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NEXT ISSUE - FEBRUARY 2021

- Aerospace Report
- Deburring
- Dust & Fume Extraction
- Honing & Bore Finishing
- Surface Measurement

In-house drill sharpening

One way for a manufacturer to reduce tooling costs is to resharpen worn twist drills in-house using a Darex XT-3000 from 1st Machine Tool Accessories (1st MTA). The electrically-powered, bench-top machine from the USA, available in manual and semi-automatic versions, can easily pay for itself in a few months through fewer discarded drills and by eliminating subcontract sharpening costs.

The XT3000 is able to restore the split point cutting edges on a step drill at any angle from 118 to 150 degrees and is equally capable of regrinding the chisel point on a jobber drill. However, the versatility of Darex equipment is such that a split point can also be ground onto jobber drills. This improves entry on manual machines and prevents wandering and oversize holes on CNC

machines, despite the absence of pilot holes. Even drills being used to machine tough nickel alloys and stainless steels may be given a new lease of life.

The most recently introduced Darex model, XT-3000 Auto, bridges the gap between a manually operated machine and a fully automated CNC sharpening system. It allows a user simply to align a standard high-speed steel or solid carbide drill, push the start button and step away. A high level of repeatability is achieved, whatever the skill level of the operator.

The auto sharpening system regrinds bits in a three-step process, displaying relevant information on an LCD screen. Many types of right- and left-hand twist drills can be sharpened for machining metals and non-metallic materials. Adapters are available for step drills, countersinks, brad points and 90-degree points. Drills in the diameter range 3 to 21 mm can be processed, although bits up to 30 mm can be sharpened if an adapter is used.

Call free on 0800 7830510 for more information or contact:

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MACH 2021 falls victim to COVID-19

Despite the sterling efforts of organiser the Manufacturing Technologies Association (MTA) for the MACH 2021 exhibition to go ahead in January as planned, the UK's largest manufacturing trade event has had to be rescheduled to April 2022.

With the continued uncertainty around the COVID-19 pandemic and local lockdowns, the MTA decided to consult with its members and exhibitors who had booked a stand at MACH 2021 and gauge their opinion on whether to continue with MACH 2021 in January or carry forward to MACH 2022.

The overwhelming sentiment was that, in order to minimise the risks to visitors and exhibitors and to provide the best possible platform for both, the event should be moved to April 2022. The event will be held in the same Halls at the NEC from 4th to 8th April 2022.

Roger Barber Publishing fully supports this move and will work hard to keep our readers fully informed about the advantages of the 2022 show.

MTA CEO James Selka says: "We believe that this decision, which has not been taken lightly, is in the best interests of the industry and those who work in it. Our first priority is, of course, the health and safety of the 30,000+ people who will visit and work at MACH.

"In addition, we believe that by moving MACH to April 2022, we will be able to offer a better experience for our visitors, and better value for our exhibitors, rather than holding it in January 2021 with the uncertainty that could still be with us. Add to this the Government's recent announcement of a pause to the restart of live events and it was felt that a dateline in April 2022 was a much better option.

"In the meantime, visitors who planned to attend MACH 2021 to find out about new technology, look for new suppliers and research new trends will be able to utilise the existing MTA digital platforms. In addition, later this year, we will launch a new, virtual platform which we believe will perfectly complement the live show in 2022.

"We're grateful to the NEC for working with us to facilitate this move and we look forward to welcoming visitors to MACH 2022 where they will be able to experience the best of modern manufacturing technology under one roof."

All exhibitors booked for MACH in January 2021 have been offered the same space at the event being held on the new dates and the MTA is already in contact with exhibitors to discuss their participation. However, should you have any questions please do not hesitate to contact the organisers:

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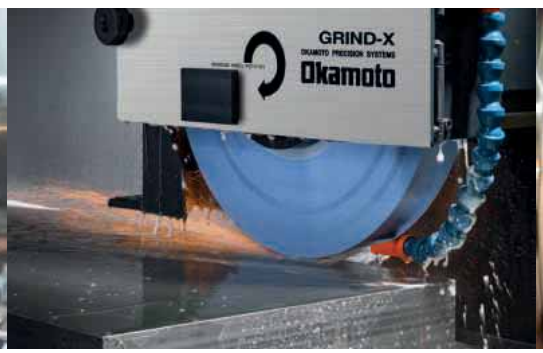

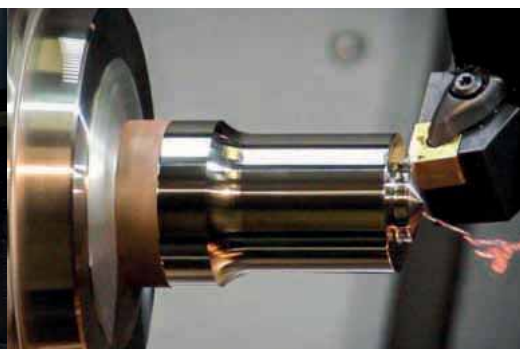

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Cutting tool manufacturer "gets into Shape"

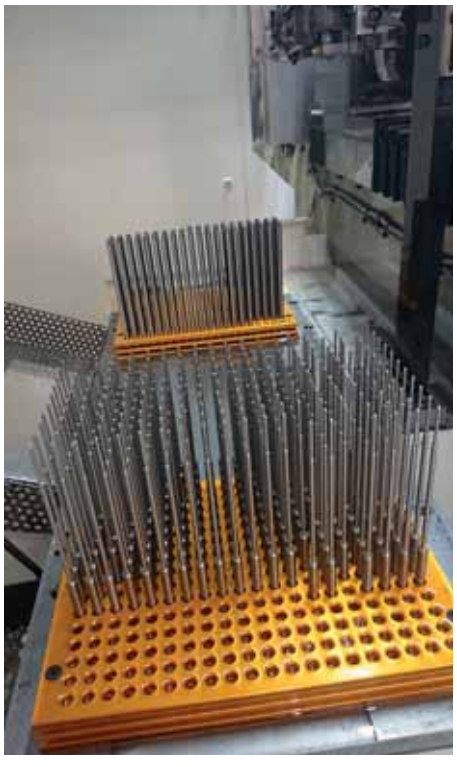
Marlor enters into the medical tools market for the first time with Rollomatic

Marlor Tooling of Peterborough, one of the UK's leading cutting tool manufacturers, continues to benefit from purchasing a Rollomatic Shapesmart® CNC tool grinding machine as it expands its sales into the medical tool and instrument markets.

Still a privately-owned second-generation family business, Marlor is now located in a state-of- the-art new production facility and boasts 12 CNC tool and cutter grinding machines plus various other CNC machines including EDM, drilling and inspection machines. Marlor is perhaps unique amongst UK tool manufacturers in that nearly all of its sales are to other tool manufacturers and sells directly to very few end users of tools.

Martyn Cross, works director at Marlor, explains that, after identifying a production bottleneck, the company had looked at many CNC cylindrical grinding machines on numerous occasions over the last three or four years, with the need for fast setup times and flexibility to make high precision tools, before opting to purchase their Rollomatic MP3+ machine. He states that the Rollomatic NP3+ is possibly the most transformative machine purchase that Marlor has ever made. Small or large batches of tools are now all done in-house with an incredible surface finish and holding the tightest of tolerances.

The Rollomatic machine has now enabled Marlor to enter the market for medical tool blanks for the first time, with Marlor securing several high value orders, including the one shown with the first batch of tools of 300 off produced automatically using the Rollomatic's fully integrated robot loader for lights out running overnight. Martyn Cross was delighted with the quality achieved that was well within the desired tolerances across the entire batch of medical parts with cycle times from the solid bar being under eight minutes.



Marlor fully utilises the easy-to-set auto loader during the evenings and nights while manufacturing lower quantity special tools during the day. Martyn Cross states that the quality, surface finish and repeatability from the machine is stunning, while the extended wheel life and dressing frequencies have been a revelation. Cycle times have been dramatically reduced with Marlor siting another example of a long length through-coolant drill for an aerospace application that used to take them seven minutes to manufacture compared with a new time of just two minutes on the Rollomatic machine. In quantifying improvements in quality, Marlor has found that the Rollomatic machine easily holds

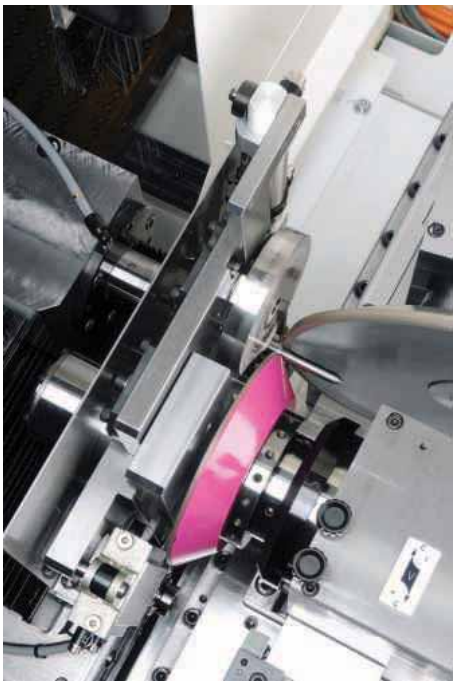
tolerances of under 3 µm on tool diameters over larger batches of tools, something that they simply couldn't previously achieve.

Rollomatic's ShapeSmart machines are designed for grinding tool blanks and similar stepped cylindrical components and are based on the method of peel grinding, a technology invented by Rollomatic. This new generation of cylindrical grinding machine has been improved to offer even more advantages for fast setups and superior grinding quality, including both rough and finish grinding in a single automatic operation for diameters up to 25 mm with a Renishaw probe handling length positioning.

Martyn Cross states that, in the months since its installation, Marlor has come to rely on the Rollomatic machine and that he cannot believe how they have managed without one for so long, adding: "The three-year parts and labour guarantee and the excellent technical and service support has given us complete confidence that we have purchased the very best grinding machine for our requirements."

The NP3+ has contributed to a significant saving on production lead times, allowed rapid response for urgent jobs needing CNC cylindrical grinding, and let us take back full control by bringing in all manufacture of tool blank grinding in-house.

Martyn Cross's ethos, followed by the team of engineers at Marlor, is based upon a fixation on shop-floor cleanliness, rigid process and quality controls, and complete traceability and quality assurances for his customers and in recent times he has overseen heavy investment in quality checking and tool measurement machines as well as in leading production equipment such as the Rollomatic tool grinding machine with Marlor looking to further invest in its tool manufacturing operation.



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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Email: sales@advancedgridingsolutions.co.uk
www.advancedgrindingsolutions.co.uk

Fintek surface finishing expertise helps medical device manufacturer

A trip to the dentist, doctors or at worst, hospital is not top of most people's wish list. However, once there, you do hope that the plethora of metal based medical devices in use have been made to the best possible standards. The quality of surface finish of medical instruments, prosthesis, implants, bone screws and more is often critical to patient outcomes. There can be no compromise.

For manufacturers of medical devices this demands similar high, and possibly even more challenging, standards than those of the aerospace industry. Hand finishing alone, besides being labour intensive and therefore costly, suffers from inconsistency. Complexity, size and fragility of medical parts often renders manual finishing mostly impossible. Especially for prosthesis, achieving surfaces with the lowest possible friction is beneficial. In addition, medical devices need to be hygienic to ensure patient safety and surface finish contributes to this goal.

A manufacturer of femoral shafts (hip stems) came to Fintek needing to improve surface finish and reduce costs. Unsure of the best finishing machine for the job, the manufacturer sent product samples and specification requirement to Fintek. We then set about processing the samples to find the best combination of machine, media and process times to produce the desired finish. This is a free service to prove results achievable.

Using a drag finishing machine, where the femoral shafts are held in special holders to ensure that they don't contact and sustain any damage during processing, it was found that surface smoothness values of up to 0.01 Ra were achievable. This produced a surface finish that under visual inspection alone was superior to what the manufacturer had been achieving by conventional methods.

With the new machines and process, the manufacturer can significantly reduce hand finishing bottlenecks and increase output, while still ensuring a higher quality surface finish that is repeatable and at a lower cost.

As well as for femoral shafts, drag finishing is ideal for tibia trays, prosthetic sockets, endoscopes and more. For smaller parts such as surgical fasteners, bone plates and screws, implants, acrylic teeth and instrument parts, disc finishing machines are cost effective. Systems are also available for surface finishing tableting tools in pharmaceutical manufacturing. Whether made from stainless steel, titanium or ceramics, high-precision finishing of all materials is possible.

Highlights include: better surface smoothness (0.01Ra achievable); time and cost saving over hand finishing; increase in output without sacrificing quality; repeatable process ensures consistency; part looks visually superior to conventional method.

Fintek, formerly Finishing Techniques, has brought together workpiece superfinishing methods into a one-stop shop for precision engineers. The company uses world leading German made OTEC mass finishing and super finishing equipment and, as its official UK agent, is able to draw on the company's in-depth knowledge gained from providing metal parts finishing systems to global companies.

Fintek can sell the metal surface finishing process, including machine, or run your parts as a subcontract service, saving you the capital outlay. It is certified to ISO9001 and AS9100.

For more than 30 years' Fintek has helped customers in aerospace, motorsport, medical device and other precision industries to improve quality, repeatability and finishing productivity. An inspection and quality control lab ensures that all micro finished and polished components meet the exacting standards customers require.

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State-of-the-art laser process measuring technology for precision machining

Increased demand for integrated production measuring technology

Finishing processes on grinding machines often demand exacting tolerances in relation to dimension, form and position accuracies, as well as highly accurate surface qualities. Often companies have empirical values available to fulfil these requirements. However, with small lot sizes in particular process evaluation on the machine is desirable, as intermediate measurement on external measuring machines and the resulting corrections prolong the processing time for part machining. These control measures would significantly increase process reliability and productivity. Solutions that can be flexibly used for a wide variety of workpieces are ideal and preferable.

Possibilities of process measuring technology in grinding processes

Production engineers have diverse measuring functions available for process evaluation, which are based on different principles of production measuring technology. The measurement of process forces such as grinding forces (Ft, Fn) or comparative grinding spindle currents, for example, provide an index for achieving the service life of tools or, equally important, enable the determination of fluctuating allowances, which can influence process stability and compliance with required tolerances. In addition, tool costs can be reduced, as excessive dressing is prevented. Familiar acoustic touch sensors assist so-called contact detection in the grinding process to reduce grinding time, or monitor the true-to-profile dressing process with its envelope curve functions. Tactile measuring systems such as measurement and control systems for diameters or workpiece lengths, pneumatic systems or microsensors for longitudinal expansions of spindle systems also support increased process reliability. Other measuring functions can also be described here, such as the use of camera or laser systems for process monitoring. Laser measuring technology, in particular, opens up interesting fields of application.

Integration of laser measuring technology into STUDER universal cylindrical grinding machines

STUDER can draw on more than 10 years of experience in the use of machine-integrated laser measuring technology, which have been evaluated for trials in the measurement of grinding wheels or workpieces. Such fundamental studies have a tradition at STUDER, to ensure the company is prepared for future trends in production technology. This knowledge and experience has been used to respond to the current requirements. The systems used in other industries for tool monitoring have been further developed STUDER, specifically on the basis of the latest laser measuring technology, only recently available, for measuring workpieces on grinding machines.

The necessary measuring device (see U-profile in figure 4) is mounted mechanically, similarly to the measuring probes on our B-axes, which carry the relevant grinding spindle. In fact, this situation is not an unfamiliar one for the operators.

The size of this measuring device can be adapted to the workpiece diameter. The existing air nozzles for blowing off the workpiece during measurement and the newly developed dirt screens efficiently protect the laser optics from the cooling lubricant in the machine. Compared to previous models, the laser unit manufacturer also uses an enhanced, more accurate laser optics. However, the most striking element from our point of view is the possibility of generating many thousands of measuring points for evaluation with the workpiece rotating. This significantly reduces measuring time. These features have been integrated into the STUDER-specific measuring cycles. The user is thus provided with a suitable method for non-contact

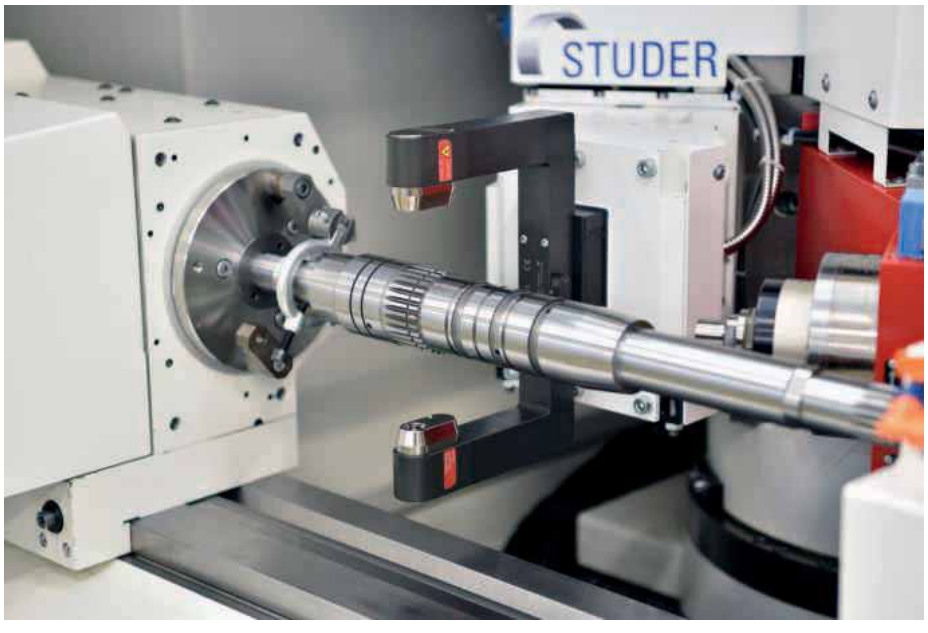

Figure 1: Example of universal use

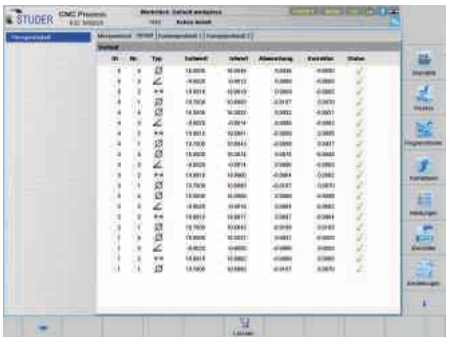

Figure 2: Measuring record for a workpiece

measurement for the machining of precision workpieces.

It should also be mentioned that not only can different diameters be recorded with a laser measuring device, but precise control measurements can also be carried out on "interrupted" diameters, such as shafts with keyways or longitudinal grooves and toothed gears in the diameter range (see Figure 2). The setup and resetting of previously used tactile in-process gauging devices is omitted, and efficiency rises dramatic.

The measuring cycle can be selected as desired after each machining operation or at the end of the grinding process. The STUDER software logs (see Figure 3) the measured values per diameter after each measuring cycle. This process enables the operator to ascertain the quality of the ground component at a glance.

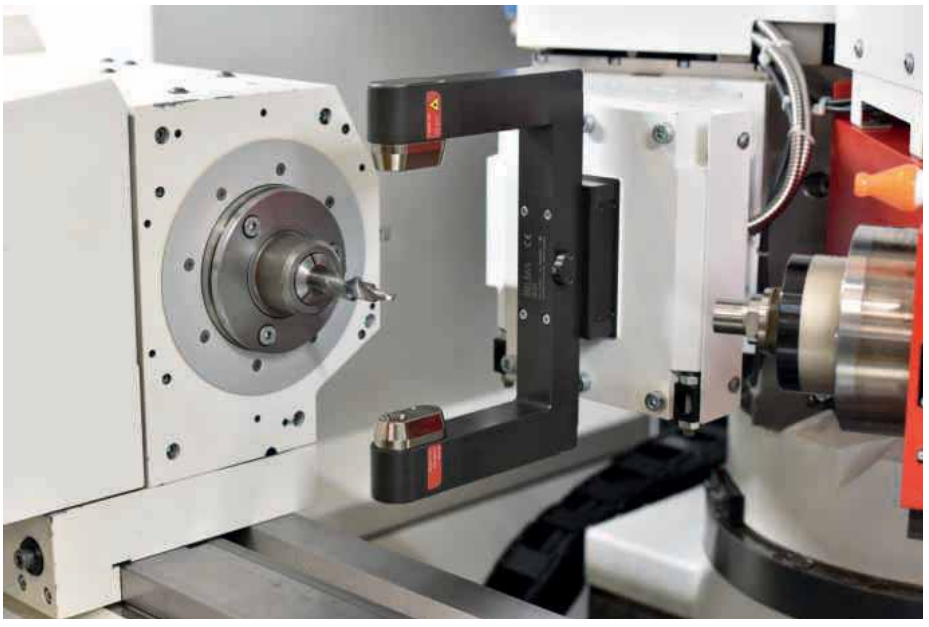

Figure 4: Non-contact measurement of precision tools with laser measuring technology

An example of application of laser measuring technology for cutting tools

A very efficient example of the use of an integrated measuring strategy is the complex machining of small batches of tools with PCD cutting edges. Often the question here is who is machining who, the diamond grinding wheel the tool, or vice-versa. The so-called "closed loop process" with tactile measuring devices is often used for this purpose (Figure 3). The cutting edges are measured, ground, measured, etc. in several iteration stages. Impressive diameter tolerances of +/- 1.5 micrometres are achieved with this measure. An increasing demand for non-contact measurement has developed for these applications, as the PCD cutting edges sometimes react sensitively to tactile measurement.

This demand for non-contact measurement of tools in this tolerance range, which have cutting edges or guide rails, can now be met with the integrated laser measuring technology described here (Figure 4). Typical measuring tasks required in this sector are, for example:

Measurement of a tool with cutting edges, where the smallest and largest cutting edge diameter are determined in a measuring plane.

Measurement in two different planes of the cutting tool, i.e. in different planes of the measuring cylinder generated by rotation, gives the dimension of the desired taper on cutting tools, which can now be output.

Depending on the measuring differences between the diameter of cutting edges and guide rails of a cutting tool in the same measuring plane, the laser optics can determine this diameter even with the workpiece rotating. This will be the case for most tools and will have a positive effect on measuring time reduction.

STUDER measuring cycles can help anyone who wants to know before machining and with the tool to be ground clamped, how large the runout is from the tool shaft to the cutting edge diameter at the end of the tool.

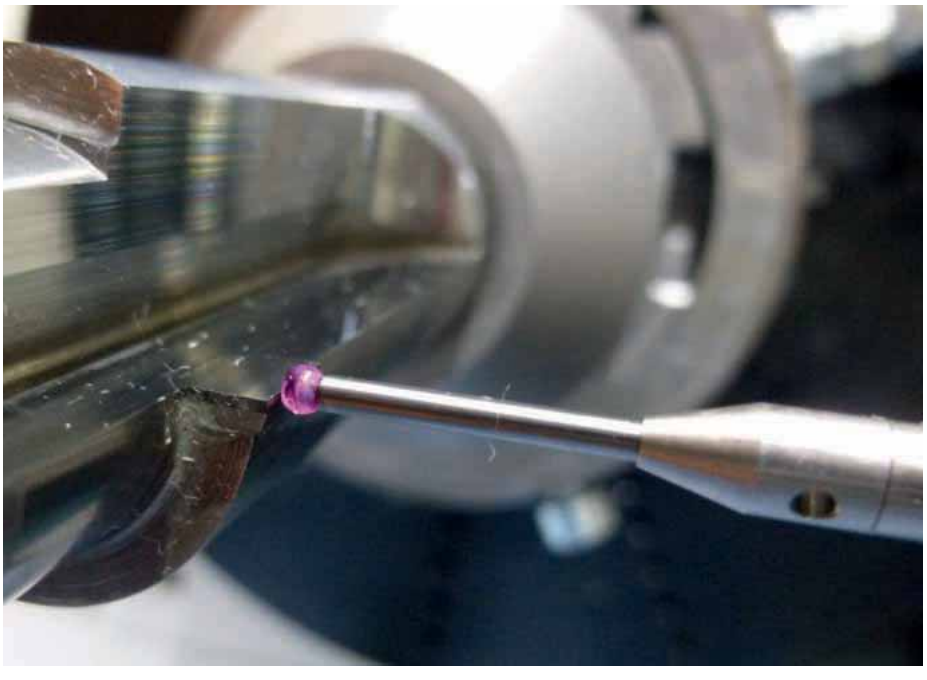

Figure 3: Tactile measurement of cutting tools

Conclusion

The presented strategy for machine-integrated laser measuring technology expands the possible applications of process measuring technology in grinding machines. A precise, universal, non-contact measuring process supports the user in his efforts to increase efficiency in precision machining.

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First of Holroyd's 'Smart Tech' rotor milling machines about to ship

Only a few months after announcing the introduction of a number of advanced 'smart technology' performance and connectivity options for its rotor milling and rotor grinding machines, UK-based Holroyd Precision is about to ship one of the first models to incorporate the new features.

Purchased by one of Japan's leading manufacturers of refrigeration compressors, the machine, a 3EX-R rotor milling machine, valued at £1.4 million, is currently undergoing pre-acceptance trials at Holroyd's UK-based machine technologies centre. It will then be shipped to Japan, ready for commissioning in late October 2020 and will be used to manufacture helical rotors of up to 350 mm (13") in diameter.

"Holroyd machines are renowned for their uncompromising levels of accuracy and build quality, as well as their ability to simplify even the most complex of manufacturing processes," comments regional sales director, Steven Benn. "Through features such as advanced RFID tagging and IO-Link communication technology, we are now also providing future-proofed manufacturing capability, regardless of an organisation's individual Industry 4.0 strategy. These are significant features that our Japanese customer was keen to take advantage of."

RFID tagging

As the new 3EX-R rotor milling machine for the Japanese refrigeration compressor specialist is destined for use in a fully automated production cell, Holroyd Precision believes its RFID tagging capabilities will prove invaluable. The system has been developed to offer a fool-proof solution to quality control by ensuring that manufacturing cannot commence unless the correct chuck, collet,

cutter and tailstock, in fact virtually any component or tooling item that needs to be switched between manufacturing cycles, is in place.

IO-Link communication technology

The machine is also the first from Holroyd Precision to incorporate single-cable IO-Link communication technology. "The opportunities that IO-Link connectivity provides for process data collection and analysis are immense," adds Steven Benn. "We selected IO-Link for its ability to handle vast amounts of data, its recognised capability in providing powerful opportunities for industrial automation and its capacity to communicate at every level, right down to the simplest automation.

"For this customer and hopefully many others going forward," he continues, "the real benefit will be the opportunity to learn from incredible levels of rich, real-time production and performance data, in order to make comparisons that can benefit efficiency, accuracy and quality, and determine trends. Similarly, from our perspective, gaining a much better understanding of how a particular machine performs in quite different manufacturing environments, will enable us to deliver even higher levels of support."

The Holroyd EX Series range begins with the 2EX, a machine capable of milling parts of up to 250 mm (9") in diameter. The largest capacity 'standard build' EX model is the 8EX which is able to cut rotor or worm helix profiles in blanks of up to 850 mm (33") in diameter. Where this diameter is too small, a custom-built 10EX model is also offered for milling blanks that are greater than 1,000 mm (39") in diameter.

Immensely flexible in their manufacturing capabilities, EX Series rotor milling machines are equally efficient at producing highly-complex components with helical screw profiles as they are when being used to mill gear parts such as worm shafts. Engineered for complete integration with automated parts handling systems, all EX Series machines deliver class-leading performance, reliability and repeatability, and benefit from advanced technologies such as on-machine probing and dry milling techniques for certain materials.

PTG. The first name in precision

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

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RK International Machine Tools Ltd

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High-performance JUCRANK non-cylindrical grinding machine impresses with high availability

Process-reliable, fully automated and dependable

In just a single clamping setup, the non-cylindrical grinding machine automatically grinds crankshafts for efficient motorbikes. With the JUCRANK from JUNKER, crankshafts can be machined around the clock in a dependable, process-reliable and high-precise way

BMW Motorrad uses the JUCRANK non-cylindrical grinding machine for different grinding operations on boxer crankshafts. These are assembled into the latest BMW two-cylinder boxer engines for efficient motorbikes. Impressed by the level of precision and extensive experience in developing CBN high-speed grinding machines, BMW Motorrad has been putting their trust in the JUNKER grinding experts for more than three decades, with 45 machines at five sites worldwide.

Process reliability and reduction of auxiliary process times
In-process measuring systems guarantee high process reliability and dimensional accuracy. The fully automated system measures the exact workpiece data and adjusts automatically during the grinding process if needed. This procedure reduces auxiliary process times and increases output.

Increasing efficiency with Preventive Maintenance Assistance
Preventive Maintenance Assistance is the software-assisted solution from JUNKER. The online help system notifies of an upcoming maintenance or repair operation on the machine.

The JUNKER machine notifies of upcoming repair operations and ensures reliable planning. Continuous monitoring of the results is possible with the new protocol manager. In addition, all data can be evaluated in freely selectable recording intervals.

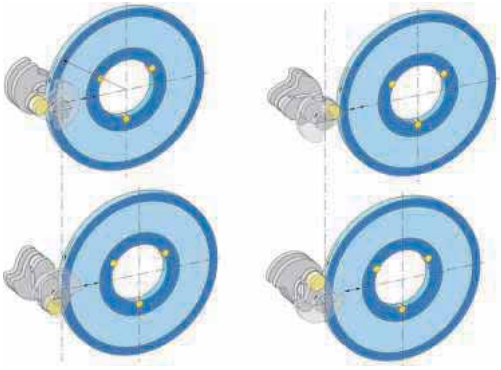
Thanks to digitalisation possibilities with partner 4JU, the industry pioneers can adapt the digitalisation of machines and systems precisely to the needs of BMW Motorrad.

Security of customer data
When service issues arise, the JUNKER can connect directly to the machine through a secure tunnel safely outside of the customer's network. The JUNKER experts quickly analyze the data and reliably take all necessary measures.

Transparency in production for customers
It is possible to collect operating data efficiently and in a user-friendly way, with status determination (such as, for example, job start/end, ongoing updates and output. The advantage is that the entire production process can be monitored at any time and from anywhere.

Precise in a single clamping setup
The JUCRANK non-cylindrical grinding machines perform all grinding tasks on crankshafts accurate and in a single clamping setup. (Source: JUNKER)

BMW Motorrad and the JUNKER Group have been enjoying a positive business relationship for more than 30 years. BMW successfully uses JUNKER OD non-cylindrical grinding machines for machining crankshafts at their production sites in Germany, Europe and Asia.



The grinding procedure
The crankshaft rotates around the central axis and the grinding wheel follows the circular motion of the pin bearing through interpolation of the workpiece spindle (C-axis) with the grinding spindle (X-axis). (Source: JUNKER)

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A new-found drive for adventure
At BMW Motorrad, performance meets impressive efficiency. The variable camshaft control ensures outstanding power development in the high and low speed ranges. (Source: BMW Group / © BMW AG)

Protect your grinding machines with Kraft & Bauer

Kraft & Bauer supplies major machine tool manufacturers and distributors with fire protection systems and also offers a full retrofit and service support facility for its UK and Irish customers from its base in Coventry, with the same day availability of all parts being guaranteed. It also offers a same day/next day swap system for discharged CO_2 and argon gas bottles.

Although most sales are made for fire protection systems being fitted to turning machines, the need to protect grinding machines remains the most important application due to the risk of a spark and it can only take a slight change in the direction or volume of coolant supply, or for a small programming error, for excess heat to be produced that can easily ignite the misty vapour that is ever present during the grinding process. Kraft & Bauer fire systems are fitted to all makes of grinding machines including Rollomatic, Walter, Volmer, Studer and many more.

Low viscosity neat oils rather than soluble ones are increasingly being used to achieve a more efficient and economic grinding process and this trend brings the topic of fire and explosion protection and prevention for machine tools to the fore. The reaction following an ignition of the oil/air mixture that can occur within the interior of the machine tool, which if violent and followed by a fire can be the cause of accidents with severe material and fire damage. Besides injuries to operators, the consequences to engineering companies

can be high due to losses because of production stoppages. Many engineering companies think that insurance is sufficient, but don't take into account that it may take many months before factories and machines may be replaced and their customers might not be prepared to wait and would instead go and find alternative suppliers whilst they were still trying to recover from a fire incident. Without the mandatory annual service certificate being in place and available of being produced to an insurance company, it is unlikely that any insurance policy would, in any case, cover for any claim.

It must be respected that if any machine uses oil and/or has a capacity to generate a spark, or is machining a potentially combustible material such as a titanium or magnesium alloy, then it represents a major fire risk. The machine manufacturer takes this information into account when analysing the risk for the identification and specification of the protection concept for the machine; usually by means of fitting an automatic fire extinguishing system and explosion flap device. The end user has responsibilities to ensure that the fire protection systems are serviced, usually at least annually, by a responsible validated service technician.

For the protection of grinding and other machine tools, Kraft & Bauer automatic fire suppressant systems use an extinguishing agent, commonly carbon dioxide or in the case of machining titanium magnesium argon gas. To ensure that a fire is detected as early as possible and that the fire extinguishing system is activated without delay, optical fire detection units, either infra-red that's best suited for grinding applications or ultra-violet light are fitted that react in just a few seconds to any incident.

Mandatory annual servicing of the fire systems is needed and has the purpose of the timely detection and repair of damage as well as ensuring safe operation and the annual proof of service certificates are also required by insurance companies. Machine tools must be tested for fire safety prior to initial commissioning when new, recurrently thereafter in accordance with the suppliers' maintenance specifications (at least annually) and after any maintenance work which may affect safety. The service record

of the annual fire detection system test should ideally be stored over the whole operational lifetime of the fire suppressant system/machine.

Kraft & Bauer UK supplies major machine tool manufacturers and distributors with fire protection systems and also offers a full retrofit and service support facility for its UK customers from its base in Coventry with the same day availability of all parts being guaranteed. It also offers a same day/next day swap system for discharged CO_2 and argon gas bottles.

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A century of gear and thread grinding expertise

Matrix Machine Tool (Coventry) Ltd was originally established over 100 years ago in 1913, originally famed and renowned worldwide for the manufacture and provision of high precision gauges to the world's engineering Industry. In 1934 Matrix successfully ventured into the design, manufacture and supply of high precision internal and external thread grinding, tool manufacture and gear machines, manufactured in their purpose-built factory in Coventry and since then have not looked back.

In the last five years, Matrix has turned back the clock and developed a range of gear products for cutting and grinding a wide range of gear types. These machines employ cutting edge technology and software developed by Matrix. The software is all intuitive and allows for simple data entry and correctional inputs, with intelligent HMI. With the addition of on-line measuring the grinding or cutting of a gear becomes a closed loop. From design to manufacture, from on-line measurement to correction, all this can be done on one machine. The gear grinding machines are capable of DIN 2-4 standards and spur, helical, involute and cycloidal are possible with modules up to M20 and diameters up to 1,000 mm.

Furthering Matrix involvement with gear cutting and grinding machines is the addition of bevel gear cutting and grinding technology. There is already a machine for diameters up to 100 mm in either grinding or cutting options and in development is a bevel gear cutting machine up to 400 mm diameter. This latest machine will also have the capability to power skive externally and internally and will carry out most 5-axis machining tasks all in one machine! Watch this space for future developments.

Today Matrix continues to design, manufacture and supply its range of high precision thread grinding machines to the global market. To facilitate the inevitable expansion in demand, Matrix Machine Tool (Coventry) Ltd has recently moved into a new factory providing 54,000 ft² of manufacturing floor space complete with three overhead gantry cranes. Furthermore,

around 15 new employee positions have been filled including engineering apprenticeships to train technicians for the future.

Matrix will be at MACH 2022 with a large centrally positioned stand. It invites interested parties to visit, where it can show you its latest technologies and help to optimise your production requirements. You will be convinced of the advantages of having a quality machine tool manufacturer in the UK.

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Fuji's compact and powerful 7-inch angle grinders optimised for productivity

Innovative bevel gear design extends tool life in heavy metal applications

Fuji has introduced a new series of 7-inch angle grinders to help metalworkers improve productivity across a range of demanding applications. Compact and lightweight, yet extremely durable, the FA-67 series combines power with a user-friendly design to make time-consuming grinding tasks easier to perform. Ideal for use even in the harshest environments, the series is a good fit for a range of heavy metal applications, including foundry, bridge and road construction, shipbuilding, and rolling stock.

The FA-67 series has been built with ergonomics in mind. Thanks to the innovative design, the tools are 25 percent lighter and 15 percent smaller than traditional 7-inch grinders yet deliver the same performance. The tools are easy to handle even over long periods, and the 2.1 hp governed motor maintains the rotation speed to ensure optimal grinding performance at all times.

The compact and lightweight body ensures easy manoeuvrability. The tools are equipped with an easy-to-use trigger that can be adapted to markets, user habits, enhanced safety, the series benefits from a unique flange design, which transmits the power to the disk, reducing the vibration the operator is exposed to. The compact head of the grinder allows for excellent visibility over the piece being worked on to help improve precision and achieve a quality finish.

The angle grinders are protected by a full metal housing, which makes them durable and well suited for any working environment. The tools feature an innovative airflow design, which creates a smoother flow through the bevel gear to extend the tool's working life with air cooling and lubrication.

For more information about the FA-67 series of angle grinders, Fuji's comprehensive offering for industries including foundries, or information on how to select the right tool for material removal applications, please visit **www.fujitools.com**

UK Distributor:
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Strive for the best: Agathon presents new highlights at second Virtual GrindShow

Extraordinary times require extraordinary measures. This also applies to the "Agathon Virtual GrindShow" format, which the machine manufacturer first held in March due to the postponement of the GrindTec, and then, six months later, on 17 September again, naturally with new innovations.

At the second Agathon Virtual GrindShow, the company from Bellach once again presented exciting innovations, which were of particular interest to current and future users of the Leo Peri and the Evo Penta, because the newly available hardware or software solutions for these two machines enable extended and even more flexible functions. With Care 360, Agathon also presented a comprehensive range of services that is tailored to the entire life cycle of Agathon machines.

Two well proven and tested machines from the Agathon portfolio, which are in use in many locations, recently received interesting functional enhancements that give users even more flexibility: The newly available option "Chamfering for Leo Peri" and the already available "3D measuring probe for Evo Penta" set new standards.

At the second Agathon Virtual GrindShow on 17 September 2020, the Agathon experts presented the two options to interested participants online in two live demos and explained their range of functions in detail. The experts were also available to answer questions from participants in the Virtual GrindShow in a live chat.

Chamfering for Leo Peri: peripheral and chamfer grinding in one clamping

For machining inserts on the periphery, the highly precise and compact 4-axis grinding center Leo Peri is the first choice. The

expansion with the option "Chamfering for Leo Peri" will further enhance the potential of this machine. For example, highly productive chamfer grinding is now also possible without reclamping and with a capacity of four to six pallets simultaneously. The new option is therefore the optimum solution for simple ISO inserts with a protective K-Land of more than 15°, both from an economic and logistical point of view. This is made possible by the optional extension of the C-axis swivel angle from the previous -45° to -75°.

3D measuring probe and extended syntax for Evo Penta

Thanks to its generous traverse paths and swivel angles of ±140° on the C-axis, the agile, high-precision 5-axis grinding centre Evo Penta is ideally suited for grinding

workpieces with complex geometries on both sides of the grinding wheel - both for standard and special designs, also known as specials. In addition to cycle time and process stability, fast setup and easy programming are crucial for the latter.

For tools with brazed-in hard cutting edges, Agathon also offers the optional 3D measuring probe and the extended Agathon syntax. The big advantage here is that the brazed-in tips can be measured for each workpiece and their position determined. This data must now be mathematically adapted to the desired contour and corrected accordingly in the grinding program. The high speed of the 3D measuring probe, which can be mounted on two sides of the grinding spindle, and the good accessibility of Evo Penta also ensure that work can be carried out with minimal restrictions.

Care 360: the right service for every phase of a machine's life cycle

When it comes to services, Agathon also scores points with its customers, because the functional efficiency of Agathon machines is not a question of age. Regardless of which phase of the life cycle an Agathon machine is in, the modular service world Care 360 offers the right solution. This means that the market leader takes into account the technical condition of the system in different phases of the machine life cycle and thus optimally tailors training, maintenance and repair services to each customer.

With the SupplyCare package, Agathon equips its customers quickly, easily and economically with spare parts in the event of damage or defects. RepairCare is the service whereby Agathon technicians carry out repairs on the customer's premises. Equally helpful is RemoteCare, a telephone remote support service, where experts can remotely access a customer's machine, record its mechanical condition and determine the need for intervention.

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Compact 5-axis vertical grinding centre

With the development of the NEO 5, KEHREN shows once again its solution orientated spirit. After many conversations with machine operators, purchasers and the management of customers the need for a newly developed machine was understood and has now been realised.

The NEO 5 accepts the most challenging processing tasks of workpieces up to 600 mm diameter. Besides surface grinding, cone and sphere grinding, the NEO 5 is suitable for (pre) turning and milling, serration and curvic coupling. With this bandwidth of applications, the NEO 5 is a reliable partner for nearly every important operation which needs highest precision. Turbine parts, aerospace components, stators, high precision coupling parts (curvic coupling), bearings and gear parts are just a few applications to be processed on this machine.

To ensure a good investment for all customers, the NEO 5 is designed for longevity with long-term precision guaranteed by using premium components and state of the art technic like hydrostatic C-axis and axis equipped with direct drives (C-, X- and Y-axis). The machine base is uncompromisingly designed to be thermal stable and reach lowest tolerance deviations to ensure highest product quality for a long time. These premium features guarantee a high-level geometric tolerance of IT0 - IT2 and a minimal run-out errors of less than 1 µm.

With implemented features such as a balancing system for grinding wheels, automatic workpiece and tool measuring system, automatic dressing unit and the possibility of tool and workpiece handling you are near by a full automatisation.

Different views for special grinding functions are included in the HMI control through a multi touch display in the new designed control panel with an electronic key system for the different access levels.

Industry 4.0 plays an important role in today's manufacturing routine. The NEO 5, defines a new standard when it comes to advanced diagnosis through different interfaces, warning and alarm messages, or a graphic overlay of fluid and wiring diagram. Predictive maintenance through a separate control is also part of the standard NEO 5 machine. The implementation of I/O Link system is currently in preparation.

The NEO 5 is suitable for following workpiece dimensions: height Ø 600 mm; weight 500 mm; weight 1.000 kg. With the extremely small footprint 3,6 m x 3 m x 3,75 m (w/d/h), the NEO 5 fits into nearly every corner of a manufacturing hall. It is designed as a one hook machine, including electrical cabinet and all necessary aggregates for an easy installation into the manufacturing hall.

The NEO 5 will be launched in November 2020. For more information, contact:

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Good vibrations

ActOn Shell Cleaning Machine installed at Rolls Royce Bristol allows client to process three times more volume in a shorter time

A new vibratory finishing system, designed and manufactured by ActOn Finishing, has been installed at Rolls Royce Bristol. This new mass finishing system is enabling the client to improve the parts' finishing quality and to increase productivity.

During the shelling process, there is a buildup of ceramic slurry on the various equipment used such as matting, rubber caps, handles, plates and cruciforms. ActOn Finishing was contacted by Rolls Royce Bristol to look at improving the cleaning process to ensure a faster process time and more consistent results.

After carrying out live trials at the facility, it was proven that the vibratory finishing machine was the right solution to clean parts quickly and consistently. Due to space restrictions, a vibratory trough was chosen which had the added flexibility of processing parts of various sizes.

The system has several advantages such as: easy to maintain; compact footprint; quiet in operation; small and large parts can be processed.

The picture below shows the level of cleanliness achieved after the cleaning process in the ActOn TU8 machine:

The new solution by ActOn gave Rolls Royce the following benefits: improved cleanliness; process time reduction from 60 minutes to 10 minutes; three times more volume that can be processed at once; reduced water consumption.

Henry Illsley, shell process engineer, Rolls Royce Bristol, states: "ActOn were quick to develop a solution for the shell cleaning system. The machine has improved our throughput significantly and we are pleased with the quality of machine that they have manufactured and installed. We look forward to working with ActOn on future collaborative projects."

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Master Abrasives' new corporate video

Master Abrasives has released a corporate video which explains who it is and features employees from its different departments.

The new three-minute video filmed before the outbreak of COVID-19 pandemic provides insight on what's important to the organisation, providing a safe and friendly work environment, giving good customer service and offering specific technical applications support. It also shows how the company encourages training for staff including apprenticeships, all with the ultimate objective of providing optimum solutions according to customer needs.

Marketing manager Noora Kauppi says: "We recognise that social media and video marketing is vital to our communication strategy to promote our products and help educate and inform our customers. Following the recent launch of a new website and striving to keep our social media updates regular, videos fit in perfectly with the modernised brand for Master Abrasives."

To open the video, viewers see the Master Abrasives premises as managing director Paul Batson talks about the company and its philosophy. The customer service team is shown working hard at listening to customers and making sure that they are getting the best solution. He emphasises that the aim is to provide complete solutions for customers. "Whether they've got a problem and they come to us or if it's an existing application that we look at to try and improve to give them cost savings."

The opening scene of Master Abrasives' corporate video

Other facilities in the video include the demonstration room where members of the applications engineering team are shown utilising the measuring equipment as they analyse a precision dressing disc. Then, alongside footage of abrasives, tool services and their machinery in action, Paul Batson describes how the product offering is divided into three main categories: abrasive consumables, new tools and tool servicing and machinery and equipment.

Viewers will see the Coated Production and Masterflex Departments in action

Sales & business development manager Andy Wright explains how a wide product portfolio allows the company to appeal to a diverse customer base with a wide range of applications, from deburring or finishing turbine blades to precision grinding of gears or automotive products, all the way through to superfinishing of components for the bearing and medical industry.

In the video, viewers will also see customer service manager Andrew Davidson (AJ) working with his team as he describes the strong relationships Master Abrasives has developed with its customers. AJ relates how many companies have been customers for years and even decades: "These customers know that the team has the knowledge and the experience to offer the professional service they require."

Noora Kauppi also shows some of the reviews Master Abrasives has received on social media as she describes the various platforms used as a way to listen and engage with customers, something they strive for as a marketing-orientated company.

The video features some employees from the company's different departments, including the Customer Service team

The technical engineering team is described by applications engineering manager Ian Meredith. He explains that within his team, the company has four people on the road with a combined experience of over 100 years, something invaluable to customers requiring technical advice for challenging applications.

Finance Director, Jamie Ward enlightens viewers about some of the changes Master Abrasives has experienced since becoming an independent company in 2012, including a really exciting period of growth, which is "demonstrated by continued investment, not just in the company in the UK, but around the world.

Viewers will also get a glimpse of Master Abrasives apprentices as operations manager Carl Lewington explains their roles. Lee is working in the tool services department to learn how to repair tools and electrical elements, while manufacturing apprentice James has learnt all the aspects of manufacturing, including the coated belts facility which he shows in action.

In the final scenes, the audience can find out how long some of Master Abrasives employees have been working with the company. This varies from two and a half weeks to 34 years for the staff featured at this point in the video, demonstrating the variety of skills and experience of the team.

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Genis 2 by TYROLIT: innovation to the core

The GENIS grinding wheel product line with vitrified bond and CBN abrasive grains are extremely popular, particularly in the automotive industry. Numerous crankshafts, camshafts, balancer shafts and transmission shafts, as well as fuel injection components, etc. are today produced using these grinding wheels. Depending on the application, the GENIS grinding layer is applied to the cores in a segment or ring shape, enabling adaptation of the grinding layer to numerous geometries.

Moreover, GENIS grinding wheels are available with a variety of core materials. Steel is seen as an inexpensive option where the wheel is subject to heavier loading. Lightweight versions are available in aluminium, or in carbon fibre as an ultra-lightweight option, which significantly reduces the overall grinding wheel weight and is suitable for very high speeds. The latest GENIS 2 LW product line offers maximum results and a significant reduction in handling. In addition to the material variations, a high-precision package can be ordered, which receives special treatment throughout the production process and is precision-balanced before leaving the factory. This additional package is ideal for machines without an integrated balancing device as here, tool changing times are reduced significantly.

External cylindrical grinding of crankshafts with GENIS 2 LW grinding wheels

Genis 2 LW grinding wheel

GENIS 2 LW grinding wheel without covers
Only for showing the design of the wheel inside. The wheels are always completely covered by steel plates

Partially opened GENIS 2 LW grinding wheel
Only for showing the design of the wheel inside. The wheels are always completely covered by steel plates

GENIS 2 expanded fields of application

Despite the versatility and high grinding power of GENIS grinding wheels, there still remain applications which have not been optimally catered for to date. The consistent further development of the bond system and the expertise gained during the implementation of customised specifications culminated in the GENIS 2 product line, which covers an even broader range of grinding applications than was previously possible, while also improving cutting performance, cycle times and wheel life. The objective with this product was to develop a bond system that achieves good mechanical properties, combined with manufacturing stability, with an extremely low bond content. Another task was to further improve on the existing tolerance limits.

The results of this lengthy development work are truly remarkable. "The bond strength has been increased by a further 25 percent compared to the already successful GENIS bond," says a delighted Gunther Steckel regarding the successful development. "This increase in bond strength can be utilised to meet the required trend towards increase wheel porosity and thus produce freer cutting tool specifications. Furthermore, the fact is that greater grain fracturing is generated, which is a reflection of the excellent adhesion of the new GENES 2 bond with regard to the CBN abrasive grain." The application-specific design of the grinding wheel is further improved by the low shrinkage factor of the GENIS 2 bond system.

The secure bonding of the CBN abrasive grains in the grinding layer ensures that the breakage occurs in the grain itself rather than it breaking out from the bond matrix. This results in a self-sharpening effect of the abrasive grain, which in turn ensures a sustained higher cutting ability of the GENIS 2 grinding wheels. Owing to the higher adhesion strength, a lower bond volume is also necessary. This means that the new grinding layer can be more porous, offering greater scope for chip transport and coolant supply. The wheel is therefore characterised by particularly cool grinding.

GENIS 2 pushes performance limits even higher

GENIS 2 grinding wheels not only extend the field of vitrified bonded grinding wheels with CBN abrasive grain, but also significantly push the performance limits

higher in terms of surface finish, cycle times and tool life. During the grinding of passenger car camshafts, for example, the cycle time was reduced by 20 percent and the dressing cycle lengthened by 30 percent, which was the main focus of the customer due to the high unit volumes involved. In another application, the grinding time was shortened to such an extent with GENIS 2 that eight plunge cuts could be achieved in the same time period as previously only four had been ground.

GENIS 2 Lightweight: simplifing handling for production personnel
With the GENIS 2 LW product line, TYROLIT is a pioneer and technology leader in the area of lightweight vitrified-bonded grinding tools. Through targeted material reduction, the wheel weight has been significantly reduced. The stock removal rate at the core is not random but is calculated using a computational FEM analysis (Finite Element Method). This means that deformations and potential performance losses can be excluded. Through use of the lightweight GENIS 2 LW version, the maintenance intervals at the grinding machines can be reduced and handling significantly simplified for personnel in production.

Weight reduction up to 50 percent
Lightweight tools determine less wear on spindles and bearings than comparable reference tools. Significant advantages arise during transport and fitting of the tools. A patent has been applied for with regard to this innovation.

- Easier handling for people in the production of mounting wheels
- Reduction of vibrations during grinding leads to a better grinding result
- Reduction of maintenance intervals of grinding machines
- Reduction of set-up times due to handling

Computational FEM analysis (Finite Element Method)
Each lightweight version is optimally designed for the requirements at hand with the aid of a computational FEM simulation. This allows maximum weight reductions to be achieved without sacrificing on stability.

- The stock removal rate at the core is not random
- Maximum stock removal without deformation of the core
- No performance losses compared to a Standard wheel

Re-plating compatible
GENIS 2 LW tools can be re-plated problem-free, therefore the slightly higher purchase price of the core can be compensated quickly. Additionally, lightweight cores are significantly cheaper than carbon fibre cores.

Maximum tool life
GENIS 2 LW tools provide the customary top performance of the proven GENIS product lines. Thanks to the weight reduction, tool life increases are possible as a side-effect, for example due to a reduction in vibration.

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Cutting out mist extraction is false economy says Filtermist

Telford-based industrial air cleaning expert Filtermist Systems Limited is urging companies investing in CNC machine tools to think carefully about leaving mist extraction off the order to cut costs.

The company, which works with many of the country's leading machine tool distributors as well as end users, has noticed a marked increase in customers investing in 'bare bones machines' and not including bar feeders, high pressure coolant or mist extraction in a bid to reduce spend.

"While taking a cautious approach is understandable in the current climate, it's false economy," states Filtermist's director of group UK sales, Andy Hives. "Although there is an initial capital investment, effective extraction can actually help to lower running costs in the longer term.

"Cost reductions can include lower heating bills in colder months as the air exhausted back into the facility is warm, lower cleaning bills as there's less oily residue on floors, ceilings and work surfaces, less days lost to ill-health as a result of exposure to contaminated air and last, but not least, there's a far lower chance of employers being hit with chargeable enforcement and improvement notices from the HSE, or hefty fines for failing to comply with COSHH (Control of Substances Hazardous to Health) regulations."

Prior to the outbreak of COVID-19, the HSE completed its Q4 inspection programme which targeted metal fabricating premises in a bid to reduce exposure to metalworking fluids and welding fume, Reducing occupational lung disease is a key focus in the HSE's current workplan. Both COSHH (Control of Substances Hazardous to Health) regulations and the UKLA/HSE Good Practice Guide for Safe Handling and Disposal of Metalworking Fluids recommend using Local Exhaust Ventilation (LEV) on CNC machines to control exposure to airborne mist particles.

"Filtermist oil mist filters are recommended by many of the world's leading machine tool manufacturers and their distributors. In the UK, we work in partnership with all of the key players to provide an integrated and seamless solution," says Andy Hives. "By investing a little bit more upfront, end-users can be confident that the air in their facility is clean and safe to breathe."

Mills CNC, the UK distributor for Doosan machines, has worked with Filtermist for more than 18 years and offers a Filtermist oil mist filter with every machine it sells. This is something which the majority of customers are happy to invest in, as Mills technical director Tony Dale confirms, "On the whole our customers understand the importance of mist extraction and are happy to include

the cost when they place the order for a new machine. The recent HSE inspection programme has helped to reinforce that this isn't just a 'nice to have', it's a necessity for any machine shop that takes the health of its workforce seriously."

While the COVID-19 crisis has hit most areas of the UK economy including manufacturing, it has also resulted in lots of discussions about the value of reshoring the manufacture of critical components back to the UK, which, if it transpires, could potentially result in a boost to the industry.

A poll by The Engineer in May reported that 59 percent of respondents thought the crisis should trigger a UK wide reshoring strategy and many of the trade associations Filtermist is a member of, including the GTMA, BTMA and the EIA, are involved in Reshoring UK, an initiative designed to connect OEMs and Tier 1 companies with local suppliers to fill gaps in their supply chains. Filtermist is also a 'collaborationeer' in the UKMfgUnite initiative, designed to bring UK based manufacturers and suppliers together to strengthen the UK's industry post COVID-19.

"Reshoring has been on the agenda for a number of years," continues Andy Hives. "The need for local supply chains became hugely apparent when the lockdowns began. If the UK's manufacturing industry is serious about reshoring production to help support the country's economy through the turbulent time ahead, it needs to ensure that this is commercially viable without cutting investment in products and services designed to protect workers' health.

"We recognise that every penny spent at the moment has to be fully justified and we have introduced a new finance option specifically for Filtermist oil mist filters to help customers' cashflow through this difficult time. This includes an initial deposit, followed by three equal, interest-free payments. This option is already available as part of most packages on offer from UK machine tool suppliers. Our offer is designed to make it easier for customers that need to retrofit extraction to an existing machine."

Established in Shropshire in 1969, Filtermist's ethos is to protect people by ensuring cleaner, safer, more productive working environments. The company, part of the Swedish Absolent Group, provides an extensive range of products and services designed to ensure the air in production facilities is free from contaminants such as oil mist, oil smoke, dust, fume and VOCs. If left in the atmosphere airborne particles can be hazardous to health and can pose a fire and slip risk.

Filtermist is best known for manufacturing a range of compact, quiet and efficient oil mist filters which are trusted by world leading manufacturers in more than 60 countries.

In the UK, Filtermist offers a turnkey service that includes initial consultation and project planning, extraction system design, specification, equipment manufacture and supply, installation and commissioning.

Recent acquisitions mean the company is now responsible for a number of product brands in addition to Filtermist oil mist filters. These include Dustcheck process filters, venting filters and dust collectors, Gallito paint finishing solutions, FastClip ducting, XS Automation control panels and Ecogate energy saving technology. Filtermist is also the UK distributor for sister company Absolent AB and offers comprehensive aftersales services including filtration consumables, COSHH compliant LEV testing, air monitoring and extraction system maintenance throughout the UK.

Call the sales team on 01952 290500 to discuss your specific requirements, or contact:

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Dusting down

How Tarmac worked with ACI to create a cutting edge de-dusting solution for the quarrying industy

Following the merger of Anglo American's Tarmac UK and Lafarge in 2013, a new approach to quarry de-dusting was required to comply with the combined entity's new corporate health and safety procedures.

Determined to ensure that potentially harmful dust did not transfer into areas where members of staff removed respiratory protective equipment, including site control rooms and offices, Tarmac sought an entirely new solution to de-dusting.

Initially, industrial vacuums were seen as a possible answer, but no effective solution could be found. It was at this point that ACI was approached to develop a bespoke JetBlack Safety solution.

Having used its low-pressure air cleaning stations at sites in the UK, JetBlack Safety's ability to remove dust had been proven. However, to meet Tarmac's new requirements, which included certainty that all staff entering dust-free zones were clear of dust, ACI was set the task of creating an entirely new, failsafe solution.

Working closely with Tarmac's on-site management team at Mountsorrel Quarry in Loughborough (one of the largest granite quarries in Europe) ACI's team designed a trial booth through which all staff would need to pass before entering the control room building.

Consisting of a hand-held JetBlack Safety cleaning station and dust extraction unit, the booth was installed at the entrance,

ensuring that all staff wishing to enter would need to de-dust before being able to access the offices.

Despite delivering to the brief and being successfully operated on-site for over five years, both ACI and Tarmac identified that a hands-free solution, where staff would be automatically de-dusted in a walkthrough booth, would ensure an even greater consistency of cleanliness.

Once again, the team from ACI took on the challenge, and in May 2019 a new walk-through solution, built to meet all Tarmac's needs, was installed and commissioned, forming the entrance to the building itself.

Using a series of nozzles blowing high volume, low pressure air, dust is automatically removed from clothing and PPE, with dust particles as small as 0.3 µm being safely extracted and captured by a H14 HEPA extraction system as soon as the doors are opened. These particles are collected for safe removal and disposal.

Operating an automatic clean down when not in use, the automated JetBlack Safety booth extracts any airborne dust that may be disturbed when the user exits the booth, preventing escape into the wider environment when the doors are opened.

Now, any member of staff wishing to enter the building first has to pass through the JetBlack Safety booth, ensuring effective dedusting before removal of respiratory protection.

This enables Tarmac to not only comply with HSE guidelines on dust control plans and procedures but also protects staff from the danger of dust exposure that could lead to life threatening illnesses, including lung cancer, silicosis and lung diseases such as emphysema and bronchitis.

"We've been working with ACI for over seven years to help protect our staff from respirable crystalline silica dust produced on site during the crushing of granite," says Mathew Schlemmer, processing plant manager at Tarmac's Mountsorrel Quarry. "Four booths provide de-dusting facilities, which are situated in the maintenance area, the quarry, our asphalt processing area and at the entrance to the control room.

"Throughout, our key focus has been to

ensure that our staff are dust-free when they move into areas where they can remove PPE. Using JetBlack Safety's range of low-pressure blower and dust capture booths we are able to protect our team from fine particles that have the potential to cause serious lung disease."

"Out on the main site," says Mathew Schlemmer, "we utilise JetBlack Safety's manual hand-held blower and dust collection booths, but at our main control room, we've installed the automated walk-through booth at the entrance, which ensures that staff always de-dust before accessing the building.

"Starting automatically, as soon as the door to the booth closes, our staff simply need to walk in, set the blower height, rotate, and in under a minute they can exit, safe in the knowledge that their PPE and workwear is clean of all dust. This ensures that whenever they leave site, my team has a very low chance of carrying home harmful dust that could affect them and members of their family.

"For us this was vital, as it is a failsafe solution that prevents colleagues from accidentally bringing dust into communal areas, which could affect the health of others."

"Working together," adds Mathew Schlemmer, "we've created a bespoke solution, which we continue to evolve with the ACI team to meet our very particular needs.

"We've been really impressed with the booths and with the JetBlack Safety team who've tailored a fantastic solution for us. It's been so effective that we fully expect other Tarmac sites to adopt similar measures, where dust presents a potential hazard to staff."

JetBlack Safety's Personnel-Cleaning Booth is a safer and highly effective means for removing, extracting and collecting residue from employees than equivalent alternatives. It is particularly effective for cleaning employee's dirty work clothes without exposing them, co-workers or their work environment to elevated dust levels.

The JetBlack Safety range of cleaning booths has been designed to offer employers and users a safer solution than equivalent compressed air systems, for removing dust and contamination and for general clean-down operations, using filtration and capture to 0.3 µm particle sizes (HEPA H14).

The cleaning booth is a self-contained unit incorporating the company's JetBlack personnel de-dusting system which delivers a high volume of air at low pressure (2.3 psi / 0.16 Bar), sufficient to remove dust and fibres effectively and safely, even when directed at exposed skin.

The JetBlack Personnel-Cleaning Booth enables workers to enter, operate and clean-down their clothing and PPE equipment very quickly. Typically, within approximately 20 seconds, most visible traces of any dust will be removed from clothing. The airflow produced by the JetBlack dislodges even hidden dust which is then captured and filtered within the extraction unit.

JetBlack Safety is part of ACI® Ltd

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Bespoke mobile paint fume extraction unit for aerospace giant

Climavent has designed a bespoke, highly technical Mobile Paint Fume Extraction Unit to filter and monitor the emissions generated during paint spraying applications at a worldwide renowned aerospace company based in Cambridge.

Climavent was commissioned to integrate sensitive, intelligent monitoring equipment and control systems that could measure and adapt how the unit works to eliminate minute solvent and odour particles from the mobile spray booths.

The CV1140 Mobile Paint Fume Extraction Unit uses eco-friendly coconut shells in a process that triple filters the particles, getting them to below 20 mg per cubic metre, less than half the Government's legal limit of 50 mg.

Being skid mounted, the CV1140 unit can be easily manoeuvred around the workshop and is capable of providing fume extraction for two tented enclosures using up to 50 m of extraction hose. It is supplied with two sets of main filters, the diverter valve and compressed air receiver, allowing the smooth changeover of filters without user intervention or downtime in production.

Working together with the customer, Climavent developed a unit capable of producing key information to ensure adherence to government guidelines. This information was monitored by the control panel on the unit which, using data logging software, PC and printer connection and HMI display, enables the end user to monitor and log the emissions as and when required. This information is also stored on an internal storage device and retrievable via USB or the printing facility.

Having produced the UK's first intelligent Mobile Paint Fume Extraction Unit, Climavent is looking forward to producing more technologically advanced units and epitomising itself as one of the foremost leaders in dust and fume extraction.

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Reducing the ecological footprint in tool production

Climate protection: the challenges for society and industry are enormous. Resource-conserving production, sustainability, climate and environmental protection and the task of reconciling all these demands with economic efficiency while generating profits is challenging. The potential to reduce the ecological footprint in many production plants is often not fully maxed out.

One example is metal processing, especially tool grinding. Those who, in addition to state-of-the-art grinding technology, also rely on the right coolant filtration can produce more sustainably.

Steffen Strobel, technical sales manager of the mechanical engineering company and filter manufacturer VOMAT in Treuen, Germany, says: "Today, many of our customers in the tool industry already want to grind their tools in the most resource-efficient way possible. In sales or planning meetings, they are increasingly asking whether our filter systems can contribute to sustainability in production in addition to being highly efficient and contributing to quality. Yes, as a manufacturer of ultra-fine filtration technology, we provide technological solutions that give tool manufacturers many impulses for resource-saving coolant fine filtration.

"To guarantee high levels of production efficiency with a quality outcome and to exploit rationalisation and sustainability potentials, VOMAT provides high-performance filtration systems that combine all these technical advantages despite their compact design and small footprint."

VOMAT manufactures filtration solutions, from small stand-alone units to large-scale industrial central systems, which separate 100 percent of dirty and clean oil in full flow by means of durable high-performance pre-coat filters. The purity achieved is 3 - 5 µm (NAS 7 standard). State-of-the-art filter, cooling and disposal technology, including HSS pre-filter systems for mixed processing if required, ensure economic and ecological success. In addition, VOMAT filters are low-maintenance and, due to their compact design, take up little valuable production floor space.

Adapted filtration performance to the production process

In VOMAT systems, the filter flow and backwash cycles are automatically controlled as required. This extends the service life of the filter elements and saves energy and costs. According to the company, many conventional systems on the market permanently filter at full filtration capacity, even if this is not absolutely necessary. VOMAT systems on the other hand adapt to the production process.

During cleaning in the full-flow process, VOMAT ultra-fine filtration systems provide permanently clean oil in NAS 7 quality. Demand-oriented filtration and backwashing ensures less load on the filter components and reduces energy consumption

If, for example, the grinding machine runs at a slower speed, only the required amount of coolant is filtered. If a VOMAT central system provides filtration for several grinding machines and some are not in operation, the filter capacity automatically adapts to the machining volume. At the same time, less cooling capacity is required. This reduces the energy consumption even further.

During cleaning in full-flow mode, the demand-oriented backwash cycle provides further advantages: with VOMAT filters, the backwash cycles are triggered by the degree of filter cartridge contamination. Once the relevant values are reached, the backwashing process begins, during which each filter is backwashed individually and with a time delay. The other filters ensure a continuous supply of clean oil. In the disposal unit, the dirty oil is separated from the sludge and then fed into the dirty oil tank. This fully automatic control of the filtration system keeps energy and operating costs low.

In addition, VOMAT technology controls

The machine supply pumps are exactly matched to the VOMAT filtration system, both in capacity and performance. The cleaner the grinding oil the longer it can remain in the system and can provide better protection for machine pumps and lines

the temperature of the coolant during the grinding process within a range of ± 0.2 K. The high-precision temperature controls keep the coolant temperature always constant within the pre-selected range. This means that the grinding oil in use will have a long-life cycle. VOMAT systems permanently cool down the coolant during continuous operation.

VOMAT offers various design options for their cooling systems, such as pallet-mounted units for easy removal and re-assembly on site without service personnel, and auxiliary units with external condenser for cooling. Another option is a cold water-operated cooling system with a closed loop piping system, such as the VOMAT's modular and expandable KWS 250 chiller is equipped, complete with circulating pump and Eaton controls. The cooling capacity is 250 kW for brine operation with a control accuracy of +/-1.0 K. The unit does not require a buffer storage tank and can be installed in industrial outdoor areas.

VOMAT's modular and expandable KWS 250 chiller is equipped, complete with circulating pump and Eaton controls. Cooling capacity is 250 kW for brine operation with a control accuracy of +/-1.0

The VOMAT KWS 250 is very energy-efficient and ensures high-precision temperature control, according to Steffen Strobel: "Thanks to the on demand backwashing technology and the highly accurate temperature control, the service life of each individual filter cartridge as well as all machine components is significantly increased. The optimal cleaned coolant can remain in the system for extended periods of time, which saves money and energy."

The filter system can continue to operate during the removal and disposal of recyclable material. The sludge is deposited directly into transport containers provided by the recycling company

Getting the most out of your coolant

Not only advanced high-performance filters, which clean coolants extremely well, ensure energy efficiency, but an automatic sedimentation system also allows for sustainable recycling. Thanks to the proprietary design features of the VOMAT system, the grinding sludge has a residual moisture content of only 5 to 10 percent after settling. The filter system can continue to operate during the removal and disposal of recyclable material. The sludge is deposited directly into transport containers provided by the recycling company. Contamination by filter aids such as cellulose or residues of paper bands are eliminated with the VOMAT technology. This not only saves money but also resources and the environment.

VOMAT ultra-fine filtration units can be used for tool grinding machines processing carbide and HSS-steel or for a mix of the two. VOMAT systems are available in various sizes: standard flow rates are 70 litres/minute, 120 to 420 litres/minute and 480 to 960 litres/minute. In addition, customer-specific system configurations can be built up to capacities of an industrial central system.

The systems can be adapted to customer-specific or increased individual requirements by means of various expansion modules, such as special cooling concepts, machine pumps, additional tanks and recycling options.

Multi-talent vacuum belt filter (UBF)

Another example of our market-driven, sustainable filtration technology is the new UBF vacuum belt filter for the filtration of water-based coolants, emulsions and grinding oils in the smallest of spaces.

The new VOMAT Vacuum Belt Filter UBF is designed for filtration of water-based coolants, emulsions and grinding oils all in a very small space

With the VOMAT UBF, ferrous and non-ferrous alloys, HSS, disc abrasion, binders, etc. can be filtered from cooling lubricants, such as water-based media, without a pre-filtration system to a filter fineness of 10 to 30 µm.

According to VOMAT, the compact UBF unit is extremely easy to maintain and, due to a special belt guide design, takes up about 70 percent less space than conventional systems.

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High demand for COMAT filtration systems

Coventry-based Advanced Grinding Solutions (AGS) has announced a large number of recent sales for the premier Italian manufacturer of filtration systems Comat for grinding applications.
Comat manufactures super-filtration systems that deliver ≤ 2-3 µm filtration quality, making oil cleaner than unused oil as supplied new and importantly doing so throughout the entire working cycle while minimising lifetime running costs and maintaining maximum coolant consistency.

Importantly for end users, the Comat filter systems feature Intelligent Performance Technology that allows them to be remotely monitored in real-time during the manufacturing processes, with customers filter systems fine-tuned by Comat to ensure that the optimum filtration quality is obtained at all times. Furthermore, depending upon the model, the Comat filter units can be monitored, controlled, and optimised by integrated controls or externally by PCs, tablets or smart phones.

AGS has sold an additional five Comat filtration systems to the tool grinding and medical engineering sectors in August and September, mainly for connection to the Rollomatic multi-axis grinding machines also represented in the UK and in Eire by AGS, with existing UK Comat end-users already including Samwell Tools of Poole and AW Precision of Rugby amongst others.

Today, more than 20,000 machine-tools use Comat Filtration Systems, with more than 120,000,000 litres of metalworking oil being super-filtered every single day. Comat operates globally and has a 30-year history in developing the most advanced filtration systems that are available. Comat's Superfiltration Technology uses continuously regenerating filtering media (diatomaceous earth, cellulose or other vegetable media), to ensure that particles larger than ≤ 2-3 µm are removed from cutting fluids and the fluid is maintained at a stable desired fixed temperature of +/- 0.2 degrees. Oil cleanliness is measured according to internationally set and agreed standards such as the National Aerospace Standard 1638. Brand new, neat cutting oil is typically classified in category nine. However, with Comat Superfiltration systems brand new clean oil is brought down and then held to a finer filtration category of just seven or eight.

Oil that is filtered by Comat systems does not need to be replaced and many clients report that they have never changed the oil for up to 20 years Main applications for these filter systems include tool grinding on Rollomatic and similar grinding machines and also on turning machines and automatic lathes. Comat systems can operate with any oil having a viscosity ranging between five and 30 Cst at 40° C (104° F).

The filter media needs to be re-generated once per day for full production/heavy stock removal applications and this takes just 15 minutes or so and machines do not need to be stopped whilst this is carried out. If the system is fitted to a grinding machine used for regrinding cuttings tools, regeneration of the media would only be required every 1-2 weeks.

In terms of running costs, the Comat systems are usually only around 25 percent of the cost of running competitor filter systems that often rely upon expensive candles or filters that need replacing at a very high cost. Most of the end users supported by AGS are only spending around £250 a year on the Comat filter media as compared with the users of other systems facing huge bills when sets of filter candles or discs, that are a wear item, need replacing.

Remarkably, the filtration levels from the Comat systems are so high that new virgin oil has to be go through several regeneration cycles in order for it to meet the finer filtered quality of older/used oil that is filtered within Comat filter systems.

The low-cost media used in Comat systems is very cheap and as there are no cartridges, paper rolls or expensive candles to replace; Comat filters offer the lowest running costs of filter units.

Today, 80 percent of sales are for Comat EVO systems that offer 24/7 monitoring and are equipped with a facility whereby the system when registering any issue will send an email/alarm warning to both the end user and to the Comat HQ to inform them of a problem. This said, Comat units are extremely reliable and a check-up maintenance visit is only recommended every two years. During such a visit the history of all parameters since installation or the last service check can be recalled and the system optimised when necessary to suit grinding or turning processes that may have changed slightly over that time.

Comat ECO systems are the basic

version of Comat filter units and are offered to cost conscious customers that want highly economic solutions and do not want Comat's automatic remote diagnostics support. However, these systems of course still offer the same very high level of filtration and ongoing reliability.

Comat filtration systems ensure a higher and more consistent quality of machined components, increased lifetime of cutting fluids, reduced machine wear and importantly bring about an increased lifetime of grinding wheels and cutting tools. From small stand-alone systems to support a single grinding machine or lathe with a capacity of 60l/min up to centralised units that can cater for up to 12 grinding machines or 25 lathes with a capacity of over 1,000 l/min, Comat has the solutions.

Furthermore, these universal filtration systems can handle any type of contaminant including brass, carbide, ceramics, glass, HSS, special aerospace and medical alloys and PCD etc. The advantages of the Comat systems are clear: they offer large reductions in running costs, they filter oil to the very highest levels, they offer a constant quality of filtration and, thanks to their ability to be remotely checked and monitored, offer hassle free ownership.

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ABM turns to Autopulit to meet customer demand and enhance its 'Complete Solution'

With over 30 years' experience in supplying some of the world's most prestigious, luxury, automotive manufacturers, ADV Brightware Manufacturing (ABM) has developed into the UK and possibly Europe's largest privately-owned supplier of brightware parts for their vehicles.

While the end product is 'highly polished', the company is proud of its cradle to grave approach providing customers with a complete solution that starts with design, through toolmaking, pressing, roll-forming, 5-axis laser profiling , polishing, assembly and distribution.

The ability to project manage from start to finish has been a major advantage for ABM, due to its ability to keep lead-times as short as possible by controlling every aspect. This has stood it in good stead, particularly during the COVID-19 pandemic, which did impact the business but not greatly, due to the nature of its customer base. However, what the pandemic did allow was an opportunity to re-focus efforts on expanding into other areas of manufacture, such as surgical/medical supplies and domestic fixtures and fittings.

"The manufacturing capability we have, with our in-house experience and skills base, combined with a drive for greater automation, presents us with opportunities to grow the business within our traditional markets as well as exploring other opportunities," says ABM managing director Richard Lindoe.

Above & right: Polishing the side frames

The company's commitment to meeting its customer demand is highlighted by its recent investment in a 9-axis robot polishing cell from Autopulit, supplied by Ellesco. The specific project was to fulfil demand for polished side frames for a prestigious 4x4. Each frame measured 3.5 m in length and traditionally this would have been a job for manual polishing. "The customer recognised that the ideal solution would be a robot cell to deliver the consistent high quality that its customers required," says ABM's automation manager Lloyd Jackson. "With this in mind, I visited the MACH exhibition and the Ellesco stand caught my eye as they had a small Autopulit robot cell on display. Discussing this with Ellesco it became obvious that this could be scaled up to provide the ideal solution."

The cell development was completed with Autopulit leading discussions taking input from Ellesco and Lloyd Jackson, whose extensive polishing know-how completed the picture. From placing the order, the timeline for delivery didn't slip by a day

Left & right: The Autopulit nine-axis robot polishing cell at ABM

Left & right: Automations engineer Musa Banaddawa manually positioning the robot (for illustration purposes), and the four position polishing mop station

even as changes were made along the way. "I couldn't fault the service and support provided by Autopulit and Ellesco, working with them gave me full confidence that they would deliver on their promises. The design of the cell is straightforward, why overcomplicate if you don't have to, but it is highly capable of the complex work that we are asking it to do, and is future proof as it can be adapted to new work when this seven-year project draws to a close," says Lloyd Jackson.

The cell consists of a 6-axis ABB IRB 6700 robot with a 200 kg payload and 2.6 m reach. This sits on an ABB IRBT 6004 track allowing the robot to traverse up to 2.7 m. Parts are loaded on to a two-station interchanger, capable of holding parts measuring 950 mm by 4,000 mm. The robot arm has access to four AC motor driven polishing tools, with each being equipped with inverters, allowing finite control of polishing mop speed and polarity, which creates a more fluent and adaptable approach when it comes to polishing large parts.

Prior to polishing commencing, the robot arm presents each polishing mop to a laser calibrating system, which calculates mop wear and automatically compensates the program to a tolerance of +/-0.1 mm, to ensure correct pressure is applied. With the polishing mop calibrated, the robot then presents it to the compound dispenser, which automatically applies one of three compounds. The whole system is controlled by an IRC5 single controller and, once programmed, the control recognises which of six side frames are loaded, so the whole process is simplified to load part, press cycle start.

The automated two-position interchanger

"The Autopulit cell has delivered significant advantages in many areas of our production including time saving, consistency and health and safety. When manually polishing it could take four hours to complete one sideframe. That is now down to 14 minutes, with an additional 30 minutes of manual intervention with soft mops. The cell can operate 24 hours/day. It doesn't get tired, so quality is consistent throughout the day. The elimination of hard mop manual polishing also removes any risk of Hand Arm Vibration (HAV) issues for operators. We also have flexibility so, when new business opportunities present themselves, we have the resources to be able to react quickly to supply high quality, cost-competitive, aluminium and stainless steel brightware."

The installation of the robot polishing cell at ABM is indicative of the relationship that Ellesco has with its long-standing industrial partners, such as Autopulit. "The relationships that we have built up over many years with our partners means that we can quickly resolve manufacturing challenges for our customers. The development of this Autopulit cell is a good case in point, going from an initial informal meeting at the MACH exhibition to a fully functioning automated polishing cell with innovative technology, such as the laser calibration, while delivering on budget and on time to the customer," says Ellesco managing director, Vincent Simonis.

Musa Banaddawa using the IRC5 single controller

The automated polishing compound station

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Perfect polish for 3D printed removable partials and other products

TEAMZIEREIS GmbH expands its customer services with an innovative electropolishing system from AM Solutions: 3D post processing technology

By investing in the innovative Drylite dry electropolishing system, the TEAMZIEREIS milling centre, specialised in dental products and job shop services, has expanded its service portfolio. The DLyte 10D system allows the automatic polishing of components produced with additive manufacturing and hybrid manufacturing. It places an excellent polished finish on removable partials, dental crowns and products for orthodontic treatments.

General manager of the TEAMZIEREIS GmbH milling centre, Ralph Ziereis explains how he found the dry electropolishing system: "A customer told us about the innovative DLyte polishing method. Subsequently we informed ourselves about this technology and its possibilities at the AM Solutions booth during the 2019 formnext show." Ralph Ziereis founded the company, located in Engelsbrand in the Black Forest region, 20 years ago. The company's business focus is on dental products and services connected with the digital workflow. For this reason, TEAMZIEREIS has comprehensive know-how with CAD/CAM operations and pursues an integrated digital manufacturing concept.

General manager Ralph Ziereis at TEAMZIERAEIS, says that by using the DLyte 10D, processing time can be reduced by up to 80 percent compared to manual work, depending on the application

Mechanical processing with consistent high-quality finishing results replaces costly manual polishing

Within the scope of its digital concept, the company produces removable partials, dental crowns and components for orthodontic treatments, for example, filigreed wires, from cobalt chrome alloys with a powder based selective laser melting 3D printing system. After they were printed these components had to be manually polished. This costly operation usually took place in dental labs. Ralph Ziereis comments: "To relieve our customers from this time consuming and expensive operation and to be able to offer another service, we had been looking for a suitable mechanical polishing method and with the DryLyte technology we finally found it. This system saves our customers not only a lot of money and time, but it also produces absolutely repeatable, high-quality polishing results."

By using the DLyte 10D, processing time can be reduced by up to 80 percent compared to manual work, depending on the application. Furthermore, several parts can be processed simultaneously.

Dry, non-abrasive electropolishing

This high-performance electropolishing system, developed by the Spanish company GPAINNOVA, utilises dry electrolyte granules instead of a liquid. During the polishing operation the workpieces, mounted to special fixtures, pass through the electrolyte with a rotary movement. This causes an ion exchange between workpiece and electrolyte with the result that the roughness peaks on the entire surface, including internal passages, are eliminated. Compared to the conventional electropolishing method the use of non-abrasive electrolyte granules maintains the original geometry, dimensions, edges and angles of the workpieces, guaranteeing a perfect fit.

Test trials ensure optimal finishing processes

A defined gloss, no change of the workpiece geometry, dimensions and edges and, above all, a flawless surface finish: these were the results Ralph Ziereis demanded. AM Solutions – 3D printing technology, a Rösler division specialising in post-processing of 3D printed components and sales partner of GPAINNOVA, conducted initial test trials in its technology centre.

These trials quickly demonstrated that the DryLite system is absolutely suitable for the finishing tasks defined by TEAMZIEREIS.

Ralph Ziereis continues: "Once we saw how easy it was to produce the desired surface finish, we decided to purchase the DLyte 10D compact and flexible system."

The definition of the processing parameters for the different work pieces was determined by the composition and size of the electrolyte granules and the processing time. Ralph Ziereis adds: "The experts of AM Solutions helped us a lot in working out the details of the workpiece specific processing programs." All programs can be stored in the equipment controls and called up by simply pushing a button.

Among other 3D printed components, the removable partials are polished with the dry electropolishing system. All must have a defined gloss and workpiece geometry, dimensions and edges must not be affected. Instead of approximately 1 hour of manual polishing, now only around 30 minutes are needed. In addition, several parts can be processed simultaneously

Ralph Ziereis concludes: "The automatic polishing is an ideal addition to our service package and makes our manufactured components a lot more attractive for our customers."
For more information, visit: **www.solutions-for-am.com**

For over 80 years, privately-owned Rösler Oberflächentechnik GmbH has been actively engaged in the field of surface preparation and surface finishing. As a global market leader, it offers a comprehensive portfolio of equipment, consumables and services around the mass finishing and shot blasting technologies for a wide spectrum of different industries. Its range of about 15,000 consumables, developed in test centres located all over the world, specifically enables customers to resolve their individual finishing needs.

Under the brand name AM Solutions, it offers numerous equipment solutions and services in the area of additive manufacturing/3D printing. Last, but not least, the Rösler Academy central training centre offers practical, hands-on seminars on the subjects of mass finishing and shot blasting, lean management and additive manufacturing.

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Polishing of composite surfaces

The marine, aviation and bathroom sectors are some of the industries that have embraced the use of composite materials over the years and this has led to the introduction of numerous applications including the grinding of glass fibre reinforced polyester and the polishing of composite surfaces. This has then resulted in businesses investigating and investing in solutions that can handle the applications and meet two simple challenges. The first is the ability to handle the current job requirements and the second is being able to deal with what is coming down the line as composite technology continues to evolve rapidly.

These challenges may seem hard to meet together, but Andy Mierau, senior technical sales Mirka UK, says, "Mirka meets both these challenges head on because the technical team is in constant communication with end-users to understand what they want now and what they will require in the future. This detailed information is then fed back to the R&D department in Jeppo, Finland so the team there can anticipate and develop the necessary complete solutions and ensure that Mirka continues to be at the cutting edge of technology."

When it comes to complete solutions,

Mirka not only offers dust-free sanding solutions and sanding and polishing concepts, but also access to high quality training programmes and technical expertise. This technical expertise comes in handy, because when working with composites, there is no one size fits all solution. However, according to Andy Mierau, this issue is easily rectified in two simple steps: "Find out what composites the business is working with or on and ask what the business wants to achieve as an end result. For example, high gloss, semi-gloss or matt finish."

Once these two steps are answered, it enables the technical expert to develop a custom solution for the business, whether that be with the help of the R&D team or by trialling potential processes until the right one has been found to meet the requirements of the customer. Once this has been achieved, the technicians on the floor can then be trained either on site or at Mirka's training centre in Milton Keynes. These custom solutions, even though they may be specifically designed for one customer, can easily be tweaked, which then provides the technical team with a vast array of options they can offer to a new or existing customer.

When it comes to top tips, Andy Mierau says, "There are no specific top tips I can offer and the reason for this is very simple. The parameters of each job will vary because one business might want a specific finish because it is what their customers expect or it could be that a business needs to meet specific guidelines as part of a contract."

As to where the market is heading, he concludes, "Industries are going to continue to evolve and we will see the market continue to expand due to technological innovations and the increasing use of composite materials."

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Reducing cycle times and improving surface quality of spherical precision optics

Founded in 1972, JML Optical is an integrated designer and maker of precision optics serving all industries that use imaging optics including defense, medical and bio-medical diagnostics, life science research, metrology, and biometrics.

A vertically integrated manufacturing company, it provides design, manufacturing, coating, and metrology services for precision optics, with an emphasis on the manufacture of spherical and plano precision optics from prototype to production volumes.

After receiving an order for 550 pieces each of two different part numbers, JML Optical would not be able to meet the commitment to its customer if the job was executed with older technology. Due to the high volume of this order, the company needed innovative manufacturing equipment that would increase throughput and quality of the products.

The challenge

Like many companies in the precision optics manufacturing industry, JML Optical utilises conventional polishing equipment in-house. As the polishing time to complete each part with conventional equipment is significant, this type of equipment is not ideal for high volume production of plano and spherical optics. In addition, conventional polishing equipment has a low repeatability rate in terms of part-to-part quality due to the fact that grooves in the polishing pitch must be recut frequently. In order for JML to confidently take on jobs with quantities in the hundreds and achieve high precision tolerances consistently, the company would need to invest in a cutting-edge manufacturing solution.

The solution

After performing an assessment of JML Optical's current business objectives,

OptiPro concluded that the ePX 200 CNC high speed polishing machine aligned perfectly with the company's goals. A two-day proof-of-concept was performed free-of-charge to legitimise the potential return-on-investment of the ePX 200 prior to the purchase of the machine. After installation of the ePX 200, two days of thorough training was provided to JML Optical to ensure the company would get the most out of their new investment.

According to Steve Burton, Director of Manufacturing at JML Optical: "Purchasing the ePX 200 has turned out be one of the best decisions JML has made.

"One of the lenses we have been manufacturing has a 57.289 convex radius across a 100.00 mm diameter. We have been able to reduce our polishing time to grey this part out from two hours to twenty minutes, and the repeatability of the polisher has allowed us to achieve a half wave of irregularity consistently.

"We are having even better results on the other part, which is a 169.217 convex radius across an 86.50 mm diameter. On this part, we are not only able to grey the part out but maintain our final radius, irregularity, and cosmetics in a 25-minute cycle time."

These are just two examples how the ePX 200 CNC polisher has helped JML decrease our polishing times while increasing quality, our capabilities and our ability to meet or beat our customer needs."

JML Optical initially purchased the ePX 200 as well as the eSX 150 optical grinding machine, but the return on investment of the two machines was so significant that the company purchased two more machines just six months later: the PRO 80 GTS optical grinding machine and PRO 80P high speed spherical polisher for optics up to 80 mm.

OptiPro Systems has more than 35 years of experience developing and manufacturing precision optical fabrication machines and metrology systems. It is a global leader in designing and building computer-controlled grinding, polishing, and measuring equipment for the precision optics and advanced ceramics industries.

OptiPro's Advanced Process Development (APD) department focuses on fabrication solutions for precision optics. These solutions are designed to yield parts that can be manufactured from a variety of commercially available materials including optical glasses, ceramics, crystals, and alloys. Part diameters range from a millimetre up to one metre for flats, spheres, aspheres, and freeform shapes. OptiPro works together with customers' engineers on cost, process efficiency, design improvements, testing and evaluations to produce the highest quality fabrication and metrology systems that will add significant value to their overall capabilities.

OptiPro Systems
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Environmentally-friendly solutions

LAM PLAN, based in Gaillard, France, has been designing and manufacturing products for polishing in the industry for over years. Its technical team addresses all challenges and attempts to respond to specific issues in a simple way, that remain safe and comfortable to handle.

Since 1962 LAM PLAN has imposed itself as a real specialist in all the polishing technologies, providing its customers with scientific competences and technical know-how to accompany them in an ever finer control of their lapping and polishing challenges. From research and development to the implementation of recommended high- performance abrasive solutions, LAM PLAN teams deploy each day throughout the world an effective and friendly process with respect to environmental issues.

The polishing technology requires not only high-quality products, but also methods and an irreproachable service.

LAM PLAN manufactures all the equipment necessary for the production of your parts: design of lapping supports; plates,

abrasive papers, polishing cloths with the support needed to make it possible to obtain the required results; design of abrasive solutions; conventional and diamond abrasive pastes and liquids and formulations adapted to your requirements.

Sectors of activity comprise:

Polishing

Manufacture and maintenance of moulds and tooling intended for sectors of activity such as : plastic injection, jewellry, eyeglass trade, forge (coins, medals), wireworks.

Lapping

Manufacture of industrial valves and fittings and relief valves intended for sectors of activity such as: chemistry, petrochemistry, nuclear.

Manufacture and maintenance of mechanical seals for the refurbishment of pumps intended for: aeronautical industry, petrochemistry, agro-food industry, hydraulics.

Manufacture and polishing of the part entering in a mechanical system intended for: precision optics (optical mirrors), glass industry, electronics (read head), electromechanics (sensors), watchmaking industry, laser disc.

Metallography

Polishing of metallographic samples in view of research work on materials or production control work in sectors such as aeronautics, automobile, nuclear.

Trademarks & patents

Your requirements are a constant source of innovation. The LAM PLAN technical team addresses all challenges and attempts to respond to specific issues in a simple way, that remains safe and comfortable to handle.

Environment

LAM PLAN is pursuing and maintaining its research and development efforts in favour of the technique and the environment. Its innovations contribute to the improvement of products and technologies by rendering them more effective, while reducing their impact on the environment and limiting the risks to user health. This responsible and intentional approach is an integral part of Lam Plan's continuous improvement policy. This choice allows customers today to anticipate international regulations in terms of occupational safety and ecology.

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Compact robot honing cell with high-end features

NAGEL introduces fully automatic horizontal honing machine for small bore diameters

The highest precision and quality with simple operation are already features of the ECOHONE H series from NAGEL Maschinen- und Werkzeugfabrik GmbH. However, the company proves that even these features can be surpassed with its new horizontal honing machine, which can work on small bore diameters up to 40 mm in diameter. At the same time, it offers a fully automatic changer for worn tools.

"We have packed all the NAGEL know-how into this small system so that in the future we can offer our precision as world market-leader in the lower budget range as well," explains Michael Nagel. He is responsible for the ECOHO-NE series, among others.

The innovation of the single-spindle honing machine lies in its built-in robot cell. It performs many other functions in addition to workpiece handling. For example, it automatically changes the machine's work tools as they become worn out, if a replacement is available in the designated tool magazine. It also automatically aligns the newly exchanged tools, thereby avoiding the need for long downtimes while manual alignment takes place.

The robot cell can do even more: it also equips the ECOHONE H for new workpieces fully automatically. "If it recognises a workpiece pallet with new material, the machine is set up automatically," reports Michael Nagel. "This means fixtures, tools, measuring equipment and much more are all changed fully automatically."

Speaking of measuring equipment, the robotic cell can be equipped with the required auxiliary stations if desired. Whether for pre-testing, re-measuring, brushing or oil-free parts, everything can be individually configured. The robot takes over the handling of the parts. All these functions can be integrated at low cost.

Automatic error correction and the evaluation of measurement data (SPC) are also feasible in this price class. The horizontal honing machine is suitable for small and large series production of workpieces made from a variety of materials, ranging from metal to glass or graphite. For large series production, the machine can be extended by a second honing unit.

NAGEL Maschinen- und Werkzeugfabrik GmbH is the specialist worldwide in the field of honing and superfinishing technology. Its innovative solutions have given our customers a valuable technological edge for more than half a century.

The machines, tools and service in the field of honing and superfinishing enable the highest level of quality, productivity and process reliability on the production lines of its customers. According to the principle of simultaneous engineering, NAGEL develops the ideal fine machining process parallel to the customer's product development and then delivers exactly the right solution to enable customers to reach all their targets.

In addition to the automotive industry, numerous other fields use NAGEL honing and superfinishing technology, from compressor building and mechanical engineering to the fields of hydraulics, pneumatics and medical engineering. NAGEL is a competent partner wherever demanding tasks in the field of precision machining need to be economically and efficiently managed.

As a company with international operations, it can offer customers service worldwide. The company employs more than 1,200 employees at seven international locations.

Innovative honing machine for Ø up to 40 mm with fully automatic set-up and part handling

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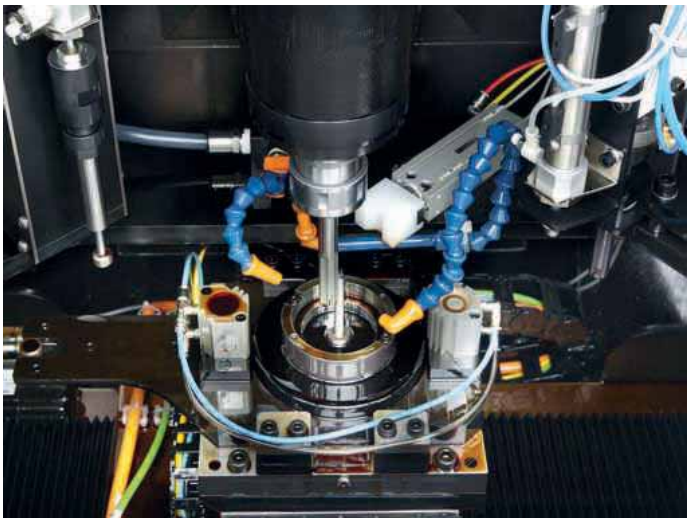
www.nagel.com

World leading honing solutions

Sunnen Products Company, based in St. Louis, Missouri and represented in the UK by Sunnen Products Ltd, is a world leader in bore sizing and finishing systems. Sunnen's customers rely on its products for precision metalworking applications covering all sorts of industries, including the global oil and gas industry.

Sunnen has designed, manufactured and distributed honing equipment, tooling and abrasives since 1924. The company has a solution for virtually any bore sizing application that demands the highest standards and most stringent tolerances. Its products include horizontal and vertical, single and multi-spindle, standard and customised precision honing systems, as well as systems with automated parts loading and in-process or post-process gauging.



In St. Louis, Sunnen's headquarters covers 486,000 sq ft (45,150 sq m) and accommodates approximately 500 employees. The private family business prides itself on its employee retention, with 65 percent of its St. Louis employees having given 10 or more years of service, while 20 percent have given more than 25 years' service.

The company has subsidiaries in Belgium, China, Czech Republic, France, Italy, Poland, Russia, Switzerland and the UK. Shanghai Sunnen Mechanical Company, China, has vastly grown since its inception in 1994 to be the industry leader in the rapidly expanding Chinese market. Shanghai Sunnen provides a full range of products and manufactures several machine, tooling and abrasive product lines. Sunnen AG, Switzerland, serves as Sunnen's technical centre for the European market, and includes sales, manufacturing, warehousing and product display.

Honing is an abrasive machining process used to size and finish cylindrical bores. Internal combustion engines of all types and sizes; mechanical gears; hydraulic valve bodies, blocks, and cylinders; petroleum extraction tubes are all examples of products requiring honing. Customers range from the small, owner-operated machine shops to large, publicly traded original equipment manufacturers.

Sunnen offers a broad line of honing machines, tooling and abrasives, while its global distribution network provides same-day service to thousands of customers around the globe. Substantially more than half of Sunnen product sales are to customers outside the US.

Today's ever-increasing needs for fuel efficiency, pollutant reductions, raw material conservation and competitive costs require leading-edge manufacturing technologies. Sunnen's mission is to deliver solutions that improve the performance of its customers. Better products make a better world.

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Preparation begins for DeburringEXPO 2021

The 4th Leading Trade Fair for Deburring Technology and Precision Surface Finishing now takes place from 12 to 14 October 2021

Markets, supply chains, manufacturing technologies and processes are changing. Entire sectors are realigning themselves. This transformation is making it more and more important for companies to demonstrate presence, and to function as solution providers. Where deburring and the production of precision surface finishes are concerned, there's no getting round DeburringEXPO.

The 4th leading trade fair for deburring technology and precision surface finishing will be held at the Karlsruhe Exhibition Centre from the 12th through to the 14th of October 2021. The exhibition portfolio covers the processing of components manufactured by means of all technologies, and from all industry sectors. The expert forum, which is in great demand as a source of knowledge, rounds out the exhibition programme with highly practical, simultaneously interpreted presentations (German <> English).

With 97 percent exhibitor satisfaction, DeburringEXPO achieves an acceptance level unparalleled by hardly any other trade fair. Amongst other reasons, this is due to the very high proportion of participating expert visitors (94 percent) who are involved in operational investment decisions. These decision-makers are seeking out solutions in a targeted fashion at the leading trade fair for deburring technologies and precision surface finishing. "Visitors come to the event with concrete tasks and the respective issues can be dealt with in depth without delay. Attention was focused on, for example, medical technology, the automotive industry and mechanical engineering. Our meetings confirmed that requirements and demands placed upon the quality of surface finishing continue to rise," reports Mathias Schnabel, sales manager and authorised signatory at Benseler Entgratungen GmbH & Co. KG, after the last trade fair presentation in October 2019.

The exhibitors at DeburringEXPO offer solutions for efficiently and reliably fulfilling the requirements of changing markets and industries

Taking advantage of the right setting

"The challenges faced by companies from virtually all manufacturing industries also have an impact on surface finishing processes such as deburring, rounding, the production of precision surfaces and cleaning. Beyond this, these process steps are becoming more and more important in the growing market for component conditioning," explains Hartmut Herdin, managing director of trade fair promoters fairXperts GmbH & Co. KG. Key requirements in this regard include ongoing quality improvement, increased efficiency, optimisation, automation and the digitalisation of processes, as well as solutions for parts and components manufactured using new and modified production technologies, for example additively manufactured workpieces and work pieces made of hybrid materials.

As a specialised trade fair, DeburringEXPO portrays these issues precisely, offers a complete overview of current and new solutions and showcases current trends in the various industry sectors. Its clear focus makes the leading trade fair for deburring technologies and precision surface finishing an ideal setting

for presenting corresponding solutions, as well as for establishing and expanding networks and detecting upcoming technologies at an early stage. Prominent companies from the industry sector, including numerous market and technology leaders, see things in the same way and have already made firm bookings for their trade fair booths more than a year before the event opens.

"Stoba Sondermaschinen GmbH has, of course, decided to participate at DeburringEXPO again in 2021, because we see the trade fair as an important factor for the presentation and marketing of our edge and surface finishing processes such as electrochemical metal and laser machining. A certain amount of risk is currently involved in the organisation of and participation in trade fairs, but as a matter of fact, trade fairs constitute a living portrayal of the economic situation and are capable of revealing techno-economic trends in a concentrated form. They make it possible for visitors and exhibitors to take part in current developments. Trade fairs also provide a suitable opportunity for gaining a better understanding of how the various industry sectors are realigning themselves. We, as well as the entire group of companies, are working intensively on gaining a foothold in new markets. DeburringEXPO is also ideally suited for this purpose," says Hans-Joachim Konetzni from sales at Stoba Sondermaschinen GmbH in summarising the company's arguments for its early decision.

DeburringEXPO is the only international platform which is consistently dedicated to deburring, rounding and the production of precision surface finishes. This makes it the ideal information and procurement platform for solutions involving these production steps

Increased focus on automation and cleaning

The supplementary programme at DeburringEXPO 2021 will be geared to increasing demands for efficiency in production and changing manufacturing technologies, for example in the areas of joining, coating and assembly. The new theme park for "Automated Deburring with Industrial Robots" will provide information concerning corresponding solutions and will also address the integration of deburring and rounding processes in an interlinked/digitalised production environment. The "Cleaning After Deburring" theme park deals with growing demands for technical cleanliness.

Knowledge transfer as added value

The integrated three day expert forum is an established supplement to the exhibition programme at DeburringEXPO. The simultaneously interpreted (German <> English) presentations, which are in great demand as a source of knowledge, make it possible for visitors to expand their know-how in the fields of deburring and rounding, as well as for the production of precision surface finishes. Beyond this, examples based on actual practice and benchmark solutions provide ideas and stimulation for the optimisation of processes at one's own company.

Further information, the entire exhibition programme and a preliminary exhibitor list, visit **www.deburring-expo.com**

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Modern sheet metal processing places more and more demands on the cut parts

Modern mechanical engineering is increasingly designed and manufactured with complex sheet metal components that are hardly or no longer machined. After the cutting follows the bending, then the welding or laser welding. In between, the components are painted using various processes, surface-treated or protected against corrosion. The various production steps are connected to each other and control the machining process. This requires dimensionally perfect cut parts with the appropriate surfaces and edge quality.

Nowadays, behind the term "deburring" hides for example a whole series of other requirements such as breaking cut edges, rounding cut edges, descaling surfaces or attaching a defined radius to the edge.

Today, WEBER has a concept with the TTSC series that can solve all these tasks. With various grinding techniques, the ideal solutions are available for the individual requirements. Parallel to the technical development of sheet metal cutting from auto oxy-fuel cutting and plasma cutting to today's laser cutting technology with more than 10 kW cutting power, WEBER has modified and further developed its grinding processes.

While the conventional grinding technique of the eighties could actually deburr and break only the cross-edges of the cut sheets, WEBER already had a machining system that rounds all edges, longitudinal and transverse, almost equally well. When the laser was used to cut thicker sheets, the problem of descaling the cutting surface arises. WEBER had also developed and used a solution for this purpose.

WEBER now has its own grinding processes for the individual problems, which can be freely combined with each other in the WEBER TTSC series. For surface grinding and deburring, conventional grinding rollers are used. The subsequent edge-breaking or rounding is done with the WEBER planetary head technique. In this grinding process, pot brushes fitted with abrasives are used, which perform a double rotational movement. This patented WEBER technology with closely spaced and rotating tool carriers allows a large overlap of the machining areas, so that the same result is achieved on the entire working width of the machine.

An additional mechanically complex oscillation movement of the brush station is not necessary. WEBER uses the MRB brush head for descaling the cut surface. Here, round brushes are mounted in pairs on rotating beams, which in turn are arranged side by side. If a defined radius is to be attached, the two methods are combined. Since the machining stations are independent, the tool-related individual wear can be precisely compensated and corrected. As the WEBER brush heads consist of units arranged side by side, they can be combined with each other in a space-saving manner according to the grinding task.

For this reason the TTSC series is built with up to four grinding stations and working widths of up to 1,600 mm. The machine is controlled entirely via a SIEMENS touch panel. All axles are motorized, all drives are frequency controlled. In this way, individual machine settings can be stored reproducibly and recalled. As often in life the differences are in technical detail. WEBER focuses here on clear and comprehensible technical solutions, tried and tested as well proven technology combined with a goal-oriented and simple operation.

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Deburring and cleaning with the PINFLOW system

The deburring of workpieces is becoming increasingly important. In recent years, the performance of chip-producing processes has increased significantly. At the same time, however, deburring has commonly been done using the same methods as have been used for decades, despite the fact that the deburring working process places particularly high demands on quality and process reliability in order to be able to manufacture cost-effectively and with high quality standards in the modern highly organised manufacturing structures and for ever more complex workpieces.

The PINFLOW system offers an innovative alternative to other procedures. The workpieces which need to be deburred are placed in a piece-specific device which is found on the work surface in the machine's processing area. The work surface, together with the device and the workpieces, is vibrated horizontally using vibrators. The device, acting as a container, is filled with the deburring medium. The vibration creates relative motion between the workpieces and the deburring medium. The deburring medium usually consists of small steel balls which, during the machining process, work not only externally but also penetrate into the piece and thus produce a deburring effect even on difficult-to-access surfaces.

The PINFLOW system can be used everywhere where, for example, simple and complex workpieces need to be internally and externally deburred, where moulding sand residue needs to be removed or where the surface needs to be smoothed: deburring complex components such as hydraulic blocks, pump housings, cylinder heads, etc.; removing the cast skin from cast iron workpieces; removing moulding sand and core sand residues; smoothing and polishing; compressing surfaces; rounding off sharp edges; removing sooty carbon residues; machining steel, grey cast iron, aluminium, brass and bronze.

The vibrations caused by the machining operation are damped by special vibration dampers which the entire machine stands on. This ensures that no vibrations are transferred to processing machines placed near the PINFLOW machine and negatively influence their processes. The processing area with vertically arranged work surface and the vibration table is completely sealed so that neither the deburring medium nor cleaning emulsion can escape. The removal of the deburring medium occurs through steady, continual movement. While the deburring medium is being removed to the reservoir, the cooling medium is isolated and processed separately. A variety of procedures are available for the treatment of the cleaning emulsion.

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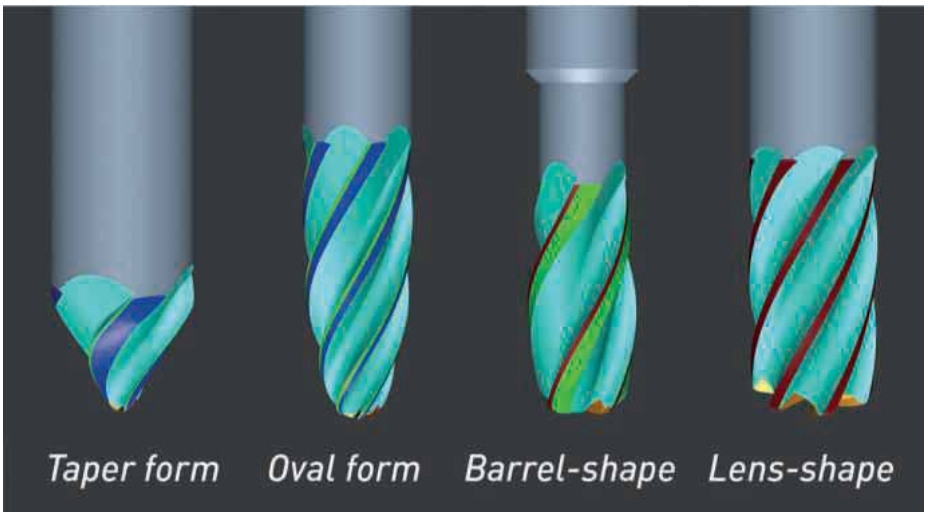
On the right path with ANCA

Like all manufactured parts, cutting tools require technical drawings to make a design a reality. Best practice for cutting tool manufacturers emphasises the importance of a tool drawing that is detailed, clear and precise. Tool drawings are essential for many reasons. Besides serving as a reference for operators to produce tools accurately and consistently, they also provide a record of the tool and enable revision control. Drawings are also predominantly used when recommending designs to customers for quoting purposes.

ANCA CNC Machines considered all the above when creating ToolDraft, which has allowed cutting tool manufacturers to achieve outstanding results. As a dedicated software package for producing 2D cutting tool drawings, ToolDraft helps users to reduce hours of workflow into a few clicks. Once a tool is created using ToolRoom (version 2016 or later) or CIM3D (version 8.1 or later), it can be sent to ToolDraft in a matter of seconds, with a click of the icon. Cutting tool manufacturers who have a backlog of tools not yet drawn will benefit greatly from ToolDraft and its ability to produce detailed 2D cutting tool drawings in minutes rather than hours.

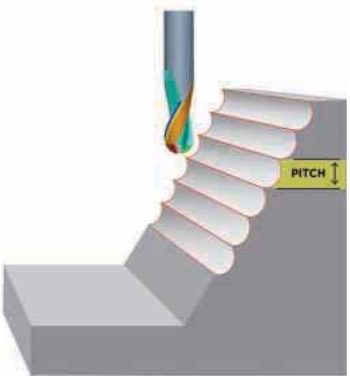
Simon Richardson, ANCA product manager, says: "ToolDraft is quick, easy to use and saves time as it allows complex geometries that are difficult to draw to be simply created and dimensioned. As the software is specifically designed for cutting tools, it offers features that 2D CAD software may not have. Time saved using ToolDraft will provide a quick return on investment for any company looking to find efficiency in their production."

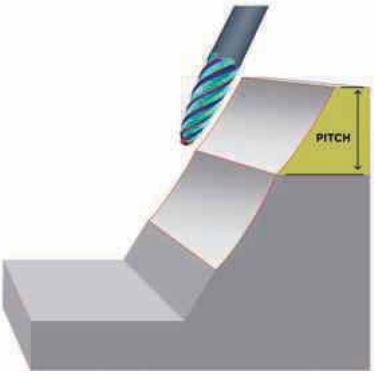
ToolDraft follows Geometric Dimension and Tolerancing (GD&T) and ISO standards. Included in the software is a library of drafting symbols, feature control frames and annotations for GD&T purposes. Dimensions can be applied to a range of various tool views and customised, if required. Leader lines with text can be placed on to a drawing to describe unique features and information. In cases when a small section of geometry needs to be highlighted, multiple detailed tool section views can be added to the drawing. ToolDraft also has the capability to add cross section views chosen by the user anywhere along the axial position of the tool.



Companies looking to produce a tool catalogue will find ToolDraft valuable as templates can be saved containing title blocks to meet company standards. Users can also insert images, tables and company logos, as well as add multiple pages to a drawing, and change text and line styles. In addition, grinding wheel packs used to grind the tool are imported into ToolDraft, and then added to the drawing for dimensioning. Single and multiple wheels can be shown and users can import wheel packs and arbors for different ANCA grinding machine models. Exporting using PDF and DXF formats is also possible.

Simon Richardson goes on to add, "A benefit of ToolDraft is requiring minimal CAD drawing knowledge to become an expert in creating tool drawings. The software allows a short learning curve, enabling drawings to be realised in just minutes. But the real beauty of ToolDraft is the in-built capability for dimensioning geometry such as helix, hook and relief angles specific to a cutting tool, which can be done in a few clicks. For any company manufacturing cutting tools, ToolDraft is the ultimate drafting solution for producing detailed tool drawings."





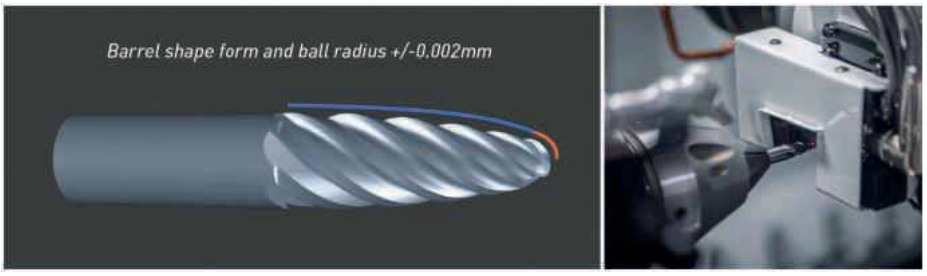
Ground barrel shape ballnose endmills outperform with ToolRoom's latest update

Discover new possibilities in machining with the Barrel Shape Ballnose (BSB) tooltype in ANCA's up-to-the-minute ToolRoom software. The latest enhancement also includes revamped Double Corner Radius (DCR) Endmills. These endmills constitute a new tool class for machining excellence. Barrel and lens shapes and taper and oval forms are relative market new-comers and are predominantly used in the die mould, aerospace, general machining and power generation industries.

ANCA Software product manager, Thomson Mathew says: "The ability to create endmills with a larger-radius edge, permits greater stepover increments. This enables machining with a larger cross over pitch during pre-finishing and finishing operations, improving productivity."

Shorter cutting distances mean it's almost like a two for one coupon for longer tool life and faster cycle times.

He adds: "Replacing conventional ballnose and corner radius applications with the large tangential form radius simulates these applications but the outsized cutting diameter is what saves cycle time and cost; and the resulting surface finish is better as well.



"Bringing these new endmills together with the expert advantages of ToolRoom, such as iView and laser compensation, designer edge ballnose, variable helix and tool balancing, sets tool manufacturers up with a complete solution and is unique to ANCA software. In addition, a special fluting operation ensures a constant hook angle all the way along the trajectory of the cutting edge resulting in vibration-free tools, with less wear and tear during machining."

Innovation and flexibility in ANCA's software has always been an intrinsic partner to tool machines' functionality. With a legacy of first-to-market software features, this enhancement continues to advance the sophistication and application diversity of ANCA's dedicated cutting tool software package. Clever features offer customers the machining capabilities needed for today's market.

Thomson Mathew adds: "ANCA has been leading the industry in terms of new features, cycles, cutting tool geometry and functionality in our cutter grinder software for over two decades and this latest release extends this further."

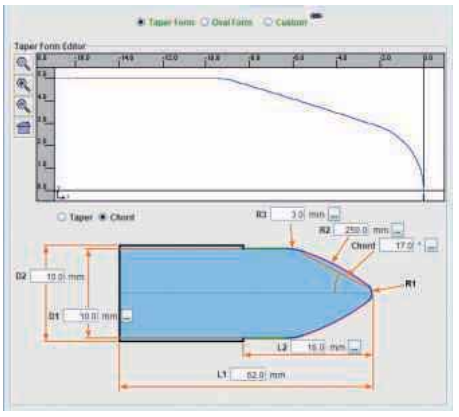
Upgrade offers wizard-based design for user-friendly operation

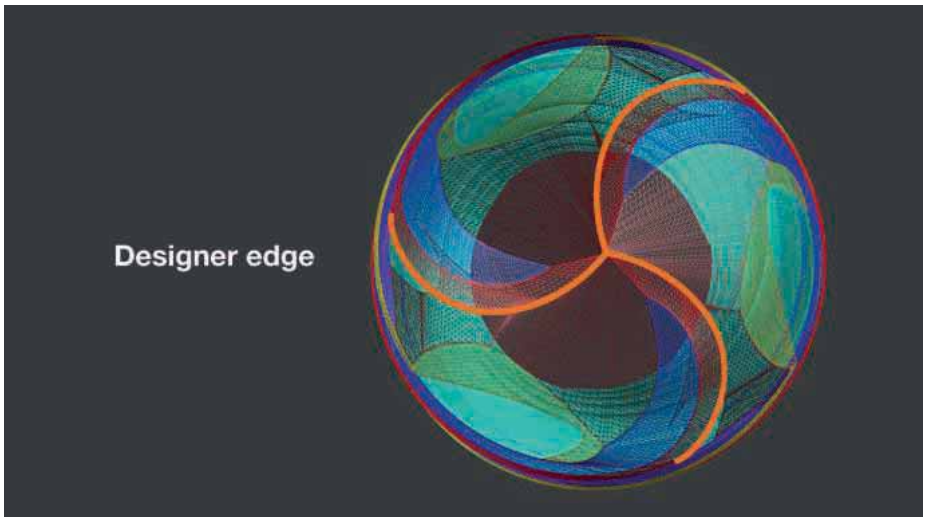
Manufacturing complex, sophisticated endmills is made easy with wizard based BSB design in ToolRoom, suitable also for catalogue production. BSB and DCR tool types are high performance endmill cutters, mainly used for finishing requiring high accuracies. They may be more familiar to some as circular segment or high feed endmills. In the current market, cutting tool manufacturers may be looking to enter new markets and this software release makes diversification with high-quality specialist tools attainable.

This sought-after enhancement retains ANCA's renowned software user-friendliness and completes the ToolRoom RN34 endmill package.

The features of the new market release encompass compensation and accuracy Compensation methods are covered as ANCA supports manual, iView and LaserPlus compensation for all geometry, as these tools are highly accurate. Both ball radius and tangential barrel form radius can be maintained within +/-0.002 mm using LaserPlus. This accuracy can also be maintained in batch grinding with automatic in-process compensation for large volume production on machines with LaserPlus.

The wizard-based design also provides the option to scale tools and add various other operations like roughing or chip breakers. Wizard support is available for oval form, taper form as well as a custom form for specials. A static view gives parameter inputs for geometry description and there is also a dynamic view available to visualise the geometry as and when parameters are entered.





There are multiple practical advantages of ToolRoom software for cutting tool manufacture:

- iView and laser compensation for large volume manufacturing.
- Designer edge ballnose for aggressive cutting.
- Variable helix/index with radial margin option for fluting cycles.
- Tool balancing for variable helix/index tools for chatter free cutting.
- Constant hook along cutting edge trajectory (special flute from solid).
- Very user-friendly GUI with static and dynamic view specially for catalogue tools.

View the video at
https://youtu.be/VjLSlAWaI8U

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Walter tool manufacturing automation enables UK companies to get ahead of the game

The argument for the adoption of automation is unquestionable; automation not only fills any gaps in (and not necessarily always replaces) appropriately skilled human resources but it also enables repetitive jobs to be consistently performed to the same high level, minute by minute, day by day. Automation also doesn't need to sleep and it doesn't have refreshment breaks or holidays.

Perhaps this explains why users of Walter tool grinding and erosion machines, as well as its tool measurement machines, are keen adopters of automation, applying various aspects of pallet systems, auto loading/unloading by robotics and automatic wheel changers 'within' their machines and, as a result, increase output without additional human intervention.

The use of such automation has effectively created stand-alone 'cells' of sophisticated tool manufacturing and regrinding units where output is limited only by the tool storage capacity of the machines' integral pallet systems.

An analysis of recent years' sales by Walter Ewag UK, a member of the United Grinding Group, has revealed that between 2015 to 2019:

Over 90 percent of its Walter Helitronic grinding machines were supplied with automatic loading systems and around a third had automatic wheel changers.

Tool vision

Robot Loader

All its 'two-in-one' Helitronic Diamond grinding and erosion machines were supplied with automatic loading systems and two-thirds were equipped with automatic wheel changers.

20 percent of the company's Helicheck tool measurement machines incorporated robot loading.

Walter Ewag UK's sales director, Neil Whittingham says: "Such figures illustrate how Walter users have embraced technology for the past 15 years or so, not only to obtain increased output with fewer machine operators tending multiple machines, but also to use these automation aids to run the machines unmanned and often in a 'lights-out' mode at night.

"Additionally, they are finding that the increased production rewards far outweigh the added cost of investing in automation, in many cases achieving payback on the cost of the robots, loaders and wheel changers within months."

A variety of loaders can be supplied as options with Walter tool grinders/erosion machines, to meet varying demands:

The FANUC LR Mate Robot Loader can accommodate up to 7,500 tools (cylindrical) depending on diameter/type and up to seven pallets enable the 'chaotic' loading of a variety of tools when the optional automatic diameter detection functionality is employed. Latest developments include a Robot Loader 25 model, capable of loading tools of up to 315 mm diameter and weighing a total of up to 20 kg into an HSK holder. An optional five-pallet system accommodates up to 70 tools.

The Top Loader has a pneumatic swivel arm with gripper (that integrates with Walter's standard robot pallet system for tools up to 32 mm diameter and up to 250 mm long) and the two-pallet system, one each for blanks and finished tools, can each accommodate up to 500 tools (depending on size).

Based on HSK 50 interface, the automatic wheel changer can store four or eight wheels, as standard (depending on machine type), and up to 12 and 24 optional.

When used on the Walter Helicheck tool measurement machines, the Robot Loader will accommodate up to 7,500 tools and each tool is measured, recorded and separated on pallets (four as standard, optionally up to 16). Also for use on the Helicheck PRO and PLUS machines, integrated laser marking on tool shank and end positions, coupled with cleaning via integrated air jets, also adds to the rewards and eliminates the need for a separate marking machine/handling process.

Pointing out that Walter robot technology can be integrated into manufacturing cells

incorporating say, finishing stations, Neil Whittingham also highlights a plethora of Walter 'add-on' technology that can further improve the benefits of automation, including automatic collet changing and tool cleaning, as well as a camera vision system that automatically finds 'veins' and/or coolant holes on tool blanks, for highly-accurate tool positioning.

Neil Whittingham concludes by quoting the results of research in North America in 2018 by Deloitte, in conjunction with the Manufacturing Institute. "The report stated that in 2015, few users of grinding machines had adopted automation and that, by 2028, a potential skills gap in US manufacturing could include 2.4 million unfilled jobs, a void that employers would be increasingly seeking automation to fill.

"It's often quoted that the UK follows US trends, but that is certainly not be the case in terms of Walter's UK tool manufacturers and regrinding customers who, for the past 15 years at least, have been harnessing the power of automation to consistently increase outputs to levels that are disproportionate to their number of employees."

Top Loader

Wheelchanger

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Smart solution for efficient precision cleaning

UCMSmartLine highly flexible, modular ultrasonic precision cleaning system

In numerous industries and markets, companies are faced with increasing demands regarding the cleanliness of their parts. These can often only be met with high precision cleaning processes tailored to specific requirements. For such applications, UCM has developed the new UCMSmartLine cost-efficient ultrasonic cleaning series. Based on standardised modules, it includes integrated electrical and control systems for cleaning, rinsing, drying, loading and unloading processes, as well as a versatile transport system. The modules can be configured to create customised extendable systems for preliminary, intermediate and final cleaning.

Swiss company UCM AG is a division of the SBS Ecoclean Group that specialises in fine and precision cleaning. With its newly developed UCMSmartLine series of multi-chamber immersion cleaning systems, the company is responding to a trend that has been emerging for some time in a number of industries and which is increasingly gaining momentum. Due to new and more demanding product requirements, changes in manufacturing, bonding and coating technologies, as well as stricter environmental regulations in some sectors, the demands on component cleanliness are constantly increasing. Among others, companies from the medical sector, watch and jewellery industry, optics, precision and micro technology, automotive and supplier industries, machine tool manufacturers and the coating industry are faced with the challenge of meeting these stringent particulate and film cleanliness specifications with reliable processes at competitive prices. A similar situation can also be observed in the maintenance, repair, overhaul sector from industries such as aerospace, electronics, medical engineering, etc.

Thanks to the modular concept of the UCMSmartline, multi-chamber immersion cleaning systems can be individually designed for a wide range of applications

Optimum adaptability and extensibility for future-proof operations

Thanks to the cleverly designed modular concept of the new UCMSmartLine, highly compact ultrasonic multi-chamber immersion cleaning systems can be built with three to nine cleaning and rinsing stages for preliminary, intermediate and final cleaning. As a result, the system can be individually configured for a wide range of applications and adapted to changing market conditions at any time. Twin and triple modules are available for the process steps "cleaning and rinsing", or "cleaning, cleaning and rinsing" and can be combined as desired. With an additional module, a two-stage fine and precision rinsing processes can be integrated with cascaded reverse osmosis or demineralised water.

The ultrasonic cleaning modules, which are heated and fitted with a filter circuit as standard, can also be adapted to suit a wide range of applications. This enables the use of single (25, 40, 80 kHz), dual (25/50, 40/80 kHz) as well as multi-frequency ultrasonics (40/80/120 kHz). The ultrasonic transducers are placed at the bottom and/or on one side of the tanks measuring 370 x 420 x 390 mm (L x W x H). The parts are dried by infrared radiation heat, hot air or under vacuum. Depending on the application, these drying technologies can also be used in combination. The loading and unloading stations of the UCMSmartLine can be arranged either at the front or at the side, depending on the space available and plant layout for optimum material flow. These tasks can be performed manually or automatically.

For cleaning applications requiring an exceptionally clean environment, one or two HEPA filters can be installed on the top of the housing, depending on the length of the system. As a rule, two flow boxes are used, which creates a cleanroom atmosphere from the last rinsing station to the unloading station. The UCMSmartLine can also be connected to a cleanroom.

Designed for maximum process reliability as standard

Inside the system, the parts are conveyed by a standard automatic transport system with servo drive. This enables the transport speed to be adapted according to the parts being cleaned. As a result, the parts are handled extremely gently during processing. In addition to preventing damage and scratches on sensitive workpieces, it also prevents components from rising to the surface. If desired, speeds can be increased in most sections of the line to ensure a higher throughput. A further advantage of the servo drive is the part-specific lift-out from the last rinsing tank for pre-drying the parts. This helps prevent stains from forming during the subsequent drying process.

The standard version of the system has a static transport rack made of stainless steel that is designed for a maximum batch

weight of 20 kg. In addition, transport racks that can be rotated along the longitudinal axis are available for bulk items requiring increased part agitation. Another type of transport rack can be rotated along the vertical axis at 200 rpm during wet processes and up to 1,000 rpm during the dry process. These racks are used, among other things, to clean microlenses in optics.

The standard automatic transport system has a servo drive for exceptionally gentle workpiece transport and part-specific lift-out for pre-drying parts as they leave the last tank

All wet-stage tanks of the system, which is entirely made from electropolished stainless steel, have a two-sided overflow which ensures the immediate removal of detached particles and other contaminants. This minimises the risk of recontamination when the parts are moved. Image source: UCM AG

If higher throughputs are required, the system can be fitted with a second automatic transport system.

The spill-over tank developed by UCM also guarantees consistently good cleaning results in line with demands: In all of the cleaning and rinsing tanks, the media are introduced from below and pumped to the top where they overflow on two sides. This creates a constant flow in the tanks and makes sure that the parts are thoroughly cleaned and rinsed. The flow also ensures that detached particles and other residues are removed immediately from the tanks, thus minimising the risk of re-contaminating the parts when they are moved or lifted out. The tanks have been designed so that they can be drained quickly and completely and that no pockets of dirt or contamination can form. The same applies to the piping of the cleaning system, which is designed for temperatures up to 70° C.

High flexibility through integrated electrical and control systems

The electrical and control technology is already integrated in each module of the new UCMSmartLine. This plug-and-play design plays a major role in reducing the amount of space required for the ultrasonic multi-chamber immersion cleaning system. It also eliminates the need for a separate control cabinet. As a result, the systems can be put in operation quickly and extra modules added at any time.

Impressive design with health, safety and environmental benefits

In addition to its performance and adaptability, the fully enclosed UCMSmartLine made from electropolished stainless steel also impresses with its design. The standard front panels are made of high-quality safety glass and are not just an optical feature. They also prevent vapour escaping from the system into the surroundings, which could pose a health risk depending on the cleaning agent used.

Compared to the many open systems available in the market, the panels also reduce heat loss, which cuts energy consumption. The covered dryers reduce energy costs even further and also increases throughput with shorter drying times.

The system's PC-based controller can be integrated into higher-level Manufacturing Executive Systems (MES) via interfaces.

Due to its modularity and high flexibility in terms of system configuration and process design, the new UCMSmartLine covers an extremely wide range of applications in high-tech industries as well as in the fields of MRO. At the same time, the modern modular concept means that the cleaning system can be manufactured cost-efficiently with short delivery times.

Thanks to the modular concept of the UCMSmartLine, multi-chamber immersion cleaning systems can be individually designed for a wide range of applications. The electrical and control system is already integrated in each module.

Up to nine cleaning and rinsing steps can be integrated into the cleaning system and variably equipped for use with single, dual and multi-frequency ultrasonics

The SBS Ecoclean Group develops, produces and markets forward-looking machinery, systems and services for industrial part cleaning and surface treatment applications. Its globally leading solutions help companies around the world in conducting efficient and sustainable manufacturing to high quality standards. The client base comes from the automotive industry and its suppliers in addition to a broad range of market sectors ranging from medical equipment, micro technology and precision devices through mechanical and optical engineering to power systems and aircraft industry. Ecoclean's success is based on innovation, cutting-edge technology, sustainability, closeness to the customer, diversity and respect. The Group employs a workforce of over 900 at its 12 sites in nine countries worldwide.

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Advances in additive manufacturing techniques

Wax removal during 3D printing

When a global leader in the development and manufacture of orthopaedic implants approached Layton Technologies for a solution to an issue resulting from the widespread innovation and increase in additive manufacturing (3D printing), Layton knew that it had the capabilities to assist with this highly complex issue.

The additive manufacturing process in question called for the 3-dimensional printing of parts using two different proprietary wax products. One of these waxes is used as a support material for the second wax which forms the basis of complex geometry moulds for the orthopaedic implants.

The current process for the removal of the support wax is an extremely labour intensive process which involves the heating and agitation of a flammable solvent in an open top container using a hot-plate and a magnetic stirrer. This setup afforded little control of the flammability hazards associated with heating the solvent and provided the operators with minimal protection from any solvent vapours and fumes.

The melting point of the support wax was identified as only 5 °C higher than the melting point of the mould wax and it was essential that when removing the support wax the mould wax was not altered in any way to preserve the precisely printed geometries.

The client identified the need to improve this process as the requirement using this type of additive manufacturing was increasing rapidly and the current manual setup had become a bottle neck.

Layton were tasked with developing a streamlined process which removed the labour intensive nature of the current process, greatly reduced the downtime created by the manual cleaning requirement and guaranteeing an end result together with ensuring that waste solvent which was loaded with support wax was kept to an absolute minimum. The lengthy project included the following requirements and events:

Extensive, customer witnessed, trials were conducted to rationalise the current process into a single stage system utilising a flammable solvent at elevated and very precisely controlled temperatures to ensure the removal of only one type of wax.

Due to the nature of the wax contamination detailed calculations were done by Layton to assess the wax loading of the solvent and the length of time that the solvent in the system could continue processing the product before it was saturated with support wax.

The trials and calculations resulted in the proposal for a bespoke system which not only removed the support wax without affecting the other wax but also reprocessed the solvent to ensure that the waste stream for the system was kept to an absolute minimum.

A comprehensive Technical Proposal was produced to satisfy the concerns that the client had expressed as to the overall ability of the new system to meet the requirements of the project.

The documentation produced by Layton, and the results of the tests conducted were all accepted by the client as an acceptable alternative to the current process. An extensive Technical Proposal was produced which included for automated processing, this satisfied the concerns that the client had expressed as to the overall ability of the new system to meet the requirements of the project.

Following the issue of the purchase order to Layton, its in-house design team produced a comprehensive Design Documentation Package which included a general arrangement diagram, a piping and instrumentation diagram and a functional design specification, a software design specification together with a comprehensive Project Plan.

At the same time as the main system design and manufacture Layton undertook the design, development and manufacture of a specialist fixturing to hold the components and to optimise the cleaning and drying process.

The final design resulted in a new, fully automated, low emission flammable solvent cleaning system complete with Layton's unique five year warranty.

Staffordshire-based Layton Technologies Limited is a global leader in the design, manufacture and installation of precision cleaning equipment for the medical, aerospace and specialist engineering industries. The company is located in the heart of England, with easy access to main transport networks via road, rail and air.

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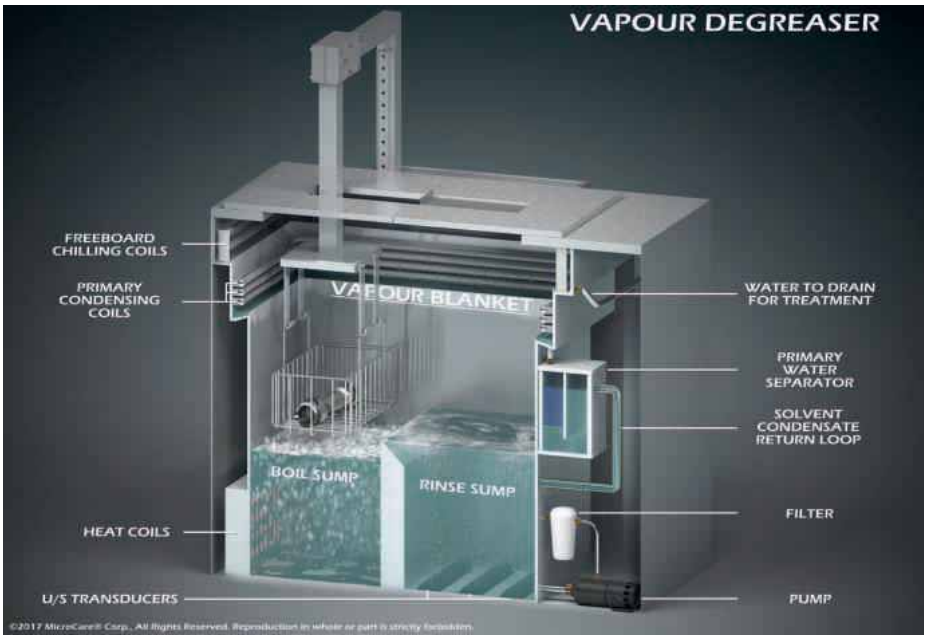
What makes a good parts cleaning fluid?

By Vanessa Hurtubise, technical chemist, MicroCare LLC

The metalworking industry is changing fast. The use of composites and polymers grows as the demand for smaller and lighter parts increases. Very small parts with complex geometries, awkward shapes, and internal blind holes are now common, while at the same time, customer quality requirements on finished parts remains high. In addition, the environmental regulations surrounding manufacturing and cleaning fluids multiply and tighten as governmental agencies seek ways to better protect air and water quality. Each of these changes, especially the emerging environmental requirements, impacts the way companies clean and prep their parts before welding, plating or assembly.



Vapour degreasing cleans and dries parts in a single process

Legacy solvents

In the past, legacy solvents like TCE (trichlorethylene) and nPB (n-propyl bromide), reliably and economically cleaned parts inside a vapour degreaser. However, those outdated chlorinated and brominated solvents are now banned as industrial cleaners in Europe due to air quality and worker safety concerns. Other regions across the globe are soon to follow.

Many metalworking shops use solvent vapour degreasing and are happy with the process and the cleaning results. However, they must opt for safer and more environmentally acceptable cleaning fluids that still clean efficiently and effectively, but are also less hazardous for workers and the environment. Happily, there are a number of next generation cleaning fluids that clean just as well, if not better than the legacy solvents.

How vapour degreasing works

Vapour degreasing is one of the most effective methods for parts cleaning. It is a consistent and repeatable process that effectively removes lubricants, silicones and greases. Vapour degreasing is fast and efficient. It also boasts high throughput and easily automates into standard production lines.

Soiled parts immerse in the continuously heated, filtered and distilled cleaning fluid inside the vapour degreaser to dissolve or lift the soils from the parts surface. In some instances, ultrasonic agitation adds additional cleaning muscle. As the parts lift from the boiling cleaning fluid, they undergo a brief vapour rinse and drying process. The cleaning fluid then condenses and drips back into the vapour degreaser to be reused. After a typical cleaning cycle of about 6-20 minutes, the parts come out dry, cool, spot-free and ready for processing or packaging.

Next generation cleaning fluids

Finished parts are often held to high cleanliness standards. Whether tested using black light inspection, particle count, water break or other analysis, they must meet customers' cleanliness requirements. Most next generation cleaning fluids rigorously clean surfaces and displace stubborn soils to readily meet those standards.

They are typically a mixture of compounds that can include hydrocarbons like mineral spirits, isopropanol and ethanol. Depending on how the compounds combine determines the cleaning fluids' effectiveness and material compatibility. Most effectively clean stainless steel, copper, brass, aluminum, nylon, polyester and polyethylene without harm.

The vapour degreaser cleans with just one type of cleaning fluid, or if fluids are mixed, blended or custom formulated to remove a specific soil from a specific substrate, maximising cleaning effectiveness. Next generation vapour degreasing fluids easily dissolve non-polar (organic) contaminants including machining and stamping oils and thick grease. Also waxes, baked-on resins, corrosion protection agents and esters. They also remove soils like drawing compounds, spinning lubricants, buffing compounds and fingerprints.

The details matter

Due to their unique chemical properties, next generation vapour degreasing fluids effectively trap and remove soils from even the smallest and most intricate part geometries. For example, the fluids have a low surface tension and are very low viscosity. This allows them to penetrate and clean inside very tight spaces such as interior blind holes or between the crevices of stacked parts. Even more importantly, low viscosity allows the fluids to flow back out of the tight spaces and to quickly evaporate. This leaves dry, residue-free parts.

Most modern fluids are also are very heavy or dense, typically, 20-40 percent heavier than water and 50 percent heavier than alcohol. Dense fluids dislodge particulate, like metal shavings or polishing pastes, from the parts. They are also effective for cleaning dust, dirt, soot, surfactants, stearates, and fibres.

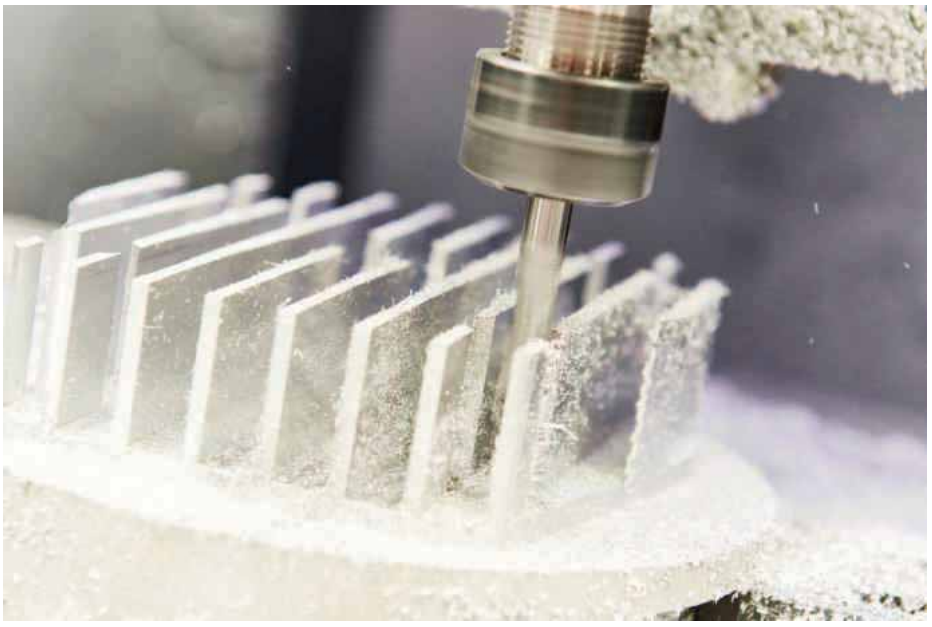
Smart energy consumption
Many next generation cleaning fluids have a lower boiling point and heat of vaporisation than their legacy counterparts. Low boiling cleaning fluids (below 100°C) still thoroughly clean parts but allow the vapour degreaser to run more efficiently. Plus, using the lowest boiling temperature possible allows cleaning of plastic or composite parts without damage. In addition, since vapour degreasing cleans and dries in just one step, there is no need for blowers, air knives or any other drying method that uses power. This translates into less fossil fuel consumption, lower carbon emission and reduced greenhouse gas output, all with the added benefit of energy cost savings.

Environmentally sustainable
Vapour degreasing with next generation cleaning fluids uses no water to clean, conserving this precious non-renewable resource. It also doesn't produce wastewater that requires specialty filtration, distillation, deionisation and osmosis prepping prior to disposal, another environmental benefit.

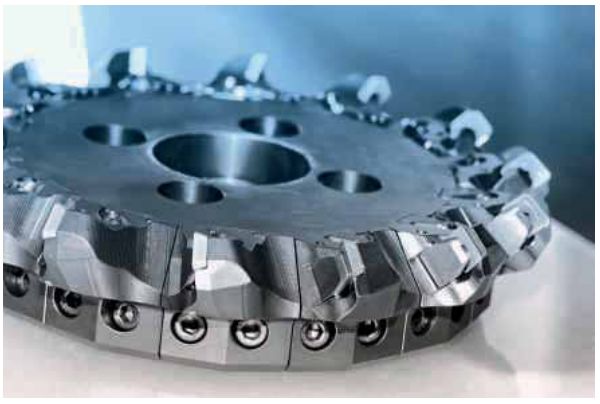
Many next generation cleaning fluids have "green credentials" themselves. Unlike the legacy solvents with air quality concerns, modern cleaning fluids have a very low GWP (Global Warming Potential) which helps reduce greenhouse gas effects. They also have a zero ODP (Ozone Depleting Potential) and low VOC (Volatile Organic Content). This allows them to meet strict regional air quality regulations. Many are not considered a HAP (Hazardous Air Pollutant). They also meet global environmental directives including the European F-Gas and REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) legislation.

Another environmental benefit of vapour degreasing fluid is its capacity for recycling. It works over and over again for hundreds of cycles before it needs refreshing or replacing. Additionally, the vapour degreaser concentrates the soils as it works. This reduces waste generation and lowers hazardous waste disposal costs.

Support worker safety
Next generation cleaning fluids help improve worker safety. First, many of the replacements for nPB or TCE have better toxicity profiles and higher TLVs (Threshold Limit Values) than the legacy solvents, making them safer for workers to be around. The cleaning fluids' SDS (safety data sheet) lists its PEL, or Permissible Exposure Limits. Higher PEL ratings are better. For instance, nPB is rated at just 0.1 parts per million whilst TCE is rated at 100 parts per million. Next generation cleaning fluids have typical PEL ratings of 200-250, making them significantly better for the safety of exposed workers.



Vapour degreasing fluids easily remove a variety of contaminants including lubricants and other production debris



Low viscosity cleaning fluids thoroughly complex parts, inside and out

Secondly, modern cleaning fluids are nonflammable which helps protect workers from burn accidents, in the event of a sudden arc flash. Lastly, next generation cleaning fluids are chemically and thermally stable, so they don't go acid with use. This reduces safety risks and eliminates the need for solvent stabilizers and scavengers. It also eliminates the weekly acid acceptance testing required of the legacy solvents.

Easy to convert
In most instances, the changeover to next generation fluids is simple and does not require any investment in new equipment. Most of the modern cleaning fluids are used in existing equipment, using the same methods. After emptying and cleaning the vapour degreaser many of the replacement cleaning fluids are "dropped in" into the machinery without an appreciable change to the cleaning process. The conversion is typically fast, with little impact to production schedules or time lost training employees on new fluid cleaning processes.

Conclusion
Vapour degreasing with next generation cleaning fluids is not only a cost-effective way to ensure parts are clean, it also addresses worker safety, energy usage and environmental concerns. For companies looking for a good cleaning fluid, the best course of action is to partner with a parts cleaning expert that has parts cleaning fluid and vapour degreasing expertise. They can help conduct on-site audits or perform in-lab tests with sample parts to ensure cleaning success. Based on specific parts make-up and the contamination encountered, they can recommend, or formulate, the fluids and parts cleaning process that works best.

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MecWash Duo bolsters Ultra Precision's £1.5m upgrade plan

Ultra Precision Products Ltd, manufacturer of high-end precision machined components, has enhanced its quality offering by investing in a MecWash Systems Duo 400, as part of a £1.5 million series of upgrades.

Ultra Precision's main business activity is in precision engineering: CNC milling, turning, and machining. Based at a purpose-built factory in Haverhill, Suffolk, key operational sectors include aerospace, medical, oil and gas, subsea, nuclear, hydraulics and defence.

A 2019 investment programme increased engineering capacity and provided customers with parts finished to a world-class level of cleanliness. As well as cleaning equipment, the investment also included the acquisition of new CNC machines.

Replacing the previous labour-intensive method of cleaning, the MecWash Duo 400 exceeds the requirements to clean machined stainless steel and aluminium precision components including rods used in medical applications, removing soils, oil, coolant, and swarf. It was essential for the machine to have the ability to clean and dry products to a high-quality specification.

MecWash's Duo 400 has the benefit of flood / immersion washing, which provides the highest standards of cleaning by full solution contact with all component surfaces, and a re-circulating heated spray rinse, which provides a superior surface finish by removing detergent residues left by the wash solution.The rinse stage can also be used to apply a longer term corrosion inhibitor for ferrous components, all finished off with a hot air dry.

Simon Quick, production manager at Ultra Precision Products Ltd, says: "Our new component washing facility from MecWash has proven to be a great success, hugely improving the quality of the parts we deliver in terms of cleanliness, whilst also reducing the process time to complete the cleaning operation. This in turn has helped with lead times and delivery.

"The machine is fully programmable for any cycle required, with a combination of flood wash, spray wash, rinse and dry. The water is filtered and skimmed automatically to keep the wash solution in the best condition possible and the dosage of cleaner is controlled and maintained automatically in cycle.

"As well as a full rotating wash, more fragile items can be run on a static wash where the baskets stay still. A variety of baskets, dividers and clamps allow us to hold all parts securely."

Geoff Quick, managing director at Ultra Precision Products Ltd speaks of Simon's decision to choose MecWash: "Being a British built machine was a factor in the purchase of the MecWash Duo. This coupled with the outstanding cleanliness provided by the Duo made it the top choice for Simon.

"MecWash's customers include aerospace, medical, pharmaceutical, defence and motorsport. We have an excellent reputation supplying precision parts into a wide range of these industries, many of which also have MecWash machines, so we are aware of the fantastic cleanliness levels achieved."

John Pattison, managing director at MecWash Systems Ltd comments: "We are always delighted when customers are recommended our systems from other suppliers they work with.

Ultra Precision's technician Harvey with MecWash's Duo 400 at Ultra Precision's Suffolk plant

Ultra Precision supplies parts into many of the same sectors that we supply our cleaning systems, so they have seen how a well developed and manufactured washing system can surpass the results they were after.

"We work closely with all of our customers to ensure the right mix of washing technology and a bespoke blend of cleaning chemicals. The Duo's final wash quality meets the highest possible standards of cleanliness. I am positive that the Duo 400 will deliver for Ultra Precision as they continue to increase their capabilities and I hope they will return to us again in the future with any further cleaning requirements."

World class parts washing technology

MecWash parts washers are used in the aerospace, automotive, defence, general engineering and Medical industries. It specialises in achieving high cleanliness standards for components with intricate geometries, difficult substrates or tenacious contaminants. Its parts washers support the full range of engineering processes, including machined castings, forgings, turned parts, pressings, extrusions and mouldings.

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Kemet declares its Genius Plus

Advances in technological development set ever higher requirements for component cleanliness in today's manufacturing industries. For several years, surface finishing experts, Kemet International has been offering complete solutions to customers with challenging cleaning problems.

Partnered with the ultrasonic cleaning line manufacturer, Finnsonic, and Swiss aqueous cleaning chemical producer, NGL, Kemet's R&D centre in Maidstone, Kent has developed optimum cleaning processes to completely and economically remove a wide range of contaminants from a variety of component materials and geometries.

Kemet ultrasonic cleaners

Recently added to the equipment offering is the latest generation in the Versa range, The Genius Plus. From a single ultrasonic tank to a multistage automatic line and for applications ranging from maintenance to precision cleaning in production environments, the modular range offers a smallfootprint system that can grow with the user's requirements. Configured out of washing, rinsing and drying modules and their options it boasts many new thoughtful details with fluid connections, agitation and control features providing a more functional, flexible and energy efficient process.

As always, the tanks provide a precise and pervasive cleaning effect featuring ultrasonic boost, sweep and degas technologies as standard. The unique booster function provides extra power for challenging contamination, whereby the frequency sweep eliminates dead spots and ensures a uniform washing result.

Other features and options are available, including: pneumatic actuated tank lids, basket dunking system, air bubble agitation, air knives (to blast off excess water when lifting the basket out of tank), noise suppression, lip steam extraction, automatic purge and filling to add clean water, automatic detergent dosing/regulation, and PH measurement. The drying module offers drying by vacuum and infrared heating, as well as simple hot air.

The new range offers increased JETpower compared to its predecessor, along with dedicated connections for closed loop circulation, a more ergonomically angled operating panel, more effective draining, immersion heaters, cost savings, more environmentally friendly, greater automation for operator safety, improved dunking design, slim construction and increased mechanical clearance and component lifetime.

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Innovative E-mobility solutions

Environmental and climate protection is not possible without alternative drive systems. In this respect battery driven electric motors and light-weight vehicle design play a dominant role. As a long-time, experienced and competent partner of the automotive industry Rösler offers numerous innovative solutions for the electric mobility.

The strategic reorientation of the automotive industry towards alternative drive systems goes along with numerous new and modified components. This applies not only to drive assemblies for hybrid and purely electric vehicles but also to the battery modules. Because of the increased use of light-weight materials, different manufacturing and assembly technologies but also due to a continuously growing automation, the surface finishing requirements for these components are particularly strict, and they must be completely free of any burrs. For quite a while, the experts at Rösler in the fields of shot blasting, mass finishing and post processing of 3D printed components have been developing solutions for these specific finishing tasks.

Smart manufacturing cell for casting and shot blasting

For example, in close cooperation with renowned manufacturers of casting cells the company developed a solution that combines die-casting and shot blasting as well as work piece handling by robot into one fully automated system. Since this smart die-casting/shot blasting cell requires a production space of only a few square meters and requires no operator, it can be easily integrated into a fully automated manufacturing line.

This innovative system for in-line die-casting, deburring and surface homogenisation is already in use at various OEM's as well as suppliers of die-castings. One customer is FIASA. This company, located in Nanclares, Spain, manufactures, among other items, components made from different aluminum alloys for vehicles with BEV-, PHEV- and mHEV drive systems. After the die-casting process the robot removes the workpiece and, after a brief cooling time, places it on a part-specific fixture in the swing chamber shot blast machine RWK 6-12-2. This machine can handle components with a length of up to 1,200 mm and a diameter of up to 600 mm. A key feature is that loading/unloading of the workpieces takes place during the shot blast process, thus minimising idle equipment times.

For optimum handling of the FIASA work piece range the shot blast machine was equipped with two Gamma 300 blast turbines with a drive power of 11 kW each. Compared to conventional blast wheels these high-performance turbines, utilising curved throwing blades in Y-design, achieve a 20 percent higher blast performance with, at the same time, reduced energy consumption. The blast media flow rate amounts to 212 kg/minute.This media throughput in combination with the higher blast performance results in surprisingly short cycle times. Their special Y-design permits the use of both sides of the throwing blades, practically doubling their usable life. A quick-change system allows quickly changing the throwing blades without having to remove the turbine from its housing. This feature, along with the use of both blade sides considerably extends the overall equipment uptimes.

Once the blast cycle is completed, the robot removes the work piece at the load/unload station and places it in a packaging unit.

Special turbine for aluminum blast media

To ensure quick and efficient blast cleaning with lighter aluminum blast media, the swing chamber shot blast machine can alternatively be equipped with high performance turbines with "C" shaped throwing blades.

This turbine was specifically developed for blast cleaning of aluminum work pieces with aluminum blast media. In order to handle the special operating conditions existing with aluminum media, it allows a considerably higher media throughput by volume. The lower bulk density of aluminum media requires a higher throwing speed to achieve optimal blast cleaning results. The Rösler C300A blast turbine fully meets these requirements.

At 3,000 rpm the C300A high performance turbine achieves a throwing speed of up to 75 m/s and a blast media flow rate of 90 litres/minute at surprisingly low operating costs. Under certain conditions a flow rate of 130 litres/minute is possible. Compared to other turbines available in the market the C 300 A produces a better blast pattern characterised by its extra length and a homogeneous blast media distribution. Based on the special turbine design the blast media consumption is about 10 percent lower.

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Surface Finishing is our **DNA**

Mass Finishing

Efficient systems engineering and innovative technologies – powerful and economical

Shot Blasting

Individual systems engineering and intelligent process solutions – reliable and energy efficient

AM Solutions

The full solution provider for 3D post processing equipment and 3D printing services

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RÖSLER® *finding a better way ...*

Continuous overhead rail shot blast machine

The AGTOS standard program of hanger-type blast machines comprises six machine sizes

The choice of the appropriate machine concept depends among other things on the workpieces involved, the required level of performance and last but not least on a customer's needs regarding an optimized production process.

In the event that a standard model does not meet your surface preparation needs, AGTOS will develop a tailor-made blast machine concept for you. A team of experts welcomes your detailed questions and looks forward to helping you.

Operation

Workpieces are placed in workpiece holders or are suspended directly from the running gear's rotating hook. The workpieces are then pushed into position in front of the blasting machine. An automatic feed mechanism then advances the workpieces to the first blasting position.

After the blasting program begins, the machine door is automatically closed and electro-pneumatically locked. As the workpieces rotate, they are blasted at three different blasting stations according to the preset blasting times. The blasting abrasive is continuously cleaned, recirculated and reused. An abrasive metering device feeds the cleaned abrasive from the abrasive storage bunker to the high-performance turbines.

Upon completion of the blasting cycle and after the turbines have come to a complete stop, the machine door opens automatically and the suspended work pieces return to their initial position. A fan unit creates the partial vacuum necessary to maintain dust-free operation of the blasting unit. Extracted air is cleaned in a special filter unit.

Capabilities and applications

Hanger-type blast machines are among the most flexible types of blasting equipment. They are used to remove rust, scale, sand and burrs from many kinds of work pieces. Hanger-type machines are also used for the finish blasting of sensitive work pieces or to roughen workpiece surfaces for subsequent coating.

As a rule, hanger-type blast machines are offered either for batch or continuous processing. However, there are many intermediate designs that are oriented towards different kinds of overhead conveyor systems. In many cases, different processes such as blasting, painting and subsequent drying can be interconnected via the overhead conveyor system. This makes it possible to tap an enormous potential for streamlining the process workflow.

Additional processing variants are created by using different kinds of work piece holders to assist in the process of feeding workpieces to the blasting machine. In many cases, standard holders such as disks, baskets or rods can solve the application challenges. However, the increasingly detailed needs of customers often lead to the creation of tailor-made solutions.

The AGTOS team can draw on an enormous wealth of experience in the development, construction, manufacturing and marketing of turbine-wheel shot blast equipment.

With state-of-the-art production facilities at the plant in Poland and a complete warehouse facility at the headquarters in Emsdetten, these new facilities, a streamlined organisational structure and a high degree of team motivation enable the company to manufacture machines and blasting units with the same consistently high quality at an economical price. This equipment line-up is complemented by a complete program of services focused on blasting technology.

AGTOS offers shotblast equipment that is tailor-mase for diverse requests. It places a special emphasis on providing perfect service for customers. This applies not only to the blasting equipment it manufactures but also to other makes of equipment. The service program includes: spare parts:; modernisation and performance enhancement; repair and maintenance; instruction and training.

According to the surface quality specified, the internal logistics and the spatial conditions, the AGTOS equipment sales team will collaborate with customers and the AGTOS project team will develop the perfect solution.

The decisive factors are the economic efficiency and operational dependability of the process. AGTOS employees have years (and even decades) of experience in the peculiarities of blasting technology. This, combined with modern concepts and design methods as well as innovative ideas, enables them to present optimal suggestions for customers' operations.
A well-equipped test centre with several blasting machines also allows them to demonstrate real blasting results.

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The No 1 choice for vapour blasting

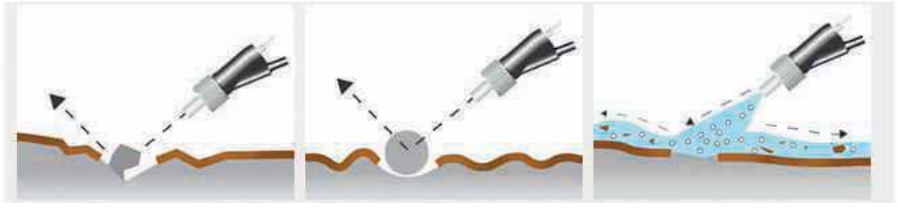
Vixen Surface Treatments is the market leader in the production of wet blasting equipment.

Founded in 1990, Vixen builds thousands of machines every year to world-renowned organisations, with the most popular range being the Aquablast® machines. These wet blasting cabinets ensure a superior finish and are a perfect alternative to dry blasting. With a dust-free process and the addition of water mixed with abrasive, parts are transformed to a like-new condition. Making this machine ideal in cosmetic applications as well as industries such as automotive, medical and aerospace. This process allows for components to be kept cleaner for longer.

The Aquablast machines are manufactured from stainless steel and are available in three different model sizes: 915, 1215 and 1515. As well as this, Vixen can offer completely bespoke models with its in-house designs team to ensure each design meets the individual requirements of any company.

One of Vixen's customers Kane Middleton, director of Outrider Motorcycles says: "Our Aquablast restores metallic items back to their original states in a safe and timely manner with minimal fuss. We've noticed the time spent on the restoration of parts has dramatically reduced as well as the increase of quality of the finished products.

"The accuracy of information and the communication from overseas was fantastic. The machine was fully operational on arrival with detailed manuals to follow. It's a very simple machine to use."



For more information on Vixen's Aquablast range, contact:

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Guyson embraces technology to remotely pass off export machines

Due to the COVID-19 pandemic and the inability of customers to travel, Guyson International, the UK's leading industrial finishing equipment manufacturer, has had to remotely pass off a number of machines destined for export markets. With the cooperation of its customers and usage of the latest video conferencing software and hardware, the pass off trials were still able to successfully take place on time.

Through a combination of Microsoft Teams running on laptop computers, allowing constant dialogue with the customers, fixed cameras in the factory build area, to show the overall machine build, plus hand held mobile phones to walk around the machine, relaying detailed video footage of the actual machines working, Guyson and its European clients were able to go through the rigorous Factory Acceptance Trial (FAT) procedural checklists and pass off the machines.

These "virtual machine pass offs" in fact have all gone very smoothly and with overseas travel restrictions foreseen for a good while yet, this usage of modern technology will no doubt become the 'new normal' for manufacturers such as Guyson, which generates much of its business through export sales.

This is borne out by the figures, as in the first half of the month of August alone, Guyson shipped well over £1 million pounds worth of export equipment. This included two very large rotary indexing turntable blast machines, each equipped with twin robotically controlled blasting for a Scandinavian automotive company, as well as a Guyson Multiblast® TR (Through Belt Conveyorised Blast Machine) fitted with eight blast guns for blast cleaning thread rolling dies.

The Multiblast TR conveyorised blast machine, in particular, was up against an especially tight delivery schedule to deliver to site, as it was replacing an existing machine that was being run in a production situation right up until its replacement arriving. The new Multiblast TR machine was passed off on a Wednesday in the Skipton factory with the client in a European country via video link technology. The machine was then stripped down on Thursday and Friday morning and packed and dispatched, via lorry, late Friday, arriving at the customers site on the following Tuesday morning, where a Guyson installation engineer was ready to install and begin commissioning the machine.

Guyson Twin Robot, Rotary Indexing Table Blast System

Getting to grips with the latest video conferencing technology and finding acceptable working practices for safely engaging with its customers and to enable business to seamlessly continue are just some of the challenges that Guyson has quickly adapted to during the current crisis.

In fact, equipment manufacturing has continued, while adhering to full social distancing guidelines, throughout the pandemic and alongside these aforementioned machines. Guyson has been very busy fulfilling critical orders for several of its 'Kerry' branded Microsolve 250 ultrasonic precision cleaning machines for the VentilatorChallengeUK Consortium, the last one for them being shipped to Rolls-Royce Filton in Bristol in May and others still being manufactured at present for more overseas clients.

Whatever your finishing equipment requirements are, Guyson will have the answer and whether you are based in Southampton or Singapore, Guyson can provide you a first-class service and product.

In the first instance contact Guyson's customer service department now to arrange free blast, ultrasonic or wash trials on your components, prove the process and make recommendations on the most suitable equipment for you:

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New Airblast pressure HOLD blast machine

The new Airblast Pressure Hold Blast Machine

Airblast has announced its new range of Airblast Pressure Hold Blast Pots. A modern evolution of the traditional blast pot, Airblast Pressure Hold Blast Pots are more efficient, use less abrasive, and are more responsive than traditional, non-pressure hold machines.

Releasing the deadman handle no longer means depressurising the blast machine. The new deadman system stops abrasive and air being delivered to the nozzle but maintains pressure in the blast machine, reducing valve wear and preventing wasted abrasive.

The Airblast Pressure Hold Blast Pot drastically reduces the abrasive wastage that results from repeated pressurisation and depressurisation. In tests, the Airblast Pressure Hold Blast Pot was able to utilise 20 percent more of the abrasive than non-pressure hold models.

A non-pressure hold blast pot depressurises whenever the operator releases the dead man's handle. Air is vented through the remote control valve and the blast hose. Blast media then settles in the blast hose, forming a slug of abrasive. Reactivating the blast machine causes the blast pot to become pressurised again. The slug of media that collected in the blast hose is then ejected and blasting can recommence. This process can result in large quantities of blast media reaching the blast room floor without touching the workpiece.

By contrast, the Airblast Pressure Hold Blast Pot ensures a steady

feed of media and prevents large loads of abrasive from repeatedly pooling. Not only does this help to prevent media wastage, it also reduces wear and tear to prolong the life of your equipment.

While the Airblast Pressure Hold Blast Pot is the new gold standard for blast machines, owners of non-pressure hold blast pots needn't feel left out, as the premium range of blast pots can often be retrofitted with our pressure hold system. Converting to a pressure hold system results in significant improvements to efficiency and throughput, ensuring a rapid return on investment.

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Perfect surface finishes for 3D printed components

Mass finishing creates smoothness and lustrein one single step

Walther Trowal developed its AM post process machines especially for refining the surface of components produced with additive manufacturing. The experience of the first customers using these machines shows that the mass finishing technology creates surface finishes in one single step, which meet the highest demands.

Most 3D printed components are produced by placing material layers on top of each other, creating a "staircasing" effect on their surface with generally a very high initial surface roughness. For this reason, many of these components must undergo a surface smoothing or polishing operation. Also, most of the time the markings of removed support structures and sintered-on powder residue must be removed, before the components can be further processed or utilised.

Mass finishing has proven to be the ideal surface finishing method for 3D printed components: These are completely embedded in the moving grinding media so that the process is very gentle and produces absolutely homogeneous and repeatable surface finishes. Moreover, the media also reaches internal passages and undercuts in the components.

The AM post process

Depending on the size of the processing bowl, up to 100 small workpieces or single components with a size of 900 x 500 mm can be treated in the model range AM of the new "multivib" vibrators. The workpieces are mounted on a carrier plate, which in turn is clamped to the bottom of the processing bowl by mechanical or electromagnetic means. Once the workpieces are in place, the media is filled into the processing bowl. During the process compound and water are continuously added. Three vibratory motors induce an intensive vibration into the processing bowl. Since the vibratory movement generated by the motors is overlapping, the component surface becomes smoother, while the edges are left intact. After a pre-determined cycle time the process is completed, and the finished work pieces can be removed.

Several manufacturers of automotive, aircraft and medical components are already using the new AM "multivib" vibrators.

The "multivibrators" of the model range AM were specifically developed for finishing the surface of 3D printed components

These machines reduce the surface roughness of the raw workpieces from around Ra = 2 to 80 µm down to a value of 0.025 µm.

Maximilian Beien, sales manager at Walther Trowal, considers additive manufacturing and mass finishing as a perfect match: "Additive manufacturing and mass finishing are an ideal combination because most 3D printed components must have an excellent surface finish to fulfill their function. For example, turbine blades require an airflow with minimal friction loss. Components with stringent specifications for hardness and strength benefit from the homogeneous peening effect induced by mass finishing. This finishing method is especially advantageous for 3D printed components with bionic shapes."

Mass finishing is suitable for a wide range of materials utilised in additive manufacturing, or example, for high performance, difficult-to-machine metals like titanium, nickel based or cobalt-chrome alloys. Furthermore, for non-ferrous metals or plastic. With all these materials Walther Trowal has decades of experience.

In this connection it should be noted that the Walther Trowal grinding media and other consumables are already approved for many materials and safety-relevant components and processes.

Maximilian Beien especially points out the high cost efficiency of the "trowalizing" process in conjunction with additive manufacturing: "Compared to electro-chemical finishing methods mass finishing achieves the desired surface smoothness and luster in one single operation. Another advantage is that the mass finishing equipment is very compact with a small footprint. The result: An excellent surface finish, surprisingly short cycle times and an overall high cost-efficiency, not only with regards to the capital expenditures but also the operating costs.

A proven finishing method for an innovative manufacturing technology

Topologically optimised workpieces with complex, frequently bionic, shapes often have difficult-to-reach internal passages. Manual finishing of these surface areas is not

A 3D printed gimble frame before (left) and after the "trowalizing" process

possible, especially when the workpieces are subject to strict safety and manufacturing standards, which is the case, for example, in the aerospace industry. Moreover, 3D printing is already used for serial manufacturing with continuously increasing production volumes.

Christoph Cruse, general sales manager at Walther Trowal, looks forward to assist the users of additive manufacturing with their surface finishing challenges: "A lot of things are going on in the field of additive manufacturing. For example, the production process as such must be optimised for many workpieces. For this reason, many customers are very pleased to learn that with regard to finishing the surface of AM components they do not have to invest additional development efforts but can rely on the proven "trowalizing" finishing technology."

A 3D printed earpiece for a hearing aid before (left), surface smoothing (centre) and after polishing

The workpieces are mounted onto a carrier plate, which in turn is electromagnetically clamped to the bottom of the processing bowl

The optimum parameters for the finishing process are, jointly with the customers, determined through processing trials conducted by the process engineers at the Walther Trowal test centre. This also includes the selection of the most suitable grinding or polishing media and compound. The process parameters for every single work piece are stored in the PLC and can be retrieved at any time.

Based on his many years of experience with all kinds of projects, Michael Becker, the manager of the Walther Trowal Test Centre, gladly shares his knowledge:

Three vibratory motors induce an overlapping vibratory movement into the processing bowl

"Compared to other finishing systems the single stage process facilitates and shortens the surface finishing operation significantly. Of course, the finishing operation can be further optimised when all surface treatment considerations are already taken into account during the design phase for the 3D printed components and the parameterisation of the printer. For example, this applies to determining the material layer thickness and the material feed rate of the printer. We gladly support our customers in resolving these issues.

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