decision to join Midland Deburr & Finish marked a pivotal moment in the company's trajectory.

"Sue's arrival was a game-changer," Chris Arrowsmith reflects. "Her larger 'corporate' HR knowledge brought a level of professionalism and strategic insight that propelled us to new heights."

Together, Chris and Sue Arrowsmith forged a formidable partnership, blending Chris's operational acumen with Sue's HR expertise to steer Midland Deburr & Finish towards continued success. Through strategic investments in machinery, expansion into multiple units and a relentless commitment to excellence, the

company flourished, solidifying its position as an industry leader.

"The past 25 years have been a testament to our resilience and determination," Sue Arrowsmith remarks. "Despite facing numerous challenges, from Brexit and the COVID-19 pandemic to fluctuating material costs and geopolitical tensions, we've remained steadfast in our pursuit of excellence."

As Midland Deburr & Finish celebrates its silver jubilee, Chris and Sue Arrowsmith remain optimistic about the future. With a track record of success, a commitment to innovation and a dedicated team, the company is poised for continued growth and prosperity in the years to come.

Chris Arrowsmith concludes: "As we look ahead, we're excited about the opportunities that lie on the horizon. Our journey is far from over and we're ready to write the next chapter in the story of Midland Deburr & Finish."

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Retrofit solution makes Vollmer VGrind 360S suitable for processing PcBN

The ultra-hard cutting material PcBN achieves the highest degree of hardness and is extremely temperature-resistant, making it a challenge to process. To enable cutting tool manufacturers to grind PcBN cutting edges with the highest level of precision, sharpening specialist VOLLMER has retrofitted its VGrind 360S grinding machine with an optional dressing unit.

The optional dressing unit for the grinding wheel with automatic wheel probing is the key to high-precision grinding of PcBN cutting edges with the VGrind 360S. Working in two work steps for both roughing and finishing, this innovation is a small step for the VGrind 360S, but a giant leap for the world of tool manufacturers.



The VGrind 360S machine.

By adapting its VGrind 360S grinding machine, the Swabian sharpening specialist can make its VGrind 360S suitable for machining Polycrystalline cubic Boron Nitride (PcBN) tools. Considered the hardest cutting material in the world after Polycrystalline Diamond (PCD), the ultra-hard cutting material PcBN can achieve an operating life of up to 25 times longer than solid carbide tools. With characteristics such as exceptional chemical resistance even at high temperatures, PcBN retains almost all of its original hardness even at 1,200 degrees Celsius. This makes PcBN the perfect material for cutting tools that are used for machining ferrous metals such as grey cast iron and hardened steel.

The VGrind 360S grinding machine is

perfectly positioned for precisely machining PcBN tools with its stable wall concept with a rigid and compact design. Furthermore, the two grinding spindles with the grinding wheel set positioned at the C-axis pivot point enable efficient multi-layer machining. The high system rigidity in combination with the drive of the X, Y and Z-axes via linear induction motors, allows tool manufacturers to machine a PcBN cutting edge with the grinding wheel oscillating across its contact surface for a chip-free high-quality surface.

Thermal stability is ensured by a plate heat exchanger that effectively cools the spindles and motors. In addition, the integrated spindle indexing of the VGrind 360S stops a spindle at the same position during grinding wheel replacement, thereby reducing planing and run-out errors in grinding wheel packages.

To support the processing of this ultra-hard material, the optional dressing unit for the grinding wheel on the VGrind 360S means that after roughing the PcBN cutting edge, the dressing unit re-profiles the grinding wheel to regain its precise concentricity and correct geometric shape. Subsequent finishing operations give the PcBN tool the desired surface finish and geometric accuracy. Customers can also retrofit the optional dressing unit with software updates to existing VGrind 360S machines. Tool manufacturers can carry out the installation independently or with the support of the VOLLMER service team in just a few simple steps.

"We have seen a positive development in the market for PcBN tools worldwide for several years, which is why we have now further developed our VGrind 360S for PcBN machining," says Eric Scheffold, product manager at VOLLMER.

With its comprehensive range of machinery, the VOLLMER Group, which has sites in Germany, Austria, Great Britain, France, Italy, Poland, Spain, Sweden, the USA, Brazil, Japan, China, South Korea, India and Russia, enjoys global success as a tool machining specialist in terms of both production and service.

The technological leader's range of products contains the most advanced



The new dressing unit on the VOLLMER 360S.



The new VOLLMER VGrind360S Dressing Unit.

grinding, eroding and machine tools for rotary tools, circular saws and band saws in the wood and metalworking industries. In offering this, VOLLMER relies heavily on the company's tradition and its strengths: Local contacts for efficient communication channels, quick decisions and rapid action by a family-run company.

The VOLLMER Group currently employs approximately 750 workers worldwide, with around 550 of these at the main headquarters in Biberach alone, including more than 50 trainees. The company invests around eight to ten percent of its turnover in the research and development of new technologies and products. As a provider of technology and services, the VOLLMER Group is a reliable partner to its customers.

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Star Cutter unveils new tool grinder at IMTS



At IMTS 2024, Star Cutter Company unveiled its newest generation tool grinder. The FLX, was shadow grinding throughout the show to demonstrate its capabilities. This 5-axis grinder has been designed with a focus on flexibility, enabling users to modify features to exactly match their grinding needs. At the same time, the FLX has automation and wheel change features that make it well-suited for high-volume, lights-out manufacturing.

"The FLX is designed to accommodate up to 15-wheel pack locations and a robot that can handle both tool and grinding wheel changeovers," says Aaron Remsing, Star Cutter product manager. "This allows the machine to produce up to 1,200 tools, 3-7 mm diameters, before unloading.

Additionally, the new wheel magazine design is achieving a 30 percent reduction in typical wheel changeover time."

Key to the system's performance is Flexium Pro CNC, the newest control platform from NUM, which offers a tenfold increase in computing power. This helps to streamline operations and allows for a reduction in power consumption. Additionally, Flexium Pro improves data security while using a smaller electrical panel footprint.

With a grind zone of up to 228 mm in length and 20 mm in diameter, the FLX accommodates a wide variety of tool sizes. It also has two spindle options, a 7 kW, 24,000 RPM HSK synchronous for general manufacturing or a 15 kW, 24,000 RPM HSK synchronous for manufacturing, regrinding and higher RPM applications.

The FLX grinder has an ergonomic design with adjustable features that allow personalised setup to ensure operator comfort. Additionally, the machine can be equipped with a selection of modular automation options that make field

implementation easy while providing for optimal part quantity and wheel changing accommodating wheels up to 6" in diameter. The system flexibility makes it suited for either manned or unmanned production.

FLX is designed to be precise and accurate in both controlled and uncontrolled climate conditions, giving it broad application across industry, even in harsh environments. It features reduced warmup time, elimination of redundant chiller systems and 35 mm linear carriages for durable machine movement and longevity.

The FLX has a footprint of 72" W x 55" D, 94.5" D with the automation model and a height of 73.3". Machines weigh 7,000 lbs, 9,000 lbs. with automation. Other options include a bolt-on tooling rail with T-slot construction, runout minimiser and a two-wheel changer, for non-automated machines.

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The future of the cutting tool industry

As ANCA celebrates 50 years of advancing tool manufacturing technology, Edmund Boland, general manager of ANCA CNC Machines in Australia, looks ahead 5 to 10 years



ANCA CNC machines general manager, Edmund Boland is the son of ANCA co-founder Pat Boland.

The old story about the factory of the future being populated by one human and a dog, the human's role limited to feeding the dog, while the dog is charged keeping the person away from the machinery, will be close to reality for tool grinding.

At a minimum, the entire production process will be linked digitally, from the intake of the raw material, to palletising, laser etching and blank preparation to the tool and cutter grinding, edge prep, coating and right through to shipping the finished goods. So, for example, when a particular job transitions from OD prep to the 5-axis grinders, the machines will automatically call up the correct program to finish grind the tools. Everything will also be linked to a company's ERP and MES system, providing very good data analytics, to help make the right decisions and improve your processes.

It's already the case that individual processes, such as OD grinding or stream finishing, are often highly automated once they're setup. So, what will differ among thriving companies is the degree to which those processes have been automated and the degree to which the transfer of material between stations has also been automated.

A small to medium shop will probably have a person who's physically moving and scanning let's say, a pallet from the OD machine to the 5-axis machine. But digitally, the 5-axis machine receives a file that says it's getting these blanks and it's all tied in with the ERP system. The same thing would happen if they're subcontracting the coating. Digitally, they're sending that information to the

coater, but somebody is manually moving tools from the 5-axis to the shipping department. Whereas in a large shop, a robotised cart would make the physical moves. That's the case with ANCA's Integrated Manufacturing Systems (AIMS).

Improving setups and quality

The more automation a shop achieves, the more consistent its output quality and the more its workers can concentrate on solving isolated problems and improving the entire process, aided by AI. "Invariably, there will be tools that are out of tolerance and someone will need to ask 'Why? What do we need to tweak? Is there an issue with one of the production steps? Is the program wrong?"

Competitive companies will therefore rely on a relatively small number of highly skilled problem solvers. These people will in turn rely on the kind of advanced training available at the ANCA Academy.

Edmund Boland also envisions a continuing role for skilled people to set up machines, though changes are coming there too. As an example, technology like steadyrests will have sensors and the ability to make automatic adjustments.

Automatic compensation to correct errors detected in-process is already a reality and this capability will only improve.

One contributing factor is the ever-increasing capability of internal

measurement devices. The new generation lasers can measure in the presence of coolant mist and even some residual oil on the tool itself. Vision systems still require manual placement and removal after use, but that will change. Camera systems require better ventilation than lasers, but there are solutions. A robot can blow out the debris from the environment within the machine right after grinding. Or you could use a robot to bring the camera into the machine from an external location.

At the same time, the list of features that can be measured internally and automatically compensated will grow. Today it's things like OD, tool profile and flute depth. In a short time we'll be able to do more. The threads within a thread mill or a tap, as an example. A K-land. Or the gash. As long as it can be measured within the system, it can be compensated.

Edmund Boland doesn't think we'll eliminate the need for stand-alone measuring machines like the ZOLLER Genius, especially when it comes to measuring complex features. But he foresees improvements in the interplay between such systems and tool grinders.

The key is in the establishment of standardised measurement protocols for specific geometric features. Until these measurement protocols are created, no tool grinder can compensate for a measured deviation. At the moment, ANCA has a



standard set of measurements available for simpler end mills and drills. As ANCA install AIMS throughout its customer base, it also working with these customers to expand the range of measurements it can compensate. It is getting into quite complex profile tools and complex end mills, for example.

Sub-micron tolerances

It's no secret that tolerances are getting tighter. Edmund Boland says achieving micron and even sub-micron, levels of precision will be the key to capturing many future applications. Demand for such accuracy will grow, because of the benefits of these cutting tools. Whether it's the surface finish of the workpiece that's being machined, tool life, or other factors. Removing all the small inaccuracies within the cutting tool lifts its performance significantly.

This is also why the market is moving more toward solid round tools, versus indexable cutters.

Material trends

Carbide continues to be the dominant cutting tool material, but PCD use is growing

faster. Thus, PCD may reach 30 percent of the market in 10 years or so. Ceramics are also getting more interest but remain a small part.

Likewise, the need for material removal technologies other than grinding will grow. Wire and rotary EDM are now predominant for PCD, but laser ablation bears watching. It is definitely an emerging technology. Customers with early machines are using them not only for PCD, but also for carbide.

Other market considerations

Given the production efficiencies envisioned, you might expect regrinding to die. Not only will the automation solutions discussed earlier also apply to regrinding, sustainability concerns will continue to make it a viable business.

At the same time, the greater efficiencies achieved by forward leaning tool producers will create expectations in the market for faster turnaround times, even for small quantities of special tools.



Unsurprisingly, the move to electric vehicles is reducing cutting tool demand in the automotive sector by as much as 50 percent. This varies around the globe, with the US lagging in EV adoption. There are also growing applications outside of the EV area which might be compensating, though the total impact of EVs will undeniably be large.

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MecWash unveils the MWX600

The next generation in aqueous component cleaning

MecWash, a leader in the design and manufacture of advanced aqueous cleaning systems, has announced the launch of the MWX600, the latest addition to the renowned MWX series. This year marks the 30th anniversary of MecWash with the release of the groundbreaking MWX600 embodying three decades of expertise, innovation and customer-driven development.



Go large with the MWX600

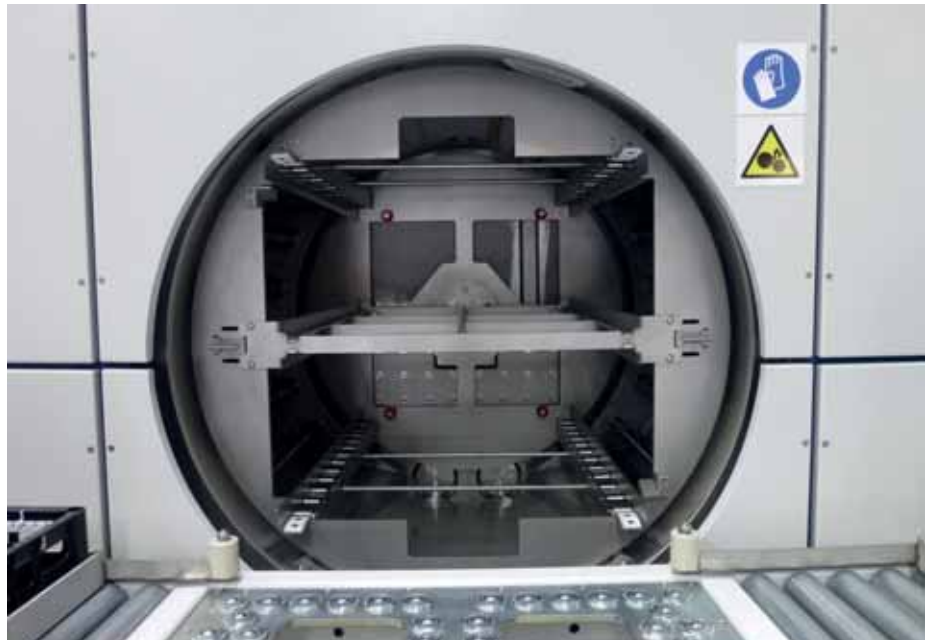
The MWX600 sets a new standard in the industry with its expansive wash chamber, measuring a remarkable 600 x 600 x 1,000 mm and an overall machine size of W 4,254 x D 2,780 x H 2,500 mm. This significant upgrade in aperture capacity to 600 x 660 mm makes the MWX600 the most versatile and powerful system in the MWX lineup, following the successful launches of the MWX400 in 2016 and the MWX300 in 2022.

Enhanced design for maintenance and servicing

Building on the successes of its predecessors, the MWX600 incorporates an advanced design with enhanced features for maintenance communication and servicing. The system is equipped with state-of-the-art remote monitoring and predictive maintenance capabilities, ensuring maximum uptime and efficiency. These enhancements reflect the commitment of MecWash towards continuous improvement and customer satisfaction, leveraging 30 years of industry leadership.

Unrivalled capacity and performance

The MWX600 is not just bigger it is better. Designed to accommodate larger components such as gearbox housings and larger engines, the MWX600 offers unmatched capacity for heavy-duty cleaning



applications. Additionally, the system boasts more ultrasonic rods than ever before, delivering superior cleaning power and precision for the most demanding industrial needs.

Setting the industry standard

As the big brother of the popular MAXI system, the MWX600 brings a new level of performance to the market that is unmatched by any other manufacturer. Its innovative features and robust design make it the ideal choice for industries requiring large-scale, high-capacity component cleaning solutions.

Advanex Europe upgrade component cleaning capabilities with MecWash MWX400

Advanex Europe has reported its latest leap forward in component cleanliness after its purchase of a MecWash MWX400. Advanex has bought three parts washing systems since initially speaking to the MecWash team at the MACH exhibition in 2012. The upgrades have been required to meet capacity increases and strict requirements of its customers.

"Each of the machines we have purchased from MecWash have provided us with a leap forward in efficiency. The MWX400 has made a substantial difference in the volume and speed of the parts washing at Advanex. The

previous MecWash machines exceeded our expectations and the MWX400 has done exactly the same," says Rob Newham, operations manager at Advanex.

Alan Atkinson, sales manager at MecWash, says: "We were delighted to be chosen to supply another high specification, high volume parts washing machine. Working with Advanex over the last 12 years has provided our team with a detailed understanding of their cleaning requirements. Choosing the optimum parts washing system was crucial for Advanex to provide consistent component cleaning.

"Many of the products made by Advanex are very delicate, so it is vital the cleaning and finishing process does not cause any damage. We previously worked alongside Advanex to create a bespoke wash chemical formulation for its application. The solution was designed to clean and protect the sensitive components and produce a bright finish. Our machines are some of the most sophisticated, connected parts washing systems in the world and the MWX400 features remote servicing, fault diagnosis, maintenance and management.

"The team at Advanex understand the reliability and cleaning capability generated by a MecWash industrial parts washer. The MWX400 is the most appropriate system to meet the demands of the increased workload and is designed to process the

most intricate machined or pressed parts that require the highest standards of cleanliness, finish and dryness," says Alan Atkinson.

Advanex Europe is the European Headquarters of the global Advanex Group which has more than 20 operations worldwide. Advanex specialise in metal and plastic components, thread inserts, springs and assemblies, supplying a diverse range of markets, namely medical, aerospace and automotive.

The precision engineering firm bought their first MecWash cleaning system, the

AVD 300, to replace an ultrasonic tank system. In 2018, Advanex bought a Duo from MecWash to ensure that the increased levels of demand, and the high-level standards of the cleaning and drying of their complex and intricate machined coiled or pressed medical parts continued. Since then, the business has grown substantially as demand for their quality medical products has increased, thus the need for a continual improvement in cleaning productivity over the last decade.

The cleaning capability of all the MecWash systems has impressed Rob Newham, who understands the importance of regulatory adherence for his customers.

Rob Newham says: "The MWX400 is the most advanced of the MecWash machines and as a long-time customer, it was the best choice to satisfy our high-volume production requirements. The machine meets and surpasses our requirements and more by giving a controlled, validated outcome on each cycle.

John Pattison, managing director of MecWash, says: "The purchase of the MWX400 and the continued relationship with a loyal customer such as Advanex is further

proof of the effectiveness of a MecWash system.

"We have a proud history of repeat business due to the excellent cleaning standards that our industrial parts washing systems provide. Our engineers design and build the systems to tackle the most difficult industrial cleaning challenges from across manufacturing. We work closely with our customers throughout all stages of the manufacturing to ensure we achieve the best results possible, rather than 'one size fits all'. This approach has resulted in a large number of long-term relationships with our customers.

"Customers trust us because we take the time to understand their needs and continue to provide support to them throughout the product life cycle. Investing in a MecWash system generates significant benefits or manufacturers, with measurable improvements in cleanliness and productivity."

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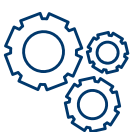
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MicroCare introduces cutting-edge Tergo cleaning fluids to precision cleaning fluid line

MicroCare LLC has announced the expansion of its precision cleaning fluid line with the introduction of new Tergo™ vapour degreasing cleaning fluids. These innovative cleaning solutions are designed to meet diverse industrial technical cleaning needs with distinctive formulas that deliver reliable and repeatable cleaning performance.

One standout of the Tergo lineup is the Tergo XCF2 Specialty Cleaning Fluid, Flux Remover and Degreaser. It offers exceptional cleaning benefits, effectively removing heavy greases, silicone oils and challenging organic contaminants from metals, alloys, composites, and some plastics. Its high, >100 Kb value cleaning power ensures thorough heavy degreasing and flux removal, while its low surface tension and high liquid density make it ideal for particle displacement and as a carrier fluid for fluorinated polymers, oils and greases.

Tergo XCF2 also excels as a drying agent after hydrocarbon or alcohol cleaning and is a superior replacement for HCFCs, HFEs, nPB, Perc, TCE and other solvents like 3M Novec™ 71DA, 72DA and Solvay Solvokane™. It is thermally and hydrolytically stable, non-flammable, non-corrosive and has an extremely low Global Warming Potential (GWP) of <1 and a zero Ozone Depletion Potential (ODP). It is PFAS-free under current United States and European definitions.

"Our new Tergo cleaning fluids are formulated to offer comparable, if not enhanced, performance to the 3M Novec solvents, which are known for their performance and reliability," says Tom Tattersall, CEO of MicroCare. "We are committed to providing our customers with high-quality alternatives that maintain the integrity of their cleaning processes without causing major disruptions to their processes or budgets."

Fast drying and recoverable by simple distillation, Tergo XCF2 is compatible with ultrasonics, making it versatile for critical cleaning applications in aerospace and

medical industries. This specialty solvent blend is suitable for both open-top and vacuum vapour degreasers, providing exceptional material compatibility and efficiency.

The Tergo non-water-based vapour degreasing fluids integrate seamlessly into existing equipment and processes, requiring minimal adjustments. These nonflammable fluids ensure chemical stability and enhanced safety during usage and storage.

With ample production capacity in New Britain, CT, the new MicroCare Tergo fluids are readily available for immediate global shipment, eliminating import delays and ensuring uninterrupted supply.

MicroCare offers extensive technical assistance to minimise disruption during the fluid transition. The company's Critical Cleaning Lab, staffed by expert chemists, conducts contamination analysis, performs cleaning tests on customer components and helps optimise cleaning techniques for optimal results at the lowest cost per clean.

For more information or to discuss which Tergo fluid best fits your needs, contact MicroCare today. Plan your transition now to avoid supply shortages and ensure your operations continue smoothly with the trusted cleaning performance of MicroCare Tergo cleaning fluids.

For more information about MicroCare, LLC and its innovative cleaning solutions, visit: www.microcare.com

MicroCare, LLC, headquartered in New Britain, CT, is a rapidly expanding global company. Since its establishment in 1983, MicroCare has been at the forefront of manufacturing environmentally progressive fluids and tools for critical cleaning applications. These products cater to a wide array of industries, including electronics, metal finishing, transportation, telecommunications, medical device manufacturing and medical/dental/veterinary infection prevention.



Complementing its product offerings, MicroCare boasts a resolute team of chemists and technical engineers committed to helping companies in using these fluids safely, effectively and economically.

With an ISO 9001:2015 registered quality system, MicroCare maintains a commitment to continual improvement and product expansion. The company houses full research and development labs in Connecticut and Colorado, USA, supporting innovation and advancement in its product range. In addition to its manufacturing facilities and global logistics centres in Connecticut and Colorado, MicroCare also operates facilities in the UK and Singapore.

Its portfolio encompasses renowned brands such as MicroCare™ cleaning fluids, Sticklers™ fibre optic cleaners, MicroCare Medical™ lubricating fluids, Spec Clean™ disinfectants and ACID Magic™ water treatments.

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Precision cleaning for a variety of industries

Kemet offer an extensive assortment of cutting-edge cleaning machines tailored to a wide array of industries. As a leading provider of intelligent cleaning solutions, Kemet International offers a comprehensive lineup that encompasses ultrasonic cleaners, advanced spray washers, highly efficient vacuum solvent cleaning machines and state-of-the-art vapour degreasing cleaners.

With a complete turnkey solution to your cleaning requirements, Kemet can help you find the optimal solutions for your needs, whether it's a completely new project or a review of an existing one. Achieving effective and efficient aqueous cleaning can be challenging, requiring a harmonious interplay between chemistry and equipment.

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Ecoclean meets current and future challenges with diversification

Answers to the transformation processes in the industry

The economy is undergoing a transformation that poses challenges for many areas of industry. New products and various megatrends require adjustments to manufacturing technologies as well as to the range of products and services.

Ecoclean GmbH is proactively addressing this change through greater diversification of the solution portfolio for industrial component cleaning and the new business area of hydrogen technology.

Energy transition, sustainability, demographic change, mobility, automation and digitisation and security; these megatrends are resulting in technological and social changes and at an increasingly rapid pace. This development demands increasingly higher flexibility and agility from companies. This is also evident in the field of industrial parts cleaning. Whereas yesterday it felt like the automotive industry was setting the standards in terms of cleanliness requirements, today it is completely different industrial sectors, each with its own specific requirements.

Ecoclean, one of the world's leading suppliers of equipment and systems for industrial component cleaning, surface treatment and automation, is responding to these changes with a future and

market-oriented diversification strategy. The course for this was already set several years ago with corresponding financial and personnel investments. As a result, new solutions for high-tech industries can now be offered in addition to equipment and systems for tasks in the previous industrial sectors, such as the automotive and supplier industry, mechanical engineering, joining technology, the jewellery and watchmaking industry and the aerospace industry.

Cleanliness in the third dimension

This includes, for example, the semiconductor industry and its suppliers. To be able to manufacture ever smaller and more powerful microchips by means of EUV lithography, extremely high demands are placed on the components for the production equipment in terms of purity. In addition to ultra-fine particulate residual impurities in the nanometre range and extremely strict specifications regarding filmic contamination, outgassing rates for organic substances and residual moisture as well as "prohibited" substances/elements play a quality-critical role here. Likewise, stringent cleanliness requirements must be met for vacuum technology components for the UHV, XHV and UCV range, for example in

high-power laser systems, high-tech measuring, and analysis equipment. Precision optics, micro-optical parts and sensor systems, among others for semi-automated and autonomous driving as well as digitisation applications in industry, also require a very high degree of cleanliness for lasting fault-free function.

For these challenging tasks, Ecoclean offers industry and application-specific solutions from pre-cleaning to intermediate and final cleaning connected to or integrated in a clean room. For the design of process and plant technology, the company has its own High Purity Test Centre with a validated clean room and corresponding measurement technology.

Turnkey solutions for medical technology

High cleanliness requirements have always been commonplace in medical technology. With the introduction of the European Medical Device Regulation (MDR), the requirements for cleaning medical devices such as implants, instruments and equipment, as well as for qualification, documentation and traceability of the processes, have become even stricter. In the meantime, the USA Food & Drug Administration (FDA) is planning to



harmonise its quality system regulation with the MDR, so that uniform regulations will apply regardless of market access.

To solve the very different tasks in medical technology in a requirement-oriented, efficient and sustainable manner, Ecoclean not only offers a complete and globally available portfolio of qualified cleaning systems. Cooperation with renowned partners also enable the realisation of turnkey projects with corresponding packaging and cleanroom solutions. Software specially developed for medical technology, RFID technology and audit trail ensure that all specifications regarding

component identification, documentation and traceability are completely fulfilled. In addition, the company's experts provide support with qualification, IQ, QQ and PQ, on request.

Thanks to the company's comprehensive medical technology and regulatory know how, combined with extensively equipped technology centres including a cleanliness laboratory and validated cleanroom, the technically and economically optimal solution can be devised for every cleaning task. It can be easily duplicated for further production sites, which accelerates qualification and commissioning.

Energy source of the future

By entering into the development, manufacture and sale of electrolyzers for the production of green hydrogen and solutions for its use, the company is opening up a new business area. To this end, Ecoclean and the Zentrum für Sonnenenergie und Wasserstoff-Forschung Baden-Württemberg (ZSW) have pooled their expertise in the joint project "EcoLyzer BW". Based on the robust and well-tested system technology for alkaline pressure electrolysis developed by the ZSW and Ecoclean's expertise and

decades of qualification in process engineering and industrial production technology, electrolyzers are designed as a modular system with compact standard modules. With power classes initially ranging from one to ten megawatts, they enable the simple and cost-efficient construction of electrolyzers that can be adapted to a wide range of applications, for example in industry, mobility, energy supply for neighborhoods and storage of regeneratively generated, surplus energy from wind power and photovoltaic plants.

An initial solution in this area was completed in September 2023 with a test rig for alkaline pressure electrolysis. It will make it possible to test and validate electrolysis stacks with an output of up to 500 kW and a diameter of 1,200 mm.

Through this diversification strategy, Ecoclean is helping to meet the challenges associated with disruptive developments as well as various megatrends.

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Cleaning solutions from Layton Technologies

Layton Technologies design, manufacture, test, install and support quality precision ultrasonic critical cleaning and drying equipment for manufacturing and component cleaning.

The company supplies a wide range of equipment from parts washers, small bench top type ultrasonic immersion tanks through to more complex designs.

From multi-stage aqueous ultrasonic cleaning equipment and passivation lines, low emission sealed solvent vapour degreasers, low flash point solvent machines to all types of dryers including forced air dryers, vacuum and solvent vapor dryers.

All of its equipment is based on a standard platform which can then be developed to meet the simplest or most complex critical cleaning processes. Its expertise lies in its ability to identify, understand and remove risk for its customers to ensure that the decision to invest capital in critical cleaning and drying equipment and processes, which are critical to continued business success, are the correct ones.

Layton can supply ready-made equipment off the shelf but the majority of clients are

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looking for something more substantial. For example, they are looking for equipment which can be customised to their particular process requirements without exceeding their budget constraints. They are also looking for support with the validation of the equipment including FAT & SAT together with installation and operator training. They also need on-site service and support in the long term. They may well be looking for assistance in establishing how to clean or changing the way they clean their products or for interim contract cleaning of their products either in the short or longer term.

As manufacturers of all types of precision component cleaning equipment, Layton Technologies clients are fully aware that their manufacturing process is wholly reliant, at various points, on some form of wet process. As such, they are aware of the essential need for a manufacturing partner who is mindful of all aspects of this process for their business sector not just the process itself but also able to anticipate the potential risks involved and be able to deliver yield improvements, consistency, reliability, traceability and process validation as well as being able to meet the stringent requirements of regulatory bodies.

The company can demonstrate significant benefits experienced by many of its clients through innovative solutions which have delivered increased speed to market of new products, increased profitability, rapid investment returns and improved product quality.

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ActOn Finishing introduces next-generation Centrifugal Disc Finishing Machines

ActOn Finishing, a UK leader in surface finishing technology, is proud to unveil its latest range of Centrifugal Disc Finishing (CDF) machines. Designed to deliver exceptional surface quality, these machines offer unmatched efficiency, making them ideal for industries requiring high-quality surface preparation, such as automotive, aerospace, medical, and precision engineering.

The new CDF range provides faster finishing times, thanks to its high-energy processing. This makes it an ideal solution for companies seeking to enhance production efficiency while maintaining exceptional surface quality. By leveraging centrifugal forces, these machines are capable of processing delicate parts, achieving superior finishes on complex geometries and hard-to-reach areas without damaging the components.



Key features of the new CDF machines include:

- **Enhanced productivity:** optimised for both small and large batch processing, the machines offer greater flexibility in production.
- **Automated control system:** the user-friendly interface allows for precise control of finishing parameters, improving consistency and reducing manual intervention.
- **Compact design:** space-efficient machines that integrate seamlessly into production environments.
- **Sustainable operation:** energy-efficient designs and compatibility with ActOn's media and compounds contribute to reducing operational costs.

"At ActOn, we continue to push the boundaries of surface finishing technology.

Our new range of CDF machines allows manufacturers to achieve faster processing times, superior finishes and greater flexibility in production," says Sid Gulati, managing director of ActOn Finishing. "We're committed to offering cutting-edge solutions that improve both productivity and product quality across a variety of industries."

Each model in the new Centrifugal Disc Finishing range is engineered to deliver outstanding surface quality, reduce cycle times and provide maximum flexibility in processing parts of different sizes and shapes. The fully automated systems offer precise control over finishing parameters, reducing manual intervention and ensuring consistent, repeatable results. The new range includes the following models:

DT Standard Series

A versatile machine perfect for processing both small, thin components and larger parts up to 150 mm. With its reduced processing time, it is ideal for small to medium batch sizes, providing exceptional results while increasing throughput.

DTB Series

Designed for heavy-duty applications, including steel ball burnishing, the DTB Series features a robust construction and high precision mechanics. It excels in demanding environments, ensuring superior surface finishes that enhance the quality and durability of metal components.

DTIS Series

Compact yet efficient, the DTIS machine features a built-in workpiece separation system. After processing, the bowl tilts

forward, allowing finished parts to be separated from the media using a vibratory screening unit. This streamlined process ensures easy operation and maximum efficiency, preparing the media for the next cycle.

DTVS Series

Equipped with a vibratory separator, the DTVS Series allows for seamless separation of components and media at the end of the finishing process. The bowl tilts forward for easy unloading, while undersized media is collected into a tray for further use. This system is designed for efficiency and ease of operation.



DTA Series

Renowned for efficiency, the DTA Series offers high-energy, fully automatic processing for large work batches. By integrating simultaneous processing and workpiece separation, this model minimises machine idle time and maximises productivity, making it ideal for operations requiring speed and precision.

DT2A Series

Optimised for large-scale production, the DT2A Series includes two processing bowls with individual loading units. This fully automatic machine excels in handling large batches with simultaneous processing and separation, ensuring minimal idle time and customisable operations for various industrial requirements.

To learn more about ActOn's technology and finishing process, contact the team at: sales@actonfinishing.co.uk. You can also request a Free Trial by visiting: <https://acton-finishing.co.uk/free-trial>

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Wet blast finishing machines for round shank tool manufacturers, re-grinders and coating centres

Vapormatt have developed three automatic wet blast finishing machines for round shank tool manufacturers, re-grinders and coating centres. All three machines clean, deburr and finish tools in a single operation, dramatically reducing tool handling costs.

Finishing processes include edge honing, or rounding, cutting edges for improved durability, longevity and to produce the ideal 'chip,' creating the desired final finish on the tool, creating the perfect surface for PVD and other coatings, removal of PVD droplets and other coating imperfections and peening coatings for increased durability.



Round shank tool before and after image.

Oncilla

The Oncilla automatic wet blasting machine is designed for premium tools where highly accurate process control and automation ensure an extremely high-quality finish every time.

The robotic operation allows for one piece at a time to be processed so the wet blasting recipe of abrasive media, water and air pressure can be refined, along with other controllable variables, for the perfect finish on the tool's surfaces and cutting edges.

An optional additional blast chamber allows for two finishing processes, for example, preparation for coating and edge honing, to be completed in one operation. Enhanced drying and other options can also be configured.

Oncilla Cub

The Oncilla Cub operates in a similar way to the Oncilla but has a fixed specification with one blast zone and basic rinsing and drying to help make it a lower cost solution. The Cub has a smaller footprint too, making it a great choice if available floor space is limited.

Puma + Vertical

The automatic Puma + Vertical wet blasting machine features a turntable with multiple satellites around its circumference, up to 42. Each satellite holds a tool, so multiple tools can be processed at the same time, making it a highly productive machine. The automated vertical action of the blast head and rotation of the satellites ensure complete 360° finishing. The Puma + Vertical is another machine with a compact footprint.

To learn more about wet blasting applications and their related benefits for round shank tool manufacturers, re-grinders and coating centres and to learn more about the automatic Oncilla, Oncilla Cub and Puma + Vertical wet blasting machines, visit:

vapormatt.com/industries/round-shank-tools

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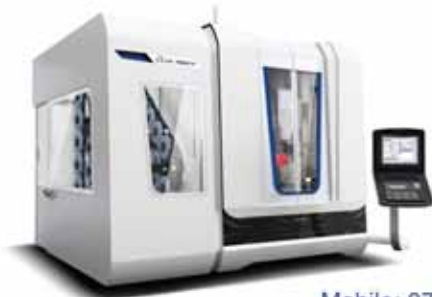
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