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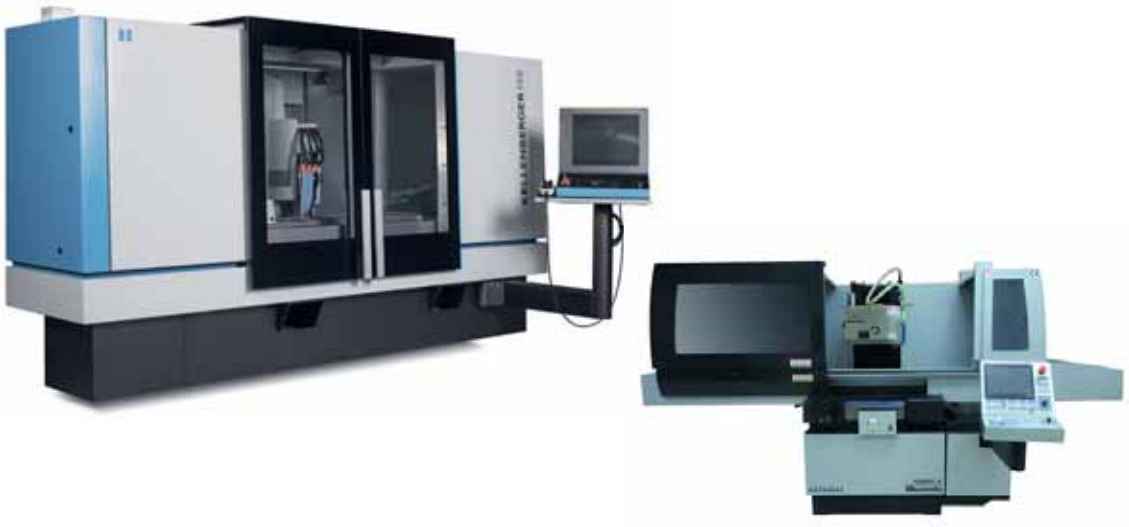

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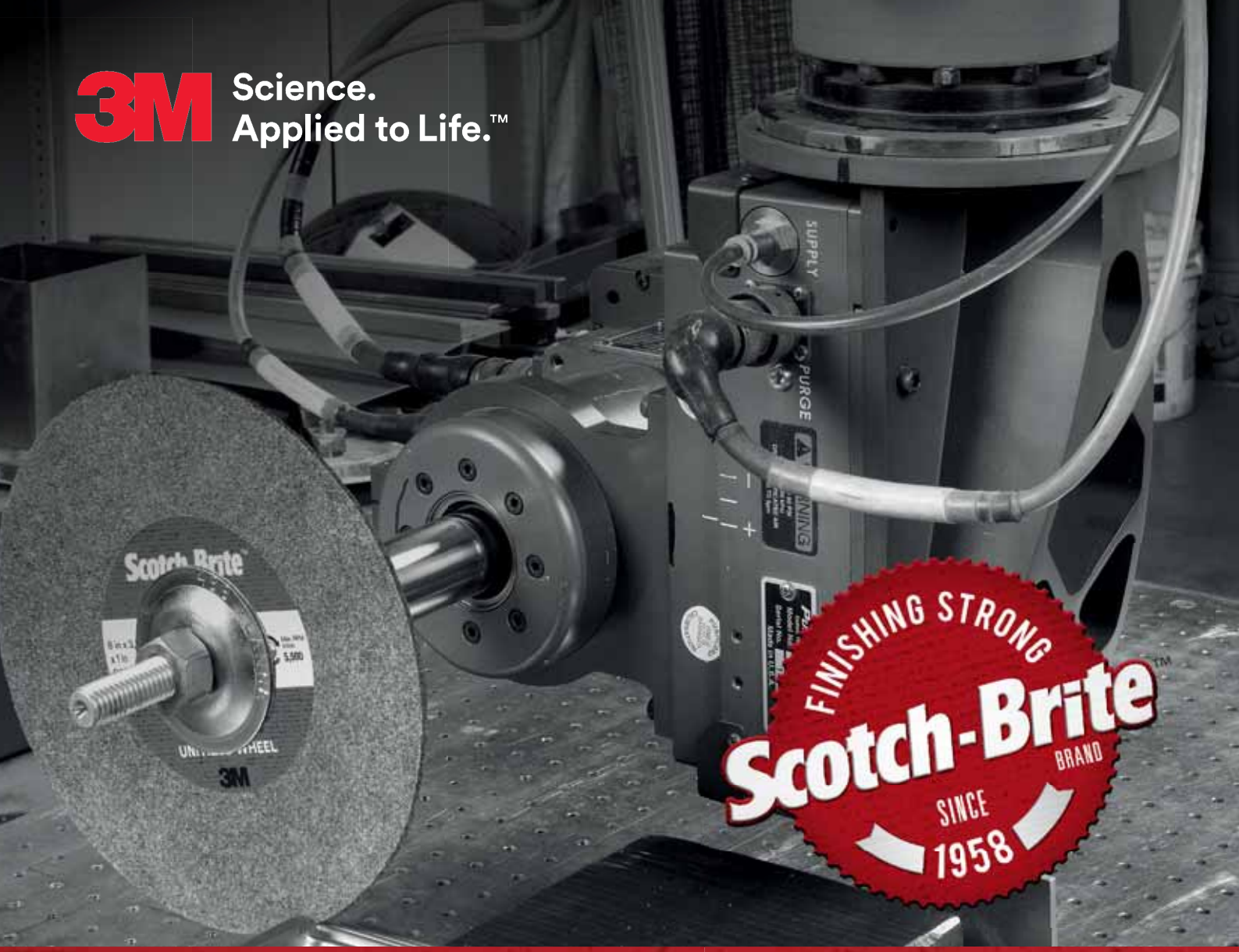

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NEXT ISSUE - JUNE 2019

- Automotive Report
- Automation
- Dust & Fume Extraction
- Polishing & Lapping
- Superfinishing

Jones & Shipman Hardinge further expands its range of high precision solutions

Jones & Shipman represents all Hardinge grinding brands in the UK and Ireland: Kellenberger, Hauser, Voumard, Tschudin and USACH.

During 2017 it became the exclusive distributor in the UK for Japanese grinding machine manufacturer Okamoto, collectively offering a vast portfolio of grinding machines covering virtually every grinding discipline.

As of March 2019, it is also the exclusive representative for Hardinge Super Precision products in the UK & Ireland.

Managing director Mike Duignan explains: "The Hardinge SP (Super Precision) products are an exciting addition to our product portfolio. They allow us to offer the optimal solution for our customers' high precision applications using a wider range of precision technologies, whether it be grinding, super precision hard turning, or a combination of both using both technologies on a single machine or as part of multi machine cell."

"Hardinge Super Precision turning and turn/grinding machines have a global reputation for holding the tightest tolerances when

manufacturing hard to manufacture parts. The latest T-Series CNC lathes from Hardinge not only continue this long tradition but achieve new standards of precision and capability."

The Hardinge Quest GT 27 SP is a combined turning and grinding centre, specially designed for high precision manufacturing of complex parts. It features a 10 hp, 8,000 rpm main spindle with 27 mm bar capacity. However, the GT 27 SP can be equipped with a "Big-Bore" spindle to handle up to 42 mm bar capacity. The headstock assembly features heavily ribbed construction, allowing minimal heat retention and optimum part size control.

The machine can be equipped with up to four grinding spindles, making it ideal for producing high quality, high precision parts depending on machine configuration. The grinding spindles can be 30,000, 50,000, 80,000 or 100,000 rpm speeds with surface finishes (turning) of 0.2 microns, part roundness of 0.38 microns and a continuous machining accuracy of three microns.

The Hardinge Super Precision range includes several other variants offering additional capacities and features including optional turnkey packages with or without automation.

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KLINGELNBERG presents cutting-edge Industry 4.0 solutions at CIMT

Since its inception in 1989, the China International Machine Tool Show (CIMT) has evolved, according to show organisers, to become a leading platform for the international machine tool industry in China, and in the entire East Asian region.

Organised by the China Machine Tool & Tool Builders' Association (CMTBA), the show is one of the four largest international machine tool trade shows in the world. Machine manufacturer KLINGELNBERG will be presenting its innovative Closed Loop concept for cylindrical gears, a pioneering Industry 4.0 solution at CIMT from April 15th to 20th.

With its entry into the robotics industry, KLINGELNBERG is also launching an initiative to expand its business outside the gear industry. KLINGELNBERG's cycloid measurement option for precision measuring centres provides a reliable solution for monitoring high production standards.

Höfler Speed Viper 180 Cylindrical Gear Grinding Machine

Focused on highly effective generating grinding in large-series manufacturing, the Höfler Speed Viper 180 Cylindrical Gear Grinding Machine draws on the successful concept of the well-established Viper 500 series of Höfler Cylindrical Gear Grinding Machines. Four different machine models are available to suit individual requirements: Speed Viper 300 and 180 in a single-spindle configuration and Speed Viper² 180 and 80 in a dual-spindle configuration. Speed Viper is designed for maximum workpiece diameters of 80, 180, and 300 mm, depending on the model. The Speed Viper² dual-spindle concept achieves the shortest auxiliary times and therefore fulfils the productivity requirements of the automotive industry. With an outside diameter of 320 mm and a width of 200 mm, the grinding worms ensure a long tool life while minimising auxiliary times for tool changes. An automatic tool clamping system with an integrated balancing unit also contributes to shortened tooling times. With a partial or full automation system, the Speed Viper can also be equipped with an automation interface that meets the VDMA 34180 standard. The Speed Viper platform is optimally designed for the Industry 4.0 manufacturing environment. Thanks to a broad array of applications and software, KLINGELNBERG's cyber-physical production system centralises production control, leading to a standardisation of results achieved on different machines and even in different plants.

KLINGELNBERG P 26 Precision Measuring Centers with "Cycloid Measurement" add-on option

Designed for use in Closed Loop processes, the P 26 Precision Measuring Center stands for quality management of gearing with scope for future development and is designed as a compact unit suited to a workpiece diameter range of up to 260 mm. The machine and software concept is optimised for the measurement of complex drive components using a technology that replaces up to six conventional measuring methods: gear measurement, general coordinate measurement, form and position measurement, roughness measurement, contour measurement and optical measuring technology. This guarantees maximum measuring accuracy and reproducibility. KLINGELNBERG's P series is one of the most widely used standards in the industry and serves as a reference for metrology institutes and with good reason.

With the cycloid measurement option, KLINGELNBERG now offers a reliable solution for monitoring the high production standards of the robotics industry. Cycloid transmissions enable high reduction ratios and are used to transmit forces in robot arms. As the need for high-precision robots increases along with increasing levels of automation, the combination of precision measuring centres and gear grinding machines for cycloids ensures continuous improvement in production quality.

KLINGELNBERG solutions are close to the market and the user. They also include a comprehensive range of services and software solutions. CIMT visitors will have an opportunity to experience these in action at KLINGELNBERG's booth A105 in Hall W1.

Cycloid measurement on a KLINGELNBERG precision measuring centre

Founded in 1863, KLINGELNBERG is one of the leading companies serving the gear industry. Thanks to numerous innovations in the areas of calculation, production, and measuring technology, KLINGELNBERG considers itself a leader in this industry. With its acquisition of Höfler Maschinenbau GmbH's core business in 2012, KLINGELNBERG has added machines for machining cylindrical gears to its range of products, reinforcing its position as a complete system provider.

Headquartered in Zurich, KLINGELNBERG now develops and manufactures at its sites in Hückeswagen and Ettlingen, as well as Győr, Hungary. The company also maintains a presence with sales and service offices and numerous marketing agents all over the world. KLINGELNBERG solutions are used in the automotive, commercial vehicle, and aviation industries, as well as in shipbuilding, the wind power industry, and the general transmission manufacturing industry. Applications range from vehicle drives, aircraft turbine engines, and cement mill gear units to drive systems for ships and oil rigs.

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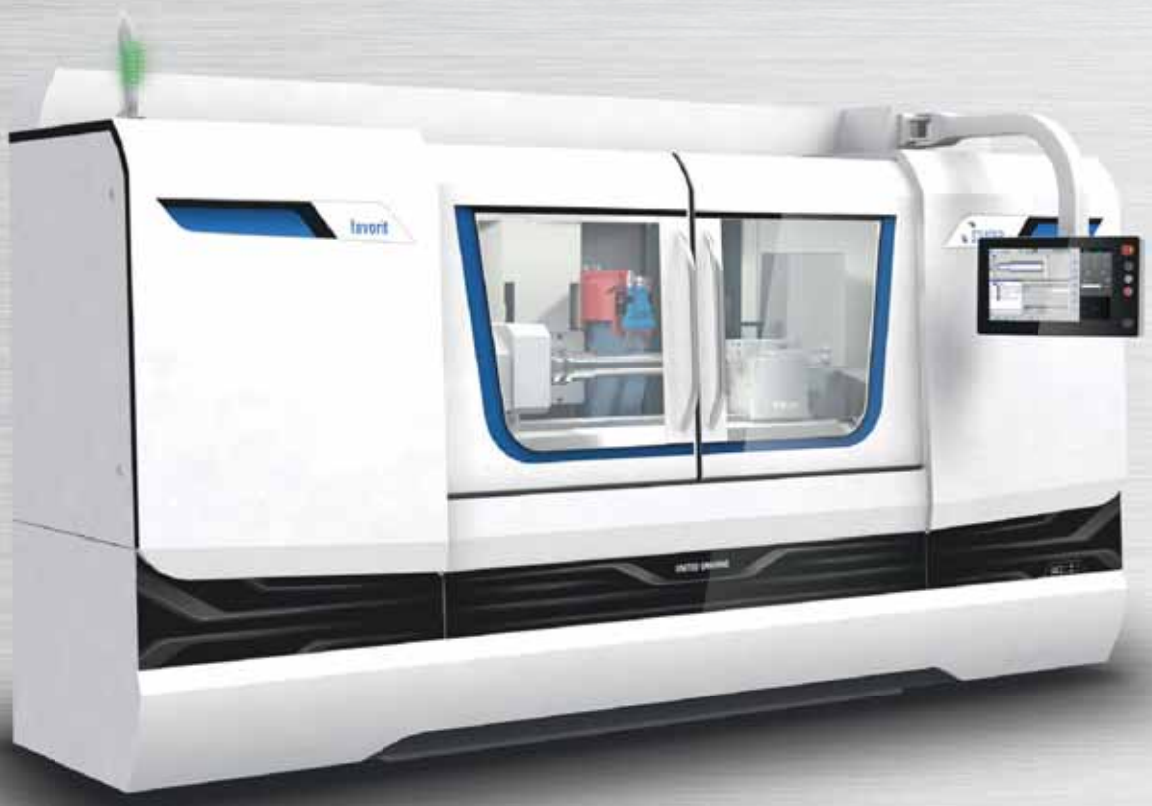
favorit

The price hit for long wide range of workpieces



The number one in terms of price-performance ratio, this machine can be used universally and, with distances between centers of 400, 650, 1000 and 1600 mm, it is suitable for both short and long workpieces. Its Granitan® S103 mineral casting machine bed equalizes temporary temperature fluctuations. The favorit line is equipped with StuderWIN and also has a touch screen panel.

www.studer.com – The Art of Grinding.

STUDER

Continuing innovation unveiled

STUDER sets new standard in universal external cylindrical grinding

STUDER continues to cause a sensation with its universal external cylindrical grinding machines. After the introduction of the favorit last year, two new innovations now follow with the S33 and the S31.

At CIMT in Beijing, Fritz Studer AG will launch the S33 and the S31 machines, now with four distances between centre of 400, 650, 1,000 and 1,600 mm. The distances between centres of 400 mm and 1,600 mm complete the portfolio for long and short workpieces. Based on the STUDER T-slide concept, these have an extended X-axis stroke. This is now 370 mm and enables additional wheelhead variants.

STUDER has redesigned the machine column geometry and added an innovative column temperature control. This ensures improved dynamic and thermal stability of the machines. The cost and complexity of setup and resetting can now be significantly reduced. This is made possible by the fixing of the dressing device on the double T-slot dresser of the longitudinal slide and by Quick-Set, the STUDER software for grinding wheel alignment. The standard control is a FANUC 0i-TF with the efficient and user-friendly StuderWIN programming software.

Another benefit is that the StuderTechnology computer incorporates the world's greatest grinding expertise. With just a little information, StuderTechnology automatically calculates the optimal grinding parameters in a matter of seconds. The customer achieves good quality and a quick, stable process at first attempt. Both machines can be easily automated for series production thanks to the standardised loader interface.

Above and below: S31 and S33 with a distance between centre of 1,000 mm

STUDER S33 – The productive machine for individual requirements

The S33 has a new wheelhead, which can be equipped with a motor spindle for external grinding and a high frequency spindle for internal grinding in different configurations. Three grinding wheels ensure that the workpiece is machined even more individually and quickly, complete machining in a class of its own. The machine has a B-axis with an automatic 1° Hirth coupling. The maximum workpiece weight is 150 kg.

STUDER S31 – The versatile solution for large tasks

This machine features StuderGuide® guideways with damping component in the direction of movement. The B-axis can optionally be equipped with a direct drive with a resolution of 0.00005°. The wheelhead can take up to three grinding wheels, a combination of external/internal, up to a maximum of two external or internal grinding spindles. For high-precision form grinding with the FANUC 31i-B control system, the S31 features a workhead with direct measuring system and the StuderFormHSM software program.

STUDER achieves record sales in 2018

It has been the best year since Fritz Studer AG was founded. In 2018, STUDER attained record sales in almost all markets. Precision cylindrical grinding machines were supplied to customers in over 40 countries worldwide and now STUDER presents its latest highlight.

On March 14, 2019, over 60 journalists from all over the world went down into the depths of the Swiss mountains. In the gallery of Hagerbach mine, in the canton of Graubünden, you feel the power and elemental force of the Alps. This test gallery and research lab is a place that has produced pioneering work and innovative power. A perfect place to take the new STUDER machines out of the dark and into the light and to present to the world the successful business development in cylindrical grinding of this traditional company from Switzerland.

Machine portfolio and sales

The shortage in worldwide procurement markets and a simultaneous increase in incoming orders posed the company with a considerable challenge. Over the same period of time, there was further development of new machines to series production. Strong growth was reported by STUDER in 2018 in central European markets as well as in Northern and Southern Europe, with the highest-ever incoming orders in the company history. Latin Europe experienced a very strong year for the third time running. STUDER has shown strong growth in China too in 2018. Demand was high, particularly for internal cylindrical grinding machines and 2018 saw record incoming orders in this segment.

STUDER achieved its biggest sales with the S33, the favorit and the S41. The manufacturer of cylindrical grinders also supplied its S31 for the 1000th time. "This shows that the machine has been providing top quality in reliability and precision for years," says Sandro Bottazzo, CSO of Fritz Studer AG. Last but not least, the small S11 production cylindrical grinding machine also reported a new sales record.

Close to customers, worldwide

STUDER is at home worldwide, servicing all the world markets with specialised representatives. "We speak our customers' language: with over 150 sales partners, we have the densest international network of consultants in grinding", enthuses Sandro Bottazzo. STUDER customers are particularly active in the following segments:

- Automotive industry - after showing extremely strong growth in 2017, this sector grew less rapidly last year.

- Machine manufacturers - important and consistently strong.

- Tool and die making - for the second year running, this division has reported a high share

- Job shops - an extremely important segment for STUDER. It is characterised by a high level of loyalty and long-term commitment

Aerospace - this sector continues at a consistently high level. STUDER benefits here too, from a high demand in worldwide air traffic.

STUDER also supplier smaller markets, such as the medical sector, for example, and is the preferred partner of many manufacturers of implants or medical tools.

Engine room of the S31

Customer care

STUDER supports its customers with 200 employees in customer care, of which 130 local service technicians operate worldwide. Customer proximity is also evident in the company's language diversity. Overall, customer care provides helplines in ten different languages.

"At our customers' side quickly and competently: that is the STUDER aim," explains Sandro Bottazzo. In order to provide even better support, solution support has been introduced. This measure helps the company to counteract any shortages in skilled employees and further improves the inter-company dissemination of knowledge.

Customer care is growing in the two-digit range. STUDER achieved a new record for all customer care services.

Technology and operations

"Precise grinding machines require precise components," reinforces Jens Bleher, CEO at STUDER. That's why STUDER is further expanding its core competence in machining. Several millions have been invested in three large 5-axis milling machine centres with integrated rotational functionality. As well as higher efficiency, these new machines will enable even better precision through complete machining and reduced clampings. The system offers ideal prerequisites for digitalising manufacturing in accordance with state-of-the-art Industry 4.0 standards. In all VDA and ISO certifications, STUDER has been audited and successfully recertified with all the latest standards.

At the heart of production is the continuous "Fliessmontage+" flow assembly. Having reported record production levels in 2017, this revolutionary system for machine manufacturers enabled an additional increase in 2018, setting new productivity standards in efficient machine manufacturing. Thanks to this, STUDER was able to continue to maintain the shortest delivery periods in the grinding industry, an excellent selling point for customers of Fritz Studer AG.

The outlook for 2019

The key indicators have shown a downward turn in the past year for all regions of the world. "We expect demand to ease in the course of the year," forecasts Jens Bleher. However, the Swiss cylindrical grinding specialist remains ambitious and continues to aim for growth.

The primary goal at STUDER is to make its customers even more successful. STUDER intends to achieve this with consistent further development and improvement. With the unveiling of two new machine versions of the S33 and S31, STUDER is quick to demonstrate that they mean what they say.

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Medical application solutions from Rollomatic

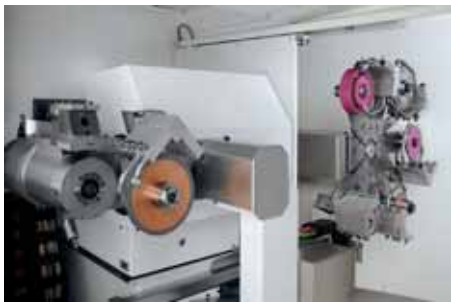
Rollomatic, whose 5- and 6-axis grinding machines are widely used throughout the UK and Eire for the manufacture of cutting tools, also offers these machines for the production of medical components of various kinds. These include grinding machines for the manufacture of medical drills, routers, burrs, saw blades, screws, reamers and surgical tools such as bone milling cutters.

Rollomatic has many references within the medical industry, with most users opting for the 6-axis Rollomatic 629 (now designated as 630) grinding machines, in either XS or XW variants.

Medical components are mostly manufactured using Rollomatic's own latest generation Virtual Grind (VGPro) grinding software, although Rollomatic has also supplied specially developed programmes for certain parts. Rollomatic software also comes with free-of charge lifetime updates that allow end-users to always have the best and latest software available to them at no additional cost. The VGPro software includes a fully integrated 3D simulator for both the component being machined as well as the machine, allowing collision checks to be made prior to actual production.

The main advantage of these Rollomatic machines is the kinematic arrangement of the sixth grinding axis that is particularly needed when looking to grind saw blades. The 6th axis enables the grinding wheels to be inclined and this makes it considerably easier to grind past the centreline on a given part without damaging an adjacent tooth or feature. Even more importantly, the contact point of the wheel to the component remains constant over the entire grinding path instead of it altering as the wheel travels around it, which is the case on 5-axis grinding machines. The use of the 6th grinding axis also ensures that more freedom to use optimum grinding paths is made possible due to the angular inclination of the wheel. This allows medical parts with very complex forms to be ground.

These machines are equipped with highly accurate linear scales with a resolution of just 0.00001 mm, as well as on the rotary grinding wheel spindle axis. Furthermore, the latest Rollomatic machines have linear motors in place of ball screws. The biggest advantage of linear motors as opposed to ball screws is the absence of moving parts,



which enables them to achieve a much higher positional accuracy and repeatability. These two factors are extremely important to the medical industry, where accuracy is everything and every part must be identical across large batches. The surface finish of medical parts is also often critical and is improved by using linear motors on the grinding machines. The sealed for life/no maintenance aspects of the linear drives ensure that less or indeed no maintenance is needed and these factors help Rollomatic to offer its industry-leading, unlimited hours, 3-year parts and labour warranty that is free of charge on all new Rollomatic grinding machines.

The Rollomatic 6-axis grinding machines may be specified with automatic wheel changers and the changer on the 629XW machine has six positions to accommodate up to 24 grinding wheels with fast change times. Large capacity robot-based pallet loaders for unmanned automated operation with a part load time of just over eight seconds are available and the machines' high efficiency synchronous grinding spindles allow tools of up to 20 mm in diameter to be ground with ease from the solid blank.

Rollomatic is represented in the UK and Eire by Coventry-based Advanced Grinding Solutions Ltd

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For human well-being

The UNITED GRINDING Group's technologies enable a wide range of medical applications, which cure illnesses and alleviate complaints. All technology groups play a part in this.

Plaster casts are a thing of the past

In the case of bone fractures, the doctor inserts plates or splints into the patient. These are screwed to the broken bone. 8.9 million bone fractures are caused by osteoporosis worldwide every year. So-called bone atrophy is an age-related disease of the bone, which occurs in elderly patients. Osteoporosis is just one example, which illustrates the connection between age and the need for medical care. People are living longer throughout the world and the need for medical technology is therefore also increasing.

Bone drills, which drill holes for fixing plates or splints to fractured bones as well as dental drills and implants, are manufactured with the tool grinding machines. Extremely sharp cutting edges and precise concentricity are required for these drills. The same applies for prostheses in the shoulder or hip, for instance. The WALTER HELITRONIC MINI POWER or HELITRONIC MICRO are used here.

High flexibility

Medical bone drills are also produced in large series with the KRONOS S 250 cylindrical grinder from MIKROSA. A customer from Ireland, for instance, produces over 1.5 million medical bone drills annually using MIKROSA technology.

STUDER also serves a very broad spectrum with applications for prostheses, tablet manufacture and much more.

"Special machines are no longer required for medical technology today. Machining with a standard machine is generally possible", explains STUDER medical specialist Antonio Bottazzo. "This increases flexibility and availability."

Which implants are ground with STUDER machines? Hip, knee and shoulder prostheses, as well as dental implants. In the case of hip prostheses, for example, two implants are relevant for STUDER: the ball and the socket. The most precise surface machining possible and the geometry are crucial for all prostheses. In the case of dental implants, the external thread and fitting taper for holding the tooth are ground.

Another application relates to dies for tablet manufacture. How is STUDER involved here? Tablets are pressed from powder. Two-part dies are used to give the tablets their different shapes and sizes. These dies are processed with STUDER machines.

STUDER software tools are also used for these applications. Nature has created real works of art with knees and hips, highly functional parts of the body with complex geometries. These geometries cannot be produced or are difficult to produce without appropriate software. STUDER offers user-friendly software tools for this purpose, such as StuderWIN, StuderFormHSM or StuderFreeForm.

Bone and dental drills

Achim Schurius, sales manager for Europe, Walter Maschinenbau GmbH, says: "WALTER and EWAG offer machines which are used to produce dental drills or bone drills for medical technology. With these machining operations, it is important to note that dental drills typically have very small diameters and are therefore susceptible to deflection. The material used, usually stainless steel with a high chrome content, is also not high-strength and may more easily lead to deflections. Bone drills can also be very long, with very small diameters. Appropriate steady rests are used on the machines to counteract such deflections.

STUDER sales manager Antonio Bottazzo (right) looks after numerous customers in the medical sector

From screws to packaging

In the area of surface and proflle grinding, parts of nails and screws through to syringes and cannulas and plastic injection moulding tools for various components are machined. Medical technology also encompasses mechanical engineering and mechatronics, however. High-precision tools such as a variety of saw blades and machine components for laboratory equipment and diagnostics are ground.

Ground precision tools are also used in the manufacture of sterile packaging. The J600 from JUNG and the PLANOMAT series from BLOHM offer the ideal basis here.

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Knee and hip prostheses as well as bone rasps and puncture needles (hollow needles for tissue sampling) (from left) are produced with STUDER machines

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Operation on the open heart

Stationary assembly was yesterday. Today, the final assembly of the Agathon grinding machines is clocked and runs smoothly

"Our goal was to assemble twice as many machines in the same available space as before," explains Marcel Trüssel, head of assembly at Agathon AG in Bellach, Switzerland. As in most companies, space is a limited commodity at Agathon and customers rightly expect machines to be delivered within a reasonable period of time, even and especially during periods of strong economic activity. In order to achieve the defined production target, the Agathon managers initially decided to introduce a clocked assembly system. The length and duration of the cycles resulted from the quotient of the annual number of working days and the number of machines to be produced per year in the future. "It goes without saying that we have taken into account a buffer for unforeseen events," explains lean manager Boban Djordjevic. In order to determine the number and content of the cycles, all work steps were first recorded and optimised. This means that the corresponding "Muda" (waste) have been eliminated according to lean theory.

The question of whether the individual machine flows from cycle to cycle or whether the employees responsible for the individual cycles move between the machines remaining at one and the same location was answered in favour of flow assembly. "The main argument for flow assembly was that all the necessary materials, tools and accessories are always available where they are needed,"explains Boban Djordjevic. For this purpose, today the mechanics at the individual cycles have fully equipped trolleys at their disposal. These trolleys can be moved freely.

The heart of the Agathon flow assembly is the central unit for the energy and coolant supply, which was designed in the company and implemented together with external project partners. The individual cycles of the flow assembly are located around this unit and all machines under construction can be connected to the coolant supply with a quick coupling as well as to the power supply. Assembly of the unit started in November 2018 with first drillings in the ground. The entire conversion of the area, which involved the changeover from stationary to clocked flow assembly, was mainly performed in parallel with the ongoing work. This work was only interrupted in the first two weeks of January. "According to the plan, the flow assembly had to start on January 14th and that's exactly when it happened," says a satisfied head of assembly, Marcel Trüssel.

Lean manufacturing = profit for everyone

To make sure that this deadline could actually be met, all the gears in the project had to interact without friction loss. "The rebuild was virtually an open-heart operation. At the kick-off meeting, there were workmen who thought it was almost impossible that we could meet the deadline,"recalls Patrik Kamber, who supports Agathon as a freelancer for Holger Illing. Holger Illing in turn is the owner of one of the most renowned Swiss consulting companies for shop floor management and guides Agathon through the entire lean process in the assembly areas, during which, in addition to the introduction of flow production, a whole bundle of other measures was and is being implemented.

In particular, the pre-assembly has been reorganised. Today, with every assembly group that is produced there is a one-off production and is released by a specific customer order. The employees in the final assembly department process these custom-made products immediately, so that nothing is delivered to the stockroom. "This increases efficiency enormously," explains Patrik Kamber, "but it means that today the assemblies must also be manufactured at the rhythm of the final assembly cycle." To ensure this, additional places were created in the pre-assembly area. However, no additional space was required for this, because the individual pre-assembly workstations are now even more ergonomic and target-oriented, and less material needs to be stored there than previously.

"For Agathon, the introduction of Lean Manufacturing means a win-win-win situation," explains Holger Illing. On the one hand, the company benefits because around twice as many machines can be produced on the same space than before. On the other hand, the employees benefit from state-of-the-art workplaces, but also from the fact that the work is more varied. I attach great importance to the fact, that my people are in a position to master a wide range of work with highest quality as possible," explains Marcel Trüssel. A flow assembly that does not flow is not a flow assembly. This means that if an employee is absent due to an event or holidays, another employee steps into the gap in order to keep the flow. Employees would therefore also rotate between pre-assembly and final assembly.

The central unit for the energy and coolant supply was designed in the company and implemented together with external project partners

However, the customer benefits the most. Why? On the one hand, the acceptance of the machine on site in Bellach is more convenient for him today because a new, separate and modern equipped area has been created for this outside the final assembly. Much more important, however, is that Agathon grinding machines can be delivered even faster. Finally, there are many applications where the customer does not want to do without the quality standards and versatility of an Agathon machine. This has been the case ever since a competitor left the market in 2017. The corresponding customers can therefore always count on receiving an Agathon machine when they need it. This result is worth every successful open-heart operation.

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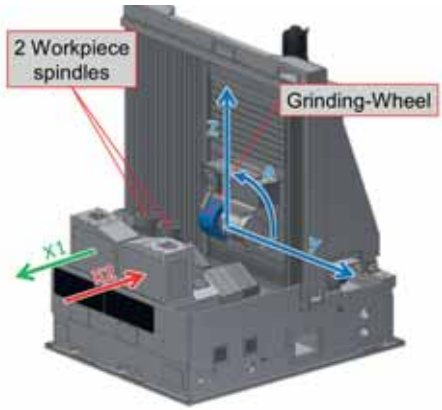
Time is money – the brand new Samputensili G 160

The increasing demand for efficiency and low noise emission of gears pushes the grinding process to its limits. With the widening range of applications for automatic planetary transmissions and increased number of speeds, gears in average get smaller and smaller, while production volumes are increasing. Unfortunately, smaller gears result in shorter grinding times and, consequently, the ratio of productive vs. non-productive time is going from bad to worse. Especially for planetary pinions, grinding times are currently down to 6-7 seconds, so that a non-productive part change of five seconds can easily result in a machine utilisation of less than 50 percent. Most state-of-the-art gear grinding machines have two workpiece spindles to reduce non-productive times when changing parts. Despite this, the non-productive time has never gone under five seconds, because the spindles are located on a rotary table which is hydraulically locked in position but is inaccurately floating while moving.

The Samputensili G 160 presents a unique, new design to finally solve this. In addition, it optimises static and dynamic stiffness compared to current standard machine architectures. Instead of using a rotary table to carry the workpiece spindles, the G 160 splits the X-axis into two linear slides (X1, X2), each of them carrying one workpiece spindle, thereby eliminating the rotary table and all the constraints connected to it. Both workspindles and the associated radial X-axis slides are under full position control anytime and both can be moved in and out of the workspace simultaneously without interfering with each other. Being driven by high-dynamic linear motors, the change of workpieces comes down to less than two seconds including meshing, synchronisation and simultaneous repositioning of the tool.



Another significant part of the new concept is the elimination of the physical shifting axis. Rather than stiffening the axis, the G 160 completely eliminates it. By doing so, not only is this "weak spot" gone, but also, instead of stacking 4 axes (radial (X), axial (Z), swivel (A) and shifting (Y), only three axes are stacked onto each other (Y, Z, A) before it comes to the grinding spindle. When compared to all existing machines, this architecture significantly increases the overall system rigidity, thus enhancing productivity and grinding quality. With the shifting axis not physically available, its motion is simulated by an interpolation of the Z and the Y axes, the so-called virtual shifting axis. Both these axes are not restricted by space constraint and are therefore large, strong and very rigid. This unique, patented machine concept ensures the best production times currently on the market.

But the machine delivers even more. No additional axis is needed to perform the dressing cycle. The dresser is mounted on the X1 axis slide next to the workpiece spindle. So, the precise and highly dynamic motion of the linear motor may also be used to fine-tune the geometry of the grinding wheel and the corresponding gear. It enables topological modifications of the gear flank at an unprecedented quality. Having the dresser located on the same slide as the workpiece-spindle, it finally makes it totally insensitive to thermal or other types of deviations.

Particular attention has been paid to ergonomics. All needs of machine engineers for operating, setting and servicing the machine are carefully respected. Changing tools is simplified by moving the main columns, Y-axis and the tool spindle very near to the operator's door and the same applies to the dresser. A secondary loading door provides access to the two workspindles when retracted into a loading position. This is where clamping fixtures, including tailstock centres, are changed and meshing sensors get adjusted. The loading and unloading interfaces are designed to attach a variety of external loading system, ranging from simple pick-and-place to flexible robot systems. To avoid sacrificing cycle time by the loading system, double-grippers are used for cycles faster than 20 seconds. Cycle times down to eight seconds can still be reached at full productivity by using an internal scara loader. All mechanical, fluid and electrical components are easily accessible for service or maintenance either from outside the machine or just by opening a door to the service isle between machine and electrical box. All built-in motors and encoders have separate covers to provide access if needed. All these features fit into an attractive, incredibly small total floor space.

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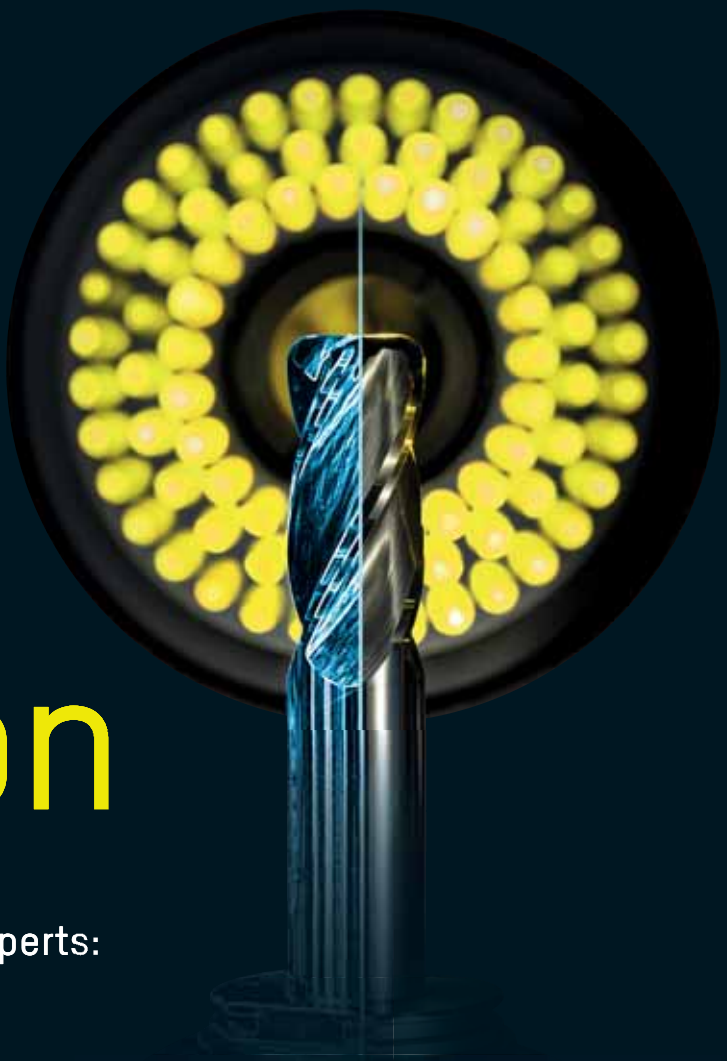

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Master Abrasives installs Micromatic grinding machine at Boneham & Turner

Master Abrasives has installed a Micromatic grinding machine in Boneham and Turner facilities in Nottinghamshire as part of the company's approach to continue improving machining capacity.

Boneham and Turner is a leading manufacturer and supplier of tooling components and precision engineered components in the UK. The company had two aging grinding machines in its production unit which it was replacing as part of an ongoing improvement program in conjunction with its centenary year celebrations.

Peter Boneham, managing director of Boneham and Turner, explains: "We are celebrating our centenary year in business and, as part of our continuous improvement programme, we have identified a range of areas for improvement. The grinding department was high on our list and, after reviewing the offerings on the market, we decided to opt for a highly respected company, Master Abrasives in Daventry, who are the sole UK agents for the Micromatic range of grinding machines.

"We chose the Micromatic ECO200U cylindrical, semi-automatic grinding machine to take over from our existing aging grinding machines and this proved to be a superb acquisition. The machine was supplied with additional features such as Digital Read Out and micro taper adjustment which helps the operator to achieve the necessary tolerance requirements."

Paul Widdowson, senior grinding operator with over 40 years' experience, describes the improvements that are being made in the grinding department with the new Micromatic machine: "This new Micromatic machine was purchased to grind a full range of jig bushes, headed and plain liner drill bushes, locating and seating bushes in a range of tool steels and stainless steels for the manufacture and assembly of Jigs and fixtures, press tooling and workholding devices.

Paul Widdowson, senior grinding operator, comments: "Since installation, this new Micromatic machine has produced a lot of close tolerance work very accurately and has proved to be very repeatable. As a result, we have recorded improvements in production output in the grinding department"

"From start to finish, the whole purchasing experience with Master Abrasives was very good: communication, deadlines and promised delivery date were successfully met which significantly helped us with our production planning." Peter Boneham, managing director of Boneham & Turner

"Since the installation, this new Micromatic machine has produced a lot of close tolerance work very accurately and has proved to be very repeatable. As a result, we have recorded improvements in production output in the grinding department, as with the old machine it had developed inconsistent sizing issues, a back log and high levels of arrears. The new Micromatic machine was up and running within a couple of days and Jake Golding, one of our skilled machinists, received machine functionality training at the time of installation, also provided by Master Abrasives technical support team. He was soon running the machine confidently."

Ian Meredith, Master Abrasives' applications engineering manager, comments: "It's been a pleasure working with this renowned company to make improvements to their grinding department after 100 years in business. Applications engineer, Martin Stevens and I had the privilege of joining their centenary celebratory event a few weeks ago and we'd happily help them out again with any future application requirements."

Peter Boneham concludes: "From start to finish, the whole purchasing experience with Master Abrasives was very good; communication, deadlines and promised delivery date were successfully met which significantly helped us with our production planning."

Master Abrasives encourages manufacturers to visit its grinding and finishing showroom in Daventry, where its application engineers can show Micromatic grinding machines' capabilities in action as well as superfinishing devices, metrology equipment and abrasives.

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Standardising individuality

ROT measures individual diamond tools in standard processes with ZOLLER

Diamond tools are a specialty of the ROT company Reiner Oehlmann Tools from the Lower Saxony town of Celle, especially for industrial grinding tasks. In addition to extremely high precision with tolerances of just a few micrometers, completing batches of just a single tool is a major challenge, especially in light of the market's demand for a good price/performance ratio.

Presetting and measuring machine manufacturer ZOLLER from the Baden-Württemberg city of Pleidelsheim also plays a key role in meeting these challenges. The company's focus is less on the presetting and measuring machines themselves, and more on adaptations to software technology. These adaptations are highly prized by ROT.

Evaluating tool geometry with the help of »lasso« contour measurement at an external office work station

Inventive spirit and focus on solutions

Although the distance between the two companies might seem great, they are united by features considered typical of Swabians: an inventive spirit, developmental prowess and a high demand for quality. "We can help out where other suppliers falter and we can do what other companies can't", says managing director Reiner Oehlmann, describing the motivation that applies to ZOLLER as well: "developing products as close to our customers as possible and finding a solution long after other companies have given up."

ROT and ZOLLER came into contact with one another for the first time 12 years ago. At that time, the company was looking for a solution for handling target/actual comparisons for diamond-ground tools. Although the collaboration started off small, today it is shaped by deep trust, a high degree of innovation and mutual dependability. Its joint developments have become more extensive and more sophisticated and the results have had a positive influence on both companies while moving them forward in their areas, especially to the benefit of their customers.

One specific example is reproducible manufacturing of diamond tools. Precision is key to high quality: The actual contour must conform closely to the target contour. But how can actual geometries be compared reliably with target geometries from CAD data, down to the micrometre? In the past, the company needed to use painstakingly configured and programmed measuring procedures for this purpose for each individual diamond tool. "This required a large amount of work, as every tool is unique. We manufacture roughly 3,500 of these tools per year," says managing director Reiner Oehlmann, describing the ROT product range. "They need to be measured over and over again during production as well, not just during final control. Finally, everything goes through final logging. Listening closely, accepting the challenge, and delivering a solution – that's how both ROT and ZOLLER approach problems."

Measuring tool geometry in the measuring room for final controlling and recording

"That's why we have machines not only in the measuring room, but in production as well" explains Jens Schröder, head of research and development at ROT. The company uses »metis« tool analysis software by ZOLLER in production to check individual parameters quickly and precisely. The saved measuring procedures and simple operation make it possible.

Capturing contours with the »lasso«

The »lasso« software function from ZOLLER is a contour measuring program. It can be used to scan and measure any number of tool and workpiece geometries, typically rotationally symmetrical, and use them to complete a target / actual comparison. This significantly reduces the work required to measure actual values on the ZOLLER presetting and measuring machine. Instead of programming a separate macro for each new tool, the »lasso« measuring program runs over the entire contour and records it, down to the micrometre. Using target data from CAD values, the program can easily and clearly display deviations between the two contours. But that's not all; the »lasso« measuring program can also independently measure certain contours and output these values. Often, it is important not only to comply with the tolerances of the contour themselves but also calculate specific measured values at a certain position. »lasso« delivers such calculations in high resolution.

Work that previously required a large amount of work and involved several measuring and evaluation has been reduced to just a few mouse clicks: the operator simply selects measuring parameters like a start and end point and the saved target contour, then receives the finished test report in a ready-to-print format, either in the saved ZOLLER format or a customised version. Data export can also be used to

insert measured values or images into the customer protocol.

"Reliable measurements save time and ensure absolute repeatability" says Jens Schröder, summarising the high quality of the measuring results. "We have absolutely no complaints and customers can rely fully on the measuring results," adds Reiner Oehlmann. "We have now reached the goal we set with ZOLLER's help, 100 percent." ROT is now using seven CNC controlled measuring machines and one office workplace by ZOLLER. These are located both in the measuring room and in production, and work very well everywhere. They have been doing so for twelve years, despite everyday use. If there are any questions, the ZOLLER service hotline and on-site service always provide answers quickly and competently. For Jens Schröder quality is "when I deliver something that works well from beginning to end." ZOLLER wholeheartedly agrees.

The Reiner Oehlmann Tools corporate group has stood for forward thinking precision tools and special grinding machines, made in Germany for over 23 years. The company offers innovative and customised customer solutions. Grinding technology is one of the company's key areas of expertise. It reliably achieves tolerances of less than 0.002 mm in precision profile grinding on diamond surfaces. The company develops and manufactures some of the processing machines it needs for this purpose. New processes and innovative products continuously generate added value for ROT and its customers. Other customer-specific adjustments to the software functions not only optimise user-friendliness but also allow for specialised evaluations.

Manufacturing a highly precise steel base body for later diamond coating.They are also measured in production using ZOLLER machines

E. Zoller GmbH & Co. KG., headquartered in Pleidelsheim near Stuttgart, has a passion for inspection and measuring technology and has been developing innovative solutions for more economical production processes for almost 75 years. So far, it has installed over 38,000 presetting and measuring machines worldwide, with software solutions that are unmatched anywhere around the globe.

Today, ZOLLER offers everything your company needs for efficient, reliable tool handling in your machining process. ZOLLER solutions are used to physically and digitally record, measure, manage, store, and inspect tools throughout the entire tool life cycle. An international network of branch offices and representatives guarantees the highest possible quality of service through personal customer advising.

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Holroyd cuts rotor manufacturing time at Mayekawa

Mayekawa Manufacturing Company, the global industrial refrigeration specialist headquartered in Japan, has purchased one of Holroyd Precision's highly acclaimed TG350E CNC rotor grinding machines. The machine is expected to more than halve screw rotor manufacturing time.

Mayekawa's new Holroyd TG350E rotor grinder has been installed at the company's Higashi-Hiroshima facility and will be used to precision-grind cast iron and stainless-steel screw rotors of up to 350 mm in diameter. Mayekawa already operates a number of Holroyd machines across its Japanese manufacturing sites. The TG350E was chosen for its ability to provide high-speed rotor grinding, combined with uncompromising levels of accuracy.

Mayekawa's new Holroyd TG350E rotor grinder

"We are delighted to have built a TG350E rotor grinding machine for Mayekawa," comments Holroyd regional sales director, Steve Benn. "Traditionally, Mayekawa has rough milled then finish milled its helical rotors, using cutters where the finished profile shape is ground using a Holroyd CS500E tool management centre. With an increasingly wide range of rotor types to manufacture, however, Mayekawa recognised the significant benefits that a TG350E CNC machine would bring to its production strategies."

Manufacturing time reduced

With a Holroyd TG350E rotary grinder at its Higashi-Hiroshima-based refrigeration compressor manufacturing site, Mayekawa is benefiting from the accuracy, speed and repeatability that Holroyd machines are renowned for, along with greater levels of automation and reduced setup time. With Holroyd TG Series machines, a significant amount of production time is saved due to the fact that the diamond dressing wheels continuously dress during the cycle. By contrast, cutting tools require periodic regrinding, depending on the materials and volumes being cut.

Setting the standard in rotor grinding

Holroyd's TG Series of multi-purpose grinding machines has long set the standard for high levels of accuracy and efficient stock removal. Indeed, around 70 advanced Holroyd profile-grinding machines are being used by manufacturers globally.

Equally suited to prototyping, batch and volume production, TG Series machines are designed primarily for the finish grinding of helical screw components such as worm screws and rotors, after they have been milled to a rough or semi-finished state. TG models offer production rates and accuracies to suit precise manufacturing strategies. Fully automated on-machine probing provides closed loop feedback of corrections to the dresser wheel and does not require a high level of operator skill.

TG Series grinding machines, at-a-glance:
- Accelerated and simplified setup
- Fully automated grinding wheel balancing system
- Powerful, menu-driven touch screen programming
- Unique on-board Holroyd 3D CMM component scanning probe
- High-power, high-speed grinding spindles
- Optional hollow spindle for longer components
- Advanced in-process dressing systems
- Large diameter grinding wheels, for maximum wheel life
- Optional Holroyd Profile Management
- System for profile development and control
- Maximum component diameter from 3 mm to 450 mm, depending on component profile
- Maximum component weight: 500 kg

PTG. The first name in precision

Incorporating the brands of Holroyd and Holroyd Precision Rotors, PTG has established itself at the forefront of high-precision machine tool design, build and supply for specialised applications. The Holroyd range includes advanced machine tools for production of complex helical components such as compressor rotors, pump screws and high-accuracy gears, and machine tools for friction stir welding advanced alloys used in transport applications.

With production facilities in the UK, USA and China, Holroyd Precision Rotors manufactures the special purpose, ultra-precision helical components used in a wide range of industries, including refrigeration, air-conditioning, gas and vacuum pumping, industrial air handling, aerospace, medical equipment, motion control, power transmission, power generation, oil & gas, fluid transfer and high-end automotive. PTG also provides advanced technical consulting services.

About Mayekawa Manufacturing Company

Founded in Tokyo in 1924, Mayekawa has grown to become one of the world's leading specialists in freezing and compression technologies. Continuously evolving its products and services, Mayekawa creates cooperation based on trust with its customers to develop 'Basho', the company's unique concept of problem solving, where customers and Mayekawa engineers collaborate closely by sharing a common challenge and vision. Mayekawa is active in both the refrigeration and gas compressor markets, selling to customers globally. The business is also developing new robotic food processing technologies. Mayekawa has generated no fewer than 100 subsidiaries across Japan and a further 40 subsidiaries overseas. To better serve its global markets and better satisfy the challenges faced by its customers, however, the business has recently expanded its capability by combining R&D and manufacturing understanding to go beyond what its various subsidiaries could have dealt with alone.

For more information, visit **www.mayekawa.com**

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MT becomes XT – the new PROFIMAT

The new generation of proven profile grinding machines from BLOHM features excellent dynamics and improved performance characteristics. It is highly productive, extremely flexible, exceptionally ergonomic and "Industry 4.0 ready". It is the latest generation of the PROFIMAT XT 608 profile grinding machine.

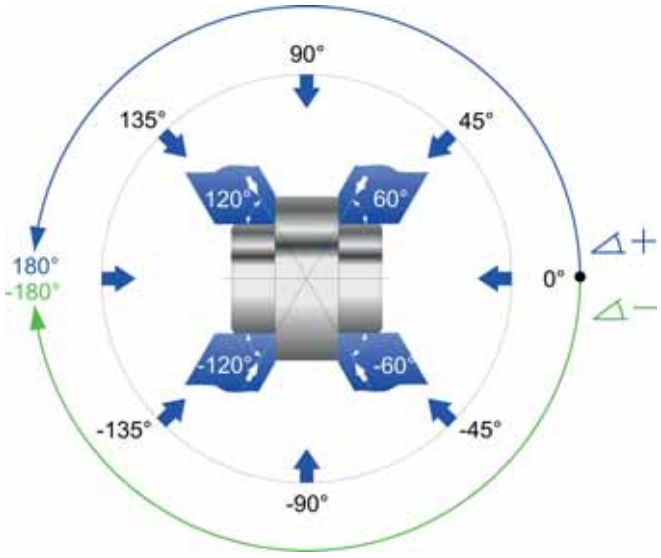
BLOHM has optimised all essential performance characteristics of the machine, including the stroke. In addition, the number of interfering contours in the working area of the machine is reduced, facilitating changeover, and the main axis speeds were increased.

All special solutions are already available and enable the Hamburg company to implement customer requirements even quicker. A significantly higher coolant throughput in comparison to the previous model minimises heat input into the component, ensuring an excellent component quality. Consequently, all measures result in a higher productivity.

Flexible and ergonomic

The PROFIMAT XT 608 combines a number of technologies in one machine: It enables pendular and creep feed grinding as well as CD grinding if equipped with the optional head dresser. Speed stroke oscillation is now also possible as an additional option. The new profile grinding machine also has functions for coolant, condition and process monitoring in line with Industry 4.0.

The PROFIMAT XT can be automated with robots at both front and rear. This is enabled by an additional optional door on the left rear side of the machine, in addition to the relevant interface. The arrangement of all peripheral devices on the right rear side allows central, maintenance-friendly access to all units.



The operating concept of the new model is based on a 21.5" multi-touch screen. Thanks to the generous display area, which is twice as large in comparison to the current machine, the operator can view more windows and options simultaneously.

In September, BLOHM successfully presented the heavy-duty, highly productive version of the PROFIMAT XT 608 with high wheel power and overhead dresser at IMTS in Chicago. At AMB in Stuttgart, the version with linear drive for speed stroke grinding generated a great deal of interest and excitement among the trade fair visitors.

"The new PROFIMAT XT 608 has been significantly optimised in all performance characteristics", according to Philipp Thiemann, head of development, Blohm Jung GmbH.

Advantages at a glance: up to 200 percent more dynamic axis; acceleration; up to 160 percent higher axis speeds; increased travel; minimised interfering contours; quick changeover possible; easy accessibility and automation capacity also at the rear; Industry 4.0 ready; multi-touch screen for simple operation; it can be automated at both front and rear.

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Master Abrasives installs new Alex surface grinding machine into its showroom

Master Abrasives is bringing in further machines to its showroom in Daventry and has now installed an Alex Machine Tools' NH-500 surface grinding machine, new to the UK. Having the new machine at its facility, Master will offer more comprehensive demonstrations for its range of precision grinding machines at its facility.

The Alex Machine Tools' NH-500 surface grinding machine is now situated in the showroom at its premises in Daventry. This demonstration area was initially set up to show the range of MASTER® precision grinding products, including conventional and superabrasive grinding wheels, diamond dressers and superfinishing products. The high quality, cost-effective MASTER branded products will be available to support any in-house demonstrations and display the potential of both Micromatic and now also Alex Machine Tools' machines.

Alex offers a comprehensive range of surface grinding machines, including a reciprocating hydraulically-operated machine, a high-power rotary surface grinder, creep feed machines and a range of precision double disk grinders. The machines include a wide variety of sophisticated elements including computer numerical controls, automatic in-process gauging and other material handling automation, depending on the customer's application and requirements.

Martin Stevens, Master Abrasives' applications engineer, Grinding Machines & Abrasives, is fully conversant with the latest developments at Alex Machine Tools and the most recent progressions in machine technology. With a background in grinding applications engineering, he has the technical expertise to help customers and offer best solutions for their precision grinding applications.

Ian Meredith, applications engineering manager at Master Abrasives, says: "Now that the ALEX machine is installed, we are able to offer customers demonstrations and potentially also grind customer parts when required. The demonstration machine will be a great aid in promoting Alex Machine Tools in the UK."

Alex Machine Tools' NH-500 surface grinding machine, now installed to the Master Abrasives showroom in Daventry

Master Abrasives invite customers to get in contact for technical advice and to discuss their specific grinding application requirements.

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Blue Moon grinding wheels from Krebs & Riedel

Krebs & Riedel was founded in 1895 and has been manufacturing high quality standard, diamond and CBN abrasives for over 100 years. As a founding member of the organisation for safety in abrasives, it can count leading UK engineering companies such as Perkins Engines, Grundfos and Delphi Diesel Systems amongst its ever-growing UK customer base. Krebs employs over 250 people and continues to expand, constantly introducing new types of wheels with improved grain structures and novel bonding systems that enhance grinding wheel quality and optimise performance.

Sales of Krebs & Riedel wheels have increased with over 25,000 different wheel types, worth over £27m a year, being sold with over 43 percent of sales being exported outside of Germany via a network of over 30 agents, with the UK sole distributor being Advanced Grinding Solutions of Coventry.

One area where Krebs & Riedel excels in is the supply of very special wheels for gear and thread grinding applications and these special wheels are available to suit machines manufactured by Gleason-Pfauter, Oerlikon, Kapp-Niles, Hofler, Maag, Samputensili and Reishauer etc. Krebs is also a member of the WZL-Getriebekreis "Gear Research Circle" at Aachen University and is heavily involved in developing advanced wheels for the latest production technologies employed by leaders in the field of gear manufacture. So successful have the Krebs & Riedel gear grinding wheels been, they have become the major supplier to leading machine companies such as Kapp.

In the automotive industry, for example, the demand for more efficient and quieter gear transmissions is pushing the gear grinding process to its limits. With the increasing number of vehicles having automatic and semi-automatic transmissions and with increased number of speeds (once only four forward gears and now eight or more is common), gears on average are getting smaller while production volumes are rapidly increasing.

Advanced Grinding Solutions (AGS) supplies Krebs wheels to several top UK gear manufacturing companies who can call off specially profiled wheels for gear production on fast deliveries. Under agreement, Krebs can keep customers blank wheels in stock and upon order will profile these to suit and then supply within just two or three days.

Working closely together with key gear manufacturing companies has now led Krebs & Riedel to develop a new type of gear grinding wheel called "Blue Moon". This wheel is ideal for continuous gear generation grinding, bevel grinding and profile grinding and is just part of a range of wheels offered by Krebs & Riedel for gear grinding applications, thread grinding and worm grinding, where the aim is often to grind and achieve a polished finish in one operation.

Today many grinding machines use worm grinding wheels for gear grinding because they have advantages over form wheels, usually a faster cycle time. Given the growing popularity of gear grinding using the continuous generation that is complementary to the form grinding method and does not replace it, both types have a part to play in gear manufacture. The Krebs & Riedel Blue Moon wheels are ideal for both processes.

Single profiled wheels may also be specified for internal and external gear grinding applications as can MAAG dish wheels and profiled wheels for discontinuous generative grinding machines.

This brand-new and improved design of grinding wheel offers increased cost-effectiveness through extended dressing cycles and increased stock removal rates. The Blue Moon wheels have been specially developed for working speeds of up to 100 m/s (with fine grain sizes) although general working speeds of 40-63 m/sec are used for gear grinding with 70-80 m/sec on the newer grinding machines. Dressing intervals are lengthened using specially selected grinding media mixtures of high-grade aluminium oxide, micro-crystalline sintered aluminium oxide and special aluminium oxide. The latest V85 Multo vitrified bonding system is employed for the Blue Moon wheels. Thanks to the optimum bonding of the abrasive particles, this special low temperature bonding system with its increased porosity is suitable for grinding speeds throughout the entire range.

Blue Moon´s newly designed grain combination optimises the pore space and the special grain geometry improves cutting ability. This increases overall cutting performance and reduces cycle times for maximum efficiency. Blue Moon wheels are made to the highest quality and can be supplied unprofiled or pre-profiled for gear modules 1-12 as required by customers. The wheels are perfect for gear grinding machines manufactured by Gleason, Kapp, Liebherr, Reishauer, and Samputensili etc.

The key focus on development of the Blue Moon wheels was to ensure that the wheels would cut harder, faster and for longer periods of time, before dressing is needed. The last remaining important performance target for this wheel was to reduce the risk of damaging the gears due to so called grinding burn which is a major cause of overheating gears and is directly related to premature grinding wheel wear before a planned dressing routine.

During the grinding process, the abrasive particles of the grinding wheel can become blunt due to wheel wear. This blunting of the wheel also quickly reduces its cutting ability and lengthens cycle times. Once worn in this manner, the abrasive particles can become loosened from the bonding material and break off from the wheel itself which turns the wheels surface shiny and smooth. The then smoother wheel generates and then transfers more heat to the gear due to a then higher friction rate which causes wheel burn and will subsequently rapidly degenerate the wheels leading to a complete failure. To overcome this problem gear grinding wheels need defined dressing frequencies to sharpen the wheels and to expose new abrasives grains on the surface of the grinding wheel. However, wheel dressing itself wears wheels down and is therefore expensive, so lengthening the frequencies between dressing is another very important factor of the Blue Moon wheels.

It is important to note that Krebs & Riedel also offers a range of diamond and CBN superabrasive wheels, that have been manufactured by them for more than 25 years and are also available from 3 mm to over 900 mm in diameter, with peripheral grinding speeds of up to 200 m/s. The major grinding disciplines that Krebs offers wheels for include cylindrical grinding, surface grinding, creep feed grinding, special profile grinding, gear grinding, centreless grinding and the non-round grinding of cam forms etc. Recently the use of dressable vitrified CBN grinding wheels for gear grinding applications has increased and Krebs also offers solutions for this application.

Such has been the success that Advanced Grinding Solutions has achieved in the UK with the Krebs & Riedel wheels that it now holds over £75,000 worth of wheels in stock for the same day/next day delivery to key UK customers. This stockholding is growing as more and more engineering companies discover the advantages in improved part quality and in cost savings that the Krebs wheels brings to them.

Furthermore, unlike some other grinding wheel companies, AGS understands that many end users do not want to purchase lots of wheels for stock if that can be avoided and therefore for most grinding applications there is no real minimum order quantity.

Some of Advanced Grinding's UK customers literally only order a single wheel two or three times a year, whilst others have several hundred wheels every month. Some buy huge CBN wheels that can be expensive while others need small internal grinding wheels costing of course a fraction of that. Krebs is able to support all customers, both large and small.

Customers wishing to improve their grinding processes are invited to contact AGS to arrange for free of charge test wheels to be made available to prove out the superior quality and efficiency that is achieved when choosing the latest wheel technology from Krebs & Riedel.

Anyone wanting to arrange a no-obligation grinding trial using Krebs wheels should contact:

Advanced Grinding Solutions Ltd
Tel: 024 76 226611
Email: sales@advancedgrindingsolutions.co.uk
www.advancedgrindingsolutions.co.uk

Eliminate sanding dust in the workplace

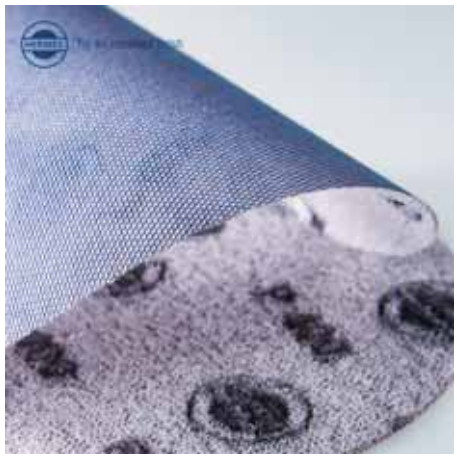
Hermes launches its new MultiNet sanding products

The build-up of dust during sanding and the resulting clogging of the abrasive are a challenge for all applications in manufacturing, particularly when sanding highly dusty materials such as wood, paint, fillers and lacquer. Sanding dust has a negative effect on the sanding process in terms of quality and working environment. The same applies to the processing of aluminum and zinc-coated steel, as well as composite materials such as carbon fibre and GRP.

The new net abrasive MultiNet MN 921 VEL from Hermes Abrasives has been developed to virtually eliminate sanding dust in the workplace, while giving substantial increases in abrasive performance.

Disc changing on the MultiNet MN 921 VEL

In use on random orbital sanding machine



The Hermes MultiNet MN 921 VEL

A macroshot of net structure

MultiNet Dust-free sanding brings significant advantages:

Due to the open net structure of the new net disc, sanding dust is extracted continuously and across the entire working area. The abrasive itself and the surface to be sanded remain virtually dust-free.

- The life of the sanding disc is significantly longer due to reduction of the abrasive clogging.
- The extreme edge stability and tear resistance ensure product longevity.
- Disc changing time is greatly reduced as no extraction hole alignment, with the backing pad is required.
- The velour-back system ensures a firm hold.
- The consistent dust extraction avoids the formation of airborne dust and guarantees a healthier working environment.
- The MultiNet is suitable for universal application possibilities, in either wet or dry applications.
- The discs can be used either on random orbital sanders or for manual sanding.

Hermes Multinet is available in the disc sizes 150 mm, 125 mm, 77 mm. Available grit sizes P240, P320, P400, P600, P800

Test it - for free

You can obtain a free of charge 150 mm diameter sample pack. Just email the contact to register for your free test disc pack.

The complete Hermes dust-free product range

With the introduction of MultiNet, the Hermes dust free range now covers all aspects of surface processing, together with the already established Hermes MultiHole VC 154-Longlife VEL and FineNet FN 915 VEL products.

While the MultiNet type is designed for dust-free sanding and gives extended life, the Multi-Hole types give higher stock removal in the coarser grits, while the FineNet products, with an extremely high adaptability to workpiece contours, give a superior finish in the fine grits.

Visit Hermes website **www.hermes-abrasives.com** or scanning the QR code will provide Multi-Net product information and an application video.

Hermes Abrasives is a global manufacturer of abrasives with its headquarters in Hamburg, Germany. In addition, the company operates numerous production facilities and sales offices in all major industrialised and emerging countries worldwide.

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Dressing and profiling of grinding wheels

From single-point diamond dresser to precision dressing roll

LACH DIAMANT, a diamond company founded in 1922 by Jakob Lach, likes to refer to almost 100 years of experience in handling diamonds.

Even today, more than ever, LACH DIAMANT is committed to the slogan "Little things MATTER". One example is the special service for remounting and regrinding single-point dressers and profile shaped diamond tools. Traditionally, all required natural diamonds are purchased at German commodity markets.

Over the last 50 years, technological changes within the series production industry led to a variety of tools and techniques which were designed to make the dressing of conventional grinding wheels more cost-efficient and precise. However, there was no way around diamonds.

Up to this day, LACH DIAMANT accompanied all these developments, a few of them as a pioneer of innovations, for example the drebojet or drebojet-plus diamond dressing rolls.

At the next EMO in Hannover, LACH DIAMANT will showcase its complete diamond dressing tool programme, from single-point diamond dresser through diamond profile dressing tools in addition to service, as a conventional part, to multi-point dressing tools, dressing plates such as Dia-Fliese-perfect and drebojet-plus as an example for milling, up to diamond dressing rolls with micro-precision, manufactured by using the negative procedure.

In a fast-paced market demanding just-in-time delivery even for diamond dressing rolls, users will be interested in the short-term delivery options for this precision instrument from LACH DIAMANT.

For more information, contact:

Cutting of industrial diamonds as an example for services for single-point diamond dressers and profile shaped diamond tools

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Well-rounded triangles

Newly developed VICTOGRAIN is among the most effective abrasives in the world, a strategically important USP for PFERD.

"The precision-formed, triangular shape of the high-performance abrasive is one of the reasons for the grain's superior performance," explains Jörn Bielenberg, CEO of the Marienheide-based manufacturer of solutions for work on surfaces and cutting materials.

The triangles of abrasive grain in the VICTOGRAIN are identical in shape and size. Their cutting edges are applied to the workpiece at the optimum angle, meaning that each individual grain needs very little energy to penetrate the workpiece. In this way, the user benefits from an efficient machining process with fast work progress, a long tool life and a reduced influx of heat into the workpiece. In addition, a lower level of performance is required of the drive system.

"VICTOGRAIN products can even achieve their extremely high performance levels on commercially available angle grinders," emphasises Jörn Bielenberg.

The triangles of abrasive grain in the VICTOGRAIN are fixed to the substrate on one of their sides. This means they are securely fixed in place and, together with their slim design, offer an extremely large chip space in order to further improve machining efficiency. The structure of the triangular VICTOGRAIN has also been specially adapted to maximise results. The very small crystals inside the triangles ensure optimum wear characteristics as sharp cutting edges are always exposed, although only the minimum amount of the abrasive grain or the triangle breaks off.

"VICTOGRAIN is among the most effective abrasives worldwide," claims Jörn Bielenberg, emphasising the strategic importance of the new high-performance abrasive. "A series of comprehensive tests under a wide variety of conditions have demonstrated that it is vastly superior to conventional ceramic oxide grain, not to mention special derivatives and developments based on ceramic oxide grain.

"This makes VICTOGRAIN an extremely promising proposition on the market for PFERD and retailers. What's more, VICTOGRAIN offers end users a level of profitability that provides a buffer in terms of costs, which is always crucial."

VICTOGRAIN tools are available now as COMBICLICK fibre discs, COMBIDISC abrasive discs and midget fibre discs, CC-GRIND-SOLID and CC-GRIND-FLEX variants in a range of dimensions.

PFERDERGONOMICS recommends a range of VICTOGRAIN tools for sustainably reducing vibration, noise and dust development, as well as for improving working comfort.

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As cool as ICE for HSS tool manufacturers

HSS is currently undergoing an uplift. Constant innovation research and product development, along with changes in the way that tools are being used, has meant that HSS drills, cutters, fibre tools and specialist tools have found a new lease of life and are once again becoming very popular and hard steels are still justified for many different applications. When it comes to the universal use of tools for various materials, the production of frequently changing projects in small quantities means that the price of individual tools also increases.

As you may probably assume, the market for such tools has also changed a lot. Low-cost supplies from many counties are pushing into the supposed high volume/ high demand markets, which again is having an inevitable effect on the prices of such tools. The quality is also thought to fluctuate across steel and coatings, but the geometries and surfaces of these tools showcase the biggest differences in performance, particularly in the function, durability and work results. In order to use tools effectively within their respective environments, they need to be consistently of a high quality but again this introduces the battle between quality and price. However, high quality products come at a price

With the capabilities of modern grinders advancing to reach very high cutting speeds, this makes it ever-more important to maintain high quality in the production and manufacturing of this specialist equipment.

Development progress in bindings and grinding grain

Thanks to continuous development and implementation of successful product innovations in other areas of application, TYROLIT has now succeeded in developing a new generation of grinding discs specifically for the requirements of HSS tool manufacturers. Modern HSS tools don't just need good surfaces to make shavings slip well, they also need consistently accurate geometries on both cutting edges and stretch areas. This enables the safe transportation of chips and coolant in large volumes to avoid so-called late scavers. The analogy is that the production of high-quality HSS tools becomes more cost-effective in the long run, as with other

tools, even if the application increases durability at the same time. However, this degree of development can't be said for grinding discs, as the ones being used to date are often limited in their application speeds. In addition, the continuous nature of use/ processes often leads to increased wear and tear and thus carries a higher risk of overheating and the dreaded grinding fire.

In the light of this, TYROLIT has a core focus going forwards: to innovate a product that avoided some of these consequences/ side effects and strive to increase possible working speeds two-fold.

The new STARTEC-ICE grinding discs do not only offer new grain sizes and mixtures but also present a completely new way of integrating them into the grinding surface. This enables a very abrasive grinding disc surface as well as a consistent and uniform surface. This is to help achieve a good cut image on the workpiece. In addition to a sharp grain, effective grinding also requires a binding system that is tailored to the combination tool and material. The binding not only has the task of keeping the grinding grain in place for as long as possible throughout processing, despite the ever-increasing grinding forces, but also has the responsibility for the grain distances and the resulting chip space.

The launch of STARTEC ICE grinding discs is a true result of the futureproof, forward-thinking and innovative mindset TYROLIT prides itself on. The Development and Application Technology department has invested far beyond the famous plates and drawn new conclusions. Going forwards, TYROLIT wants to become more than just a manufacturer but also become a support network for end-users and do this firstly, by offering less expensive HSS tools, raising their production to new levels of productivity and profitability.

Building on good experiences with the MIRA ICE grinding disc range launched a few years back, a grinding disc for rolling grinding offers the same principles for the binding system of grinding discs, which are now transferred to new products. The result of this is a grinding disc that has very sharp cutting, grinding grains with long lifespan of individual cuts. The novel binding supports the grain and is thus partly responsible for low wear and tear cycles.

Thanks to the new manufacturing processes, there is an unusually uniform grain distribution in the grinding surface, which in turn allows many cutting processes to take near enough the same amount of time. In addition, the binding system ensures sufficiently large grain distances and a high porosity of the grinding surface. This creates a space between the individual grinding grains. This free space enables efficient ways to transport the shavings and to keep coolant apparent within the process. This is so that the grinding surface does not clog when working with high speeds. The material shavings are safely removed without clamping or even being burned in. The high coolant volume

provides cooling of the cutting and workpiece at the respective processing/ workstation.

The result indicates a huge leap in the overall economy of grinding HSS tools as well, from a process safety perspective.

Martin Pilz, marketing manager at TYROLIT adds: "The combination of innovative grinding grain and the novel binding system enables the highest sweep-outs and best surface qualities with significantly extended finish cycles at the same time. The reduced grinding forces benefit the workpiece and the machine." The power consumption of the grinding spindle is also noticeably decreased, making it generally more economical and environmentally-friendly too.

All in all, the STARTEC ICE product line will give manufacturers of HSS tools a means of production that significantly strengthens their positioning within a highly competitive market. The new performance values, in line with the modern machine park of the tool grinders, allow for a much more economical production of such tools, at a consistent level of high quality. For customers, the feed has increased from an already good 2,100 mm/min up to 7,000 mm/sec. This reduces the cycle time from 7.2 seconds to just four seconds.

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Selecting the correct deburring method to optimise efficiency

The science of surface finishing is one that continues to present many challenges for engineers, part manufacturers, technicians and fabricators every single day. One such equation is the method of deburring. A process that is typically defined by removing a 'burr', a raised edge of excess material, which is done by chamfering the edge of the metal to create two smaller sharp edges. The intricacy of the part coupled with demanding material properties are both key obstacles that can make it difficult to find a deburring method that is efficient, both in terms of cost and process.

Most surface finishers carrying out a deburring process, whether it be in a pattern/tool maker or aerospace manufacturing workshop, are looking for precise edge finishing with increased speed and reduced side effects. For example, some manufacturers will require a deburring process to be completed in a specific timeframe, such as CNC machines which require the mechanical parts to be deburred in the cycle time specified to match the overall production line rate, and others will be more focused on the precision and geometry. An example would be turbine blades where it is critical that they produce a specific deburred radius.

Deburring can be required wherever there is turning, milling, drilling, boring, lapping, shaping, machining, surface grinding and abrading. All these machining and cutting operations produce a burr, a thin ridge or area of roughness produced in cutting or shaping metal. In abrasive terms, a burr can be defined as an unwanted protrusion from an edge having undergone some type of machining operation. It is the process of completely removing the burrs from a workpiece, leaving a slightly radiused edge, without any modification to the part shape and geometry.

There are many reasons why deburring is necessary, not least for safety. When a piece of metal is cut in a workshop, the sharp edge can present a danger of injury. If the stainless steel used to manufacture tanks and vessels, professional kitchens or other food and beverage equipment is being cut to shape from a larger section then this can cause a burr on the underside of the material. The sharpness also predominantly poses a material handling risk as well as the end-product safety for the user. Additionally, it can cause mechanical damage to the assembly if a burr breaks, for example on pistons, gears, textile machinery or computer hardware. Again, in the assembly of gears or parts in the power generation industry, they may not fit together if the burr is still intact. Finally, it can play a major role in electrical applications where a broken burr could create a short circuit in printed circuits, electric motors or generators.

What are the options?

Deburring has been around since the beginning of time, but its process has evolved throughout history, therefore there is a plethora of traditional methods available, including files, mounted points, bonded wheels, scalpels, abrasive rolls, wire brushes, abrasive belts, rotary burrs, flexi hones and rubber wheels. However, it is the question of an absolute deburr that many manufacturers battle with.

3M has developed a variety of unique abrasive solutions for deburring that ensure increased efficiency and productivity in all metal and wood applications, as well as a deburring consultancy service which helps to identify the correct solution for any deburring application.

Scotch-Brite™ products leave a much smoother surface after deburring and there is no undercutting or gouging of the surface. Unlike most other products, they also deburr both the sides and surfaces of the workpiece. Scotch-Brite™ deburring wheels and bristle brushes create an absolute deburr with a rounded edge, as there is no secondary burr created by the process, the corners are rounded, there are no geometric changes and it keeps the tolerance.

Let's evaluate some of the traditional methods compared to the new technology incorporated in the Scotch-Brite deburring products:

Using hand files and wire brushes on a buffing stand can provide results that are inconsistent and time consuming. Should a workshop or production line receive an increase in orders, another method would be required. Furthermore, coated belts can generate flats and change the geometry of the workpiece as well as leaving secondary burrs. 3M deburring wheels and bristle brushes overcome these issues as they help prevent undercutting and gouging through their controlled abrasive action. They last longer and are easier to use which means less downtime & operator fatigue, offering a more consistent, controlled result and they work much faster. They also offer a better alternative to wire brushes because there are no flying wires, making them far safer.

Scotch-Brite™ Rapid Cut Unitised Wheel

Selecting a deburr based on application

Heavier deburring - for applications that require a heavier deburring tool where the nature of the material or the type of cutting tool produces a heavier burr than normal, unitised wheels such as Scotch-Brite wheels offer non-directional, soft deburring without making a large radius. Scotch-Brite™ Unitised Wheels are made from a non-woven web interspersed with resin and mineral and then cured under pressure to form a slab from which the wheels are cut.

Lighter deburring - for lighter burrs, convolute wheels offer a better solution than the unitised wheels mentioned above. Convolute wheels are wound onto a fibreglass core with a resin layer to form a "bun" which is then cured in the oven. This offers a finer cut, softer density and a more even finish.

Stock removal and shaping – a replacement to rubber bonded wheels are moulded wheels, suitable for stock removal and shaping. They would be used, for example, to remove milling marks and taking out small mismatches from the machining process. They are more aggressive than unitised wheels and run more smoothly than rubber and bonded wheels, with the result that they can produce the result more quickly with less vibration.

Light deburring, cleaning and surface preparation - for applications such as cleaning rust and contamination in maintenance repair and operation (MRO), removing coatings such as painted surfaces, weld cleaning, deburring complex shapes

Scotch-Brite™ Deburr & Finish Pro Unitised Wheel

Scotch-Brite™ Roloc™ Bristle Disc

such as gears and turbine blade roots, and cleaning and/or deburring of threaded bolts bristle brushes offer the most effective solution. Scotch-Brite™ Bristle brushes are designed to offer additional safety benefits due to the abrasive-filled plastic brushes eliminating the risk of flying wires and conforming to contoured parts. Compared to wire or filament brushes, they can cut faster and more effectively meaning an overall increased production rate. The fresh mineral is exposed as it wears meaning there is a constant cut rather than the peening effect produced by the other products making 3M Bristle Brushes more efficient. Generally, the finer, more conformable bristle products are used for decorative finishing and will conform more readily to surface contours along with generating a more uniform finish. The coarser, less conformable bristle products are therefore used for more difficult blending, cleaning, and deburring operations. Pressure and speed can also influence life as well as performance. Lower pressure and speed mean a lower cut and longer life and higher pressure and speed means a higher cut and lower life. Too high pressure increases wear drastically.

When used in automated processes, lubricants or coolants are advised whenever possible to reduce heat and extend product life. All Scotch-Brite™ products can be used with coolants such as water and some water-soluble oils, most reducing surface roughness. The higher viscosity lubricants produce lower surface roughness and grease produces a finer surface finish than oil.

3M understands that every deburring application is unique. Whether it be to match production line rates or to find a more cost-effective method, choosing the right method or tool and matching it with the right abrasive product are absolutely critical. Why not let 3M expert deburring consultants help you find the ultimate solution for your deburring needs?

Scotch-Brite™ being used in a robotic application

3M UK plc
Abrasive Systems Division

Constantly driving innovation and integrating new technologies into our heritage products to create groundbreaking solutions is what 3M do best. For more information on unique Scotch-Brite products for deburring applications visit: **go.3M.com/deburringsolutions** or call **0845 504 8772** to find out about our free deburring consultancy service

Brushed crankshafts

KADIA introduces the new EC-Brush deburring machine

The deburring of complicated engine components such as crankshafts or camshafts is usually carried out with the aid of special solutions. KADIA Produktion GmbH + Co. has decades of experience in this field. The honing and deburring specialist from Nürtingen has now added a standard brush deburring machine for this application to its product range for the first time.

Before a crankshaft reaches the finishing machine for finishing the bearings, any loose particles or flaky burrs must be removed from it. These foreign bodies could otherwise enter the new engine interior and cause damage there. The most common solution for this process is a robot that guides the workpieces with a gripper to a deburring console equipped with different tools (brushes, discs, etc.). A complicated, complex motion sequence has to be programmed, because each workpiece edge must be brought exactly into the machining position. For each crankshaft variant, the robot must be taught again, i.e. the new coordinates must be entered and stored. This means a lot of effort for the plant support, and often also frequent downtimes. In addition, the robot takes two minutes to machine each crankshaft. However, the usual cycle times in the automotive industry are 30 to 60 seconds. As a result, engine manufacturers often operate several deburring cells in parallel in order to cope with the quantities.

The developers at KADIA, who are familiar with these circumstances from their own experience, thus considered a new plant concept. It was to be flexible, allow short cycle times and require little effort for support and maintenance. The result: the standard brush deburring machine EC-Brush. What sounds simple at first has several constructive tricks up its sleeve. The machine has a total of five programmable axes: one rotary drive each with right/left rotation for the brush and the workpiece. The workpiece is clamped against a point in a three-jaw chuck. The brush rotates at about 500 rpm, the crankshaft at 30 rpm. Linear axes also provide the brush's back/forward and lateral oscillation movement and a traversing range for the centre. The latter enables different crankshaft lengths to be clamped, so that any variant for 3- to 6-cylinder engines (for passenger cars or small commercial vehicles) can be machined in any desired succession. Loading and unloading can be carried out manually, semi-automatically or fully automatically.

The EC-Brush crankshaft deburring machine from KADIA has an inclined bed and is therefore very compact. The footprint is only 2.6 x 2.3 m

The deburring brush

At the heart of the EC-Brush deburring machine is the brush, which is equipped with fibres made of abrasive nylon. Their cross-section is oval, i.e. long and short fibres adapt to the eccentric design of the crankshafts. Only one operation is required, as the shaft is completely immersed in the brush. The long fibres reach from the cheeks up to the connecting rod bearings, while the short fibres machine the main bearings area. There are always certain fibres in mesh. The long ones are deflected at short workpiece distances to create an additional impact effect. Particles and flaky burrs, which typically occur during drilling or grinding,

are reliably removed. The choice of fibre type allows adaptation to the component's material. Another important difference to the robot solution: the EC-Brush deburring machine allows wet machining. The workpiece is rinsed at the same time in this case.

"The main time for deburring a crankshaft is only about 20 seconds. Including loading and unloading, cycle times of about 30 seconds or just above are possible," explains Henning Klein, managing director at KADIA. "Three cells are required to achieve the same output as a deburring robot, the investment costs for which are about twice as high."

As this is a standard machine designed according to the modular principle, KADIA says that the delivery time is also significantly shorter than for a special solution. The small space requirement creates a further advantage. The designers at KADIA equipped their deburring machine with an inclined bed on which the brush moves back and forth. This results in a compact design with a footprint of just 2.6 x 2.3 m.

The advantages of the EC-Brush deburring machine from KADIA are:
Easy to program (5 axes)
Short cycle times (approx. three times less than robot solution)
Standard machine with fast availability and cost-effectiveness
Each crankshaft variant can be machined from three to six cylinders
Wet processing possible
Can be integrated into an automation concept
Compact design (footprint 2.6 x 2.3 m)
Low maintenance costs

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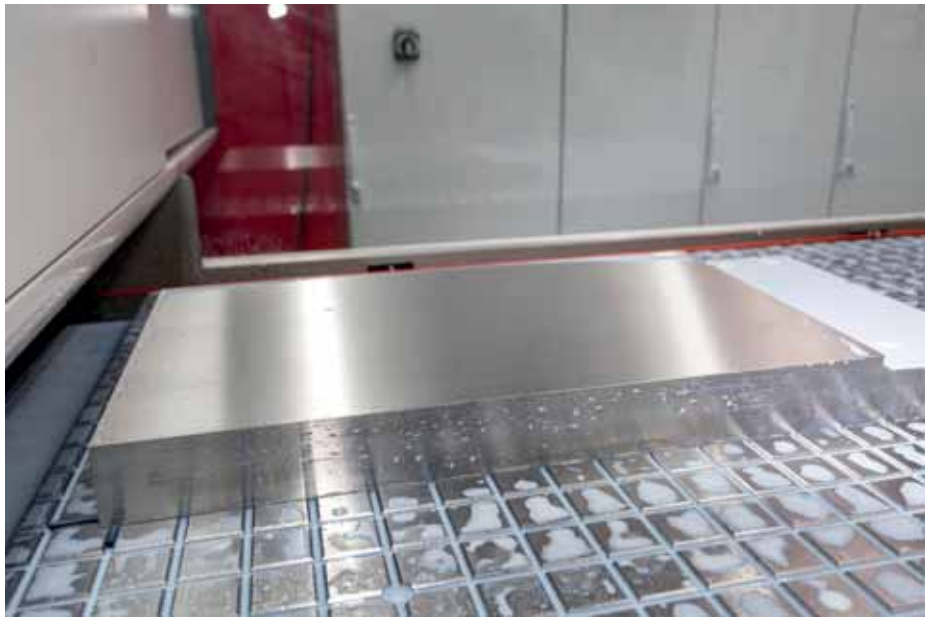
Niche turns to mainstream for Timesavers 81 Series

The use of long and wide plate material, particularly in the aerospace sector brings with it its own set of issues, namely the consistency of the flatness and thickness of the material. While it is possible to grind these sheets using stone abrasives or to mill them to bring them within specification, wide belt abrasives add a new dimension to the process.

When approached by suppliers of sheet material, particularly titanium and other exotics such zirconium and molybdenum, Timesavers took on the challenge, looking at the pros and cons of the exiting techniques and developing its 81 Series wide belt reciprocating table abrasive machine that delivers considerable productivity gains and cost savings. While milling may produce a faster result, it is difficult to process thin sheet, accuracy is limited and the surface finish produced may require additional processing. Grinding using stones or abrasive wheels may deliver the surface finish and accuracy, but at the expense of cycle time. Timesavers' alternative, the 81 Series, developed in collaboration with abrasive belt manufacturers Hermes and 3M, is a wide belt grinder that can process materials in thicknesses ranging from 0.15 mm up to 100 mm, with stock removal rates of up to 0.2 mm/pass achievable and with each pass covering a width up to 2.1 metres on sheets up to 7.5 metres in length. The result is a significant time saving compared with conventional grinding where cycle times can be halved when removing the 3 mm skin from titanium (as is required by aerospace customers) and on molybdenum sheet where Timesavers has reduced a conventional 10 hour grinding cycle down to 25 minutes!



Ellesco-Timesavers 81 Series component

Timesavers describes the process as

Ellesco-Timesavers 81 Series machine

calibrating, an indication of the accuracy and quality that can be achieved. A typical 81 Series process combines a fast, rough grinding cycle followed by up to three spark-out passes with the sheet, which is positioned on the powerful vacuum table then rotated and the cycle repeated on the opposite face. The result is a thickness accuracy across the entire sheet of 0.25 µm, with the major benefit of the process creating a 'short-scratch' finish, which means there is no direct path from inside to outside, making it ideal for use in applications such as sumps, cylinder heads, etc. The surface finish is such that potentially gaskets can be eliminated. This is possible due to the combination of machine and belt technology, with new abrasives offering long life and high cutting rates, thanks to the creation of a regular arrangement of abrasive grains, whether they be aluminium oxide, zirconium oxide, silicon carbide or ceramic. These can be applied to a wide range of backing media, such as paper, cloth or a non-woven cloth with a polyester web. This regular orientation of the abrasive delivers constant cutting and clearance angles, unlike the random orientation of grains in grinding wheels or stones. The result is greater consistency over surface finish when processing a range of materials. Wide belt grinding also has advantages over milling, as thinner sheets can be processed, and the surface quality is far superior.

Ellesco-Timesavers 81 Series long bed

Further advantages of using the wide belt approach to high metal removal are its lack of influence on the material being processed and the environment. Using abrasive belts puts less heat into the material, therefore eliminating any chance of metallurgical damage or imparting stress into the part. The reduced cutting forces also require less energy, thereby generating savings in power consumption. For example, when using wide belt abrasives to grind Titanium on the Timesavers 81 Series machine the specific energy requirement is 90.3 kWh/mm^3 of material removal. This compares with 441 kWh/mm^3 for a conventional grinding machine, an 80 percent reduction. These energy savings are increased further when grinding 'less exotic' materials such as steel, stainless steel and cast iron, with the latter showing a saving of over 88 percent.

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On top of the game

Weland AB successfully expands finish work capacities with ARKU deburring and leveling equipment

In the small town of Smålandsstenar, one of the biggest players of Sweden's metal fabricating industry has its headquarters. Weland AB started as a manufacturer of staircases and railings. In addition, as a subcontractor the company serves over 700 customers with sheet metal working. Given its diverse clientele, the company is continuously facing three major challenges: increasing its capacity, ensuring fast delivery and high-grade parts ready for processing. ARKU helped the company stay on top of the game, with the experts from Baden-Baden providing reliable leveling and deburring equipment.

Weland's board members move with the times. Chief operations officer Björn Henriksson closely observes the market and reacts if change is required. This agile approach has kept the company thriving since its founding days in 1947. What started in a small shed has expanded ever since. Today, Weland is a big group employing 1,000 people and achieving annual sales worth 250 million euros. Two business areas drive the strong growth: Weland produces a variety of staircases, railings and gratings for inside and outside use, as well as acting as a contract manufacturer for sheet metal working. Over 700 customers nationwide rely on comprehensive cutting, welding, bending and finish work. From time to time, they require Weland to adapt existing strategies.

A while ago, Björn Henriksson noticed a change in customers' sheet metal needs: "Our clientele relies on lean production to ensure fast time-to-market. Consequently, major customers often ask for entire kits of parts that they assemble at their site – a fork lift, for example."

A company like Weland thus doesn't

produce one part and another subcontractor the next. Instead, Weland provides all parts from a single source, which reduces customers' purchasing efforts. However, complete kits are only one side of the coin. In order to meet the requirements of the market, parts need to be flat, stress-relieved and deburred. This ensures safe and correct assembly. These requirements, in turn, put Weland to the test, especially in terms of finish work. The company had to gear up its leveling and deburring capacities.

More added value for customers

"A few years ago, we leveled with just one machine in Smålandsstenar. Regarding big customers, this was a major setback. Due to limited machine capacity, we were risking bottlenecks and not getting jobs done in time," explains Björn Henriksson. In terms of product safety, the company relied on a deburring machine to round off sharp edges, but the equipment didn't show a good price to performance ratio. Hence, there was a pressing need to increase the added value for the customer and produce in a cost-effective way. This looming change became even more relevant when a major customer required Weland's services. Björn Henriksson had the chance to sign a lucrative contract, on one specific condition, high-quality leveling.

"At that moment, it dawned on us that our future hinged on more leveling capacity," adds. As a conscientious manager, Björn Henriksson immediately started looking for a solution. But where to start?

From previous purchases, he knew of the reliable hydraulic levelers from HRC, now a fully-owned and serviced ARKU brand. During a trade show visit in Germany, he and his colleagues decided to get a more precise idea of ARKU. When they arrived at the booth, they were in for a surprise: "We were excited to see ARKU not only showcased levelers but also deburring machines. This looked like the perfect match to reach our goals. ARKU even offered to run tests with Weland parts in Baden-Baden."

Björn Henriksson favoured the idea. It would allow him to make an important investment decision more easily: "Expanding our machine park is part of our corporate DNA." This gives Weland a competitive advantage over smaller companies. Numerous are those that offer laser cutting, for instance, but rare are the ones that provide welding, bending and finish work on top. Small companies cannot easily carry out heavy investments. As a result, Weland boasts a much larger service portfolio, which allows it to spur its growth.

Tests that left a mark

In July 2017, Weland came an important step closer to gaining that competitive edge. Björn Henriksson had travelled to Baden-Baden for testing. The results left nothing to be desired. "We were simply impressed by the flat, stress-relieved parts with round edges," he happily admits. ARKU had achieved the results with a FlatMaster® precision leveler and an EdgeBreaker® deburring machine. The FlatMaster 120 levels sheet metal components up to 40 mm thick. Its series of alternating bends ensures sheet metal comes out flat and stress-relieved. Flat metal, in turn, makes for precise assembly and high-quality end products. "Without precision leveling, we couldn't serve renowned customers from the Swedish automotive industry," Björn Henriksson points out. "In their daily business, automatically leveled parts are imperative." To ensure flatness control, the leveler comes with ARKU's flatness control system FlatJack®. The device checks the flatness of cut parts. FlatJack operates with precision, measuring flatness values down to tenths of a millimetre. The data is recorded in the control system, where it can be viewed at any time.

In terms of deburring, the EdgeBreaker series was specifically designed to process materials after laser, plasma or flame cutting. The machine deburrs and rounds

the edges of up to 100 mm thick parts. Thanks to an oscillating grinding drum, the machine deburrs parts from both sides in just one pass. Cross-running brushes round off the edges after deburring. Manual slag removal is no longer necessary prior to using the machine as the EdgeBreaker gets it all handled. "Deburred and rounded edges serve a double purpose: They increase surface treatment such as finishes and prevent injuries," emphasises Björn Henriksson.

Installation experts

For the passionate COO and his team, these were reasons enough to team up with ARKU. The company ordered a FlatMaster and an EdgeBreaker. After the equipment had safely travelled the 1,000 km to Sweden, things went fast. Within a few days, a service team of ARKU engineers and project managers installed the machines. "We didn't have to take high hurdles," Björn Henriksson recalls. "The well-organised ARKU technicians got our new gear running smoothly. We could use it right away."

Thanks to previous experience with levelers and deburring machines, staff knew how to handle the new equipment. The easy-to-use, intuitive controls of both the FlatMaster and the EdgeBreaker did the rest. "Of course, we had to do some training, especially for maintenance colleagues. But this didn't take a lot of time either. ARKU machinery has a clear-cut structure that allows to quickly remedy issues," adds Björn Henriksson.

All two machines are currently running in one-shift operation. But Weland intends to up operations to three shifts, given the high order status. "I think that we are well positioned to increase production even further and the latest ARKU equipment will be a big help in this. ARKU means reliable quality at a reasonable price." Very satisfied with the two latest additions to his machine park, Björn Henriksson is poised to take up whatever challenges might come next.

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Reducing damaging pollution during deburring

Paul Riddick, technical director at fume and dust extraction specialist Vodex Ltd explores the technologies that can be used to reduce the environmental impact of deburring, as well as minimising health and safety risks

Deburring is as old as metal working. For thousands of years, the operation of removing ragged edges from cast or worked metal was taken for granted; nobody really thought about its environmental impacts. Fettlers may have noticed a few effects, but nobody worried much.

Recently, its potential to do environmental damage has been under some scrutiny. In addition to waste metals and airborne side-products, there are also used grinding discs and other associated materials and risks to consider. Airborne hazards can be minimised with an industrial dust extraction system, while others require a carefully thought-through waste disposal policy.

Manual deburring is still the most common method, with workers using a combination of files and scrapers or power tools such as off-hand grinders (two-wheeled grinders mounted on a bench). Inevitably, these operations generate dust and sparks. As you would imagine, this dust is comprised mostly of the material being ground but there will also be many side-products from the process, which generates considerable frictional heat and therefore promotes a plethora of possible chemical interactions.

The material itself often contains additives and impurities that need to be taken into consideration. For example, "iron" or "steel" are not pure; they may also contain zinc, cadmium and a host of other possible materials. Abrasive wheels, which also fragment and are partially vapourised, add their own assortment of chemical

ingredients. Consequently, the final contents of both solid and gaseous by-products may be very complex.

In itself, deburring is a somewhat hazardous process, with the possibility of fragments becoming airborne, especially if anything breaks. Mechanised deburring equipment is little better. Machines that deburr sheet metal products by rolling them over a cutting surface can generate large metal burrs that are scalpel sharp and very dangerous. These large by-products need to be addressed in health and safety policies just as clearly as the less visible ones.

Thermal technologies, such as cyrogenic deburring, use explosive gas mixtures to remove multiple hard-to-reach burrs in a single operation. The cryogenic method also uses liquid nitrogen or dry-ice to embrittle the metal first. Although this is conducted inside a chamber, there are still waste gases and particulate side-products that have to be vented away.

Deburring is also performed electro-chemically. A high current is passed through a conductive saline or acid fluid in order to dissolve away the unwanted metal. Electrochemical deburring is mostly performed on extremely hard metals and/or to reach parts of the product which are otherwise inaccessible. Again, of course, there are numerous waste materials and side-products.

The consumables used in chemical and electrochemical deburring add their own toxic and corrosive fumes to the potential pollutants in the metal itself. Anything intended to dissolve metal is unlikely to agree with the lining of human lungs.

While workers are the most likely to succumb, grinding, fettling and buffing increase the concentrations of these toxins in the general environment year-after-year. As such, they pose a risk to everyone working at your place of business. Because some hazards are solids and others are vapours, you need a combined dust and fume extraction system to deal with them.

Dust extraction solutions

A dust and fume extraction system generally consists of a system of ducts and vents located strategically around your sites of operation. Many fume and dust extractors can also be filtered, mobile systems - allowing you to deploy them where and when you need them. Appropriate filters allow you to capture the dust so that it can be properly disposed of.

A variety of dampers, valves, sensors, filters and control equipment can be used to ensure that pressures, effectiveness and noise levels are all optimised for your environment.

The dust extraction system itself poses some dangers, for example, if regular cleaning is neglected, the equipment is not maintained, or its operation is needlessly noisy. You can overcome this by ensuring that you have some clearly defined training procedures in place, part of which should be to log all routine cleaning and maintenance operations.

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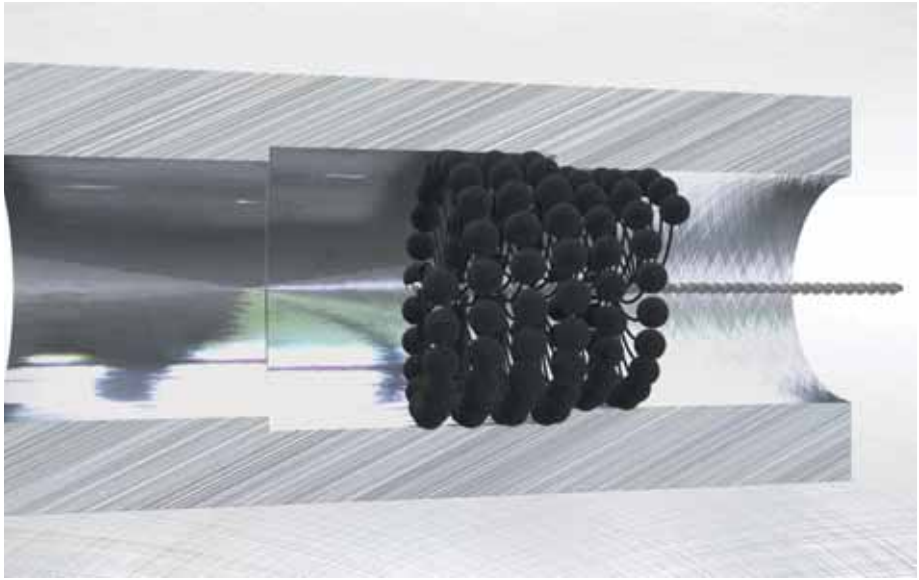
Anodising aluminum cylinders

An economical approach to resolving surface finishing challenges

Flexible hones address surface roughness and increased dimensional changes for anodised cylinders that mate with other parts.

To permit the use of aluminum instead of other, heavier metals in industrial applications, many cylinders are anodised to create an extremely hard surface that is wear-resistant, corrosion resistant, non-conductive and lubricious. Because anodised surfaces are porous, they also improve adhesion of coatings as well as accept a variety of dyes for colouring.

Given the myriad of benefits, anodising is popular for a variety of cylindrical items, including lift mechanisms for chairs, lift cylinders for hatchbacks, shock absorbers and forks for bicycles, fuel pumps, water pumps, pneumatic and hydraulic cylinders, spool valves, valve stems and valve bodies.



Before and after - FlexHone

By definition, however, the anodising process means the parts grow dimensionally and increase in surface roughness.

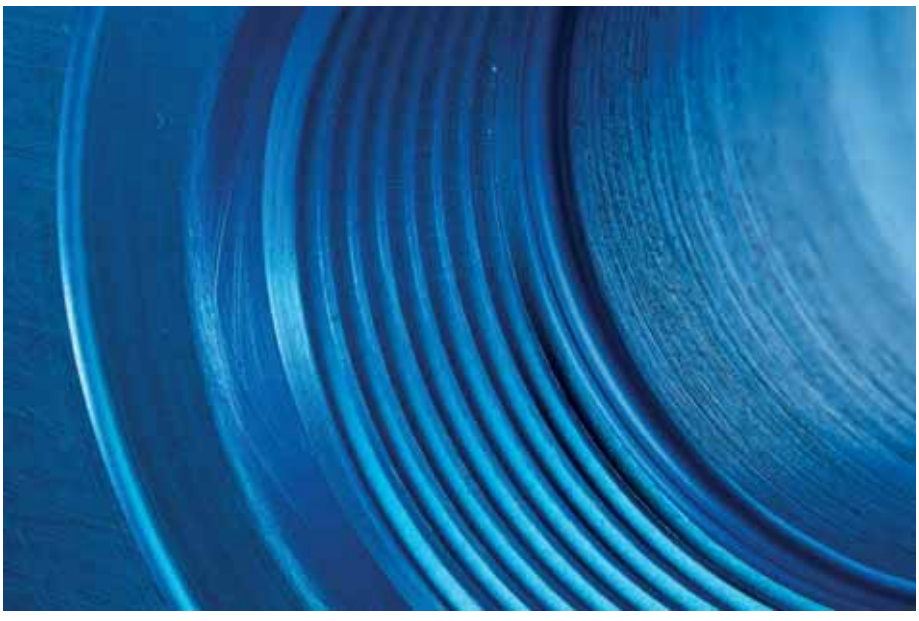
For a cylinder, that includes both an increase to the outer diameter (OD) and decreases to the inner diameter (ID). There are several different types of anodising methods and each type or class reflects a range of coating thicknesses. As a rule, thicker coatings provide greater corrosion protection and, in harsh environments like salt air, this means longer-lasting surfaces.

As for surface finish, generally a hardcoat that is anodised to a .002 thickness will result in a Ra that is two to three times the original bare metal finish. For example, a machined Ra of 16 can easily become 30 Ra or more after anodising. For many parts, this is not an issue. However, when the part is cylindrical and mates with another part, often using a seal, increased dimensions and rougher surface finish can be problematic.

Anodic coatings are very hard (only slightly less than diamond and harder than hard chrome plating) and increased surface roughness can abrade sealing materials. Seal wear and coating irregularities can provide a path for leaks.

For this reason, parts require a fine surface finish for reliable sealing and long component life. To accomplish this, many are utilising honing tools as an economical approach to treating the surface before or after the electrochemical process to control the dimensions and create a smoother surface.

The result is a cost-effective approach to resolving finishing challenges in the anodising process to consistently yield high-quality products at a competitive price.



Anodised blue cylinder

Honing tools

Traditionally, manufacturers have used grinding, lapping, and rigid honing to improve the surface finish of anodised and hard-coat anodised parts. Machine setups are difficult, however, and they must be extremely precise. There are several reasons for this. Firstly, the anodised coating is very hard. Secondly, the total coating thickness is very thin. Thirdly, the high points and low points of the anodised coating are not absolutely symmetrical around the centreline of the cylinder ID.

When rigid honing is used with anodised parts, the honing stones only contact the coating's high points. In other words, parts of the cylinder ID remain untouched.

There are other issues with rigid honing, too. Because anodised coatings are relatively thin, only a very small amount of material should be removed. Yet rigid honing works best with heavier cuts and greater material removal. Fine cuts combined with tool loading can contributed to smeared surfaces.

The Flex-Hone® Tool from Brush Research Manufacturing provides a better way to improve the surface finish of anodised and hard-coated cylinders.

With its unique construction, the Flex-Hone comprises abrasive globules that are permanently laminated onto the ends of flexible nylon filaments. As the diameter of the tool is greater than diameter of the bore, the Flex-Hone is used in an oversized condition and is self-centrng, self-aligning, and self-compensating for wear.

Importantly, the Flex-Hone tool's abrasive globules "float" to ensure that all parts of the bore and not just the high spots are surface finished. Unlike on rigid honing machines, Flex-Hone setups are simple, too. Surface finishes can be improved with just a few strokes of the tool and the results are consistent.

The Flex-Hone Tools can be used prior to anodising to control the size in anticipation of the shrinkage in ID. Honing also removes "fuzz", sharp edges and any amorphous material that might adhere to the surface and affect the quality of the anodising.

The most common usage for the honing tool, however, is after anodising to correct unanticipated size and surface finish issues. When the quality of the final anodised finish is of the utmost importance, some even use the tool before and after.

With anodised coatings, the recommended abrasive types are aluminum oxide (400, 600, or 800 grit) and levigated alumina (extra fine only). Choice of grit depends on the type and thickness of the anodised coating and the final surface-finish specification. Flexible honing tools are available in sizes ranging from 4 mm to 36 in.

Multi colour anodised cylinders

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Single-pass honing is a single solution for VVT stator bores

What's not to like about a machining process that hits print tolerances with adjustment-free, 1.67 Cpk capability, while running 4000+ parts per day, six days a week? That kind of worry-free production of 50-micron roundness and 80-micron total tolerance made a Sunnen VSS-2 Single Stroke® honing system the process of choice for Cloyes Gear and Products in machining VVT (Variable Valve Timing) stator bores for OEM automotive customers.

The new four-spindle machine came on line at Cloyes' Subiaco, Arkansas, plant in early 2009 to replace a roller burnishing process that struggled to hit print tolerances. The new machine simplified the sizing of the segmented bore, eliminating a high scrap rate and headache for the plant. Cloyes Gear and Products, Inc. is a major automotive tier one supplier. The company's aftermarket division also offers a complete line of replacement timing drive systems and components, and Cloyes enjoys an excellent reputation in the performance community as well.

The Subiaco plant is home to the company's powder metal (PM) production facility, meeting OEM demand for lightweight, high-strength components in high volume. Cloyes controls the complete PM production process, both primary and secondary operations, employing press sizes of 60-825 tonnes, allowing the company to hold the highest standards of quality and constantly stretch the limits of the technology. Materials processed include iron, phosphorous iron, nickel/copper/steel add-mix, pre-alloyed, copper infiltrated, tungsten carbide/bronze matrix and stainless series 300/400. Part densities up to 7.5 g/cc are achieved. Key capabilities include sintering to 2,250° F, hardening (induction, carburising and carbonitriding), and a full range of secondary operations including steam bluing. The Subiaco plant produces two different VVT stators for a single customer. Both parts are made of sintered steel with a hardness of 45 HRA. The stator's minor ID is made up of five segments constituting a bore that must be sized and finished after induction hardening in order to achieve a specified 50 microns roundness and 80 microns total tolerance.

4-spindle VSS-2 honing system used by Cloyes Gear to hone the bores of VVT stators. The segmented bore of the powder metal parts is finished to a roundness of 50 microns and total tolerance of 80 microns

"We could turn this ID in a lathe, but it would be very challenging on a production basis because of the highly interrupted bore," says the process engineering manager at the plant. "We originally processed the part with roller burnishing but found it difficult to hold the desired roundness and process capability, resulting in a high scrap rate," he adds. "We had a high level of confidence in single-pass honing based on three Sunnen machines in our plant already, so we purchased the company's new VSS-2 machine with four spindles and integrated it with an automated part load/unload system."

How single-pass honing works

When properly applied, single pass honing is a quick, cost-effective method to get a precise bore size, geometry and surface finish. Parts made of cast iron, powdered metals, ceramic, glass, graphite and other free cutting materials, with L/D ratios up to 1:1, are ideal for the process. The L/D ratio for the Cloyes VVT stator is 23/84 mm. Single-pass bore sizing is also appropriate for splined bores or longer L/D ratios if cross holes or other interruptions are present to allow chip flushing.

Parts are automatically clamped and fixtured on the rotary table of the honing machine

The Sunnen VSS-2 Single Stroke Honing system has the most accurate spindle alignment in the industry, according to the builder, combined with flexible, easy-to-use controls. Spindles on VSS-2 machines are factory aligned independently, for precision centring with the tooling plate. This produces better bore geometry than possible with earlier machines that used an "average" alignment for all the spindles. Alignment accuracy exceeds DIN 8635 requirements for vertical honing machines. VSS-2 Series machines use up to six spindles to progressively size and finish part bores, using diamond tools of preset diameter and grit size. The control allows the column feed and spindle speed to be varied throughout the cycle. Operational flexibility is enhanced by using six available stroke profiles, including pecking, short stroke and dwell, which are easily added to a setup.

The VVT stator starts as powdered steel, which is pressed, sintered and sized in a restrike press. A small hole is drilled near the periphery of the part, then the teeth are brush deburred and induction hardened

before honing. The bores require removal of about 0.076 mm (0.003") material, so each of the four spindles takes off a little less than

The honing machine uses four diamond honing tools to progressively remove 0.076 mm (0.003") of material, running approximately 4000 parts/day with 1.67 Cpk process capability

a 0.025 mm (0.001"). Tool life is around 80,000 parts, according to the process engineering manager. After honing, the parts are face ground, deburred, washed and packed. In operation, the VVT stator interfaces with a rotor that moves about 15 degrees to adjust valve timing for optimum engine performance, based on RPM and other parameters.

Like its other honing machines, Cloyes interfaced the new machine with a part feeding system that includes Fanuc M6i robot, allowing the machine to run essentially untended 22 hours a day. "This system is all about short cycle time, high production rates, and high process capability, all without babysitting the machine," says the process engineering manager. "We might need to make an adjustment once a week to keep the parts within spec. That's the kind of productivity and process capability needed to be competitive in the OEM automotive market these days."

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Palletising and polishing with robots for higher efficiency and conservation of resources

Fastlog AG is a company that was re-established in 2009 with over 100 years of tradition from the former PTT Group and currently employing 140 people in service and logistics of spare parts for its business customers. In this niche business, the objective is to increase the lifecycle even of basic used electronic devices such as modems or set-top boxes from the IT/telecommunications sector and to make them available to the market again, fully inspected and tested.

In fact, each device in the "Fastchecker" is tested and inspected in detail, polished, cleaned and newly packaged again. This "refurbishing" saves the manufacturers lots of money and ultimately reduces the burden on the environment. "Fastchecker" is a clear solution for the rapidly-growing demand in the Swiss market, and Fastlog revolutionises the after-sales business for electronic components and systems with this FANUC M-20iA/10L palletising robot, given the nickname "PALETTI" by its co-workers.

Refurbishing is a strenuous manual process

As all devices at Fastlog are completely inspected at modern measurement workstations and receive the latest software updates, the finishing touch in the sequence is the refurbishing of the covers, whereby the cover needs to be gently and carefully finished and polished, as modern plastic covers do not forgive any minor flaws. Repairing each device manually or removing old adhesive labels: These are physically demanding and monotonous tasks. Marcel Hadorn, operations manager/head of services at Fastlog explains: "That is why we decided to deploy a robot from FANUC for these tasks, on the one hand, to take a load off of employees and on the other hand, to meet the efficiency requirements.

"We discovered the company Derap AG, which has its headquarters nearby, and we had them prepare sketches of initial routines and requirements. We were quickly convinced that we wanted to use a robot for palletising. Then the company FANUC was suggested to us. What convinced us about FANUC was seeing the direct applications of its plant in the nearby location of Biel/Bienne."

Requirements specification for choosing the right robot

Together with the integrator Derap AG from the nearby town of Heimberg (BE), a detailed requirements specification was prepared. The initial focus was on the palletising robot M-20iA/10L, the application of which is standard today in many companies and which very quickly achieved the desired result for Hadorn and his team. A key parameter in the requirements specification was the cycle of 12 devices per minute, which was also successfully achieved. Thus, Marcel Hadorn and the consultant team led by Peter Keller, CEO of Derap AG, were on the right track: "We were very quickly convinced by the precision of the robot applications, although for the palletising process, you don't need tolerances of tenths or hundredths of a millimetre", confirms Marcel Hadorn. "Although there were certain challenges during commissioning, we were able to quickly correct them by coordinating the stacking of the boxes. The system, including the sensors, works perfectly." he adds.

Peter Keller, CEO of the engineering firm Derap AG, explains from his perspective why robots from FANUC were the right choice: "We received the cycle times and the different desired palletising patterns with tight tolerances as a specification from Fastlog. We looked for the appropriate robots that were able to fulfil these tight specifications. This already narrowed the search considerably." The crux of the matter was optimally placing many of the different shrink-wrapped and thus not always perfectly geometrically-shaped device packages on the pallet with eccentric suction devices to ensure that there will be no production interruption, and that the load won't shift during road transport.

The iRVision system in the unit delivered by FANUC is "also very well matched as a component, which was an additional decisive criterion for choosing FANUC robots." Close cooperation for quick solutions. Thus, the palletising was somewhat more difficult to master, given

more sophisticated processes. However, the originally planned polishing system was somewhat easier to implement by comparison. The development of the polishing system went relatively quickly. Marcel Hadorn adds: "With the polishing system, we were able to reach our goals within the deadline we set for ourselves. Here even more personnel savings can be achieved than on the palletising system."

An important point for him was also "the fact that the Derap company provided us with superb assistance in deciding on the robot models M-10iA and M-20iA/10L from FANUC. We defined the requirements in terms of weight, speed and workspace conditions on the systems then, based on a recommendation by Pierre Rottet from FANUC and in cooperation with the people at Derap, we opted for these specialised devices." Bürki Electric AG from Steffisburg was responsible for the networking, installation and programming of the PLC controller and the vision components of both systems. Short distances and local companies working hand-in-hand combined to lead this close project collaboration to rapid solutions.

On the M-10i palletising robot, today named "PALETTI" by the employees, different design approaches were originally discussed. It quickly became clear that a continuous application of force would be necessary for the difficult polishing process in order to guarantee consistent quality. This was achieved with the force momentum sensor by the company FANUC, "which runs very homogeneously and smoothly. We are satisfied how the whole project was organised." confirms Marcel Hadorn.

Pierre Rottet, sales manager for robots at FANUC, adds: "This M-10iA robot in combination with force momentum sensor is quite unique. The sensor communicates directly with the robot controller, guaranteeing that the contact force exerted when polishing the housing will always be the same. This offers the advantage that you can achieve consistent quality in this polishing process. On the other hand, there are significant time savings during programming, i.e. when teaching the movements. The force momentum sensor thus always carries out the programmed movement with the same contact force."

Internal know-how for external future visions and growth

The entire polishing process of plastic housings containing sensitive electronics is generally a very delicate process, as is the rapid packaging of completed package onto the pallets. "Our employees are grateful that these tasks can be taken over by robots today," says Marcel Hadorn. "We initially had concerns about deploying these robots in our production, because after all, they ultimately eliminate jobs. But remarkably, this was well received by the employees and the mood is surprisingly positive. The palletising was a very strenuous task, especially in the summertime.

"Also well received from our staff was the polishing robot, as there were frequent health-related downtimes on this system. This was a sign for us to take the load off the employees. There have not been any complaints from the employees that they no longer have to do this strenuous task," says Marcel Hadorn. This means automation with robots dovetails with a more environmentally-friendly and resource-conserving (working) world of tomorrow, which, all in all, requires new solutions, especially due to the high-wage price pressure for Swiss companies, particularly given the heightening competitive situation with Europe and the Far East.

FANUC Switzerland also considers this forward-driven project highly successful: "With this project, we have gained not only the company Derap as a system partner but also the company Fastlog as a new end customer, who is now using robots in production for the first time. This certainly will not be the last project."

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Damage-free processing of parts for glasses

Spectacles, now more commonly referred to as glasses or eyewear, are mainly worn as an optical aid to correct defective vision and misalignment, in which case they are also referred to as corrective glasses. Glasses can also be used to protect the eyes from the effects, injuries or irritation caused by external influences. In some cases, people wear them as a fashion accessory, while there is also a vast market in sunglasses, where there is equal care taken over frame manufacture, especially by high-value brands.

The main parts in a pair of glasses are the lenses and the frame. In turn, the frame consists of several smaller parts such as temples, end pieces, hinges, lens rims, nose pads and a bridge. The bridge is important, as it is the connecting part between the lenses and ensures their weight is evenly distributed. High-grade materials are fundamental in the manufacture of glasses. Metal frames are shockproof, scratch-resistant and make the end product more aesthetically appealing. Another production factor is ensuring that the bridge is fully deburred and rounded to guarantee maximum comfort for the wearer.

OTEC CF machines have a special deburring, smoothing and polishing process for small glasses parts such as hinges, bridges and connecting parts, preparing them perfectly for further processing. To remove the burrs left by manufacturing, OTEC's process first uses ceramic grinding bodies for stronger grinding then plastic ones for refining. To keep the part clean during the process, a compound is added to rinse away the abraded material and protect against corrosion. Next comes high-gloss polishing with a special walnut granulate that produces a smooth surface – a must from an aesthetic point of view.

OTEC CF machines use a centrifugal process for highly effective mass finishing. The glasses parts are placed in an abrasive and moved around by a revolving disc separated from the process container by an adjustable gap. This produces a toroidal flow in the grinding media, enabling high-precision, thorough processing via the various centrifugal forces.

OTEC disc finishing machines can process glasses parts in bulk and therefore increase efficiency. The reduction in processing time obtained by high rotation and relative speed also make the process more economical. The disc features rounded ridges so that glasses parts can be processed gently. Small, flat parts don't get lodged around the edge of the disc during the process and are therefore processed thoroughly.

Unlike their conventional equivalents, OTEC disc finishing machines can process very small metal parts for glasses without damaging them at all. A unique zero gap system means that the gap between the revolving disc and the stationary container can be reduced to nothing. This means that highly delicate parts such as bridges and hinges can't get stuck in the gap, which prevents them from being damaged and produces a smooth, polished surface. The system also makes it possible to use very fine-grain grinding media. What's more, the ingenious container shape reduces processing time by up to 30 percent compared with comparable machines. So, if you're in the optical business, 'opt' for OTEC for glasses parts with a flawless, highly polished surface.

OTEC GmbH provides precision technology for achieving perfect surfaces. OTEC machines are used for deburring, grinding, smoothing and polishing, with the aim of improving surface quality on tools and products. With a network of over 60 distributors worldwide, OTEC is there for international customers from a wide range of sectors. Customers benefit from OTEC's in-depth technical expertise when it comes to developing the perfect interplay of machine and abrasive.

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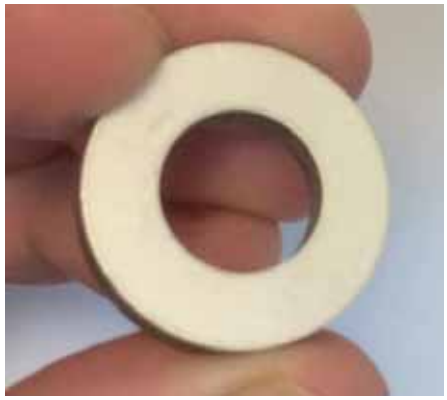
Ceramic component challenge? Call Kemet

Advanced technical ceramic materials have transformed the world we live in, to the point where we don't even notice we are encountering them. They are present within our cars in sensors and control systems, within our computers, phones and touch pads. The water and power we use daily all benefit from ceramic technologies, which can withstand the extreme temperatures and mechanical stresses in applications for generating energy in power plant engines and turbines, all contributing to better efficiency and productivity.

It is the unique properties of these many ceramic components that can make them a challenging material to machine to final geometries. Many are made from the same material that historically would have been used to lap and polish them, typically aluminium oxide and silicon carbide.

The challenge this created was one that Kemet International rose to, with its composite lapping plate materials and diamond compounds and slurries being a leading solution. Originally developed in the early 1970's, the combination of composite lapping plates and diamond abrasives provided a marked improvement in the efficiency of lapping and polishing ceramic materials, with results that enabled 100 percent quality control because of the highly reflective surfaces that this combination of processes was able to achieve. Until this breakthrough, boron carbide had been the only option for lapping ceramic materials: a costly and an incredibly dirty process which could only provide a non-reflective surface that could not be measured optically.



Before lapping ceramic

After lapping ceramic

Today, Kemet offers a full process programme, which includes diamond slurries for both twin plate and open face lapping systems and a variety of Kemet composite plates for specific types of ceramics, as well as specially formulated cast iron plates. Newer applications, like ceramic coatings on aerospace bearing assemblies, have required the development of special purpose machines, as well as process consumables: another of the technical services Kemet can offer.

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Customised measurement solutions for innovative technologies in aerospace

by Pierre Courbun, development engineer at Metallicadour

Cutting tools for machining aerospace components have to meet the highest precision requirements for high-speed machining. Therefore, geometry and edge conditions need to be addressed. With Alicona we found what we were looking for: A measurement solution that provides us with precise, repeatable measurements as well as simplicity and flexibility in use.

Automated measurements, along with repeatable and traceable 3D measurement data, convinced the technology transfer centre Metallicadour to choose Alicona. For developing innovative tool and automated machining solutions in aerospace applications, they verify geometric dimensions and surface finish on tools and components using optical 3D metrology.

New applications in the aerospace industry and the rapid pace of technological change lead to an increasing demand in tooling. With Alicona's optical measurement technology, the expert team at Metallicadour found the right solution for measuring complex geometries and hard-to-machine materials, such as titanium, composites and heat-resistant alloys.

Metallicadour is a resource and technology transfer centre devoted specifically to the metal industry and fields of machining, assembly and process automation. It was founded in 2015 with the academic support of ENIT, the National School of Engineering in Tarbes in France. The centre is located in the heart of the Adour Industrial Basin in France and aimed particularly at SMEs in aeronautics. The centre is supported in its work by the major local aircraft manufacturers, among them Safran, Daher and Dassault. Metallicadour enables component manufacturers to test and automate machining processes and demonstrate the interest in new cutting technologies, such as very high-pressure lubrication and cryogenic turning.

Alicona sensor at Metallicadour

Testing of new machining tools and technologies for aircraft construction

Verification of form and roughness has a major influence on the service life of a tool and can help to significantly reduce wear and chatter for an improved surface finish of components. "Cutting tools for machining aerospace components have to meet the highest precision requirements for high-speed machining. Therefore, geometry and edge conditions need to be addressed," states Pierre Courbun, development engineer at Metallicadour. "With Alicona we found what we were looking for: a measurement solution that provides us with precise, repeatable measurements as well as simplicity and flexibility in use."

As the measured parts and requirements vary, Pierre Courbun and his colleagues were pleased to find a solution for all kinds of measurement tasks, including form and roughness measurement of mills, inserts and drills: "Our components often show steep flanks, deep lengths and light refection. With Alicona's optical measurement system, we measure small surface connection radii and the geometry of very complex surfaces. We are also able to verify roughness on components with very smooth surfaces or parts that are way too small to be measured tactile. Laser solutions are often not precise enough for our measurement tasks," he explains.

Landing gear cobot at Metallicadour workshop

New insights into cutting processes and wear behaviour of tools

Based on the technology of Focus-Variation, the measurement system allows for profile (Ra, Rq, Rz) and area-based measurements

(Sa, Sq, Sdr). With up to 500 million measurement points it provides robustness of the measurement data. Accuracy of roughness measurements can be verified with a roughness standard that is traceable back to the PTB (National Metrology Institute of Germany).

The 3D measurements can be compared against CAD data or reference geometries for verification of accuracy. This helped Courbun and his partners in their research on understanding the cutting phenomenon and related indicators.

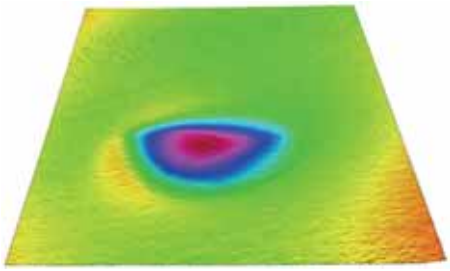
Fir-tree root of turbine disk

"With our measurements we compare different tools and materials to investigate wear behaviour. We study the correlation between cutting forces, wear behaviour and performance of the tool, respectively the roughness generated by the tool over its full life cycle. Moreover, we also investigate the links to the matter of surface material as well as the change of mechanical surface tension."

Alicona is also used in the development of new machining solutions. Pierre Courbun

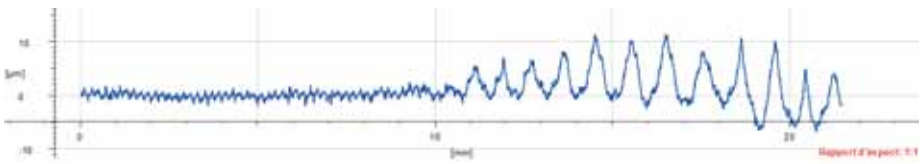
Injector combustion chamber

Alicona at Metallicadour - defect measurement in true colour



Defect measurement in pseudo color

continues: "We are working on an automated manufacturing solution, where the workpiece is processed by a milling robot. Following each process step, the component is automatically measured for verification of dimensions and possible deviations from the target geometry. This is implemented by another robot that is equipped with Alicona's optical sensor. Based on the high-resolution measuring data, the machine automatically modifies the process parameters for further manufacturing."



Milling vibration measurement

Robot-based solutions for automated defect detection of aircraft components

In joint research and development projects, Metallicadour and Alicona also implemented automated defect measurement on rotor blades as well as new collaborative robot solutions (cobots) for quality control of landing gears, turbine discs and large components. Defects on rotor blades as well as engine and other aircraft components are safety-critical when they cause stress points which in turn create a crack. When the local stress concentration becomes too high or the crack reaches a critical size, the remaining material cannot support the applied loads. This may result in a fracture or sudden rupture. The defects can be caused by machining errors, corrosion or external influence, for example the impact of stones and debris.

"Before, components could only be evaluated by the unaided eye of an expert. With Alicona local surface defects are automatically measured, so that shape and size of defects can be quantified in MRO and process development," Pierre Courbun points out. If the defect is outside a defined tolerance it must be removed by dressing until it is acceptable or, if not possible, the workpiece needs to be scrapped and replaced.

Alicona is a global supplier of optical 3D surface measurement solutions for quality assurance in the lab and in production. The company's key competence is the measurement of form and roughness of even complex, miniaturised geometries. With Focus-Variation, the key technology, it offers a technique that combines the functionalities of a micro coordinate measurement machine (CMM) with those of a surface measurement system. For a user, this means to measure both form and roughness of components on an areal basis. The stable and robust technology of Focus-Variation delivers repeatable and traceable measurements even in a production near environment.

The Alicona product range includes a number of standard as well as special solutions. Research and Development acts very close to the direct need of industry, which enables it to design both standard products as well as special solutions based on industrial partnerships.

Alicona will be exhibiting at Control 2019 in Stuttgart from 7th to 10th May in Hall 5 Stand 5401.

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Roughness, shape and ripple measurement with scattered light sensors

The measurement of surface roughness is a complex task in contrast to a pure length measurement. Traditionally, the surface is scanned with a diamond needle and a line profile is generated, from which height parameters such as Ra, Rz or Rk are usually determined. Despite its widespread use, this technology has its limits on very finely machined surfaces with Rz values <1 m and in the description of functional properties such as friction, gloss or adhesive behaviour.

The scattered light measuring technique offers great advantages, especially for these surfaces, since the surface characteristics are not obtained from a height profile but from the distribution of the microprofile angles within the measuring spots. The rougher the surface the greater the angular distribution and, correspondingly, the scattering of the reflected light. This measuring method is recommended in the VDA 2009 for production processes in the automotive industry.

Surface metrology 4.0

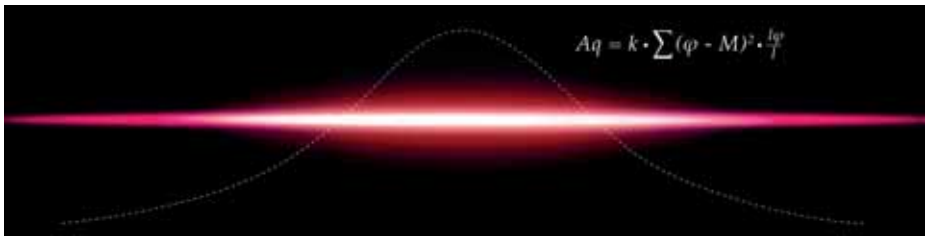
High resistance to vibration and distance qualifies the scattered light measurement technology for direct use in production environments. The high measuring speed makes it possible to measure up to 100 percent of the parts and to evaluate tool states with the help of the resulting data. This can save considerable costs in the production process.

Measuring components with high functional requirements

Due to the high sensitivity of the sensor system, this technology is ideal for finely machined surfaces with high functional requirements. Since angle information is recorded, scattered light measurements in many cases allow unambiguous conclusions to be drawn about the friction behaviour, for example stick-slip effects, of surfaces. Correlations to the functional behaviour have meanwhile been incorporated into a wide variety of components.

Form measurement with the scattered light sensor

In the macro range, the sensor operates according to the deflection principle. Via the



shape deviation angle (M) and the known local scan length Dx, the absolute shape deviation y = f (x) can be calculated. This principle allows roundness deviations <0.2 m simultaneously to detect roughness and waviness measurement. The results of the scattered light measurement technology are comparable to those of high-precision coordinate measuring machines.

Ripple measurement and FFT

With an FFT (Fast Fourier Transformation), ripples on the surface can be obtained up to an amplitude <0.02 m traceable measure. An OptoSurf software solution represents the respective amplitude heights in the associated frequency ranges up to a maximum of 500th order. This information can be used to monitor and optimize the machine setup process in addition to quality assurance.

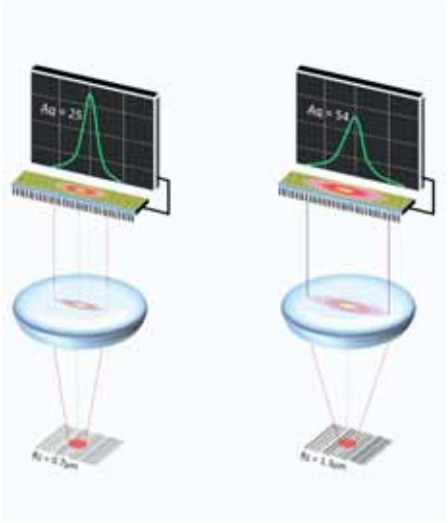
Based on product and customer-specific limit curves, niO components are automatically recognised and discharged into measuring machines.

Area measurement - 3D representation

With the scattered light measurement technology, it is now possible to measure important functional surfaces over the entire surface and display them as 3D graphics. This makes it possible to make statements about the homogeneity of the machining and at the same time to gain insights into whether a bearing seat causes noise or not when measuring the waviness.

Optical surface metrology in a rough production environment enhances quality control and process control, while reducing costs.

Applications include automotive, mechanical engineering, surface technology, semiconductor technology products, sensor OS 500, machine



integration, measuring station solutions, measuring and test standards and robot solutions.

OptoSurf GmbH develops, manufactures and sells optical surface measurement technology for measuring the roughness, waviness, and roundness of finely machined surfaces, as well as supporting customers in testing surfaces and their functional behaviour. OptoSurf is a top expert in optical surface measurement technologies for use directly in the shop floor environment.

Before offering customers a solution, OptoSurf evaluates their measuring task is feasible using scattered light technology. This can only be done by providing comprehensive test measurements. In this way, OptoSurf lives up to its claim of always offering its customers an ideal solution and giving them the certainty that scattered light technology is optimally suited for their purposes.

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Measuring contours and roughness

Jenoptik measuring instruments can be used to measure either the roughness or contours of your workpieces. The company offers versions that work in separate measurement runs and models that measure in a single probe step. You can also choose between mobile and stationary systems for simple and complex measuring tasks.

All Jenoptik measuring systems are highly precise and offer repetitive accuracy. They can detect even the smallest deviations from the standard, ensuring that you produce components with consistently high quality. The measurement run is largely automated, which prevents operator errors. You also save time, money and resources.

The instruments have a modular design, which means they can easily be integrated into existing measuring system or can be expanded. You can configure the measuring station according to your requirements. If required, Jenoptik can develop and manufacture measuring instruments for contour and roughness measurement that precisely meet your requirements. You will also benefit from its years of experience and our comprehensive expertise.

A modern system concept for maximum flexibility

Industrial production processes are very varied, as are the requirements of metrology. The Waveline W800 series has been designed to cover the maximum spectrum of customer demands. All measuring station configurations are designed on a modular basis and can therefor be easily extended at a later stage.

W800 measuring systems have been developed by Jenoptik for roughness and contour measuring tasks associated with typically manual or seni-automatic measuring processes.

The systems are easy to operate and offer a great variety of analyses, thanks to the performant Evovis measuring and evaluation software. The result is athe highest standard of measuring accuracy in the shortest time.

Features include: 500 or 800 mm measuring column; +-45 degree tilt unit; 120 or 200 mm traverse unit with display for status and position indication; roughness or contour probe arms with magnetic coupling; 700 x 520 or 1,000 x 520 mm granite plate with T groove; control panel for easy operation of the measuring station.

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Gilmour Tools meets increased oil & gas and aerospace insert demand with Ewag grinders

In response to the need for increased output by customers in the oil & gas and aerospace industries, Larkhall-based Gilmour Tools, the of the largest independently owned cutting tool manufacturers in Europe, has expanded its already impressive range of Ewag insert grinders with a Compact Line insert grinding machine.

Supplied by Walter Ewag UK, a member of the United Grinding Group, the new machine complements five other Ewag insert grinders (Ewamatic models) and has been installed primarily to produce threading-type inserts for the oil and gas sector.

According to managing director Gary Gilmour, the new 5.5 kW/7,000 revs/min machine is ideally suited to such work, offering very fast and accurate machining of inserts.

Its production capacity is not only enabling the company to meet increasing order demands but the machine also represents the latest progressive upgrade to insert manufacturing at the 10,000 ft² factory in the west of Scotland.

The machine's 'three-in-one' dressing unit is highlighted as being especially useful, since it ensures grinding wheel concentricity and high process reproducibility, as well as wheel dressing, regeneration and 'crushing' in a single package.

Gilmour Tools specialises in the production of a wide range of carbide inserts for all oil threads to many complex shapes in a variety of materials alongside the production of toolholders and blades. Established in 1976, the company has customers in the aerospace, automotive and general engineering sectors as well as the oil and gas industry.

The Compact Line was purchased to meet the rising order book, particularly from clients in this latter industry sector, which has also led to complementary investment in new EDM equipment, additional machine operators and two-shift working.

Capable of machining inserts in carbide, cermet, ceramic and PCB/PCD, the 6-axis Ewag Compact Line provides resolutions of 0.0001 mm (linear) and 0.0001degree (rotary). Depending on the clamping system, the machine can accommodate minimum inscribed circle diameters of 4 mm (pin clamping) and 3 mm (indexable insert clamping) and offers very short setup times.

The Ewag Compact Line grinding machine (above) will enable Gilmour Tools to meet rising demands for inserts

Applying protective chamfers on the inserts' main cutting edges is ensured by the machine's optimised kinematics as well as by its C-axis. Machine downtime is minimised by the machine's short travel distances and by the integrated 6-axis FANUC robot that offers agile handling and a high degree of flexibility for loading complex inserts.

Machine usability and effectiveness is also guaranteed by the integrated ProGrind software, while the FANUC control system enables all grinding routines to be programmed quickly and easily via its user-friendly touch-screen panel.

Increased order intake for Walter Helicheck measuring machines

Walter Ewag UK reported another successful year of order intake during 2018, following the trend set over the previous three years for its ranges of Walter Helitronic tool grinding and erosion machines, Ewag insert grinding and laser models, as well as the Walter range of Helicheck tool measuring machines.

The Walter Helicheck 3D – a revolutionary route of scanning and digitising tools

Sales director Neil Whittingham comments: "While last year's order book was especially focused on tool grinding and erosion, this year we've also seen a shift towards investment in tool measurement from across the Helicheck range, including the top-of-the-range Helicheck 3D."

With X, Y and Z axes capacities of 270 mm by 455 mm by 325 mm, plus an A-axis of 360°, the Helicheck 3D utilises a revolutionary method of laser digitising to enable items to be scanned quickly and easily to create three-dimensional model data that can be saved, processed, analysed and measured.

Neil Whittingham adds: "Of course, not all machines ordered in a certain year are delivered during that year, which means we have a healthy outlook as we enter 2019."

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Lawrence Engineering invests in Rollomatic grinding machine

Lawrence Engineering was formed in 1985 by Michael Lawrence, a tool and gauge maker by profession, who started his career in engineering back in 1970.

Starting off by himself as the sole employee and initially working from his garage, the company is located at the foot of the Ox mountains near Sligo in Ireland, now employs 14 people and is growing rapidly. 95 percent of Lawrence Engineering's business is to medical device manufacturers located in Ireland. The company, whose policy is always to invest in the best and newest technologies has a wide range of machines including assorted EDM machines, milling machines, grinding machines and turning machines. It specialises in manufacturing very high precision, low batch, ground components in a variety of materials and, in particular, small injection mould and extrusion tooling.

In order to meet his customers' demands, Michael Lawrence has spent in the region of £800k this last year on assorted machines, including the purchase of the Rollomatic NP5 grinding machine, which is his company's biggest single machine purchase to date. Several machines are now under order and a new purpose-built factory extension of 200 sq m is being constructed

to house them. The enquiry level for January 2019 was equal to that in whole of 2013, which demonstrates how many more engineering companies are looking to Lawrence Engineering to supply them with components. Michael's son, James, who joined the workforce around four years ago, is helping oversee the recent rapid expansion with overseas sales to countries as far away as Canada.

Michael Lawrence had not heard of Rollomatic before he saw the latest NP5 Grinding machine on the AGS stand at the MACH show last April. Having received a demonstration at the show, he immediately understood the advantages that the machine would bring to him and soon thereafter placed an order for a high specification of Rollomatic NP5 machine that also caters for special un-round profile grinding. This machine, along with the others in Rollomatic's wide range of grinding machines, is manufactured at its 12,000 m² production site located in Le Landeron, Switzerland, that incorporates ultra-modern manufacturing equipment and technology.

Michael was very impressed with the very large saving on cycle times that the Rollomatic brings, in some cases reducing the time to programme and manufacture a very special tool from over 2.5 hours to just 10 minutes. Furthermore, because tools on the Rollomatic machine are produced in a single automatic operation from the solid bar material, this guarantees the highest possible precision and removes the need to transfer parts across several different machines, which was previously the case.

Programming could not be simpler with Rollomatic's software, which works offline or directly on the grinding machine, allowing the most complex of tools to be programmed up in just five minutes. The NP5 uses the special design of pinch/peel grinding pioneered by Rollomatic that allows parts with high length to diameter ratios to be manufactured with component part lengths up to 400 times the part diameter to be ground without deflection issues. The machine has a working range for parts from 0.025 mm to 25 mm in diameter with autoloading from pallets via an integrated 3-axis robot loader. The 5-axis machine allows for stepped diameters, angles, chamfers, flats and even hexagonal and non-concentric cam profiles to be ground with ease.

The software, in conjunction with the rough and finish grinding wheels setup, allows users to specify multi-pass grinding operations for roughing and/or finishing to achieve the highest possible level of accuracy, while creating superior surface

finishes on tapers and radii. Size control across large batches is within 0.002 mm on even the longest of tools, with runout concentricity of under 0.001 mm from this high precision grinding machine. Movomatic and Marposs gauges are used for part positioning and for the post-process automatic gauging of ground diameters with automatic feedback to the Rollomatic machine's FANUC control.

As with all Rollomatic grinding machines, the NP5 comes with the industry leading three years parts and labour warranty as standard and with free software updates for life to ensure that all Rollomatic end users are always kept ahead of the game.

Chris Boraston, MD at Advanced Grinding Solutions, is naturally delighted with the sale of the Rollomatic machine to Lawrence Engineering, commenting that this is precisely the type of new customer that AGS are looking to add to Rollomatic's already impressive UK and Irish customer base:

"With more rotary tools of all kinds being manufactured on Rollomatic's here in the UK and in Ireland than on any other make of grinding machine, they are of course one of the leaders in their field and in the last year we have been able to add a number of new customers that have become Rollomatic end users for the first time and this is especially pleasing.

"The Rollomatic NP3 and NP5 machines are the firm favourite for tool manufacturing companies and it's good to see other forms of specialist makers of tools and punches investing in these machines to increase the precision of their parts and to drastically reduce their cycle times."

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AB Tools broaches machine operator skills gap with ANCA software and technology

Simple to learn and flexible to use, ANCA's technology can be learnt in under three days, claims Alfred Lyon, AB Tools shop supervisor

AB Tools is a leading expert in the special cutting tools market for high performance rotary cutting tools. Started in 1977 by Alan Baker, his son, Jonathan Baker joined in 1979 as the first employee. Today it services almost every industry, from smaller shops to large facilities in aerospace, automotive, medical and others.

AB Tools is experiencing the highest sales in its 40-year history, with most its customers in the US, as well as exporting to Canada, Mexico, Europe and even Australia.

Jonathan Baker, president of AB Tools, says: "We not only stand by our product 100 percent, but we use them in our day to day operations. From milling out some multi-flute carbide-tipped cutters with one of our own Dexi-Dovetail cutters to securely holding blanks with our own Accu-Hold endmill extensions.

"The Shear-hog is our bestselling product. My father, Alan Baker, designed the Shear-hog insert 25-plus years ago and it immediately became our number one product and has been ever since. We make a range of carbide tip cutting tools on steel blanks to increase the possible range of diameters and lengths of our products.

"We chose to invest in ANCA technology when our top grinder, Alfred Lyon became interested in how a CNC machine could help our business. Once we invested in an ANCA, the company significantly increased its capacity in what types of tools we could produce. Personally, I think our ANCAs offer the entire package: they run clean, don't require a lot of maintenance and are fast to set up. Our cycle times have improved with easy programming night and day."

Alfred Lyon, shop supervisor and top grinder at AB Tools says: "Years ago it was difficult to be competitive in producing special tools, due to the time and labour involved. When we invested in an ANCA machine, its grinding capabilities and flexible software meant we could now produce one offs or two offs faster.

"Furthermore, it dramatically increased the efficiency of the manufacturing process, meaning we could manufacture specials at a profit. That has meant that today we are very competitive in our pricing and can service our customers with shorter lead times.

"I looked into getting an ANCA at the IMTS trade show, where a technician demonstrated that I could program one of our tools under five minutes. Previously, to make a tool it took 20 to 25 minutes to program the G-Code and a further 15 to grind. That meant huge savings in time and effort. Once you finish the job, the program saves and next time you require that tool you can simply reload the file.

"An ANCA applications engineer came to AB Tools to give us three-day training on the new machine. I'd like to think I'm a fast learner, but in a day I was grinding tools and, by the second day, I felt like the trainer didn't need to be there. It was literally that fast. Having technology that is easy to learn is especially important given the lack of skilled operators. At AB Tools our approach to broach that skills gap is to train people who have recently finished high school and offer them a career path. In a few days we get them operating and setting up. We then train them in programming - it's that easy.

"My favourite thing about the ANCA technology is the ability to program off machine. In the past, the simulation was in my head and that's true of many manual cutter grinders. You have an idea of what you want and, after making the tool, you hope it is produced to look like what you've been dreaming about. The simulation software allows us to create the tool with all the given parameters and see what the finished tool will look like. That, combined with being able to program off machine, has revolutionised how we make cutting tools.

"Repeatability is also important, because in the past we could make the same tool but it would never be exactly the same. The flute length would be different, while cut length, relief and clearance would all change slightly. With ANCA, because you can save the program and all the features that go along with it, the cutting tool has the same features every time it is ground.

"When we got our first MX7 Linear, we were blown away by the finishes. I mean, the cutting edges are just beautiful. The flutes,

how they look. We don't polish anything. I love to share what I make on social media and comments like 'That's art' as the tools these days are honestly beautiful," he enthuses.

Jonathan Baker continues: "Alfred, a key employee at AB Tools had back surgery and that knocked him out for a good few months. However, he doesn't like sitting still and his passion for grinding meant he wanted to come back to work as soon as he could. The ANCA technology meant he was able to take the simulator and run programs at home on his bed, enabling him to start working again while he was physically healing.

"This was also important for our business, as it meant we had our top grinder and all his expertise back with us much earlier than would have been possible without the simulation software."

"I had a spinal fusion that required an eight-hour surgery. That night I wanted to start working again but my wife wouldn't let me while I was in the hospital. After coming home, I was immediately able to connect everything. From my bed I was able to program jobs for the ANCA grinders in the shop and was programming five to 15 jobs a day," recalls Alfred Lyon.

"I would email the programs to the shop where they were loaded onto a USB by a member of my team who would stick them in the machines and be able to just hit GO.

"I wouldn't be as happy with ANCA if their service wasn't as good as it was. It doesn't matter how great your product is, if you don't have support that can be an issue. I simply email and I will be sent an answer, or a technician will show up at our doorstep the next morning. That level of service started from when we had one machine till now when we have six. That kind of treatment resonates with me."

Jonathan Baker concludes: "I'm passionate about our industry as I have been in it all my life. There's a great bunch of people out there that love what they do. AB Tools is always looking to the future and hope it will include almost all CNC equipment. The achievements we have realised from buying our first ANCA CNC machine is incredible and that technology will continue to improve, opening huge opportunities."

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Vollmer VDays

Vollmer recently hosted its four-day VDays event at its world headquarters in Biberach, Germany. The Swabian sharpening expert was visited by over 400 customers from around the globe to witness the very latest technology from the world leading manufacturer of grinding and erosion machines for the processing of rotary cutting tools and circular saw blades.

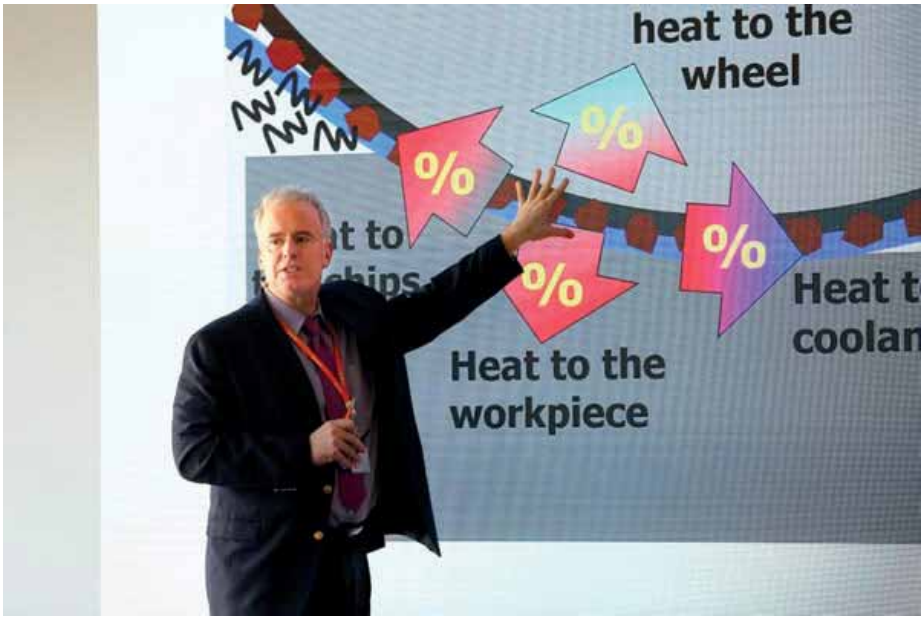
Dr Stefan Brand, CEO of the Vollmer Group, opened proceedings with an overview presentation of the Group, with pertinent points being the phenomenal growth journey the company is on. Vollmer recorded unprecedented sales and turnover growth in 2018 and, with a bulging order book for 2019, this performance is expected to continue.

Dr Brand also emphasised the importance of the global market, with its 490 Biberach staff and total worldwide headcount of 730 employees ensuring that 85 percent of sales are outside the domestic market. With sales currently running at 20 percent in Asia, 16 percent in the Americas and 61 percent in Europe, Vollmer has a dominant position in Europe, but the opportunities in the rapidly growing Asian and American markets are a tantalising prospect.

To service the global demand and the respective growth potential, Dr Brand announced the company's plans to vacate the current premises and move into a purpose built 48,000 sq/m factory on the outskirts of Biberach by 2023. The new facility will give Vollmer an additional 12,000 sq/m of factory space, while streamlining the existing business model, which has been located on the existing site for almost 100 years. To prepare for the long-term future of the Vollmer Group, the new facility has an additional 50,000 sq/m of space to expand beyond current plans, solidifying growth for future generations.

Product innovations

The seminar schedule for the event was split across two seminar theatres, with delegates having the option of choosing their respective seminar subject. Business development manager for the VGrind 360 and Vgrind 360E, Andreas Weidenauer discussed the extensive benefits of the VGrind machines. This included an overview of the build quality that touched on the polymer concrete machine base for vibration absorption and reduced thermal expansion, as well as the impressive C-axis concept that provides the perfect absorption and elimination of deformation and vibration of grinding pressure through the top and bottom bearings in the twin grinding spindle configuration. Reviewing the slideshow of the Vgrind 360 and 360E, it is apparent the unique twin spindle configuration exhibits dynamics, precision, deformation and vibration dampening characteristics that epitomise the quality that underpins the Vollmer brand. The presentation also alluded to the spindle options available with both machines, as well as the option for linear glass scales on the X, Y and Z axis, which are fitted as standard to the C- and A-axes.



This detailed insight was duly followed by product manager Eric Scheffold, who addressed the attendees regarding the very latest VGrind News. This presentation focused upon the numerous modular automation solutions, that include the HP160, HC4 and HPR250. These automation configurations are just one element of how Vollmer is committed to providing its customers with a 'complete solution'.

The HP160 pallet magazine and HC4 chain magazine are compact and ergonomic solutions that provide external loading and unloading with a single or double gripper configuration for clamping tool shanks up to 25.4 mm diameter. The gripper system also incorporates fully automatic in-process compensation to improve precision, run-out

and reduce sleeve wear. The HP160 system is available with a two or four pallet station that can accommodate up to 272 or 900 cutting tools respectively. Precision and automated reliability are crucial components of the Vgrind.

The packed schedule of events also included parallel presentations from technology partners such as Element 6, Gerling, ITQ, NUM, Haimer and Zoller, with an additional keynote presentation on 'How to improve carbide grinding' by Dr Jeffrey Badger, someone who was evidently a grinding guru. With such an esteemed list of presenters, visitors were not only offered the opportunity to embrace the 'complete solution' ethos and technology in the Vollmer Technical Centre but also in the theme of the presentations that catered for every aspect of precision grinding.

As part of the DeBeers Group and a world leading designer, developer and manufacturer of synthetic diamond super-materials, Element 6 has worked with Vollmer for many years to trial the machineability and operability of new material developments. The company gave a 'through the keyhole' insight into the development and considerations of PCD materials; a presentation subsequently followed by Holger Gerling, managing director of Gerling, an industry leader in brazing technology for PCD cutting tools.

The afternoon presentations were delivered by Haimer and Zoller. The Haimer seminar focused on balancing and pre-setting of grinding wheels, while the Zoller presentation on optimising grinding processes through digitisation certainly complemented the Vollmer theme of optimised production and digitisation.

IoT and the future of manufacturing

Dr Stefan Brand also detailed the IoT journey that Vollmer is plotting and how

the business will achieve its goals. Factoring in every consideration and department within the business is a process that 'must' involve all departments and all stakeholders, not only today, but every day. Dr Brand emphasised that the IoT journey for Vollmer will 'never end'. It is about continually evolving and pushing the business forward whilst always learning. Dr Brand stated that the company is currently undertaking almost 130 IoT projects and this number will only grow with time.

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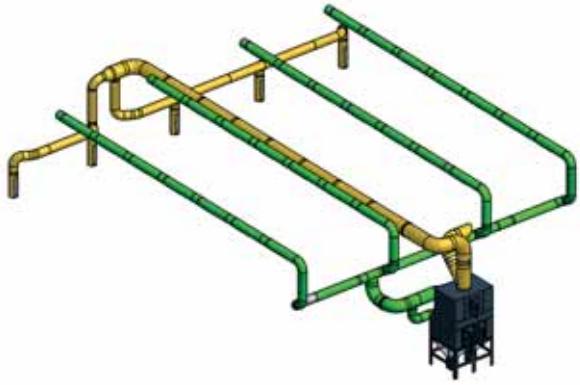
Large-scale plant from LTA Lufttechnik GmbH

Erwin Junker Grinding Technologie a.s. Mělník, Czech Republic

The individual extraction devices mounted on the columns in the hall were not adequately tackling the air pollution arising due to aerosols (welding fumes and dry dust) in the metalworking department. Mobile extraction units and fixed vents could not be used due to lack of space and the numerous cranes. A range of concepts were drawn up with the customer to best meet the individual requirements for a exhaust system that was up to the task. The result is a decentralised filtration solution with permanent extraction, which catches and cleans rising smoke and dust, with the aid of four manifolds above the crane runway and adjustable air inlets and returns the purified air via ground-level inlet openings. Continuous changeover between exhaust air duct and the recirculation system is also possible.

To meet the high requirements, such as an effective extraction volume of 20,000 m³/h, LTA Lufttechnik GmbH selected a DF24000-JET cartridge filtration system, which collects the rising smoke and dust using four manifolds above the crane runway with adjustable air inlets and returns the purified air via ground-level inlet openings.

"The extraction system for the metalworking department proves once again that LTA keeps on raising the bar in the field of decentralised filtration solutions. It has the ingenuity to solve even the most difficult of tasks to the customer's complete satisfaction, to raise both cleanliness, occupational safety and employee satisfaction. Not only is the new filter system from LTA considerably more efficient than its predecessor, it also plays a key role in reducing general risk to health."



Pipeline layout including filtration system during planning phase

Energy-efficient operation thanks to the use of a pressure sensor and a frequency converter

The decentralised filtration solution to reduced aerosol/dust content in the air in the hall

Production hall FEUER powertrain North America, Inc., Mississippi, USA

In 2016, Feuer put a variety of filtration systems into operation at their Mississippi site, including wet and dry filtration systems based on the electrostatic and mechanical separation principle.

A clever filtration concept for the crankshaft plant

In 2016, Feuer put a variety of filtration systems into operation at their Mississippi site, including wet and dry filtration systems based on the electrostatic and mechanical separation principle. In total, four LTA filtration systems with a total extraction capacity of 104,000 m³/h were designed for extracting aerosols and established on site. Four pipelines totalling 600 m were laid. The aim was to implement redundant wet filtration systems along with systems with an automatic cleaning function to remove the oils, emulsions and dust output by the machines. To do so, all the systems (1 x dry, 2 x oil and 1 x emulsion) were equipped with a separate switch cabinet and the exhaust air emissions were permanently monitored. Each machine connection was also fitted with a duct separator, a volume flow flap and flexible polyurethane hoses.

FEUER powertrain North America, Inc. is one of the world's leading manufacturers of cast and forged crankshafts. The 61

machines are operated with cooling lubricants, while some use a dry system. Consequently, the extracted air is polluted with oil, emulsion or dust particles. The challenge was to operate the systems for oil and dust as energy efficiently as possible and with an automatic cleaning function. In addition to extraction of non-combustible and/or explosive dusts on 21 machines, this involved redundant wet processing for the extraction of aerosols on 16 cutting oil, 16 grinding and eight emulsion machines. While the new filtration systems from LTA enable separated dust to be transported away in optional containers via screw conveyor and rotary valves, the cutting or grinding oils can be separated with ease with electrostatic filtration systems with integrated cleaning and then either disposed of or re-used following suitable treatment. Last but not least, this sophisticated filtration concept also permanently monitors the exhaust air values directly on the flues.

"We are very pleased with the central LTA air filtration systems, which provide extraction for the entire production line. The automatically cleanable systems provide continuous extraction for our machines with minimal maintenance expense and create a consistently clean indoor environment in the production hall."

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Above and below: The production hall at FEUER powertrain North America, Inc., Mississippi, USA

New EconPLUS perforated filter range designed with simplicity and security in mind

Axium Process has recently introduced the EconPLUS perforated filter as part of its range of Certified 316L stainless steel filters providing a low-cost, reliable and versatile solution for process pumps and equipment protection.

Designed with simplicity and security in mind, the EconPLUS filter range has been manufactured as a two-piece construction internally, has no loose parts and has a mechanical sealing area eliminating the need for a polymer seal with the inherent possibility of failure and replacement. The filters, which are suitable for both CIP (clean-in-place) and SIP (steam-in-place) duties, are simple and easy to maintain and require no tools for element extraction.

EconPLUS perforated filter screens are fully interchangeable and are available from 2,000 micron up to 8,000 microns. Manufactured with a 4", 316L stainless steel housing to ensure maximum screen surface area and designed for filter flows either out-to-in or in-to out, this versatile and dependable protection filter is providing a cost-effective solution for many process applications.

Axium Process is a filtration specialist and manufactures a comprehensive range of 316L stainless steel filters that include Wedge-Wire, Sintered Mesh and Perforated Screen options. The filters, which are manufactured in the United Kingdom at the company's Swansea-based manufacturing facility, can be customised to suit site or process requirements.

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Oelheld SintoGrind TTK aids Kahlaer quality

Founded in 1994, Kahlaer, based in Thuringia, Germany, specialises in the design, production and maintenance of milling and drilling tools and the regrinding of carbide saws. Through the use of a range of advanced Schneeberger and Vollmer CNC machines tools and an assortment of ancillary equipment, the company is able to provide its growing customer base with a wide variety of high precision manufacturing and sharpening services.

In addition to milling cutters and tapered tools, made of HSS and solid carbide, Kahlaer is also able to manufacture and maintain woodworking tools and more complicated special tools to customer's requirements.

Amongst the many industries served by the company, Kahlaer is constantly expanding its business within the challenging automotive, optical and medical industries. Supplying these demanding sectors has necessitated a further increase in the company's already high production standards.

Increasing precision and quality requirements has prompted company owner Stefan Hartmann to invest in the latest CNC-technology. Recently, a Vollmer CL 200 machine was installed, enabling the simultaneous high-precision grinding of both the front and the back of saw blades. The advanced machine also boasts a mechanism that allows hollow face grinding, in addition to a special program for trimming blade bodies.

To enable the Vollmer machine's full productive potential to be realised and to guarantee the highest surface quality standards, Kahlaer use Oelheld's SintoGrind TTK grinding fluid.

Stefan Hartmann explains: "The product's excellent air release characteristics convinced us to work with SintoGrind. In addition, the use of the high quality Oelheld product ensures that the grinding wheel keeps its cutting edge and does not clog."

Air release property is determined by measuring how many minutes the air bound in the oil requires to leave the medium, down to a residual content of 0.2 percent v/v. Every air bubble trapped in the oil later interrupts the lubricant film of the medium during the process. Hence, the more air there is in the oil/process, the poorer will be the machining result. Polyalphaolefins, as used in SintoGrind TTK, are characterised by their outstanding air release property which result in significantly higher process reliability.

SintoGrind TTK is the 4th generation of Oelheld's top range high-performance grinding fluid. In formulating the original SintoGrind TTK, Oelheld's mission was simple: to supply grinders with the best grinding fluid technology available. Having achieved the company's original objective, in close cooperation with leading grinding machine tool manufacturers Oelheld has constantly updated SintoGrind TTK.

Over several years, major SintoGrind TTK developments have resulted in users' ability to increase feeds and speeds, which strengthens their ability to compete. While further product enhancements have

Thanks to the sedimentator developed by VOMAT, the carbide sludge is automatically processed and deposited in a user-friendly manner directly into a suitable transport container for the recycling company

resulted in superior surface characteristics finish and reductions in tool wear.

In addition to the above, SintoGrind TTK is recognised as one of the safest grinding fluids related to health care. The multiple benefits of SintoGrind TTK have resulted in it becoming the global grinding fluid of choice where quality is of paramount importance.

Although SintoGrind TTK is applicable to all grinding applications, it is especially useful when flute grinding, external grinding, profile grinding, saw blade grinding, inserts grinding and the grinding of aeronautical, medical parts and wear parts.

In addition to many other materials, SintoGrind TTK is the ideal fluid when grinding tungsten carbide, HSS, steel, PCD, CBN and ceramics.

Steffen Waldenburger of Oelheld adds: "SintoGrind TTK grinding fluid is based on polyalphaolefins and is free from chloride and heavy metals. It is made for demanding grinding processes, which require high-precision and the best possible cooling. As polyalphaolefins (PAO) are synthetically made base oils, they not only have a high purity but also a strong resistance to pressure."

In pre-filtration of HSS swarf a vacuum belt is used. Its advantages lie in the better filtration and swarf drying performance. Again the recyclable material is directly deposited into containers specified by the recycling company

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Porvair's microfiltration range introduces the 4 lug to its junior filters

Porvair has announced the addition of the 4 lug adaptor to its junior filter range for small-scale applications. Porvair manufactures a range of disposable polymeric filters for use within the biopharmaceutical, food and beverage, industrial and chemical process, printing and validated filter industries.

The 4 lug junior cartridge is available with a range of media for filtering gases and low volume liquids for pharmaceutical, food and beverage and process applications. The 4 lug filters are suited for applications requiring retention of bacteria in liquid and venting applications in sterile environments using Porvair's sterile membranes.

The 4 lug adaptor is designed with double O-rings to provide total security where sterility is of paramount importance. For aseptic applications a junior cartridge with a 4 lug adaptor can be used for in-situ SIP and CIP regimes, in closed systems.

For non-aseptic applications the 4 lug filters offer the versatility of using Porvair's proven Polyfil™ and Microfil™ media, ideal for processing inks, chemicals and water where volumes are low or multi-pass fluid paths require absolute level filtration.

The range extends to Biofil™ junior filters, Fluorofil™ junior filters, Polyfil™ junior filters and Microfil™ junior filters.

Mike Hughes, General Manager, comments: "Porvair strives to be a customer-driven company. We have added the 4 lug adaptor to our popular junior filter range as a direct result of customer demand. This addition expands the range to allow the use of Porvair junior filters where a locking adaptor is required."

Porvair Filtration Group is an international leader in the development and supply of high performance, innovative materials and solutions for applications in filtration and separation. It has an extensive network of manufacturing sites, sales offices and distribution channels throughout the world. Its expertise in a wide range of media and the dedication of its design, manufacturing, sales, test and research teams ensure it is at the forefront of filtration technology.

For over 50 years, Porvair has delivered world class performance to the most demanding of environments, including aerospace and defence, nuclear, process and microelectronics.

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Ever greater demands being placed on cleanliness

In many sectors of industry, companies are facing new or more stringent challenges in industrial parts and surface cleaning. New manufacturing and fastening techniques call for new coating technologies and suitably adapted cleaning solutions. When it comes to removing particulate residues and surface films in such applications, the demands are on the rise. In fields such as the semi-conductor industry, medical technology and mechanical engineering, the specifications for parts cleanliness are becoming more and more stringent. Mastering these challenges is the name of the game at parts2clean, the International Trade Fair for Industrial Parts and Surface Cleaning, which is being staged for the 17th time from 22 to 24 October 2019 at the Stuttgart Exhibition Centre.

In the face of global competition, companies need to offer cleaning solutions capable of delivering consistently high results, both quickly and cost-effectively. To an ever greater extent, the levels of cleanliness achieved need to be documented on a continuous basis and the results stored until the next processing stage or even up through delivery to the customer. "The exhibitors at parts2clean will be presenting solutions for every requirement," says Olaf Daebler, global director of parts2clean at Deutsche Messe. "parts2clean is the top international get-together for the industry, and a prime showcase for best-fit solutions and the latest technological advances and trends."

International source of know-how and purchasing options

parts2clean is the premier international source of know-how and purchasing options for industrial parts cleaning and the show's visitors come in search of solutions for highly specific requirements. "Parts cleaning is a key issue in medical technology. As parts2clean is the only trade fair covering every aspect of parts cleaning, that's where we go to showcase our products and services. Those who came to see us at the show were industry professionals armed with a keen interest in finding answers to very specific questions," reports Dr Dagmar Martin, head of the working group "Interface analytics in the production process" at the Natural and Medical Sciences Institute (NMI) at the University of Tübingen.

It is also clear from the visitor survey that visitors to the 2018 show were well prepared to invest in new technology: 85 percent stated that they were directly involved in their company's purchasing decisions, while 82 percent of the professionals who attended last year's parts2clean had come with firm investment plans. "41 percent were considering purchases totalling €100,000 euros, so exhibitors not only generated valuable leads, but also a lot of sales," remarks Olaf Daebler. Demand for stand space at this year's show is high: By mid-January, more than 75 companies had booked their stands for 2019, among them virtually all the market leaders and innovators. Even at this early stage, the total amount of space booked (currently over 3,300 square meters) has already reached approximately 50 percent of the total for 2018.

All-encompassing array of exhibits, with new display categories

With a cross-disciplinary range of solutions addressing every industry and every stage of the industrial parts and surface cleaning process, parts2clean enables users from a huge array of manufacturing and reprocessing backgrounds to gather the information they need about processes, cleaning media and ways of optimising processes and costs. Major emphasis will also be placed on medical technology cleaning applications, as well as the automation of cleaning processes, for example by means of robots. As the removal of surface film contaminants and the selective cleaning of functional surfaces are destined to become more and more important over the years to come, these topics will also be prominently featured at parts2clean 2019.

Visitors will also be inspired by the special QSREIN 4.0 showcase, which this year will explore the future of process control in water-based parts cleaning. Here suppliers and users of cleaning technology will be examining innovative, best-fit, cost-effective approaches to process monitoring and control capable of meeting consistently high standards of cleanliness.

Attractive supporting program

parts2clean also excels as a source of know-how, for example in the form of its three-day Industry Forum staged in association with the Fraunhofer Cleaning Technology Alliance, a forum that will offer added value thanks to its co-staging of the Innovations and Future Forum as organised by the German Industrial Parts Cleaning

Association (FiT). Among the key topics to be covered there are technology basics, strategies for optimising processes and costs plus quality assurance. The Forum will also treat visitors to first-hand reports on best-practice applications, as well as discussion of the latest trends and innovations. The entire parts2clean Industry Forum will be simultaneously translated (German to English/English to German).

Twice a day, Guided Tours (in English and German) to the stands of selected exhibitors will highlight notable offerings for the cleaning of industrial parts and surfaces, making it easy to find promising innovations and suppliers for their specific needs. For participating exhibitors, the Guided Tours serve as an excellent chance to impress a highly receptive audience with their innovative products. This adds up to valuable leads and excellent business prospects.

Deutsche Messe AG

As one of the world's foremost organisers of capital goods trade fairs, Deutsche Messe (Hannover, Germany) stages a rich array of events at venues in Germany and around the globe. With 2017 revenue of 356 million euros, Deutsche Messe ranks among Germany's top five tradeshow producers. The company's portfolio features such world-class events as CeMAT (intralogistics and supply chain management), didacta (education), DOMOTEX (carpets and other floor coverings), HANNOVER MESSE (industrial technology), INTERSCHUTZ (fire prevention, disaster relief and safety & security), LABVOLUTION (lab technology) and LIGNA (woodworking and wood processing tools, equipment and machinery).

Deutsche Messe also stages trade fairs at other German venues, for example parts2clean (industrial parts cleaning) and SurfaceTechnology (surface treatment). The company also regularly hosts a number of internationally renowned events by third parties, among which are AGRITECHNICA (agricultural machinery) and EuroTier (animal production), both of which are staged by the German Agricultural Society (DLG), EMO (machine tools; staged by the German Machine Tool Builders' Association, VDW), EuroBLECH (sheet metal working; staged by MackBrooks) and IAA Commercial Vehicles (transport, logistics and mobility; staged by the German Association of the Automotive Industry, VDA). Deutsche Messe's portfolio also includes trade fairs in Australia, Canada, China, Indonesia, Italy, Mexico, Russia, Singapore, Thailand, Turkey and the USA. Among the sectors addressed at these overseas events are automotive, ICT and digital business, manufacturing and processing industries, energy, logistics and metal processing.

With more than1,200 employees and a network of 58 sales partners, Deutsche Messe is present in more than 100 countries.

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Exciting new cleaning and lubrication products

EnviroTech Europe extends range of innovative vapour degreasing solvents and industrial cleaning products

EnviroTech Europe is continuously expanding and improving its range of products. It offers diverse cleaning, corrosion protection and lubrication solutions throughout industry and constantly evaluates new formulations and products to meet specific challenges.

Aquus water-based cleaners

Recognising the need for cleaners where solvents may not be acceptable due to incompatibility with metals or plastic substrates or where solvents have been rejected by the company's environmental policies, the Aquus range of water-based cleaners offers economical alternatives to deal with all types of oil, grease and soils.

These high-performance formulations can be applied by spray or immersion with agitation, immersed sprays, ultrasonics or by hand wipe cleaning. Working with equipment partner Enviro Tech, technical advisers can deliver complete processes to agreed customer requirements.

Aquus CL-One offers a selection of cleaning solutions based on a unique, proprietary formulation using very powerful detergents and surfactants that can be mixed with water in ratios ranging from one part of Aquus CL-One to 10 parts of fresh or salt water, 1:10, up to 1:50. The ratio of Aquus CL-One to water is dependent on the contamination or soil to be removed. Aquus CL-One is not only one of the most effective water-based cleaning solutions available but is also the most economical.

Mixed metal processing, where individual workpieces or assemblies contain different metals, can be processed with Aquus CL-One formulations, which operate at ambient or low temperatures and give excellent cleaning results. Advice on the selection of the most suitable process, dilution rates and the required equipment is given by a team of experienced technical support advisers who will arrange samples for evaluation.

EnSolv precision vapour degreasing solvent

EnSolv is approved and used throughout the world by industries where critical cleaning of manufactured items in metal and other substrates such as glass is vitally important. It is safe for operators and the environment with low operating costs and short process times. Parts emerge from the vapour degreasing or ultrasonic tank clean and dry for inspection, further processing or painting.

The EnSolv range of vapour degreasing solvents is being expanded by the addition of two further options that are both usable in conventional machines and offering lower solvent usage, complete stability and lower costs while being compliant with all current environmental and user safety protocols.

EnSolv CC-A is designed for use in vapour degreasing applications where a precision cleaner is needed to remove process cutting oils and fluids based on oil or water-based emulsions. This formulation utilises environmentally compliant solvents combined with sophisticated surfactants to gently remove inorganic solids and soils such as fingerprints, polishing compounds and grinding paste from finely finished and polished surfaces such as stainless steel and optics and will not stain yellow metals such as copper, brass and bronze due to the addition of a package of stabilisers with the surfactants.

EnSolv CC-B adds further flexibility to the range of vapour degreasing solvents with its increased solvency and ability to remove all types of oils and clean marking inks and other organic surface contaminants. EnSolv CC-B should be available for release in May.

ProSolv formulations for cleaning of mixed substrates

The cleaning of parts for electronics, mechanical and electrical assemblies, medical equipment and optical assemblies where combinations of metals and plastic with glass, adhesives etc need very special vapour degreasing solvents which are

compatible with these materials in all possible combinations.

The ProSolv range meets the needs of these industries. It is usable in conventional vapour degreasing or liquid cleaning tanks with ultrasonics, immersed sprays and or vertical agitation. ProSolv solvents are based on fluorocarbons with excellent environmental profiles with very low or no Global Warming Potential (GWP) or Ozone Depletion Potential (ODP) and very high levels of safety for operators. The new formulations will be available for release Q3 2019 and the technical team is ready to discuss details now.

Clarea cleaning solvents

Many cleaning jobs are too large for immersion or spray tanks or need to be cleaned in situ. These are generally cleaned by hand wipe, manual brushing or spray. The new range of Clarea cleaning solvents are based on very safe solvents for operators and the environment. Slow drying allows time to ensure proper cleaning and coverage of large areas with minimal solvent use. Clarea cleaning solvents are available from stock.

Clarea®

CORR-EX corrosion prevention

The CORR-EX division specialises in corrosion protection.

SuperCORR A is an innovative proprietary formulation that is a dry, ultra-thin film, water displacing coating with extraordinary properties, including a combined lubricant and corrosion protective compound that is supplied in aerosols. The SuperCORR A formulation has approvals from major OEMs, the military and utilities worldwide to prevent corrosion in avionics, electronics, electrical systems including connectors, switches, plugs as well as dissimilar metal corrosion.

More products are in preparation offering extended protection in the most difficult and extreme exposures. The website has details of all Enviro Tech products. Visit and record your interest in any product or advise of problems you have. You can also be added to the e-mail list to notify you when updates and new products become available.

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Assembling and packaging firm invests in medical grade cleaning facility

At a cost of more than £1 million, Assembly Techniques Ltd (ATL), based in Dukinfield, Greater Manchester, is opening a new, two-story facility featuring a Class ISO8 (US FED STD 209E 100,000) cleanroom for component washing and drying on the ground floor.

Adjacent to it is a Class IS07/10,000 area for processing critical clean sub-assemblies for future customers in the medical sector. On the upper level is a white room for assembling less critical kits that are currently supplied to manufacturers in the analytical, food, water and other industries.

At the heart of the new operation is a Pro 550 six-stage, ultrasonic, aqueous cleaning line from Turbex, which was installed in the Class ISO8 area in October 2018. It has taken over from an older aqueous washing system and will assist ATL in attaining ISO 13485 medical accreditation, which it expects to achieve by the end of October 2019, enabling ATL to supply components to the medical sector. By March 2020, companies will have to comply with the traceability, risk and other requirements of the upgraded ISO 13485 specification, which was defined in 2016.

When auditing is complete and accreditation has been granted, the company will be able to carry out subcontract cleaning of prostheses, surgical instruments and other medical items, which will be a new area of activity. It will also be able to use the system for processing components used within the food industry.

ATL director Nigel Downing comments: "All our metallic and high-end plastic components are supplied by external contract machinists and a large percentage of those will require degreasing and removal of cutting fluid residue before assembly.

A stainless-steel basket containing components has been picked up automatically from the input station by the transporter and is about to enter the first cleaning stage

"The Turbex line is so efficient that nearly all components including non-critical parts can be processed in the equipment using a range of semi-automatic washing cycles.

Works manager Steve Chadwick adds: "The line can handle multiple stainless steel baskets simultaneously, each containing components in batches ranging from one-off to several thousand. It presently takes 15 minutes on average for baskets to visit all six stages sequentially, without manual intervention, but various cleaning times can be programmed to suit customer requirements.

"Not only will the equipment with its ultra-fine cleaning capability allow us to start supplying customers in the medical industry, but it will also enable business expansion in existing sectors we operate in and allow us to grow the business further."

The choice of the Turbex line was down to it being a standard six-stage system, whereas others ATL considered would have had to be configured as special lines and were accordingly of higher price. Another point in its favour was adaptability. For example, further stages could easily be added to meet additional requirements, as could a conveyor belt coupled with full automation to replace manual handling of baskets at the start and end of the line.

After components have been steam pre-cleaned, a basket is taken to the input station from where, under program control, a transporter picks it up and moves it along the line, immersing it in each stainless-steel tank successively. A notable feature of the equipment is that every washing stage is equipped with a dual frequency ultrasonic generator, which results elevated levels of ultra-fine cleaning performance.

The washing process involves a pre-clean, plain water rinse, main wash, another plain water rinse and separate deionised water rinses at the last two stages. The basket is then automatically deposited by the transporter onto the output table. Excess water is blown off by hand using compressed nitrogen, after which the parts are taken to a drying cabinet and then transferred through an air lock into cleanroom standard bags, ready to be called up for assembly.

The Class ISO8 (100,000) clean room housing the Turbex aqueous, ultrasonic component washing line at Assembly Techniques, Dukinfield

The drying cabinet full of scrupulously clean metal and plastic components awaiting assembly

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Where does parts cleaning really start?

By Simon Graham, MD Kumi Solutions Ltd

Parts cleaning seems at first a simple process of immersing dirty products into a vat of cleaning fluid, rinsing in another and then drying the parts. However, as many readers will have experienced, the equipment, chemistry, economics and service support levels vary considerably.

So where do you start?

Subcontract companies receiving dirty products from multiple clients must consider the cleaning chemistry first, followed by the method of utilising it effectively. Choices are more limited because you never really know what contaminants are coming into your business. So, your chemical choice must cover a broad spectrum of salts, oils, greases and other soils. Geometry and quantities processed per load also play a significant part in your decisions.

Alternatively, many companies manufacture products and clean them in-house. In this scenario, cleaning starts with the correct cutting/forming fluids as well as slideway and hydraulic lubricants employed.

Why does this matter?

Well, most engineering fluids are not just mineral, semi-synthetic or fully synthetic oils, they are in fact complex chemistries, with anything up to 50 additives being applied to the base fluid to deliver the machining or forming properties demanded by customers today.

Once these engineering fluids enter a cleaning system, they can behave very differently compared to when they were being used for cutting metals. Some become more viscous, others float in aqueous cleaning systems, while sink making separation is also challenging. Under vacuum conditions found in solvent systems, some oils foam excessively. While others can decompose to form acids and alkaline fractions. In more extreme cases these oils can produce substantial coal like deposits in the vapour generator (aka still or boiler).

What is the solution?

To put it simply, just use oils and lubricants that offer stability once inside a cleaning plant. But how many oil suppliers have asked about your cleaning, offering oils compatible with your machining operation and cleaning chemistry? None I would imagine.

There's a new name being discussed in UK manufacturing; one that's is a highly successful, 350 million Euro business in mainland Europe, developing engineering fluids for more than 100 years. Georg Oest Minerlölwerk GmbH & Co. or known simply as Oest from Germany has been working with chemistry suppliers such as SAFECHEM for decades, developing a wide range of engineering fluids that come under their "Oest Solvent Care®" product range.

Engineering fluids from Oest are designed to offer all the optimal performance expected during the cutting or forming of metals. However, this is where their similarity ends with other oil producers. Oest Solvent Care fluids are highly compatible with cleaning systems such as Pero's R-Series solvent degreasers. When used correctly, they don't foam, suffer from thermal breakdown and they distil easily with no co-boiling fractions to contaminate your solvents. They are perfectly compatible with chlorinated solvents and modified alcohols.

Companies that change to Oest Solvent Care products that are machining or forming metal parts followed by a cleaning process see many positive benefits including: reduced cost for cleaning system maintenance; shorter and less frequent system down times; falling costs from improved compatibility with the solvent; zero foaming for consistency of clean parts.

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Kemet blog shows how to clean components

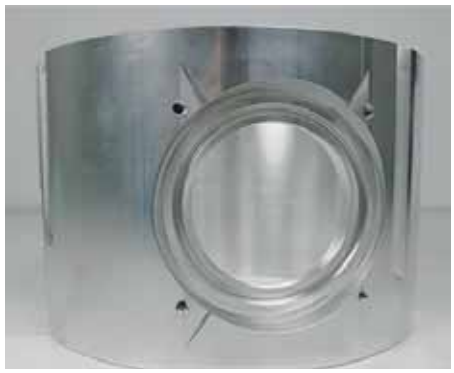
Surface finishing expert, Kemet International Ltd has published its numerous test cases for cleaning a variety of components of many different materials with a wide range of contamination challenges.

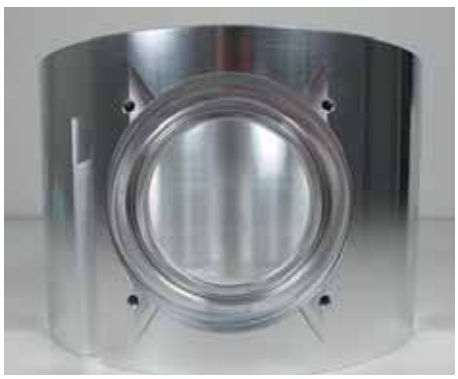
One example is a process for removing oil from an aluminium part. The part was cleaned using Kemet's MI range of ultrasonic cleaners. The first stage was the wash tank using cleaning agent 'Rodastel 30'. This is a low acidic cleaning agent and works very well with aluminium. The part had an initial cycle of 5 minutes and was then inspected for any cavitation erosion and damage. With no damage, the part had a second cycle of 10 minutes. After the cycle had completed, the part was transferred to the second stage rinse tank. Rinsing neutralises the part and is a very important stage. The part was then dried for a cycle of 10 minutes using Kemet's MI hot air dryer unit. The part had a further cycle of 25 minutes to test if cavitation erosion became apparent. After this cycle, there were clear signs of cavitation erosion. Using 'Rodastel 30', this part would only need 5 minutes in the ultrasonic wash tank. Signs of erosion only became apparent after 30 minutes.

Another great example is the cleaning of a plate heat exchanger. These are notoriously difficult to clean and are normally cleaned by jet washing or acid cleaning which are very labour intensive and time consuming.

The plate heat exchanger was cleaned in a small bench top unit (Kemet 12) placed standing up. The bath was filled with tap water then diluted with the cleaning fluid Solvit 3. The part was placed standing up and set for a cycle time of one hour, then rinsed and inspected. One side had fully cleaned up, with all the scale removed. The other side has changed colour slightly, but still heavily contaminated/stained. The part was then cleaned in 60-minute cycles until 100 percent clean. It took a total time of eight hours in the ultrasonic to fully clean both sides with no staining/scale remaining.

For more cleaning trial case studies, visit Kemet International's blog at **www.kemet.co.uk/blog/cleaning**





Kemet International Ltd Tel: 01622 755287
Email: sales@kemet.co.uk www.kemet.co.uk

Filtermist still sparkling at 50!

Established in 1969 and now part of the Absolent Group, Telford-based oil mist removal specialist Filtermist International is celebrating 50 years in business this year.

As well as being widely recognised for effectively removing oil and coolant mist from workshop air, Filtermist units are also used by many of the world's leading aqueous parts wash machine manufacturers to capture and contain potentially damaging steam generated in the wash process.

Parts washing applications require the highest standards of both cleanliness and dryness; even the slightest contamination can significantly impair component quality, which in turn can impact on the performance of the machinery which the component ends up in. It's also not just quality that can suffer. Machine operators may also be exposed to airborne contaminants contained within the steam if effective extraction is not used.

Filtermist's director of Group UK Sales, Ian Woodward comments: "Steam and mist produced as a direct result of heating water and detergent to very high temperatures can be contaminated with oil mist particles, swarf and detergent which can be damaging to health. Excessive moisture in the atmosphere can also harm equipment and electrical systems. While many aqueous parts washers offer excellent standards of component drying, the temperatures reached during the wash cycle can result in mist and steam which can lead to condensation and rust and become a health hazard if not properly addressed.

"As well as being used by a huge number of OEMs worldwide, our units can also be fitted retrospectively, making them ideal for installations where the application may have changed and for incidents where the need for an effective steam and mist extraction system has become apparent over time."

Filtermist has predominantly focused on working with machine tool manufacturers and operators over its 50-year history, but this year, for the first time ever, the company's German team will be taking part in the Parts2Clean show in Stuttgart to demonstrate Filtermist's potential in this application.

"Thanks to the fact that we use centrifugal technology, the potential of our products in this market is quite niche", continues Ian Woodward. "The high volume of engineering firms that use aqueous parts washers, rather than solvent based methods, offers an additional opportunity for Filtermist to make a difference to the working environments of a large number of people."

Filtermist has worked with market-leading component cleaning specialists MecWash for more than 15 years. MecWash's Managing Director John Pattison says: "Filtermist uses proven technology housed in robust casings that stand the test of time. Some of our customers operate three shifts, meaning production is continuous. All elements of our wash systems must be capable of handling 24/7 operation.

Where required, we include Filtermist as standard for all clients where a build-up of steam could be an issue. The units are compact, making fitting simple, plus their size, location and use of standard consumable parts means they are easy to maintain, making life easier for our clients and ensuring they're happy with every aspect of the MecWash cleaning system."

Filtermist units are located on the top of the wash machine, ensuring mist is collected at source before it has the opportunity to permeate throughout the factory. Spinning at a rate of 2,850 rpm at 50 Hz and 3,420 rpm at 60 Hz, the centrifugal drum collects tiny particles of water and forces them together to form larger droplets which are then collected and removed or returned to the wash machine, depending on the nature of the application. Particles of cleaning agents which could otherwise enter the air are also removed at source, ensuring workers are not exposed to any microscopic particles which could potentially be harmful to their health.

The material used to manufacture extraction units used in parts washing is vital. Mild steel Filtermist units can be used in applications where the fluid contains a rust inhibitor. For all other applications, or where legislation dictates the use of stainless steel, such as food production, Filtermist's entire range can be provided with stainless steel drums and outer casings.

To discuss how Filtermist units can effectively remove steam and mist from workplace air, contact:

Filtermist International Ltd
Tel: 01952 290500
Email: sales@filtermist.com
www.filtermist.com

Correct use of part-specific cleaning containers

Optimum results due to part specific workpiece holders

Parts cleaning applications that require part specific designed workpiece holders are steadily increasing for various reasons. For these uses, Metallform develops and manufactures technically and economically ideal solutions as standalone and insert workpiece holders.

Increasing requirements on the cleanliness of workpiece surfaces, a higher automation level in production, workpieces with critical to clean areas and increasingly complex part geometries are leading to growing demands in parts cleaning. Therefore, part specific designed workpiece holders are becoming more and more important. Due to their optimal design as standalone or insert workpiece holder they make an important contribution to fulfil cleaning requirements needs-based, efficiently and ergonomically.

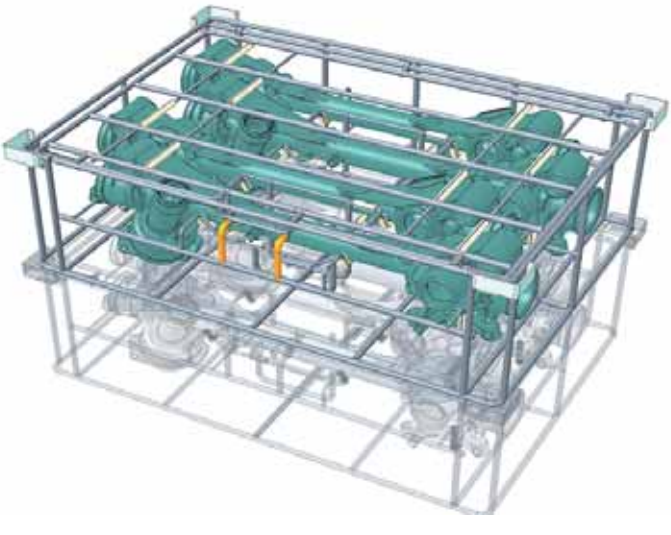
Standalone workpiece holders – ideal for massive and heavy parts

Standalone workpiece holders are used without an outer cleaning basket. The main application area is the cleaning of massive and heavy parts and components which are manufactured in high volume quantities. The weight of these batches is usually too high for manual handling. The loaded workpiece holder is therefore hoisted with a lifting device directly to the cleaning machine's loading device. As another advantage of this solution, the positioning of parts in the workpiece holder can be optimally adapted to the requirement of cleaning. This includes, on the one hand, the all-around accessibility for the cleaning medium and washing mechanics such as ultrasonics or spray jet.

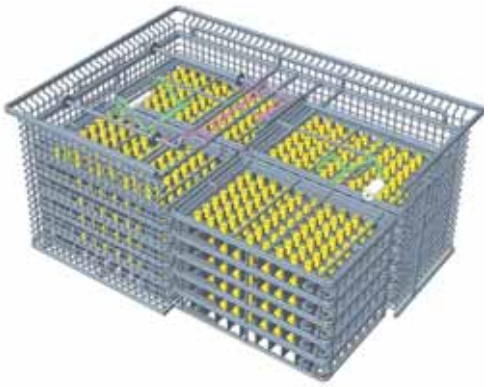
On the other hand, the workpiece can be placed in the holder in such a way that critical to clean areas can be specifically be treated. Additionally, a good automation of parts handling with robots and thus the integration into a networked production environment speak for this solution. The measures of standalone workpiece holders are typically adapted to the batch size of the cleaning machine, which ideally corresponds to the dimensions of a standard cleaning basket. This allows for using the cleaning machine with standalone workpiece holders as well as with cleaning baskets.

Insert workpiece holders – the more flexible alternative

Characteristic for this solution is that the loaded workpiece holder can be handled manually. For using the full capacity of the cleaning machine, several workpiece holders are combined to one batch and placed into an outer basket. In addition, for gentle parts cleaning the basked allows for building different compartments by using compartment rods. The basket, therefore, can be used for different part specific workpiece holders and compartments as well as for cleaning bulk parts. The higher flexibility is a major advantage of this solution.



Standalone workpiece holders are an ideal solution for massive and heavy parts



For insert workpiece holders, several smaller units are manually placed into an outer basket

Stainless steel in careful workmanship

Metallform manufactures both, workpiece holders and cleaning baskets from stainless steel rounds with electrolytic-polished surfaces. Therefore, the products can be used with all cleaning media, and offer an all-around accessibility due to their open design. Additionally, the high-quality material enables a long service life. The rods of the workpiece holders, as well as the outer structure of cleaning baskets, are butt welded which prevents injury hazardous edges.

Metallform Wächter GmbH is an owner-run company active in the fields of wire and sheet metal forming. Its core skills in the wire production department lie in developing and manufacturing stainless steel cleaning baskets for industrial parts cleaning applications. The company constantly sets new market benchmarks with not only its extensive range of standard products which are available ex stock in all well-established sizes, but also comprehensive expert advice and custom-made cleaning basket and workpiece holders. Metallform's cleaning baskets are used in the automotive industry, mechanical engineering, aerospace industry, precision and optical engineering, electronics and electrical engineering, medical and laboratory technology and many other sectors.

Metallform Wächter GmbH
Tel: 0049 7252 942636
Email: joerg.schleeh@metallform.de
www.metallform.de

A 'wheelie' great result

Total process and effluent treatment solution

Following the design of the Brompton Folding Bicycle by Andrew Richie MBE in 1975, initial low volume ad hoc production commenced in London, with the product subsequently then achieving recognition by way of the Best Product Award at the Cyclex event at Olympia in 1987. Full time production followed from the first railway arch facilities in Acton to a factory in Brentford in 1988 with the company then achieving Royal recognition with the Queens Award for Export Achievement in 1995.

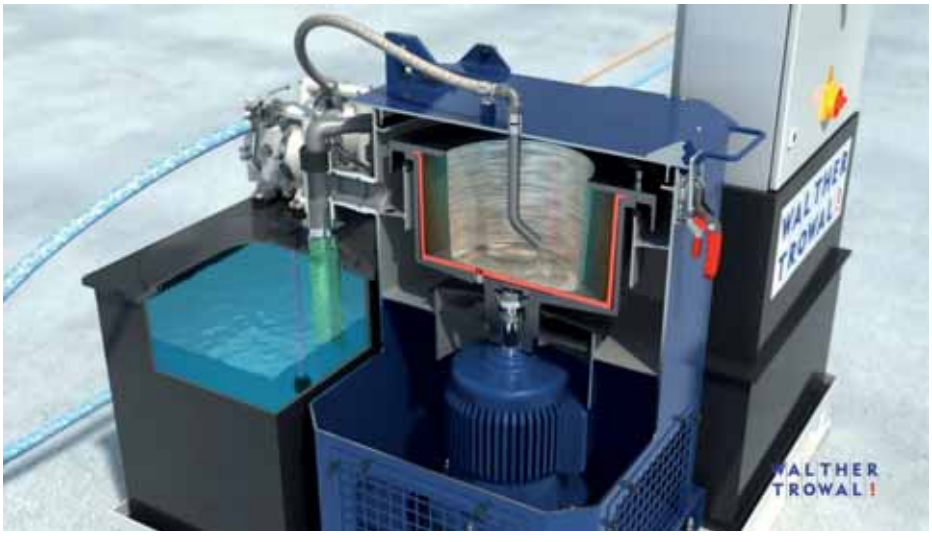
Today, the company employs over 230 staff, currently producing over 45,000 bicycles per year, exporting to 45 countries and maintaining a commitment to quality and excellence. Managing director, Will Butler Adams was awarded an OBE in the 2015 New Year's Honours List.

The company uses the latest leading technologies from rapid 3D prototyping through precision machining, skilled brazing, co-ordinate measurement and electrostatic powder coating. However, until recently, despite applying production disciplines, the company was conducting somewhat inconsistent and uncontrolled vibratory finishing processes to clean, descale and remove unwanted deposits from brazed sub-assembly components prior to powder coating. The processes used conventional ceramic processing media in conjunction with a citric acid pickling agent which was producing inconsistent results with large irregular amounts of chemical being required.

The subsequent inhibition stage of the processes also required uncontrolled amounts of compound to be used and in conclusion far too many variables were being employed in a non-uniform manner. Moreover, the processes were producing an unacceptable toxic effluent and consent limits set by the local water authority were unable to be met. Post process effluent was therefore being collected in IBC containers and being removed from site by a specialist hazardous waste company for treatment at very high cost of £1,800 per week.

Two existing suppliers were unable to offer better methods or provide operational and technical support. Therefore, taking full responsibility and observing a duty of care, factory manager Tony Hobbs contacted Walther Trowal for advice and recommendations.

A full site evaluation of the processes being used was undertaken to include collection of sample components for alternative process trials and effluent for chemical analysis. The process trials by Walther Trowal were carried out free of charge and established that an improved method could be adopted using a fraction of the citric acid and that an improved surface finish and appearance could be produced consistently. With the uniform use of materials, it also reduced the cycle time from one hour to 30 minutes. Furthermore, by the introduction of a centrifugal effluent treatment system, the process liquid could be recycled, within a so-called closed loop system, based around a ZM 03–FL model machine, whereby its small footprint permitted the machine to be fitted into the current layout with no major alteration being required.



The unit serves eight vibratory finishing machines and the recycling system allows Brompton to save up to 90 percent of the water and compound consumption compared to the previous processing method, reducing waste effluent removal to one IBC every three months.

Following installation, the system has operated efficiently in full production resulting in multiple savings and providing a quick return on investment and much improved working environment.

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New Guyson 'Standard Blast Products' brochure

To kick off the New Year, Guyson International, the UK's leading industrial finishing equipment manufacturer, has issued a new 'Standard Blast Products' brochure that, all in one place, showcases its comprehensive range of 'standard' blast cabinets. This glossy 12-page brochure features the company's premium ATEX rated blast cabinets, its professional Euroblast® range, light industrial Formula cabinets and specialist alloy wheel refurbishment cabinets.

Potential customers are invited to use the brochure, in conjunction with a Guyson sales engineer, to guide them in selecting the most appropriate machine for their specific application. This consultation will be assisted by free sample evaluation, undertaken in Guyson's 'Component Finishing Centre' which will validate the optimum blast media, pressure settings and machine type to fulfil the customer's process requirements.

The introduction explains the company's long 80-year pedigree in manufacturing in the UK as well as its worldwide facilities to support customers regionally in surface finishing technologies. A good overview is included of Guyson's other product ranges that comprise: robotically controlled automated blast and peening systems; ultrasonic cleaning equipment, from benchtop baths to large multi-stage automated systems that use either solvent or aqueous cleaning solutions; rotary basket aqueous spray washers - all for precision cleaning processes.

Featured products include the Euroblast range of suction and pressure feed blast cabinets, chosen for rugged industrial surface finishing applications like grit, bead and shot blasting. A newly launched equipment range is the Euroblast Ex range of fully ATEX certified blast systems, which incorporates a manual blast cabinet, cyclone separator, dust collector and tumble basket option. These Ex units have been designed especially for use in potentially explosive atmospheres often found in Additive Manufacturing (AM) applications where the use of fine powders of materials such as polyamide polymer, aluminium, titanium and other reactive metals, can create potentially explosive atmospheres.

Guyson's new 'Standard Blast Products' brochure

The newly uprated Guyson Formula entry level blast product, offering a simple yet effective solution for light to medium blast applications, is introduced with new safety door, LED lighting with switch and convenient UK and European single-phase plug design. Guided by the Guyson sales engineer, the choice from the comprehensive range of process control cyclone separators and dust collectors presented in the brochure assures optimum selection. Also featured are the garage equipment Wheelmaster and industrial small component Tumbleblast equipment.

The last two pages highlight the 'full service' nature of Guyson's business covering the company's customer service, extensive spares and blast media provision and highly trained specialist field service team that installs, commissions and services the equipment all over the world. Worldwide contact details for each of the company's five sites are available on the back page.

Guyson International Ltd is a privately-owned family company with a worldwide reputation for excellence in the design and manufacture of blast finishing, spray wash and ultrasonic cleaning equipment, as well as being the UK supplier for all your hose and coupling requirements.

Guyson was formed more than 75 years ago and is registered to BS EN ISO 9001: 2008. The Skipton-based finishing equipment division has also recently been awarded BS OHSAS 18001:2007. The head office is located at Skipton, North Yorkshire.

On this impressive 10,000 square metre site, the company designs and manufactures all its bead blast, spray wash and Kerry ultrasonic cleaning equipment. Also under the same roof are Guyson's well-equipped sales, testing and demonstration facilities, as well as central warehousing and distribution for all spare parts and blast media.

The glossy printed brochure is available now, free to all existing and prospective customers, from the Guyson Customer Service Department:

Guyson International
Tel: 01756 799911
Email: info@guyson.co.uk
www.guyson.co.uk

Blasting of aluminium – business as usual

Aluminium as a material, in particular die-cast aluminium, is becoming more and more frequent for workpieces which need to be processed. Aluminium is also interesting as an abrasive media. One reason for aluminium abrasive is the further processing of the workpieces. If a hard kind of abrasive such as stainless-steel abrasive remains at areas of the workpieces which are difficult to access, this might cause damage to tools during the subsequent processing. This is one of the reasons why aluminium abrasive is chosen. In addition, surfaces treated with aluminium abrasive become more visually appealing too.

For this reason, the engineers and technicians at AGTOS take the topic of aluminium seriously and have conducted numerous tests in cooperation with customers. They have even developed machines which have been constructed especially for this kind of material. By this means, a huge amount of experience has been gained in the AGTOS test centre as well as in practice.

New AGTOS website

The newly created website with responsive design is just as multifaceted as the turbine-wheel blasting equipment manufactured by AGTOS at its factories in Emsdetten, Germany and Konin, Poland. The company attaches great importance to being able to provide solutions to those users who ask advice on how their surfaces can be blasted best. The user has two possibilities to find the most suitable solution.

In the section "Branch-related solutions", the selection menus make it possible to find solutions which have been implemented in certain industrial sectors. You can also search for workpieces to display processing solutions. Another approach is offered to those who already know exactly what type of blast machine they need. The "Shot blast machines" section shows and describes all types.

If you wish to make contact, you can complete a special form or write an email to the manufacturer or to the nearest sales location. The addresses of the sales partners can easily be found in a map. The "Company" menu item describes all you need to know about AGTOS, including career opportunities within the company. You can also find a lot of information from the press or other media in "Newsroom". Here you can also find brochure downloads and links to videos. You can also find current information on upcoming exhibitions and news from the company.

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Email: info@agtos.de
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RS Components introduces next generation of 3M respirator masks

Providing improved comfort, the third generation of AuraTM respirator meets the needs of a range of industries.

RS Components (RS), the trading brand of Electrocomponents plc, a global multi-channel provider of industrial and electronic products and solutions, has introduced the latest generation of respirator masks from 3M, a leader in safety and personal protection equipment. Suitable for use across a wide range of application environments, including metalworking, carpentry, construction, pharmaceutical and automotive industries, the third generation of the 3M AuraTM respirator brings a number of improvements, combining new technologies with the latest in ergonomic design.

The 3M Aura Particulate Respirator 9300+Gen3 series retains all the features of its predecessor series, as well as enhancing it with the use of the vendor's new Cool Flow™ Comfort Valve. This is an improved valve that offers easier opening and allows more exhaled breath to escape from the mask, thereby reducing heat and creating more comfort and breathability for the user. In fact, the new valve allows 36 percent more air, together with its natural heat, to be expelled more rapidly than the original 3M Cool Flow valve.

The design of the 9300+Gen3 also makes the mask easier to put on, re-position and take off. This is achieved with the addition of

new tabs on the upper and lower panels of the respirator, in combination with the grip feature on the valve. The products are also supplied with a thicker cover web and nose clip. This helps to provide a good seal, as disposable respirators are only effective when there is a good seal between the user's face and the edges of the respirator, otherwise contaminated air can leak in.

In addition, the series adds more durable braided headbands for increased user comfort. These are colour coded for easy identification: yellow for FFP1, blue for FFP2 and red for FFP3, enabling users to choose the appropriate mask to meet the required Assigned Protection Factor for the application.

The third-generation mask retains 3M's Advanced Electret Media (AEM) technology, which filters air with the help of electrostatic charges. Each fibre in the structure comes with a very high electrostatic charge, which efficiently draws particles from a wider capture area and secures them. This means fewer fibres are required to capture particles, enabling the construction of an effective filter with a significantly more open structure than conventional electret filters, thereby freeing up the passage of air.

The mask also comes with the new 3M Safe GuardTM product authentication process, which enables users to perform an online confirmation that the mask is a

genuine 3M manufactured product. The series is available in a range of variant types, with or without valves, for example.

The 3M Aura Particulate Respirator 9300+Gen3 series is now shipping from RS in the EMEA and Asia Pacific regions.

RS Components, Allied Electronics & Automation and IESA are the trading brands of Electrocomponents plc, a global multi-channel provider of industrial and electronic products and solutions. Together, they offer more than 500,000 industrial and electronics products, sourced from over 2,500 leading suppliers, and provide a wide range of value-added services to over one million customers. With operations in 32 countries, they ship more than 50,000 parcels a day.

RS Components
www.rs-online.com/web
www.electrocomponents.com

On-demand aluminium parts get tough with new anodising service

Protolabs, the world's fastest digital manufacturer has launched a new service in response to growing demand from customers looking for a single-source solution.

The company, which employs over 430 people at its state-of-the-art facility in the West Midlands, is now offering aluminium anodising as part of its on-demand production service that starts with initial part design and moves through to a finished protected or decorative part - all from just one supplier.

Industry's need for speed has reaped dividends for the high-tech Shropshire manufacturer, with sales rising to £60 m across its European operations.

"We have grown rapidly as customers recognise the advantages of using our digital manufacturing capabilities for rapid protypes and on-demand production parts," explains Stephen Dyson, special operations manager at Protolabs.

"Talking to our clients, we realised that if they needed to anodise an aluminium part it was often difficult for them to source and then manage a supplier. They not only have to do all the research and then raise a separate purchase order but often find that the supplier only accepts large quantities of parts in an order, which isn't great for low volume runs.

"Keeping the entire production process with a single supplier makes perfect sense for manufacturers. It means they can get their finished parts shipped in a matter of days and our technical team can advise them through the entire process, right from the initial design of the part to the best approach for the final anodising finish."

Anodising applies a thin, protective coat to the part forming a protective oxide layer. It is used to create a barrier against corrosion, to increase abrasion resistance and to produce decorative effects through enhanced surface finish. It can then be died if requested.

Protolabs currently offers two levels of anodising. For parts needing protection against a harsh environment it provides hard anodising to ISI 10074, whereas if an aesthetic finish is required, then decorative anodising to ISO 7599 is also available.

The service is suitable for parts manufactured from aluminium 6082 and 7075. All the parts are sealed as part of the standard process, unless they are due to be painted after anodising, in which case the company's technical team will advise the customer.

Protolabs saw significant growth across its UK and overseas business in 2018, tapping into global trends around customisation and shorter product life cycles.

Thanks to a combination of design, analysis, bespoke production software and in excess of 100 CNC milling, CNC turning and plastic injection moulding machines, not to mention a state-of-the-art 3D printing facility in Germany, the company typically turns jobs around in between three to 15 days.

For further information about the anodising service, or to speak to a Protolabs technical engineer, contact:

Protolabs Tel: 01952 683047
Email: stephen.dyson@protolabs.co.uk www.protolabs.co.uk

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