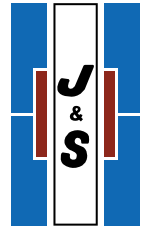




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- Polishing & Lapping

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## DF Precision Machinery: the home of high precision

After spending the previous decade at the heart of the Jones & Shipman/Hardinge management team, Mike Duignan and Alan Fisher established DF Precision Machinery Ltd in 2020. The partners' founding objectives were to use their wealth of experience, related to precision grinding machine applications and sales, to benefit the UK grinding fraternity, as well as provide highest standards of customer care. In addition to precision subcontractors, key industries now being served by DF Precision include the aerospace, automotive, autosport, mould, tools & die, bearings and medical sectors.



As well as offering a range of highly efficient, cost-effective grinding solutions and related support services to potential UK customers, DF Precision Machinery is the official global supplier of Jones & Shipman spare parts and support services. The company holds the extensive J&S OEM records, drawings and software and offers unrivalled expertise related to Jones & Shipman products.

Over several years, Hardinge has acquired many iconic, globally renowned precision grinding brands, including, Kellenberger, Voumard, Hauser, Tschudin, USACH and Jones & Shipman. As exclusive UK and Ireland representatives for Hardinge Grinding products, DF Precision Machinery boasts an impressive portfolio of solutions. Complementing Hardinge products, the company is also the exclusive UK distributor of Okamoto Grinding Products. In addition to Okamoto's extensive range of surface and profile grinders the renowned manufacturer also offers internal, cylindrical, vertical and rotary grinding products.

Explaining DF Precision Machinery's ethos, Mike Duignan says: "To ensure the delivery of highly efficient precise grinding machines and solutions that provide an attractive ROI for our customers, we use only quality partners. The companies we represent are global leaders in their fields and have built strong reputations through their dedication and commitment to offering first-class products and support.

"All at DF Precision Machinery are committed to supporting our entire product portfolio with first-class levels of service. In addition to offering expert advice related to all aspects of grinding, we are able to help potential customers to specify machines that enable their purchases to match their specific needs and budgets."

"Our customer first philosophy ensures that all of our customers receive high-quality specialist support from initial sales discussions, through to the provision of long-term support services that optimise returns on investments."

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# ANCA's co-founders receive top industry award in the Victorian Manufacturing Hall of Fame

Pat Boland and Pat McCluskey, co-founders of advanced tool and cutter grinding manufacturing company ANCA, were admitted to the Honour Roll of the Victorian Manufacturing Hall of Fame 2022 for their service to industry.

ANCA, which started in 1974 in Pat Boland's bedroom in Melbourne with a \$4,000 mini-computer, is now a leading company, employing more than 1,200 people, with an annual turnover of more than \$300 million.

The Victorian Manufacturing Hall of Fame Awards celebrated and highlighted the importance of local manufacturing. Victorian minister for industry support and recovery, Ben Carroll, presented the awards at a Gala event.

This award recognises both Pat's contributions to manufacturing, from ANCA's beginnings in 1974 to today, where business is thriving and ANCA's sophisticated technology is designed and built in Melbourne and exported across the world, to over 50 countries.

A lifetime of contributions to the industry identifies Pat Boland and Pat McCluskey as 'manufacturing heroes'. Delivering world-leading technology for over four decades makes them an inspiration to many both inside of and outside of their company.

The importance of software, a global outlook and supplying a highly-specialised niche product have been key to ANCA's success from the beginning. Now, ANCA competes and wins on a global stage for the specialist tool and cutter grinding machine market.

ANCA has 38 patent applications globally, from seven patent families in the fields of mechanical engineering, electrical engineering and software. Competing internationally has meant an enduring focus on innovation to be first to market with new and better technical solutions.

ANCA CNC grinders are used for manufacturing precision cutting tools and components across a diverse range of competitive industries including cutting tool manufacture, automotive, including electric vehicles, aerospace, electronics and medical. ANCA has offices in the UK, Germany, China, Thailand, India, Japan,



Brazil and the USA as well as a comprehensive worldwide network of representatives and agents.

As ANCA designs and manufactures its own machines, control system and software, the company is able to provide innovative solutions for key components such as CNC controls, spindle and servo drives.

Technology is a part of ANCA's DNA. Typical of a leader able to do what nobody else in its field can do, ANCA has achieved a long list of world firsts. These include:

- First to introduce a probe for digitising tools in a CNC tool and cutter grinder
- First to introduce a modem for support and diagnostics in a CNC tool and cutter grinder
- First to introduce soft axes for significantly simplified programming of a CNC tool and cutter grinder
- First to introduce MPG Feed for safe program debugging and testing
- First to introduce Windows-style Graphical Users Interface and Real Time Operating System in a CNC tool and cutter grinder
- First to introduce a CNC tool and cutter grinder with all rotary and linear axes being directly driven
- First to introduce industry standard Statistical Process Control (SPC) in a CNC tool and cutter grinder
- First to introduce iBurr software for burr grinding, which uses Active Graphical User Interface
- First to introduce full and true 3D simulation of the grinding process - CIM3D (patented in Australia and USA)



On winning the award Pat Boland said: "Pat McCluskey and I are honoured by the winning of this award. We thank all our teams who have contributed to ANCA's success in the global marketplace."

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# Stuttgart success story continues

The heart of the metalworking industry beats again in Southern Germany

AMB 2022 will take place from 13th to 17th September at the Messe Stuttgart. This next edition of the top metalworking trade fair will welcome more than 1,500 exhibitors to showcase their latest products on a total exhibition area of 120,000 square metres, as well as over 91,000 trade visitors who will discover the true potential of the future market trends.

Every two years since 1982, AMB has presented the highlights of the international metalworking industry. It focuses on products, technologies, innovations, services and concepts for people who are passionate about metalworking. This makes it a marketplace, training and networking platform all in one. Whether you are visitor or exhibitor, over the years, AMB has become one of the most important events of the industry.

Based on the current number of exhibitors, the ratio of national to international exhibitors reflects the highly international nature of the exhibition. Currently standing at 31 percent of the exhibitors and 29 percent of the exhibition space, the international figure is in keeping with that of AMB 2018. These figures demonstrate that it is worth making the trip to Stuttgart to see the latest developments in the metalworking industry, nurture existing business relationships and seek out new partners.

The net area available for allocation to exhibitors is currently 73,000 square metres. Given that the total gross area available is around 120,000 square metres, visitors to AMB 2022 will therefore be met with packed halls and a fully occupied site. "Momentum is high and everything is set for the success story of AMB to continue," says director of mechanical engineering and production Gunnar Mey who, along with his team, is responsible for AMB.

## AMB 2022 enhanced with digital expansions

Major changes await exhibitors and visitors with respect to digital offerings. These have been seamlessly integrated into the exhibition programme. Leading the way here is the innovative online exhibitor overview, in which exhibiting companies can now provide videos, animation sequences,



product brochures and the like for download in addition to static information. They can also incorporate interactive content or their social media presence. What's more, companies can add multiple contacts for different target groups to ensure that the right people are brought together at the stand.

It will also be much easier for visitors to plan the route to the stands they are interested in visiting. You can plan your own specific topic-based tours using a new function in the online exhibitor overview, enabling you to perfectly arrange your visit to the exhibition in advance. These self-guided tours are managed by means of numerous filter options, which will take visitors to exhibits and applications at stands showcasing the various highlight topics.

The exhibition is also pursuing a digital course when it comes to presentations too. For example, presentations covering different topics each day will be held in the Trend Lounge in the ICS foyer and the content will be recorded and made available on demand once the exhibition has finished. Spotlight topics include additive manufacturing, metal as a material, industrial security, digital networking, climate change and sustainability as well as start-up pitches.

Live production will also be seen at the special show for young people, which is organised by the Mechanical Engineering Youth Foundation and aims to inspire young people to consider a career in mechanical engineering and plant construction and to showcase new technologies used during training. From the stand in the Atrium, an entire process chain from the drawing to the manufacture of a Formula 1 model car will be reproduced. Apprentices from the partner companies involved will be on hand to answer any questions.

As usual, travelling to and from the exhibition site couldn't be more straightforward. The exhibition ticket includes a public transport pass covering transport to and from the trade fair. Thanks to the recently extended U6 tram connection, there is now an additional transport option from the centre of Stuttgart as well as from the Filder Plain area, with services every 10 minutes. The journey time from Stuttgart central station is 32 minutes.

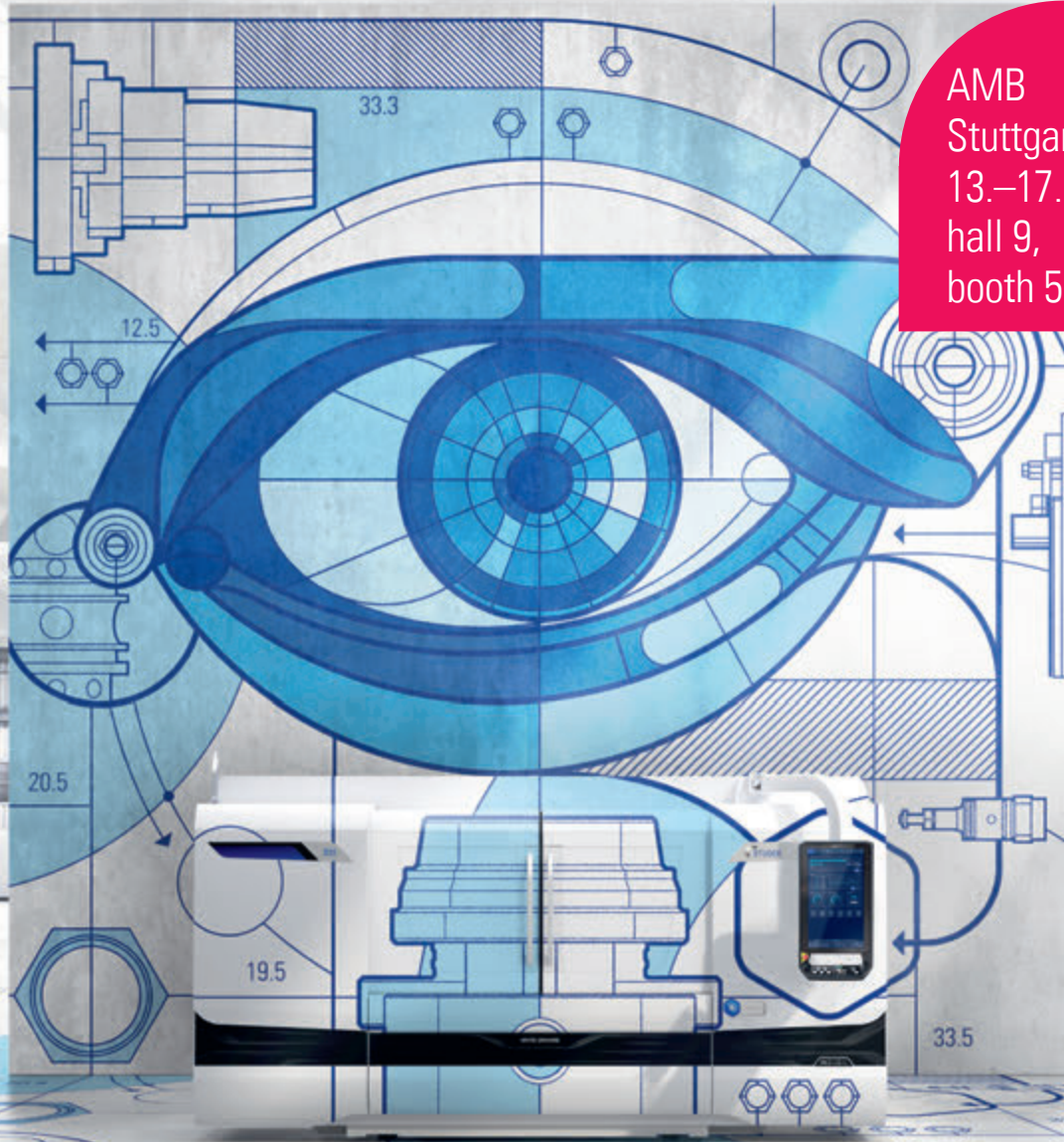
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 **STUDER**

# KLINGELNBERG to present solutions for smooth-running gearboxes

Every two years since 1982, AMB has presented the highlights of the international metalworking industry. This year, system-supplier Klingelberg will be back and it will be highlighting solutions for smooth-running gearboxes. Its stand will feature the Höfler cylindrical gear grinding machine Speed Viper, the Klingelberg precision measuring centre P 40 and the newly developed Höfler cylindrical gear roll testing machine R 300.

## The ideal combination

The electrification of the automobile has brought about a fundamental change in the design and quality requirements of a car's drive train. The number of gears in the gearbox has been significantly reduced, while the noise behaviour of the gearbox has gained even greater importance as a decisive quality characteristic. This has given rise to the requirement for 100 percent quality testing of the gears before they are installed in the gearbox, in order to minimise the number of complaints during end-of-line testing.

As a result, it is only logical to perform the gear inspection directly following hard finishing. The Klingelberg production cell,

consisting of the cylindrical gear grinding machine Speed Viper, the CompactLoader and the integrated cylindrical gear roll testing machine R 300, is ideally suited for this purpose. The production cell can be equipped with all machine models in the Speed Viper series, from the Speed Viper 80<sup>2</sup>, dual spindle, to the Speed Viper 300.

Whatever the setup, the 100 percent quality inspection is always carried out with the Höfler cylindrical gear roll testing machine R 300. With the R 300, all five known roll testing methods are optionally available. The inspection focuses on noise assessment, but on tests performed in single-flank contact: single-flank test, angular acceleration test and structureborne noise test. The quasistatic single-flank test provides a comparison to tooth contact analysis, the digital twin of the single-flank test. The result gives information about the quality of the gear geometry and correlates with pitch and tooth flank topography. The dynamic angular acceleration and structure-borne noise test procedures are an ideal complement to the singleflank test for evaluating noise quality.

The Klingelberg production cell is the solution for the manufacture and 100

percent quality testing of high-precision gears for the electric drive train. With the optionally available R 300 production monitor, users always have a documented overview of the current key quality indicators in their operations.

## Precision measuring centre P 40

Klingelberg will also be presenting the tried-and-tested P 40 precision measuring centre with hybrid metrology. Klingelberg hybrid metrology is a smart combination of tactile and optical measuring technology. An optical sensor system developed specifically for gear measurement, as well as the rapid changeover between the 3D NANOSCAN tactile sensing system and the HISPEED OPTOSCAN optical sensor, enable flexible, fast and highly precise measured value acquisition under all conditions.

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**Hall 5 - Stand C41**





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Due to the increasing quality requirements in large-scale transmission manufacturing, some transmission and vehicle manufacturers now require a certificate of quality for all gears installed in the powertrain. A further driver of ever-higher inspection levels is e-mobility, which places much higher demands on the noise behavior of a transmission due to the elimination of the combustion engine. To meet this challenge, Klingelberg has developed the Höfler Cylindrical Gear Roll Testing Machine R 300. As an ideal addition to the Höfler Speed Viper Generating Gear Grinding Machines, the R 300 covers all five roll testing methods in one compact machine. The perfect solution for anyone who wants to combine inspection cycles and reduce disassembly costs while benefiting from a user-friendly design.

Learn more:



# Como Industries quintuples pin gauge output with the TSCHUDIN CUBE 350

At AMB, TSCHUDIN AG, a Swiss technology leader in centreless cylindrical grinding, will showcase three machines. A special focus will be on the compact CUBE 350 and a current, very successful cooperation with the French high-precision manufacturer Como Industries. Thanks to the efficiency of the CUBE 350, Como Industries quintuples the output of pin gauges with very small diameters.

TSCHUDIN covers a very wide range of machined workpieces in centreless grinding, from the smallest wires for medical technology to truck axles weighing 150 kg.

"It changes our way of working completely," says Sophie Demesse, CEO of Como Industries, speaking about the purchase of the compact, TSCHUDIN CUBE 350 centreless grinding machine.

Como Industries, headquartered in Courbevoie near Paris, produces pin gauges, hydraulic nuts, and other high-accuracy pieces for well-known customers such as Airbus, Michelin, Thales Group, or Safran. The CUBE 350 will be used for the production of high-precision pin gauges. Sophie Demesse continues: "On the old machine, we needed five hours to manufacture 100 pin gauges with a very small diameter and a precision of 1.5 µm. With the CUBE 350, we need only one hour; a huge productivity leap."

The new grinding machine convinces not only with speed, but also with optimised quality. "Before, we were not able to reach the same kind of precision when it comes to diameters between 10 and 20 mm. These parts needed an extra finishing step. Thanks to the CUBE 350, this extra step is no longer needed, which boosts our efficiency," says Sophie Demesse.

Visitors to AMB can enquire about the successful cooperation and meet Sophie Demesse, TSCHUDIN shareholder Urs Tschudin and CEO Iwan von Rotz and also witness the compact, award-winning, 3-axis CNC centreless grinding machine CUBE 350.

## New possibilities

With the upgrade of the machine park at Como Industries, Sophie Demesse sees new possibilities for future development: "Some



pin gauges with larger diameters are only rarely sold. In future it might make sense to produce these on demand instead of having them in stock." Generally, it is important for the company to have a stock of most of their products in the warehouse.

Sophie Demesse says: "If a customer calls and needs a certain product urgently the next day, we will deliver. This has been our service pledge since our founding in 1970."

The purchase of the CUBE 350 was multiple reasons, as Sophie Demesse explains: "Firstly, we needed to upgrade our production because the sales are going well. Secondly, young people in this industry want to work on state-of-the-art machines. Without this investment it would be much more difficult to find and retain talent. It was a crucial step for us."

After the initial first contact, Sophie Demesse travelled to EMO Milano in 2021 to meet with the TSCHUDIN team. In the discussions, Urs Tschudin, shareholder of TSCHUDIN AG, gave his expert advice on how Como Industries could adapt its production and increase efficiency.

From that point, the two companies worked closely together, including the training of Como Industries experts on the new machine in the TSCHUDIN headquarters in Grenchen, Switzerland.

"For us it is important to stay one step ahead of our competition in Europe, but

also in Asia. The cooperation with TSCHUDIN allows us to do so," emphasises Sophie Demesse.

## Versatile product portfolio

As a global leader in centreless grinding, TSCHUDIN will present its versatile product portfolio at AMB Stuttgart. "In addition to the CUBE 350 described above, we will also be exhibiting another CUBE 350 with robot and a 400 ecoLine. Workpieces of the most diverse sizes can be ground on our machines, from the smallest wires for medical technology, whose shape can only be seen under a magnifying glass, to truck axles weighing 150 kg," reports Iwan von Rotz, CEO.

While the CUBE 350 is designed for machining small workpieces up to 20 mm in diameter, the 400 ecoLine/proLine is ideal for machining medium-sized workpieces with a diameter of up to 150 mm and the 600 ecoLine/proLine can machine pieces with a diameter of up to 250 mm. The maximum grinding wheel width is 500 mm.

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**Hall 5 - Stand C11**



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# Advanced Okamoto surface grinders make debut

As a director of DF Precision Machinery Ltd, the exclusive distributor of Okamoto Grinding Products in the UK, Mike Duignan will be in attendance on the Okamoto stand at AMB to greet all potential customers.

Making a debut at the exhibition will be the advanced new Okamoto ACC-63SA1 surface grinder range. Replacing the globally popular SA Series, the innovative Okamoto surface grinder is available in six sizes, 500 x 200, 600 x 300, 600 x 400, 600 x 500, 800 x 400 and 1,000 x 500.



The new ACC-SA1 Series features an easy-to-use touch screen control with colour graphics, allowing trouble-free, advanced surface grinding with automatic wheel dressing. The innovative series enables fully automatic grinding operations for standard surface grinding or shift plunge surface grinding and delivers enhanced levels of productivity. The new machines' grinding methods are selected via the main panel while feed-rates and feed change points can be set and easily adjusted at any time. Table-park and wheel head retract at cycle finish are provided as standard.

Coupled with the surface grinder's touch screen control are 1/10 Micron, AC Servo Motor driven ball screws in both axes with 2-axis DRO as standard. The grinding wheel is directly driven via an elastic coupling between the motor and shaft and offers the

best possible power, precision and surface finish values. Wheel speed inverter and wheel dressing from the table mounted diamond are also provided.

ACC-SA1 range machines boast a robust, rigid cast iron construction providing excellent static and dynamic stiffness characteristics, in addition to delivering first-class dampening qualities. The machines' hydraulically driven table features double V slideways with minimal overhang and non-contact switches for table reversal while all slideways feature automatic lubrication.

Also at AMB, the new version of Okamoto's ACC-42SAiQ surface grinder features a long list of improvements, including ball-screw table drives and the latest Fanuc control with faster response times and clearer, crisper graphics.

The Okamoto graphical touch screen, operator interface featured on the iQ range allows significantly quicker and easier machine setup. Graphical representation of common, grind patterns and wheel shapes are set up directly on the touch screen view pane with the help of the iQ function.

The ACC-42SAiQ retains and improves on the unique table position control of the previous generation. It features fast reciprocation and can be set to grind with up to 5 different table positions in the same cycle. The switch from hydraulic control to a ball screw table drive reduces heat build-up and improves reversal accuracy. The machines' double V slideways have minimal overhang in both X and Z axes while a robust, cast iron construction provides optimum stiffness and ensures the highest levels of precision.

In addition to its comprehensive list of standard equipment, the new machines will

be shown with a new five position swing dresser for wheel forming. The single point diamond used in the swing dresser is quickly and easily changed when worn. The ACC-42SAiQ is also offered with other specialist optional equipment such as rotary indexing tables, cylindrical grinding attachments and rotary spinning tables.

As well as first-class grinding machines, Okamoto will be demonstrating the company's highly efficient Aero Lap polishing machine. By the use of an exclusive, automatic, high-speed multi-cone technology and a unique abrasive medium, the easy-to-use machine can create a mirror-smooth finish even on hard-to-polish parts, such as punches, dies and small-sized moulds. With the ability to be used on almost all metals, Aero Lap machines perform 10 - 25x faster than conventional polishing machines and can bring an Ra 24 finish to Ra 1.5 in just 30 seconds.

Mike Duignan enthuses: "In addition to being the UK distributor for world renowned precision grinding brands, including, Kellenberger, Voumard, Hauser, Tschudin, and Jones & Shipman, all at DF Precision Machinery are proud that we are the exclusive UK distributor for Okamoto's high-quality, cost-effective machines. In addition to anticipating high-levels of sales for the exciting new Okamoto surface grinding machines, we also expect the innovative Okamoto Aero Lap polishing machine to prove very popular in the UK.



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**Hall 5 - Stand B16**

## LACH DIAMANT to celebrate 100th anniversary at AMB

LACH DIAMANT was founded in 1922 in Hanau am Main, formerly known as the "City of fine jewellery", as a diamond cutting shop for the production of brilliant-cut diamonds.

Today it is run as a family business in the second and third generation by Horst and Robert Lach with the assistance of Iris, Annabelle and Denise Lach.

After being refounded in the 1930s, "Deutscher Industrie-Diamant Vertrieb Jakob Lach", the present business trading name of LACH DIAMANT was developed in the 1950s, providing the production and development of high-performance diamond and CBN tools/grinding wheels that are made in Germany for the industry.

LACH DIAMANT is a pioneer and leader in many areas of diamond and CBN tools and their manufacturing. In 1969, it developed and manufactured the first CBN-Borazon® grinding wheels for grinding high-alloy hardened steels and HSS tools.



In 1973 it developed and produced the first Polycrystalline cutting tools for cut turning of aluminum and copper. 1974 saw the introduction of the first CBN cutting tools for turning high-alloy steels and spray-on materials. Not to forget the discovery of spark erosion by Horst Lach in

1978, European patent, which allowed the economical production of rotary polycrystalline tools such as milling cutters and saws for the machining of aluminum and wood/composite materials in the automotive, components, furniture, flooring, aircraft and wind power industries.

At AMB in Stuttgart, LACH DIAMANT will present everything from its rich history and demonstrate the tradition, passion and innovation which characterises the company and all its employees. New for grinding and well received at this year's GrindingHub trade fair, was the quasi renaissance of metal-bonded grinding wheels.

In its headquarters in Hanau and in its production plant in Lichtenau, LACH DIAMANT employs around 150 employees. Together with LACH DIAMOND INC. in Grand Rapids/MI, USA, the company supplies customers all over the world with diamond and CBN tools. Its technical development engineers work passionately on refining standard tools as well as on developing innovative solutions for the specific applications of its customers.

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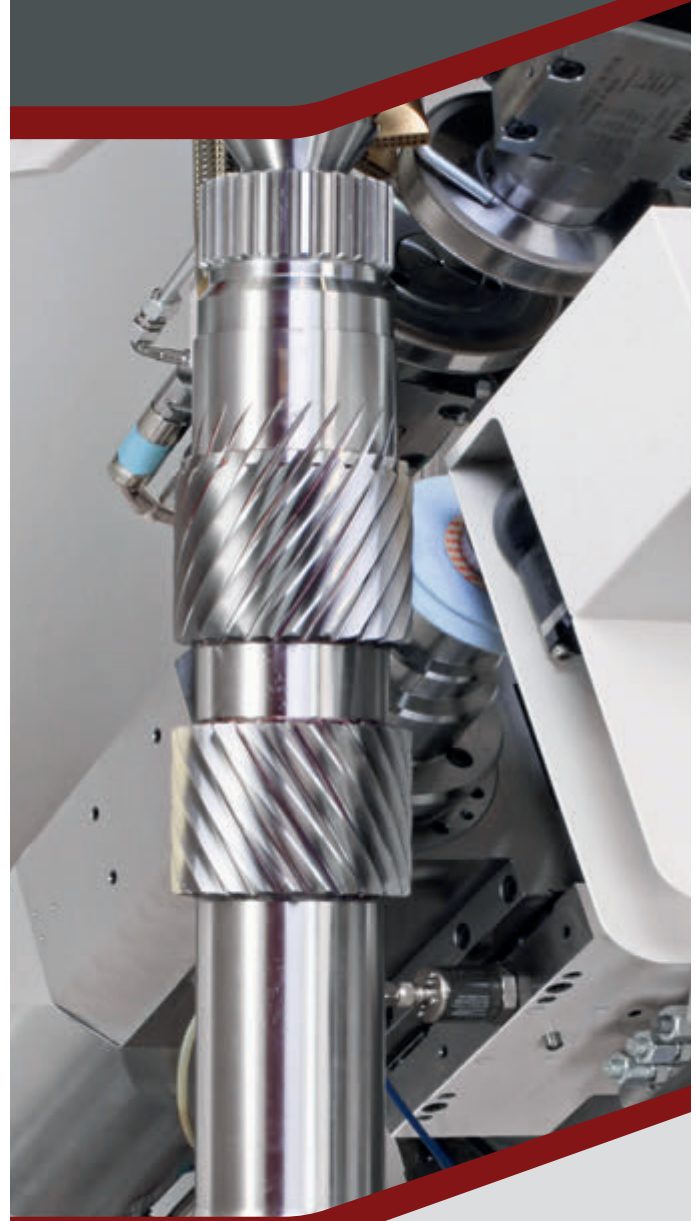
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precision for motion

## The best range of universal grinders for aerospace

by Claudio Tacchella

The aerospace & defence sector has always been one of the main vectors of technological and entrepreneurial innovation, capable of developing products, production processes and digital solutions, as well as revolutionising, in a short time, aerospace and defence strategies with a significant impact also in the civil aviation sector. Industry 4.0, 3D printing, increasingly innovative and intelligent materials and production processes, automation and robots and digitalisation are just some of the themes that will bring disruptive changes with enormous and competitive challenges.

Made in Italy represents, in this context, a recognised global excellence, which is characterised by the reliability, quality and flexibility of products, research & development and work organisation. The production chain of aerospace companies is rich in industrial and technological capabilities and places Italy at the forefront in the international context, fourth in the EU and seventh in the world.

Among these, the company AZ spa based in Thiene (VI), stands out. It is a manufacturer of large-sized special cylindrical grinding machines that has been able to gain success as a leader, thanks to the high quality and performance levels of its products and the ability to propose itself as a problem solver for technical topics, including complex forms, with innovative, highly flexible and customised grinding solutions.



AZ RU universal grinding machines are high performance machines designed to work in the micron range

The company has over 40 years of experience in the sector and has always had a strong international vocation with an export share of over 95 percent and more than 3,000 grinding machines delivered and operating in more than 80 countries.

AZ spa has an impressive modular range of grinding solutions dedicated to numerous strategic sectors. In particular for the international aviation industry, direct, indirect EOM and MRO designs and builds grinding systems presented in a wide product portfolio called "AZ-Aerospace"

for the manufacture and maintenance of components of aircraft engines, turbo spindles and landing gears.

In the AZ-Aerospace line, the new RU range, RUA, RUX and RUG models, for high precision CNC universal grinding machines for external and internal diameters, which has recently been renewed, stands out. The RU line is modularly designed and is developed in numerous models which differ in size with distance between centres 400, 600, 1,000 and 1,600 mm, technical characteristics, configurations, accessories and process control devices and customisations.

AZ RU universal grinding machines are high performance machines designed for customers who have to work with dimensional, shape and position tolerances in the micron range.

The dynamics of the machine is developed on a rigid "T" shaped base with the main axes Z longitudinal and X transversal arranged orthogonal. The wheelhead moves along the X-axis, the table, where the workheads are mounted, moves along the Z-axis.

The axes move on linear guides by high precision ball screw or linear motors. The workpiece is clamped by headstock and tailstock both easily positioned along the table. Constructive features are projected to



The wheelhead can perform machining for external, internal, shoulder, face, conical, complex profiles and threads grinding

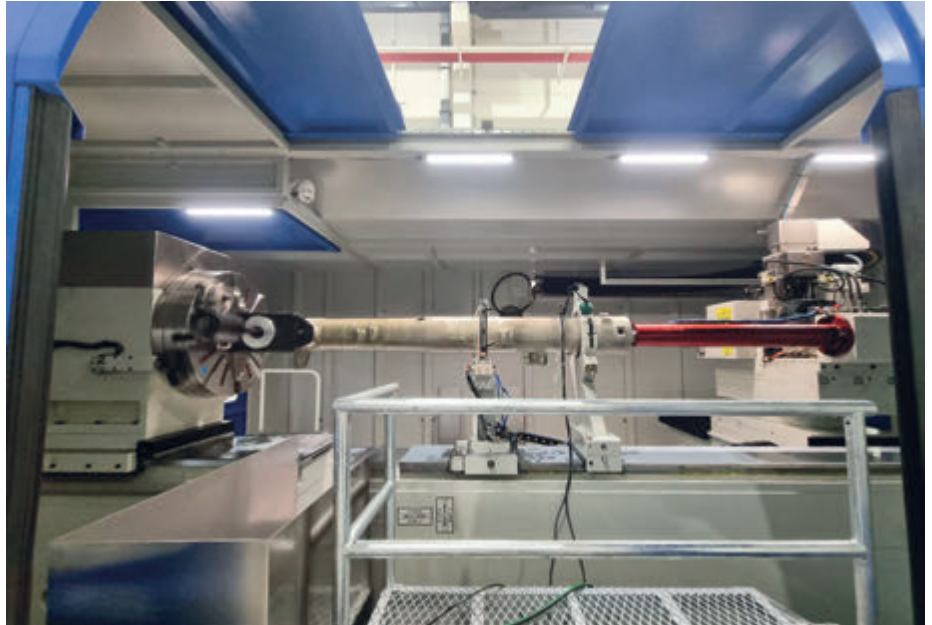
ensure maximum machine stability during all the process phases. The table, the wheelhead and the headstock can swivel CNC or manually controlled.

The operational flexibility of RU grinding machines is very high. Thanks to a wide combination of wheelhead, OD grinding wheel diameter 508 mm with spindle power from 8 to 15 kW, the machine can be configured with a fixed wheelhead or manually rotating in B axis of +/- 20°, or automatic B axis B at +/- 30° or +/- 360° while the grinding wheel spindle can tilt in axis A for thread grinding.

The wheelhead can be equipped with multiple spindles to perform different types of machining. It can be integrated in a single clamping for external, internal, shoulder, face, taper grinding, complex profiles and threads for external and internal machining with straight, angular and with B axis which is driven by an integrated torque motor.

Silicon carbide, corundum, CBN and diamond grinding wheels can be used to grind all aerospace materials, metals and their alloys including chromium and in particular those subjected to the most innovative systems for thermal spray techniques, such as H.V.O.F. (High Velocity Oxygen Fuel). The grinding process is constantly monitored thanks to high-level and last-generation measurement and controls systems.

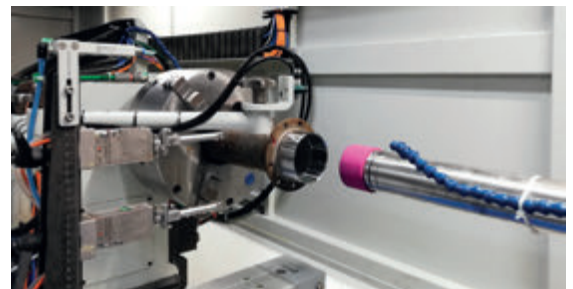
"The modularity of the RU project," says Sarah Pizzolato marketing director of AZ spa, "also allows us to guarantee maximum flexibility of use, which is a very required condition by aerospace companies given the high added value of the pieces to be processed with waste equal to zero defects. In addition to performing multiple grinding operations in a single piece setup, our grinding machines allow them to be easily



The machine can perform internal grinding of very deep holes

reconfigured and retooled in order to saturate and make the most of their productivity. The customer can combine several different batches with each other and with different volumes, up to the single piece to be processed. The AZ-Aerospace range use the most advanced mechatronic solutions, that are all customisable, energy efficient, safe, reliable and comply with Industry 4.0 requirements."

For the technical assistance service, in addition to the remote assistance and monitoring services available on the grinding machines, AZ spa has developed an innovative technology called AZ-SmartService which, thanks to Augmented Reality (AR) technology, helps customers all over the world to connect with

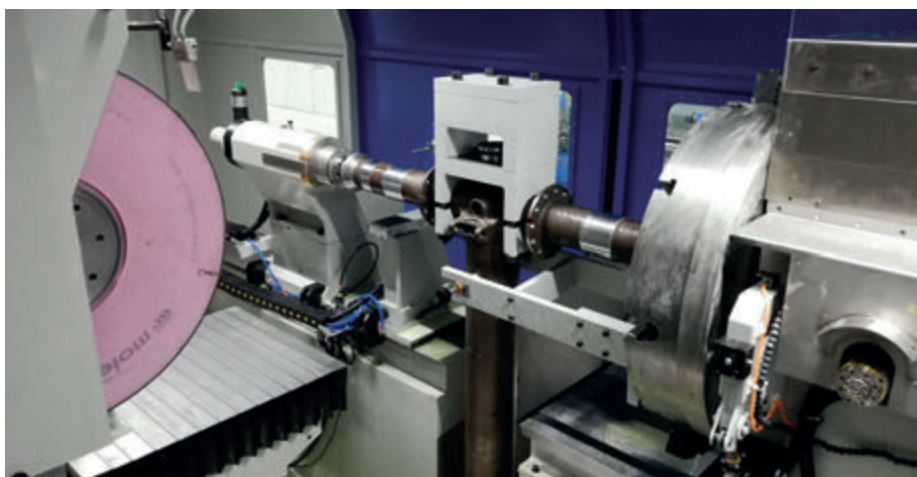


The grinding process on AZ-Aerospace range is constantly monitored thanks to high-level and last-generation measurement and controls systems

AZ technical support. With the special AZ-SmartGlasses device, highly skilled AZ tech support can see through the eyes of the operator and give precise instructions on the correct operation to be performed and in real time. This technology reduces human errors, the risk of wrong spare part identification and the time of spare part delivery, costs and time in technical assistance.

With the AZ-Aerospace line, the aeronautical industries can benefit from the technological progress brought about by the grinding machines and grinding solutions made by AZ.

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The RU line can be configured to perform the complete machining of landing gear

# Stream finishing highly loaded gears is key to aerospace production cost savings

It is several years since OTEC Präzisionsfinish GmbH pioneered and launched the first generation of SF stream finishing systems. With the new generation machines, super finishing of highly loaded gears down to Ra 0.06  $\mu\text{m}$  is made simple, fast, efficient and, above all, repeatably accurate to ensure precise gear geometries are retained during deburring, smoothing and mirror-like polishing.

## Stream finishing gears for aerospace

Reduction, propeller and helicopter gearboxes are subject to extremely high loads for extended time periods. To perform reliably they require the highest precision in design, validation and manufacturing. Many of these gears are designed as planetary gear systems that transmit the torque from the low-pressure turbine to the propeller, rotor or fan. This design has many benefits such as fuel-burn savings, engine noise reduction and engine operation cost saving.

Besides stringent design criteria, gear teeth topography, tooth flank lay, also plays a vital role in preventing the highly loaded gears from excessive wear, fretting, pitting and scuffing failures. This calls for perfect gear teeth surfaces. Stream finishing ensures gear teeth surfaces are precisely polished, and at the same time, removes sharp edges or burrs. The process can be applied to achieve different surface requirements for example super finishing, edge rounding, deburring and more.

OTEC has refined the stream finishing process, working as a chosen partner to many aerospace OEMs and Tier 1 suppliers, who find that it is not only simple, effective and highly productive, but that it is also an environmentally-friendly process inline with their current production needs. OTEC stream finishing performs with less media, compound and water wastage while offering faster process times, productivity and efficiency.

## Reaching deep

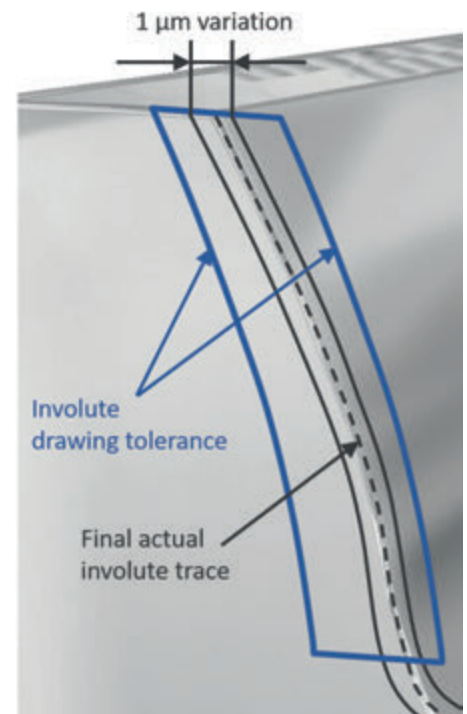
In one particular research, a wet finishing process was conducted in an OTEC SF machine. Higher quality surface results were achieved by selecting the correct abrasive media size to suit the different geometry of



the gear. In the example pictured above, a small sized media was chosen to easily access hard to reach areas where more conventional finishing methods often fail. With wet finishing, the water/compound mixture serves to absorb and rinse away the particles of debris coming from the workpieces and the abrasive medium. This ensures that the maximum efficiency is retained throughout the entire processing cycle. This has a positive impact on the roughness parameter, reduction of teeth involute curvature waviness and desirable teeth flank topography. Excellent repeatability for teeth involute and teeth lead can also be achieved.

As a comparison, test pieces of a highly loaded gear were finished by a high precision grinding machine to an ISO1302 grade number N5 surface roughness. With OTEC's stream finishing process, a surface roughness between ISO1302 grade N3 and N2 was achieved in just over 20 minutes. Importantly, visual grinding lines were also removed from the part. The higher accuracy of surface finishing imparts a greater resistance against wear, scuffing and pitting and is expected to significantly increase the working life of the gear.

The diagram shows the calculated variation of material removal along multiple involutes for the tested workpiece. Compared to conventional methods, an



incredibly low process variation of only 1  $\mu\text{m}$  was achieved along the involutes. This can help increase the tolerance allowance for the initial grinding process and reduce production scrap rate. It also offers the possibility of applying tighter tolerances at the gear drawing/design stage to reduce the gear weight, a constant goal for aviation fuel saving.



## Aerospace turbine and compressor blade applications

Stream finishing also has major benefits in super finishing turbine and compressor blades to between Ra 0.4 µm and Ra 0.06 µm. With up to five workpieces clamped, high output is assured. Precise targeting of surfaces mean homogeneous smoothing is achieved with minimal material removal. Importantly, integrity of blade profiles are retained within required tolerances as the leading and trailing edges are rounded to a defined radius.

Stream finishing is also effective in smoothing blades in preparation for hard coatings applied by PVD, improving the coating integrity and consistency. It can

even be used to smooth blades post-coating to remove any undesirable hard droplets that may break-off and cause maintenance issues if left. The high-quality super finish reduces friction and allows blades to perform at much higher levels of efficiency. This increases the blade service life to reduce maintenance costs and also contributes to fuel reduction targets.

## Stream finishing in the UK

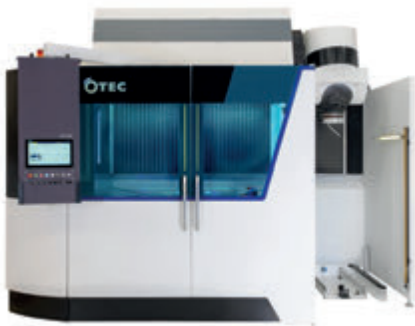
Fintek is a long-term partner with OTEC. It uses its stream finishing systems to provide full subcontract services to UK aerospace component manufacturers of gears, turbine blades, compressor blades, blisks and landing gear parts. It also supplies stream finishing machines, consumables, training and support for in-house production.

Operations manager, Jamie Phillips, comments: "Our relationship with OTEC is important. We are able to draw on their vast international experience and research and development expertise. We are also able to share our knowledge with them from both subcontract services and production machines installed with UK aerospace customers.

"With OTEC's new SF-HP, for example, we are able to process much larger parts now than were previously possible. The current maximum component size is 650 mm diameter, 650 mm long and weighing up to 200 kg. However, the real size limit is highly dependent on the workpiece geometry and the resistance when it is immersed into the media. Current tests processing large ring-shaped turbine disks are reaching a diameter of 810 mm. Therefore, depending on the part's geometry, it maybe possible to offer cost effect superfinishing on even larger aerospace components.

"We are also seeing demand from additive manufacturers. As we have a range of technologies that can remove support structures and powder residues from 3D printed parts, under one roof, we can stream finish to take the part's surface smoothness to the next level of performance."

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## Flying high in the aerospace industry



Williams Aerospace Engineering has been at the cutting edge of engineering since 1960, manufacturing precision machined components for the most discerning customers for use in the most extreme environments. It is proud to supply the aerospace, nuclear, medical, Formula 1 and performance sports car and commercial markets.

The company offers a comprehensive range of specialist, precision engineering services, all under one roof at its Southampton headquarters. All the work is produced on company owned equipment and calibrated externally by a NAMAS approved laboratory supported by NAMAS certificates, to meet BS EN IS 9002 requirements.

The extensive range of services, quality led approach, years of experience and expertise and unfailing attention to the smallest details combine to allow Williams to deliver unique precision engineering solutions to the most exacting standards.

Whatever your grinding requirements, Williams can help you fulfil it, whether it be

internal and external cylindrical grinding, centreless grinding, surface grinding. It can produce work up to 6" diameter by 21" long, with internal dimensions of up to 4" diameter by 3.5" long.

CNC honing is the final stage to take place on the internal diameters of machined components and involves the very fine finishing of surfaces. Williams specialises in match grinding as a number of customers require bores with very fine surface finishes. With honing together with solid lapping, it can achieve surface finishes down to 0.5 micro-inch (0.013 microns). This is extremely important for the valves match ground in the hydraulics aerospace industry.

Williams Engineering has many years of experience in honing to very exacting tolerances. A highly skilled workforce, coupled with cutting-edge machinery enable it to carry out the highest quality precision honing work quickly and efficiently.

The company also offers comprehensive precision lapping services for flat lapping and polishing applications from its premises in Southampton. Flat surfaces can be achieved using lapping machines.

For the cylindrical lapping of bores, Williams can lap sealing faces down to 0.5 micro-inch (0.013 microns). This is extremely important for the sealing of faces where there is metal-to-metal contact, for example for hydraulic components in the aerospace and automotive industries.

It caters for a huge range of different material types and can produce any required surface finish and flatness by using



lapping, polishing plates and pads, slurries, suspensions and compounds.

### Alex Aiken makes a return visit to Williams

Last December, Williams Aerospace Engineering was pleased to welcome Alex Aiken, executive director for Government Communications, Cabinet Office, No.10, back to its Southampton premises. He was very impressed with the new, efficient and modern workshop facilities the company now offers.

Williams managing director David Fripp showed the prestigious guest around the engineering specialities Williams excels in, from gear cutting, CNC milling, CNC turning, grinding, flat & cylindrical lapping to honing and explained to him the extremely high tolerances and quality of work Williams have become famous for.

Topics discussed during the meeting included Government support for manufacturing businesses, future support for those manufacturing companies, supplying to the Civil Aviation Industry, Commercial Banking support, the impact COVID-19 has placed on the business and much more.

Alex Aiken is extremely knowledgeable with manufacturing processes and will look to raise some of the points discussed, with the Prime Minister and Government Officials in due course.

If you've been to visit the Southampton premises in the past, the company would love to have you back and walk you through all the improvements it has made. If you've never been, why not make an appointment to come and check it out?

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# New Ghiringhelli A80 centreless grinding machine guarantees high micron accuracy and compact solutions

by Claudio Tacchella

Italian company Rettificatrici Ghiringhelli S.p.A. has been manufacturing and designing the best centreless grinding solutions for more than 100 years, with a steady renewed and customisable range of machines, automation and systems. The latest machine, the A80 (Anniversary80), is dedicated to the centenary of the company's foundation in Luino (VA). It has a totally updated design and belongs to the new line of high precision centreless grinding machines. The new A80 expands the range of products by joining the list of the smallest machines with perfect technical features for grinding operations with fixed centre.

Joint managing director of Rettificatrici Ghiringhelli, Patrizia Ghiringhelli says: "The new A80 line was introduced last year as an absolute preview at EMO in Milan to

celebrate the centenary of our company's foundation. The new machine, much awaited by the market, immediately met with appreciation from potential users for its innovative design and technological solutions combined to very high accuracy and reliability."

The A80 is a very compact machine in a new design combining aesthetics, accessibility in complete safety, ergonomics, automation and integrated plant engineering. It's a grinding machine with fixed centre which can carry out both plunge and through-feed cycles, thus offering great flexibility of use, quick retooling and an optimal use even for small productions. Basically, it has six CNC controlled axes on a natural granite basement. The two counterposed working slides, V and Z axes, are driven by Siemens digital synchronous



The grinding wheelhead allows to mount wheels of  $\varnothing$  maximum 200 mm x L 80 mm width at a constant peripheral speed up to 50 m/s (63 m/s optional)

motors. The grinding wheelhead has a spindle with extra-precision class and a 4 kW motor. It has wheels of  $\varnothing$  200 mm x L 80 mm for a peripheral speed up to 50 m/s, 63 m/s optional. Automatic wheel balancing is optional. The control wheelhead with spindle on extra-precision bearings has wheels of  $\varnothing$  100 mm x L 80 mm. The control wheelhead can be tilted by  $\pm 5^\circ$ . The grinding wheel dressing, X/Y axes and the control wheel dressing, X1/Y1 axes, through diamond or diamond roll are controlled by CNC with dressing slides with interpolated axes. All the motors used belong to the IE3 energy class. The lighting of the work area and the light signals are accomplished with LED. In this configuration the machine can grind pieces from  $\varnothing$  0.3 mm up to  $\varnothing$  10 mm for lengths up to 80 mm, both plunge and through-feed.

Patrizia Ghiringhelli continues: "The A80 is positioned in a market segment where we were not present until now, because it's a grinding machine devoted to the grinding of

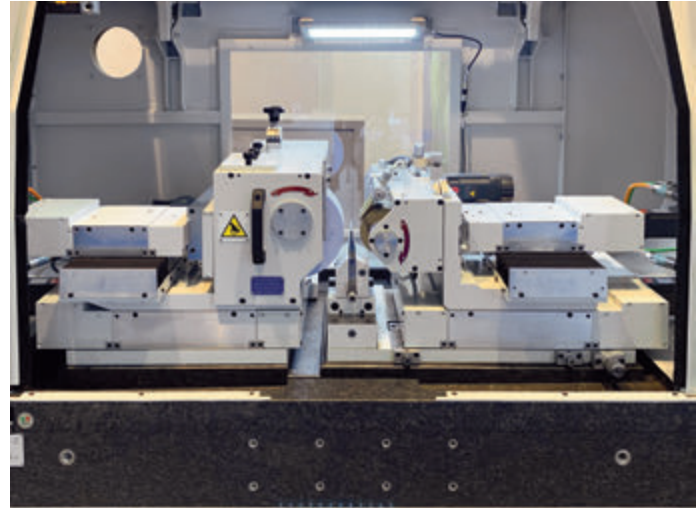


The new A80 expands the range of products by entering the list of the smallest machines. It's suitable for the grinding of very small parts with fixed centre both plunge and through-feed

smaller parts compared to the standard sizes of our product's range. Thanks to this machine size, we aim at further growth in those sectors where we are already active with new opportunities and breaking into new ones. The ideal sectors are, for example, watchmaking, micromechanics, eyewear, medicine, electronics, electromechanics, automotive and all those fields which need grinding to be accomplished on very small parts and this new centreless grinding machine is able to do that at very high precision. With the new A80, by expanding the grinding opportunities with our solutions, we are already increasing our market shares too."

The lighting of the work area and the light signals are accomplished with LED and all the motors used belong to the IE3 energy class. The A80 can be perfectly integrated into the production processes of Industry 4.0. The CNC used is the brand-new Siemens Sinumerik One, while all the software functions, automation included, are integrated through the HMI software platform belonging to Ghiringhelli characterised by diagnostics, libraries wheels/profiles, cycle programming and instructions, remote control, remote diagnosis, preventive periodic maintenance and much more. The new grinding machine can be easily integrated with the most popular management production devices thanks to the OPC UA open protocol (developed by OPC Foundation) which is particularly reliable and well-tested. It has a wide range of automatic systems for the loading and the unloading of parts and a wide choice of accessories and optional systems for the highest system-customisation.

Patrizia Ghiringhelli concludes: "Like all our machines, the A80 model too can be strongly customised in the configuration required by the end-user. We are constantly ready to grasp some ideas and to listen to the experiences and suggestions of our machines' users."



The new A80 finds various applications in watchmaking, micromechanics, eyewear, medicine, electronics, electromechanics and automotive



The machine integrates all the necessary in its very compact layout and rests on a natural granite basement



In the CNC used all the software functions, automation included, are integrated into those of the machine through the exclusive HMI software platform belonging to Ghiringhelli

The co-engineering is a fundamental aspect for our company which involves all models and the new A80 centerless grinding machine is no exception. Being part of our production's range, this machine's line actually shares the same features of the other centreless grinding machines we manufacture."

Rettificatrici Ghiringhelli is present at the 33.BIMU exhibition in Milan: **Booth 11 - Stand D04**

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## Bowers ring the changes with a Studer Grinder

Before being used, measuring instruments such as bore gauges, internal micrometers and air gauges must be carefully set by the use of ring gauge of known internal diameters. As the precision of the ring-gauges being used have a direct influence on the accuracy of each instrument's findings, they play a critical role in the precise inspection of bores.

The recent replacement, an older grinding machine with an advanced new Studer S121, universal internal cylindrical grinding machine, has ensured the efficient production of premium quality ring gauges, with sub-micron levels of accuracy, at the Bowers Group's Bradford, West Yorkshire manufacturing facility.

Long recognised as the leading digital and analogue bore gauge manufacturer, Bowers continues to lead the field within the area of internal measurement. Amongst Bowers Group innovations, in 1984 the company introduced the world's first digital 3-point internal micrometer. More recently Bowers developed an innovative, Bluetooth enabled 3-point internal digital micrometer that enables users to collect data wirelessly. Complementing the company's internal measuring instrument range, Bowers now also manufactures a comprehensive range of instruments designed for other applications, such as depth and external gauging. A past recipient of the coveted Queen's Award for Export, Bowers currently exports approximately half of its output.

To ensure the continued quality and precision of its products, Bowers pursues a policy of regularly investing in the best available advanced CNC machine tools. Typical of Bowers' progressive investment program was the purchase of a Studer S121 grinding machine through Studer UK agent Micronz Ltd.

Bowers Metrology group technical director, Tom Parry explains: "Over several decades we have continually refined our manufacturing methods resulting in our ability to efficiently produce premium-quality, high-precision ring gauges from 1.50 mm – 300 mm diameter. Bowers' ring gauges provide our customers with guaranteed precision, dimensional stability and durability. Following their manufacture, all of our ring gauges are precisely inspected and issued with UKAS certificates in our own, on-site UKAS certified laboratory.



"As an older grinding machine, used to internal grind our ring gauge, was beginning to need regular maintenance we recently made the decision to purchase an advanced, new CNC internal grinder."

Tom Parry continues: "We have been very impressed with the precision and efficiency of a Studer S33 grinding machine that we installed several years ago. This machine is now in constant use grinding spindles and other high-precision components. Although, given the costs involved and the possibility that other manufacturers could have made technical improvements to their grinding machines, in addition to considering installing another Studer, we also looked at the suitable machines from other companies.

"After carefully evaluating all of the alternatives we came to the conclusion that the Studer S121 best met our challenging, sub-micron precision grinding requirements and also satisfied our demanding production efficiency demands. It helped our decision that, although we chose the S121 on its technical merits, the Studer machine was actually less expensive than some of the less able grinders that we looked at.

"Now installed in our dedicated, temperature controlled precision grinding department, the Studer S121 has significantly improved our ring gauge manufacturing capabilities. It is providing outstanding sub-micron levels of grinding precision and enabling the highly efficient production of our ring gauges."

The advanced S121, universal internal cylindrical grinding machine, as purchased by the Bowers Group, is the culmination of Studer's 100 plus years of in-depth experience in the development and production of precision cylindrical grinding machines. The famous Swiss company



enjoys a worldwide reputation for the quality of its machines and its complex system solutions for the high-precision cylindrical grinding of small and medium-sized workpieces.

Studer's global customer base includes companies involved in sectors with extremely demanding grinding standards, such as the machine tool, automotive engineering, tool and die and the aerospace industry.

Granitan®, a material structure developed by Studer is used to provide the S121 machine's base with excellent cushioning behaviour, ensuring outstanding surface quality of all ground workpieces. The use of the advanced material also compensates for temporary temperature fluctuations and increases the service life of grinding wheels, resulting in reduced downtime.

The S121 was designed to accommodate medium-sized workpieces in both individual and small batch production runs.

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# Details make Perfection and perfection is not a detail

*(Leonardo da Vinci)*



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# Contain the mess for cleaner, more precise grinding operations

Advanced precision rotary units are designed to minimise surface grinding mess and completely contain any debris

"You can't stop him, you can only hope to contain him," is a favorite catchphrase of sportscaster Dan Patrick, used to describe the challenge of playing against elite athletes. With surface grinding, it can similarly be said that you can't stop the cloudy haze of dust, swarf and debris generated during the grinding process you can only hope to contain it.

That is just what today's advanced surface grinders aim to do, by minimising the amount of material that must be removed to achieve very precise tolerances and incorporating shrouds, air misting and cooling filtration systems that contain the mess almost entirely.

"Many people know they are in a shop with a conventional surface grinder as soon as they walk in the door because there is a unique smell due to the breakdown of the abrasive, combined with burning of the material. It is also not uncommon to see a cloud of dust over the grinding area," says Erik Lawson, engineering manager at DCM Tech, a designer and builder of industrial rotary surface grinders based in Minnesota, USA.

In precision metalworking shops, grinding the surface of parts is often required to achieve certain specifications for size, tolerance, flatness, or surface condition. Regardless of the reason, traditional surface grinders are notoriously messy as they produce dust, debris and swarf, which is a combination of the material removed and the consumed abrasive.



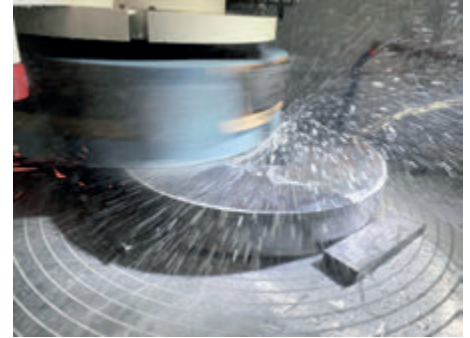
However, in precision machine shops today there is increasingly less tolerance for excessive grinding mess. Machine shops prefer tidy operations and so are increasingly searching for more modern, automated surface grinders that are easier to operate, provide much more precise grinding and do so while containing the debris.

### Times have changed

A decade or two ago, a messy, dusty shop floor may have been acceptable, but not today. Precision machine shops have evolved and now both customers and operators have much higher expectations for tidiness, according to Erik Lawson: "For customers, a messy shop floor can indicate a lack of attention to detail and raise questions about the ability to be precise. Shop operators do not want to work in a cloud of dust and swarf all day, go home dirty and have their family smell it on their clothes." He notes that in the past, machine shops may have swept their floors once a week or, at best, once a day.

Today, many machine shops take pride in presenting an extremely clean work environment. Since the grinding process is inherently messy, however, the first key to achieving a clean shop while meeting all quality criteria is grinding to spec without overgrinding.

"Automated, precision grinders minimise mess because the machine only removes the minimal amount of material and so prevents overgrinding, which generates excess dust and debris for no real purpose," says Erik



Lawson. "On top of that, some material is quite valuable, so overgrinding can be costly."

Machine shops primarily utilise surface grinders with a reciprocating table and a horizontal spindle that turns the grinding wheel. Reciprocating table grinders are precise but have a slow material removal rate and require multiple passes. Traditional rotary surface grinders are a faster option but can be problematic in the hands of less experienced operators. With limited control of spindle speeds as well as manual controls, the equipment requires sophisticated operators that can factor in complex calculations and considerable expertise and experience are required.

Although both types of conventional surface grinders can be found in many shops, they typically have an open configuration, which allows dust and debris to escape the machine and become airborne.

In contrast, modern vertical spindle, rotary table surface grinders have a table that rotates with the workpiece held firmly in place underneath a vertical spindle. The grinding is not performed by the peripheral edge of the wheel, but by the entire diameter of the abrasive surface, which facilitates grinding performance and consistency.

"The less material that is removed while meeting all specs, the less debris that goes into the air or gets into the coolant," concludes Erik Lawson.

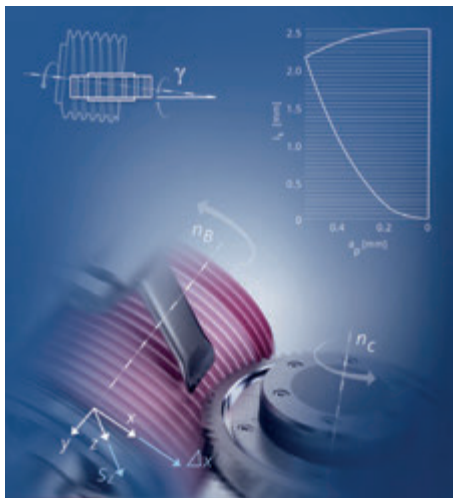
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# Automatic machine component monitoring for gear grinding machines

**Dr Christian Dietz & Walter Graf, Reishauer AG**

Continuous generating gear grinding has established itself as the preferred method of hard-finishing automotive gears. The machine tools, gear grinding machines, have reached an elevated level of maturity, leaving little room for improvement on the mechanical side.



However, recent developments in process and component monitoring have added a new dimension to the performance of these gear grinding machines. Additionally, machine components are subject to wear over time. The critical questions regarding wear are when it may start to affect gear quality and cause NVH issues? To answer these questions, this article focuses on machine component monitoring and how this is used, by applying Artificial Intelligence (AI), to predict and avoid negative impacts of wear. In the context of Reishauer gear grinders, component monitoring refers to all machine axes and their bearings used in the grinding process to achieve the required quality of the tooth flanks.

For this purpose, Reishauer has developed a process and component monitoring system, ARGUS, based on AI. Several prerequisites must be met for artificial intelligence to be effectively used in the first place. First of all, a large amount of curated data is needed, based on which it becomes possible to derive physical regularities on which to design algorithms.

In this context, there is also a need for experts and professionals from the gearing industry who can program the algorithms required for AI.

In a nutshell, AI has to be hard-won. What is called "intelligence" in AI is based on lengthy processes of sending reviewed and curated data sets through neural networks. Subsequently, the data output results must be checked, revised and sent backward through the neural network. In this manner, the AI system continuously learns, constantly corrects itself and adjusts the algorithms accordingly. This process is also called deep learning. AI is, first and foremost, a decision-making technology. In the context of component monitoring, speed and accuracy of decision-making is imperative and AI is lightning fast.

Automated component monitoring requires a cloud structure for data storage to cope with the large volumes of data continuously generated by countless grinding machines around the clock, as shown below.

Furthermore, it requires overarching machine algorithms that can evaluate the anonymised data about the states of the machine components in real-time with AI. The grinding machine runs autonomous cyclic tests that reflect the components' conditions. Since the grinding machines generate enormous quantities of signals, the signal quantity is only useful if it can be interpreted. To this end, in the past, it was necessary to bring in a highly skilled person who knew how to interpret and analyse changes in the signals especially in real time because it is of paramount importance to interpret the data before any critical process condition can occur. No matter how experienced, this person will not be able to



interpret the multiple problems in the volumes of data generated today. The ACD does not expect errors but is constantly evaluating and thus uncovering tendencies in the deviations. It is only on the basis of analysing these tendencies that preventive maintenance becomes possible at all. Due to the large amount of data, the ACD finds even the smallest errors or deviations.

Only enormous amounts of data, which are available anonymised in a Cloud, make it possible to train the corresponding algorithms. It is important to mention that the legal regulations concerning data protection must be strictly observed. The machine can be checked as often as required without needing personnel and without interrupting the production cycle. This enables preventive maintenance and cost savings for the user as machine downtimes can now be planned.

Over time, the precision of the algorithms continues to improve as the knowledge gained leads to further developments and refinements.

Even though there is a complex Cloud architecture and high-level algorithms in the background, this complexity is broken down for the user in the web application into an easy-to-interpret colour code. If the light bar is yellow or red, this indicates damage development and component failure.



Customers can subsequently give Reishauer specialists access to the data in the Cloud. A specialist can then analyse the problem in the shortest possible time and suggest appropriate corrective measures.

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# Improved surface conditioning usability

Resolving issues for clients is of high importance in our industry. Tyrolit was recently approached by two separate customers, to provide a solution on an existing process where the customers suffer from two crucial issues: supply problems from their current supplier and poor lifetime of the product due to belt joints failing.

Using Tyrolit product Bibielle X-Flex, the aerospace machining customer ran back-to-back tests against their current product, in order to try to resolve quality issues they had been experiencing.

As a result, no breakage over the useable lifetime of the belts occurred and, in addition, in comparison to the incumbent supplier, by using Bibielle X-Flex, the process achieved a 100 percent increase in the number of parts produced. Not only is this a hugely beneficial result but it has also saved time, ultimately proving to be more cost-effective.

The extended benefits of Bibielle surface conditioning products also had the same positive impact for another Tyrolit client, a company specialising in casting of industrial gas turbine components. Similarly, this client also began trialling Bibielle X-Flex belts as they were experiencing issues during their manufacturing process, with the belts snapping, resulting in short lifecycle.

Previously, the engineer would have had to hand manipulate the belt to add flexibility to the backing in an attempt to soften the



backing, allowing the belt to rotate without delaminating. With the unique material of Bibielle surface conditioning it means the structure is quite particular, making it very flexible, which in turn allows a tighter radii on the tool and prevents delamination, resulting in the added benefit of extended product life.

The fact that Bibielle X-Flex goes straight onto the tool and is flexible from the start, allows instant "out of the box" usage. This provides not only a cost and time saving, but also improved usability with clients achieving a significantly improved surface finish. Equally, there have been no reported breakages on the joints during the surface conditioning process for the usable lifetime of the product.

There is often a need for a new solution to improve the grinding process and Tyrolit



constantly thrives by assisting customers and helping them to overcome any obstacle. In a world that is constantly evolving, it is important to be able to adapt.

In order to position itself to get into new markets, in 2020 the Tyrolit Group acquired Bibielle, a leading manufacturer of high quality three-dimensional abrasive material. Now, in its 103rd year of business, Tyrolit understands the methods to ensure its products, combined with the process in hand, work to the best of their ability, achieving optimal solutions for clients.

In addition to products with improved usability and improved stock levels, the company are able to provide a 10 day lead time from placing the order to delivery.

Contact Tyrolit today to see how it can help find a solution for your surface conditioning requirements. 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. It 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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## The difference between flap discs and grinding discs



Flap discs and grinding discs are important abrasive discs as they both are utilised to shape metal. The main differences between the flap disc and the grinding disc come in when and how they are utilised for metalworking processes. Grinding discs are perfect for material removal and flap discs are perfect for surface preparation.

Grinding discs are coarser and perform faster at rough surfaces than zirconia flap discs, additionally they are utilised for moulding metal. Flap discs help you to achieve a smooth and finished surface.

### What are flap discs?

Flap discs are rough discs produced using little flaps of covering grating. Flap discs for aluminum are more effective in their utilisation than using a level rough paper. The length of each flap can be worn out totally before the disc should be supplanted, so the wheel is helpful as the flaps disintegrate, not at all like a level rough sheet which should be disposed of regardless of whether just a little piece of the sheet is dissolved away. Flap discs last quite a bit longer than fibre discs.

The benefits of flap discs during use are that each different flap assaults the workpiece at a somewhat unique point that additionally shifts with the processor's point. This stays away from the normal issues with level rough paper that can produce

indistinguishable, rehashed scratches in work without much of a stretch.

### What are flap discs used for?

They are utilised to shape and form metal and can be utilised as an option in contrast to pounding discs for eliminating weld stores and slag. Flap discs are less powerful than pounding haggles and can be harmed if care isn't taken. They are lighter than pounding discs, so they produce less vibration and are simpler to work with.

### What are grinding discs?

Grinding discs feature an assortment of sizes and thicknesses. Ensure the discs you buy are the right size, so they fit into your alert. They ought to be about a fourth of an inch thick. Low coarseness grinding discs produce huge and exceptionally hot sparkles. If these land on your skin, they are somewhat harmful. Nonetheless, they are sufficiently hot to liquefy some attire, particularly manufactured strands, and, if arriving on glass, they can be inserted into the glass. Eye security or a face safeguard ought to be utilised consistently.

### What is a grinding disc used for?

A standard grinding disc or grinding wheel is intended for the rapid removal of material from metal. Use it to plan metal for MIG welding, trim down old welds and remove

welding slag. They are accessible in various estimated grits, very much like sandpaper.

Lower numbered grit is coarser and removes metal faster, while higher grits are for completing work, cleaning and finishing. A higher coarse grinding disc might take somewhat more to follow through with the task than a lower measured one, yet it will be more secure and more agreeable as fewer huge flashes will be created.

### Flap discs vs grinding discs

Flap discs and grinding discs both have similarities and differences at some point. Each metal cutting tool has its own advantages. Grinding discs are commonly used to remove bulk stock material from the surface, whereas flap discs are utilised for fine surface finishing and conditioning.

So, If you are not looking for fine finishing, you can surely choose a grinding disc to obtain fast results. Later on, you can use a flap disc to complete the grinding and polishing job. Grinding is a fast process as compared to finishing so flap discs will consume time and are designed to work comfortably and smoothly.

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## New to the market from Tyrolit

With an extremely limited number of other suppliers for radial bristle brushes on the market, Tyrolit has announced that it is now the exclusive industrial distributor of SUNBURST Radial Bristle Brushes in Europe.

Since joining in partnership with Dedeco Sunburst in 2021, Tyrolit has the sole rights to sell these products in the UK and Ireland, bringing competition into a previously exclusive market, while adding an extended range to its Surface Conditioning portfolio.

As a leader in specialty abrasives since 1937, Dedeco introduced the SUNBURST range back in 2017, when at the time, there was only one other alternative supplier for these products anywhere in the world.

These thermoplastic abrasive bristle discs and brushes are perfect for deburring, cleaning, finishing and polishing. They are the ideal alternative to wire and nylon applications, improving performance in a safer, more efficient and flexible way. These products are available individually or in assortments of multiple shapes and sizes, with grit sizes ranging from 36 grit to 1 µm.

The flexible bristles conform to contours,



cracks and corners while working equally well on flat surfaces. With a durability to last a lifetime, the blended bristles guarantee extended wear and a consistent, smooth finish. Bristle Brushes are not only more efficient than wire brushes, but they work faster, easily achieving a constant, quality finish with lighter pressure.

Through a cool running feature, the brushes generate minimal heat. This reduces potential damage or distortion to the work surface, making them the perfect solutions for processes such as removing weld burns, discolouration, corrosion and rust, oxidation, grinding marks, stains,

adhesives, paint and other surface contaminants.

With a wide variety of industries that will hugely benefit from these products, it is a pioneering time to be able to provide a vast and extended range of surface conditioning products.

Contact Tyrolit today to see how your business can take advantage of these products: [gbmarketing@tyrolit.com](mailto:gbmarketing@tyrolit.com)

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**TYROLIT**

# An oelSmart® approach to heat management; grinding oil, filtration and monitoring for optimal cooling

Modern grinding systems are extremely sensitive to the slightest change in temperature. With high or fluctuating temperatures, tolerances on precision parts cannot be guaranteed and even minuscule temperature variations can have a negative impact on part quality, especially when it comes to micro tools.

Grinding fluid manufacturer oelheld UK Ltd is encouraging toolmakers to be oelSmart when it comes to managing heat within grinding processes through the selection of an appropriate grinding oil and coolant filtration unit, along with proactive monitoring of the system as a whole.

### Heat generation in the grinding process

During the grinding process, heat is generated by friction and other forces involved in particle removal from the workpiece. The resulting thermal energy is distributed between the workpiece, debris, grinding wheel and coolant and released into the machine enclosure. The degree to which heat is transferred between each element can vary greatly depending on the application setup.

Research has shown that in circumstances of poor or inadequate cooling, the workpiece can absorb as much as 43 percent of the thermic energy created, the swarf 30 percent and the coolant as little as 16 percent. Such conditions present the risk of micro-crack formation and inconsistencies between parts, which may fail to meet defined tolerances due to material expansion caused by increased temperatures, ultimately leading to higher scrap rates.

By comparison, optimised cooling conditions can alter the heat distribution

dramatically. It is possible to direct up to 60 percent and 26 percent of the heat generated to the swarf and coolant, respectively, with the airspace and grinding wheel receiving 11 percent in total, leaving just 3 percent for the workpiece to contend with.

### The role of cooling lubricants

Cooling lubricants can be classified as water-miscible (emulsion or solutions), or non-water-miscible (mineral, semi-synthetic or fully synthetic) oils. Both categories offer lubrication, cooling, cleaning, flushing, and protection against corrosion but there can be marked difference between the performance and suitability of each when it comes to grinding processes.

Historically, water has been used within many metalworking applications to provide cooling. Water has twice as much heat capacity and five times as much thermal conductivity as oil but since water evaporates at 100°C (212°F) and turns to water vapour, which has no lubricating effect and is a poor thermal conductor, it has limited uses in contemporary manufacturing processes.

While water-based solutions and emulsions are often used during conventional grinding processes, non-water-miscible cooling lubricants with boiling points of at least 240°C (464°F) and which contain special friction-reducing properties are required as grinding speeds increase.

In today's high-speed processes therefore, a semi or fully synthetic grinding oil is required with additives specifically designed for top performance under high temperatures to provide: lubrication, which

reduces friction and heat generation; reduced foaming, which can get impede cooling; flushing properties to remove debris which can retain a large proportion of thermal energy.

In the selection of a suitable coolant, a grinding oil's performance over time is also an important consideration from a productivity perspective. The additives found within a high-quality product will be better able to withstand the high temperatures of modern-day grinding in the long-term, and so require changing less frequently.

### The role of filtration

Alongside careful coolant selection, effective filtration that ensures grinding oils are not only optimally filtered, but cooled too, is a prerequisite for high-speed toolmaking. This is something microfiltration system manufacturer VOMAT GmbH understands well and the reason why the German manufacturer has placed such an emphasis on the development of accurate and precisely controlled cooling systems.

As well as ensuring oil filtered to NAS7 purity, 3-5 µm, is readily available for delivery to the workpiece through full-flow filtration with 100 percent separation of clean and dirty oil, VOMAT's range of standalone and centralised systems come equipped with in-built and optional add-on cooling technologies, providing continuous oil cooling to pre-set temperatures when in continuous micro-filtration mode as standard.

For the smaller VOMAT units, up to the FA240 model, which are designed to serve



just one or two machines, this comes in the form of an integrated, easy-to-service, AC compressor unit with an in-built condenser mounted in the lid of the unit's access hatch. If additional cooling is required, a cold-water heat exchange which can be operated using plant-wide cold water cooling systems can be integrated, as can modules that provide drive or spindle cooling, if a machine requires it.

In all cases, VOMAT's innovative technology offers temperature accuracy of +/- 0.2K, within an ambient room temperature of 15-35°C, making them an ideal option for precision grinders for whom temperature control is a priority.

### The role of ongoing monitoring

Another crucial aspect of temperature management is ongoing monitoring. As part of the company's strategy to support customers in taking a proactive and holistic oelSmart approach to the management of grinding fluids, oelheld UK Ltd has recently introduced oelSense remote monitoring service.

Making use of wireless sensors installed at critical points within filtration equipment,



oelSense systems provide 24/7 real-time monitoring of key filtration variables such as oil level, flowrate and temperature, which could affect production. The technology allows for automated alerts should any variable fall out of tolerance, which can prove particularly useful for volume batches or overnight runs.

The service means customers can walk away from jobs safe in the knowledge that should any of the monitored variables change, they'll be notified straight away. For oelheld customers who hold a service contract with the company, those notifications can be sent directly to the company's team of service engineers.

Ultimately, effective temperature control is a crucial element in the production of modern precision tools to meet increasingly high customer expectations in terms of performance, service life and surface finish. However, in addressing the issue, it is possible that toolmakers may be able to find a way to add value and a potential source of competitive advantage through improved

productivity and tool quality, by taking a proactive and whole-system approach.

To discuss your coolant, filtration, or ongoing monitoring requirements, contact oelheld UK's team of technical engineers who will be happy to provide advice relating to any aspect of your metalworking fluid system.

**oelheld UK Ltd**  
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## oelSense

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# KleenOil India improve pump life with Eclipse Magnetics' Filtramag+

Working for its client within the steel industry, KleenOil India has helped significantly improve the product quality of cold rolling sheets by installing a FiltraMag+ 2.0 from Eclipse Magnetics within its annealing process.

The company previously used a traditional magnetic roller separator to protect its Electrolytic Cleaning Line (ECL) from ferrous contamination. However, with a magnetic performance of just 6,000 gauss, it soon noticed that the collection performance was inadequate and significant problems were occurring with the quality of its finished products.

An ECL line is used within the steel industry to help clean and strip the surface of the steel sheet of rolling dust by using an alkaline solution. The material passes between electrodes, immersed in tanks containing the electrolyte. While this technique is more effective in cleaning cold rolled steel than conventional cleaning processes, the instability of the chemicals can and do cause problems.

While a magnetic roll separator can offer a level of protection within these circumstances, the effectivity can be significantly reduced, leading to contamination removal being somewhere between the 30 to 40 percent mark. Despite the magnetic roller being installed, the alkaline solution, in this case, was still heavily saturated with dust particles and was suffering from an unstable PH level. This led to significant rusting during the process resulting in scratching of the final product.

Effective filtration of the alkaline solution is paramount to ensure optimal efficiency of the ECL and simply having any magnetic filter or separator is not guaranteed to solve the ferrous contamination problem. The efficiency of the filtration depends on the magnetic material type, size of the magnet, magnetic strength and also the fluid flow dynamics. A low strength magnet or minimal exposure to the fluid will not perform to the required levels. In this case, 400 mg/m<sup>2</sup> of contaminant was remaining in the fluid after passing through the magnetic roller.

As well as using the correct product for the process in question, the higher level of protection of the solution also provides



additional benefits, including prolonging the lifespan of the pump as well as a reduction in associated costs related to maintenance and wastage.

Passing 500 litres per minute, with over 10,000 litres of fluid used in a by-pass manner, the Filtramag+, located on the return line, reduced contamination in this application within the alkaline solution from 400 mg/m<sup>2</sup> to just 30 mg/m<sup>2</sup> by removing the fine dust particles that were causing problems.

Ankrish Kapur, director of sales and strategy at KleenOil India explains: "The magnetic roller was not offering enough protection to the fluid in this application and it highlights the importance of choosing the correct method of magnetic protection. Due to the fine particles circulating within the alkaline solution, significant rusting was being created during the ECL process that was causing damage to the steel sheet. We recommended Filtramag+, a highly effective magnetic filtration system, to our client as its ability to remove even the finest particles from fluids would significantly improve the issues that the business was facing. By installing the Filtramag+, our client was instantly offered higher levels of protection against the damage that were being caused

by the contaminated solution. We work regularly with Eclipse Magnetics high-performance products and always see significant, positive results soon after installation of the filter."

The Filtramag+ magnetic filter from Eclipse Magnetics offers high-intensity 11,000 Gauss, patented Neodymium magnetic circuits, making it particularly effective for use with materials that have lower magnetic permeability such as cast iron and tungsten carbide.

Providing significant cost, quality and environmental benefits over traditional media-based filters, the Filtramag+ is ideal for harsh chemical wash systems with its dual-flow technology ensuring that extraction rates are maximised as ferrous particles are exposed to the magnets twice on a single pass through the filter.

As a result of the installation, the company is no longer suffering from damaged finished components, reducing scrappage and waste, as well as prolonging the life of the pump.

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## Filtration matters

BOFA International has launched a new podcast series highlighting innovation in portable industrial fume and dust filtration. 'Filtration Matters' will be engaging BOFA's knowledgeable team in discussions about how extraction system design is helping companies to improve productivity across multiple sector industries including laser, 3D printing, electronics and printing, while also supporting workplace environmental strategies.

In the first of the series, Josh Evans, an applications engineer at BOFA, goes back to basics, explaining the underlying principles of filtration and how manufacturers can go about specifying technology tailored to their processes.

As Josh explains: "Almost all manufacturers need filtration technology to remove emissions from a process and return clean air back into the workplace. This not only makes for a healthier workplace, it also helps protect investment in equipment to enhance productivity and avoid unscheduled downtime."

You can listen to the 'Filtration Matters'

podcast via the following link: <https://bofainternational.com/en/podcast/>

BOFA International launched in 1987 as a small family business and has developed into a multi-award-winning leader in portable fume extraction and filtration.

It now employs over 260 people at its headquarters in Poole, Dorset and in offices in Germany and the USA and exports to 120 countries around the world. Its reputation in providing high quality portable fume extraction solutions has become well established over the last 35 years and trusted by all sizes of business in a wide cross section of industries including laser, electronics, 3D printing and additive manufacturing, printing, mechanical engineering, dental, medical, pharmaceutical and beauty.

In September 2018, BOFA International was acquired by US-based Donaldson Company, Inc, a leader in the industrial filtration market, manufacturing filtration systems and parts.

BOFA designs, develops and manufactures fume and dust extraction



systems for a wide range of industrial sectors and applications. Its products play a very important part in the workplace environmental programmes of organisations across the world, while at the same time helping to improve industrial process performance by minimising disruption to production. No compromise, just great, innovative technology.

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## Why choose Fielder as your filtration specialist?



Fielder Filter Systems is one of the largest process filtration and water treatment suppliers in the UK, distributing worldwide to a large network of customers and industries.

It is an established, independent company specialising in the advice and supply of water filter systems, water treatment products, process filtration, water filter housings, microfiltration filter cartridges, particulate filtration, Ultraviolet (UV) disinfection systems and reverse osmosis systems.

With stock held in its UK, Polish and German facilities, the company provides customers with the best service available. Its stock availability, technical support, external account managers, training and laboratory facilities provide excellent customer service.

Fielder has the people, expertise and knowledge to get as technical as customers want. In-house, it offers a dedicated technical team, chemists, computer-aided system design, wet-lab testing facilities, particle and full water analysis and a customer training centre.

The company's technical service ensures total peace of mind that not only are you purchasing reputable branded products, many carrying FDA and WRAS accreditation, but is designed to fulfil your exact application requirements. Full technical back up is on hand should it be required. It also carries ISO 9001 certification.

Fielder can provide expert technical assistance and filtration solutions, which helps your application perform to its

optimum level, and gives the required edge in your industry.

If you are looking for a filtration supplier that provides a 'little bit more' than just the product or you simply have an application you would like to discuss, then Fielder will assist you.

### Award winning company

The Kent Messenger's 'MegaGrowth 50 Awards' have recognised Fielder Filter Systems as the 8th fastest growing exporter in Kent.

The ceremony acknowledges a full range of Kent businesses, from sole traders and partnerships up to locally owned limited companies, to receive recognition for achieving amazing growth in varying economic times, showing opportunity is always there. Fielder won an award for its achievement in export sales.

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# delapena rises to the challenges

## Sintered products rise to the challenge with special abrasives

With the honing market expanding, industries including automotive and aerospace are continually looking to find lighter and stronger materials which has delivered a stream of challenges to the honing industry.

New applications and materials are being introduced and the tolerances required for technically advanced components are constantly being refined. The need to be able to hone a vast array of materials including chrome, glass, ceramics, Inconel and molybdenum has grown rapidly.

Honing specialist materials has always been a challenge to the market, however delapena sintered products have an advantage. The team at its state-of-the-art development facility has a wealth of honing knowledge, enthusiasm for innovation and the drive to accept a challenge.

With the current supply chain issues around the world, delapena is being approached by many customers to reverse engineer many types of abrasives that are suffering from extended lead times.

Over recent years, delapena sintered products have been developing specific grades of metal bonded and resin bonded abrasives for hard-to-hone materials such as chrome, inconel, stainless steels and titanium as well as developing unique grades for OEM engine manufacturers.

### Now boasting a catalogue of specialist honing stones for a variety of materials

#### Chrome stones

As the name suggests, this product is targeted at honing chrome with extremely high surface hardness, up to 80Rc. delapena worked directly with a customer facing challenges with honing hard chrome and reduced the cycle time from one hour down to twenty minutes. Since then, delapena has secured three major customers in America honing hard chrome.

Customer feedback says: "Requires less pressure, remains open and free cutting while achieving higher stock removal rates and increased tool life."

#### Inconel stones

Inconel materials are oxidation-corrosion



materials used in extreme environments and are widely used in the sub-sea industry. When honing Inconel, it is essential a free cutting abrasive is used to prevent the part from generating heat during the honing cycle which can lead to work hardening of the material.

#### OEM engine manufacture

Typically, engine block cylinder bores come in three different variants: cast iron blocks, steel cylinder liners and plasma sprayed bores. Each of these materials require a different diamond abrasive bond to achieve optimum performance during the honing process. During the last five years delapena has successfully become a leading supplier of diamond honing abrasives to the UK OEM engine manufacturers.

Martin Elliott, managing director, says:

"UK engine manufacturers have realised annual savings of over £100,000 by introducing delapena abrasives into their honing process giving longer tool life and improved geometric results of the cylinder bores. The customer also has the peace of mind that delapena stock their abrasive on the shelf allowing them to reduce inventories and have a 24-hour lead time of product."

#### Specialist in reverse engineering and tooling refurbishment

With the reputation for being leaders within the honing market, supporting every aspect of honing, delapena group has extensively invested in its tooling refurbishment department located at delapena Group's centre of excellence in Cheltenham, Gloucestershire.

## Reverse engineering

During the last 20 years, several CBN and diamond abrasive manufacturers have ceased trading. delapena now offers a service whereby a customer can send delapena a sample of the abrasive it is using and it can be reversed engineered to allow



the customer to continue using a certain grade of product.

Chairman David Arthur says: "We act as the UK's specialist research and development facility for the honing market. With new applications being driven by new materials, honing is again becoming a critical part of modern manufacturing processes."

## Tooling refurbishment

delapena manufactures specialised honing tools, as well as offering a first-class refurbishment service for other major manufacturer's tools, including Gehring, Nagel, Pemano and Kadia to name a few. Its reputation for a precise and efficient process, exacting quality assurance, paired with knowledgeable and friendly staff, are

the main reasons for its growth and success. For larger users with unpredictable demands, delapena offers consignment stocking of abrasives and can manufacture new products within seven days.

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**Watch video**



## Honing of BEV pinion gears with sophisticated design

Honing of transmission gears has been one of KADIA's core competencies for many years. A honed bore with high dimensional accuracy and optimum surface finish reduces friction and promotes powertrain efficiency. This is particularly true for Battery Electric Vehicles (BEV). System-related high standards of smooth operation are also required here.



Many of the BEV transmissions, some of which are very compact, contain stepped pinion gears with a sophisticated design. For example, the thin wall thickness at the long neck of the workpiece can lead to elastic deformation during honing and thus to reduced chip removal. KADIA solves this problem by a rigid tool design in combination with an optimally balanced cardan honing fixture. This prevents the system from resonating, by scanning the complete bore on the honing machine, which allows the bore profile to be fully displayed and honing parameters to be optimally adjusted. Continuous recording and evaluation of the cutting forces, enables automatic corrections to be made to the process.

The honing machines KADIA has delivered to customers for stepped pinion gears so far have been designed for two- or three-spindle honing processes, depending on the requirements. A video of honing stepped pinion gears with a U line honing machine can be found on YouTube.

Honing is the most precise metal cutting

process for the economical high-precision machining of bores. It offers the highest precision in dimension, shape and surface manufacturing tolerances. KADIA develops high-end honing technology for small to medium-sized bore diameters. With our Smart Dynamic concept, we offer the most advanced procedures for honing of precision components.

High-precision bores and burr-free workpiece surfaces is KADIA's specialism, with over 50 years of experience. It sets standards with its premium technologies and is a leading expert in honing and mechanical deburring.

KADIA is a part of the internationally active Nagel Group with locations in Europe, USA, China, India and Brazil.

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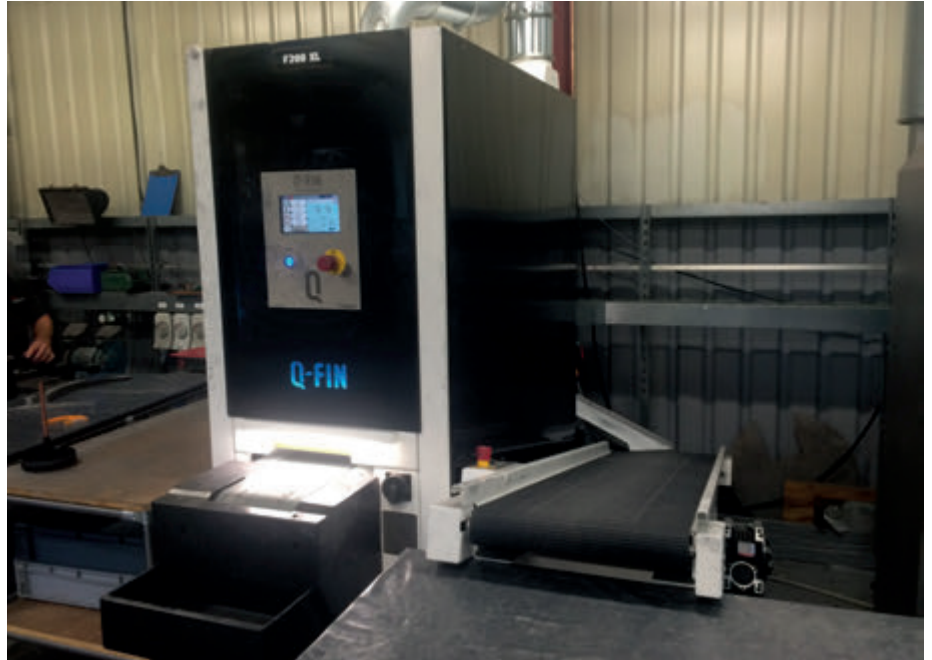
# Kiyo Engineering purchases Q-Fin machines from Simpson Technology

Kiyo Engineering is a progressive, forward thinking metal fabrication and design business with a wealth of experience across major industrial sectors. Based in Redhill, Surrey, it combines proven expertise in cutting-edge, high-quality fabrication and sheet metal and precision machining with the latest technologies in production, design and projects/contracts.

The company works collaboratively with clients to identify and provide the best solutions. Underlying its success is an ongoing commitment to precision engineering of the highest standard delivered in a timely and competitively priced way.

It has been in the business of engineering and design, specialising in the welding and fabrication of aluminium, stainless steel and mild steel products for an ever-increasing client, base since 2007. Kiyo Design Limited commenced operations in 2007 with its primary areas of expertise being engineering design and metal fabrication. Following a successful launch and five years of operation, Kiyo Engineering was introduced as the company's trading name.

In 2017, it expanded into a custom-built factory space located near Gatwick Airport affording 11,000 sq ft of new production, fabrication, design and storage areas. Within 18 months, driven by its continued growth, the decision was taken to expand the factory with the addition of a further 20,000 sq ft which was completed in 2019.



Richard Wilson, director of operations, says: "We moved to our current premises six years ago and there were five of us and now there are 55 of us. Now we have 35 XYZ machines and we have two CNC routers, three Addison saws. As we produce thousands and thousands of parts every month, up to 40,000 parts, we do a lot of deburring.

"As a company, we will look at any job. The good thing is if we cannot do the job, we know people who can do it. Altech are very good friends of ours and I have known the owner for twenty years and we share work. All of my sheetmetal work is subbed out to other companies and then brought back here."

### Progressive design and engineering

Substantial and ongoing investment in the latest plant and machinery together with robust technologies has placed us Kiyo at the cutting edge of its industry. It is a progressive and forward-thinking business with a wealth of knowledge across many sectors. Its expertise in design is complemented by a full range of advisory services including guidance on the most cost-effective production methods for projects and contracts of all sizes. Very much a family business, Bernard Wilson,

Richard's brother, is the managing director and director of engineering.

Richard Wilson explains: "In this factory there are 55 people, of which I would say 25 are family and friends. I have two aunts, two uncles, a sister-in-law, my mum, my dad, my stepdaughter working here and also my son from time to time."

### Investing in a Q-Fin F200 XL machine

Due to Kiyo Design's increasing requirement for high volume and high-speed deburring, it required a machine which could handle these demands. A visit to Altech proved to be fruitful as Richard Wilson explains: "I was actually visiting Altech and I was having a chat with Ian and Arron Westley. As we went through their factory and I walked past the Q-Fin F200 XL machine, I was intrigued as it was new. Ian could not wait to give me a demonstration of it and I quickly realised that I needed one of these because it is perfect for our router work as our router does not debur. Ian provided me with Simpson Technology's contact details and having seen some samples of what the machine could do, we placed an order instantly. The order was placed prior to MACH 2022 and our machine was taken to the exhibition. It arrived at our facility the Monday after the

exhibition ended. Having seen the other Q-Fin machine that they had available, I decided to purchase a second machine from Simpson Technology."

### The small powerhouse for rounding and deburring sheet metal parts

The F200 XL is a 3-station machine suitable for deburring, grinding and/or rounding small sheet metal parts. This deburring machine has a grinding unit as the first processing station, followed by two bowl brushes. The grinding belt removes burrs or, if required, gives the product a nice line finish. The brushes round off the product and give the surface an even finish. The F200 XL has two counter-rotating brushes which ensure optimal rounding.

The F200 XL has been developed by Q-Fin to finish, at high speed, small flat plate parts up to 200 mm wide. Q-Fin deburring machines are available in the UK from Simpson Technology who are based in Greater Manchester.

Richard Wilson continues: "On our router, on any given day, we can produce anywhere between 100-200 parts, but there is a lot of deburring required by hand which could take one and a half to two days. This is only



an hour's work for the Q-Fin machine. Therefore, investing in this machine was an absolute no-brainer for us. We used to have piles and piles of deburring to do, but this is now done so quickly and the machine is very easy to operate.

"We can do so much with this machine now. For example, sheet metal wise, I can get things laser cut and they can now be deburred so quickly. It is just a fantastic machine and the time savings are immense."

### Q-Fin machine creates new opportunities

It is clear that continued investment in high-end machines is a key part of Kiy Engineering's plans for ongoing growth. Richard Wilson says: "Now that I have the machine, I have contacted Gatwick Airport

as we are now able to do jobs that we have turned down in the past thanks to the Q-Fin machine. We are only going to get bigger and better if we invest in bigger and better machines. The aim is to make machining quicker and easier for our employees. We are always developing and trying to make things quick on the shop floor in order to get the work out. It took me just five minutes to convince my brother to purchase the first Q-Fin machine."

So will Kiy continue to invest in Q-Fin machines in the future? Richard Wilson concludes: "It is certainly a possibility and perhaps even a larger Q-Fin machine. I have even looked at their laser machines. Q-Fin are great machines and we have been very impressed with them."

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## Automation of deburring process with robotic arm

Process automation is becoming increasingly important. Robots are now being increasingly used to take heavy work off our hands. At the beginning of June, Timesavers visited Teqram in Zwolle, together with German dealer 1A-Maschinen and the company Quadrus. Teqram, part of Tollenaar Industries, develops software and vision guided robot systems that are controlled by a camera.

Robots are increasingly being used to automate processes involving the handling of heavy products. Think for example of a robot that fills the machine or Teqram's well-known EasyFlipper, with which products can be turned over easily and quickly. All these solutions are primarily aimed at working more efficiently and relieving the workers. In this way, the craftsmen can be deployed elsewhere in the process where their skills are most needed.

### Robotic deburring process

Tollenaar Industries also holds a sheet metal working company called Tosec. This is where the idea for automation originated and where, among other things, the Timesavers 42 RB series can be found; a rotary brush machine for deburring and rounding edges to a radius of 2 mm. Loading and unloading such machines is labour intensive and could easily be taken over by a robot. Therefore, at the front and back of the deburring machine, there is a

robotic arm that can lift up to 100 kg. The products are located by means of EasyEye, the camera system that controls the robot. The grippers then pick up the parts from the pallet and place them on the infeed table of the machine. The second robot takes the parts from the conveyor belt and stacks them neatly back on a pallet.

### Automation at Quadrus

The visit was not without good reason. Quadrus has been a Timesavers customer for more than 20 years and has recently invested in two 42 RB series, with extraction equipment from partner Absaugwerk. The German-based company has several laser machines connected to a fully automated warehouse. However, the new deburring machines are not yet part of an automated process, so a visit to Teqram and Tosec provided the necessary insights.

### Timesavers deburring machine: 42 RB series

One of Timesaver's best-selling deburring machines is the 42 RB series. It is the largest RB machine with Timesavers' popular rotary brush technology. With a working width of up to 1,600 mm and an optional magnetic



track, it is excellent for processing both small and large metal parts. Equipped with a carousel of eight rotating flap brushes, the machine can achieve uniform edge rounding to the desired radius. In addition, the sanding brushes can be used for a directionless finish or replaced by metal wire brushes for laser oxide removal.

### 1A-Maschinen

The relationship between Timesavers and Andreas Artinger, the owner of 1A-Maschinen, has existed for many years. The German dealer takes care of Bavaria, Austria and recently also North Rhine-Westphalia. Besides the Timesavers deburring machines, they also offer other equipment for metalworking, from laser cutters to sheet levelling machines to sanders.

Are you curious about the possibilities for automation in your production process? Or are you interested in a suitable solution for your deburring process? Then do not hesitate to contact:

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## VOLLMER and ultraTEC enter partnership for the future

As of 1st July 2022, sharpening specialist VOLLMER holds a majority share in the start-up company ultraTEC Anlagentechnik Münz GmbH, which will be known as ultraTEC innovation GmbH in future. ultraTEC launched its ultrasonic deburring systems in 2019 and is keen to advance its economic and marketing development together with VOLLMER. VOLLMER was mainly impressed by the start-up's innovative spirit, the unique ultrasonic deburring technology and the fact that ultraTEC is a family-owned company from Swabia, just like VOLLMER.

"When we founded our company three years ago, we based our foundations on our



son Jonas' successful project on ultrasonic deburring as part of the 'Jugend forscht' initiative, my wife's economic expertise and my will to turn these into a start-up company," says Dieter Münz, CEO of ultraTEC innovation. "Today, we offer four different ultrasonic deburring systems and with VOLLMER, we have an experienced partner at our side who can help us bring our technology to customers across the world with their size."

The core expertise of ultraTEC innovation lies in the contact-free deburring of metal and plastic components with specially developed sonotrodes. Burrs or protruding fibres are created during machining processes like cutting or injection moulding. For tools, hydraulic components, micro components or medical implants, deburring edges after machining is absolutely essential.

Ultrasonic deburring is the only method that can be implemented in a fully automated, contact-free and energy-efficient manner, for virtually any material and in a validatable process, unlike

common methods using high-pressure waterjets or electrochemical machining. High-pressure waterjet deburring systems, for example, need around twenty times more energy for deburring similar parts than ultrasonic deburring systems from ultraTEC. Ultrasonic deburring is also an alternative for components that are difficult to deburr and currently require manual deburring.

It was not only the innovative and patented ultrasonic deburring technology with in-house sonotrode development that convinced VOLLMER to take on a majority share in ultraTEC Anlagentechnik Münz GmbH. The start-up's history and philosophy are a particularly good match for the Biberach-based sharpening specialist. Like VOLLMER, ultraTEC is a family-owned machine manufacturer and what's more, it is based only around 20 kms away from Biberach in the Swabian town of Laupheim.

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# Microfinishing and lapping film

The ability to provide microfinishing and lapping film products converted in a fast, flexible and high-quality process is one of the major benefits which Precision Polishing, part of the Biffignandi Group, offers to its business partners and customers.

The concept of the Precision Polishing division started in 2012 with an innovative business model, logo design and infrastructure investment planning. It has now become a reference point within the European market for microfinishing and lapping film. A dedicated clean conversion department combined with a high-quality product range, have always been key elements in this process.

In recent years, its business growth has been a result of following and driving the ever-increasing market evolution. Its target has always been to offer the best service available. As a consequence, it then decided in the middle of 2018 to invest in the construction of a new factory to increase production volumes to meet market demands. This has given it a high degree of flexibility and expands the solution portfolio

by using new technologies for conversion equipment.

### Microfinishing and lapping film conversion capabilities

Thanks to the investments made over the years in new converting machines and technologies, Precision Polishing can now manufacture in-house all the major finished products required in the market.

As a leader in the superfinishing market, most of its production capability is focused on the slitting of microfinishing and lapping film in roll form. It is currently manufacturing rolls to a minimum width of 5 mm and standard rolls with widths of 50 mm, 100 mm and 200 mm. The maximum width is as the original jumbo roll.

Standard lengths are available up to 300 metres. Longer lengths depend on product specification and customer requirements. Rolls are available both with Abrasive Side Out (ASO) and Abrasive Side In (ASI).

Regarding the roll cores, it can offer various possibilities and dimensions. Cores manufactured from cardboard are not

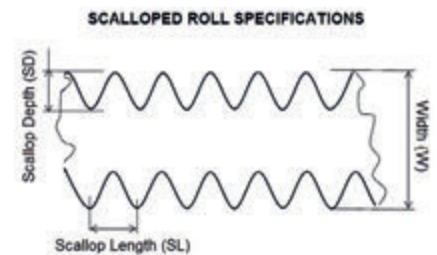
available for cleanliness reasons. It is also manufacturing scalloped rolls, waved edges and rolls with Pressure Sensitive Adhesive (PSA) backing.

Scalloped roll dimensions are specified as Width (W), Scallop Length (SL) and Scallop Depth (SD). They are always designed according to customers specifications or developed taking the workpiece dimensions and machine parameters into account.

### Precision Polishing scalloped roll specification

As well as rolls, it produces discs and sheets in various dimensions, both being available with plain PET backing or PSA. Standard sizes are produced on a regular basis. Non-standard or customised dimensions are available on request.

In addition to the traditional full cutting process, it has dedicated stamping machines capable of manufacturing PSA discs, sheets, daisies and other shapes in roll form.



### Roll PSA discs

Endless belts are also available for all microfinishing and lapping film in its product range. The jointing tape can be positioned on the abrasive side or on the backing. Dimensions are always made on request. Furthermore, the company takes the utmost care and attention in its cleaning procedures to maintain the highest standard in the production of the finished product. A high level of cleanliness in the department is

The Science behind

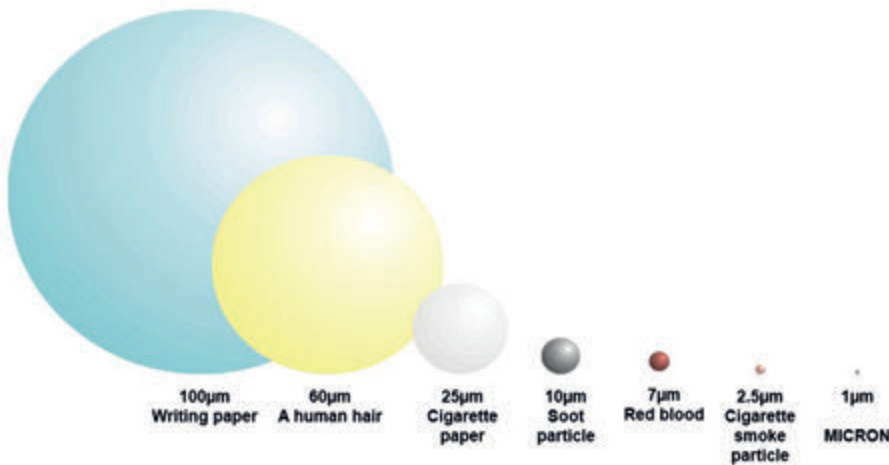
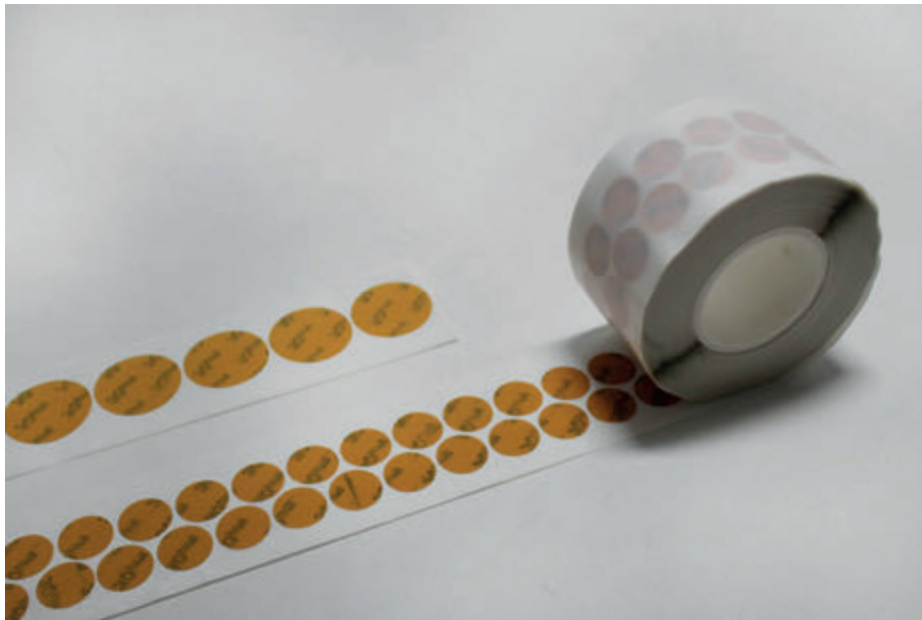
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of paramount importance to provide a high quality and consistent conversion process free from external contamination. Its microfinishing and lapping film product range covers an extremely wide grit range, most of which are in the very fine mesh sizes, <math><10 \mu\text{m}</math>. In many cases they are used for superfinishing, lapping or polishing processes where a defect caused by dirt or dust particles could be an extremely costly re-work.

### Microfinishing lapping film range

Given the high production capacity and the specialised handling of these materials, Precision Polishing is now also available to work as a subcontractor, not only for microabrasive film, but for all products that require a high precision converting process.

Precision Polishing, part of Biffignandi spa, was founded in 2012 following the start of a research & development project focusing on micro and superfinishing sector with innovative and structured

microabrasives. These new specialistic knowledges, new products and services and the sales activities are coordinated and developed by the Precision Polishing division.

The range of services and solutions by Precision Polishing for its Italian and international partners is highly focused to all the industrial applications that aim to micro finish surfaces with very high-quality standards.

Biffignandi spa, together with Precision Polishing division and the other group companies, follow the Biffignandi Group mission: We improve the world of surface finishing.

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# Kingsbury quality comes to the surface with ACCRETECH

The surface characteristics of technical products have a critical impact on their performance, lifespan and visual appearance. Further complicating component inspection, many industries surface roughness tolerances parameters are narrowing. Although a wide range of static surface roughness measuring instruments are now readily available, when a company's requirement is for a precise, easy and quick to use portable surface roughness instrument, the options are relatively limited.

After searching for a suitably accurate and efficient portable means of inspecting the surfaces characteristics of ground components, the technical staff of Kingsbury's Grinding Division discovered the advanced HANDYSURF+ instrument. In addition to delivering the high-levels of precision required, the robust ACCRETECH product had the ability to be easily transported to customers' premises and to withstand shop-floor use.

Kingsbury launched the company's Grinding Division in 2017 and now represents Haas Schleifmaschinen GmbH in the UK, Ireland and the GCC region with the aim of providing its customers with first-class grinding machines and comprehensive CNC grinding services. Also, in late 2021, Kingsbury was awarded



representation for Studer AG within the GCC region.

A key element in Kingsbury's Grinding Division's success has been its ability to provide its customers with excellent levels of end-to-end support. In addition to employing highly-skilled personnel, to help ensure the best outcomes for its customers Kingsbury's Grinding Division provides its staff with first-class equipment. For example, the recently purchased ACCRETECH HANDYSURF+ is now being used to gather accurate surface roughness data in pre-qualification trials before the sales of grinding machines. The instrument is also used to aid the development of new processes.

Kevin Ling, Kingsbury Grinding Division application engineer explains. "As a company, Kingsbury have more than 60 years of experience in supplying highly efficient and cost-effective machine tools and delivering first-class levels of support. Since its launch, we have applied Kingsbury's time honoured levels of customer care to our Grinding Division.

"When demonstrating the effectiveness of our machine tools and showing the complexity of the components we can develop, establishing required surface finish standards is a priority. This is a necessity not only for customer compliance, but also for

determining dressing parameters and the optimum grinding wheel specification for best possible performance.

"The purchase of our advanced ACCRETECH instrument provides us with the ability to quickly measure surface roughness with excellent levels of precision. In addition to other uses, our HANDYSURF+ is employed to prove the exceptional standards of surface finish that our grinding machines are able to achieve and to provide our customer with confidence.

"Also, our ACCRETECH equipment is used to guarantee that our machines continue to deliver expected financial returns to our customers as we assist in the development of new processes and product lines. We work closely onsite with engineering teams across many industries. As the HANDYSURF+ instrument is portable, it allows for quick and easy application in a live production environment."

ACCRETECH offers a comprehensive range of high-quality instruments for the use of measuring surfaces characteristics. The company's products meet a wide variety of requirements regarding resolution, precision, component size and application. Although the HANDYSURF+, as purchased by Kingsbury's Grinding Division, is regarded as ACCRETECH's entry level

surfaces measuring product, the robust, portable instrument boasts a wide range of features that are normally found only in more expensive, static instruments.

Building on the global success of the company's previous HANDYSURF instrument, ACCRETECH's HANDYSURF+ features an ergonomic design, a simple operating system and intuitive software. Also, whereas the original HANDYSURF model required users to set a narrow range when measuring with a high resolution, the new, user-friendly HANDYSURF+ dispenses with this requirement. The advanced new instrument has a generous Z direction measuring range of 370  $\mu\text{m}$ , the widest in its class and achieves a resolution as high as 0.0007  $\mu\text{m}$  over its entire range.

Given the less than perfect environments the robust HANDYSURF+ is able to be used in, the instrument's 2.4 inch colour LCD has significantly improved the visibility of its readings. In addition, the provision of clear, graphic representations of measurement results allows on-site verification with the use of various parameters and waveforms.

Simple 6 button operation and newly developed UI enables intuitive operation and trouble-free access to multiple analysis functions, while waveform types can be easily changed by using a screen located icon. A useful enlargement function and an automatic Go/No-Go judgment function, established by setting upper and lower limits, are easily accessible. Despite its relatively compact size and portable nature, the HANDYSURF+ is capable of a wide variety of analyses modes, including BAC, ADC, peak-count and motif analysis.

A choice of three optional drive units allows potential customers



to choose a HANDYSURF+ model according to their individual needs. Standard equipment includes a carrying case, calibration Plate, user's Guide/Quick Reference, amplifier, tracing driver, pickup, cables, calibration table and a CD-ROM. If required, by using the supplied USB cable or optional USB memory, inspection certificates can be created from measurement results. Alternatively, results stored on the HANDYSURF+'s internal memory can be downloaded to a PC as a text file.

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## Measuring surface roughness in turned parts

Traditionally, cylinder bore surfaces in cars were like the Himalayas with lots of peaks and troughs. When piston rings went up and down, this would slice the tops of these off so manufacturers made the bores tight to pre-empt this. Consequently, in the past, motorists needed to “run-in” their engine, limiting its speed for the first thousand miles or so. While the automotive world has moved on, this is an early example of how manufacturers recognised the value of surface characteristics. Here Mike John, technical director at The Sempre Group explains the importance of surface roughness and how to get the most out of this data.

Surface roughness often dictates how one part interacts with another. For example, if a shaft is rotating inside a bearing, a rough surface is undesirable because it causes excess friction. Meanwhile, a smooth and round surface ensures optimal performance by minimising resistance. If turned parts have the wrong surface characteristics, they could wear out, get bigger, smaller or rattle around.

In the automotive sector, surface texture is vital for anything that rotates in an engine. For example, camshafts will sit on a white metal bearing, a smooth object with a coating and oil will produce a frictionless surface. However, if the surface roughness is poor, this will cause metal-to-metal contact. Consequently, the part will wear quicker and irregularities in smoothness can produce nucleation sites where breaks and corrosion occur.

### Measurement in action

On the shop floor, most engineers and manufacturers use Roughness average (Ra) to measure change in process and understand micro- and macro-level geometric irregularities. The Ra will tell them if their tools are wearing out and producing different surface characteristics over time. Armed with this information, they can decide whether to make a tool change to remain within spec.

Ra won't give the full picture, just an average. It assigns a value to the deviation away from a median height say, on an engine's crankshaft, but says nothing about the direction of surface performance. Knowing what parameters will provide the required functionality of the surface is the first step. For instance, manufacturers can use plateau honing to create a metallurgically stable microstructure on the wall of a cylinder bore. Then, they can characterise the peaks and troughs as a number using skewness (RSK) and determine whether this is positive or negative. Automotive manufacturers will often use three or four characteristics, including Rz and Response Surface Methodology (RSM).

There are two methods of finish measurement: skidded and skidless. Skidded stylus systems are ideal for simple measurement of high-frequency surface roughness, while skidless technologies are better for low-frequencies ripples, waviness and surface profiles. For example, the Jenoptik Waveline W5 features a skid situated by a stylus. The skid drags along the surface to remove the need for a straightness reference, removing added costs. The system can measure up to 28 parameters and includes a changeable probe and guide system for adaptability.

### Data collection

Most engineering drawings specify the required dimensions and



surface texture of turned parts. Following measurement, manufacturers can compare their system's output against the initial spec to determine compliance. Despite its importance, most manufacturers don't tend to gather their surface roughness data or store it effectively. It's often treated as a tick-box exercise and, providing it's within spec, many don't give it a second look.

However, automated solutions can help manufacturers gather surface roughness data and export it easily. For example, using High QA Inspection Manager, they can scan entire drawings, or multiple pages, in one click and automatically extract surface roughness data. The process is fully automated, enabling total traceability.

The automotive industry has come a long way from tight cylinder bores, but surface roughness is still as important as it ever was. Knowing how to measure surface characteristics accurately and then capture this data is vital for ensuring part efficiency and functionality.

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## New Laser Contour Check for improved in-process non-contact tool measurement

Laser Contour Check is the new non-contact cutting tool measurement innovation that ensures high-precision and fast in-process measurement of tool parameters in WALTER tool grinding and eroding machines.

WALTER EWAG UK reports that the new development utilises blue laser technology in conjunction with an intelligent measuring system to accurately and efficiently measure various features on cylindrical tools from 1 to 52 mm diameter. Any deviations are compensated for directly during the machining process.

Laser Contour Check's analogue laser beam measures a tool's entire contour rather than measuring at specific points as with tactile or digital methods. Laser technology also avoids possible damage to the tool's cutting edges as well as measuring errors that could occur due to probe tip wear during tactile measuring routines.

A short measuring time of just 16 seconds, including cleaning, for diameter



measurement, depending on tool type, ensures high productivity and optimised sequences for cleaning and compensation can be easily and quickly programmed and adapted by the operator.

The measuring system, which will be available as an option for WALTER's extensive range of tool grinding and eroding machines, is integrated directly into the machine's working area and moves into position when required.

WALTER EWAG UK says the blue laser beam used offers improved accuracy compared to a conventional red laser. Blue

lasers have a shorter wavelength and so optimise the laser beam geometry and reduce the effects of diffraction.

WALTER has been producing tool grinding machines since 1953. Today, the product range includes CNC tool grinding machines for grinding and/or electro-erosion machining of PCD, CBN, HM and HSS tools for the metal and woodworking industry. The product range is complemented by CNC measuring machines for complete non-contact measurement.

EWAG has been a successful producer of manual and CNC machines for indexable inserts and small-diameter rotationally symmetrical tools made of hard materials since 1946.

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## Optical CMM machine to measure tight tolerances

$\mu$ CMM, the first purely optical CMM machine, is used to measure extremely tight tolerances in high accuracy. Users combine advantages from tactile coordinate measuring technology and optical surface measuring technology and measure the dimension, position, shape and roughness of components with only one sensor.

The optical CMM offers high geometric accuracy of several optical 3D measurements in relation to each other, enabling the measurement of small surface details on large components and precisely determining the position of these individual measurements in relation to each other. The spectrum of measurable surfaces includes all common industrial materials and composites such as plastics, PCD, CFRP, ceramics, chrome, silicon. Simple operation is implemented by single-button solutions, automation and ergonomic control elements such as a specially designed controller. Air-bearing axes with linear drive enable wear-free use and highly accurate, fast measurements.

Bruker Alicona is a global provider of



optical, industrial measurement technology for quality assurance of complex components of different shapes, sizes and materials. Its non-contact measuring systems are used in all areas of precision manufacturing. Its core competence is the measurement of dimension, position, shape and roughness in the fields of production measurement technology and automation, prototype development as well as traditional quality assurance. Based on the technology of Focus-Variation, its measuring

systems close the gap between classical dimensional metrology and surface roughness measurement. Users can measure both GD&T features and roughness parameters robustly, accurately, traceably and in high repeatability by using only one optical sensor.

The company stands for agile development, high technological competence and is motivated to constantly drive innovation. Since its foundation as Alicona in 2001, it has been known for continuously improving both user-friendliness and production-suitability of optical measurement technology. This makes it one of the driving forces in the integration of measurement technology into production, thus constantly opening-up new opportunities for automation and increased productivity.

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# The road to future-proof parts cleaning at parts2clean 2022

The wholesale realignment of industrial sectors, plus the need for resilient supply chains and increased demand for improved sustainability are the driving forces for major changes in industrial parts and surface cleaning. How these challenges can be mastered will be the focus at parts2clean 2022, the international trade fair for industrial parts and surface cleaning which takes place from 11th to 13th October at the Stuttgart Exhibition Centre.

From the automotive industry and its suppliers to plant and mechanical engineering, medical and sensor technology, aerospace, energy technology and the semiconductor supply industry, new and modified products and manufacturing technologies in the field of industrial parts and surface cleaning require new, adapted solutions. This is also the case with the recycling of raw materials and the remanufacturing of products, which is becoming increasingly important due to a shortage of raw materials and the need to conserve resources. Added to this are trends like digitisation and AI, as well as stricter regulatory requirements and climate protection objectives.

"parts2clean addresses all these challenges," explains Hendrik Engelking, global director at Deutsche Messe. "Every segment of industrial cleaning technology and all of the relevant suppliers are represented at this flagship fair, which offers a comprehensive overview of trends, technologies, procedures and processes that no other trade fair can rival."

### Cross-sector solutions and a wide variety of materials

With its cross-industry offerings and broad range of materials on display, parts2clean enables users from all sectors of manufacturing, as well as from reconditioning and recycling, to learn about the latest cutting-edge solutions from industrial cleaning technology and directly compare the various technologies from wet chemical processes, energy-efficient drying solutions, cleaning containers and workpiece carriers to technologies for dry cleaning such as CO<sub>2</sub> snow blasting, plasma, laser, vibration and compressed air processes.

Other areas include the control, monitoring and inspection of cleaning, rinsing and drying processes and the degree of cleanliness achieved. Innovative solutions are also being developed in the segments of cleaning automation, including parts handling, developments for the intelligent integration of cleaning processes into connected manufacturing environments and Cloud solutions. In addition, the focus will be on cleanliness-compliant manufacturing environments such as cleanrooms. "parts2clean offers an ideal basis for the design of future-proof component cleaning adapted to the respective requirements," comments Hendrik Engelking.

### Knowledge transfer at bilingual forum

The simultaneously translated German to English presentations by



well-known speakers from science, research and industry at the parts2clean three-day specialist forum will provide additional value for the event.

"In this way, parts2clean offers national and international visitors one of the most sought-after sources of expertise and valuable information on trends, innovations, benchmark applications and reports from the field," says Hendrik Engelking.

This networking hub for industry know-how, organised by the Fraunhofer Cleaning Business Unit and the German Industrial Parts Cleaning Association (FiT), is integrated into the flagship show, and participation is free of charge for visitors and exhibitors. In addition, the presentations this year will once again be streamed live on the event website.

### Supporting program at parts2clean

Whether it involves higher cleanliness requirements, new cleaning applications that need to be mastered or stricter energy efficiency and climate protection standards, the challenges facing manufacturing companies are numerous and varied.

Electromobility and the energy transition, changes in manufacturing and coating technologies, new materials and material combinations and the digitisation of manufacturing are just a few of the trends requiring new and adapted processes in parts and surface cleaning. Apart from particulate contaminants, an increasingly important aspect involves filmic organic, inorganic and, in some cases, biological contaminants in the fight to meet cleanliness specifications.

"The exhibitor showcases at this year's parts2clean will offer solutions in all areas of industrial cleaning technology to meet these new requirements in a leading-edge context," reports Hendrik Engelking.

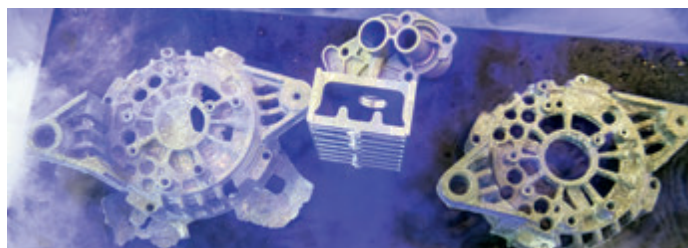
"For example, developments for the removal of fine-particle and filmic-chemical contaminants will be presented, as well as solutions for improved energy and resource efficiency, greater cost-effectiveness and flexibility."

## Attractive supporting program adds value to the event

It's not only the cross-industry, cross-technology and cross-materials exhibition portfolio which make a visit to parts2clean 2022 a must for cleaning technology users from all industries. The supporting program's side events offer knowledge and expertise as well as solution approaches for process adaptation and optimisation in a condensed form which cannot be found anywhere else.

## Holistic view of component cleanliness along the process chain

Pre-defined cleanliness requirements can be met stably and efficiently by taking a holistic view of the process chain. This includes, as a result of increasingly stiff requirements for component cleanliness, environmental conditions as well. The special show titled "Component Cleanliness - a Holistic View of the Process



Chain," organised jointly with the Cleaning Excellence Centre (CEC), provides visitors with a better grasp of the road to clean components. This begins with the pretreatment of workpieces and extends from cleaning, including a selection of the appropriate process chemistry, to the cleaning of containers and workpiece carriers, to professional monitoring of the achieved cleanliness with laboratory equipment and cleanliness-compliant packaging in a cleanroom. Specialists in technical cleanliness will guide visitors through this special show on all three days of the trade fair.

Hendrik Engelking concludes: "Despite the adverse conditions we faced last year, we were able to stage a successful event. We are extremely grateful for the trust that attendees and exhibitors have placed in our organisation and, consequently, in the implementation of parts2clean, which has given us added optimism for the upcoming events especially parts2clean 2022 in October."

**Parts2clean**  
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**www.messe.de**  
**www.parts2clean.com**

## SRD Engineering invests in MecWash parts washing system

SRD Engineering, a British company that manufactures high quality precision engineering parts for challenging applications such as Formula One racing, required a parts washer to cope with the cleaning demands of its large workshop. SRD contacted MecWash to find out if the Tewkesbury-based company could provide a system that could effectively clean machined parts in brass, titanium, stainless and carbon steel.

Mark Bonham, managing director at SRD, comments: "Before speaking with MecWash, the team hand-washed the machined parts which took valuable time and, with an increase in workload, became slow-paced and inconsistent. We wanted a system that could provide high standards of cleaning and drying, allowing the team to focus on providing our customers with the precision parts we are renowned for."

John Pattison, managing director at MecWash, says: "Speaking with Mark, it was

clear from our initial discussions that MecWash had the experience and expertise to provide the system that SRD required."

Using the latest cleaning technologies, coupled with specialist chemicals formulated by MecWash in-house, a MecWash aqueous cleaning system enables customers to meet the demanding requirements of industries with stringent surface finish standards.

Paul Jarratt, sales manager at MecWash, comments: "After detailed analysis of SRD's cleaning requirements, we recommended the MecWash Duo. The Duo 400 was the most appropriate for SRD with a 400 x 450 x 600mm wash chamber and a compact footprint.

"The Duo process involves immersion washing, which provides higher standards of cleaning by full solution contact with all component surfaces. It has a spray wash and a re-circulating heated spray rinse, which provides a high standard of surface finish



removing detergent residues left by the wash solution. The process is completed with a hot air dry."

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# Guyson equipment cleans and maintains planing and woodcutting tools

Guyson International, one of the UK's leading manufacturers of industrial finishing equipment, recently delivered a KS450 ultrasonic cleaning tank and a Formula 1200 benchtop bead blast cabinet to RHW (R H Wilson (Lakes) Ltd) of Kirkby Stephen, a leading timber importer and supplier, for cleaning and maintaining their wood cutting and planing tools.

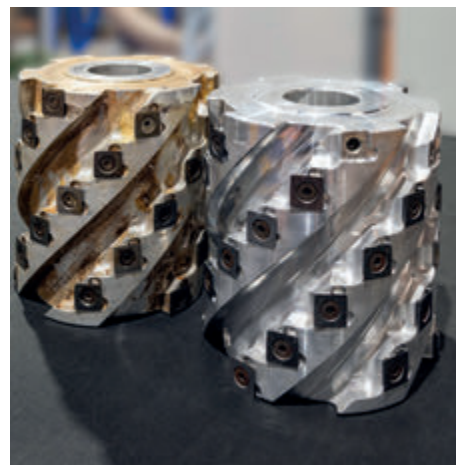
The problem was how best to clean 'helical planer blocks' to remove a build-up of pitch, sap, resin and other wood-based materials. These substances adhere to the cutting blades and plane body, affecting their efficiency, performance, and quality.

RHW's managing director Rodney Dalton was invited to Guyson's Skipton Component Finishing Centre, where it has a wide array of finishing equipment set up for customer trials and demonstrations, in order to find the best solution.

Currently, maintenance staff spend considerable amounts of time trying, with a small manual spray washer, to clean these planer blocks, but with limited success. Thus, they usually get left and when the residue hardens the job becomes even more difficult and takes longer.

As with most maintenance tasks, blade cleaning is easier when done regularly, before the accumulation becomes too thick or baked on by the heat. Regularly cleaning the planer block will also help extend the cutting life and improve performance. But the problem can be made worse when the wrong type of cleaning is used.

Harsh, mechanical cleaning by metal scraper or wire brush can introduce



thousands of minute scratches to the surface of the blocks, allowing ever more material to stick to the blade and make the situation worse, while less abrasive cleaning often involves hard manual labour, scrubbing for prolonged periods with nylon pads and common household cleaners. Or there is the use of more aggressive spray-on caustic solutions that may lead to corrosion of the blade surface.

Guyson recommended trying one of its industrial quality KS ultrasonic tanks. Safe and effective cleaning is achieved using ultrasonics, controlled heat and a mildly alkaline detergent solution. The highly effective precision cleaning is performed without manual intervention, allowing staff to conduct other tasks while the cleaning is being performed. Within ten minutes, the helical planer blocks were removed from the demonstration unit and were in pristine condition with no signs of contamination. Rodney Dalton was delighted and ordered a mid-sized KS450 ultrasonic tank there and then, stating: "Now we can clean them every day and this problem will never occur again."

The KS ultrasonic tanks are available in a range of six standard sizes with capacities up to 248 litres, with larger sizes available upon request. KS tanks allow users to pre-set the exact time and temperature for cleaning, ensuring consistent quality from batch to batch. A simple membrane keypad controls all functions. An LCD panel displays the temperature and time set by the user, the elapsed time since the cleaning process

began and the status of the power supply, heater and ultrasonics. All units operate in temperatures ranging from 20 to 80°C, enabling the optimum temperature to be selected for a particular combination of component material, cleaning solution and contaminant. Among the automatic safety devices are sonics that do not operate if the solution temperature exceeds 10°C above the set temperature and low-level protection to prevent heater burn-out if the solution level drops.

While in conversation with Guyson's sales manager in the demonstration room, the topic turned to how their other wood cutting and moulding tools are cleaned, as they produce skirtings, architrave, decking and bespoke mouldings. The Guyson Formula 1200 benchtop bead blast cabinet was also ordered for general workshop reconditioning and metal brightening as some tools are steel, so can oxidise. Guyson 'Honite glass beads' were included with the cabinet so the oxide layer can now be safely removed without damaging the tooling.

Guyson's customer service department can arrange free 'try before you buy' ultrasonic cleaning or blast finishing trials on your wood cutting tools to prove the process and give recommendations on the most suitable equipment for your needs.

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**[www.guyson.co.uk](http://www.guyson.co.uk)**





# Kemet introduces new cleaning machines with virtually no solvent loss

Surface finishing specialist, Kemet International Ltd is introducing a new range of cleaning machines, offering 99 percent recovery of material waste, reduction of management costs, high economic benefits, sustainability and innovation. The machines operate in a complete vacuum treatment cycle in all phases, ensuring excellent cleaning components, removing swarf, particles and oils without releasing harmful substances into the environment. The systems use a combination of spray, basket rotation, aqueous cleaning, modified alcohols hydrocarbons, hydrocarbons HFE and ultrasounds.

The machines offer a number of features and benefits, including: minimal loss of solvent which significantly reduces the process cost and environmental impact; distillation, separation and filtration of contaminants, allowing oils to be reused in machining processes and swarf/particles to be reused or economically disposed of; use of modified alcohols, with a flash point of more than 60°C under vacuum, so machines

do not have to be manufactured to ATEX approved rates, which reduces build cost and makes the machines more affordable; an ethernet connection to provide online diagnosis of technical issues and predictive maintenance, which reduces downtime; can clean component areas that are hard to reach with Aqueous/HFE solvents, including blind holes and tubes.

Kemet can make recommendations on the ideal process, dependent on the quantities to be treated, the amount of contamination and the size of the components to be cleaned. The machines are already being used effectively in many sectors, including precision mechanics, automotive, heat treatment, hydraulic components, springs, moulded components, fashion accessories, jewellery, watches, components for furniture, medical, dental, cookware, cutlery and electronics.

As well as this new range of vacuum solvent cleaners, Kemet's cleaning division also offer a comprehensive range of ultrasonic cleaning tanks and systems,



passivation lines that comply with ISO 7 clean room, and more than 200 high performance cleaning fluid formulations. These include solutions with validation standards of ISO 19227-2018 and biocompatibility standards of ISO 10993-18, ideal for the medical and aerospace industries.

Contact Kemet to arrange cleaning trials and Kemet will find the ideal cleaning solution for you.

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# VOLLMER to present new innovations

### “We are hitting the ground running”

Under this motto, Swabian sharpening specialist VOLLMER will be presenting new innovations at the AMB metalworking trade fair in Stuttgart. The machine manufacturer is presenting its 5S campaign ‘Sharp, Smart, Sustainable, Social, Strong.’ VOLLMER will offer live demonstrations of sharpening machines, services and digital solutions, showcasing new features for the VHybrid 260 grinding and erosion machines, as well as the tool-grinding machines from the VGrind family. VOLLMER services for maintenance and training, as well as the digital V@dison solutions will round off its trade fair presence.

Following the enforced break caused by Coronavirus, the international world of metalworking is once again convening at the AMB trade fair in Stuttgart. VOLLMER will present its full-line range of grinding, eroding and laser machines along with automation for unmanned machining. With this extensive range, VOLLMER always provides the ideal solution for manufacturing circular saws as well as rotary tools regardless of the manufacturing process. Solutions will cater for a wide range of tool types including carbide/high-speed steel and PCD tipped tools.

### VHybrid 260 with pioneering process innovation

At AMB, visitors can see the latest process innovation of the VHybrid 260 grinding and eroding machine not just figuratively, but literally too. Thanks to an optimised eroding process, surface qualities of 0.05 µm/Ra,

micrometre/average roughness value, can be precisely eroded.

On the VHybrid 260, surfaces on PCD tools can therefore be created in a way that has never been seen before, which is currently only possible with time-intensive and costly grinding work. This raises the question of how eroding can be further established in the future based on the process innovation in the manufacturing process.

Tool manufacturers can use the VHybrid 260 to machine as usual with reliable process management in an unmanned operation. Erodng can therefore be used, for example, as a key technology for machining for small PCD tools, such as drills and milling cutters with diameters of 1 mm and even smaller.

### VGrind grinding machines for carbide machining

On the VOLLMER stand, the new VGrind argon tool-grinding machine can also be inspected as with the VGrind 260 and VGrind neon that has only recently been added to the machine manufacturer's range. As with all VGrind machines, they are based on VOLLMER's double-spindle concept, which allows for efficient multi-level machining of carbide tools via two vertically configured spindles. While the VGrind 260 can be configured to meet specific customer requirements, VGrind argon and neon are two special models that have been assembled for special applications.

The VGrind 340S grinding machine will also be present at AMB and is ideal for



producing and resharpening the smallest of carbide tools with a diameter of between 0.3 and 12.7 mms. Such drills and milling cutters are in particularly high demand in sectors like car manufacturing, the electronics industry and medical engineering, where assembly spaces and components are becoming smaller and smaller. Furthermore, VOLLMER provides information about additional sharpening machines, such as the VLaser 370 laser machine or the QXD 250 eroding machine.

### Comprehensive services for sharpening technologies

Maintenance, training and finance are at the heart of VOLLMER services and these are increasingly digital and web-based thanks to V@dison solutions. Software solutions control sharpening machines and automated processes and can increase machine performance as required. Smart solutions are also available for evaluating process data or cross-connecting users directly with VOLLMER services.

“With the 5S campaign, Sharp, Smart, Sustainable, Social, Strong, we are combining our services for maximum sharpness on the cutting edge, and we accompany this with smart services,” says Jürgen Hauger, CEO of the VOLLMER GROUP. “In doing so, a clean environment and a sense of social togetherness with our customers and employees are of the utmost importance to us. At the AMB trade fair, we are pleased to present to our customers a live demonstration of how all of this makes our company stronger.”

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# The future of tool grinding

### Maximum precision for rotary tools and inserts

Over the last few years, Haas Schleifmaschinen has implemented a wide variety of turnkey solutions that produce cutting tools for a wide range of manufacturing processes. These are characterised by the perfect interaction between hardware and software. With the Multigrind® Radical, Haas Schleifmaschinen is continuing this tradition and will bring the future of tool grinding to life at the AMB. Milling cutters, drills and inserts as required and in chaotic loading. Of particular interest here is the fundamentally rethought operating concept, which is fit for the future. The focus is on the consistent decoupling of operation and machine, a logical reduction that leads to unprecedented independence. With the new operating concept, the machine becomes a pure executer.

### The new liberty in tool grinding

Because everything in grinding revolves around the NC code, operation or programming in CNC grinding has always been inextricably linked to the machine itself. The high-tech grinding machine as a pure execution system was previously inconceivable. However, if calculation and machine are separated, completely new possibilities arise. The decoupling shifts the necessary computing load from the machine to the network. This not only makes the generation of NC code more flexible overall, but also significantly faster. This is because scaling is possible in the network, but not on the machine.

Consequently, the operating concept offers a large degree of freedom even after many years of use. This is because the obsolescence of the machine's PC control system is prevented. Considerations about retrofitting and upgrading slowly aging controls are therefore obsolete. In this way, the user can benefit directly from the permanent further developments in the software, because the NC code is calculated in the company network and not on the machine. The calculation is located in the company's own network and is thus available for execution via tablet, laptop and cell phone. This makes the work in front of the machine more flexible. The tool grinder thus works on the move and is always up-to-date wherever he is. By locating it in



the company network, operation is no longer limited to just one machine. It can be implemented for several machines via a freely selectable platform, tablet, PC, laptop and I.T security is also taken into account by the separation.

In addition to extending the service life of the machine, the operating concept offers scope for the sustainable flexibility of the working reality. Dispensing with the classic control system on the machine changes the workplace and a previously inflexible working environment is made more flexible. In addition, the location in the company network offers a better overview. Synergies also result from the common basis with regard to networking, documentation, interfaces, parts spectrum and production infrastructure.

However, it is not only the operating concept that is remarkable, but also the performance. The Multigrind Radical was developed against the backdrop of constantly increasing demands in the production of precision tools.

### All-in-one tool grinding machine

Haas Schleifmaschinen meets these challenges with a great deal of technical finesse, so that milling cutters, drills and plates can be ground radically faster, extremely flexibly and extremely efficiently, depending on requirements. This results in the best times for both tool change and wheel change. As tool and wheel changes take place in parallel, additional time is saved. Non-productive times are thus a



secondary matter. The Multigrind Radical is equipped to the maximum and yet radically reduced. It stands on a footprint of 1,425 x 1,875 mm and, at 2,070 mm, is also ideally suited for low shop heights. The machine bed is inherently rigid and made of mineral casting while the free over-corner access is completely user-friendly. Further value is added with quick integration into the production without major programming effort. No lengthy training is required during installation and operation and production can begin immediately without loss of time. Parameterisation, templates and ERP information form the data basis. The programming itself is super simple and makes very fast production changes possible, simply provide parts and get started.

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## PRECISION MEETS INNOVATION THE NEW VLASER 270 BY VOLLMER



VLaser 270  
Tool Sharpening Machine

With the new VLaser 270, VOLLMER has introduced a complementary step-change in technology. In addition to the portfolio of grinding and erosion machines, VOLLMER has now introduced laser technology for fast, efficient and high-quality machining of ultra-hard materials such as PCD, CVD-D and MCD. Providing the highest possible flexibility, quality and surface finishes to your cutting tool production. New solutions combined with reliable precision: Simply VOLLMER.

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Creating Tool Performance

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# ANCA launches its premium, next generation machine range

The new MX7 ULTRA can manufacture large volumes of endmills and other cutting tools of the highest accuracy and quality. The minute size of a micron is beyond the human eye, but in becoming even more precise and moving from micrometres to nanometres, ANCA will offer the highest accuracy and quality in a cutting tool in the market. New software, hardware and design features are combined to make significant advances in surface finish, accuracy, and controlled runout, to deliver batch consistency from the first ground tool to the thousandth.

Pat Boland, ANCA co-founder says: "The MX7 ULTRA is a significant development in precision machine design and will change the industry expectations for accuracy and tool life.

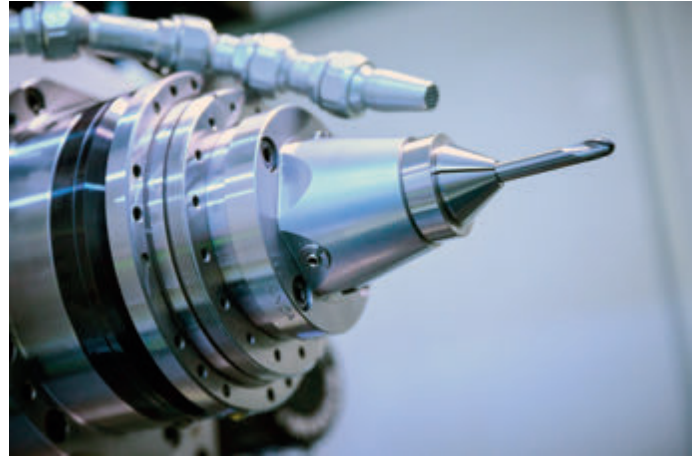


Achieving these outstanding results has only been possible because of our extensive experience working with customers to manufacture the highest quality cutting tools over many years. At ANCA we are always designing and innovating to find better customer solutions and I am very proud of the ANCA team that have developed the MX7 ULTRA."

"The ULTRA machine is truly market changing. It is the culmination of ANCA's elite technology, deep industry knowledge and customer experience in grinding," says Thomson Mathew, ANCA product manager for the MX series and software products.

Unlike its competitors, ANCA is vertically integrated. This provides a significant advantage as it means ANCA teams can develop and manufacture their own machines from base to canopy, including controls and drive systems, design and simulation software and even machine monitoring software. Owning all the technology means engineers and designers can consider the entire machine as a single system when developing new solutions.

Thomson Mathew states: "We wanted to create technology that could produce premium cutting tools that are above the current market standard in both accuracy and tool life. We introduced nanometre resolution into our axis, which is new to the cutting tool



market. The result is a perfect example of ANCA's vertical integration capabilities as we have the in-house ability to fine tune or develop the new algorithms for our drives to make this happen.

"Cutting tools like ballnose, corner radius, barrel shape ballnose and double corner radius endmills are used widely across industries including diemold, aerospace and power generation. The surface finish quality, accuracy and runout are critical for the performance and cutting life in all applications so our customers want a guarantee that their first tool will be exactly the same as the hundredth or thousandth. The MX7 ULTRA can produce high quality cutting tools to suit all customer needs to satisfy all industry types.

Thomson Mathew continues: "With almost 50 years of expertise, ANCA are experts in the field of cutting tools and we want to impart our knowledge through best grinding practices. As part of the ULTRA experience, skilled application engineers will be available to train and educate our customers to ensure the machine will produce high quality tools from the first day of production.

"It has taken years of research and development and engineering excellence for us to develop this premium solution to grind high quality tools. In my 25 years in the industry, I believe this is one of the most outstanding innovations we have accomplished that will really change the cutting tool market. We are confident that our customers will be very satisfied with the life and performance of cutting tools produced on this premium machine."

### **MX7 ULTRA superior performance highlights - greater control for the velocity and acceleration or deceleration along with machine jerk limits**

To increase the stiffness of the C-axis, the MX7 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 is part of the MX7 ULTRA package to 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 analog 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.

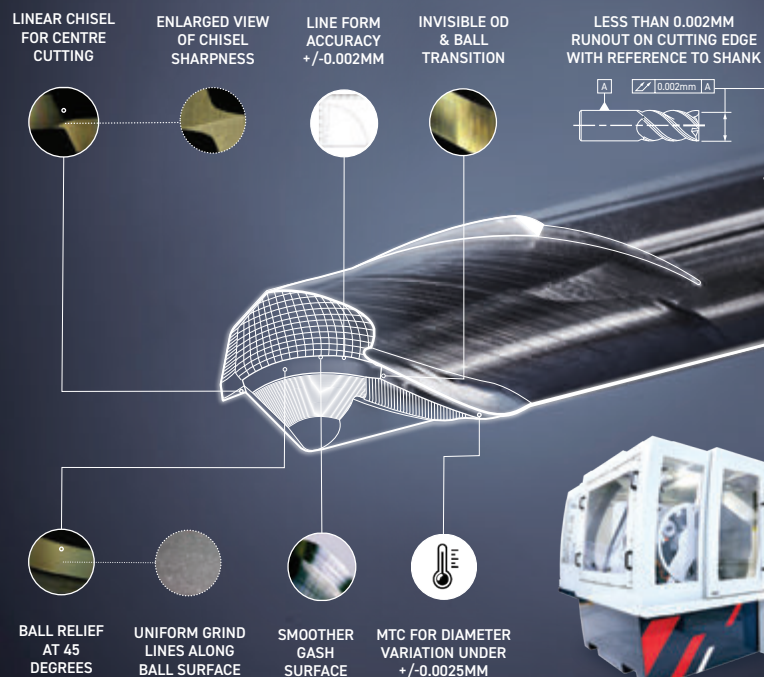
### Consistency in finished tool quality

A major inclusion in the MX7 ULTRA package is the total tool runout measurement and compensation operation in iGrind. 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.



## THE HIGHEST QUALITY FROM EVERY ANGLE

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# Special EFX invests in ActOn shot blasting equipment to improve process speed and parts' finish

Established in 1965 as a UK family business, ActOn Finishing works hard to design, develop and manufacture surface finishing products of high standard. The company offers a complete end-to-end solution for mass finishing, shot blasting and wastewater treatment for a wide range of industries.

Recently, ActOn had the opportunity to supply a sand blasting machine to Special EFX, which has improved its components' finish and process speed. Sand blasting, also known as abrasive blasting, involves finishing components in a pressure blasting machine, by spraying the abrasive media under high pressure against the part's surface. This process is especially used for smooth finishing applications.

### Smooth finish on custom awards and trophies

Special EFX Ltd is a leader in designing and manufacturing bespoke awards and trophies for clients in the UK and worldwide. To produce the matt, brushed, polished or satin finishes it offers, it was using a pressure blasting machine in-house. However, it wanted to update its finishing equipment as it needed a shot blasting machine with a pressure fan that would provide a more constant flow.

After contacting different suppliers in the market, it decided to work with ActOn Finishing. Tony Darby, production manager



for Special EFX Ltd states: "Customer service was very good, very friendly, helpful and they showed us around their facility in Coventry. That is where we made the decision to go ahead with ActOn. We had spoken with other suppliers as well, but ActOn seemed like the people we wanted to work with."

Further to carrying out trials for them, it was decided that the best option to achieve a matt sandblasted finish prior to anodising was the ECO MP pressure blast cabinet. This shot blasting machine is a professional and compact system built to achieve a rapid and efficient finish. Moreover, the ECO Blasting Systems have been designed to allow you to minimise your investment while enjoying the benefits of a good quality shot blasting machine.

### The ECO shot blasting cabinet features and benefits

The customer can now shot blast the parts quickly and as the machine is a pressure fan machine, it gives constant pressure without any disruption in flow. The parts finish has improved and results are repeatable while the ECO MP pressure blast cabinet offers permanent visibility due to optimal circulation of air and dust filtering. This shot blasting cabinet has a solid construction and comfortable arm hole.



### Results

The smooth finish required was achieved in a short period of time, while the client enjoys consistent and repeatable results every time without the need of reworking or scraping the parts.

Tony Darby concludes: "Aftercare was very good. Any problems we had, they are at the other end of the phone and they were helpful with the installation of the machine. I would recommend ActOn due to the professionalism of their team, the quality of the cabinets they provide and for the friendliness and helpfulness they provided during the purchase"

For more technical details regarding ActOn's shot blasting equipment, contact:

**ActOn Finishing Ltd**  
**Tel: 024 76 466914**  
**Email: [sales@acton-finishing.co.uk](mailto:sales@acton-finishing.co.uk)**  
**[www.acton-finishing.co.uk](http://www.acton-finishing.co.uk)**



# Surface treatment of stamped or cast parts

For the first time at AMB, Walther Trowal will be showcasing its machines for vibratory grinding as well as for blasting stamped and cast parts. The new trough belt blasting system is characterised by a small space requirement, the TT vibratory grinding system by its 20 percent lower energy requirement.

Walther Trowal will present the compact THM 300/1 continuous trough belt blasting system. The company has designed them specifically for high throughput of small, filigree or thin-walled parts, for example for parts made of die-cast aluminium or zinc with diagonals between 20 and 150 mm. These include parts for model cars, consumer electronics or fittings for the furniture industry.

For the first time a continuously operating continuous blasting system is now available for small parts, which only takes up a footprint of only 1.4 x 2.7 m and can be easily integrated into existing production lines.

The unique trough belt transport system conveys the workpieces particularly gently in a spiral movement through the machine. The parts are continuously circulated and evenly blasted from all sides.

Meik Seidler, sales manager for blasting technology at Walther Trowal, sees a clear trend in blasting: "The THM continuous systems with the unique trough belt principle can be easily integrated into interlinked process sequences. As a result, they are increasingly replacing the usual batch systems. The parts enter the machine in the cycle in which they are produced in production, the intermediate transport from one process stage to the next and the interim storage of parts is no longer necessary without replacement."

Interested parties who have seen the machines at the trade fair can carry out tests with their own workpieces in the new TTC test and training centres at Walther Trowal in Haan/Germany and Grand Rapids MI/USA.



## New Turbotron centrifugal power plant with up to 20 percent lower energy consumption

With new, energy-efficient electric motors, Walther Trowal reduces the energy required for vibratory grinding in the Turbotron TT 90 A/2C centrifugal power plants for deburring, rounding, smoothing and polishing mass parts of small and medium-sized workpieces by up to 20 percent.

With the new option "Gap flushing and automatic adjustment of

the annular gap", they are particularly suitable for machining extremely thin precision stamped parts. The pressure built up by the flush reliably prevents thin-walled parts from getting into the annular gap between the rotating turntable and the stationary work container.

Christoph Cruse, general sales manager at Walther Trowal, sees further advantages for his customers: "Unlike traditional centrifugal systems for vibratory grinding, the TT systems work in the working tank when deburring and grinding thin parts with a high water level. In this way, the workpieces neither stick together nor do they stick to the container wall."

Walther Trowal supplies the new Turbotron systems with the gap flushing option both as a single machine for manual filling and emptying and as larger, fully automatic systems with feeder, screening machine and abrasive return.

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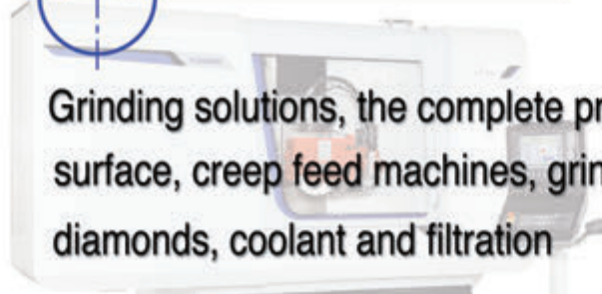
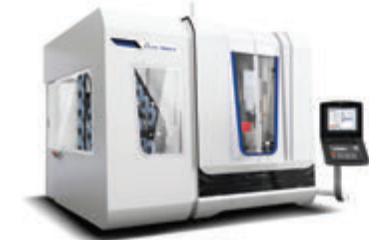


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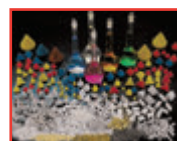
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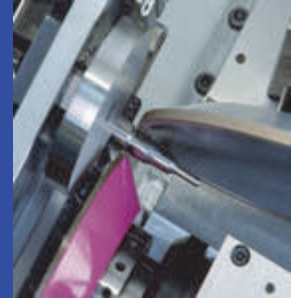
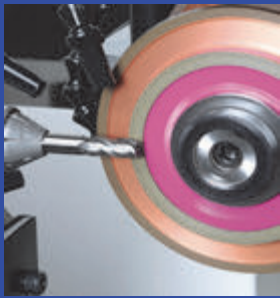
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