GRINDING & SURFACE FINISHING
FEBRUARY 2024

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GRINDING & SURFACE FINISHING

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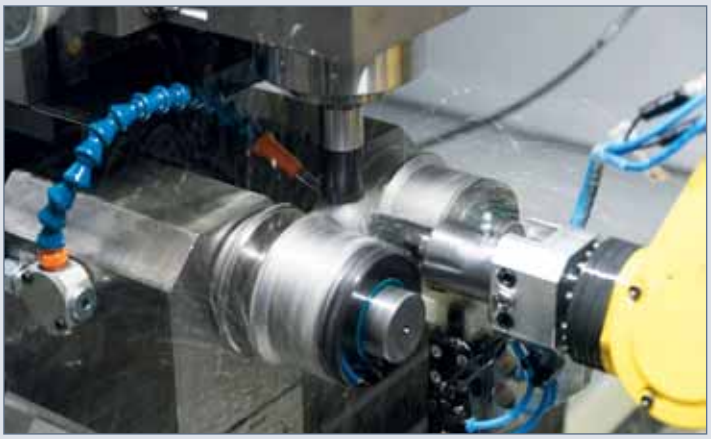
Master provides the complete solution for grinding and finishing with new machinery partnerships

Master Abrasives has been serving industry worldwide for many years with the extensive range of abrasive and polishing products within its portfolio. It has always excelled in developing solutions for the toughest application problems and aiding customers in achieving optimum productivity by providing the right tool at the best price. This has been true across a broad spectrum of industrial market sectors and application areas, from precision grinding to hand deburring and finishing. In industries as diverse as aerospace and medical, through to foundries, in fact anywhere where metal needs to be removed or finished, Master Abrasives has either offered or developed an effective solution.



This year, its profile continues to grow in a strategic and methodical way. The recent addition of MVK micromotor tools has opened up some significant opportunities in being able to offer customers potential energy savings since these tools are a lot more cost effective to run than pneumatic tools and complement the abrasive range offered by Master Abrasives.

The most recent strategic development within Master is its move into capital equipment. With its advanced knowledge of grinding, the move to sell grinding machinery and equipment has been beneficial to both Master and its customers.

Managing director Paul Batson explains: "We now have an impressive and carefully selected range of quality grinding machines in the portfolio which started with a full range by Micromatic Grinding Technologies, ActOn's vibratory finishers and surface grinders by Alex Machine Tools. Last year, we added three new partners each with their own advantages: UVA LIDKÖPING, Supfina and G&N Precision and, entering 2024, we can now offer the Rosa Favrettro range of grinding machines. These partnerships mean we can offer not only the consumables for a complete solution for grinding, superfinishing and polishing application but also the machine tools and hence continue to give a complete solution for industry."

Master Abrasives will be exhibiting its complete grinding and finishing solutions at MACH 2024. Visit the experts on **Stand 430** in **Hall 6** to see some of the machinery and consumables available, including grinding machines and equipment from Micromatic, Supfina, KW Spindles and new partner Rosa Favretto.

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Knowledge Hub initiative to be core theme of MACH 2024

Reversing UK manufacturing's poor record for adopting new technology will be tackled head on at MACH 2024. The Manufacturing Technologies Association (MTA) has made it its mission to spearhead growth by using its flagship event to launch its new Knowledge Hubs initiative.

The programme showcases the latest technology to exhibitors, helping manufacturers learn more about the potential offered by such technology, as well as when to adopt it and how to implement it to best effect.

The initiative has been handed a major shot-in-the-arm with the announcement by chancellor Jeremy Hunt of £4.5 billion of funding to support advanced manufacturing. The funding will directly benefit several of the exhibition's key themes, especially energy efficiency, where £960 million has been earmarked for clean energy manufacturing through a Green Industries Growth Accelerator.

The MTA, which organises the MACH event on behalf of the engineering-based manufacturing industry, has been campaigning for greater adoption of new technology for some time.

It will expand upon this at MACH 2024, which opens its doors at the NEC in Birmingham on 15th April, by explaining that implementing latest techniques in manufacturing processes is the fastest way to boost the UK's output.

Knowledge hubs

The focus for this will be a series of new Knowledge Hubs. These will focus on educating manufacturers in when and how to adopt new technologies. The hubs, which will have dedicated stands within the various exhibition zones, will each focus on a particular type of technology: Automation and Robotics; Data and Artificial Intelligence; Energy Efficiency; Additive Manufacturing; Tooling.

In recognition of the importance being placed on these hubs, each is being managed by one of the specialist centres from the High Value Manufacturing Catapult, such as the Manufacturing Technology Centre (MTC) and the Advanced Manufacturing Research Centre (AMRC). The Catapult network is recognised for the cutting-edge research and development work being conducted at its various centres.

The network collaborates with thousands of innovative businesses across a wide range of sectors, including manufacturing, space, health, digital, energy, transport, telecoms, the urban environment and many others.

The MTC at Ansty Park, Coventry, is one of the largest public-sector investments in UK manufacturing, with impressive facilities proving innovative manufacturing processes and technologies in an agile environment.

The AMRC, which is spread across several sites in Yorkshire, works with companies of all sizes, including SMEs, start-ups and large-scale manufacturers to help them improve their productivity and save time, money and energy. The Factory 2050 facility in Sheffield combines a range of technologies including advanced robotics and automation.

Grinding & Abrasives Zone

Grinding and abrasives play an integral part in many industrial processes and, as such, it is fitting they should have their own platform at the UK's national exhibition for engineering-based manufacturing. Industrial grinding enables objects to be precisely sharpened or worn down to exact specifications, making it a highly desirable process for many sectors. Industrial grinders work by using a powered abrasive wheel to grind away excess material from the edges or flat surfaces of objects and components. Different types of abrasives allow for precision detailing, some of which might not be available in mass production techniques.

Many of the varied array of industrial grinding machines and abrasives will be on display in the zone. The British Abrasives Federation is the sole UK accrediting training body for the safe use of professional abrasives. It also represents a range of abrasives manufactures and distributors present in the UK, giving them a voice on the European and global abrasives stage. The Grinding & Abrasives Zone will be located in Hall 6.

Surface Finishing Zone

Surface finishing encompasses a broad range of industrial processes, each designed to change the surface of a manufactured item for whatever is required to suit a specific process. The means to achieve this are served by an array of machines and components, many of which are on display in this zone.

At MACH 2024, the Surface Finishing and Component Cleaning Zone will be also located in Hall 6. It is an ideal location to meet new customers and network with industry experts.

MTA
Tel: 020 7298 6400
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www.machexhibition.com

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machexhibition.com

Master Abrasives to exhibit grinding solutions with machinery partners

MACH 2024 will be an excellent opportunity for Master Abrasives to focus on its machine tool offering to the UK industrial marketplace. Its stand will showcase the company's offering.

Master Abrasives' roots lie in the application and sale of consumable abrasive tools used for metal removal and polishing, however, over the past few years it has developed a strategy to offer even more of a "complete solution for industry" by building a solid grinding and finishing machine tool offering. This portfolio includes grinding wheels, dressing systems, grinding machines, superfinishing units, coolant nozzles, measuring equipment and introduces the latest additions to the family: the range of surface grinding machines from Rosa Ermando machine tools, based in Italy.

The stand will feature the CNC grinder PLUTO-18 - specially designed by Micromatic Grinding Technologies to focus on compactness, high-performance and providing an economical grinding solution. It is best suited to produce highly accurate small components and can perform both plunge and traverse grinding operations. Visitors will see the machine cycle and be able to ask experts on the stand about its capabilities and other application queries.

A Rosa surface grinder will be displayed by Master Abrasives as the new agent in the UK and Ireland. The team will be introducing a representative from the Italian manufacturer to visitors. Additional representatives from Micromatic and Supfina will be available to discuss application requirements, so Master is encouraging any visitors with general or specific application enquiries to make an appointment and bring along their components or problems for experts to assess and offer a potential solution.

Another part of the display will be Supfina's tape finishing attachment, just one example of the many high-quality products the German manufacturer offers. Johannes Weiss from Supfina is travelling to support the team for part of the MACH week and can discuss the potential for any of Supfina's broad product range, whether you're flat finishing, fine grinding, double disk grinding, superfinishing or looking for high-tech automated solutions.

To complement the comprehensive machine tool portfolio, Master is exhibiting its established range of high precision abrasive grinding wheels, available in conventional, ceramic and Superabrasives. Visitors will find answers to all application requirements, from high stock removal to consistent part quality. Superfinishing stones, wheels and tapes, also known as micro films, are part of its abrasive offering, ensuring complete and cost-effective solutions for customers.

Ian Meredith, applications engineering manager and stand manager for Master Abrasives comments: "This year at MACH we have a wider range of machinery and equipment available than ever before and our expertise is even stronger. This is why we've gone for a larger stand and made sure we have a prominent location on a main aisle in Hall 6. Our team will be ready to answer any application questions and arrange for a full grinding demonstration back in Master Abrasives showroom."

The Master Abrasives team at MACH is led by Ian Meredith who has many years of experience in a range of applications. Kelly Warrington, customer services team leader, will also be offering support; her role involves providing vital assistance from the office for applications engineering. Other Master representatives attending include Paul Batson, managing director, Andy Wright, business development and sales manager, and other members of the marketing team.

Some more partners promoted on the Master stand this year to improve manufacturing productivity include Q8 Oils for coolant, KW Abrichttec GmbH for

spindles and spindle repair and measuring equipment by Innovative Automation Products. Master Abrasives can also put visitors in contact with an experienced company if finance options need to be considered.

Companies involved in grinding are invited to meet the specialists Master Abrasives will have present at MACH to discuss their grinding issues or aims to improve their processes.

To avoid missing the opportunity, visitors should get in touch with Master to arrange their appointment ahead of time by emailing: **grindingmachines@master-abrasives.co.uk** or discussing further with Ian Meredith. Whether you're looking for improved cycle times, more consistent part quality in sensitive parts, or have other grinding and finishing goals, the Master stand will have the experts on-hand to answer your questions.

Ian Meredith concludes: "We have a dedicated applications engineering team available to provide technical advice at MACH. We can present a cost-effective, high-productive solution including the machine, the right abrasives, coolant nozzles and dressers for a high-quality finished part."

The stand will feature the PLUTO-18 CNC grinder as an economical, high-performance and compact grinding solution

As the new agent in the UK and Ireland, Master Abrasives' team will be introducing a representative from the Italian manufacturer to visitors

Ian Meredith and Kelly Warrington will offer applications support alongside other members of Master Abrasives' experienced team and visitors from Micromatic, Rosa, Supfina and UVA.

Supfina's tape finisher will be displayed as an example of the many high-quality products the German manufacturer offers

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' remains on much of the product range and services offered by the company in the UK and world-wide.

The tool services department at Master offers repair of all pneumatic and electric tools and services such as airline efficiency

and noise assessments. It also provides solutions to Hand Arm Vibration (HAV) with tool testing in accordance with ISO 5349-2, trigger time monitors or HAV management systems and toolbox talks for the awareness of HAV requirements.

MACH 2024 will be bringing a fantastic array of new technologies, engineering services and machinery demonstrated at the National Exhibition Centre.

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www.master-abrasives.co.uk

Stand: 6-430

Eclipse Magnetics showcases high-performance filters at MACH

Eclipse Magnetics will be showcasing the benefits of its high-performance magnetic filtration systems at MACH 2024.

Eclipse Magnetics' fine particle filtration systems are the most effective means of removing problem ferrous particles from industrial fluids such as coolants, lubricants and wash solutions. They offer significant cost, time and environmental benefits over traditional membrane or barrier filtration methods.

A combination of high-intensity Neodymium magnetic cores and advanced fluid flow dynamics ensures that even the finest ferrous particles are removed from circulation. The resultant cleaner fluids ensure reduced usage of consumable filter media, longer fluid life, reduced maintenance downtime and an improved quality surface finish.

Magnetic filtration systems also help with the journey to "Net Zero" by reducing waste and resultant disposal costs. They can considerably reduce the usage and disposal of contaminated fluids and filtration media.

In addition, the ferrous particles collected can also be reclaimed and recycled.

Featured on the stand will be the wide range of product choices, from the manual clean Micromag for flow rates up to 150 litres per minute up to the Automag Skid, which has an integral automated cleaning and reclaim unit. Multi-Automag units are suitable for flow rates up to 10,000 litres per minute.

An operational Autofiltrex automated clean filter will also feature on the stand to spotlight its simple operation and fine particle performance. Autofiltrex is a cost-effective option for automated, 24/7 operations.

Magnetic filters are now widely used in a vast range of applications, including precision automotive parts, precision steel finishing applications, bearings, precision tools and parts wash systems.

Eclipse Magnetics is part of the world-renowned Spear & Jackson Group. With a 250-year history, the Spear & Jackson Group is now a multi-national organisation with divisions covering garden tools, Bowers Group metrology equipment, Robert Sorby woodworking tools as well as magnetics.

Eclipse Magnetics Ltd
Tel: 0114 2250600
Email: info@eclipsemagnetics.com
www.eclipsemagnetics.com

Stand: 6-36

New ASYS dBELL monitoring system for workplace dust, fume and noise

The ASYS dBELL 100 workspace monitor provides the health & safety professional with an incredibly easy to use system that can be adapted to meet the requirements of most workplace environments. Easy to set up and configure, simply wall-mount the dBELL 100 integrated area monitor and gateway and create an ASYS Cloud account to view metrics, trends and easy to read weekly reports on your phone, tablet, or computer. Optionally, connect ASYS dBELL personal exposure dosemeters or remote monitors.

At the heart of the dBELL system are calibrated, laboratory grade sensors making reliable and traceable personal exposure assessments possible. Metrics include TVOC (ppm), PM2.5, PM4, PM10 and occupational noise exposure, LAeq, LEX,8h, LCpk, Dose, to regulatory standards.

Armed with quality baseline data, it is possible to deploy mitigation strategies and assess subsequent effectiveness. Ongoing continuous area monitoring forms a critical alert mechanism to any unexpected shifts in baseline conditions or unusual trends during work and process operations.

Benefits include:

- Deploy flexible tools for conducting workplace noise and airborne hazard studies.
- Assess mitigation strategies and on-going monitoring programme.
- Promote a safe, healthy, and productive workplace environment today, every day.
- Make it easier to demonstrate compliance to regulatory guidelines and standards.

National Photonic was established in 2016 to serve the needs of environmental lighting measurement and analysis. In 2018, it commenced a partnering initiative with ASYS Corp. to develop a range of environmental monitoring solutions for occupational health & safety. It is proud to support the ASYS product portfolio, providing the health & safety professional with a comprehensive range of scalable tools to obtain a baseline picture of noise and air quality in the workplace. National Photonic is committed to a belief in fostering trusted collaborative relationships with its customers, its suppliers and with its employees.

The ASYS dBELL system will be on display at MACH 2024.

National Photonic Ltd
Tel: 01463 711890
www.nationalphotonic.com

Stand: 19-510

Sharmic Engineering to showcase vibratory finishing solutions at MACH

Sharmic Engineering, a leading provider of vibratory finishing solutions, is excited to be exhibiting at MACH 2024, the UK's premier manufacturing technology exhibition. At the show, Sharmic will showcase its latest innovations and comprehensive product line-up of vibratory finishing machines, vibratory bowls, tubs and high-energy machines, automation systems and consumables.
Its vibratory finishing solutions are designed to provide an efficient and effective way of deburring, polishing and finishing various types of metal, plastic and ceramic components. The company's machines are versatile and flexible, allowing manufacturers to process a wide range of parts and materials, from small and delicate components to large and heavy parts.

Sharmic is committed to providing its customers with innovative and cost-effective solutions that meet their specific production needs. The company's team of experienced technicians and consultants will collaborate closely with customers to assess their unique requirements and recommend the best solution to help them achieve their desired outcomes.

In addition to its products, Sharmic also offers a range of services, including machine maintenance, repair and refurbishment, as well as vibratory media testing and process development services. The company is committed to providing its customers with exceptional customer service and support throughout their journey.

At MACH 2024, Sharmic will be showcasing its latest vibratory finishing technologies and services. The company will also be available to answer questions and discuss how its solutions can help manufacturers improve their production efficiency and quality.

To learn more about Sharmic Engineering and its vibratory finishing solutions, visit the company's website at ***www.sharmic.co.uk***

Sharmic Engineering is a reputable provider of vibratory finishing solutions that caters to various industries worldwide. With its commitment to excellence, it offers an extensive range of products and services to provide you with the highest quality materials and machinery that meet your specific requirements.

Its core mission is to help you achieve unparalleled results in your production process and bring your products to a new level of finish and quality. It takes pride in its expertise in vibratory technology and its dedication to providing innovative and cost-effective solutions to clients, from small to large-scale production facilities.

The company's dedicated team of engineers and technicians possesses an unrivalled depth of experience in the industry. With each passing year, it has enhanced its expertise, incorporated the latest technological advancements and refined its manufacturing techniques. This continuous improvement has allowed it to stay ahead of the curve and maintain its standing as a premier provider of compounds.

As a family-run business, Sharmic Engineering prides itself on the personal touch it brings to every customer interaction. Its clients are not just numbers; they become part of the extended family. It prioritises building lasting relationships with its customers, ensuring it understands their unique requirements and offering tailored solutions that meet their needs.

Sharmic Engineering Ltd Tel: 01299 822135
Email: sales-enquiries@sharmic.co.uk

Stand: 6-414

Advanced Grinding Solutions announces record machine sales for 2023

Rollomatic grinding machine with new Comat filter system.

Advanced Grinding Solutions (AGS) has confirmed that 2023 was its best year ever for machine sales, with orders totalling some £1.8 m being received in December alone, and a total order intake approaching £14.5 m for the year. Leading the way was Rollomatic with large numbers of machines sold to the UK cutting tool industry. Various manufacturing companies located in Ireland also ordered Rollomatic grinding machines for manufacturing medical parts and special tooling for the mould industry.

Chris Boraston, MD at AGS, explains: "The UK remains a large market for Rollomatic tool grinding machines with more rotary cutting tools manufactured here on Rollomatics than on all other brands put together. 2023 was a remarkable success story for Rollomatic as mainstream UK manufacturers of end mills, drills, burrs and other such tools purchased more machines than ever before. Rollomatic also succeeded to supply a number of its NP machines for the blank preparation, cylindrical grinding, of cutting tools and for more specialised tools for the mould & die industry.

The Rollomatic NP machines are used by many UK cutting tool manufacturers to quickly and easily cylindrically grind carbide and HSS tool blanks to diameter and form shape rather than to do so on multi-axis tool grinders, whereby the blank preparation grinding process on those machines takes considerably longer, is more expensive and is generally not as accurate. Previously, when there was a need to increase capacity, many companies ordered more multi-axis tool grinding machines. However, that can compound the problem of lengthy cylindrical grinding times as those machines cannot grind anywhere near as efficiently as the NP variants. More tool grinding companies are realising that using NP machines really does release many hours of manufacturing time from the front-end grinding cells thus streamlining production due to the cycle time savings that are made. The last week of December rounded off a fabulous year in the UK for Rollomatic with an Irish manufacture of drills purchasing its first Rollomatic grinding machine.

It was also extremely pleasing for us to sell more 6-axis Rollomatics for the manufacture of carbide inserts. The Rollomatic 630XW grinding machine has a general working range of grinding tools from 0.1 mm to 20 mm in diameter, 3.9 mm to 25.4 mm IC dia on inserts, has a high speed multi-pallet pick and place loader with positions for up to 1,360 tools as standard, and as standard a 6-position grinding wheel changer holding up to 24 wheels. The ultra-efficient synchronous grinding spindle motor provides constant rotation speed and torque regardless of the

Loader on a Rollomatic laser machine.

load on the motor and this combined with the latest linear motor technology provides benefits such as an enhanced surface finish and reduced maintenance costs. The oil that's used for cooling the linear motors is the same as the coolant oil; this ensures constant thermal stability during production. Machines may be specified with an optional retractable grinding wheel dressing unit with an in-built Dittel acoustic sensor and are equipped with a touch probe that determines the exact location of the insert blank after clamping; this in order that the software can grind the tool geometry according to the virtual centreline of the blank. This ensures that a run-out of just two microns can easily be achieved. As with all Rollomatic grinding machines it comes with the industry leading three years parts and labour warranty that is provided by Rollomatic at no additional cost and also free of charge software and free unlimited software updates for life.

2023 also saw the UK sale of another of Rollomatic's very special laser machines for the manufacture of PCD tools. The Rollomatic LaserSmart®810XL is engineered with cutting-edge laser technology, ensuring unparalleled precision in machining operations. Whether it's intricate special low batch production or high-volume production, this machine delivers exceptional accuracy. Embracing the Industry 4.0 ethos, the machine is equipped with advanced automation. This not only enhances productivity but also reduces the margin of error, making it a reliable choice for modern tool manufacturing facilities. Designed for the production of cutting tools in ultra-hard materials and featuring six simultaneously interpolated CNC axes, the LaserSmart810XL is ideally suited for machining tools up to 300 mm, 12", in diameter, 350 mm, 14", in length and up to 15 kg, 33 lbs, in weight. An automatic robot with a capacity of 30 parts is included as standard.

The LaserSmart810XL is the perfect solution for machining ultra-hard tools used in the automotive, aerospace and woodworking industries.

To summarise, Rollomatic sales to the UK and to Ireland for 2023 were at a record level with machines of every single type across the range being sold including 5- and 6-axis tool grinding machines, NP30 and NP50 cylindrical and special purpose grinding machines and laser machines as well."

Tschudin also enjoyed record UK sales of its centreless grinding machines with several more being supplied into the UK and Ireland comprising of multiple Cube machines and a proline400 machine. The Tschudin Cube centerless grinding machines enable end users to achieve significant productivity gains and the machines particularly quick and flexible changeover times help to minimise machine downtime. What sets the Cube machine apart in particular is its very small size and radical open design for easy access. Users only need access to the rear of the machine to perform maintenance and servicing tasks, which means that several machines can be positioned together without any gaps. The Tschudin Cube centreless grinding machine uses Tschudins patented W-axis which has the workrest blade mounted onto its own CNC axis that allows for parts to be loaded to it outside of the grinding area making loading efficient, fast and very safe. Traditional centreless grinding machines require parts to be loaded to a fixed work-rest blade that sits inside of the machine between the grinding wheel and control wheel making loading difficult, more expensive and sometimes unsafe. This also makes changeovers more complex and therefore lengthier. The Tschudin machine overcomes all of these issues and claims to be the world easiest and fastest centreless grinding machine to set up. Linear direct drives on the X, U and W axes ensure flexibility and productivity with the Cube being specifically developed for the grinding of small components with part diameters of up to 20 mm.

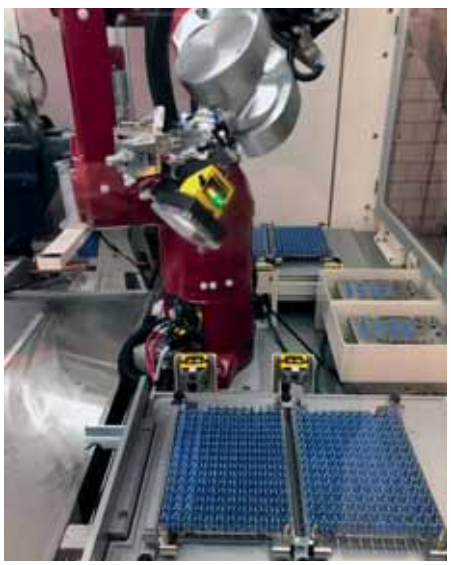
The Tschudin proLine400 machine sold and supplied by AGS in 2023 was

Tschudin Cube 350 grinding machine.

Superfiltered oil on a Comat system.

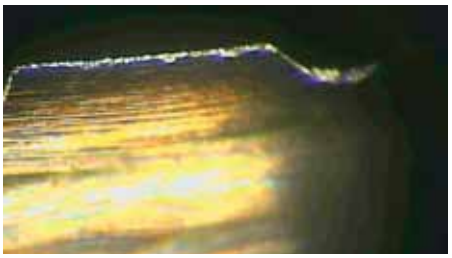
manufactured in a record timeframe after a UK customer needed a new machine extremely quickly and Tschudin literally worked night and day to make sure the machine was there when needed. This is a 4-axis machine with a capability to plunge grind parts up to 150 mm diameter and 280 mm long and weighs some 10 tonnes. The proLine centreless grinding machine also has a patented fourth CNC-axis for the vertical movement of the regulation wheel. The work rest and dressing tool of the regulation wheel are fixed in position at the height of the grinding wheel. This feature means that the machine can be auto corrected to take into account wheel wear and ensures that no matter what the wheel wear is the grinding point can be kept constant at all times.

Most of the machines sold by AGS in 2023 were equipped with Comat Superfiltration systems. Comat designs and manufactures super-filtration systems that deliver a filtration quality of under 3um throughout the entire working cycle thus maximising the quality of parts produced on machine tools while minimising lifetime running costs and maintaining maximum coolant consistency. Comat systems can be customised to meet specific client's needs allowing for maximum efficiency of the filtration process and oil is actually filtered to a better quality than new unused virgin oil on Comat systems. The remote monitoring of the performance of its filtration systems from its HQ near Milan in Italy, ensures effective after sales support with systems being monitored in real-time during manufacturing processes and customers filter systems fine-tuned by Comat to ensure that the optimum filtration quality is obtained at all times. Today, more than 20,000 machine-tools use Comat Filtration Systems, with more than 20,000,000 litres of metal working oil super-filtered every single day. Comat operates globally and has a 30-year history in developing the most advanced filtration systems that are available.

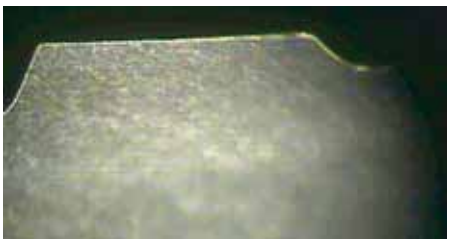


Mass deburring of parts on an MF machine for the automotive sector.

The final machine sale for AGS in 2023 was for a Magnetfinish deburring machine for the deburring of small pins for a major automotive parts manufacturer. This machine will be equipped with three robots and will automatically deburr and then wash and dry parts before placing back into pallets with an output of some 180 parts per hour. After being produced by a grinding process; parts of all types can suffer from having micro sized burrs. These can impact heavily upon the lifetime of components and cutting tools and can affect their performance. When milling, drilling or tapping at extreme speeds, the resulting



Above: Ground cutting tool edge before processing on the MF machine.
Below: The cutting tool edge after processing on the MF machine.



high temperatures that develop at the cutting edges on tools are the main source for such problems because the tool becomes highly susceptible to wear. The patented Magnetfinish technology addresses this problem. The Magnetfinish process polishes the flutes on all types of HSS and Carbide rotary tools such as endmills, form cutters and drills, provides the perfect conditioning or "edge honing" of the cutting edges, micron rounding of the edge and is also used to polish profiles on taps and coated cutters. The Magnetfinish polishing process of the tools flutes results in a superior chip flow leading to the increased productivity of the tool.

The tools primary cutting edges are machined to allow a defined and reproducible radius of between 3 µm and 50 µm to be created. This edge preparation process can increase the lifetime of tools such as ball nosed end mills by a factor of four and also allows more consistent machining results to be achieved as from using the tools for the very first time. The processing times for cutting tools are extremely fast with the average machining time for smaller tools being in the region of five to 10 seconds.

AGS's principals will be supporting the company on its **Stand 18-328** at the forthcoming MACH show and further information on all of the machines may be downloaded from the AGS website.

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Tel: 024 76 226 611
Email: info@advancedgrindingsolutions.co.uk
www.advancedgrindingsolutions.co.uk

ADVANCED
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FOR
DEMANDING APPLICATIONS

We provide the most advanced technology to the UK's engineering industry, offering the best of Europe's grinding and finishing products, all from one UK partner. Our range of high precision machinery is drawn from Europe's leading machine tool manufacturers, featuring the very latest technological advances in machine tool design and process development.

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Stand 18-328

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sales@advancedgrindingsolutions.co.uk · www.advancedgrindingsolutions.co.uk

Grinding solutions for all types of landing gear

by Claudio Tacchella

The Italian company AZ Spa, based in Thiene (VI), has specialised for over 40 years in the design and construction of a wide range of grinding solutions for the aerospace sector. All highly customisable and fully Industry 4.0 compliant, they are branded as AZ-Aerospace.

"Our grinding machines," states Sarah Pizzolato, marketing director of AZ SpA, "are dedicated to the production, maintenance, repair and overhaul of numerous aeronautical components. In particular, we offer comprehensive grinding solutions for landing gear, main and nose, used in civilian and defense aircraft from prestigious industries such as Bombardier, Boeing, Airbus, Sukhoi, F35 and the NH90 helicopter."

Reverse engineering and digital twin

The design of AZ grinding machines is entirely done in-house through 3D CAD and CAE. The company also adopts state-of-the-art tools that contribute to the digitisation of each manufactured machine. Among these, they use a portable 3D optical CMM scanner, MetraSCAN 3D, produced by Creaform, representing an innovative solution for manufacturing and metrology professionals. Its resistance to vibrations and environmental instability accelerates 3D measurement workflows, thanks to an extraordinary speed of 1,800.000 measurements per second. The scanner is equipped with 15 laser crosses ensuring accuracy and volumetric precision of 0.025 mm and 0.064 mm, respectively, compliant with VDI/VDE 2634, part 3, standards. Blue laser technology proves ideal for glossy and reflective surfaces, while the extendable measurement volume adapts to various part sizes, avoiding movements and ensuring precise results, making it optimal for use on complex parts.

"The portable MetraSCAN 3D scanner," clarifies Sarah Pizzolato, "integrates advanced technology for precise measurement and detailed 3D modelling. It promotes innovation and competitiveness in the development and design process of our products. In particular, the tool offers us the extraordinary ability of reverse engineering to reconstruct customer parts even in the absence of construction drawings. The scanner's versatility also allows us to design customised part carriers. This design flexibility translates into personalised service for our customers, adapting components to their specific needs. A key element is the total compatibility of the generated 3D models that integrate with our in-house CAD system, facilitating the design process and continuous improvement. Furthermore, the entire 3D project of the grinding machines integrates seamlessly with the new Siemens Sinumerik-One CNC system we employ, enabling the creation of a digital twin, an exact virtual representation of the machine and the piece to be ground. The virtualisation of the grinding machine offers the possibility to simulate the process, optimise and refine designs accurately before they are realised, significantly

The AZ AKP range with bed gap has been designed for external and internal grinding of landing gear.

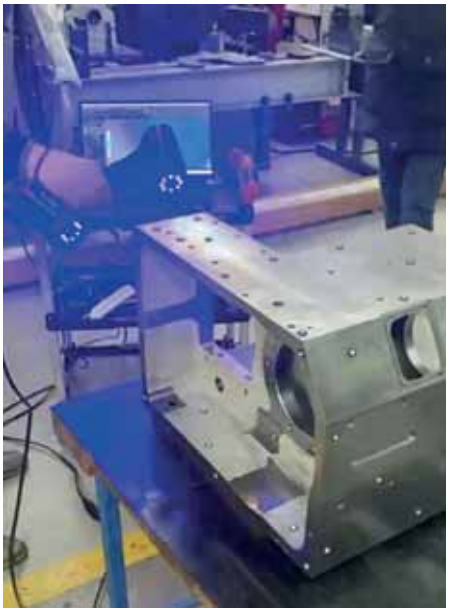
The internal grinding of deep holes on the landing gear is carried out using special electrospindles equipped with various interchangeable extensions.

reducing time-to-market and operating at unprecedented levels of efficiency and precision in our industry."

A comprehensive range of grinding solutions

The innovative solutions adopted on the machinery range from the RUA, RUX, RU and RUG series for universal grinders to more specific grinders like the AKP series for OD and ID grinding for landing gear with a gantry gap, the GSB series for ID grinding for landing gear and the LBC series for orbital grinders for landing gear for external and internal diameters or for heavy asymmetric parts on a rotating table.

Among these models, the AKP series is highly appreciated for operational flexibility and extensive configurability. The AKP model is specifically designed for OD+ID grinding of aircraft landing gear. The front base of the machine is divided into two parts. The gap allows for the rotation of T-shaped landing gears during the grinding phase. The grinding head is available in various configurations, with automatic B-axis rotation of -20/+215° through an integrated torque motor. Grinding wheels in silicon carbide, corundum, CBN and diamond can be used, allowing the grinding of all aerospace materials, particularly those subjected to innovative Thermal Spray techniques, such as H.V.O.F. (High Velocity Oxygen Fuel). Internal ID grinding is carried out using an internal spindle with interchangeable extensions.



The MetraSCAN portable scanner integrates advanced technology for precise measurement and detailed 3D modeling.

Cylindrical and orbital grinding in a single machine solution

At AZ, a special grinding machine with a gap is in the process of realisation, integrating, in a single system, external OD + internal ID + orbital grinding operations, capable of working on all types of landing gear.

"The grinder," concludes Sarah Pizzolato, "is intended for an important customer who needs to work on various parts of Airbus and Boeing landing gears up to the B777 in a single machine. Orbital operations are necessary due to the considerable dimensions of the pieces, which are asymmetric. The solution was a new machine configuration that combines AZ technology used in the AKP series and that of the LBC777 series. The machine, equipped with two grinding heads, performs OD and ID operations with the first grinding head and has a second carriage grinding head that moves parallel on a dedicated base. The second carriage has a planetary head for orbital grinding."

All the grinding machines produced by AZ are governed by latest generation CNCs and have numerous integrated process monitoring and control systems.

Thanks to modular design, this special machine configuration can be further enriched, making it possible for both finishing and potentially, even deep-hole turning; all technologies already developed by AZ in the GSB series. AZ Spa will exhibit at the international GrindingHub fair in Stuttgart, Hall H09, where AZ engineers are available to explain all the technical features and provide all information on the new AZ-Aerospace range.

The AZ LBC range features a planetary head for orbital grinding of the external and internal diameters of heavy asymmetric landing gear.

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Precision grinding Inconel knife edge turbine engine seals

In aerospace engineering, precision is more than an ideal to strive for: it's a key factor in the reliability, performance and safety of every component. This project with a leading Tier-1 aerospace industry supplier, known for its complex engine components, highlighted Duval Precision Grinding's capabilities in providing world-class precision grinding services, utilising advanced grinding technology and collaborating with its customers to solve even the most demanding manufacturing challenges.

Duval Precision Grinding were tasked with precision grinding Inconel-based knife edge seals, a critical component for maintaining efficiency in turbine engines. These parts were processed using CNC precision grinding. The plasma-coated knife seals required meticulous handling, ensuring adherence to the highest precision grinding standards.

The problem with the seals was initially discovered during a routine quality control check. Precision measurements revealed that the parts were out of round, a condition not immediately visible but critical to the engine's performance. This distortion, known colloquially as the "potato chip effect," was traced back to prior machining operations. While accurate in isolation, these operations induced stresses in the material, causing it to warp like a potato chip; flat, yet subtly distorted.

The cause of this distortion was twofold: First, the inherent properties of Inconel, a material notorious for its challenging machinability and tendency to warp under stress. Second, the machining process had inadvertently introduced uneven stresses across the component. This was a significant cause for concern because even the slightest deviation from the true roundness could lead to inefficiencies and force the parts to be scrapped and remade.

In seeking solutions, the team contemplated several potential avenues. One option was to revise the initial machining process to reduce stress introduction. Another solution that was explored involved employing advanced grinding technology to compensate for and correct the distortion.

The solution came through collaborative innovation and grinding process optimisation. General manager Ray Provencher worked closely with the customer's engineers, employing advanced grinding technology and high-precision tools. This collaboration led to a new methodology in the CNC precision grinding process for this component, improving the stability and accuracy of the parts in their operational state.

The first step involved working closely with the customer's engineering team to revisit the initial machining process. By adjusting the machining parameters, the team aimed to reduce the stress introduction in the Inconel material. This revision required a delicate balance to maintain the precision of the machining while minimising the introduction of internal stresses that could lead to distortion.

Duval Precision Grinding leveraged its advanced grinding technology to address the distortion specifically. It employed a combination of CNC and manual precision grinding techniques tailored to the unique challenges of the distorted Inconel parts. High-precision grinding tools and carefully calibrated machinery were used by experienced grinders to gently remove material and correct the roundness without adding further stress to the part.

A specialised fixture was designed to address the issue of the parts distorting once released from a constrained state. This fixture mimicked the operational state of the parts more closely, allowing the team to grind the components in a condition that closely resembled their final installed state. This approach helped to mitigate the spring-back effect once the parts were released from the fixture.

Throughout the process, the team implemented rigorous testing and quality control measures. Each step of the revised process was closely monitored and parts were frequently checked for accuracy and distortion. This iterative approach ensured that each adjustment was effective and that the final product met the stringent aerospace precision standards expected by the customer.

This solution effectively addressed the challenges posed by the Inconel knife edge seals. By combining revisions to the machining process, advanced grinding techniques, specialised fixture design and rigorous quality control, Duval Precision Grinding was able to prevent the distortion. This approach solved the immediate problem and set a new precedent for handling similar challenges in the future.

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Customised grinding solution for tap manufacture meets demand in aerospace market

Projected global demand for products such as taps, dies and thread forming tools is anticipated to rise from 2.75 billion to 3.42 billion over the next five years, with a Compound Annual Growth Rate (CAGR) of 5 percent. The high-tech industries, particularly automotive and aerospace sectors, are expected to sustain a significant portion of this growth, accounting for 16 percent of the overall market demand. Additionally, there is an expected increase in demand from medical applications, which is projected to contribute another 7 percent to the total market share within the next five years.

Given the impetus from these high-tech markets, tap producers will need to enhance their designs to meet the escalating market share of specialised materials. Notably, composites, expected CAGR of 8.5 percent and super alloys, expected CAGR of 7.5 percent, are anticipated to experience the most substantial growth, necessitating the development of tailored designs in response.

With the boom of automotive and aerospace applications, ANCA sees great potential for the future of the high-end tap market. ANCA's years of experience working with tap manufacturers has given the company valuable insights into the industry challenges, making it well-equipped to offer the right solution. The TapX is a machine specifically designed and integrated with automation to ensure high productivity in mass production. As a one-machine solution with single clamping, it guarantees substantial benefits for manufacturing standard and special taps by eliminating the traditional requirement of needing several grinding machines.

Flexible, precise and efficient, one-stop tap grinding is simply unimaginable on ordinary grinding machines, as high-speed steel taps, carbide taps, micro taps and non-standard taps require different and detailed solutions. The difference lies in the performance of a single grinding process, a parallel grinding process or a combined grinding process. In addition, several grinding machines are usually required, each performing a specific tap grinding task. TapX integrates the various processes into one machine.

Flexibility is a key feature of the tap grinding process on the TapX. The specially designed machine and powerful ToolRoom software ensure a vast range of tap types and sizes can be designed and manufactured in one setup. Combine this with the benefits of quick changeover time and it's not hard to see how TapX can increase productivity and reduce lead times.

The production of taps in different materials is an example of how this highly flexible solution can contribute to productivity. Taps are mainly made of HSS and carbide materials, which require high precision, surface finish and reliability for grinding. TapX is suitable for the complete production of HSS or carbide taps. With a single setup, it can grind various types of standard taps, micro taps and non-standard taps. Its excellent rigidity guarantees repeatable, high-quality results, while its CNC control plus programmable force of the centre ensures reliability of high frequency movements.

The TapX uses ANCA's own LinX motor technology for all linear axes and direct drive technology for all rotary axes. By eliminating all belts, pulleys, and gears, the TapX is not only a more precise machine, but a more reliable one as well.

Although HSS will remain the dominant material of choice, carbide tools are growing in popularity with the increase in thread milling applications and introduction of more exotic materials. Compared with HSS, carbide offers high rigidity, good machining quality and long service life. Consequently, the production of carbide taps presents challenges for machine productivity, accuracy and dressing of special thread grinding wheels.

TapX offers the perfect solution with its single clamping to optimise the grinding process. Combined with greater flexibility in wheel selection and process deployment, this revolutionary solution means more flexibility, reduced costs and increased tap production output. The total setup time for multiple general machines is reduced from three to four hours to one hour for one TapX machine, which significantly reduces lead time for small to medium batch production, urgent order response and customer changes. In recent years, ANCA continues to innovate and has developed a unique solution for dome carbide taps with a wider application. Its superior performance is unmatched in the industry.

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High-precision grinding is an art

Starting a business always involves a certain amount of risk taking. "It's like racing a motorcycle. If you don't want to risk anything, you might give away your chance to win," says Randy Gevers on the subject, the tall company boss of GRT-Tech with the steel-blue eyes and winning smile. For him, it goes without saying that you also need a lot of stamina, technical savvy and passion.

The passionate grinder Randy Gevers knows what he is talking about. Before founding his company GRT-Tech, he was successful in motorcycle racing for years.

High quality is their trademark.

However, his success story does not begin with him, but with his father Antoon Gevers, who not only instilled in his son a passion for engines and technology, but also for metalworking and, in particular, for grinding. Antoon Gevers got the last µm out of every machine and thus helped the companies he worked for during his 50 years of working life to be successful in this realm. The development of moulds for CD presses in 1980 finally cemented Antoon Gevers' reputation in the grinding world.

After years of working as grinders in the same company, the two Gevers' took the plunge into self-employment in 2016, when Antoon Gevers took early retirement. The first machine Randy Gevers purchased was a conventional grinding machine, with others following in short succession.

Fittingly, the first customers came from the KTM world, as the two Gevers' had built up a large network through racing. Their former employers soon placed contract manufacturing orders as well.

Today, customers from the aerospace, medical technology, tool and die and packaging industries trust the Gevers', as do the navy, luxury yacht construction and many more. Among the demanding customers who value GRT-Tech's work are suppliers to the semiconductor industry. "We could theoretically make a living on that alone," Randy Gevers says. "A company shouldn't get into dependencies. It's ultimately the variety of parts that makes the job appealing."

Materials at GRT-Tech range from steel, various stainless steels, brass and copper to ceramics and plastics. Small batches of up to 50 pieces are usual quantities, as well as individual parts and prototypes. Antoon Gevers often manufactures special parts for motorcycles and classic cars that customers entrust to him based on his experience.

The realisation that for the machining of complex workpieces, e.g. for tool and mould making or medical technology, one quickly reaches the limits with a conventional grinding machine came to Randy Gevers after a very short time. For this reason, the move to the current location in 2018 was followed by the purchase of a used high-performance Kellenberger CNC universal cylindrical grinding machine KEL-VARIA. "We had a lot of requests for grinding complex workpieces right from the start," says Randy Gevers. "We could only accept about 10 percent of them. I couldn't and wouldn't continue like that." The decision in favour of a Kellenberger grinding machine was not a difficult one. Antoon and Randy Gevers knew and appreciated these machines from their former employment.

The KEL-VARIA is a predecessor model of

René van der Peet (BMT) has configured the KELLENBERGER 100 together with Randy Gevers.

today's premium KELLENBERGER 1000 series and, like the latter, stands for the highest machining and surface quality. Its high static and dynamic rigidity and stability are decisive factors for high precision and great productivity. Hydrostatic guides in all main axes ensure the highest form accuracies for grinding tasks 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 thus increases productivity.

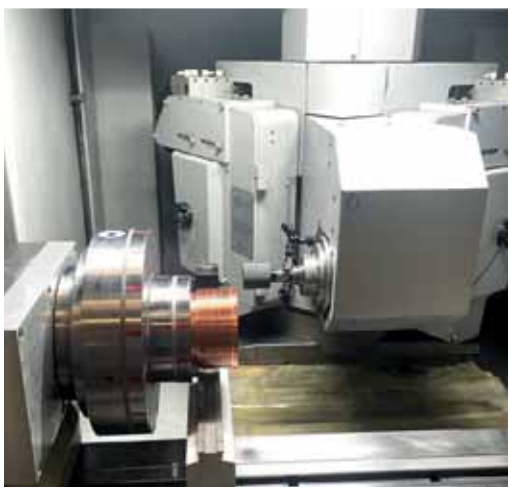
As a result of the good experience, another Kellenberger grinding machine quickly found its way to Heeswijk-Dinther, a KELLENBERGER 100 universal internal and external cylindrical grinding machine. René van der Peet from the sales company BMT Bridgeport Machine Tools, which has represented the Kellenberger, Hardinge and Bridgeport brands, all part of the US Hardinge Group in the Netherlands for years, acted as an advisor. His experience was of great benefit to Randy Gevers in the machine selection process.

The KELLENBERGER 100 is available with centre widths of 1,000/600 mm and centre height of 200 mm and is designed for workpiece weights of up to 150 kg. The high drive power of the grinding wheel ensures 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 machine 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 and one measuring position and a new measuring probe arrangement without swivel mechanism for increased measuring accuracy.

Non-circular grinding of Capto holders.

The variety of workpieces for a wide range of industries makes the work exciting.

Randy Gevers chose the centre width 1,000 mm to be more flexible with part size and a grinding head variant with two external grinding spindles, an internal grinding spindle and a tactile measuring head. The high-frequency spindle, with a speed range of 6,000 to 40,000 rpm, has an internal coolant supply. The machine is equipped with a FANUC 31i CNC control, the matching software is provided by Kellenberger. "I am fascinated by the machine's great reliable accuracy. But I consider my experience of many years to be the factor, that ultimately makes the difference for the customer," says Randy Gevers. "After all, a machine can't provide the advice on how best to manufacture a workpiece."



Internal grinding of a workpiece with problematic material combination.

Challenging workpieces are part of the daily business, such as currently the machining of a component with a material combination of copper and cast iron. The required roughness is < 0.15 µm. "We could also achieve 0.05 µm, but that is not necessary in this application," explains Randy Gevers. But: "Cast iron is a very porous, brittle material, the grindstone clogs very quickly and must be continuously dressed, but again not too often. It is essentially a matter of finding the right balance. The more experience and intuition a grinder possesses, the more precise such a workpiece will be in the end. Which, incidentally, is very expensive due to the material combination and the upstream machining operations such as turning, milling and eroding. So, the grinding operation has to be right the first time."

"The more complex the workpiece, the higher the precision requirements, the greater the motivation for me to bring the workpiece to perfection," concludes Randy Gevers. He just loves a challenge. Only no longer on the race track, but on his machines. For the benefit of his customers.

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GrindingHub 2024 now bigger and more international

Six months before the event opens, it is already clear that the next GrindingHub will be bigger and more international. 375 companies from 28 countries have already secured a place at the trade fair for grinding technology from 14th to 17th May 2024 in Stuttgart, Germany.

This can be seen from the preliminary list of exhibitors, which was recently published on the GrindingHub homepage. Dr Markus Heering, executive director of the organiser, VDW, German Machine Tool Builders' Association, is more than pleased with the positive response: "Expectations for the GrindingHub are naturally high after last year's magnificent launch. We are confident of being able to stage another outstanding leading trade fair for the industry in 2024 given the current level of registrations, the internationality of the exhibitors and the broad scope of the event which covers the entire process chain."

The increase in exhibitors from Asia is particularly impressive. The organisers have received just under 50 registrations so far. The first GrindingHub was still suffering from the after effects of the pandemic, whereas freedom of travel has now been restored and companies from all over the world can now make their way to Stuttgart. This is particularly evident among the Chinese: the number of Chinese exhibitors has grown from 4 to 32. China is currently the largest national producer and the largest market for grinding technology. Jiangsu Weize Intelligent Technology based in Liyang City in Jiangsu Province, for example, is exhibiting at GrindingHub for the first time. Chen Taoxin, deputy general manager at Weize, on participating in the trade fair says: "The GrindingHub is a very professional event that is a good fit with our company's trade fair philosophy. We can meet many of our customers there and also see the latest developments in the industry." There is also expected to be a significant increase in visitors from Asia, especially from China and Japan. Stuttgart, as the location of the event, offers ideal conditions for welcoming grinding experts from all over the world. "Our unique location in close proximity to Stuttgart International Airport, the A8 Autobahn and the B27 federal highway means that we are easy to reach for all visitors and exhibitors. As a recent winner of the Sustainability Award, Messe Stuttgart is pleased that the S-Bahn and U-Bahn trains also provide pleasant, environmentally friendly transport at frequent intervals. Your admission ticket allows you to use them free of charge," emphasises Sebastian Schmid, member of the management team of our cooperation partner Messe Stuttgart.

Experience the entire grinding technology value chain live

Various new manufacturing countries have been added, as have individual areas within the grinding process chain. More abrasives manufacturers will be represented in 2024 than at the launch event, for instance. The broad range on show, including everything from the grinding machines themselves to appropriate software tools, process peripherals and measuring and testing systems, raises the appeal of the trade fair for users of grinding technology. Martin Büsch, head of marketing for Central Europe at Saint-Gobain Abrasives in Wesseling, manufacturer of all four main categories of abrasives, agrees: "As far as we're concerned, GrindingHub has established itself as the leading trade fair for grinding technology within a very short space of time. We see it as an excellent and useful opportunity to engage with our customers, potential interested parties and top-class experts."

Leading trade fair for grinding technology on track for success

"The VDW will begin the layout planning shortly," says Markus Heering from the VDW, describing the next steps. "We are delighted about having to open a fourth hall thanks to the increase in the number of exhibitors. We'll naturally continue talking to all potential participants that have not yet registered."

Further information is also available on the GrindingHub homepage at ***www.grindinghub.de***

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Grinding solutions from EMAG SU

Extreme surface finish for e-mobility

Particular precision and process reliability have characterised automotive engineering for many decades. With the establishment of e-mobility, however, these demands are increasing once again, because many e-motor components need to be manufactured even more perfectly. In most cases, this involves the highest surface finish in the micrometre range so that no loud running noises occur on the gear components. In a quiet e-motor, for example, these noises would be audible. In this context, the technology of EMAG SU is drawing the attention of many production planners. Among other things, the specialists developed high-performance solutions for gear grinding including short chip-to-chip times, intelligent axis concepts, thermal and mechanical stability and a high degree of user-friendliness. Which machines and processes are the focus here?

Outstanding solutions for the field of gear profile grinding include the G 250 machine on the one hand and the G 160 on the other. The G 160 is used for components up to module three and with a maximum O/D (Outer Diameter) of 160 mm. In this field of application, it is the fastest machine on the market, which is made possible by two parallel workpiece tables that move alternately at high speed to the grinding wheel. Thus, while one component is machined, the internal loading robot inserts a blank into the other spindle or unloads the finished component beforehand. In addition, the axis concept ensures perfect surfaces, which are so important in e-mobility. The decisive factor here is that the G 160 does not have a tangential axis, but instead the existing Y- and Z- axes generate a "virtual" tangential axis through simultaneous movement. As a result, the distance between the A-axis and the tool contact point is very small, which in turn prevents the so-called "ghost frequencies" on the surface of the component. The possibilities this approach opens up for e-mobility are shown, by the example of an "intermediate shaft" with 21 teeth and a normal module, where a floor-to-floortime of only 33 seconds, including entanglement compensation and proportional dressing time and a grinding time of only 25 seconds are achieved. Similar performance values are shown for an input shaft with 26 teeth and a module of 1.6 mm. Here, the pure grinding time is only 28 seconds.

The larger G 250 machine also scores with precision, minimum chip-to-chip times, short setup times and reliability for components with a maximum length of 550 mm. The machine also has a double table, like the G 160. Loading and unloading operations as well as component measurement are thus performed in cycle time-concurrently. Additionally, the grinding mandrel can accommodate grinding wheels with different diameters and the entire design is very rigid. Gear generating grinding and profile grinding take place on the main grinding spindle, so the machine does not have a thermal growth. It can also be retooled for the other process in just a few minutes. In the field of e-mobility, for example, this approach is used for grinding axle drive wheels. The floor-to-floor time here is only 69 seconds, including entanglement compensation and proportional dressing time, with the actual grinding time even comprising only 58 seconds. The G 250 achieves a comparably high productivity level when machining pinions with a strong crowning in the tooth flank profile and normal crowning in the flank line. The bottom-to-bottom time is 33 and the grinding-only time is 28 seconds. A DIN 3962 quality of 4 is achieved.

Furthermore, EMAG SU illustrates what the general future of gear grinding could look like with the establishment of the new "Sky Grind" process. Here, the final grinding on the gear is carried out completely dry with great financial advantages for the users, because the filter system, cooler and co, which are normally required for wet grinding, are no longer needed, thus reducing the initial investment.

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THE ART OF GRINDING.

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Fritz Studer AG, established in 1912, is a market and technology leader in universal, external and internal cylindrical grinding as well as noncircular grinding. With around 25,000 delivered systems, STUDER has been synonymous with precision, quality and durability for decades.

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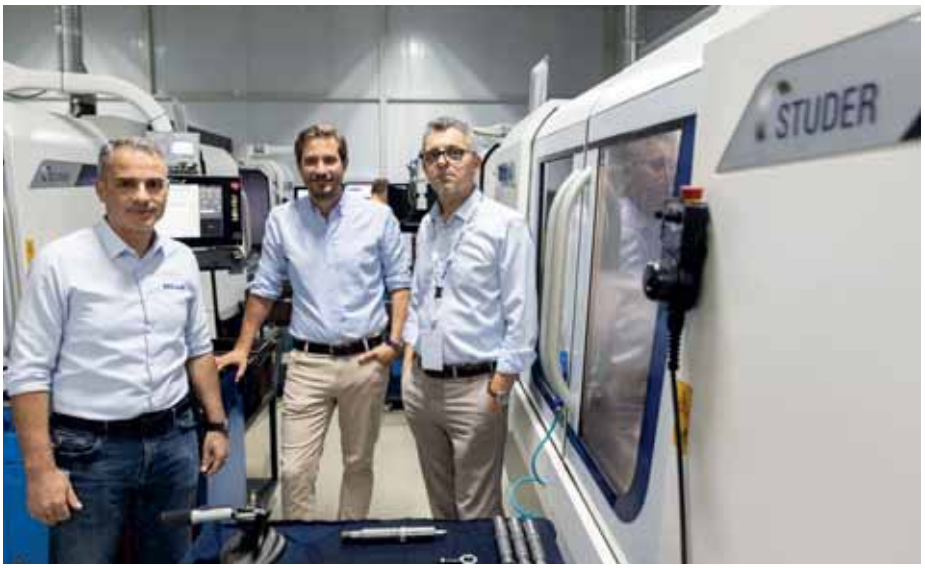
STUDER

Taking quality to the next level with Studer

For over 30 years, Turkish company SELSA has been supplying international clients in the automotive industry with high-quality components. With five new STUDER cylindrical grinding machines, it has now significantly expanded its business field.

Cem Dizdar, managing director of SELSA, recounts how his family fled former Yugoslavia for Turkey during the war, a move that no one could have imagined would lead to them founding one of the country's flagship companies in the machining sector. His father, a mechanical engineer trained in Germany, established the company in 1992 from scratch. Back then, only a handful of employees worked in a small space. Today, around 280 skilled workers manufacture precision parts for an international clientele, particularly in the automotive sector, in a modern 7,000 sq m facility operating around the clock. Most recently, five CNC universal cylindrical grinding machines from Studer have been added to the operation.

"There is no more prestigious brand than Studer when it comes to grinding machines and we did not want to compromise on quality and precision with this investment," says Cem Dizdar, explaining the purchase of four favorit machines and one favorit CNC. He speaks from his office at SELSA's headquarters in Bursa in the northwest of Turkey. The city, located on the Sea of Marmara, with historical significance and a population in the millions, is about an hour and a half's drive from Istanbul and is one of the country's most important industrial centres, particularly for the automotive industry.



Customer diversification and high technology as a strategy

A German automotive supplier has also been producing in Bursa since the 1970s. "We have a long history with this supplier," says Cem Dizdar. His grandfather worked there, his father completed supplementary training and his mother from Germany was a teacher in Bursa who taught the children of the employees. When the first major order for the mass production of diesel injection nozzles came in 1995, it was an important milestone for SELSA. The high demands on quality, precision and efficiency have become ingrained in the company's DNA, earning it a reputation beyond the local region. Cem Dizdar has been familiar with all the company's operations and processes since his youth and later studied mechanical engineering in Istanbul himself. When his father suddenly died in 2014, he had to take responsibility overnight.

"What my father, Selami Dizdar, built and accomplished fills me with pride and gratitude. We have an excellent team and a well-coordinated system," he says. However, it is quite natural for the younger generation to have a new perspective and innovative strength is particularly important today in an automotive sector undergoing rapid change. The switch to electric motors or stricter CO_2 emission regulations are just two examples. For the managing director, diversifying the customer base and focusing on high technology is particularly important for the current strategic orientation of his company. SELSA currently invests around 4.7 percent of its total budget in research and development and is now recognised as a research-and-development facility for mechanical engineering by the Turkish state.

The acquisition of the five CNC universal cylindrical grinding machines from Studer is part of this strategy, as Cem Dizdar explains: "We made this investment specifically in connection with a new major order for an internationally leading supplier of steering and transmission pumps." Specifically, the Studer machines now produce around 700,000 drive shafts for control pumps each year.

"We received very precise specifications and tight tolerances for complex geometries from the customer. The Studer machines enable efficient mass production of technically demanding workpieces and they have played a large part in our receiving this order and being able to fulfil it to the fullest satisfaction."

How did the decision for the five Studer machines come about? Atilla Aydin, area sales manager from Studer for Turkey, who has advised SELSA personally and on-site from the beginning, knows the answer: "We closely examined the geometric requirements of the components and the desired production volume and had them checked by our in-house engineers and specialists," he reports.

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What an E-volution!

Full OEM rebuild to bring advanced performance and Siemens' control to 1990's Holroyd rotor miller

For one of Germany's most respected compression equipment specialists, the opportunity to purchase a previously owned PTG Holroyd 2E-volution CNC rotor milling machine from its Rochdale-based manufacturer was simply too good to miss.

That's because before being shipped to Germany, the machine will undergo a full refurbishment and upgrade programme, during which it will be transformed into a state-of-the-art 'new' PTG Holroyd 2E-volution rotor production centre.

Built to last: an original Holroyd 2E-volution CNC rotor milling machine, pictured when new.

Looking to expand its screw manufacturing capability and enjoying reliable, trouble-free operation from its fleet of current PTG Holroyd rotor milling machines, the organisation in question is buying the older model in complete confidence.

Manufactured in 1993, the PTG Holroyd 2E-volution rotor miller, for manufacturing helical rotors of 200 mm maximum O/D, is currently at PTG Holroyd's machine tool technology centre where, after a complete overhaul and full mechanical refit using genuine Holroyd components, it will also benefit from the integration of Siemens' future-proof SINUMERIK ONE CNC control. Rebadged as a PTG Holroyd 2E-volution rotor production centre, it will provide rapid setup, intuitive user-friendly operation and the latest levels of accuracy, reliability and productivity.

"The sheer number of older PTG Holroyd 2E-volution machines still in daily use around the globe says a great deal about their quality and longevity, as well as the faith our customers place in them," comments PTG Holroyd sales director, Mark Curran. "In fact, many of our customers have requested a full retrofit and upgrade to bring performance up to current day standards.

"The SINUMERIK ONE upgrade alone will provide our German customer with Siemens' incredible 'Run MyVirtual Machine' capability, meaning they will be able to mill virtual rotors on the desktop before commencing physical production. The risk of legacy software issues going forward will also be reduced. PTG Holroyd machines are built to last and an E-volution upgrade, which is suitable for many of our older CNC milling machines, enables customers to update their machine tools and gain the accuracy and performance of a current model at much lower cost than purchasing new."

The PTG Holroyd E-volution rotor milling machine upgrade programme includes:

- Full refurbishment and refit with genuine Holroyd parts
- Siemens' SINUMERIK ONE future proof CNC
- The latest, fully enclosed machine guarding
- Comprehensive 12-month warranty
- Optional service or planned preventive maintenance package

The first name in precision

Incorporating the brands of PTG Holroyd, PTG Powerstir Friction Stir Welding and Holroyd Precision Rotors, PTG has established itself at the forefront of high-precision machine tool design, build and supply for specialised applications. The range includes advanced machine tools for the production of complex helical components such as compressor rotors, pump screws and high-accuracy gears, and Powerstir machine tools for friction stir welding advanced alloys used in transport applications. With production facilities in the UK, USA and China, Holroyd Precision Rotors manufactures the special purpose, ultra-precision helical components used in a wide range of industries, including refrigeration, air-conditioning, gas and vacuum pumping, industrial air handling, aerospace, medical equipment, motion control, power transmission, power generation, oil & gas, fluid transfer and high-end automotive. PTG also provides advanced technical consulting services.

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Sparx Machine Tools provides the solution

Tempa Pano has been manufacturing "low voltage electrical enclosures" since 1989. During this time the company has consolidated its position as a leader in the industry. To cement that position, a substantial investment has been made into a new 21.000m² production site in Runcorn. This investment will provide a substantial increase in product capabilities with the use of advanced technology and experienced engineers. Tempa Pano take pride in being the first-choice solutions partner to customers providing a wide range of products and services.

Integrating the Kuhlmeyer DBS belt grinding machine into its production line represents a strategic move to enhance the precision and efficiency of its stainless steel enclosure manufacturing. This cutting-edge equipment brings tangible benefits, ensuring a consistently high-quality finish while allowing the company to optimise its grinding and polishing processes.

The Kuhlmeyer DBS is a practical investment that aligns with Tempa Pano's commitment to delivering top-notch products, offering both operational efficiency and improved aesthetics for its stainless steel enclosures.

The Kuhlmeyer DBS is a more basic machine compared to the Kuhlmeyer ZBS. Sophisticated technology and experience are integrated in the new development. All necessary features are also part of the Kuhlmeyer DBS concept and well accessible for the operator.

The DBS-Compact is designed for grinding welded edges, corners and surfaces of small components out of steel or stainless steel. By easy replacement of the grinding belt the machine is rapidly changed between roughing and finishing process.

The compact design allows for the integration of the machine into existing production areas. The main advantage is the easy and ergonomic grinding with maximum quality by the precise Kuhlmeyer technology and experience.

Technical data

Table size: 3,000 x 1,000 mm
Workpiece weight: Max. 100 kg
Table movement horizontal manually: 1,500 mm (manually)
Table lifter stroke: 600 mm, motorised
Footprint dimensions: 4,400 x 2,400 x 2,450 mm

Sparx Machine Tools is a family-run business located in Poole, Dorset. It is proud to be the UK supplier for Kuhlmeyer and Baileigh, offering a good range of metal finishing machinery. Its range of quality used engineering and fabrication machinery are serviced and prepared by its own in-house engineers before being made available for purchase. The team are also on hand to value any surplus equipment you may have, followed by its quick payment and professional collection service.

Its fully trained and knowledgeable engineers are always on hand for any service or repair work you may require. Sparx Machine Tools will happily service all parts of the UK and all types of machinery, including any parts you may require. The company prides itself on offering a professional service to all customers. Machines can be run and demonstrated under power and it welcomes all visitors to visit its premises to inspect any machinery and discuss options available to them.

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Polished gear flanks for EV-transmissions

by Walter Graf, senior project manager for Reishauer AG, Switzerland

Figure 1 - Grinding worm for the polish grinding of gears.

This article introduces the process of polish grinding of gears. Improved surface quality increases the overall efficiency of gearboxes, resulting in reduced friction, higher power density and noise-optimised gears, lower NVH. All these factors are highly relevant, especially for electric drives. When Reishauer developed polish grinding in 2012, the process aimed to improve the efficiency of ICE engine transmissions and the set goals were easy to achieve. Today, in 2024, the situation is dramatically different. While an ICE engine operates at around 3,000 rpm and supplies acoustic masking of the gear noise, EV drivetrains feature up to 20,000 rpm and offer no such masking.

For this reason, EV gears must run substantially quieter. Furthermore, both left and gear flanks must perform identically for acceleration and deceleration due to regenerative braking. When looking at the surface texture, we must distinguish between roughness, waviness and form. Any of these parameters can influence the performance of a gear. Polish grinding can only influence the roughness, not waviness or form. The grinding process must control form errors and waviness before polishing takes place. However, the continuous generating gear grinding process has proven to supply excellent quality in form, waviness and pitch. Continuous generating gear grinding delivers a surface roughness of around Ra 0.3 µm, which must be reduced by a subsequent polish grinding stroke. Let's take a moment to ponder the term surface roughness: It's common to hear surface roughness described as a number that can be measured by a gauge. But describing surface texture with a number is a lot like describing a concert in decibels, loudness is just part of the story. A rock band, an orchestra and a chainsaw can all produce 100 decibels, but the full picture is much more complex and interesting. [1]

The process

The basic technology for polishing grinding is continuous generating grinding. Based on a dressable grinding worm, this method has proven itself in terms of flexibility and high productivity. The kinematics of this process can be understood as a worm drive with rotational movements of the grinding worm and the workpiece, nB and nc, see Figure 2.

Polish grinding is performed as a final machining sequence, with the workpiece remaining clamped on the same workpiece carrier during both grinding and polish grinding. Also, most importantly, polish grinding does not aim to impart the surface with a mirror finish. First and foremost, polish grinding must produce a functional surface, a surface that features reduced friction while still capable of retaining an oil film during gear meshing. Polish grinding follows immediately after conventional generating grinding. For this purpose, the grinding worm is divided into a grinding and a polishing zone. This final sequence is a polish grinding pass using the elastic, resin-bonded section of the grinding worm. There are some fundamental differences between grinding and polish grinding. Simply put, grinding uses larger grain sizes of 80 mesh, with an average grain diameter of 185 µm and a rigid bond structure. For polish grinding, a grain size of 800 is used, with an average grain diameter of 7 µm.

Grinding aims to achieve perfect geometry, a "good" surface quality, gear flanks free of waviness, form accuracy and high material removal rates. Polish grinding should not alter the geometry created by grinding. However, it increases the load-bearing capacity of the tooth flanks by removing surface peaks. Moreover, for technical purposes, polish grinding should only remove the peaks of surface roughness and leave the roughness of the surface valleys intact so that an oil film can adhere to the polished surface.

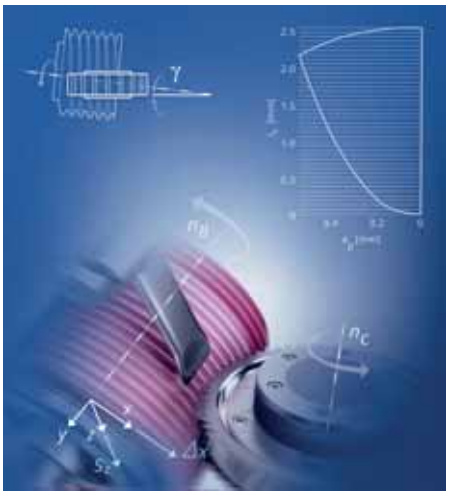

Figure 2 - Principle of continuous generating grinding.

After the roughing and finishing grinding passes, the grinding worm shifts via a jump from the vitrified bonded zone to the polishing zone for the final machining pass, as shown in Figure 3.

Using a combined grinding and polishing wheel on one machine offers a significant advantage over alternative methods, such as vibratory finishing. In the combined process, polish grinding perfectly follows the gear profile and flank line's precision-ground micro and macro geometries.

Figure 3 - Principle of continuous generating polishing grinding.

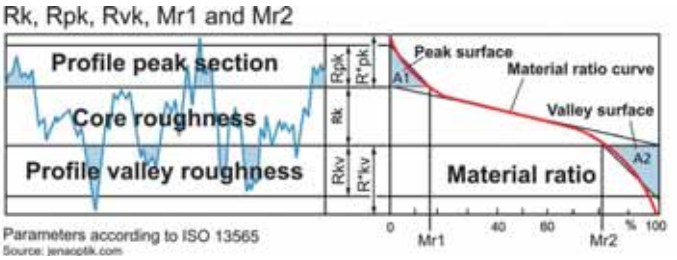

Figure 4 - Abbott material ratio curve.

Surface characterisation

One such number would be Ra, the arithmetic average of the profile height deviations from the mean line, the most common value for describing ground surfaces. However, this is mostly for historical reasons, as early roughness gauges were limited to this parameter. However, Ra is not very useful for polish grinding as the same Ra value can have various surface characteristics. The problem of why Ra is not useful for polish grinding is given by its definition: The average deviations from the mean line. In other words, the average is taken from the valleys' depth and peaks' heights along a defined distance. According to this definition, two very different surfaces could be identical: one with high and low valleys and the other with low and deep valleys.

As M. Stewart writes in an SME paper from 1990: "Tribology studies have shown that the ideal sliding surface is smooth with relatively deep valleys to hold and distribute the lubricant. However, quantifying and specifying these surfaces has always been a problem. Since its introduction, the bearing area curve, the Abbott curve, has been recognised as the only effective method for characterising these surfaces but is rarely used in specifications." [2].

The Abbott curve, Figure 4, is a much better indicator for predicting the load-bearing wear behaviour of gear flanks than the roughness value Ra. Thus, an identical Ra value can describe a surface with high peaks and shallow valleys or a surface with low peaks and deep valleys. For this reason, users today prefer the Rvk value, which describes the reduced groove depth. This parameter is used to characterise valleys that retain lubricant. During the polishing process, the Rpk value, the peaks, is altered more than the Rvk value, the valleys.

The goal of polish grinding should be to reduce the Rpk and leave the Rvk as much as possible intact, with the further goal that the Rpk value remains identical on both flanks.

While one must be careful to declare absolute surface characterisation values for polish grinding, the following values may serve as a guideline: Rpk 0.15 µm, Rk 0.4 µm, Rvk 0.25 µm, Ra 0.1 µm.

Economic considerations and conclusion

The direct integration of polish grinding as a subsequent step in the conventional generating grinding process results in minimal investment costs if customers already have Reishauer generating grinding machines. Moreover, the diamond dressing tools remain the same as with conventional methods. Polish grinding also requires only minimal additional operator training. Although the cycle time increases slightly due to the additional polishing stroke, this is offset by the gain in product quality.

Additional costs arise from purchasing special grinding wheels with two different areas for grinding and polishing. The higher process costs compared to conventional gear grinding are more than offset by the benefits of reduced torque loss, higher load-bearing capacity of polished ground gears and higher power density in the gearboxes.

References

[1] Surface roughness is more than a number, Mike Zecchino and Mark Malburg, Power Transmission Engineering, June 2023.
[2] Stewart, Mike, "A New Approach to the Bearing Area Curve", SME Technical Paper, International Honing Technologies, May 1 to 3, 1990, Novi, Michigan.

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Lanulfi achieves cost reduction through abrasive automation

Customer challenge

Lanulfi, a manufacturer of steel and aluminium moulds, accepted a new order for the production of aluminium moulds for bus sides. The customer ordered a large volume and required tight delivery times.

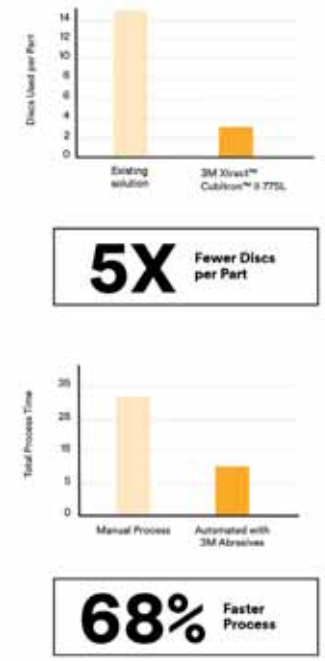
Problem solved

The automation experts at Roboticom helped Lanulfi evaluate and introduce an innovative robotic system to manufacture aluminum bus sides and satisfy their customer. Economic, social and environmental considerations led Lanulfi to adopt a robotic technology specifically developed for its production needs.

Roboticom involved 3M Abrasives at an early stage, quickly identifying the right abrasive products to speed up the project timeline. This new automated process uses the latest generation of 3M Xtract™ Cubitron™ II Film Disc 775L with a diameter of 150 mm and 75 mm for removal and pre-finishing operations and 3M™ Film Disc 375L for fine grade finishing.

By automating these processes with abrasive discs from 3M, Lanulfi was able to realise significant efficiency gains. In the robotic sanding process, each disc change takes about 30 seconds. During the same cycle, using the same grades, the existing solution uses 15 discs. Achieving the same results with the 3M solution requires only three discs; a 5X reduction in discs used per part, resulting in significant cost savings.

Lanulfi CEO, Marco Lanulfi says: "The time savings obtained are truly remarkable. Just consider that to carry out the finishing operations with the robot 10 hours per mould are required today, versus the 32 hours that would have been necessary with the use of the labour of two operators for two days."



Solution spotlight

3M Xtract Cubitron II Film Disc 775L

As robotic material removal grows more common, manufacturers require abrasives optimised for automated processes.

3M Xtract Cubitron II Film Disc 775L is powered by 3M Precision-Shaped Grain, a self-fracturing ceramic grain that cuts fast, lasts long and requires fewer disc changes. Its film backing offers excellent tear resistance and edge retention, contributing further to the product's long lifespan. These characteristics make 3M Xtract Cubitron II Abrasives an ideal choice for a wide range of robotic grinding and finishing processes.

Thanks to a strong relationship between Roboticom, Lanulfi and 3M, Roboticom was able to provide its customer with a new, automated process. This new process enables Lanulfi to be more flexible, efficient and productive in the metalworking automated production process.

If you're new to robotic material removal, there is a lot to learn. That's why 3M robotics experts have developed a set of tools and resources to help guide you through the automation process, from evaluating your current manual process to selecting a system integrator and every step in-between.

3M abrasive belts, discs and wheels are ideally suited for robotic applications and can help you increase productivity, consistency and cost savings.

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

Do you have cutting, grinding, cleaning or polishing challenges?

3M can help you solve your real-world needs. Its mission is to provide you with all the support you need to keep your project running as smoothy as possible. It can collaborate with you to increase productivity and mitigate the challenges of a shrinking workforce, complying with regulations, eliminating risks, training your workers and much more.

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New and improved flap discs from Tyrolit

Helping to increase stock removal rates, the NEW 2in1 Tyrolit Flap Discs provide the perfect combination of efficiency and durability.

Due to a new design, these discs consist of 30 percent more flaps, providing not only a more specific stock removal rate, but also an increased product lifetime in a more efficient and durable capacity.

From working with steel or stainless steel, this tool masters even the most difficult tasks, ensuring projects are completed faster and more precisely.

With the launch of the NEW Basic 2in1 Flap Disc, produced by Egeli Egesan in Turkey, Tyrolit's revision of its flap discs started at the beginning of October. The aim is to gradually convert the cloth of the entire Tyrolit Flap Discs range to in-house production over the next 12 months.

The Flap Discs are Ideal for use on applications such as:
- Surface grinding
- Welding seams removal
- Machining of pipes
- Deburring.

Now currently available in the UK in 115 mm, 125 mm and 178 mm consisting of grit sizes 40, 60, 80 and 120.

A high abrasiveness ensures first-class application results and an excellent price-performance ratio, providing an ideal solution to the market.

Tyrolit is a leading manufacturer of grinding and dressing tools, as well as being a system provider for the construction industry.

Since 1919, its innovative tools have been making an important contribution to technological development in numerous industries. Tyrolit offers tailored grinding solutions for a varied range of applications and a comprehensive assortment of standard tools for customers all over the world.

The family-owned company based in Schwaz, Austria, combines the dynamic strengths of the Swarovski Group with over a hundred years of commercial and technological experience.

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An evolution in abrasives

Weiler Abrasives, a leading provider of abrasives, power brushes and maintenance products for surface conditioning, has introduced its Tiger 2.0 zirconia alumina and aluminum oxide cutting, grinding and combo wheels. Designed for demanding metal fabrication industries like shipbuilding, pressure vessel and heavy equipment fabrication, these abrasives help cut through inefficiencies, safety issues and labour shortages that prevent companies from doing their best work.

"We understand that our customers' production environments are ever-changing and many are challenged with doing more work with less labour. We listened to their feedback to determine what they want and need in their abrasives," says Tony Hufford, category manager for metal fabrication at Weiler Abrasives. "The result is wheels that offer fast cut-rates with extended life that we developed through countless hours of trials and validation to provide the best product to market."

In addition to offering fast cutting speed, Tiger 2.0 wheels last up to 40 percent longer to increase efficiency in operations' cutting and grinding applications. The wheels feature an award-winning blotter design that includes an industry-first, patent-pending Optimum Use Line. The line is a visual indicator that helps the operator use the wheel to its full life. This innovation reduces changeovers, allowing for greater productivity while also reducing waste and abrasive spend. In some cases, users experience three times more efficiency than with their previous abrasives.

Tiger 2.0 grinding wheels feature anti-chipping technology, an advanced bond formulation that reduces uneven edge wear and chipping to improve safety and the user experience and extend wheel life.

All of the wheels deliver smooth, predictable cutting and grinding, making the work safer. The addition of a QR code on the wheels makes it convenient for operators to access crucial safety information where and when they need it.

Weiler Abrasives took today's labour shortages into consideration when

formulating the Tiger 2.0 wheels. The wheels produce consistent results among different users to reduce training time and minimise rework. The wheels also make cutting and grinding easier to lessen operator fatigue and improve employee retention.

Tiger 2.0 wheels are available in Type 1, Type 27 and Type 28 options. These wheels range in size from 4 to 9 inches and are intended for use on portable angle grinders.

Learn more about how Tiger 2.0 can cut through barriers in your operations at weilerabrasives.com/tiger-2.0

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Tool systems for grinding and honing today's most challenging gears

The trend towards hard fine finishing of gears for automotive transmissions is accelerating. In recent years, the focus has been on increasing the efficiency of gears in order to make optimum use of the narrow gear ratio range, gear by gear and to reduce fuel consumption. Surface finish, in particular, is under increased scrutiny since it plays such a decisive role in achieving the noise and efficiency requirements of gear units for today's EV applications.

These higher gear quality standards are driving significant innovation in the grinding and honing manufacturing processes required to achieve them. Fine finishing and, in particular, polishing machining, offer a tailor-made approach to meet these objectives. Inherent in these processes is the fact that two machining steps, roughing and fine finishing, are performed sequentially, in a single setup. Alternatively, different processes can be combined to achieve the same end result, such as grinding with gear honing. The disadvantage of this approach, however, is that the workpiece must be loaded into a machine tool twice. What all these processes have in common is that they offer a wide range of tool specifications, including variations in grit size and bond type, to achieve the desired result in the finished workpiece.

For fine finishing in one clamping, two zones of combination tools are used in generating grinding, both of which are ceramic-bonded, but with different grit types and, above all, grit sizes. Zone 1 is identical to a conventional, standard generating grinding worm, which performs the main cutting action during roughing.

Gleason Combi Honing with two honing tools in one setup, seen here as a polishing application.

Two-zone wheel for polish grinding — zone 1 right (ceramic zone), zone 2 left (polish zone).

Finishing is performed exclusively in zone 2 with a finer grit size in order to achieve the required surface roughness and material contact ratio.

The procedure for gear honing is analogous, whereby a Gleason honing machine can accommodate two honing tools in the same, single honing head in a process called combi honing.

Development of this highly productive new generation of combination tools has also required that the bar be raised on the tools used to dress them. Whereas in gear honing the diamond-coated dressing tools are typically designed for a specific workpiece, generating grinding addresses a wider variety of applications. For prototypes, a universal shape dresser (GDU) can be used, which operates in point contact and thus maps any type of profile modification via machine kinematics. For smaller batch sizes, flexible tools (GDF) with a specific pressure angle and module range are used, which dress the grinding tool with a single flank.

All of the above dressing systems can also be used to perform Gleason's twist-controlled grinding process without any further modifications.

Today's dressing tools must consider the greatly increased demands on surface finish, but without sacrificing the best possible performance inherent in standard machining processes. This is an enormous challenge for the diamonds used by the diamond dressing tool, one of the essential system variables in the dressing processes.

To reliably maintain a maximum form error of < 2 Nm, manufacturers of dressing tools have to consider many factors. Shape and position tolerances of the basic body must be maintained with extreme precision. The smallest deviations in the axial runout of the tool can cause the µm limit to be exceeded when checking the gear quality. Analyses of noise, vibrations (NVH test), and the surface structure help to check the requirements in all areas with great precision. A homogeneous grain distribution and a clean coating must be ensured before the grinding/finishing of the electroplated coating can take place.

Dressing tools for gear honing and gear grinding. From left to right: Diamond dressing gear for gear honing; workpie e-specific dressing disc system (GDW); and flexible dressing roll system (GDF) for generating grinding.

In gear honing, the approach is congruent; only the degrees of freedom are greater since there are two separate honing tools without a connection. In this case, if necessary, a special diamond dressing gear per honing ring can also be executed to utilise the full potential in fine and polishing machining. In addition, for gear honing it is of course also possible to design a dressing tool, diamond dressing gear, for both honing tools, e.g. for combi honing.

Through the use of this new generation of dressing tools, the latest grinding wheels and honing tools are well-positioned to meet the increased demands placed on them.

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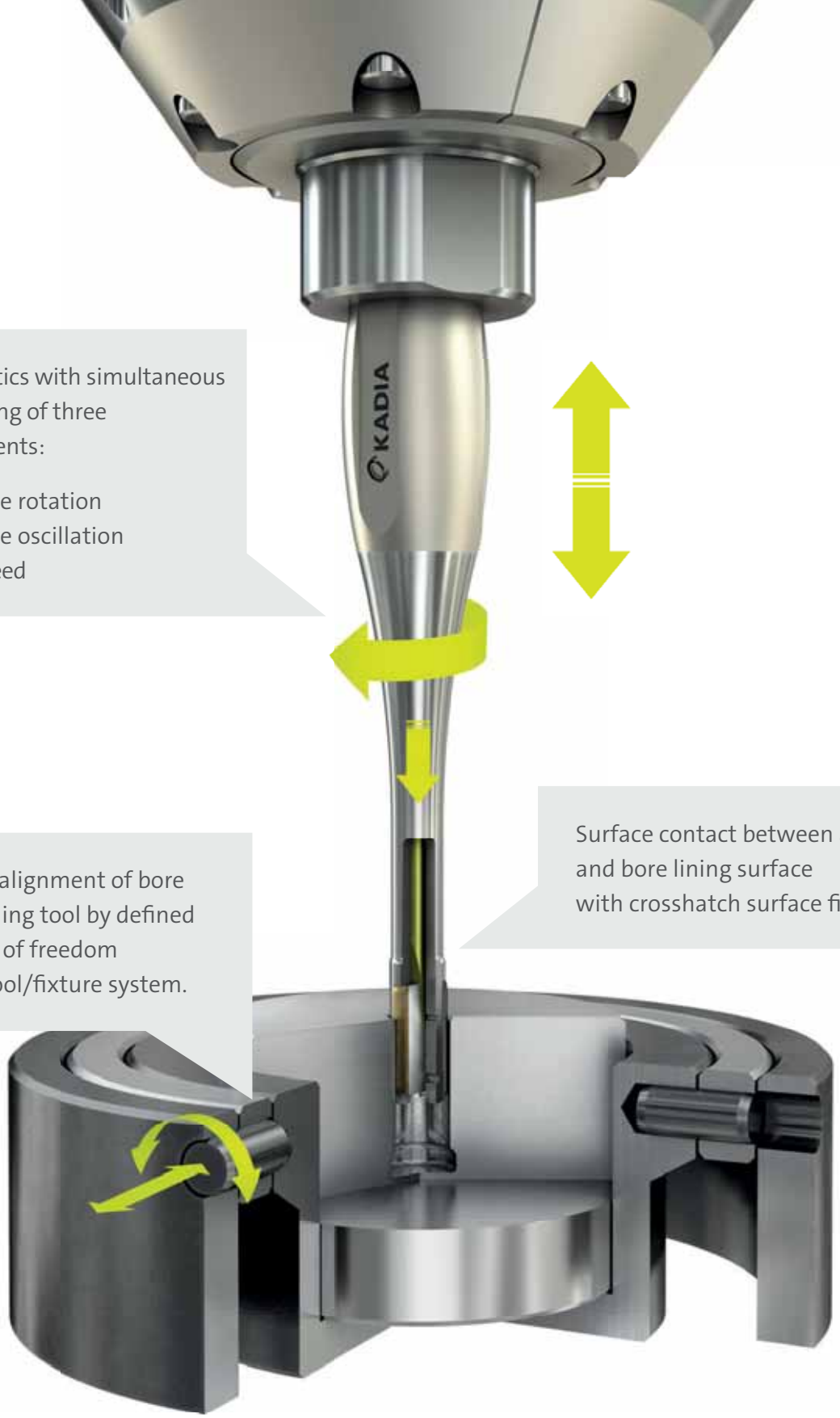

Kinematics with simultaneous overlaying of three movements:

- Spindle rotation
- Spindle oscillation
- Tool feed

Coaxial alignment of bore and honing tool by defined degrees of freedom in the tool/fixture system.

Surface contact between abrasive and bore lining surface with crosshatch surface finish.

WHAT IS HONING?

Animation film on our KADIA YouTube channel.

www.kadia.com

KADIA

25 years “on the cutting edge of a micron”

Microcut was founded in 1995 and has delivered over 700 standard and special machines. The company is located in Switzerland, at Jura-Südfuss, in the heart of a region known for a long tradition in micro and watch technology.

Microcut started with engineering of special machines for finishing of high-precision components for the fibre optic industry. In 2006, the development of a universally applicable process for finishing small bores, the Microcut Honing System, was started. The independent process is consistently developed further and the diameter range is continuously expanded. Parallel to the machine business, tool and contract manufacturing will be successively expanded.

The areas of machinery, tools and contract manufacturing complement each other ideally and form the solid basis of the company's business model.

With the successful market launch of sonic-honing technology in 2019, it underlined its innovation competence and are proactively shaping the future.

Through close customer contact, Microcut develops a continuous and detailed understanding of customer needs. With a competent, innovative, experienced and diversified team of engineers, scientists and professionals, it is able to develop solutions with an optimal cost-benefit ratio.

As a reliable partner, Microcut can count SMEs as well as large corporations among its customers.

High-precision finishing of small bores with honing machines

Microcut develops machines and tools for the efficient finishing of small bores with highest quality requirements for the diameter range from 0.015 mm - 8 mm. As a service, it offers Microcut contract honing.

The Microcut Honing System for small bores is an easily controllable and robust process and guarantees minimum dispersion of shape accuracy, surface quality and dimensional accuracy. The Microcut Honing System, developed specifically for small bores, has outstanding technical and economic advantages over established processes such as internal cylindrical grinding and conventional honing. In 2019, it proudly presented the sonic-honing technology, which combines highest precision and productivity. With this development stage, the cutting performance could be increased by factor four, the surface roughness improved and the tool life extended.

With the Honing Module MH©cut, Microcut brings its 4.0 technology directly onto a machine tool, such as a hard turning lathe, thus enabling complete finishing in one clamping. During the general miniaturisation of components, the Microcut Honing System offers solutions for small bores, where established methods reach their limits due to their principles.

An ever-increasing demand for quality, with high-cost pressure, can additionally favour a process change to the Microcut Honing System. Low tool costs per bore as well as low space and energy requirements of the systems underline the sustainable customer benefit of Microcut technology. The process is suitable for small quantities, e.g. in tool and mould making, but also for large series in the automotive industry. The machines are modular and scalable.

Due to the easily reproducible, exceptionally good shape accuracy, the demand for Microcut machines for larger diameters is also increasing. The advantages are particularly evident in interrupted main bores with releases and cross bores, such as in hydraulic control components.

Today, its products are successfully used in various high-tech industries around the globe. As a reliable partner, it can count SMEs as well as large corporations among its customers.

Machines in its range include:

UniBore UB831-M
Precision honing machine with one honing spindle and highest flexibility regarding part variety for manual loading. Machine for the machining of holes with diameter: 0.25-8 mm.

UniBore UB834-S-2C
Honing machine with sonic-honing technology for highest productivity. Machine with up to 4 honing spindles and two round plates for fully automatic loading of holes with diameter: 0.25–8 mm.

UniBore 900
Honing machine with sonic-honing technology for highest precision, productivity and autonomy with integrated automation solution. Machine for bores with diameter: 0.25-8 mm.

MicroTube 1700
The solution for the internal machining of Nitinol tubes. Machine for honing Nitinol tubes with inner diameters from 0.8 mm to 8 mm, lengths up to 1,700 mm and wall thickness from 0.1 mm to 0.3 mm.

MicroBore 125
Over 120 times in daily series operation. Machine for machining the smallest bores of diameter: 0.060-0.150 mm.

MicroBore 20/50
For the smallest bores. Machine for machining the smallest bores of diameter: 0.015-0.060 mm

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Choosing the right finishing process for your needs in modern manufacturing

Honing and grinding are both abrasive machining processes used to improve the surface finish and dimensional accuracy of metal parts, but they differ in terms of their techniques, goals and outcomes.

Grinding is a material removal process that involves using abrasive particles, such as grains of abrasive material like aluminum oxide or silicon carbid, to remove excess material from a workpiece. It is typically used for heavy material removal, shaping and achieving tight tolerances and a smooth finish.

Honing is a finishing process used to improve the surface texture, roundness, and dimensional accuracy of a part under constant surface contact with the tool. It involves the use of abrasive stones or diamond hones that rotate and reciprocate within a bore or on a surface. Honing is primarily used for achieving a smoother, more precise surface finish without significant material removal.

Grinding is an aggressive material removal process. It removes relatively large amounts of material quickly and is suitable for tasks like stock removal and shaping. Grinding can achieve very high levels of dimensional accuracy and surface finish, making it suitable for critical applications.

Honing is a gentle material removal process. It removes only a small amount of material at a time and is designed to improve the surface finish and geometry of the workpiece without altering its dimensions significantly.

Depending on the nature of the grinding process, you could either have a rough or smooth surface. Grinding can create intricate profiles and contours that might be challenging with other machining methods.

Honing is primarily used to improve the geometric form of a surface but can also improve the surface finish. Honing is used in applications where achieving a high-quality, internal surface finish and precise dimensions are essential, such as in engine cylinder bores, hydraulic cylinders and gears.

The choice between these processes depends on the specific requirements of the part and the desired surface finish and dimensional accuracy. No matter what your requirements might be, Hardinge will have either a honing or grinding machine for your finishing process.

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www.dfpmach.com

Lapping machines from Lapmaster Wolters

What sets Lapmaster Wolters lapping machines and polishing machinery apart from the competition is their versatility. Every machine is designed specifically for the customer's application. Lapmaster Wolters has no predisposed tendency to promote one specific abrasive technology. The result is the development of the optimum process for the application. Conventional abrasive, diamond superabrasive, or lapping media. No matter what the application calls for, you can be sure that the company will provide you with the best possible equipment and process to produce flat surfaces and extremely fine surface finishes with unfailing uniformity.

Fundamental lapping theory

The basic theory of lapping starts with the components being placed within the confines of conditioning rings directly onto the surface of a rotating lap plate that is coated with a precision film layer of slurry. The components should never come into direct contact with the lap plate surface. Through powered lap plate rotation, the loose and rolling abrasive particles within the slurry layer transfer cutting energy with their sharp cutting edges by penetrating the contact surface of the components removing microscopic chips of material. Concurrently the abrasive is acting on the lap plate via the contact surface of both the components and conditioning rings causing wear that when controlled by adjustable radial ring position will effect spherical curvature changes to maintain a flat lap plate condition.

Peter Wolters AC microLine double-sided lapping machines

The high productivity double-sided lapping machines of the Peter Wolters AC microLine® range display state-of-the-art design and concept. The modular system of main components together with the precision of the latest control, drive and measuring technologies superb process reliability and make the system simple to operate. Easily removable machine linings and fully covered process areas give the best accessibility and industrial safety. For automatic loading and unloading, the upper wheel can be swung out.

Durability, reliability, low cost of ownership, variety in applications and automation solutions, these are the outstanding features which characterise every Peter Wolters AC microLine machine. For further increase of productivity, all machines can be equipped with automation setups. Choose between semi and fully automated versions. These automation choices guarantee optimal unit cost combined with high throughput and, therefore, the most economic solution.

The Lapmaster DSL series of double-sided lapping machines are driven by three, variable speed motors for maximum process control flexibility. All three rotating machine components, the sun gear, top plate, and bottom plate, are independently controlled. Process down pressure requirements are pneumatically regulated and continuously monitored by a load cell.

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Surface finishing quartz

Quartz is a widely used material in many industrial and scientific applications due to its unique physical and chemical properties. Achieving a high-quality surface finish on quartz components is essential for ensuring their functionality, reliability and performance in various industrial and scientific applications. Lapping and polishing are the best surface finishing techniques for achieving the desired surface finish on quartz. These techniques offer high precision, efficiency, versatility and repeatability, making them the preferred choice for surface finishing quartz components.

Why is surface finishing important for quartz?

Surface finishing refers to the process of refining the surface of a material to improve its appearance, functionality, and durability. In the case of quartz, surface finishing plays a crucial role in achieving precise dimensions, high-quality surface roughness and optimal optical performance. A well-finished quartz surface enhances the transmission of light, improves the accuracy of measurements and reduces the risk of damage and wear.

The surface finish of quartz components directly affects their functionality and performance. For example, in the semiconductor industry, quartz wafer components require a smooth, defect-free surface to enable precise patterning and alignment. Similarly, in optical applications, such as lenses, mirrors and prisms, the surface finish determines the clarity, reflectivity and dispersion of light. Therefore, achieving the desired surface finish is essential for ensuring the reliable and efficient operation of quartz components in various applications.

Why polishing and lapping are the best choice for surface finishing quartz

Polishing and lapping are two surface finishing techniques commonly used to achieve high-quality surface finishes on quartz components. These techniques involve the use of abrasive materials, such as diamond, alumina, or silica, to remove material from the surface of the quartz and produce a smooth, flat and uniform surface.

Lapping involves the use of a rotating lap plate coated with an abrasive slurry to grind and flatten the surface of the quartz component. Lapping is ideal for achieving precise thickness, flatness and parallelism on large and thin quartz wafers used in the semiconductor industry. Polishing, on the other hand, uses a rotating polishing pad coated with a fine abrasive slurry to remove the micro-scale surface roughness and produce a mirror-like finish. Polishing is suitable for achieving high-quality optical surfaces on quartz components used in the optics industry.

Both polishing and lapping techniques offer several advantages for surface finishing quartz

High precision

Polishing and lapping offer a high degree of precision and control over the surface finish, enabling tight tolerances and smooth surface finishes.

Efficiency

Polishing and lapping are fast and efficient surface finishing techniques, reducing the time and cost of production.

Versatility

Polishing and lapping can be used on a wide range of quartz components, including wafers, lenses, mirrors, and prisms.

Repeatability

Polishing and lapping offer excellent repeatability and consistency in the surface finish, ensuring the quality and reliability of quartz components.

Test requirements

Quartz to be lapped and polished to achieve a flatness greater than 1 µm and an Ra value better than 1 Nm. The lapping and polishing were performed in two stages using different machines, plates/cloths, abrasive types/grades, and additional pressure. The following are the machine and material details used in the two stages:

Stage 1 (lap)

Kemet 15" lapping/polishing machine
Lap Plate: Cast Iron
Abrasive Type/Grade: Kemox 0-800S

Stage 2 (polish)

Kemet 15" lapping/polishing machine
PSU-M polishing pad
Abrasive Type/Grade: Kemox WC-970BB

At first, the Quartz sections underwent cutting on a Micracut 201 precision saw with a diamond cut-off wheel and a slow feed rate. As a result, a tidy cut with minimal chipping was achieved.

After cutting quartz with Micracut.

After stage 1 (matt lapped).

Lapped and polished quartz.

Process breakdown for stainless steel rotor parts

Stage 1: In this stage, the cast iron lap plate and Kemox 0-800S abrasive were used to lap the quartz samples. The lap plate was attached to the Kemet 15" diamond lapping/polishing machine, and the quartz samples were held on the weights using Dycem, a non-slip rubber. The samples were lapped for 20 minutes with an additional pressure of 4 kg.

Stage 2: In this stage, the PSU-M polishing pad and Kemox WC-970BB abrasive were used to polish the quartz samples. The polishing pad was attached to the Kemet 15" KemCol machine, and the Quartz samples were again held on the weights using Dycem. The samples were polished for 30 minutes with an additional pressure of 4 kg.

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Compact deburring and edge rounding solution

Time is money. Space is money. That is why Timesavers International, largest producer of wide belt grinding machines in the world, introduced a new machine for deburring and edge rounding. Faster than the manual work. More compact than the other available edge rounding solutions. In short, a perfect entry-level model. This new 12 RB series was first shown at last year's Blechexpo in Stuttgart, Germany.

Since 2009, Timesavers uses 'RB' to refer to the Rotary Brush. A technique that is used for edge rounding and creating a radius. Up until recently, the Timesavers machines were equipped with eight or four rotary brushes. Each of these brushes have over a hundred abrasive flaps. Because of its flexible material, the brush hits the edges of metal parts, grinds the corners and glides over the surface. Leaving the upper side unharmed in the process.

12 RB series and
Below: Inside the 12 RB series

RB machine range

The first deburring machine that was introduced with the rotary brush technique was the 42 RB series. It can have a working width of 1,350 mm or 1,600 mm and has eight brushes to cover the whole surface. With this amount of brushes, it is a piece of cake to round edges up to a 2 mm radius. In addition, the machine takes care of deburring, laser oxide removal, slag removal and finishing. A versatile, all-in-one solution for small and large products. Later in 2017, Timesavers manufactured the 32 RB series. An RB machine with four rotary brushes and a working width of 1,100 mm. Eventually in 2020, the RB technique was integrated in a smaller, 600 mm wide machine: the 22 RB series.

More compact solution

Yet, there was still a need for a more compact edge rounding machine. One that could replace manual deburring and rounding without occupying excessive space. Implementing the rotary brush technique in a smaller machine posed a challenge, particularly with a 530 mm long brush and a diameter of 350 mm. Given the necessity for the brush to rotate and cover all edges, the outcome is a 300 mm working width with three machine heads configured as: WRBW. A wide belt for grinding, one RB for edge rounding and another wide belt for finishing.

Easy operation

The 12 RB series is designed with user-friendly features. It includes a large Siemens HMI touchscreen for machine control, frequency-controlled motors and motorised height adjustment. Additionally, the machine has window doors and an illuminated interior to enhance visibility while processing. A noteworthy aspect of this 12 RB is its constant pass at a fixed table height of 970 mm. Regardless of whether the product is 3 mm thick or 100 mm thick. This unique attribute allows for a streamlined deburring process, especially when using return or outfeed tables.

Sheet metal processing

Dry working deburring and edge rounding machinery is perfect for sheet metal fabrication. They handle steel, stainless steel, aluminium, copper and more. These wide belt grinding machines are suitable for processing flat parts, sheets or plates up to a thickness of 100 mm. For the 12 RB series possible product sizes can vary from 20 x 20 mm up to 300 mm width. Due to a robust vacuum table the machine is capable of securely holding even a coin in place during grinding.

Dust extraction

A powerful dust extraction system is crucial for a clean and safe working environment, benefiting employee health and extending

machinery life. Timesavers exclusively partners with top-tier companies to ensure the best machine performance. In Germany, Absaugwerk GmbH specialises in extraction systems, including wet separators that seamlessly complement Timesavers machines.

Advice on tooling

There is a wide selection of abrasive material available for the 12 RB series, allowing users to achieve the desired application. To ensure top-notch quality in abrasive belts, Timesavers has established a partnership with 3M. Their grinding belts are not only long-lasting but also consistently reliable. Depending on the desired results, one can choose from coarse grits like #60 to fine grits up to #400. The 3M Scotch-Brite belt is widely used for finishing all sorts of metals. Timesavers has application experts who think along with users and provide them with advice on which tooling to use.

Quick tool change

12 RB series samples on conveyor.

Before vs after samples 12 RB series.

Brushes are available in various grits, flap sizes and minerals. The selection of mineral depends on factors such as the required radius size, the type of metal being processed, and whether the product will undergo anodising. For certain companies, it might be essential to eliminate laser oxide of plasma cut parts, significantly enhancing the quality and strength of welds. In such instances, tooling in the RB machine can be effortlessly changed, allowing a swift transition from a flap brush to a metal wire brush or from a fine grit to a coarser one. The abrasive brushes are made by Timesavers' business partner Boeck GmbH.

Seeking a machine solution that takes care of deburring, edge rounding and finishing? One with a small footprint, improving efficiency and contributing to cost savings? Visit ***www.timesaversint.com*** for detailed information.

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Vollmer introduces groundbreaking ultrasonic deburring system

Now available from Vollmer UK is the exciting new ultraTEC ultrasonic A25 deburring machine. As part of the Vollmer Group, ultraTEC is a company that has won a number of awards for its patented new ultrasonic deburring method that only uses water. Without the use of chemicals, the ultraTEC deburring system has already been recognised as a validatable process in a variety of industry sectors.

Only formed in 2019, ultraTEC has taken the industry by storm with its unique technology that utilises an ultrasonic horn that oscillates to generate sound waves as well as cavitation to clean and deburr external and internal edges with complete process reliability. The environmentally friendly solution provides sharp edged burr-free parts that often cannot be processed via alternate methods. This energy efficient system eliminates common challenges when deburring parts such as deformation, discolouring and changes to the oxide layer on the component. It is also performs on small and delicate components that cannot be processed via alternative methods. This makes the ultraTEC ultrasonic A25 perfect for applications in heavily regulated sectors with challenging demands such as the medical, food and drug industries, aerospace, electronics and many more.

How it works

The ultraTEC ultrasonic A25 creates a formation and dissolution/implosion of bubbles in water that release an intense energy during implosion. This is created by an ultra high oscillation of 20kHz, 20,000 oscillations a second, with an oscilation width of +/-80-120 microns, which far exceeds the amplitude of ultrasonic cleaning, cutting and welding technologies. An ultrasonic horn that is fully submersed in water is set into resonant vibration via mechanical oscillations to transmit the extremely high forces into the water tank. With horn diameters from 1.2 to 14 mm, the ultrasonic horn is fixed in a position in the water tank and components are robotically moved around the ultrasonic horn that creates a cavitation jet from 250 to 270 m/s that breaks burrs from the parts.

The Vollmer ultraTEC Innovation A25 ultrasonic deburring system.

The auto loading system on the ultraTEC A25.

The robot loading station on the ultraTEC A25 from Vollmer.

The ultrasonic horn and parts gripped in the ultraTEC A25 machine from Vollmer UK.

The ultraTEC ultrasonic A25 is configured with an ultrasonic stainless steel 40 litre basin that can accommodate parts up to 150 by 150 by 150 mm and weighing up to 1.5 kg. In the basin are two opposing ultrasonic horns to cater for a variety of applications and once processed, parts are moved to a compressed air drying station. Components are collected from an external pallet by a 6-axis ABB industrial robot that is programmed via an application integrated into the ABB RobotStudio suite, a CAM system for ultrasonic deburring.

The ultraTEC ultrasonic A25 is a completely flexible system with a multitude of options such as conveyor loading and different component tray configurations.

Additional options include various waterproof gripping systems for part picking, a selection of motor and air pressure spindles for additional processes like brushing and re-gripping stations to turn components around for gripping from the opposite side. For further information on this exciting new technology, please contact Vollmer UK.

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 grinding, eroding and machine tools for rotary tools, circular saws and band saws in the wood and metalworking industries. In offering this, it 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.

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Trumpf deburring tool provides repeatable accuracy

Trumpf has introduced a new TruTool TKA 1500 edge milling tool with updated features to create sheet metal edges with repeatable accuracy and without rework. The redesigned deburring tool is now available with a new cutting mount and guide fence for increased applications and safety. Additional ergonomic enhancements to the TKA 1500 contribute to the tool's low-vibration and smooth operation.

Trumpf designed the TKA 1500 for operator safety and ergonomics. The tool's handle shape, size and positioning ensure safe machine guidance and support the chamfer quality. The large electric hand tool is equipped with a 2,600-W motor and adapted gearbox, meaning it is very quiet to run and operators can generate a high-quality chamfer reliably and for longer periods of time without fatigue. Design improvements have reduced vibrations and ensure that an optimum feed rate can be achieved. This reduces the amount of wear and tear, increasing durability.

The TKA 1500 comes with a standard, 45-degree multi-edge cutter mount, and depending on the application, operators can also choose optional multi-edge or radius multi-edge cutter mounts in 30-degree, 60-degree and now 37.5-degree angle positions. The new multi-edge cutter mount can chamfer 37.5-degree angles, which is particularly useful when processing tubes. The new edge milling tool is suitable for an increased variety of applications. It is suitable for deburring, rounding or chamfering end edges. The tool can also be used to prepare parts for powder and paint coatings, as well as welded seams.

The bevel length can still be adjusted without tools, although now it is easier to adjust since the new design of the TKA 1500 provides an unrestricted view of the dial ring. Operators can use the tool to create clean visible edges, break off sharp edges, add a radius or prepare a weld seam.

Another highlight of the new TKA 1500 is the unique guide fence, which is made of stainless steel and is said to be beneficial when processing long, straight sheet metal and outer contours. The guide fence makes it easier to run into the sheet metal and control the processing direction. The guide fence also provides protection against chips, directing chips downward in a controlled fashion to increase occupational safety.

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Q-Fin helps its customers make a lasting impression

In November last year, Q-Fin showcased its robotic cell, double-sided deburring lines, handling solutions and new Qonnect+ software at Blechexpo in Stuttgart.

Since its creation in 2013, Q-Fin Quality Finishing Machines has focused on the development, production and sales of machines for deburring, edge rounding and finishing of sheet-metal parts. The Dutch company, part of a larger group of four companies, also builds dust extraction machines to combine with its finishing machines. It has already picked up several awards including the surface-finishing technology prize at EuroBLECH 2018 in Hannover and, in 2019, a Blechexpo award for its F200 XL small parts machine. The dynamic manufacturer has, on average, released two technology innovations every year since its foundation and has exhibited strong growth levels in both staff and turnover over the past few years.

Q-Fins's head office, with showroom and demonstration centre, is at Bergeijk in The Netherlands. All its machines are assembled there although metal components, after engineering, are sourced from its sister companies in the group. It is currently building a second hall, focusing on handling solutions, at its new premises in Bergeijk.

Joost Kouwenbergh, business officer for Q-Fin says: "Our new 1,500 m² building, which will be dedicated to handling solutions, is almost finished. We expect to move into the building in mid-November. Handling solutions around deburring machines are becoming more and more important for customers. There is a lack of manual labour for loading/unloading machines and to move parts onto processes such as bending or welding, for example, so process automation has come more into focus to ensure quality. As this is such a large part of our activities now, we decided to create a new department and a new building dedicated to automation and handling solutions." Robotic handling is also a key feature of the company's customised deburring lines. Q-Fin works with Yaskawa who provide the robots for loading and unloading the deburring machines.

Joost Kouwenbergh adds: "Imagine a double-sided deburring line with infeed and outfeed tables, plus robotic cells and 3D cameras at the front and back of the line. These types of lines are becoming more popular than stand-alone deburring machines. In our new hall, we will have the space to properly showcase lines with one or two robot cells and double-sided deburring lines.

"We use turnaround systems for double-sided finishing of sheet-metal products. Weber Maschinenbau, for example, bought two of our latest SER1200 Multibrush finishing machines with Q2S turnaround unit four months ago. This is a huge and impressive line for optimal two-sided finishing. Weber was quick to see its potential; we may possibly add robots at the front and back of the line later."

Q-Fin expanded its stand space at the Blechexpo exhibition to 136 sq metres. It will showcase an operational robot cell at the exhibition and highlight automation around its machines, including its new Q-Calibration software. A key focus will be its SER1200 Multibrush. This Super Edge Rounder features two different brush techniques, a combination of the F1200 machine with one grinding belt and four oscillating disk brushes and a Multibrush rotor with six brushes and a second grinding unit for line graining. The option of vacuum or magnetic support systems unlock new possibilities for processors of

stainless steel as well as thicker steel. "The SER1200 is for products up to 1,200 mm wide and for users who want large deburring machines that are capable of various different operations. It offers high speeds and directionless finish, with edge rounding up to 3 mm," explains Joost Kouwenbergh. "We also have a machine with vacuum system for operators working with stainless steel products that need a directionless finish. We can do edge rounding with the brushes in front and ensure a directionless finish with the multi-brush. Combining these two systems gives us a definite advantage. A derivative of this, the new M1200 Multibrush machine, will be ready at the beginning of next year featuring a grinding unit and Multibrush station."

Q-Fin aims to double its turnover in two years' time and is positioning itself to meet that ambitious target. However, it is also aware that rapid growth needs strong and stable support.

"Companies who are looking to grow and innovate are still willing to spend money as long as they can win back the investment, ensure higher quality etc. We don't expect that situation to change in the next two years. We expect to grow a lot more as customers invest in new techniques, such as robotics and automated handling solutions. We have increased our capacity in Germany, we may even take on a third account manager there and we also see potential for growth in certain European countries," states Joost Kouwenbergh. "Our goal for the next five years, to 2028, is to position our deburring machines as the new standard in deburring and we will keep pushing the boundaries." Q-Fin has set up all its machines in working order so that customers can test their own products by appointment at its Experience Centre in Bergeijk.

Joost Kouwenbergh concludes: "At Q-Fin, we help organisations that want to make a lasting impression e.g. businesses who are ready to get started with their 4.0 version. Those who believe that simple production processes are not obstacles, but opportunities to distinguish themselves from the rest. Just as we also strive to stand out."

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High end technology in tool grinding

When Guido Bertoglio first developed the principle of thermal compensation in a tool grinding machine in the mid-1980s, the foundation was laid for incredible precision and efficiency in grinding a wide variety of tool geometries. Optimised technology, modern materials and ever new developments of the basic principle are today the absolute unique selling proposition of consistency and accuracy of TTB tool grinding machines. TTB Engineering SA was founded in 1995. Since then, the Swiss company has been located in Riva San Vitale, Lugano in the Swiss Ticino.

A sceptical customer of TTB Engineering SA was recently able to experience on his own tool just how unbelievably well the operating mechanism of a TTB tool grinding machine works. Within the company, a wide variety of tool grinding machines were tested for their consistency and accuracy. The goal was to produce tools automatically in as large a quantity as possible without the need for a machine operator to intervene and readjust. In the process, the geometry to the first-ground tool was allowed to have a maximum deviation of no more than 3µm. After that, the machine operator had to intervene again and make appropriate compensations. After trials on a wide variety of machine types from several machine manufacturers, the maximum number of pieces within the issued tolerance range was three tools without intervention. As they were not satisfied with the result, they decided to approach TTB Engineering SA and asked for a comparable test. Thus, a machine was taken out of the current production and equipped with the desired test series in the test centre.

Own test setup in the test centre

For the test, the standard model of a TTB EVOLUTION was chosen. The TTB EVOLUTION has a grinding wheel turret with four spindles, each of which can be equipped with up to three grinding wheels. This means that all the grinding wheels required for the grinding process are ready for use at any time and can be changed automatically within a few seconds. The positioning accuracy from one spindle to the next is a maximum of 0.3 µm axially and radially. In the test setup, the machine was equipped with a loader, with two precise CNC axes with pneumatic swivelling and clamping units, as well as two pallets for blanks and finish-ground tools, which can hold up to 800 workpieces in the range from 1 to 16mm, depending on the diameter.

All expectations exceeded

After the test setup was accepted and the machine was set up, the test run could start. Since the customer was sure that they could easily produce the required three workpieces within the tolerance of 3 µm, they were quite confident in the test centre of TTB Engineering SA. Nevertheless, they were naturally very curious to see by how many precisely ground tools the previous tests could be surpassed? The tool grinding started and soon the third tool was ground and measured. Lo and behold, the tolerance was still well within the required 3 µm. So, the test continued and all the tools were constantly measured accurately. After five tools were still in tolerance and then 10 tools there was still no cause for concern. This was followed by 30 tools, 50 tools and so on. In the end, there were 107 fully automatically produced tools with a geometry deviation below 3 µm, without a machine operator having to intervene or readjust in any way.

The customer looked at the result almost in disbelief before his amazement turned into enthusiasm. Another customer was thrilled by the absolute consistency and maximum precision of the TTB Evolution and has since been using the machine very profitably in day and night shifts without errors.

The next generation of precision is already ready

The latest new entry to the TTB family is the TTB Next. A machine that takes the notorious consistency and precision of TTB Engineering SA to the next level with further innovations and even requires a 30 percent smaller footprint compared to the TTB EVOLUTION.

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Unleash the power of precision

ANCA's FX7 ULTRA guarantees perfection for small tools down to 0.1 mm

Designed for small tools, the new FX7 ULTRA is the latest game-changing innovation in ANCA's premium ULTRA machine range. Boasting unparalleled accuracy and exceptional quality, the FX7 ULTRA takes small tool manufacturing to new heights.

"The FX7 ULTRA introduces cutting-edge technologies that revolutionise precision grinding for small tools down to 0.1mm diameter. If you produce tools such as ballnose, corner radius endmills, and complex or intricate profile tools, then this machine is for you," says Darren Fox, ANCA product manager.

New software, hardware and design features significantly improve surface finish, accuracy, and controlled runout, ensuring batch consistency from the first ground tool to the last. These advancements ensure that the FX7 ULTRA is the go-to solution for precision grinding in industries that rely on small tools, including electronics, telecommunications, medical devices, aerospace, automotive, diemold, and general machining.

Features of the FX7 ULTRA include: one nanometre control system, new servo control algorithm for smooth motion system and mechanical upgrades enhance stiffness and rigidity, in-process measuring, balancing and runout compensation for consistent accuracy, Motor Temperature Control (MTC), ANCA's patented innovation and specialist training support from our engineering experts on how to grind perfect cutting tools.

The FX7 ULTRA not only grinds tools faster than other machines, but also produces tools with both finer surface finishes and greater accuracy which means superior tool performance and quality.

Darren Fox adds: "The ULTRA technology has enabled production of high-quality small tools with the capability to grind down to a size as small as 0.1mm. The nanometre control enables micro-adjustments for smoother axis movement resulting in optimal tool geometry, ensuring superior cutting performance and surface finish. These advancements will have a significant impact across the entire tool range, enabling precise and efficient grinding operations for a variety of applications."

Pat Boland, ANCA co-founder says: "Our customers who supply to industries where intricate and precise machining operations are paramount are always striving for the best quality tools and now they can stay ahead of the game with the FX7 ULTRA. After years of dedicated research and development, the FX7 ULTRA is set to revolutionise the way we manufacture small tools."

A technical look at the FX7 ULTRA's innovative features:

Greater control for the velocity and acceleration or deceleration along with machine jerk limits
To increase the stiffness of the C-axis, the FX7 ULTRA combines developments to the nanometre or micro degree resolution in the linear and rotary axis, tuning parameters, several system enhancements and major mechanical changes.

ULTRA-fast response to internal or external disturbances
ANCA's newly designed servo control algorithm allows silky smooth motion of an axis with the use of a unique algorithm and nanometre measurement in the control system. This will create finer cutting edges and eliminating micro-chips making it more efficient while used in actual machining of materials.

Better cycle time and higher productivity of high-quality cutting tools
The unique algorithm is key to the performance of the machine and ensures outstanding tracking performance. It also allows ULTRA-performance of the servo system without using a complex, complicated or expensive mechanical system.

Reduced setup times and scrap
Cutting-edge software has been developed by ANCA to ensure batch consistency in large volumes. LaserUltra will maintain consistency and accuracy of the grinding process which includes in-process measurement and compensation to accommodate wheel wear and other external variations during large batch grinding. Its analogue capability can maintain less than +/- 0.002 mm line form accuracy of any profile which includes ballnose and corner radius tools.

Increased wheel life and better-quality tools
Tool and wheel performance can be further optimised by the iBalance software, which guides a user to the optimal grinding position and RPM for vibration monitoring and balancing the wheelpack inside the machine. Correctly balanced wheelpacks result in superior surface finish and reduced wheel wear due to the elimination of wheel vibration.

Consistency in finished tool quality
The total tool runout measurement and compensation operation is available in the iGrind software. When an endmill is in rotation it is important that each tooth hits at the exact same spot along the workpiece for longer tool life and efficient cutting. Every tool in the batch can be measured and compensated for runout to make sure the entire batch is within a tolerance of 0.002 mm. It is another piece of assurance that the first endmill will be as good as the last.

Consistent spindle thermal stability
Motor Temperature Control (MTC) is a patent pending innovation built into the motor spindle drive firmware. Smart control algorithm actively manages and maintains the temperature of motorised spindles in the FX7 ULTRA. Dramatically reduced machine warmup time means production can start sooner, once the machine has reached thermal stability. This improves productivity and machine use. Consistent thermal stability of the spindle over time regardless of changes in load or speed, or coolant temperature, greatly improves the dimensional stability of grinding results.

Post grinding processes
The smoother, finer cutting edge and surface finish as a result of the combination of all the above including the nanometre control will assist in all post grinding applications like edge preparation and coating. A finer edge that has been properly prepared has greater stability, which reduces the likelihood of it chipping, while also decreasing surface roughness which can cause increased friction between the tool and the workpiece.

Visit ***www.anca.com/FX7Ultra*** for more information.

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Solutions for dust and fume extraction in a 3D printing work environment

The popularity of 3D printing, or additive manufacturing, has increased greatly in the past few years. Because of this, it is important to raise awareness of the potential health hazards associated with using the technology.

The possibilities of creating customised products with minimal waste and low manufacturing costs have led the 3D printing industry and the technologies behind it, to grow and develop rapidly. Previously, 3D printers were mostly used for creating smaller quantities of prototyping parts. Today, engineers are 3D printing everything from bone replacements to aircraft and houses, with new possibilities presenting themselves constantly.

Increased awareness of hazardous fumes and combustible dust from 3D printing processes

As more and more companies use 3D printing in their operations, questions have been raised regarding associated health and safety issues. There is a concern about the fumes, dust and odours created during the printing and post processes.

With 3D printing being a relatively young industry, scientists have only recently begun to investigate this and there are studies indicating potential health risks associated with using the technologies. This is the case regardless of if you are using the printing process of, for example, material extrusion, binder jetting or powder bed fusion. Study results show that printers emit a significant amount of Ultrafine Particles (UFPs) and hazardous Volatile Organic Compounds (VOCs). Post processes of gluing, grinding and painting the product have also been shown to generate potentially hazardous pollutants.

Depending on which material and printing process you are working with, the pollutants can be both combustible and cause various health problems if inhaled. This applies especially in cases of large-scale manufacturing where several machines run simultaneously. Good ventilation and customised fume and dust extraction systems are therefore important to ensure a safe work environment.

Additive manufacturing research laboratory at Swerera IVF

As a provider of clean air solutions, Nederman is participating in the construction of an additive manufacturing research laboratory at Swerea IVF. The Swedish research institute conducts research for industrial renewal and sustainable development.

One of its current projects is to set up a production line for additive manufacturing of metallic materials. The aim is to facilitate the industrialisation of additive manufacturing by creating a platform for innovative products, materials and processes. In addition, the research laboratory will function as a showroom to display 3D printing applications to interested parties.

Providing extraction solutions for desktop 3D printers and large-scale manufacturing

The additive manufacturing research laboratory includes desktop 3D printers as well as a system for large-scale manufacturing. Nederman is providing air filtration and fume extraction solutions for both of these areas. As for now, it has installed benchtop extraction kits for the desktop 3D printers. The kits include a fan, filter, fan speed controller, hoses, table brackets and connectors. Next, Nederman will provide a fume and dust extraction solution for the large-scale manufacturing system. Its solution will extract fumes during the printing process and dust during the machining process. This is done using the same vacuum unit.

Dust and fume extraction in 3D printing

In all of the applications described, ultrafine particles, volatile organic compounds and dust are captured at the source of pollution, before they reach the operator's breathing zone. The result is a safe and clean work environment where several 3D printers can run simultaneously without causing health risks.

Nederman is excited about being a part of this project together with Swerea and to see where 3D printing technologies will take the manufacturing industry in the future.

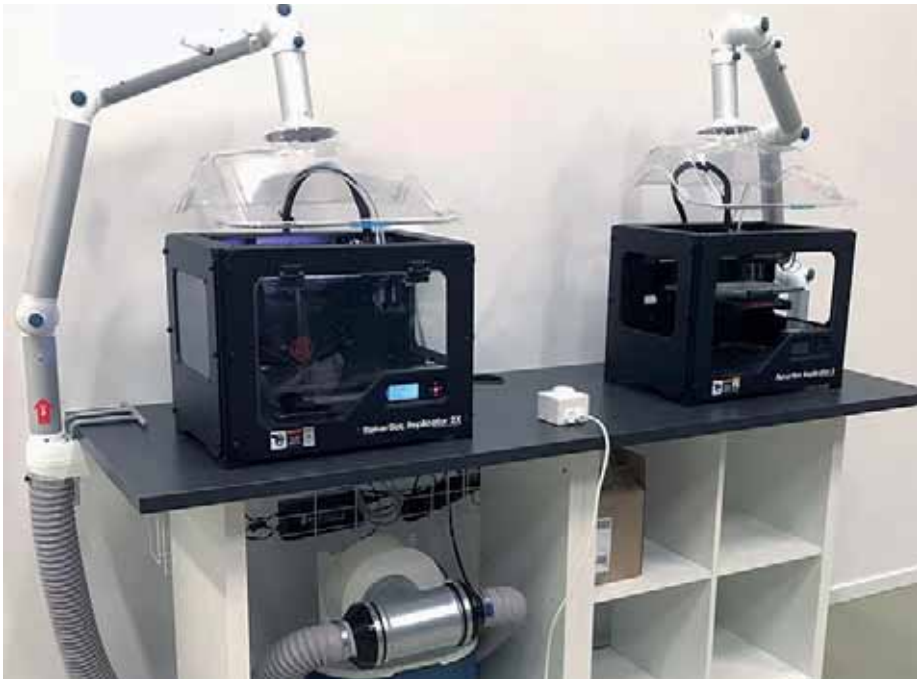
Unmatched expertise in combustible dust management

Revolutionary dust extraction solutions ensuring workplace safety

For decades, Nederman has been at the forefront of revolutionising the landscape of workplace safety, particularly in the realm of combustible dust management. Its dedication to providing cutting-edge dust extraction technologies has solidified its position as a trusted leader in workplace safety and clean air technologies in various

industries. The integration of its technology in warehouses has seen increased awareness of the dangers of combustible dust and the enhanced safety coverage that Nederman products bring to a workplace. Organisations have not just recognised but relied on Nederman's unwavering commitment to workplace safety to ensure safer operations and increased operational capacity for their businesses.

The choice of its clients to continue to utilise our technologies and superior dust extraction solutions showcases Nederman's proven reliability and effectiveness. This has solidified its relationships with clients and shows a continued trust in its commitment to protecting people, planet and production from harmful effects of industrial processes.



Mastery in mitigating hazards associated with combustible dust

Industries engaging in advanced manufacturing techniques face inherent risks linked to combustible dust. Understanding these potential hazards and their catastrophic outcomes, our team comprises of industry-leading specialists trained in monitoring and managing workplaces prone to combustible dust risks. Nederman's unwavering dedication to safety has made it a popular choice for companies in need of premium dust extraction solutions.

What can go wrong with combustible dust and how do Nederman products manage that?

Combustible dust in industrial settings remains a silent threat, capable of triggering catastrophic consequences. Without the appropriate extraction devices, combustible dust can accumulate unnoticed and create a volatile environment. Even a minor ignition source could escalate into a severe incident that can quickly jeopardise employee safety and business operations.

Advanced technologies and premium dust extraction solutions are engineered to detect and manage these risks proactively. By continuously monitoring dust levels and air quality, Nederman systems provide an early warning mechanism, enabling swift intervention before any hazardous situation escalates.

Its comprehensive approach doesn't stop at detection, its capabilities extend into rapid response measures. Through remote monitoring platforms like Nederman Insight, specialists are instantly alerted to any issues, ensuring immediate intervention. In an industrial landscape fraught with potential hazards, the company has a commitment to proactive risk management that safeguards both personnel and productivity.

Tailored solutions for uncompromised safety within limited spaces

Collaborating closely with numerous organisations, Nederman has tailored solutions to meet their specific needs, especially when confined spaces pose a challenge. Its latest innovations, such as the configurable MCP Smartfilter, symbolise its commitment to delivering advanced, space-efficient dust extraction solutions.

Despite size constraints, the team configures units within available space, offering upgraded, more advanced dust extraction solutions without compromising on safety or efficiency.

Advanced features ensuring optimal efficiency and safety

Its products meet stringent combustible dust management standards. Operating at lower frequencies, they facilitate monitored power consumption for enhanced safety and reduced energy levels.

Equipped with Nederman Insight, specialists and clients can remotely monitor unit performance, allowing proactive maintenance and issue identification. This proactive approach minimises downtime and allows for planned maintenance which ensure minimal operational interruptions.

Elevating workplace safety and operational excellence

Nederman's commitment extends beyond product excellence. Its team of combustible dust management specialists undergo continuous training, ensuring unparalleled expertise in dust extraction technologies.

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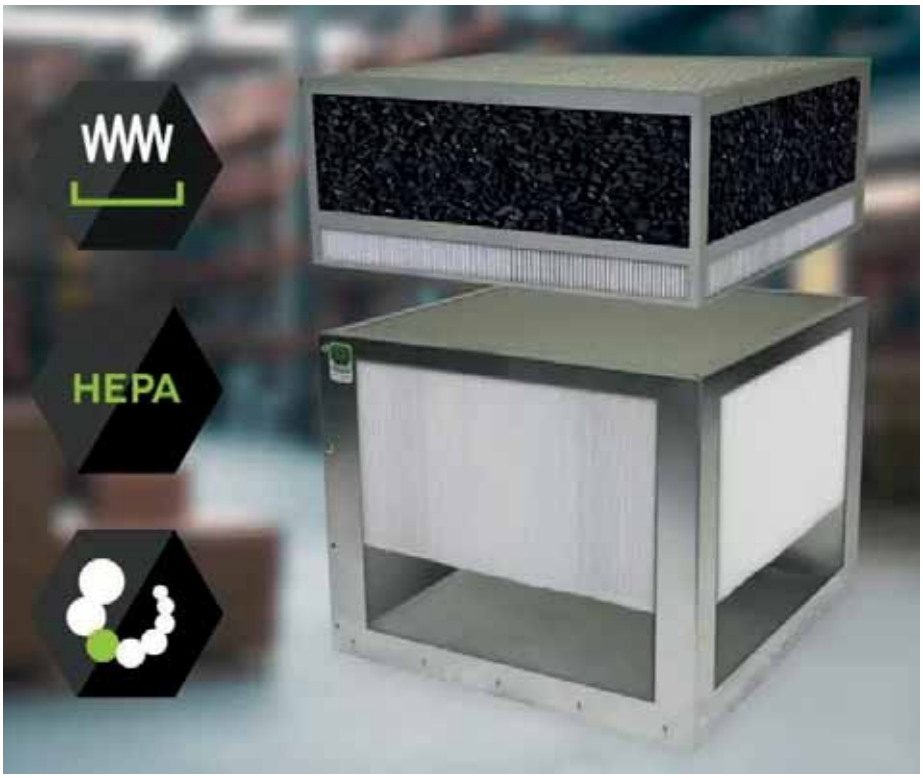
Three steps to filtration efficiency

Every day, around the world, BOFA fume and dust extraction technology is helping companies to manage the safety of their workplace environments and to improve productivity. Whether it's additive manufacturing, lasering, electronics production, printing, or another fume-emitting process, BOFA's portable systems are filtering potentially harmful airborne particles.

Its engineers are experts in identifying the composition, volume, size, shape and velocity of emissions and developing a filtration system matched to end user requirements.

As Josh Evans, applications engineer at BOFA explains: "BOFA filtration technology helps to reduce exposure to unwanted substances in the workplace. At the same time, our systems help keep production equipment free from dust that might otherwise impact on product quality. And because our technology is portable, it can support an agile manufacturing environment."

BOFA systems typically comprise a 3-stage filtration architecture which when coupled with advanced air flow control, provides high levels of extraction performance while optimising filter life and helping to lower the overall cost of ownership.



The 1-2-3- of BOFA filtration technology

Stage 1

The pre-filter, the patented DeepPleat DUO, incorporates a large capacity drop-out chamber to collect a high volume of larger particulate. This helps capture the bulk of emissions, thereby optimising the life of the HEPA (High Efficiency Particulate Air) filter.

Stage 2

The HEPA filter is purpose-designed to create a large surface area capable of capturing 99.995 percent of particles at 0.3 microns, helping to protect operatives from airborne contaminants with potential to be harmful to human health.

Stage 3

A layer of activated carbon removes vapours and gases such as VOCs (Volatile Organic Compounds), specially formulated to handle specific chemical interactions. The exact configuration, airflow rates and filtration media will depend upon each application and the industrial process involved. Take a laser process compared to electronics production, for example. The HEPA and carbon filters will be the same for both processes, but the pre-filter will need to filter large amounts of fume in laser processing, whereas pre-filtration for electronics production will require a smaller capacity.

In printing, some wide-format printers use a solvent called butanone, also known as Methyl Ethyl Ketone (MEK), which can react exothermically with untreated carbon. So here, specially treated carbon would need to be used.

In mechanical industries, such as sanding and drilling, no gases are given off, so no activated carbon filter is required. For this reason, extractors such as BOFA's DustPRO range are specified as a 2-stage system, with a pre-filter and HEPA filter.

Another critical factor is system control. BOFA's Intelligent Operating System (iQ) will respond dynamically as filters begin to fill to maintain the airflow needed to deliver the specified extraction performance. iQ provides a visual system condition read-out, along with independent filter status monitoring to enable operators both to order replacement filters and exchange them in a timely fashion to avoid the risk of unplanned downtime.

To find out more about BOFA filtration systems, take a look at the education modules available by registering with the BOFA Academy.

The value in buying BOFA technology

Total cost of ownership. It's a key consideration uppermost in the minds of manufacturers looking for efficiency and productivity gains. Industry is increasingly an automated environment, where equipment reliability, technical support and supplier responsiveness are key to maintaining production schedules.

Unplanned downtime can be hugely costly for any business operating 24/7, which is why when it comes to fume and dust extraction systems, BOFA invests significantly in 'wrap-around' customer support as well as market-leading filtration and system control technology.

Of course, total cost of ownership captures both capital expenditure and operating costs, incorporating the initial outlay, energy consumption, maintenance, replenishment of consumables and more. In the case of fume and dust extraction, which removes airborne contaminants with the potential to be harmful to human health and

damaging to equipment, reliability and filtration performance are among the most critical considerations. That's why BOFA has developed a comprehensive, wrap-around customer ethos covering everything from design and installation to ongoing maintenance and technical support.

"Our focus is on delivering excellence at every customer touchpoint, from initial specification and architecture design through to filtration performance and system control," says Arran Morgan, BOFA senior product manager.

"Each system is tailored to deliver the required extraction performance as a result of a thorough understanding of both the process and the associated emissions. We have a team of engineers designing technology as well as scientific and chemical experts who identify the type, volume, size, shape and velocity of particles being emitted. This combination ensures that the filtration architecture, typically comprising a pre-filter, HEPA filter and carbon layer, helps deliver optimal performance and longevity for any given process.

At the same time, we also test and inspect every unit before despatch through a rigorous 8-stage SureCHECK programme that verifies fabrication, electrical components and filtration effectiveness. This means that reliability is 'baked in'."

Once the technology is operational, BOFA also makes it easy for operators to view their extraction system performance in real-time, through innovations such as the Intelligent Operating System (iQ).

"iQ is an industry 'first', offering independent filter status monitoring and remote diagnostics, which are key contributors to lowering the overall cost of ownership," says Richard Heard, technical Manager at BOFA. "The system provides intuitive visual management, quickly alerting users to filter condition and any performance exceptions out of scope, thereby ensuring timely maintenance scheduling and optimal productivity.

In addition, once an extraction system has been installed by BOFA, a whole range of support is then available to the customer to maintain the optimal performance of the technology. With the support of its parent company, US-based Donaldson Company, Inc., a leader in the industrial filtration market, it offers class-leading R&D. It also provides the peace-of-mind that comes from a comprehensive warranty and an easy-to-contact technical helpline in the unlikely event that any issues arise."

It's not just the combination of system monitoring, smart airflow management, extended filter life and bespoke design that makes BOFA technology ideally suited to today's manufacturing environment. BOFA units are also portable, meaning that they can easily be manoeuvred to support an agile manufacturing environment; a benefit that is becoming increasingly important as companies seek to flex opportunities in new markets and satisfy fluctuating customer demand.

This portability also offers energy consumption benefits because it returns filtered air into the workplace rather than expelling air outside via a fixed vent-to-air system and then having to reheat the factory space which is another important contributor to lowering the total cost of ownership.

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MecWash system revolutionises productivity at IMI Truflo Marine

The addition of the MecWash MWX300 has made a dramatic impact at IMI Truflo Marine, increasing cleaning productivity over six times while vastly reducing the operational manpower required. IMI Truflo Marine noted a significant improvement in both efficiencies and the standard of cleaning which helped the business meet global demand. The historic naval valve manufacturer make flow control solutions, with over 120,000 valves in service to 24 of the world's naval fleets.

IMI Truflo Marine contacted Paul Jarratt, sales manager at MecWash, to enquire about upgrading to a high-performance aqueous cleaning system to improve their cleaning programme.

Paul Jarratt comments: "Speaking with the team at IMI Truflo Marine, it was clear we could build a machine that would make a substantial difference to the output of the business. We discussed their current cleaning programme which consisted of two large ultrasonic dip tanks and required a sizable amount of energy and resources.

"The MWX300 was the ideal machine for application at IMI Truflo Marine. The precision cleaning and sophisticated drying processes would ensure the components are free of contaminants, preserving the critical tolerances necessary. Marine components have very tight tolerances, and even small amounts of dirt or contamination can prevent them from functioning properly."

MecWash works alongside companies from across manufacturing and engineering to design and build bespoke parts washing machines to streamline their cleaning regimes. The experienced team designs and builds industrial parts washers for particularly difficult cleaning challenges. Customers receive an in-house laboratory analysis of complex component cleaning issues and MecWash can specify or develop specialist cleaning chemicals when required.

IMI Truflo Marine has been a specialist in the design and manufacture of high integrity valves, actuators and pressure reducing stations for critical naval marine applications for over 60 years. In the marine industry, the process of precision cleaning is crucial for manufacturers, as high quality and adherence to regulations are essential.

Kurtis Smith, continuous improvement engineer at IMI Truflo Marine, says: "Truflo needed a machine that could provide a consistent and high-quality finish on valves in sensitive materials used in marine systems. It was important for the business that the new system could improve productivity with less manpower required in the parts washing process.

"Since the installation in 2022, the MWX300 has delivered impressive cleaning results, especially considering its size. The cleaning process has always been challenging due to the sensitivity of the parts and the mirror finish required. Previously, only three valve kits could be cleaned with a 30-minute cycle, with the MWX300, 12 kits are being cleaned within 18 mins, with a smooth and polished finish."

He continues: "The previous method was manual and required the parts to be blown dry with air guns after washing. Now, the parts are simply placed in the baskets, loaded into the MWX300 and the start button pressed. 18 minutes later, 12 kits of clean and dried parts are ready for the next operation with the minimum of manual intervention which fulfils the brief that we originally presented to MecWash."

John Pattison, managing director at MecWash, adds: "The MWX300 will support the long-term durability and functionality of the components cleaned at IMI Truflo. We are exceptionally pleased to have made such an impact to their productivity with the machine speeding up the cleaning capability of IMI Truflo Marine from 6 kits an hour to over 36 kits per hour, all with the drying included.

"The reports from IMI Truflo show the immediate impact of the MWX300. These improvements highlight the results of the MecWash machines and the value that the change in precision cleaning can bring to manufacturing companies. Well-cleaned and maintained parts perform better and last longer, contributing to a more reliable operation and creating savings for the customer in the long-term."

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MicroCare welcomes new chief operating officer

MicroCare has announced the appointment of Lu Anne Green as its chief operating officer. With a history of excellence in manufacturing and operational leadership, she brings a wealth of experience and expertise to this pivotal position. her impressive career spans multiple industries and she has consistently demonstrated a commitment to quality and efficiency in manufacturing and operations.

Lu Anne Green's background includes notable roles such as chief operating officer at ELG Alloys, principal at a private wholesale food distributor and senior vice president of global operations at ICU Medical. Her skill set includes LEAN, Six Sigma, quality control, systems integration, profit and loss management, supply chain optimisation, contract manufacturing, inventory reduction, global sourcing, logistics and multi-site operations.

As the newly appointed COO at MicroCare, she will play a vital role in the company's ongoing commitment to manufacturing excellence and operational efficiency. She will be responsible for overseeing all manufacturing operations across

MicroCare's Connecticut, USA, based operating locations, with a focus on planning and prioritising customer, employee and manufacturing requirements. Lu Anne Green's experience in developing and implementing processes to improve operational performance, strengthen customer and vendor relationships and mitigate health, safety and environment risks will be invaluable in her new role.

In her capacity as chief operating officer, she will also collaborate closely with the executive team to develop and optimise organisational capabilities in alignment with the company's strategic objectives. Her expertise in supply chain management, global sourcing and contract manufacturing will contribute to MicroCare's ability to meet its performance targets and drive manufacturing and operational capabilities to match sales activity.

Tom Tattersall, MicroCare CEO, says: "We are thrilled to welcome Lu Anne Green to the MicroCare team as our chief operating officer. Her experience in various industries and her track record of implementing LEAN, Six Sigma principles and quality control measures will be instrumental in further elevating our manufacturing and operational capabilities. We are confident that Lu Anne's expertise will help us deliver even better solutions to our customers and continue our commitment to excellence."

With Lu Anne Green's appointment as the chief operating officer, MicroCare is poised to enhance its position as a leading provider of manufacturing solutions in its industry.

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Safetykleen unveils ground-breaking purified cleaning technology

Safetykleen, the experts in sustainable parts cleaning solutions, has announced the launch of its game-changing purified cleaning technology.

This break-through innovation marks a significant milestone in cleaning technology, addressing the ever-increasing demand for faster, more efficient and environmentally responsible cleaning solutions.

Purified cleaning technology is a triumphant culmination of three key elements, all working seamlessly together to elevate parts cleaning standards across a diverse range of industries:

With an astounding 99 percent removal of impurities from water, Safetykleen guarantees the purest water for unparalleled cleaning efficacy. This ground-breaking advancement ensures that cleaning is not only better thanks to the absence of unwanted minerals depositing on parts but also stays at consistently high quality throughout the service cycle, meaning customers continue getting reliable cleaning results between two services.

It incorporates upgraded formula chemistries that outperform existing chemical solutions, delivering 2x better and faster cleaning results. This leap in cleaning chemistry sets a new industry benchmark for cleanliness and speed, enabling customers to make gains in their workshop productivity and energy savings.

Purified cleaning technology is integrated with state-of-the-art automatic dosing pumps at each Safetykleen branch, ensuring maximum accuracy and efficiency as each customer's chemistry solution is prepared to order, with the right mix of chemistries, with no manual intervention. The result is consistency and cleaning efficacy guaranteed in the customer's unique solution every single time.

It is poised to revolutionise the cleaning industry by setting new standards for speed, efficiency and environmental responsibility. The pioneering innovation will empower businesses to achieve cleaner, safer and more sustainable environments with a variety of benefits.

The technology significantly reduces cleaning time by up to 50 percent, allowing

businesses to optimise their productivity while making savings on energy consumption. New advanced chemistries of purified cleaning technology, in conjunction with purified water, not only guarantee cleaner surfaces but also maintain the cleanliness of parts washers, resulting in longer-lasting cleanliness. This extended cleanliness ensures consistent and dependable results while reducing the risk of breakdowns caused by unwanted mineral deposits. Purified cleaning technology not only cleans better but also smarter, leading to reduced energy consumption and a more sustainable approach to cleaning.

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ActOn Finishing develops wet blasting cabinets for consistent and effective surface finishing

Surface finishing leader launches a new range of wet blasting cabinets and automated vapor blasting systems, to offer the manufacturing market a more ergonomic and effective solution to clean, descale, deburr, remove rust, oil or grease and smooth finish a wide range of components.

ActOn Finishing is a leading provider of shot blasting technology, offering state-of-the-art cabinets and finishing solutions for surface preparation. ActOn's technology excels in providing a uniform and consistent surface finish, making it an ideal choice for applications in industries such as automotive, aerospace, metal fabrication and more. The company's commitment to innovation and quality has resulted in a new range of Wet Blasting cabinets, the AWB range and automated vapor blasting systems.

About AWB range

The AWB series has been ergonomically designed for easy operation in sitting or standing position, for cleaning, descaling, deburring, roughening, oil or grease removal and die cleaning. This machine is suitable for blasting with all kinds of inert abrasives.

The key advantage of ActOn AWB wet blasting cabinets is the ability to provide a gentler and more controlled surface finish compared to traditional dry blasting methods. Some of the key features of these machines include:

- Stable cabinet, sturdily constructed of mainly SS sheet with sectional reinforcements.
- Angled full view, hardened glass security window, provided with electric wiper motor and wiper arm/wiper blade.
- Replaceable operator protective abrasive resistant full length rubber gloves.
- Glandless vertical polypropylene slurry pump with 3,000 rpm electric motor.
- Pressure regulator to control air flow.
- Electrically operated foot pedal .
- Internal blast chamber lined with plastic sheets for protection.

A fully wet blasting automated system

ActOn has also designed an automated wet blast machine for blasting of shafts prior to coating. The system consists of two blasting lines which can blast up to 70 mm Ø shafts. Parts travel through the blast chamber and then enter the water wash chamber to remove any residue that may be on the components. The parts are then air dried before exiting. Some of the key benefits of this system include:

- Offers consistent finish across all parts.
- It's a fully automated system.
- Fast throughput rate.
- Includes programmable recipes and adjustable settings including conveyor and pump speeds.
- It's a British built high-quality product.
- It's efficient in operation.

Aqua blasting is now easier than ever

Both the AWB aqua blasting range and the automated system have been built to be easy to use. Here's a basic overview:

1. **Abrasive media used:** the systems have been built for blasting with all kinds of inert abrasives.
2. **Water required:** the abrasive slurry is propelled onto the surface at high pressure using specialised equipment. The addition of water helps control dust and provides a lubricating effect, reducing friction and heat.
3. **Cleaning agent (optional):** in some cases, a cleaning agent or rust inhibitor may be added to the water to enhance the cleaning process or protect the surface from further corrosion.
4. **Impact:** the abrasive slurry impacts the surface, effectively removing contaminants, rust, paint, or other unwanted materials.
5. **Cleaning and finishing:** the process not only removes unwanted substances but also leaves the surface with a smoother finish compared to dry blasting methods. This makes it suitable for applications where a clean and aesthetically pleasing surface is desired.

Finishing applications

The versatility of these new wet blasting cabinets makes it a valuable method in various industries, ranging from automotive and aerospace to marine, construction, restoration and more. The ability to achieve a clean and controlled surface finish while minimising environmental impact contributes to its widespread use in different applications, such as: surface cleaning, paint and rust removal, surface preparation, aluminium and non-ferrous metal cleaning, engine parts cleaning or restoration of automotive and aerospace parts.

Why you need the new wet blasting range from ActOn?

The new range of wet blasting cabinets offer several benefits compared to traditional dry blasting methods. Some of the key advantages include:

1. **Reduced dust emission:** One of the significant advantages is the reduction in dust production. The addition of water to the abrasive slurry helps to suppress dust, making it a cleaner and more environmentally friendly process. This is particularly beneficial in enclosed or sensitive environments where dust control is crucial.
2. **Gentler on surfaces:** AWB cabinets are generally gentler on surfaces compared to dry blasting. This makes it suitable for cleaning delicate or sensitive materials without causing damage.
3. **High quality surface finish:** produces a smoother surface finish compared to dry blasting. The combination of abrasive media and water can provide a uniform and attractive appearance to the treated surface. This is especially important in applications where aesthetics matter, such as automotive restoration or architectural components.
4. **Less abrasive wear:** the presence of water in the blasting process reduces wear and tear on equipment, including nozzles and hoses, compared to dry blasting. This can lead to lower maintenance costs and longer equipment lifespan.
5. **Precise control:** the wet blasting process allows for more precise control over the blasting parameters. Adjustments can be made to the pressure, water-to-abrasive ratio and nozzle configurations to achieve the desired results for different materials and applications.
6. **Versatility:** wet blasting can be applied to a wide range of materials, including metals, plastics, composites and more. Its versatility makes it suitable for various industries, such as automotive, aerospace, marine and restoration.

Whether it's paint or rust removal, cleaning, or surface finishing, ActOn Finishing's new wet blasting technology excels in providing a thorough and controlled process.

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