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NEXT ISSUE - FEBRUARY 2022

- GrindTec 2022 Preview
- MACH 2022 Preview
- Aerospace Report
- Deburring
- Dust & Fume Extraction
- Honing & Bore Finishing

Manual or semi-automatic 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 manually operated, electrically-powered, bench-top machine from the USA can easily pay for itself in a few months through fewer discarded drills and by eliminating subcontract sharpening costs.

The XT-3000 is able to restore the split point cutting edges on a step drill at any angle from 118 to 150 degrees. It is equally capable of regrinding the chisel point on a jobber drill. However, the versatility of Darex equipment is such that it is also possible to grind a split point on jobber drills. This improves tool entry on manual machines and prevents wandering and oversize holes on CNC machines, despite the absence of a pilot hole. Even drills used for machining tough nickel alloys and stainless steels may be given a new lease of life.

Most recently introduced is the Darex XT-3000 Auto, which bridges the gap between the 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 automation attachment is factory-fitted to new units but can also be retrofitted by 1st MTA to existing Darex XT-3000s in the field.

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.

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GrindTec 2022: The international competence centre for grinding technology focuses on the process chain

Precise grinding is much more than the short contact between the workpiece and the tool, so GrindTec makers will focus even more on the entire process in 2022 and will represent the entire technology and process chain in Augsburg, including all niches from external cylindrical grinding machines to gear testing equipment. Only those who master the entire process will achieve results for themselves and their customers that are process-reliable, reproducible at all times and thus highly economical.

All the parameters that influence production, starting with the design of a tool, through holding and clamping systems, the integration of digital interfaces, the use of cooling lubricants and abrasives, measuring, finishing, right up to tool management and packaging of high-end tools will be presented by over 300 exhibitors. Examples include tool clamping systems that can be adjusted to the µ and correct wobble errors, tools manufactured using the high-vacuum brazing process, the presentation of optimisation options for the process through the use of the digital GDX data exchange interface, such as in-process measuring.

"GrindTec is always practice-oriented and geared to the actual needs of the grinders, after all, as a technical sponsor and trade association, we are in daily contact with our members: it is therefore a trade fair by grinders for grinders," emphasises FDPW managing director Wilfried Saxler. "The association is thus also a seismograph of what grinders want or need."

With a high degree of selectivity and in-depth knowledge, there are exhibitors in Augsburg for every sector, no matter how small, in the entire manufacturing process, whether it is gear tool grinding machines, hydrostatic grinding spindles, emulsion care, carbide saw teeth, honing stones, diamond dressing rolls or polyester-based finishing films that guarantee accuracies below 0.002 µm, or one is looking for re-use grinding machines. As the topic of re-use also comes closer to the idea of sustainability, many companies that produce sustainably or support sustainability will also exhibit at the 2022 trade fair. Thus, GrindTec is not only a performance show, but also the image of the entire supply chain, a trend barometer and every two years the largest future-oriented "mobile" competence centre of grinding technology.

On June 10, GrindTec organiser AFAG and technical sponsor FDPW launched the concept presentation of GrindTec 2022. The new GrindTec concept "By doers for doers" convinced many participants immediately. Joachim Kalsdorf, project manager of GrindTec for many years, also shares this view: "In the three weeks following our publication, we received more than 50 registrations, including numerous companies that will be at GrindTec for the first time."

To date, 250 participating companies from twenty countries have already registered for the leading trade fair for chipping and cutting precision tools with a total of more than 1,200 product nominations. If you compare these with the last GrindTec, you will not notice any significant differences. As in 2018, the segment of grinding, polishing and honing equipment is in the lead with over 300 nominations, followed by tool machining systems including various grinding machines with 250 nominations. Dressing tools, blanks, raw materials and carbide rods follow in third place (180 nominations). This already provides a solid basis for the industry's expert meeting.

In focus: the future of grinding technology

For 2022, the organisers of GrindTec aim to focus even more on the future in the application. GrindTec is to open up new perspectives even more than before, to network and communicate even more and thus to rise to become the most important platform for knowledge transfer in the industry. In doing so, AFAG and FDPW are relying on such proven facilities as the GrindTec FORUM, but also new special topics such as a process chain presentation. Grinding technology 4.0 and a start-up platform will supplement the comprehensive range of trade fair offerings in the future.

A great deal has happened since the last GrindTec in March 2018. Not only has Augsburg Trade Fair significantly expanded its hall capacity, but the hotel industry in Augsburg has also recorded an increase of more than 30 percent in the number of beds. The large parking lot for visitors is now directly connected to the trade show via an additional new access road. In addition, convenient shuttle bus lines have been set up to Munich Airport, Munich city centre and Augsburg Central Station.

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UNITED GRINDING Group launches C.O.R.E. — Customer Oriented REvolution

Machine tools fit for the digital future
The industrial production of the future is connected, with machine connectivity the key phrase. A number of requirements must be met before networking is either possible or usable. UNITED GRINDING C.O.R.E. Customer Oriented REvolution ensures these requirements. "The digital future begins with C.O.R.E.," stresses CEO Stephan Nell. The groundbreaking new hardware and software architecture was developed by the Group's specialists and premiered at the EMO 2021 exhibition in Milan. It opens up remarkable possibilities for networking, controlling and monitoring the production process and thus also for process optimisation. C.O.R.E. also brings the user experience of operators into the world of the smartphone generation.

When the public discussion about the fourth industrial revolution, Industry 4.0, intensified a few years ago, the UNITED GRINDING Group made the decision to invest more in the digital future together as a Group, not only in the future of the group but above all the future of its customers. Thus the development of C.O.R.E. began. The aim and central focus of this development was to ensure increasing connectivity, i.e. the exchange of data between people, machines, and the production environment, and to create the basis for the operation of modern IoT applications. In addition, an intuitive operation was to be enabled to make the work easier for machine setters, machine operators, and maintenance staff. C.O.R.E. has turned this vision into reality and in a revolutionary way.

Intuitive operation
It is reminiscent of a gigantic smartphone: The 24-inch full HD multitouch display identifies the next-generation machine tools equipped with the new C.O.R.E. technology. Navigation works like on a smartphone, using "touch" and "swipe." Customers can also configure the user interface according to their individual requirements and arrange the most important functions and operating displays according to personal preferences, similar to the app overview on a smartphone home screen.

Thanks to the new access system, which works via a personalised RFID chip, the individual user profile is automatically loaded. This not only makes it easier to log in and out of the machine, but is also significantly more secure. Another advantage is that a roles profile is stored for each user, so users only see information relevant to them. This reduces complexity and helps prevents errors.

When it comes to reducing complexity, it is also noticeable that the new C.O.R.E. panel has virtually no keys. There is a prominent rotary switch for feed rate override, allowing the axes to be regulated with a simple turn.

The uniform use of the C.O.R.E. Panel across all brands also simplifies machine operation and makes training easier; anyone who knows how to operate one UNITED GRINDING machine can operate all of them.

More than just an innovative control panel
The eye-catching new control panel is, of course, only the visible aspect for machines equipped with the new C.O.R.E. technology. "There are also major innovative developments behind the machine enclosure," stresses Christoph Plüss, CTO of the UNITED GRINDING Group. C.O.R.E. OS, a full operating system, is installed on a high-performance industrial PC, the C.O.R.E. IPC. It serves as an IoT gateway and is home to all software applications. C.O.R.E. OS is also compatible with all CNC controls used at UNITED GRINDING.

Furthermore, the new technology opens up a wealth of opportunities for connectivity. Not only can all machines with C.O.R.E. technology from the UNITED GRINDING Group be networked but also third-party systems via implemented interfaces such as umati. This opens up direct access to UNITED GRINDING Digital Solutions' offerings on the machine, from remote service to the service monitor and production monitor. For example, support from the Group's Customer Care Team can be requested directly at the C.O.R.E. panel. A chat feature ensures fast and easy support, and the integrated front camera even enables video calls.

Highest benchmark: user experience

In the development process of C.O.R.E., which lasted several years, software and process experts from all brands of the UNITED GRINDING Group pooled their expertise to design an unparalleled software architecture. "The immediate experience of the users has always been our top priority," explains Christoph Plüss. It is for a good reason that the abbreviation C.O.R.E. stands for Customer Oriented REvolution.

"In the area of operating systems and software architectures of machine tools, C.O.R.E. is a quantum leap," emphasises company CEO Stephan Nell. "This means that our machines are ready for the digital future." The C.O.R.E. technology presented for the first time at the EMO 2021 in Milan is still under development. "It lays the foundation upon which we can build," explains Christoph Plüss. "Development will continue on an ongoing basis. Thanks to the flexible, modular structure of the software architecture, we will continuously add new features and applications. We intend to harness the concentrated software development power of our group for the benefit of our customers." Our goal is to inspire customers with a regular stream of new C.O.R.E. software releases and thus actively help to shape the digital future. In this way, the Group remains true to its ultimate goal of making its customers even more successful.

Christoph Plüss, CTO of the UNITED GRINDING Group

C.O.R.E. at a glance

Core system:
- Machine operating system
- Powerful industrial PC
- Ethernet connectivity
- Various interfaces and protocols
- Data security

Human Machine Interface:
- Modern 24" multitouch display
- User-specific configurable interface
- Uniform, intuitive operation

UNITED GRINDING Group is one of the world's leading manufacturers of precision machines for grinding, eroding, laser, measuring and combination machining. With around 2500 employees at more than 20 production, service and sales sites, the Group is organised in a customer-oriented and efficient way.

With its brands MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, and EWAG, as well as competence centres in America and Asia, UNITED GRINDING offers an ample range of application expertise, an extensive product portfolio and an array of services for surface and profile grinding, cylindrical grinding and tool machining. In addition, a competence centre for additive manufacturing is operated under the IRPD brand.

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Surface finishing of removable partial dentures, clasps and implants

The New EPAG-Smart T From OTEC

It is not so long ago that relatively young people opted to have their teeth removed and replaced with full dentures, top and bottom, usually to avoid the prospect of painful toothache and rather expensive extractions. Fortunately, dentistry has come a long way since then and in the UK at least it is available to all at a reasonable cost through the NHS.

Today, dentists are incredibly skilled at helping us keep our original teeth for as long as possible. Even if dentures are required, often they are able to build removable partial dentures (RPDs) with exacting precision to fill the gaps.

One way to do this is to cast a framework made from a metal such as Cobalt Chrome which can be thin yet very strong. New teeth are added to the framework in positions that fill the gaps of missing teeth. Clasps on the framework are carefully designed to grip around healthy teeth when the fully assembled denture is fitted by the dentist. The accuracy of partial denture manufacture is vital so that the tooth around which the clasp fits is not being overstressed, supporting too much load or taking too much pressure.

Little known by the lay person are the incredible number of detailed steps taken by a dental laboratory technician to build RPDs from the initial impressions made by the dentist. Some of the most time-consuming and important steps are the surface finishing stages and these are the focus of this article:

The OTEC EPAG-Smart T– a compact table-top unit for finishing dental frameworks, crowns and implants, developed with the help of dental laboratory Flussfisch GmbH

A finished partial denture framework showing the complex geometry for precise fitting and how the clasps fit around healthy teeth

The dental finishing problem

Traditionally, making the CoCr frameworks is a miniature investment casting process. Increasingly, highly accurate patterns are being made by modelling or 3D printing. It is also becoming more common to directly 3D print the CoCr frameworks. Once cast or 3D printed, hand finishing the CoCr frameworks using powered hand tools is the usual method to carefully remove residues from the casting or printing process and to reduce surface roughness as well as giving a final polish.

Finishing alone can encompass seven stages before the framework is ready for use. Typically, these would comprise abrasive and blasting stages to remove the bulk of the residues and roughness. Buffing, pre-polishing and electropolishing would take the part to a near complete finish. Final post-polishing and cleaning makes the framework ready to use.

It is painstaking, time-consuming and costly work that removes a skilled technician from performing other valuable tasks. Many frameworks are complex geometries with surfaces that are difficult to reach effectively with power tools and where conventional electropolishing units also struggle to reach all surfaces evenly.

Freeing technician time for other skilled tasks, keeping the cost of RPDs affordable and also improving quality, are all key drivers for dental laboratories. Labs are seeking to automate as much of the workflow as possible. 3D printing technology has been developing over the last decade and automated electropolishing over the last four years.

Surface finishing innovator OTEC Präzisionsfinish GmbH could see that an improved electropolishing process would not only result in a more even surface finish, but would also replace several stages of the finishing cycle. Having already developed the EPAG Smart, table-top, electropolishing unit for jewellery manufacturers. OTEC saw the synergy of making fine filigree jewellery pieces from precious metals with that of dental frameworks and clasps. Both can be cast or printed, both have complex geometries, both require skill and time to accomplish a high quality finish without compromising tolerances.

Improving the dental electropolishing process

Processing dental frameworks in conventional electropolishing units improved the surface finish of frameworks considerably, providing hand buffing and pre-polishing were performed beforehand. Even then, after electropolishing, surfaces were unevenly finished with outer areas treated more and some depth areas missed. The fine clamps often received too strong abrasion, making them thinner and potentially weaker. And the process did not achieve a gloss finish in the palate region.

To understand why this happens we need to look at the electropolishing process. Traditional units apply a voltage to a cathode and anode placed in an electrolyte. The workpiece, in this case a framework, is attached to the positive anode. The electrochemical reaction dissolves ions out of the CoCr framework and they migrate to the cathode. Problems arise because the ions want to take the path of least resistance such that material removal can be greater at the tips than from other surfaces. In addition, shielding effects in complex areas, commonly known as Faraday's Cage, further reduces finishing effectiveness in these areas.

The EPAG-Smart T overcomes these problems by introducing a solid in the electrolyte and adding controlled rotation of the framework through it. The solid slows down the reaction to provide process stability and allow ion exchange. Shielding effects are significantly reduced due to the flow created around the framework. When the solid reaches ion saturation it does need to be changed along with the electrolyte to maintain quality.

Real world dental lab testing

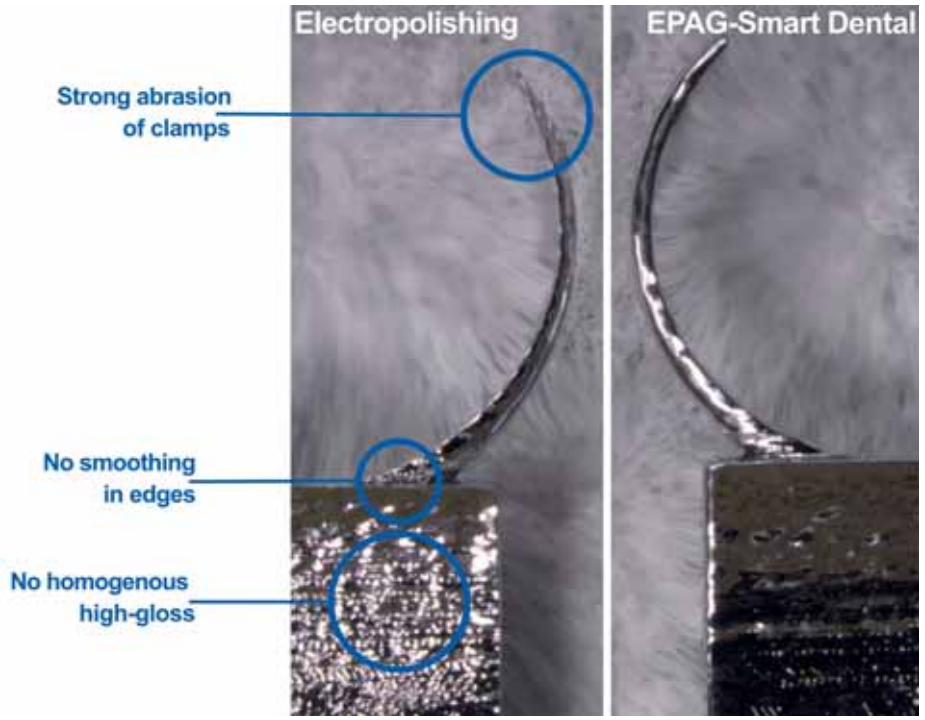
To put the EPAG-Smart T to the test, OTEC teamed with German dental laboratory Flussfisch who were seeking to further automate the manufacture of dental frameworks, implants and more.

One of the attractions of the new unit to Flussfisch was its compact size and requirement for a standard electrical socket, making it easy to position on any lab table-top. More important though, they needed to prove it could save time without compromising quality. With the expert testing and feedback by Flussfisch, OTEC was able to tailor the electropolishing process so that it was able to replace three of the seven finishing stages – buffing, pre-polish and electropolishing. Significantly, this reduced manual effort by over fifty percent while producing a better overall finish, including in the harder to reach areas. Material removal was minimal especially in the vital clasp areas ensuring they did not become too thin and therefore weakened.

Flussfisch also found other advantages over existing technologies they had tested but were unsatisfactory as processing time was over three times as long and the media lifetime was artificially limited, pushing up the cost of use. They also discovered the mounting method in competitor offerings was more likely to cause framework damage.

The EPAG-Smart T suffered none of these problems, successfully processing frameworks in just 20 minutes in a consistently repeatable process. The electrolyte/solid media lifetime being determined by consumption rather than an artificial limit also helped to reduce cost. A superior mounting method minimised the likelihood of product damage.

With manual polishing costing eleven euros per part and the new EPAG-Smart T process reducing this to one euro per part, return on investment calculations showed that the ROI can be achieved in less than a year when producing around five RPDs per day. Another important advantage is that the dental technician can work on more valuable and more enjoyable tasks.



A close-up comparison of traditional electropolishing and the EPAG-Smart T shows a more even and smooth finish, retaining better definition of the clasp and therefore strength in this vital area

The user interface extends to modern mobile phone app for easier control of multiple units and access to diagnostics and support information

Adding in other technological improvements such as an easy to use graphical user interface for custom process storage and easy recall, LAN connectivity and extending control to a mobile phone app so multiple units can be easily managed, all made the EPAG-Smart T a compelling solution to improving dental part finishing productivity.

While this article has focused on dental frameworks and clasps, other dental parts such as crowns made from metal can also benefit from the time and cost saving derived from surface finishing in an EPAG-Smart T. It speaks for itself as Flussfisch GmbH are now a distributor for the unit in Germany. For dental labs, hospitals and larger single-site dentistry practices in the UK and Ireland, Fintek, is the exclusive distributor of the EPAG-Smart T and are happy to provide demonstrations to interested labs.

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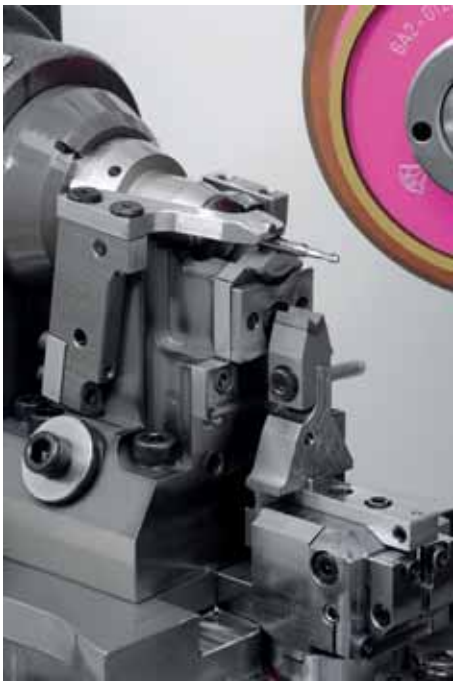
Advanced Grinding and deburring solutions for the medical industry

The growing medical Industry is a major manufacturing sector that AGS is heavily involved with having supplied machines to most of the large International OEM Medical companies and to their sub-contractors that have manufacturing plants throughout the UK and Eire.

Rollomatic's GrindSmart Nano5 and Nano6 grinding machines have been developed specifically for the manufacture of medical, dental and industrial tools. In the case of the Nano6 machine this has a capability of grinding tools as small as just 0.03 mm in diameter with concentricity values below 0.001 mm. This machine has an integrated loader with a capacity of 1,000 tools with load/unload times of just eight seconds floor to floor. These machines are used by medical drill and burr manufactures to great effect. The production of micro-drills requires the use of a special steady rest support device and hydrostatic technology with a direct drive spindle and the addition of a torque motor on the B-axis ensures that the best possible surface finishes are obtained along with the sharpest possible cutting edges.



The revolutionary DLyte polishing machines produced by GPA Innova benefit from utilising the world's first dry electro

polishing process. The DLyte range of machines use a totally unique, single step automated process, for polishing metals; this is a revolutionary dry non-abrasive electro polishing process that does not use any liquid as the electrolyte. These new patented machines polish and deburr steel and stainless-steel, cobalt chrome, titanium, aluminium, nickel and precious metal alloys components for the dental, medical, aerospace, automotive and other industries. Typical applications include bone screws, artificial hip and knee joints, turbine blades, cutting tools, and any similar component whereby fine surfaces finishes to under 0.09 µm Ra are required without altering key part geometry after the previous grinding or milling process.

The medical industry was amongst the first to benefit from using the D-Lyte machines for polishing implants. The typical process to finish implants were previously based on using mechanical abrasive based processes like robotised belt polishing or abrasive bowl type polishing. These types of processes work by generating friction onto the workpieces surface from a generic abrasive belt or media.

Global innovative manufacturing leader for medical implants, Medartis AG drives technologies and solutions for osteosynthesis and purchased its first Gerber brush polishing machine for deburring titanium parts back in 2008 and additional Gerber brush polishing machines are now in use. The BP-MX brush polishing machine brushes away sharp edges and burrs and creates precisely-defined radii or contours on edges with high accuracy. At

the same time, the surface is polished. The purchase of the BP-MX machine for the double-sided controlled deburring of titanium blanks eliminated the previous laborious manual deburring process and the employees were able to be deployed elsewhere within the business. for other relevant work steps. Medartis saw several benefits from the investment they made in the Gerber machines and apart from the labour saving the parts are now better defined, have a regular improved quality, and the process is both easy and automated. Due to its high toughness, parts made from titanium place high demands on the machines when machining the parts and defining the process is important. The residue-free deburring result was achieved in a gratifyingly short cycle time. All burrs left over from the previous milling operations were completely removed down to the root of the burr using the Gerber BP-MX brushing machine. This gave Medartis a perfectly deburred bone plate which is then ready for further process steps. The desired de-burring result and process reliability is guaranteed by regular, fully automatic measurement and tracking of the bristle length as the brushes wear. By changing parameters such as the brush material, brush density, brush speed, table speed, working pressure, operating time and the polishing agent it is possible to create different contours, shapes and surface roughness as is desired to arrive at the perfectly deburred and polished component.

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Gearwheel manufacturing in a 34-second cycle

by Martin Witzsch, KAPP NILES

Minimising production times to ensure competitiveness is one of the most important challenges in the automotive industry; Henry Ford already recognised this over a century ago. After decades of optimisation, it is difficult to reduce machining times even further while maintaining the same level of quality. Nevertheless, the company Volkswagen (VW), near the German town of Kassel, has managed to achieve this in gearbox production using KAPP NILES gear grinding machines.

Gearwheel manufacture in 34-second cycle

The Volkswagen plant in the small town of Baunatal is one of the larger German locations of the enterprise with a workforce of about 17,000. Its production focuses mainly on passenger car gearboxes in ten different series at present. Gearing centres from KAPP NILES are being deployed on 50 percent of the manufacturing lines. The company, based in Coburg, Bavaria, is primarily known as a specialist for hob grinding with dressable tools: a process combining productivity and quality.

KAPP NILES machines are also applied in the production of the DL 382 dual clutch gearbox for Audi. A total of sixteen gearings is required to shift the seven gears with this type of gearbox, ten ground and six honed. The production unit runs 24 hours a day, five to six days per week, depending on demand. VW strives to achieve an EPEI value of one day in the production unit. EPEI stands for "Every Part Every Interval", meaning that all components can be produced on each day for the aforementioned gearbox. This type of streamlined production requires seamless processes and a high degree of flexibility.

Technical clerk, Christian Hahn, is in charge of the production process of the DL 382 dual clutch gearbox (Image 1). He describes the production process: "We have five gearing centres by KAPP NILES in the wheel production unit and two more in the shaft production unit. In order to achieve an EPEI value of 1 day, we change over the machine in the wheel production unit twice a day. This way, we can produce ten different wheels per day."

Image 1: Technical clerk, Christian Hahn

The challenge with flexible production was the short cycle times, with an output of 880 gearboxes per day, one machine in wheel production must produce 1,760 parts per day. Including all setup times and failures, this yields a line cycle time of 34 seconds. An average line cycle time is about 39 - 40 seconds. Bernd Kümpel, application technician at KAPP NILES, analyses these figures: "Saving five to six seconds per cycle does not sound like a lot at first, but together it can be up to a 15 percent reduction. If I consider that at least 40 percent of segments cannot be influenced, I have to reduce the actual process time by 30-40 percent. Seen in this way, 34 seconds is a real challenge."

Saving precious seconds during changeover, dressing and measuring

A total of seven KAPP NILES machines are being deployed which, with their low space requirement, are ideally suited for the highly automated production at Volkswagen. These include three KX 100 DYNAMIC (Image 2), two KX 260 TWIN in wheel production and two KX 160 TWIN in shaft production (Image 3).

Image 2: KX 100 DYNAMIC

Image 3: KX 160 TWIN

Christian Hahn and Bernd Kümpel agreed from the very beginning that the desired cycle time could only be achieved with a combination of several measures. In order to minimise the daily setup effort, Christian Hahn makes sure that the wheels that are to be produced on one machine have bore holes of the same size. Thus, he has to changeover the machine, but not the clamping tools. The remaining setup time is minimised by the intelligent setup concept of the KX 100 DYNAMIC. For one machine, he needs just 20-25 minutes.

"The semi-automatic setup makes the KX 100 DYNAMIC extremely user-friendly," says Bernd Kümpel, describing the process. "All you need is an Allen key for the entire setup operation. With it, you operate the hydro-expansion clamping chuck of the

dresser roll. Everything else is connected without any screws via HSK interfaces."

An additional visual aid is available in the form of a menu-guided and easy-to-understand cycle on the machine controller. By completing the step-by-step process and the acknowledgement screen the operator ensures that no work steps are executed incorrectly or, in fact, forgotten. High-cost failures are prevented in this way. The tools are dressed using full profile rolls, allowing all threads of the cylindrical worm to be approached and moulded simultaneously. Thus, with a 5-pass full profile roll, the dressing time can be reduced by more than half without compromising on quality (Image 4).

Image 4

The integrated measurement system is another important time-saver. Christian Hahn explains: "After each changeover, a quality measurement has to be made outside the machine. In fact, we continue to require this, but I can already check the basic, quality-related parameters with the integrated measurement sensor in the machine itself. It saves a lot of time since we can start production before the results of the external measurement are available."

The integrated measurement system of the KAPP NILES machines thus accelerates the restart process considerably. The external measurement merely checks more teeth and generates the measurement report to monitor the gear.

Open for new machine tool technology

The search for optimisation potential also includes the actual grinding process. Cubitron™ II machine tools by 3M™ show a highly promising approach, with geometrically specific triangular shaped cutter heads, compared to conventionally dressable grinding wheels. "With these, you can step it up a notch, to say it plainly. That is, remove more material in one thread, and remove it faster," explains Christian Hahn.

For this purpose, KAPP NILES provided relevant preparatory work with a large number of grinding tests in-house to be able to use the benefits of this machine tool with the DL 382 components. Bernd Kümpel says: "With CII, you can remove a considerable amount of shavings without any thermal damage to the component. This way, we reduce time consumption by a solid 30 percent compared to other grinders, depending on the component."

Saving space and money

Production is characterised by a belt chaining (or linkage) which goes through the entire hall (Image 5). Among the employees, it has gained the nickname "highway". The available space is limited. Hence, the highly compact KX 100 DYNAMIC machines are the preferred choice. This machine type has two separate rotatable mounted columns, each with vertically movable pick-up axes with one workpiece spindle. While a workpiece is being machined, the other

Image 5

pick-up axis places the machined workpiece and loads a non-machined part onto the workpiece spindle. The workpiece is aligned outside the work area. This allows the workpiece spindle, already accelerated to machining speed, to be swivelled in the work area. Non-production times are thus reduced to a minimum.

A transfer unit (Image 6) does the loading to and unloading from the conveyor belt. Bernd Kümpel tells us: "We usually move with the belt directly below the machine. However, this was not possible here. With the transfer unit, we compensate for height and distance from the belt to the machine." This solution is not only compact, but also cost-effective. "An integrated automation solution would have been significantly more expensive, at about 25 percent of the price of the machine," adds Bernd Kümpel. "A simple transfer unit costs less than 10 percent of the machine price."

Image 6

Planned success

The time for conversions and commissioning is, in most cases, very limited, but the highly ambitious goals have been achieved. Christian Hahn takes stock: "Throughout the process, I have been very satisfied with the on-site support and the local service. We were convinced by the machine concept and managed to overcome any obstacles together. The cycle time, in particular, was a critical aspect, but, we did it." For this, they faced a lot of time constraints. The commissioning which included the machine capability analysis, where 100 components of each type are produced and measured a 100 percent, took place in the summer of 2016. Production commenced right in the first week of September.

Apart from the cycle time, other difficulties were overcome in the shaft production Christian Hahn describes it as follows: "The shafts are hollow and thus, comparatively unstable. This called for a special clamping technique and a machine that can absorb the unavoidable vibrations in the grinding process. The KX 160 TWIN can do this due to its solid design and construction which in turn helps to achieve better grinding quality."

Should immediate service be required, KAPP NILES has stationed an employee in Kassel who only provides support to the Volkswagen plant. Bernd Kümpel says: "Our highest priority is to ensure production, regardless of the problems that occur." Exceptional support that is very much appreciated by VW

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ETG takes the 'creep' out of high-feed grinding

Ultra-productive 5-axis grinding is now a technology that has been added to the Engineering Technology Group (ETG) portfolio with the arrival of the FGC 2 Flexible Grinding Centre from the Winbro Technology Group. Manufactured here in the UK, the Winbro FGC 2 demonstrates astounding flexibility with its 4- and 5-axis capabilities that permit complex component form grinding to be undertaken simply, quickly and precisely with unsurpassed surface finishes.

The impressive Winbro FGC 2 has been designed with features that focus upon performance, reduced setup time, high part accuracy and fast cycle times incorporated throughout the machine.

The FGC 2 machine features both profiled diamond roll and rotary diameter disk dressing capability to provide fast and efficient setups. Furthermore, the machine can also be supplied with double dresser capability for multiple and extended machining operations. This provides even greater productivity levels for the end-user. The dressing facility enables the economic and precise dressing of complex fir tree root forms and shroud end features that are commonplace in the aerospace industry. The system takes the user from initial profile dressing through to in-cycle wheel dressing for optimal productivity and process automation.

The Winbro FGC 2 offers a spacious X-, Y- and Z-axis work envelope of 800 x 600 x 510 mm with a rotary A-axis of 360° and tilting B-axis of +/-110°. The working surface of the table is 1,400 x 650 mm, providing the end-user with a spacious work envelope that can accommodate large workpieces. The extremely productive grinding centre can rapidly traverse around the X, Y and Z-axes at 32 m/min with an acceleration rate of 5 m/sec^2, making this machine an extremely attractive proposition for a wide variety of industry sectors and component types.

FGC 2 offers accuracy levels in accordance with ISO: 230-2, with a positional accuracy in X-, Y- and Z-axes of 0.005 mm and repeatability of 0.003 mm. The machine is driven by a powerful Heidenhain iTNC 640 CNC control unit and a 38 kW spindle motor with the BBT40 spindle taper that can achieve a maximum speed of 8,000 rpm.

The machine is controlled by unique grinding software that is easy to use, operator-friendly and simple to program 3-, 4- and 5-axis simultaneous machining of components via on-screen graphics. This also includes the positioning of the programmable twin coolant nozzle system. The high-pressure coolant is supplied by the fully programmable and steerable twin nozzle arrangement that assures coolant is continually supplied as near to the cutting point as possible and that the wheel is always clean and sharp. Results suggest that this method creates a saving of 30 percent on wheel life when compared to standard, single nozzle type machine tools.

Complementing this is an optional unique media-free coolant filtration system that eliminates filter paper consumption. This technology is both environmentally friendly, highly efficient and it also helps to reduce operational costs of the Winbro FGC 2.

Both the Engineering Technology Group (ETG) and the Winbro Technology Group understand the need to maximise productivity in a high-pressure manufacturing environment. This is why the FGC 2 machine introduces its automatic wheel change technology that keeps productivity levels at a maximum and 'wheel change' related downtime to a minimum. The automated wheel changing technology works in synergy with the automatic tool changer (ATC) that can accommodate up to 12 x 250 mm diameter grinding wheels or 16 x 220 mm diameter grinding wheels.

ETG is structured and has three divisions; UK Headquarters, ETG Ireland and Hyfore Workholding. Each has a clear objective, but all ensure the end-user receives the highest level of service.

ETG conducts business activities throughout the United Kingdom and Ireland. ETG's Headquarters in Wellesbourne, Warwickshire deliver UK operations and the whole of Ireland is served from Newbridge, Co. Kildare.

For further information on the impressive Winbro FGC 2 Grinding Centre, contact:

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OEM and subcontractor back a favorit

In 2010, West Sussex-based Cox Powertrain began its mission to deliver a revolutionary new concept in ultra-lightweight diesel outboards. This was the genesis of the CXO300. Since then, Cox has successfully raised over £120 million of private investment in order to bring the outboard from a dream to a reality. Having commenced production in May 2020, the CXO300 is now becoming hugely popular throughout the global maritime market.

Cox Powertrain has invested £6.7m in a world-class production facility and all components are precured using a range of OEM's. All items are manufactured to Cox designs and drawings unique to the CXO300 which remains the IP of Cox. As the CXO300's drive shafts have specific requirements the decision was taken to manufacture them at Delta Tooling (Horsham) Ltd. and to supply Delta with the machine tools to produce the shafts. Delta is a highly skilled machining subcontract who has provided Cox with many prototype, pre-production items over the last 6 years and is now manufacturing producing parts.

When Cox Powertrain's head of DFM & Manufacture, Colin Stapley identified the need to introduce grinding capacity and capabilities into the business, related to the production of critical drive shafts, a search was made for a high-precision, CNC universal cylindrical grinding machine. Having considered the offerings from several leading manufacturers, with input from Gary Childs, the MD of Delta Tooling, Colin Stapley decided that the Studer favorit was the ideal, premium quality CNC universal cylindrical grinding machine for ensuring that the shafts' demanding dimensional and surface finish tolerances could be met.

Whilst Cox Powertrain retain ownership of the recently purchased Swiss grinding machine, given the subcontractor's capabilities and as it made logistical and operational sense, the decision was made to locate the favorit at the premises of Delta Tooling. Consequently, the Studer machine was installed in a new, dedicated facility adjacent to Delta Tooling's main factory.

Gary Childs, Delta Tooling MD explains:

"Delta Tooling has been supplying world class designers with precision CNC machining services for over two decades. In addition to serving challenging industries, such as the motorsport, automotive and medical sectors, we are delighted to have formed a close working relationship with Cox Powertrain. After refurbishing a vacant unit next to our main production facility, the Studer favorit was installed in what is now our dedicated Cox Powertrain production cell. Given their demanding specifications, the machine has proven to be ideal for the precision grinding of Cox Powertrain's drive shafts.

"With the assistance of Peter Harding, the owner of UK Studer agent, Advanced Grinding Supplies Ltd, Colin Stapley of Cox Powertrain and I were able to precisely specify the favorit to exactly meet Cox Powertrain's demanding needs.

"Peter Harding worked closely with us in areas such as developing the grinding process and ensuring the use of the correct wheels, Peter also helped organise the machine's trouble free installation and operator training. The favorit's logical control system and its easy to use software ensured that we were quickly able to exploit all of its advanced capabilities.

"The machine is now in regular use and the high-quality of the drive shafts produced by it adhere to their challenging dimensional and surface finish specifications. In addition, the highly productive machine is helping us to satisfy ever increasing demand for our output."

For more than 100 years, Studer has been

designing and producing high-quality precision cylindrical grinding machines. The Studer favorit CNC Universal Cylindrical Grinding Machine is designed for the grinding of medium-sized workpieces in individual and serial production. Owing to the availability of a range of options, such as in-process gauging, balancing systems, contact detection and length positioning, the machine can be precisely supplied to correspond with users' needs.

The favorit's machine bed is made of solid Granitan® S103. The Studer developed material has proved its efficiency over many years. The excellent dampening characteristics of the machine base ensures outstanding surface quality of all ground workpieces. The use of Granitan® S103 also leads to the increased service life of grinding wheels.

The machine's cross slides V and flat guideways are moulded directly into the machine base and are finished with a non-abrasive Granitan S200 slideway coating. This patented surface structure prevents the slides from 'swimming' and also eliminates the stick-slip effect, present in conventional guideways.

Both longitudinal and cross slides are manufactured from high-quality grey cast iron and have highly precise, ground V and flat guideways. The slides rest entirely on the guideways of the machine bed through the entire speed range, which is the basis for excellent straightness (0,0025 mm over 650 mm measuring length). The favorit's slides are advanced by 40 mm diameter circulating ball screws connected to a three-phase servomotor via torsion-resistant, bellow-type couplings. This efficient arrangement enables the axes to achieve high process speeds and maximum precision with in-feed movements of 0.0001 mm. Use of the swivelling machine table on the longitudinal slide enables the whole length of the surface to be ground and acts as a support for the workhead, tailstock and accessories.

The favorit's turret wheelhead can be used for both external and internal grinding and can be equipped with an external grinding wheel and an internal grinding spindle. With extreme precision, the user can manually (2.5°) index the turret.

The machine's FANUC 0i CNC control, with an active flat colour monitor (10.4"), is extremely reliable and optimally matched to the favorit's drive elements. A manual control unit facilitates setup close to the grinding process, whilst a special electronic contact detection sensitron function (optional), enables downtimes to be reduced to a minimum.

The high-specification mechanical engineering concept of the favorit is complemented by a grinding software program developed in-house by Studer. Based on Pictogramming, the operator strings the individual grinding cycles together, and the control system generates the ISO code. Grinding and dressing process sequences can be programmed freely to optimise the grinding process. Cox Powertrain's Colin Stapley concludes: "The decision to purchase a Studer favorit and to install it at the premises of Delta Tooling has proven to be a successful one."

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Engis UK launches new high precision vertical grinding machines

Superabrasive specialist, Engis Corporation has announced the new EVG Series of high precision vertical grinding machines for the production of ultra smooth surfaces. These machines have been designed to grind advanced materials to a high degree of precision in flatness and surface quality, greatly reducing or even eliminating the need for subsequent lapping, moving direct from grinding to final polish of SiC and other materials.

Ideal applications for the EVG Series machines include semiconductor wafer grinding or back-thinning (SiC, GaAs, Sapphire, Si, GaN, AlN, InP), semiconductor equipment components, for example ceramic chucks, glass ceramic, as well as substrates for semiconductor advanced packaging, including MEMS (ceramic, polyimide).

Engis EVG machines are available in three different models, the EVG-200, EVG-250 and EVG-300, all of which incorporate a programmable logic controller, 400 rpm max. worktable speed and 2,000 rpm max. wheel speed. Sizes of the machines vary from 800 x 800 x 1900 for the EVG-200 up to 1050 x 1050 x 2020 for the EVG-300. All machines have been designed with ergonomics in mind, with easy access to the work area and with a variety of chuck options.

Advanced machine control options are available, providing automated grinding wheel dressing, automated positioning of the grinding wheel relative to the workpiece and workpiece thickness measurement. For maximum control, an upgrade to in-process thickness measurement with feedback to the grinding cycle in real time is also available.

The most advanced model offers automated thickness options: multi-point contact probing for multiple wafer grinding or a choice of contact or non-contact continuous in-process measurement for single wafer machining.

EVG Series machines are equipped with Engis grinding wheels based on the Mixed Abrasive Diamond (MAD) wheel technology, which tailors the wheel to the material being processed. A video showing the machine at work is can be seen at www.engis.com/videos. Engis specialists

application engineers can provide specific process recommendations for particular materials and applications.

For more information, contact:

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www.engis.com

TYROLIT, ICD and RTS

A united approach, delivering optimum results for the customer

For three leading businesses, their success lies firmly with the goods or services they procure from each other and at the end of the chain, the high-quality solution provided, allows the customers of ICD to gain the utmost benefits of a collaborative work stream.

What came first, machine, consumable, service or product and which is more important? Different people will of course have different views. If you are the OEM, you would answer the machine of course. If you are the creative producer of bespoke grinding wheels, you would say you are. But if you are the company who put both those parts together and ultimately deliver a product to the end consumer, you would say your business.

Thankfully TYROLIT, ICD and RTS do not have a problem in answering this question, their collective answer is the same:

TYROLIT is one of the world's leading manufacturers of grinding and dressing tools as well as a system provider for the construction industry. The family-owned business combines the strengths of being a part of the dynamic Swarovski Group with a century's worth of individual corporate and technological experience. Since 1919, its innovative tools have made an important contribution to the technological development in many industries. TYROLIT offers tailored grinding solutions and a comprehensive assortment of standard tools for customers all over the world.

The team at RTS (Leeds) Ltd have been providing innovative machinery and equipment solutions to the engineering industry in the UK and overseas since 1985. their expertise lies in providing special purpose machinery and materials handling equipment to a broad range of

manufacturing disciplines. This equipment has been used in a wide variety of industrial and analytical environments and applications. The company carries projects through from initial design, manufacture, assembly and testing to installation and commissioning. A full range of facilities under one roof covering CAD design, machining, fabrication, assembly and testing, enabling it to offer proven, cost-effective solutions to satisfy your engineering requirements.

ICD Europe is an expert in the procurement, processing and supply of a wide range of specialised metals and alloys. From its strategic global locations, it directly supplies consumers in a wide variety of industrial sectors including the aerospace, medical, petrochemical, automotive, electronics and industrial gas turbine industries. As part of the ICD Group, it has an extensive global supply chain. Since its formation in 1952, the ICD Group has had a presence in over 50 countries dealing in a diverse range of commodities, including lumber, plastics, pigments, minerals, chemicals and metals.

Kim Dean, technical sales manager TYROLIT, Andrew Scott, managing director of RTS and Wayne Hawkes, managing director ICD Europe discuss the advantages of their relationship:

Andrew Scott: I started in this industry after graduating with a degree in Mechanical Engineering. My first role was working with the purchasing of speciality machinery, so it meant that I was looking at bespoke needs and trying to tailor those together with what was being offered to me by different suppliers. After a few years later and changing roles, I identified that there was an opportunity to create these bespoke machine requirements within my own entity and that's kind of been the story ever since. I have been involved in designing and building speciality machines for 30 years give or take. We got into abrasives kind of almost by accident.

Kim Dean: So, all the machines that you manufacture, are they bespoke?

Andrew Scott: Yes. We want our machines to last, to do exactly what is required by the customer and to be able to adapt to their changing needs. We've been in discussion recently with a company who bought a standard machine eight years ago and now it needs replacing. The one that we're going to build is going to last 20 maybe 30 years without a shadow of a doubt and it will be a lot more maintainable than what he's got. If you look to the machine we develop for ICD now, that's where you can really see this collaboration in play. It's an absolute beast of a machine.

Kim Dean: You kind of have to think a little bit outside the box yourself. You are now not pitching a standard set of products, to get the very best result in this instance we too need to go bespoke. With that also comes a different service level, we are evolving together. You find yourself now trying to open your game and produce a bespoke abrasive to go with a bespoke wheel and that's really how we started looking at a series and a range of products for the aero industry or the medical industry, large components and smaller engine components. Looking at thinner cuts, when you're asked to go into these super expensive alloys, they're asking for thinner and thinner cutting technology, so there's less waste. Most of this material waste that

comes up from these machines and ends up in landfill because they find it difficult to separate.

Wayne Hawkes: Absolutely right. Our new machine has really helped us to cannibalise in our market. With the process we were needing to cover, these machines are used normally in laboratories or in steel plants. So they weren't robust enough for doing our processing or agile enough to get the efficiency through. Our end customer is always looking for the most efficient costing, so we've got to show them cost savings because we're doing that whole process. We've got to be cheaper than their in-house processing to do this. Our new machine which carries out all processing requirements in one unit gives a better yield and a better, much better price. The customer benefits from a better yield and a better surface in one smooth operation.

Kim Dean: It was certainly an interesting opportunity for us and it is great to be involved in such a collaborative way. We were able to really define the best wheels and of course be included in advising tweaks

back to RTS, to help the machine work optimally for ICD.

The specific requirements for our cutting discs were to maximise yield on the more expensive materials such high nickel alloys. Where the material is of high value, then we would cut it as little as possible, with a thinner disc. Tyrolit is good at this, in that we can strengthen the disc to allow us to take it under the normal width to diameter measurement ratio. Grain, the fillers and bond are selected not to contaminate or react with the cutting. Cutting temperatures can be 1,300 degrees C. These alloys are required to remain pure. We select the specification so that we have a high G-Ratio, that is to say the least use of abrasive for the most amount of metal removal.

As the machine rotates the part, in order to cut the alloyed bar, it can be cut all the way through, or 'nick fractured', so partially cut. At this point the grinding elements comes into play. The wheel is used to externally grind the imperfections from the billet. The considerations are to remove material quickly and not impart heat. The operation of cutting and grinding in the machine are done without coolant. Tyrolit has employed a high temperature bond within the wheel. This allows us to work effectively at the high grinding temperatures and keep the wheel in good shape. Again, the action of grinding must be free of contamination of the ground material.

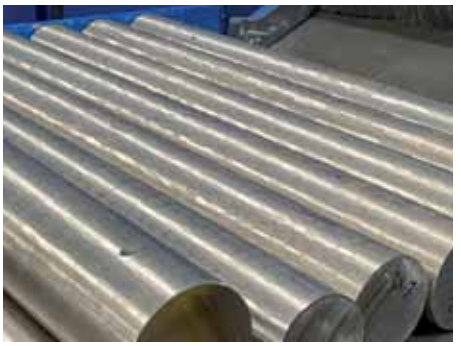
continued page 20

Wayne Hawkes: We have benefited more than I think any of us planned with this project. Working with TYROLIT and RTS really works, as a combined force. A good example of this is cutting and finishing bigger billets. With the need to cast bigger blades, the customer needs bigger ingots, so we've designed this machine to actually cope with a 10-inch diameter bar.

Andrew Scott: I think it is fair to say we are all emerging from an interesting time in our lives. We're always working on new ideas and rarely standing still. We're all the same, looking for ways to improve our game and ultimately give a greater level of satisfaction and throughput to the customer. If we can

support them with new innovation, that is just such a positive experience.

Kim Dean: I think that is the key driver with all of this. It is it is our job as service providers to do more and to listen well. We are all experts certainly, but we are also always learning. Often our customer doesn't actually know what they want, not



entirely. If we can solve a problem they may not perceive to exist, whilst working collaboratively with our key providers, we really know we have more than fulfilled the brief.

Wayne Hawkes: I agree and if we can do all of that AND save time or money or BOTH along the journey, as a group in the future we can really deliver a level of customer service that excels beyond measure.

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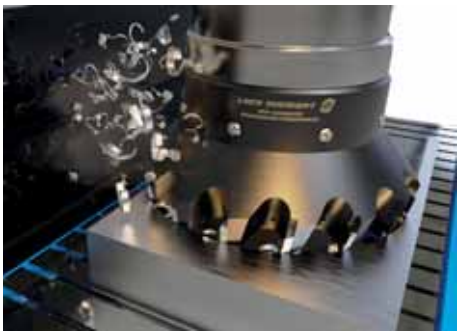
3-2-1 – launch!

New website with extensive content

LACH DIAMANT, the diamond and CBN tool manufacturer, has launched its new web presence in modern design. Visitors to the website can now benefit from an extensive content focusing on LACH DIAMANT solutions for a wide range of applications, all of this with colour and moving images. More than 2.505 new pictures and 138 videos show the high-precision diamond and CBN tools in use. You will find unique historical images and insights into the family company's 100-year-history and operation at **https://www.lach-diamant.de**

Intuitive with great added value
"During the planning phase of the new company website it was important to us that our high demands on our high quality standards in the production of precise diamond and CBN tools are also reflected in the presentation of our website. We also wanted to take the users on a journey, starting from the idea and leading to the tool manufacturing. We have been able to clearly emphasise our strength. On the one hand, we can provide standard tools directly from stock and, on the other hand, we are working on high-precision conceptional designs for special tools in numerous sectors. This is our daily business. It embodies our passion, which we are living day to day together with our customers, with a know-how that has continuously grown over 99 years. In our view, the website shows exactly this. See for yourself." says CEO Robert Lach with some pride.



LACH proves again its pioneering role in the tooling industry
CEO Horst Lach is pleased about the successful relaunch: "The new website perfectly reflects who we are and what we stand for. It shows that our company never stands still, far beyond our core business and is permanently developing. For this reason, LACH DIAMANT is known for its pioneering achievements in this sector."

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Five risk-free years with all Filtermist oil mist collectors

UK oil mist collectors manufacturer, Filtermist International Ltd is so confident of the quality of its products that it has introduced a five-year warranty totally FREE of charge. The warranty covers key non-consumable components, including the motor.

The new extended warranty is valid on all units purchased after 1st October 2021 and was officially launched at the EMO trade show in Milan in October.

Filtermist International CEO James Stansfield elaborates: "We have manufactured our compact, centrifugal oil mist filters for more than 50 years now and in that time we have pretty much perfected our manufacturing processes.

"If our units are properly serviced and maintained, there is no reason why they cannot last for a substantial number of years. We have operational Filtermists in the field which are more than 30 years old! This is a really important factor in why we are so successful globally, especially given the current conversations around sustainability and the environment.

"The design of Filtermist oil mist filters has been developed and improved since 1969 to become the globally recognised product that it is today, under the guidance of our skilled and experienced team. We are fortunate to have a dedicated workforce, many of whom have worked at Filtermist for more than 20 years, so if anyone knows how to produce oil mist collectors that work it is them.

"We are putting our money where our mouth is by offering a free five-year warranty to all of our customers as we know our units are designed to keep working for the long haul."

Filtermist International is accredited to ISO9001:2015 and ISO14001:2015, and its oil mist collectors are CE marked. The motors used are CE and CSA/UL certified.

"As an ISO accredited company, we follow documented procedures to ensure all of our products are manufactured to the highest standards," continues James Stansfield. "Every single Filtermist unit undertakes rigorous quality assurance checks during the assembly process to ensure it is in perfect condition and ready for dispatch. Our dedicated quality assurance manager is constantly monitoring our production. This all helps us to check standards are continuously maintained."

All Filtermist oil mist collectors now come with a free five-year warranty

The five-year warranty must be activated via Filtermist's global website **www.filtermist.com** where full terms and conditions can also be downloaded.

Filtermist delivers new service offer for UK customers

Telford-based Filtermist Systems Ltd, which offers a turnkey service that includes project planning, design, specification, equipment manufacture and installation, will now include the first service visit with every installed oil mist filter purchased by domestic clients.

This initiative is designed to provide companies, working across automotive, aerospace, food and drink and high value manufacturing to name just a few sectors, with peace of mind that their oil mist extraction is performing as intended and ensuring employees are consistently protected from potentially harmful airborne oil mist particles.

"Like all mechanical machinery, Filtermist units perform best with regular maintenance. This ensures the required airflow is being maintained and can flag up any potential issues, including blinded filters or blocked ducting," explains Craig Woodward, divisional sales director for Oil Mist and Industrial Vacuums.

"We've introduced the inclusion of the first service with all of our UK sales of installed Filtermist units to end-users to encourage customers to see the benefits that regular servicing can offer.

"As a full-service provider, we like to work in partnership with users to ensure the air in their facilities is clean and safe to breathe at all times. Some suppliers will sell an oil mist

filter which ticks the box of installing local exhaust ventilation (LEV) as required by the HSE, but without aftersales support it can be hard to be certain that the filter is continuing to perform at the original specified level.

"COSHH (Control of Substances Hazardous to Health) regulations require all LEV systems to be tested at least once every 14 months, but that can potentially mean a long time between an issue occurring and it being identified if something happens soon after the LEV test.

"Booking a service visit between routine LEV tests provides a way for issues to be swiftly identified and resolved, meaning there is less likelihood of the system failing the next thorough examination and test."

A Filtermist engineer working on a Filtermist oil mist filter

Filtermist recommends servicing its oil mist filters every 2,000 hours, although this can vary depending on the nature of the application. If the recommended interval is more frequent, this will be noted on the digital service report supplied after each service visit.

Every Filtermist unit is supplied with an installation and maintenance manual, which includes an LEV logbook to enable users to accurately record the outcomes of daily, weekly and monthly checks, in addition to service visits and routine LEV tests.

"Keeping accurate records is another requirement of COSHH, so we try and make this as easy as possible for our customers," continues Craig Woodward. "Let's face it, whether it's servicing a car or a Filtermist unit, it's not at the top of anyone's agenda, so including the first service with every install means our customers have one less thing to think about."

You can visit Filtermist's YouTube channel to watch one of its service engineers undertake a routine service of a Filtermist oil mist filter.

Established in Shropshire in 1969, Filtermist's ethos is to protect people by ensuring cleaner, safer, more productive working environments. Part of the Swedish Absolent Air Care Group, the company 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.

An active acquisition programme means that in addition to Filtermist oil mist filters, the company also manufactures Dustcheck process filters, venting filters and dust collectors, and Kerstar industrial vacuums, including ATEX rated models.

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.

Filtermist's ethos is to protect people by ensuring cleaner, safer, more productive workshops. Established in the UK in 1969, Filtermist manufactures a range of compact, quiet and efficient oil mist collectors which are trusted by world leading manufacturers to effectively remove oil and coolant mist, fume and steam from workshop air.

Oil mist is created by machine tools spraying high pressure oils and coolants onto metal components to keep them cool during manufacturing operations including milling, drilling, turning and grinding. Exposure to airborne oil mist particles can cause a number of occupational diseases including skin conditions, respiratory problems and even cancer. It can also pose a fire and slip risk, and can damage sensitive electrical equipment if left in the atmosphere.

Filtermist oil mist collectors use centrifugal force to separate oil mist particles from the air. Clean oil drains back to the machine for re-use or collection and clean air is returned to the workshop.

Filtermist offers local support in more than 60 countries worldwide through a network of approved distributors and Absolent Air Care Group sales operations in Europe, UK and Ireland, APAC and EMEA.

Contact Filtermist's team to find out more about the five-year warranty on all Filtermist oil mist collectors.

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www.filtermist.com

Dust extraction specialist showcases evolved range of equipment

Dustcontrol UK exhibited its updated range of high-performance extraction equipment at Advanced Engineering 2021, the UK's largest annual exhibition for manufacturers and supply chain professionals. At the NEC Birmingham the Dustcontrol team showcased the firm's extensive range of both fixed and mobile cyclone-based dust extractors and air cleaners at stand L92.

The latest addition to the DC Tromb mobile extraction unit family, the Hepa 13 filtered DC Tromb Turbo offers optimum quality, containment and performance. One of the major updates is the three-phase turbo motor that has been added specifically to enable running for long periods without the need to switch off. The new model has also been developed with a thermal protector that activates at high temperatures, while a simpler filter change has also been included for easier and quicker removal.

The EX version is certified to IP65 standard, meaning it can operate in explosive environments; ATEX Zone 22. It also has a tall cyclone, large Hepa filters and powerful motor package, allowing it to handle large amounts of debris.

Another piece of equipment on show was the DCF Immersion, a mobile pre-separator made for handling metals like titanium and magnesium and other reactive materials in a safe way. The material is sucked/transported through a neutralising fluid and collected in a fine net basket, staying in the fluid until emptied. The compact and portable unit can also be easily transported between workstations.

The mobile pre-separator can be used with either a mobile dust extraction unit or centralised system.

The team will also be exhibiting its Smart control panels, a compact and efficient control system suitable for central vacuum systems and the majority of more complex installations. Attendees will also be able to get up close to the DC 11-Module, an optimised stand-alone centralised vacuum unit for source extraction and industrial cleaning.

As with all of Dustcontrol UK's equipment, the DC 11-Module can be fitted with Hepa 13 filters, meaning exhaust air can be safely returned to the work environment.

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Innovative new filtration technology boosts metal additive manufacturing productivity

BOFA International has developed a world first innovation in fume extraction to make the exchange of filters in metal additive manufacturing processes safer, faster and better for productivity.

The new stand-alone AM 400 system uses patented technology that enables the filters that remove potentially harmful fume, gases and particulate from metal additive manufacturing to be exchanged on site without risking a thermal event. BOFA launched the new product at the RAPID + TCT show in Chicago in September.

The laser powder bed fusion process used in metal additive manufacturing needs to operate in an inert atmosphere because the materials worked risk spontaneous ignition should they come into contact with oxygen. As a consequence, when new filters are needed for these systems, up until now, equipment had to be shut down and moved to a safe area for the saturated filters to be removed and replaced by operatives wearing full PPE.

With BOFA's AM 400, filters are contained within a separate housing with a robust seal, enabling filter exchange to be completed quickly and safely without isolating the additive manufacturing equipment.

Haydn Knight, sales & marketing director at BOFA, comments: "This innovation in filtration design will lead to significant productivity gains for businesses involved in metal additive manufacturing. This production process is used across multiple industry sectors to create high value components and products, and by enabling easier and safer filter exchange, end users are able to benefit from reduced downtime which translates into tangible productivity gains."

The AM 400 extraction system has been developed specifically for the metal additive manufacturing market, offering high air flow potential up to a maximum flow of 190 cu ft/min and a maximum operating pressure of 250mBar, with low leakage at <30ml/min @ -10mBar.

In addition to enhancing filter exchange efficiency and safety, AM 400 system users will also benefit from patented innovations that optimise filter performance, enabling operators to monitor filter status and coordinate exchanges to match maintenance schedules.

Haydn Knight adds: "The AM 400 marks a significant advancement in extraction technology for metal additive manufacturing through a design that helps safeguard human health and product quality while delivering value-adding productivity improvements."

The AM 400 featured in the BOFA line-up at RAPID + TCT, alongside a new high temperature 3D PrintPRO model (3D PrintPRO HT) and a redesigned 3D PrintPRO 4 system as part of its full line-up of 3D PrintPRO units (3D PrintPRO 2, 3, 4 and HT).

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Valmet strengthens its environmental systems business with key acquisitions

Valmet has completed the acquisition of EWK Umwelttechnik GmbH and ECP Group Oy following the agreements that were announced on June 10. EWK Umwelttechnik is a German company manufacturing and supplying air emission control systems and after-installation services. ECP Group is a manufacturer and maintainer of electrostatic precipitators (ESP), focusing on power plants and pulp and paper industry, in Finland. EWK Umwelttechnik and ECP Group will be included in Valmet's financial reporting for the first time in Valmet's third quarter financial reporting 2021.

The acquired business of EWK Umwelttechnik becomes a part of Valmet's Pulp and energy business line. EWK Umwelttechnik's offering of emission control technologies includes electrostatic precipitators, wet absorbers, catalytic and heat recovery systems, and wastewater purification products. The company serves multiple customer segments, including wood-based panelboard, glass, mineral wool, and steel industries. The net sales of EWK Umwelttechnik were approximately EUR 22 million in 2020. The company employs approximately 50 employees mainly in Kaiserslautern, Germany.

"Combining Valmet's and EWK Umwelttechnik's emission control offerings expands the solutions we can provide our customers and widens the industries that our technologies cover. This creates new business opportunities for our environmental systems business. EWK Umwelttechnik has a very skilled team and I am happy to warmly welcome the 50 professionals to be part of Valmet," says Bertel Karlstedt, business line president, Pulp and Energy, Valmet. "Joining Valmet is a start of a new chapter in our history. We bring new technology and industry competences to Valmet and I'm convinced that together we will be able to serve our current and future customers with a more comprehensive technology offering and service presence globally," says Peter Ohlenschläger, CEO of EWK Umwelttechnik GmbH.

As of July 1, 2021, ECP Group is known as Valmet Environment Oy. The acquired business will be integrated into Valmet EMEA organisation, to enhance energy and recovery services. The offering acquired from ECP Group consists of manufacturing and modernising electrostatic precipitators as well as providing services, such as inspections, annual maintenance, spare parts and performance improvements. The net sales of ECP Group were approximately EUR 6 million in 2020. The company, founded in 2002, is headquartered in Vantaa, Finland, and employs around 20 employees.

"Valmet Environment complements our competences in improving and maintaining emission control processes in the pulp, paper and energy industries. The demand for better air emission control is increasing as emission regulations are tightening in our customer industries, and our customers look for more sustainable technology. Now we are able to better serve our customers' needs in flue gas cleaning. This is a true step change, and we are excited to welcome experienced and committed members to our team," says Minna Saarelainen, director of Energy Sales and Services Operations at Valmet.

Valmet is the leading global developer and supplier of technologies, automation and services for the pulp, paper and energy industries. Valmet's vision is to become the global champion in serving its customers. Our 14,000 professionals around the world work close to our customers and are committed to moving our customers' performance forward, every day.

Valmet's services cover everything from maintenance outsourcing to mill and plant improvements and spare parts. The strong technology offering includes pulp mills, tissue, board and paper production lines, as well as power plants for bio-energy production. Valmet's advanced automation solutions range from single measurements to mill wide turnkey automation projects.

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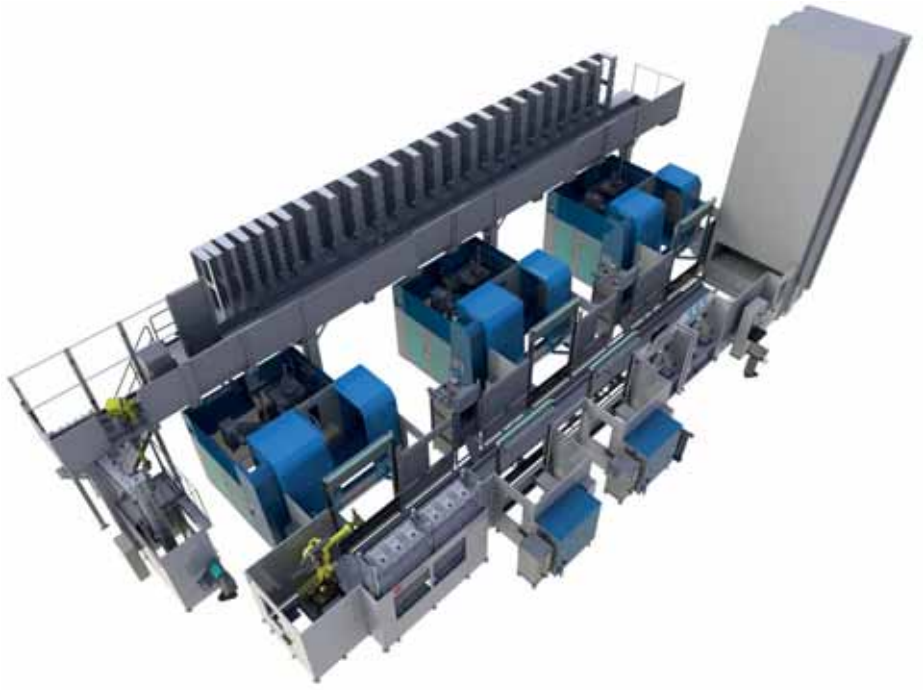
Agile and unmanned grinding automation

Intelligent grinding automation helps manufacturers excel in the world of high-mix-low-volume production. This happens by going beyond the traditional concept of automation - focused on machine tending and extending it with deeper process integration and features production planning and resource management. The end result: high machine utilisation combined with production flexibility, leading to economical batch size one. To learn about the challenges, benefits and of a unique customer case from the grinding automation industry, keep on reading.

The system from a birds-eye view: grinding machines are in the middle with tool gantry storage on the above and robot with it's rail below



Grinding automation drivers and outcomes

Manufacturers utilising grinding machinery in high-mix-low-volume batch production are facing many challenges today, most of them dealing variability in one way or another: in volumes and demand, in production mix, in lead times and in batch sizes to name the main factors. The drivers behind these deal with increasing customisation, shorter planning horizons, quality and traceability requirements and the never-ending pressure to cut costs and tied capital in production. In the end it boils down to the question of how to serve the customers even better and to make good business while doing so.

Despite there not being easy one-size-fits-all type of solutions to these challenges, intelligent automation can help tremendously by increasing efficiency not just in the world of physical movement but also in production planning and resource management, allowing for a greater level optimisation that is explained in practice using a case example below.

Automation helps operations by decreasing idle times, cost, waste and often times the stress around unexpected changes and uncertainties. More integrated processes enable higher OEE for the total production. All of this translates to higher revenues, profits and return on capital. As the work in production becomes more safe and meaningful, the engagement of employees rises making it easier to acquire and keep talent. At the end, customers are happier customers due to faster and more reliable delivery times, quality and pricing. Sounds like a solution where everyone wins, but how to get there? The top of the pyramid serves as a clue as it reminds us about the ultimate goal for people and businesses: to make the most out of the time we've got. In numbers, that's exactly 8,760 hours each year. Let's see one way to realise that.

How does a Finnish business deliver globally recognised ''best-in-class'' automation solutions? Leigh Tricklebank from Fastems UK sales puts it in simple terms: "Manufacturing Management Software (MMS) is our unique differentiator, providing genuine user benefits and business value. MMS is a perfect acronym, and as it says manages manufacturing, in particular dynamic and reactive scheduling and resource management. By managing the production resources like raw materials, NC-programs and tools along their off-sets MMS can plan and execute production always against the target of production orders and their due dates, making sure everything that is planned to happen, can and will happen. For grinding machines and their ancillary processes this approach unleashes the full production value within them: combining the high utilisation of machinery with flexibility in production."

If data is the new oil, supported by process repeatability and traceability, then

Fastems MMS Dashboards organically capture's the essential. The 27 user-defined widgets that build the Dashboard, can display machining metrics, inspection reports and everything in between, meaning that root cause analysis and continuous improvements can turn to daily practice instead of mere words in a strategy document.

Leigh Tricklebank enthuses: "To our knowledge, this is the first tool automation solution for 5-axis grinding centres in the world. Tool automation means that the tools are loaded and unloaded automatically to the grinding machine magazines allowing automatic setup changes for different batches automatically and at the right time.

"As grinding processes usually feature lots of tools, this creates significant savings in tooling cost and more flexibility on production as the system is capable of 'any-part-any-time-any-machine' production leading to economic batch size one. Furthermore, the system features an adaptive grinding process which means that the grinding process is automatically adjusted based on the integrated CMM data."

Everything in the system is controlled via Fastems MMS. If any changes should occur, the plan is automatically re-calculated and operators are always guided for the right action at the right time. For any missing resources, the system alerts beforehand. Naturally, all physical movement inside the system is completed by robots. It's noticeable that the system has high integration level meaning that not just machine tending is being automated but also the air-blowing, measuring as well as production planning features elaborated earlier.

To summarise, intelligent automation consists of these following main parts, enabling manufacturers to reap the full automation benefits available today. Automation suppliers need to handle especially points 3-5 and have an important role in point 2 as well:

1. Choosing the right equipment vs production requirements
2. Integrating value chain (process) steps while making processes stable
3. Flexibly automating all (applicable) physical movements
4. Automating production resource management
5. Automating proactive production planning and analytics

Keep in mind, that despite the quite extensive scope of the example solution, grinding automation can come in many forms and sizes that can give an access the automation benefits just as well. For those readers utilising other kinds of processes, one could also be integrating for example robotic finishing such as deburring or polishing into a similar system – or to work as stand-alone.

For further information, contact Leigh Tricklebank on 07749 071681 for your free survey to include automation layouts and application feasibility.

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FANUC produces 750,000th robot

Automation specialist enhances its position
FANUC Corporation, one of the world's most prominent suppliers of automation technology, continues to enhance its position with the production of its 750,000th industrial robot, which is more than any other manufacturer in this segment.

At present, FANUC produces around 8,000 industrial robots every month at its factories in Japan, although monthly capacity is available up to 11,000 units. The company is renowned for its highly automated production facilities, where thousands of robots demonstrate reliability, dexterity and speed in the build of FANUC products that include robots, controllers and machine tools. The company will deliver its 750,000th robot to a European customer.

FANUC's largest customer group are car producers and their suppliers, although manufacturers from other industries, such as electronics, food, pharmaceutical and medical, are also growing their base of industrial robots. While the coronavirus pandemic initially led to a decline in robot orders, FANUC has since witnessed a strong rebound in sales, especially from Asia and the USA.

"In Europe, the recovery has truly begun," states Shinichi Tanzawa, President & CEO of FANUC Europe Corporation. "Although FANUC's overall order intake for robots in Europe increased only slightly during the past fiscal year, sales in the past few months are at a historical high."

FANUC is pursuing ambitious plans in Europe, where the company is steadily expanding its sales and service network. In the past four years alone, FANUC has invested more than €120 million in new facilities across Europe. Further underpinning its growth plans, the company will invest another €100 million in the coming three years.

Shinichi Tanzawa says: "We are confident that the trend towards robotisation will grow further and that FANUC robots will help customers to automate their manufacturing plants and save costs like FANUC does at its own factories. We will do everything necessary to support our customers in these endeavours."

Vehicle electrification specialist turns to FANUC cobots to increase productivity
Specialist electric vehicle battery manufacturer, Danecca, has invested in two FANUC collaborative robots to improve the accuracy and repeatability of its heat staking applications following a major customer order.

The battery manufacturer, founded in 2018 by ex-Jaguar Land Rover and National Grid engineer Danson Joseph, specialises in battery development, verification and validation, as well as rapid prototyping and production.

Following the successful purchase and integration of a FANUC M20iD 6-axis industrial robot, integrated with a TRUMPF PFO laser for welding electrical connections, the company has now invested in two state-of-the-art FANUC CRX 10iA collaborative robots.

Given the close proximity between operator and Robot, the lightweight CRX-10iA has been designed with safety front of mind. Movement automatically stops upon contact with humans or unexpected objects and will instantly move back to avoid trapping. The CRX cobot range is certified according to the ISO 10218-1 and EN/ISO 13849-1 safety standard and the smooth and elegant design avoids pinching and injury, making it an ideal partner for production workers.

Danecca purchased the two CRX cobots to improve the accuracy, repeatability and takt time of its heat staking process, while also freeing up more time for technicians to focus on value-added tasks.

James Hampshire, electronics engineer at Danecca, comments: "Heat staking has traditionally been a labour-intensive application for us, with long takt times that can become quite fatiguing for the operator when done manually. Following the successful tender for a demanding order, we quickly identified collaborative robots as a viable solution to work alongside our battery technicians to significantly increase our output without compromising on quality.

"The CRX cobots now enable us to heat stake up to 23 units at any one time and have helped to eradicate any inconsistencies. This is incredibly important as any irregularities in the process would render that particular unit redundant, adding unnecessary time and cost into the process. Not only have we seen a significant increase in repeatability and accuracy, but the takt time has also reduced by over 10 minutes per cycle."

"From a programming perspective, the CRX cobots are incredibly intuitive to use and we know that once we have told it to do something, it will do it and do it correctly.

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8760 Fastems

ELEVATE YOUR

CNC PRODUCTION

Join our virtual event on **the 30th of Nov 2021 at 12-14 GMT**

Focused mainly on 4 and 5 axis machine tools, we will launch the newest in CNC automation: Flexible Pallet Tower, the new compact and affordable plug-and-play automation; and the latest version of Manufacturing Management Software, the best automation control to plan, run and monitor your production. **A warm welcome!**

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Cost-effective deep hole drilling system

Partnership · Precision · Performance

Sunnen's versatile SHDD series deep hole drilling systems focus on fast setup and changeovers on a wide range of parts. Three models of new deep hole drilling system deliver tight diameter control, straightness and superior surface finish, signaling the next wave of Sunnen's total-bore solutions.

Sunnen Products Company used voice-of-the-customer input to develop its latest cost-effective deep hole drilling solution, the new SHDD Series systems, resulting in an array of standard features . These heavy-duty machines are designed to handle high-capacity production of drill collars, drill pipes, submersible pumps, hydraulic components, ship rotor shafts, landing gear, turbine shafts, cannon barrels and more. The versatile SHDD series achieves tight diameter control, straightness, and superior surface finish in workpiece materials ranging from aluminum to super alloys. Three different operation modes accommodate a variety of machining processes including counter boring, pull boring, trepanning, bottom forming and skiving/roller burnishing. Available in 2-, 4- and 6-metre part length capacity models, the deep hole drilling system can handle solid drilling from .8 to 5.0 in (19 – 127 mm) and up to 7.0 in (178 mm) for counterboring or trepanning.

As part of development of the SHDD series, Sunnen partnered with Midwest Precision Manufacturing, the renowned expert in deep-hole drilling, gun drilling and honing. The team from Midwest Precision provided up front design input from the customer's viewpoint. A SHDD-4500 installed at the Midwest facility in Fredonia, Wisconsin, USA provides further real-world input for refinement of the machine and continued development of drilling applications.

"This design approach demonstrates our commitment to develop the best deep-hole system on the market," says Phil Hanna, machine product manager at Sunnen. "We're unique among deep hole drilling manufacturers in that we provide a complete solution from machines to tooling, drive bars, cutting inserts, pads, coolant systems and coolant. The primary focus of our design team has been to reduce machine setup and changeover time. Our controls engineering team has worked to develop user friendly intuitive control screens. Our goal is to create an easy-to-use, heavy-duty deep hole drilling solution that will operate reliably for many years."

The SHDD series standard configuration includes features such as a 3-jaw chuck, part counter rotation, ballscrew driven tool feed, rack-and-pinion-driven pressure head, Beckhoff PLC control with 394 mm (15 in) colour touch screen on a moveable slide, combination light curtain/fencing safety system, and a 1,650-gallon (6,245-litre) coolant system with a chiller and four 10-micron bag filter units. An automatic chip removal system and heavy-duty tool drive shaft vibration dampeners are also standard on the SHDD systems.

Options include: fixed tool/part rotation, pull boring capability with a lantern chuck, front chip exhaust, large bore workpiece pressure head with 7 in (178 mm) capability, 4-jaw chucks, remote process monitoring, part barcode scanning capability and a camera at chip exit to allow for process optimisation from the operator station. A brochure is available at www.sunnen.com, with details on all features and options of the SHDD series machines and accessories.

Sunnen's BTA deep-hole drilling tool and accessories include: solid drilling tools, trepanning tools, counter boring/reaming tools, bottom forming tools, deep-hole machining oil, cutting inserts, and guide pads. SHDD machines are engineered and built in the USA and are covered by Sunnen's three year warranty.

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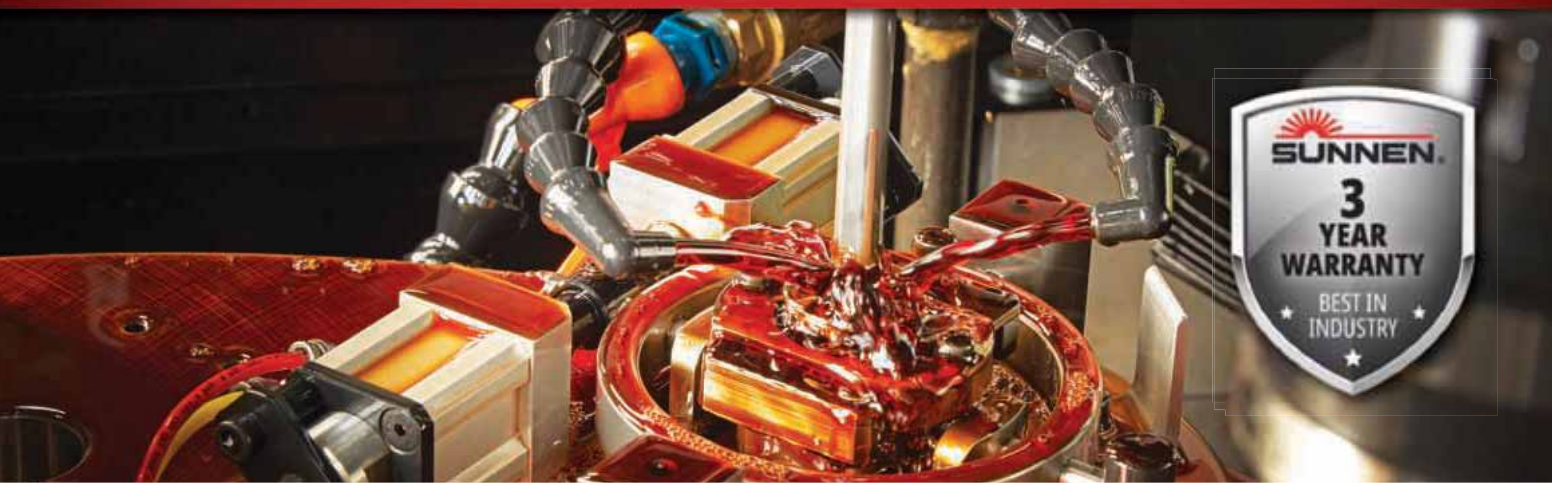

There's more than one way to machine a bore. **Only Sunnen has them all.**

No matter what your bore machining application...from primary hole drilling to final finished bores...we have a turnkey solution for you.

Deep hole machining. Sunnen manufactures a full range of machines, tools and accessories for deep hole drilling, trepanning, counter boring, form boring, skiving/roller burnishing...even **Sandvik-style** replacement cutters, cartridges and pads.

Honing. From manual, tool-room hones to automated, high-production systems, Sunnen will optimize your honing process with a conventional multi-stroke or single-pass system designed specifically for your application, including machine, tooling, abrasives, cutting fluids, bore gages and automated parts handling.

Skiving and Roller Burnishing. For cost effective bore sizing on hydraulic cylinders and other high-production applications, Sunnen's new SHDS-series machines are significantly faster than traditional honing, yet deliver precise tolerances and quality surface finishes.

Lapping. When bore specifications call for extremely tight tolerances, Sunnen's SVL-series automated bore lapping machines bring increased productivity and consistency to what has traditionally been a manual process.

To find out about the latest technology in bore sizing and finishing, visit Sunnen.com or contact your local Sunnen representative.

For more information contact
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SUNNEN®
Partnership · Precision · Performance

Gehring presents technologies for modern manufacturing

The electrification of the powertrain plays an important role in CO_2 reduction. The automotive industry requires production technology for the introduction of their hybrid and electric vehicles which is very flexible in terms of quantities and types and at the same time guarantees short cycle times and high quality.

The stator is the part of the electric motor with the largest production effort and thus the greatest potential for optimisation. Hairpin stators offer the best performance characteristics and the highest automation potential for mass production of stators. Here, deviating from the known winding or pull-in technique, individual hairpin slip-in coils are formed of flat copper wire and inserted into the stator housing. Core processes include pin production, setting and inserting the pins into the stator, twisting the pin ends, laser welding and impregnating the stator.

Gehring has developed integrated production solutions for stators for electric motor production together with the specialised subsidiary copperING. Automobile manufacturers and suppliers receive all the relevant technologies as well as the process and system design from one provider. The Gehring Group supplies fully automated, flexible stator production lines that fulfil the quality requirements as well as the cycle times and flexibility requirements of the automotive industry. Gehring relies on a combination of in-depth understanding of technology from its own e-mobility experts and extensive experience in process and system design.

At EMO 2019, Gehring presented two new machines from this process chain: a robot-based station for setting the pins in the stator slots and a laser machine for welding the wire ends.

CO_2 reduction in combustion engines to comply with emission standards

In parallel with technological developments in e-mobility, it is important to further develop existing vehicle models with internal combustion engines in such a way that they comply with ever stricter emissions legislation.

Two efficient methods come with the so-called "Nanohoning" and "Formhoning" from Gehring. These are process sequences to produce motors with coated cylinder liners (Nanohoning) and a technology for the compensation of distortions in the engine (Formhoning). Both methods are now used in the mass production of internal combustion engines and achieve significant savings.

Complete package honing technology – production-ready innovations with effect

The Nanohoning technology chain is used to produce motors with coated cylinder liners and includes the process chain roughening – thermal coating – honing. Thermal spray coatings in cylinder liners of internal combustion engines increase the energy efficiency of the aggregates through lower friction. Wear and size of the motors are reduced. In addition to honing processes, Gehring also supplies laser roughening in this process chain. The laser roughening enables high adhesive pull strengths with low roughness. Thus, less coating material is needed. It also reduces operating costs by eliminating tooling costs compared to other processes.

To further improve fuel economy in conventional aluminum or cast-iron engines, Gehring has introduced the technology of form honing. Form honing simulates the deformation of cylindrical shapes of combustion engines under operating conditions during honing, which results in a nearly cylindrical shape. This has a positive effect on CO_2 emissions, oil and fuel consumption, performance and wear. The technology has been industrialised in cooperation with leading global automobile manufacturers and now provides cost benefits for plants in the USA, Europe and China. Thus, in serial production, a more than ten percent reduction in friction in the cylinder bore could be achieved, or an emission reduction of about 1.5 grams of CO_2 per kilometre. The cost of implementing the process is only a fraction of other measures with a comparable effect.

Based on the newly developed PT 600 two-spindle honing centre, Gehring presented the complete range of honing technology for machines, automation, tools, abrasives and contract machining at EMO. Both series and V engines can be machined on the PT 600. With its tool changer, comprehensive process capability, ergonomic loading concept and optimised installation surface, it is suitable for the flexible production of a wide range of engines at tier suppliers and contract manufacturers.

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Engis customised bore finishing solutions

Superabrasives specialist, Engis Corporation knows that not every bore finishing application fits neatly onto a standard machine platform. In those special cases, Engis engineers can design a system tailored to the specific application, a solution which will optimise part geometry at minimal cycle times and costs.

Over more than thirty years, Engis custom bore finishing solutions have put customers ahead of the competition, providing specially designed machines for markets such as hydraulic, automotive, compressor and firearms, around the world.

Specific solutions have included: in-line transfer, concentricity establishment, automated pressing, polishing and bore finishing, multi-column systems for large parts, including bore finishing, gauging, brushing, face deburring and marking and machines with special multi-spindle arrangements capable of simultaneously finishing multiple bores in a single part.

Optional machine features and enhancements include: spring-loaded "Crash Sensors", interlocked with machine controls to protect machine and tooling from potential accidents, shadow gauges to detect misloaded components; interlocked with the machine controller, full-perimeter guarding for added operator safety, "Walk Away" switch that enables increased production potential, as well as a wide variety of automation and gauging packages.

Engis custom automation systems are engineered to optimise productivity, with complete customised automation packages, including both in-bound and out-bound product flow. From pick-and-place units and robotics, to in-process gauging and sensor systems.

Whether it is a process that requires rotating fixtures, blind and semi-blind bore finishing, bore-to-datum concentricity applications, even OD finishing, Engis designs solutions that can be tailored to each customers' application.

Engis (UK) Ltd is part of Engis Corporation, a worldwide organisation which manufactures and markets superabrasive finishing systems for

Engis Specialty series machine

v1_engisoperations that demand precision surface polishing and close tolerance requirements.

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ActOn Finishing innovative surface finishing solutions for additive manufactured parts

Additive Manufacturing (3D Printing) is now an established technology for prototyping and mass production. However, metal parts that have been produced through additive manufacturing tend to have a surface with an average Roughness (Ra) ranging anywhere from 10 to 30 microns. The values of Ra may increase at support locations and may decrease depending on the geometry profile.

In order to improve the appearance, surface roughness and mechanical properties of additive manufactured parts, post processing remains an important factor. Selecting the most suitable surface finishing technology is critical to prove the viability of components from a cost and functional standpoint. In an ideal world, surface finishing must be considered when designing components for AM to ensure the desired component and its characteristics can be achieved.

3D printed parts require post processing to remove powder and support structures, achieve a smooth surface and a polished finish. ActOn Finishing has developed cost-effective technology and a series of automated mass finishing processes to surface finish additive manufactured components in a short time.

For a powder-based metal additive manufacturing process, first step often involves removing the powder residue left from the 3D printing process. The AM Blasting technology is perfect to remove powder, even from parts with complex geometries, in an efficient way. The AM DI depowdering system is developed for manually cleaning of powder bed printed parts and it is suitable for blasting of individual, large parts.

For surface finishing and polishing the 3D

printed components, ActOn CHEF technology is recommended.

The CHEF Machines are fast finishing machines that reduce surface roughness, deburr and polish 3D printed parts. In many cases, the results achieved via CHEF systems cannot be achieved in a standard vibratory process, particularly applications that include achieving a high level of surface finish or a high rate of defect removal. Moreover, the CHEF machines can be 10 times faster than traditional finishing methods and produce superior finishes. It is one of the most efficient batch finishing methods.

The action of these machines relies on the high force and speed at which the media chips come into contact with the processed components. The forces can be as great as 15-20 times the force of gravity, depending on the rotational speed and the turret size of the centrifugal machine.

ActOn works closely with The Manufacturing Technology Centre (MTC) to develop an optimum Finishing solution which benefits the industry by reducing processing times and producing a repeatable and quality AM component. The AM parts have been built using SLM or EBM processes, from materials like Ti6Al4V. Hence these required intensive manual finishing, to remove support structures and to smooth down rough surfaces.

Trials were carried out that determined

that the most efficient equipment is ActOn's CHEF machine to achieve sub 1µm RA surface finishes. The MTC then acquired an ActOn CPM-10 model and ActOn's consumables to undertake in-house development. Further trials have been conducted by both teams to determine the optimum machine parameter settings to process additive manufactured materials like Ti6Al4V.

An Ra of sub 1 µm was achieved in five hours, 80 percent faster than traditional finishing, with an Ra between 2 µm to 3 µm in approx. 30 minutes. Cost savings on the finishing process were 80 percent. Reducing surface roughness, to deburring and polishing are just a few of the applications that have been achieved via the high energy finishing process. The project provided further information regarding surface finish parameters, component weight loss, media weight loss, effectiveness of using media with different abrasive grades and hardness.

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Reduced machining times and improved quality

Mastrini MS Ltd is a family business based in South Wales, established by Benoit Mastrini. Always at the forefront of innovation and eager to utilise new technologies, the company became the sole UK and Ireland agent for Recomatic SA and BULA Technologie SA in 2021.

Mastrini MS is specialised in assessing existing grinding and polishing processes and suggesting optimised solutions that can drastically reduce machining times whilst improving quality, making your products more competitive.

Ciposa develop specialised micro-assembly equipment that can handle even the smallest of components with high levels of speed and control. Capable of being scaled to different requirements, Ciposa's innovative modular designs ensure multidisciplinary precision. Through optimising output and ensuring quality with precision using these leading technologies, we aim to strengthen our customers' positioning in their industries.

Benoit Mastrini is a proud member of the MTA (Manufacturing Technologies Association), the UK's trade association for creators and suppliers of technology for manufacturers. In April 2021 he became a member of the WAF (Welsh Automotive Forum), an independent company that provides sustainable continuous improvement for the automotive industry in Wales. An experienced CNC machine tool specialist with a background in automotive, aerospace and luxury watchmaking industries, he started in the metalworking industry in 1998 as an apprentice at Schneider Electric, building punches, dies and mould for the electrical equipment industry.

In the following years, he has worked within the automotive and aerospace industry and, more recently, in the luxury watchmaking industry at Rolex SA in Geneva. It was here that he took charge of the investment and industrialisation of surface finish machinery for complex timepieces. During this challenging and exciting experience, he worked closely with the most advanced CNC machine tools suppliers and often chose Recomatic and Bula solutions for this demanding industry.

Having extensively experienced working with the leading Swiss manufacturers of cylindrical IO/OD grinding machines, Benoit Mastrini has implemented complex processes and fully automated tailored solutions in the Caerphilly-based business.

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Q-Fin keeps developing and is 4.0 ready

Q-FIN
Quality Finishing Machines

Since 2013, Dutch deburring machine builder Q-Fin Quality Finishing Machines has made innovation a top priority. Every day, people at Q-Fin are busy improving their machines based on all collected technical data. The machine programme keeps growing. They are convinced that together you are capable of more, which is why the Q-Fin Knowledge Club (QKC) was created. Once a week, the engineers, sales and marketing employees and technicians come together to innovate, improve and let the common knowledge grow. One of the things they have focused on in recent years is in-house software development. According to Q-Fin, the latest software has been developed in such a way that the operator can operate the touchscreen intuitively and the machine sets itself as it were.

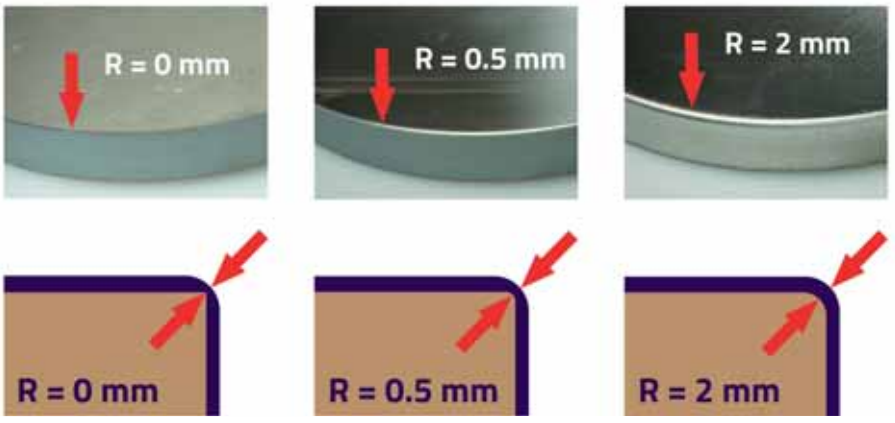
Q-Fin machines 4.0 ready

Today, Q-Fin supplies its deburring and finishing machines with program selection in the operating menu. The machine operator can choose from a number of preset programs on the HMI screen, e.g. for a large edge rounding, in combination with the correct material thickness. In addition, the operator has the option of inserting own programs for products that regularly return to his company. After calibrating the brushes and selecting the correct program, the machine automatically sets the correct rotation and feed speeds. The program indicates which abrasives have to be mounted for this program. The smart software is also ready for connection to a barcode scanner.

As an option, all machines from the Q-Fin range can be equipped with the automatic brush height system (ABS) with which the highest setting can also be controlled from the touchscreen. This makes the Q-Fin machines completely ready for industry 4.0. "Q-Fin machines were already known as the most user-friendly in the market, but with these new additions we make it even easier for operators to quickly apply a perfect finish to their products," says operations manager Martijn Coppens.

Integration

Q-Fin machines can be perfectly integrated into a smart production line for the production of sheet metal parts. In practice, the deburring machine will often be placed directly after a laser cutting machine. In addition to the application of roller tables, driven infeed and outfeed tables and/or an external return conveyor belt, solutions around the deburring machine also include robots or cobots that load and/or unload the machine. By ensuring a flawless surface finish and rounding, these reliable and easy-to-operate machines eliminate a common bottleneck in the production process, save manual labour that is often perceived as dirty, heavy and unhealthy and ensure products with a consistent high-quality finishing level.



Double-sided finishing

The application of a reversing unit for double-sided machining fits this picture of "solutions around the deburring machine". Heavy and large steel plate parts must be provided with a large radius on both sides for a good adhesion of powder coating. These parts must be passed through the machine twice and turned over in between. The latter is often done by hand or with the help of an overhead crane. This takes up a lot of time, is strenuous work for the operators and not one hundred percent safe. According to Q-Fin's GrindingPower® philosophy, the products can only be provided with a large radius at high speed giving pressure on one side,and Q-Fin has therefore developed the Q2S reversing station in widths of 600, 1,200 and

line, this reversing unit provides batch-wise double-sided machining at an unprecedented high throughput speed. The system can be operated and maintained by one operator.

Heavy slag removal

The DS600 and DS1200 are the most recent additions to the Q-Fin machine range. With these machines, Q-Fin is able to remove heavy slag from steel parts in 1 pass and then feed the product through a Q-Fin deburring machine to apply a radius to the product. The positive consequence of this is that in the next step in the production process, work can be done faster, cleaner and safer.

In the production line we see an integration of the DS600 or DS1200 between the plasma cutting or oxy-fuel cutting machine and the deburring machine. The necessary manual removal of the slag is eliminated in this process. We have seen increasing automation around both the cutting and deburring machine in recent years. For example, the cutting machine can be unloaded automatically, the deburring machine can be loaded by a Cobot and after the deburring machine the products can be identified and / or marked again. However, for many metal processing companies, a drifted conveyor belt or return belt on the deburring machine already offers a lot of ease of use, so that the process can be carried out by 1 operator. The showroom of Q-Fin Quality Finishing Machines in Bergeijk, The Netherlands is open for a visit after making an appointment, taking into account the prescribed measures, so that you can test the new machines and the new software yourself.

Q-Fin Quality Finishing Machines
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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 motorised, 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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The right tools for the perfect finish

Deburring, or burr removal, is a vital part of the metal fabrication process. Finding the correct abrasives and power tool combination can improve operator precision, as well as determine the quality, functionality and durability of the part. Andrew Badger, key account manager at Norton explains how fabricators can ensure they have the right tools for the job:

Matching the right tool and abrasive can hugely improve the deburring process, leaving a clean and smooth finish, expanding the tools' lifespan and even reducing operator fatigue.

There are so many different products on the market for deburring alone, varying in size, materials and configurations, that it can easily become overwhelming. To help make the decision process easier, there are a series of simple steps to help fabricators make an informed choice:

- What material is being worked on? e.g. stainless steel, carbon steel, aluminium
- How tall and thick is the burr?
- The edge radius
- Stock loss and surface finish
- What is the required finish?

Power tools

A right angle grinder (RAG) is the most versatile machine for deburring, a staple in any workshop. It can replace numerous tools and make the most tedious, labour-intensive jobs quicker and easier when used with the correct disc.

A die-grinder, on the other hand, can be used for deburring in hard-to-reach areas or smaller components where a RAG would be too large and cumbersome to access. Used with flap wheels, mounted points and carbide burrs, a die-grinder's versatility makes them ideal for all types of fabricators - from welders to sheet metal workers, specifically when precision is needed.

Abrasives

Flap discs and fibre discs can be used with a range of power tools, but it is important to determine which is best suited for the job and application. Fibre discs are ideal for quick material removal when the life of the disc is not as much of a concern.

Operators should also consider reviewing the type of backup pad used. Softer pads are better for working on a piece that has both flat and contoured surfaces, allowing fibre discs to better conform to the shape of the surface. For faster material removal, a harder backup pad will increase the pressure between the abrasive and the surface.

Similar to flap and fibre discs, flap wheels, cartridge rolls and spiral rolls are ideal for getting into awkward areas and internal diameters and are must-haves for when using a die grinder on intricate pieces.

Mounted points are a popular choice for die grinders when working on complex pieces, and are available in a range of shapes and grits from coarse to fine, allowing fabricators to tailor their abrasives depending on how quickly and aggressively they want the material to be removed.

In contrast, carbide burrs don't actually use abrasive grains but feature a unique geometry that helps to chip the surface away. These are great for tough applications and where the life of the product is a critical factor.

Lighter burrs and scratches can be blended and refined with non-woven surface conditioning discs. Easy to use and long-lasting, these discs can often minimise the number of steps required in the deburring process and mean fewer swaps are needed between different types of abrasives. A good quality surface conditioning product will also be forgiving, preventing shedding or smearing on the workpiece during use.

Materials

It is always important to check that the abrasive is suitable for the material being worked on. Some abrasives are better suited for stainless steel as they feature technology that prevents the workpiece from getting excessively hot when removing the surface material. This helps to minimise any risk of bluing, which can affect the aesthetic of the

workpiece. It is also not advised to use grits coarser than 60 grit on stainless steel, as this can leave deep scratches that will require extensive rework, costing time and money.

For aluminium and softer metals, fabricators should be sure to use an abrasive that is specifically designed for these materials. Abrasives that are designed for use on carbon steel can become loaded when used on softer metals, affecting performance and could even ruin the surface of the workpiece.

The best way to find out whether an abrasive is right for the job is to simply check the product packaging or contact the manufacturer if in doubt.

To provide metal fabricators with as much knowledge as possible on which tools to use, plus how and when to use them, Norton is hosting a series of FREE live webinars on various topics, from weld removal to composite polishing.

Find out more about these free sessions at: **nortonabrasives.com/en-gb/norton-live-streams**

For more information on which Norton deburring product is best for the job, visit **https://www.nortonabrasives.com/en-gb/resources/expertise/rag-deburring**

Norton's mission is to manufacture products that have a positive impact on everyone's life and provide well-being, quality of life and performance, while caring for the planet. It believs in supporting customers, empowering them to achieve better results, optimise their processes and be inspired to innovate. From everyday operations to specialist manufacturing requirements, Norton offers one of the largest selections of abrasive products, machines and accessories.

Norton caters for a vast array of markets from automotive, metal fabrication, woodworking, manufacturing, marine and much more. It is constantly looking for ways to improve your working conditions and simplify the job by eliminating dust or noise, reducing total costs by increasing the number of parts you can finish in an abrasive application, and considering the ergonomics of the application to improve worker comfort. 'Right' means different things to every customer, but if Norton doesn't have the solution you're looking for today, you can count on it to be developing that solution for tomorrow.

As a brand of Saint-Gobain, a world leader in the habitat and construction markets, Norton is proud of our strong presence in your communities. With over 10,500 employees spread across 27 countries, it is a global brand delivering locally.

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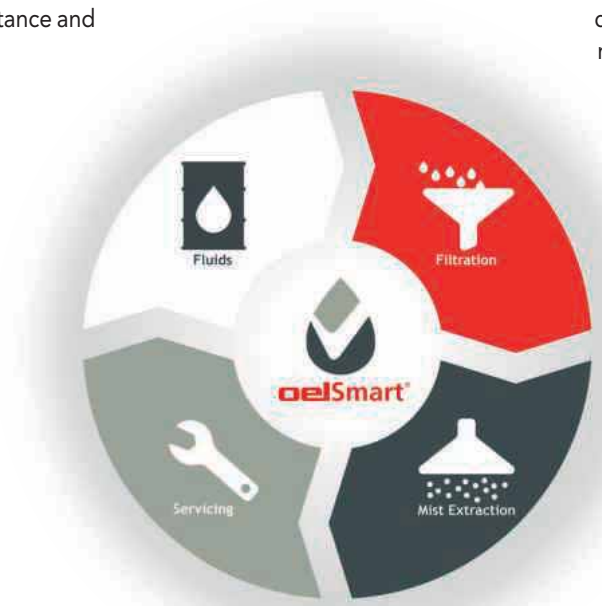
Hartmetall UK chooses the oelSmart® solution for carbide

Strength, durability, abrasion resistance and the ability of carbide to withstand temperatures found in high-speed machining make it the material of choice for many precision toolmakers and grinders. However, the material presents several challenges, particularly when it comes to COSHH considerations concerning cobalt, which can present a serious risk to worker health.

According to metalworking fluid specialist oelheld UK Ltd, all aspects of the fluid system have a role to play in the performance, productivity, and worker protection of carbide processes. That is the underlying philosophy behind oelSmart®, the company's holistic and proactive approach to fluid system management which is designed to help grinders get the most from their fluids.



"Being oelSmart® is about making sure all aspects of a metalworking fluid system are right for the job and working well together. Being proactive about ongoing maintenance and management can have a big impact on performance, costs and H&S compliance. Ultimately it impacts the bottom line, and we want to encourage metalworkers to take an oelSmart approach to see those benefits for themselves," explains Pete Mangan, managing director, oelheld UK Ltd.

When creating a system for working with carbide, the presence of cobalt within the material is a key consideration. During the machining process, it is possible for cobalt to 'leach' out and dissolve into the metalworking fluid. Classed as a heavy metal, the substance in this form is toxic and can pose a serious risk to health if swallowed, absorbed through the skin, or inhaled.

"The adage 'prevention is better than cure' is certainly true of cobalt leaching; once metalworking fluids have become contaminated, it will soon be necessary to replace the fluid entirely. Fortunately, there are several preventative measures grinders can take within their systems to reduce the risk of leaching," continues Pete Mangan.

Fluids for carbide

One such measure is to opt for an oil which contains cobalt leaching inhibitors; a high-quality carbide-equipped oil can last for years if well-filtered and prevent even a single ppm of cobalt entering the fluid. However, equally important is to prevent any tramp oil or foreign fluids entering the grinding oil as some additives found within industrial lubricants such as hydraulic and slideway oil can in fact boost the cobalt leaching process. Regular oil tests are recommended to help identify potential contamination at an early stage, as well as providing a more general insight into a fluid's ongoing performance levels.

Filtration for carbide

A sintered material, carbide uses powdered cobalt to bind irregular shaped tungsten carbide particles together. The resulting debris created by the grinding process tends to be much smaller in size than, say, HSS. To effectively remove carbide swarf the filtration provision must be capable of filtering debris particles down to 3-5 microns. Insufficient filtration can exacerbate any cobalt leaching that occurs by allowing particles to remain within the machine and filter tank, providing more opportunity for a reaction with the oil.

Oil mist extraction for carbide
Just as leached cobalt can be found within metalworking fluids, it can also be present within oil mist particles. If inhaled by workers it can cause inflammation and fibrosis of the lung in a condition called 'hard metal disease', making an effective and properly maintained mist extraction unit crucial to reducing potential worker exposure. Any extractor technology can be considered (i.e., electrostatic, centrifugal or mechanical) but it is essential to correctly match the airflow to the process and ensure mist extraction filters are well maintained and cleaned or replaced when necessary.

Servicing for carbide
Equally important as an effective system setup, is an appropriate servicing and maintenance schedule for the equipment involved. A proactive approach, carried out in accordance with manufacturer recommendations, is essential for ensuring consistent performance and HSE compliance, especially COSHH requirements concerning workplace exposure levels to cobalt, and regulations concerning LEV system testing, which should be conducted by a competent person every 14 months, at least.

Leading the way: the example from carbide specialist, Hartmetall UK Ltd
When it comes to carbide, Hartmetall UK Ltd are experts. Established in 2003 as an independent distributor of tungsten carbide wear parts, the Worcestershire-based company today holds a comprehensive range of tungsten carbide rods (sintered, ground with and without coolant holes, deep hole drill blanks), strips, EDM blocks and preforms in grades EMT 100–612.

Hartmetall UK also offers an in-house cylindrical blank grinding service providing steps, tapers, ball nose and back tapers to meet customer requirements. As the company's reputation and reliability for subcontract preform grinding has grown, a continued investment strategy in the latest technology has been key to increasing capacity and keeping up with demand over the last eight years.

To complement its growing number of Rollomatic grinding machines, oelheld UK has been working with Hartmetall UK for several years, implementing and adapting a grinding fluid and filtration solution to meet the company's expanding requirements and work in conjunction with the existing fluid system components.

oelSmart® coolant SintoGrind TTK
A fully synthetic neat oil, SintoGrind TTK has been specifically designed for grinders working with tungsten carbide and is the clear choice for companies such as Hartmetall UK working to strict quality requirements. The carefully selected additive package means SintoGrind can offer the best possible surface finish whilst also providing productivity benefits such a prolonged fluid lifespan, extended grinding wheel life, and low foaming. Of additional importance when working with carbide, not only is the fluid heavy metal free but contains cobalt inhibitors which actively work to prevent cobalt leaching, and thereby reduce the risk of worker exposure to the substance. However, to maximise the fluid's lifespan and ensure consistent performance, productivity and worker protections, the right choice of filtration was also an important factor.

oelSmart® filtration – VOMAT microfiltration
Hartmetall UK's VOMAT FA180 uses a full-flow (non-bypass) method of filtration which offers effective filtration down to the 3-5 microns size of carbide particles. With 100 percent separation of clean and dirty oil, and filtration to the highest purity class (7 NAS), VOMAT's microfiltration units ensure only the cleanest oil comes into contact with the workpiece, with temperature control to +/- 1˚c if required. In addition to controlling temperature, the VOMAT units feature technology which allows self-regulation of filtration levels to meet changes in production, as well as automatic on-demand backflushing of the filter cartridges. These features become especially important when processing carbide to prevent build up in the system, especially for a company such as Hartmetall UK which seeks to automate wherever possible.

"Since we acquired the Vomat eight years ago, it has been trouble free and we're very happy with the performance. It's a really clean system which requires almost no maintenance and the sludge containment is especially useful. Emptying the sludge is now an easy, one-man job. We would certainly recommend the Vomat units to other manufacturers," enthuses Mark Turton, managing director, Hartmetall UK Ltd.

Together, the SintoGrind and VOMAT combination offers a level of reliability and performance in keeping with the exceptional quality Hartmetall UK offers its customers, with maximum protection for workers. By taking advantage of the latest in fluid and filtration technology, Hartmetall UK has built a system that creates value and supports the company's plans for growth in 2022 built on increased capacity, reducing delivery times and working closely with customers to develop new products, particularly within the medical and aerospace industries.

With expertise in all aspects of metalworking fluids systems, oelheld UK Ltd is uniquely positioned to provide support and services on all matters fluid, filtration, mist extraction and maintenance related. To discuss your requirements or find out more about becoming oelSmart®, contact:

oelheld UK Ltd
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MecWash Systems serve the American engineering sector

MecWash Systems services numerous manufacturing and engineering companies around the globe from its flagship headquarters in the UK. In addition, MecWash has a range of national distributors and it also has dedicated company operations in two key markets, North America and China, each with its own distributor network.

Bill Westbrook is the operations manager for MecWash Systems in North America. He joined the company in 2011, having previously worked for a MecWash distributor in Ohio. Bill oversees all activities related to sales, marketing, customer service, distributor relations, machine maintenance, and commissioning of MecWash machines in the United States and Canada.

We caught up with Bill to find out more about how MecWash serves the innovative manufacturing sector in the USA:

What's the landscape of engineering and manufacturing in the area you cover?

There are five industries that we focus on predominantly: hydraulics, medical and dental, aerospace, automotive, and precision engineering. We find that each area of the country has a certain focus in machining.

Across New England, New York, and Pennsylvania, the customer base is primarily aerospace intermixed with medical and scientific manufacturing. Our customers in Illinois, Iowa, Wisconsin and Minnesota are hydraulics concerns, many doing large valve machining and assembly. Of course, we have automotive customers in Michigan, Indiana, and Ohio. In the Rockies, we have hydraulics and medical customers. In the Northwest, we serve the largest dental equipment manufacturer in the world.

How have the cleaning requirements changed over the last ten years?

Cleanliness requirements are getting tighter. Ten years ago, a company might often have needed to clean and dry parts to a visually clean standard. Now, many companies have exacting cleanliness requirements dictated by maximum particulate size and/or gravimetric weight gain. The maximum particulate size can refer to a single callout, say maximum 500 microns in many hydraulics applications. Or, it may include a maximum number of particles inside of defined micron classes, say maximum 100 particles in the Class of 50-100 microns, 50 particles in the Class of 101-200 microns, and so on. Our customers tend to be companies that manufacture high value parts, whereby scrapping a part because of a cleanliness failure becomes very expensive.

How would you describe the MecWash difference when it comes to cleaning standards?

Most customers need their parts to look immaculate. These same parts can be challenging to clean when they have many drilled passages, blind holes, and inner diameters that are very small. It can be difficult to rid a part of contamination when inner diameters are very tight and blind holes are long.

We manufacture high-performance, rotational aqueous cleaning systems and aqueous cleaning chemical under the MecWash name. Whereas 20 years ago, some manufacturers might have been sceptical about the power of aqueous cleaning to remove cutting oil and other oil-based contaminants off complicated parts, today, MecWash has devised numerous methods to clean complex parts to the highest cleanliness standards. Furthermore, we are able to strip waste from the wash and rinse waters and recycle these fluids, so that our cleaning methods are environmentally sound and our cleaning systems inexpensive to operate year in and year out. The same can't be said for our solvent-based competitors.

Bill Westbrook, North American operations manager at MecWash

How does a typical week flow for you in the US?

In 2020, during the pandemic, my day-to-day was pretty free flowing. I did continue to travel approximately one week per month to visit with existing customers, but new business opportunities were confined to Zoom, phone calls and emails, like many people's businesses. There was so much uncertainty.

Now in 2021, business is really picking up again. New customers are making enquiries, existing customers are expanding their business lines and adding more MecWash machines. It's an exciting time with manufacturing on the rise, so much more after undergoing a year like the last one.

Established in 1993, MecWash Systems Ltd specialises in the design and manufacture of a complete range of aqueous parts cleaning and degreasing systems for metal and plastic engineering components. Its capabilities include laboratory analysis of complex component cleaning issues and specifying or developing specialist detergents, plus the ability to design special processes and parts washers for particularly difficult cleaning challenges.

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Cleaning fluids that comply with European medical device regulations

The Kemet cleaning fluid range is designed to be efficient, simple and compliant. The simplification of this range was made possible by the implication and coordination of all departments: R&D, production/HSQE, purchasing. Informed about the new challenges the medical industry faces, they managed to condense contradictory requirements: efficiency, availability, cost control, regulatory compliance.

Kemet International is the UK distributor for NGL Nordic A/S with more than 300 high performance formulations providing a solution to most cleaning challenges. In addition to regulations and standards, NGL's approach includes knowledge of materials but also anticipation of process and material evolutions, such as additive manufacturing, or passivation following laser marking. Extending their collaboration to other players in the production chain (equipment manufacturers, consultants, laboratories, manufacturers of consumables, etc.) allows Kemet to develop new solutions.

ISO 9001, ISO 14001 and ISO 45001 are the basis of its quality management, in addition to multiple control steps all along the production cycle. The company is committed to continuous improvement in order to bring ever better quality to their customers.

In a medical device cleaning process, avoiding bacterial growth, especially in demineralised water rinses, is a challenge. Water flows through sections which can be difficult to reach (bends, pipes, pumps) where the presence of micro-organisms is hard to measure and control. Without specific water treatment, biofilm can develop and proliferate all the way to the rinse tanks. Prevention, through appropriate pre-treatment of the water, is thus essential, even if water is heated to 70° and constantly circulated.

A pre-treatment solution has been successfully implemented for the final rinse of medical devices prior to entry into the cleanroom at Charles PERY, a manufacturer of medical implants and instruments in France.

Established in 1938, Kemet International Limited is at the forefront of precision

lapping and polishing technology, using diamond compound and diamond slurry, which are manufactured in-house to ISO 9001:2015 quality standards. It offers innovative solutions to operations which demand precision finish and close tolerance. Kemet's highly specialised and accurate lapping machines can machine a wide variety of materials for numerous applications.

Kemet International
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www.kemet.co.uk

New compact plug & play system for efficient solvent cleaning and preservation

Reduced unit costs thanks to higher cleaning performance and lower energy consumption

With features such as a large batch capacity, improved washing mechanics and wash fluid reconditioning, as well as energy-optimised system technology with effective heat recovery, the new generation of EcoCcompact machines keeps unit cleaning costs low even when cleanliness requirements are high. The small footprint and flexible changeover between hydrocarbons and modified alcohols also contribute to the excellent economic efficiency and future-proof concept of the compact plug & play cleaning system from Ecoclean.

Ever-stricter demands on component quality and rising product diversity are calling for increasingly complex and versatile solutions in the parts cleaning sector. To keep production competitive, it is also essential to minimise resource consumption and unit cleaning costs while maximising cleaning performance. The latest generation of the cost-efficient EcoCcompact solvent-based system has been adapted to meet these requirements. Requiring a space of just 3,200 x 1,600 x 2,450 mm (L x W x H), the compact plug & play solution allows you to switch easily between hydrocarbons and modified alcohols (semi-polar solvents) during ongoing operation without any conversion work.

The EcoCcompact accomplishes cleaning tasks ranging from pre- and intermediate cleaning to final cleaning and presevation fast, in a needs-based manner and at minimised unit costs

Optimal cleaning results achieved faster and more cost-effectively

The machine comes with two or three fully-integrated flood tanks, each fitted with a filtration system in the supply and return lines in the form of bag-type or high-performance filters and bypass filtration. This flexibility enables optimum results to be achieved in short cycles, all the way from pre-cleaning and intermediate cleaning tasks to final cleaning and preservation. On the one hand, the working chamber's standard diameter of 550 mm results in a batch capacity which is ten percent higher than that of conventional systems in this segment. On the other hand, the high flooding volume means that parts are fully immersed in the wash fluid during the process. In addition, the powerful, frequency-controlled flood pumps not only ensure that the working chamber is filled and emptied quickly; they also achieve a high mechanical cleaning effect during the standard injection flood washing step. This can be further enhanced by integrating an optional, frequency-controlled rotary drive to rotate and position the parts to be cleaned in a specific way.

Besides the high capacity and effective washing mechanism, the EcoCcompact's energy-optimised system technology makes the machine even more economically efficient. For example, the second and third flood tanks are warmed by heat recovered from the distillation process. Among other

things, this has led to a significant reduction in energy consumption. Thanks to the efficient distillation process, the machine also has impressively low solvent requirements. This has been attained by installing the distillation unit in a vertical position, which requires hardly any mounting fixtures. The design reduces sump formation, prevents dirt build-up and results in an extended bath life.

A seven-inch HMI touch panel and self-explanatory pictograms guarantees simple, safe and fast operation. Integrated parts visualisation also makes process tracking and maintenance easier and more intuitive.

With these features, the EcoCcompact not only meets the requirements of factories with comparatively low production capacities and varying cleaning requirements but also those of large factories with decentralised cleaning stations.

Thanks to its large batch capacity, improved washing mechanics and wash fluid reconditioning, as well as energy-optimised system technology, the EcoCcompact accomplishes cleaning tasks ranging from pre- and intermediate cleaning to final cleaning and preservation, fast and at minimised unit costs.

The SBS Ecoclean Group develops, produces and markets forward-looking machinery, systems and services for applications involving industrial parts cleaning, precision parts cleaning, deburring, surface preparation and surface treatment. Its globally leading solutions help companies around the world in conducting efficient and sustainable manufacturing to high quality standards. The client base comes from a broad range of market sectors: medical equipment, micro technology and precision devices, the automotive industry and its suppliers, mechanical and optical engineering, power systems and the aircraft industry.

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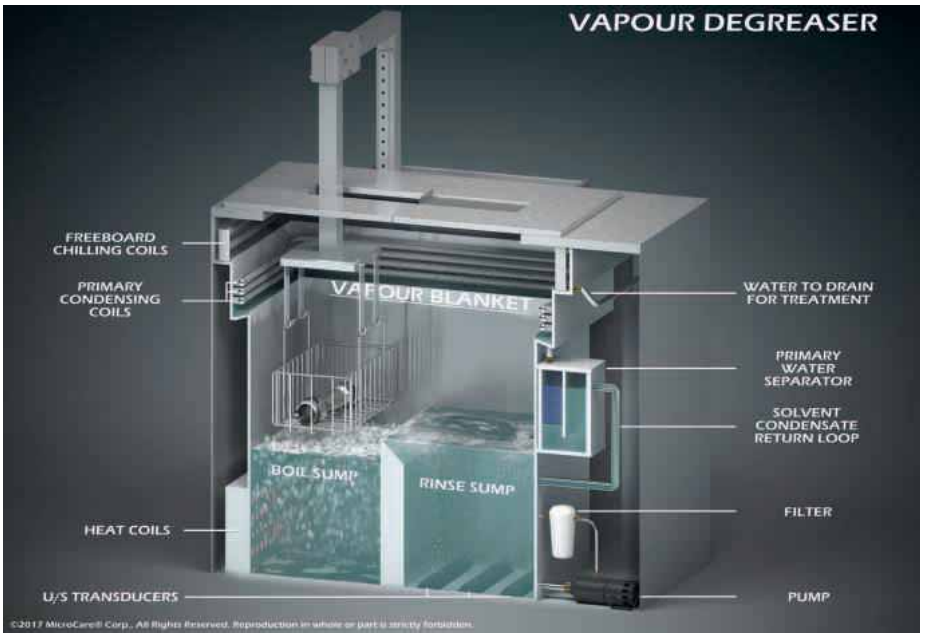
Ensuring metal parts reach new heights in cleanliness

by Elizabeth Norwood, senior chemist, MicroCare LLC

The aerospace industry demands a high level of quality and precision from components manufacturers. Metal parts require next level manufacturing processes and quality controls to meet the stringent standards and tolerances within the sector. Without exacting manufacturing procedures in place, the consequences could be catastrophic if components were to fail in flight.

Surface preparation is an important element of the metal manufacturing process but, in critical production applications within the aerospace sector, the significance of effective parts cleaning underpins safety and reliability. The cleaning process must be precise to achieve the correct surface finish for down-line operations like plating, welding, coating or anodising. It must remove every speck of contaminant whether a fleck of metal swarf, oil, grease, lubricant, polishing paste or other debris like adhesives, wax or marking inks.



Vapour Degreaser: Vapour degreasing easily programmable for excellent process control and repeatability

Several cleaning methods meet the challenge of precision cleaning metal parts. However, just meeting cleanliness standards is not enough in most modern aerospace fabrication shops. Other factors must be considered including adhering to environmental regulations and ensuring the health and safety of workers. Finding an all-encompassing cleaning method may seem unachievable but there is an answer. Vapour degreasing helps manufacturers within the aerospace sector achieve a high-quality surface finish through safe, consistent and sustainable cleaning.

Why vapour degreasing is so effective at critically cleaning

Vapour degreasing uses two elements: a closed-loop vapour degreasing machine and low-boiling, non-flammable cleaning fluid. Not only is vapour degreasing easily programmable for excellent process control and repeatability, but parts come out of the machine dry and cool enough to immediately handle.

Vapour degreasing cleans small, complex and intricate metal parts to a critically high standard without compromising safety or the environment. Advanced cleaning fluids are formulated with the correct cleaning features. They are low-boiling, with high densities, low surface tensions and low viscosities to wet every surface. This means they penetrate the most complex part shapes and awkward geometries. Even cleaning internal blind holes or hidden crevices, which are now commonplace in aerospace parts.

Many finished metal aerospace parts must meet exacting cleanliness standards including black light inspection, particle count, water break testing or other analysis to ensure they meet quality requirements. Vapour degreasing ensures parts pass required cleanliness tests, cleaning validations and quality standards.

Cleanliness Testing: Vapour degreasing ensures parts pass required cleanliness tests, cleaning validations and quality standards

Passing the sustainability test

Long-term sustainability is another test that vapour degreasing cleaning fluids pass with flying colours. There are a growing number of legislations to follow as regulators enforce more laws to reduce negative

impact on the environment. Modern vapour degreasing fluids feature low-VOC formulas, which are ozone-friendly and comply with many directives including European F-Gas and REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) legislation. This helps manufacturers to replace outdated chlorinated and brominated solvents, like Trichloroethylene (Tric), perchloroethylene (Perc) and n-propyl bromide (nPB) all of which contribute to ground water and air quality problems. Importantly, they offer improved environmental properties without compromising the performance and provide the most effective method to achieve critically clean.

Improving workshop safety

We now know that vapour degreasers, together with modern cleaning fluids, clean effectively and sustainably, but they also tick the safety box.

Not only are they non-flammable, but the Permissible Exposure Limit (PEL), a toxicity rating measured in parts-per-million (ppm), is much better for modern sustainable cleaning fluids. High numbers, those approaching 1,000 ppm indicate a safer cleaning fluid. Lower numbers specify a greater risk. Typical PELs for the sustainable fluids are 200-250 ppm, compared with older fluids like TCE which has a 100-ppm PEL or nPB that is rated at just 0.1 ppm. Sustainable vapour degreasing cleaning fluids are better for the safety of exposed workers.

Meeting the critical cleaning challenge

Meeting quality standards and regulatory requirements is paramount within the aerospace industry. There are many complexities associated with manufacturing metal parts, but one of the top challenges is cleanliness. When producing high-reliability aerospace components requiring exacting finishes, vapour degreasing combined with specially engineered cleaning fluids fits the purpose. This is not only to critically clean, but also to clean consistently, completely, sustainably and safely.

About the author

Elizabeth Norwood is a senior chemist at MicroCare, LLC, which offers precision cleaning solutions. She has been in the industry more than 25 years and holds a BSc in Chemistry from the University of St. Joseph. She researches, develops and tests cleaning-related products as well as currently having one patent issued and two pending for her work.

Complex Part: Vapour degreasing cleans small, complex and intricate metal parts to a critically high standard

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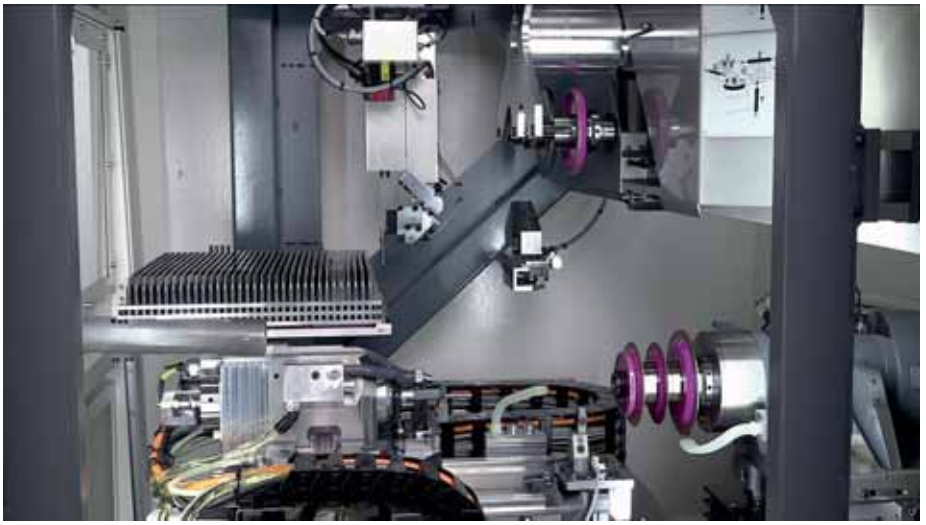
A world first in CNC tool grinding from Rollomatic

New ultra-efficient lean grinding process for cutting tools



The economical manufacture of cylindrical cuttings tools has, until now, called for the use of at least two grinding machines. Firstly a blank prep cylindrical grinding machine is required followed by one or even two multi axis grinding machines to grind the tool's neck, flutes and the end face tip. This is because whilst these operations could in theory all be done on a multi-axis tool grinder, it can never be done efficiently and cost effectively as the grinding wheels are of too small a diameter and the rotary speed of the headstock is too low and the cycle times are therefore very long. The support of tools outside of the headstock without the Rollomatic peel grinding process also means that deflection during grinding occurs unless cutting feeds are kept very low.

The unique hybrid design of Rollomatic's new GrindSmart 660XW grinding machine overcomes these issues and combines, for the first time, the power and performance of a blank prep cylindrical grinder with the flexibility of a multi axis tool grinder to allow for all machining operations to be carried in one single automatic operation on the same machine and in one clamping. Therefore for the very first time cutting tools may be machined complete in a highly efficient single grinding process.

Rollomatic's newly developed GrindSmart 660XW tool grinding machine, that received its debut at the recent EMO exhibition, also brings dramatic gains in production efficiency for tool manufacturers. The savings for tool manufacturers are enormous because lengthy setups on multiple machines are avoided all together, and the handling and storage of partly finished tools between machines is also negated completely.

Typical production efficiency from the traditional multi machine production method for standard end mills is in the region of 11 percent and this is increased to some 82 percent on the Rollomatic 660XW machine. Of course, there are also large savings in manpower as the number of different machine types needed is greatly reduced and because the machine is very compact then the floor space required is also further reduced.

The machine is equipped with a large capacity loader taking up to 1,360 tools in six pallets, and features the latest in linear motor technology on each axis. A powerful 14 kw constant torque synchronous grinding spindle ensures maximum grinding efficiency for all types of cutting tools from 0.1 to 12.7 mm in diameter. The machine features four linear and two rotary axes and the unique aspect is a special design of workhead that's identical to that used on Rollomatic's blank prep cylindrical grinding machines that runs at 3,000 rpm and which is mounted onto its own linear CNC axis, allowing for the well-known Rollomatic developed peel grinding process for fast and efficient blank prep cylindrical grinding. For drill grinding applications a special innovative steady-rest combines optimal tool support for fluting and point grinding.

It should be noted that this is a totally new design of grinding machine that, despite combining all necessary grinding operations, actually has a smaller footprint than standard 5-axis and 6-axis tool grinding machines that do not have a true cylindrical grinding capability. Like all Rollomatics, it is also an extremely accurate machine that is

easily capable of holding tight tolerances of just 2 µm on tool runout across large batches of tools and as with all Rollomatic grinding machines, comes with the industry leading three years unlimited hours parts and labour warranty. The 660XW machine also comes with all cutting tool software that's supplied free of charge and is also updated free of charge for life, as Rollomatic's software department brings out regular updates for new tool geometries. This means end-users are always kept ahead of the game and don't have to worry about paying extra for new software as their needs change.

Rollomatic's target when developing this new ultra-efficient lean grinding process was to remove as many non-added value operations as possible. This has been accomplished as multiple machine setups by operators are no longer required, work in progress has more or less been eliminated and there is no intermediate inventory of batches of tools awaiting transfer from one machine to another.

Chris Boraston, of Advanced Grinding Solutions, agent for Rollomatic in the UK and in Eire comments: "The positive feedback from major cutting tool manufacturers has been amazing and they have immediately recognised what Rollomatic's new ultra-efficient lean grinding process can do for their production of tools. The huge gains made in simplifying production management not only makes production considerably easier to control, the large cost savings in manpower and in the removal of the non-value added operations allow tool manufacturers to become really competitive in the market.

The large reductions in lead times that this truly unique one hit machining method brings are also really important, as work is not held up waiting for a second or third grinding machine to become available and, if a batch of tools is needed quickly, the ability to load a blank carbide rod into the 660XW machine and to get totally finished cutters from it is a huge benefit.

Rollomatic's focus on smart grinding continues and, when you see a machine that increases production efficiency from 11 percent to over 80 percent, it's clear that industry will be very excited by these figures. We believe, with good reason, that this machine is set to change the way in which the industry grinds its tools".

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ANCA's new LaserUltra measures tools 70 percent faster

Launched at EMO 2021, LaserUltra dramatically increases capacity and reduces waste through highly accurate and fast in-process measurement and compensation.

ANCA leads the market in inventing, developing, and offering its customers the latest technology to realise the benefits of automation and lights out manufacturing. LaserUltra is the next generation of the highly popular LaserPlus, an in-process measurement technology only available with ANCA that gives customers the power to operate unmanned overnight with the confidence they could retrieve their finished tools the next day within specification. LaserPlus was itself a game changer for the industry and already significantly faster than external tool measurement processes.

The 70 percent reduction in measurement time compared to Laser Plus is achieved through the new Analog measurement. The Analog measurement is a continuous edge scan instead of a number of digital points along the cutting edge. This process also eliminates variations caused by machine standing idle, errors due to manual wheel corrections and the requirement of skilled operators. In its place LaserUltra has increased accuracy, productivity, and reduction of scrap.

ANCA's LaserUltra allows the measurement of tool geometries to tolerances of 0.002 mm without removing the tool from the grinder, saving time in the manufacturing process and ensuring maximum accuracy in measurement is maintained over large batch grinding.

Pat Boland, ANCA co-founder, says: "The intersection of 5-axis milling machines, advanced CAD/CAM software and advanced profile geometry cutting tools is revolutionising the die & mould and aerospace machining industries. ANCA's Laser Ultra tool measurement system together with RN34 software gives tool manufacturers all they need to manufacture complex profile endmills productively to outstanding accuracy."

Thomson Mathew, ANCA software product manager adds: "Gone are the days of manual or external measurement and compensation for critical dimensions or profile forms due to wheel wear or other grinding factors, as LaserUltra can measure and compensate within a couple of microns. All this is done in process without taking the tools out of the machine with complete control of process stability and capability. These measurements are displayed at various locations to give our customers complete visibility and trust in their grinding process."

LaserUltra is an automatic OD, profile measurement and compensating system for ANCA's TX, MX and FX machines. It is ideal for measuring and compensating tools to maintain tight tolerances (0.002 mm) in unmanned production grinding. The in-process measurement is available in both digital and analog for fast and accurate measurements to enable productivity and performance improvements. It is permanently mounted inside the machine and will not interfere with typical grinding processes and accessories. Using the laser, the operator can perform accurate in-process measurement and compensation without removing tools from the machine.

Thomson Mathew continues: "It gives customers flexibility to service multiple markets, supporting a large range of cutting tool applications, for example all types of endmills or step tools - including profile, compression routers and Threadmills and several more. Furthermore, different versions of LaserUltra can cover large diameter ranges and various lengths depending on user cases. Finally, LaserUltra can generate reports which can be configured depending on customers' requirements."

ANCA's new era of automation: intelligent solutions for maximising productivity 24/7

The first to market ANCA Integrated Manufacturing System (AIMS) uses smart automation and IT integration to connect tool production processes and systems.

ANCA's launch of integrated solutions with AIMS, connects sequential processes in tool manufacturing, to bank the benefits of automation and integration. AIMS facilitates streamlined tool production, linking separate processes to each other and factory IT systems. The future of toolmaking is here, with AIMS providing versatile, modular options for common manufacturing challenges to optimise cutting tool production.

AIMS offers functionality that is adaptable to each factory's needs; from smaller scale, data-based options to the full AIMS setup across a series of machines with endless possibilities. Central to any AIMS system is the AIMS Server that manages data flows between the elements of the AIMS system and established IT platforms, such as your ERP system.

Building on this, customers can choose from a suite of "auto" solutions for reducing production costs, resolving labour challenges and integrating systems to improve product and process quality. From transferring tools between operations with AutoFetch robot options, fully automated tool measurement and process compensation using AutoComp and managing data via the AutoSet hub, AIMS delivers streamlined manufacturing, with connected tool production processes integrated to IT systems that takes tool production to the next level.

"ANCA is here to provide tool manufacturers with solutions to support production that work across all industries and applications and expand to complete tool production needs. This is a new

landscape for interconnected technology, working end to end," says Chris Hegarty, ANCA Group CEO.

"Integration and automation solutions provide infrastructure to manufacture tools with increased productivity and higher quality. ANCA has the industry-leading software and control capabilities to deliver a system for production management that tackles time, cost and labour inefficiencies where it counts."

"We are delighted to be accelerating into the fourth industrial revolution with advanced, smart factory solutions for cutting tool makers – intelligent automation for connecting processes and data management."

Over 70 percent of ANCA customers seek machines with robotic functionality. ANCA's world-first technology developments utilise automation to gain efficiencies and have helped reduce production costs by 50 percent.

The AIMS online demo exhibits interconnected grinding technology solutions that eliminate wasteful manual handling, reduce machine downtime in between batches and take away the need to have operators constantly monitoring and adjusting production machines.

For complete tool production, AutoMarkX offers automated laser tool marking

The new AutoMarkX is ANCA's tool marking solution designed particularly for the needs of cutting tool production. ANCA already has you covered with critical tool grinding processes; CPX for blank preparation, and tool grinding on ANCA's TX, MX and FX tool and cutter grinders. AutoMarkX will work seamlessly alongside ANCA CNC grinders and automates the tool marking process, further extending unmanned production operations.

Tool manufacturers are seizing options that streamline processes and save labour costs. AutoMarkX is capable of automated pallet loading and takes care of the tool laser marking process, freeing up operators to perform more value-adding tasks. AutoMarkX is designed for integration with AIMS, being able to automatically receive and dispatch pallets from AutoFetch, while connectivity to the AIMS Server provides details of the message to be marked on the tools.

Product manager, Jan Irzyk says: "This machine is efficient and compact, but more than that, it can be integrated with your ERP and AIMS, so that technology can work together. Removing the need for manual handling, our new laser marking solution pushes tool marking capabilities into lights-out production.

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Walter and Ewag machines integral to United Grinding Group's C.O.R.E strengths at EMO

In addition to Walter and Ewag exhibiting a series of their renowned tool and insert grinding and erosion machines as well as a tool measurement machine on the EMO stand of parent company United Grinding Group, the Group also revealed its revolutionary new customer-focused initiative at the show and that will "pave the way for a new generation of machine tools that fully embrace the digital age."

On the opening day of the show, United Grinding Group CEO Stephan Nell announced: "We have invested unwaveringly in research and development both before and during the coronavirus pandemic, to secure the future, not just for us but, above all, for our customers. When we talk about the future, it is inseparably linked to digitisation and with increasing work simplification in production."

He added that C.O.R.E is intended to put the focus back on people and in a truly revolutionary way.

The United Grinding Group stand displayed a host of Group company machines, among them the Ewag Laser Line Precision for entry-level machining of diamond cutting materials such as CBN, PKD, MKD and CVD-D on tools up to 200 mm diameter and 250 mm long, as well as indexable inserts from 3 mm internal diameter and up to 50 mm external diameter.

The Helitronic Raptor Diamond is the entry-level two-in-one grinding and erosion machine for tools of 3 mm to 400 mm diameter and in lengths, including end face operations, of up to 270 mm.

The Helitronic Micro is for grinding tools from 0.1 mm diameter (in production) and 3 mm diameter (re-sharpening) and up to 12.7 mm diameter, and now up to 220 mm long.

The Helitronic Vision 400L is for grinding tools of 3 mm to 315 mm diameter and up to 420 mm long.

The Helicheck Plus tool measurement machine is for inspecting tools up to 330 mm long and 1 mm to 150 mm diameter.

Allied Tooling and Walter take tool grinding and erosion to a new level

Online audio and web conferencing technology has played a crucial role in business discussions and decisions during the past 18 months or so, but Walter Ewag UK and customer Allied Tooling Ltd took the concept to a new level by staging a remote demonstration of a Walter Helitronic Power Diamond 400 two-in-one tool grinding and erosion machine for processing both carbide and PCD tools.

"The demonstration finally convinced me that this was the perfect machine for our needs," says Wes Hacker, managing director of the Poole, Dorset-based tool operation, one of the largest privately-owned saw and cutter servicing and tooling suppliers in the UK.

"It is an incredible machine, a real game changer," he adds. With a 26 kW spindle producing 10,500 revs/min combined with axes traverse rates of 15,000 mm/min in X, Y and Z, Wes Hacker says the machine's power and speed is complemented by its ease-of-use and the effective and efficient tool and grinding wheel loading.

"Importantly too, programming is very straightforward and the machine can process a diverse range of tools. All these attributes, together with its attractive price tag, meant that this was the machine we just had to have to enable us to continue to grow the business."

While Wes Hacker reflects that the Helitronic Power Diamond 400 initially caught his eye at an exhibition and "was clearly way ahead of competitor models", he knew that output levels would be further improved by enhancing the machine's exceptional performance in single set-up tool grinding and erosion with the use of an automatic wheel changer as well as with Walter's Robot Loader 25 tool handling magazine.

"The combined processing of carbide grinding and PCD erosion will enable us to meet all expectations in terms of customers' tooling needs, especially PCD-tipped tools for the increasing composites machining market," he says.

"Now, with integrated wheel changing and a loader able to accommodate up to 80 tools, we are also in a position to automatically and cost-effectively process large batches of tools of varying designs, including operating the machine in a lights-out mode."

Established over 40 years ago, Allied Tooling Ltd is renowned for its

comprehensive range of products and services, supplying shank and block tooling for woodworking, metalworking, engineering and composite applications, including abrasives, TCT saw and bandsaw blades, HSS, carbide and PCD spindle block tooling, as well as routers, Euro knives, plus HSS and TCT serrated back knives.

Much of the tooling processed is in relation to its exclusive UK agency for AKE, a Germany-based saw and tooling manufacturer, though bespoke designs are also manufactured in-house for an extensive customer base that extends from kitchen manufacturers through to Formula One teams.

The company continually invests in the latest manufacturing technologies to constantly improve efficiency and quality levels, and the Helitronic Power Diamond 400 is the latest addition to a CNC-focused machine shop that also includes a Walter Helitronic Power tool grinder and a Walter Helicheck tool measurement machine.

Able to process tools of 3 mm to 380 mm diameter and up to 520 mm long, the Helitronic Power Diamond 400 includes Walter's renowned Tool Studio software that has integrated wizard technology for fast tool production simulation, parameter changes and machine operation, for instance, as well as an erosion function option for the fast and easy programming of 'what you see you can grind and erode'.

Combined with the machine's physical attributes, Tool Studio's ease-of-use is also particularly highlighted by Wes Hacker, who comments that "its genius is its simplicity."

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New shot blast machine increases capacity, improves quality and optimises manufacturing efficiency

Gienanth GmbH, located in Eisenberg in the German Palatinate area, has a long history that reaches back to the 15th century. This history has been characterised by tradition, comprehensive knowhow and innovation in the field of cast iron components. Today, Gienanth produces its products at four locations in Germany, Austria and the Czech Republic. Besides engine blocks for large engines, utilised in ships, railways and generators, the company also produces components for all kinds of machinery as well as parts for the automotive and utility vehicle industry. This cast iron specialist considers himself as a solutions provider, who supports the customers along the entire value-added chain covering the generation of ideas, product development, material selection and production of the ready-to-mount components. With this integral approach the company has experienced a continuously growing worldwide demand for its products. It was also the reason for Gienanth receiving the German Innovation Award 2019 for the bionic re-design of the carrier plate for the brake pads in utility vehicles.

Due to a steadily growing demand for the cast iron products the existing shot blast machines could no longer handle the higher production volume. Jens Eckel, project engineer at Gienanth in Eisenberg, summarises the technical requirements as follows: "With the new shot blast machine, we intended not only to increase our capacity, but we also wanted to make the shot blasting operation more efficient and

improve the overall quality." To achieve an acceptable uptime of the critical machine components the equipment design had also to take into consideration the highly aggressive, angular and extremely hard blast media and the fact that every hour around 200 kg of sand are carried into the shot blast machine. Another challenge was the building, where the shot blast machine had to be placed: because of the sawtooth roof with its complex support structure the overall machine height had to be reduced by installing a split elevator.

To adequately deal with the extremely harsh operating conditions for de-sanding and cleaning, the shot blast machine was equipped with eight high-performance Rutten Gamma 330-HD turbines, each with an installed power of 18.5 kW. The machine handles a blast media throughput of up to 2,520 kg per minute. The eight blast turbines are equipped with six throwing blades in the innovative "Y" design.

Compared to conventional turbines this special blade geometry generates an up to 20 percent higher shot blast performance with a lower energy consumption. Another significant advantage of the "Y" blades is that both blade sides can be utilised by simply turning them around.

For optimal shot blast results four turbines are placed in the roof and the other four turbines are located in the bottom of the blast chamber. The special requirements of the customer were a key factor for the particular placement of the turbines: to prevent the smaller work pieces, weighing only 1.0 to 1.5 kg, from changing their position, moving on top of each other or getting blown off the wire mesh belt, the turbines are mounted at a slight angle. This allows the blast patterns of the upper and lower blast turbines to meet precisely at the wire mesh belt so that the blast stream from the upper turbines holds the work pieces in place. At the same time, the somewhat higher blast performance of the lower turbines causes the work pieces to get slightly lifted from the belt. This eliminates the risk of shadowing.

A vibratory conveyor transports the raw castings directly from the casting cell to the shot blast machine. This vibratory movement already removes some of the sand from the castings. At the inlet section of the shot blast machine the work pieces are transferred onto the 1,250 mm wide wire mesh belt. An employee makes sure that the work pieces are evenly distributed on the belt. After the shot blasting operation the castings are transferred to a 15 m long transport system that was also supplied by Rösler. This special foundry conveyor, equipped with a particularly robust transport belt, transports the finished castings directly to the shipping department.

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RÖSLER® finding a better way ...

Cranes with perfect surfaces

When crane systems and lifting gear with a load capacity of 80 kg to 120 tonnes are constructed, the surface also needs to be perfect. ABUS, one of the most important European manufacturers of indoor cranes, erected a completely new plant in Gummersbach and works there since 2019 with AGTOS shot blast machines. These embody special functions and have been adapted to meet high ergonomic and safety requirements.

Michael Wirths, component plant manager at ABUS, relates how this cooperation with AGTOS came about. "Our contact with AGTOS arose in the early 2000s in relation to spare parts for the Schlick shot blast machines we then operated. We were very pleased with the cooperation, as AGTOS had speedy response times and offered excellent service. For us, it was apparent that AGTOS would also be the company to approach when it came to new investments. Cooperation in the project was marked by a spirit of partnership, commencing with the definition of requirements, compilation of a specification and the offer and continuing through explanations and speedy consideration of change requests. Design changes were also realised efficiently by AGTOS project managers U. Wietkamp (design) and Christian Remmes (sales). We were very impressed by the project work".

AGTOS wire mesh conveyor shot blast machine

Special features of both shot blast machines

Both shot blast machines are installed on vibration isolation mats that reduce vibration and noise. The two machines are also equipped with a generously dimensioned Type TP 1500 touchpanel to ensure that personnel enjoy optimum operating conditions. Swivel arms facilitate flexible positioning, contributing to optimum machine operation. Batches are recorded through barcodes, triggering the appropriate predefined blasting program in each case. Maintenance hatches and doors were enlarged, adapting them to ABUS requirements with regard to ergonomics.

In the event of a service assignment inside the blasting cabin, the dedusting system which normally leads to the associated cartridge filter switches to indoor extraction. The advantage here is that additional mobile extraction units can be dispensed with. Nevertheless, the filter systems are equipped with fire detection equipment and extinguishers. The performance of filter systems is set to separation efficiency levels far lower than statutory requirements.

The first wire mesh conveyor shot blast machine delivered was used for processing flame-cut blanks for single-track crane trolleys. Blasting in this case achieves optimum cleaning of the parts prior to welding. Rust and scale need to be effectively removed through blasting to achieve high-grade weld quality. The welding process is followed by coating with waterborne or 2-component paint, depending on customer requirements and wishes.

Wire mesh conveyor shot blast machines are, essentially, extremely flexible in terms of their use. The fact that workpieces are simultaneously shot blasted from above and below considerably broadens the spectrum of workpieces that can be processed. The machines are used for applications such as deburring, descaling and cleaning of cast and laser-cut parts.

The AGTOS wire mesh conveyor shot blast machine operating process

Automatic workpiece detection upstream of the inlet sluice starts the needs-based abrasive supply to the four active AGTOS high-performance turbines. These are equipped with 11.0 kW motors at ABUS, enabling the achievement of blasting speeds of up to 2.0 m/min.

Workpiece detection ensures that shot blasting only occurs when the workpieces are in the shot blasting area. This reduces the stress on wear parts in the machine and saves energy. The inlet sluice is equipped with wear-resistant rubber curtains for sealing purposes. Workpieces that have passed through the shot blasting zone move to a blower unit. Abrasive remaining on the workpiece surface is removed here and fed back into the abrasive circuit. The abrasive keeps circulating and is cleaned for continuous use. Cleaning is realised in a special air separation system. It cascades here over an edge, while a finely adjustable air flow is fed through at the same time. This is generated by the cartridge filter system fan. It guides the fines to the impact separator where coarser particles are separated. The abrasive continues to the cartridge filter system which eliminates undersized particles and dust. An abrasive dosing device is used to convey the cleaned abrasive from the storage hopper to the high-performance turbines.

Christopher Fritz Dietrich, project engineer for factory planning and organisation, emphasises the compact design of the machine, a feature not available in this form from other manufacturers. ABUS placed particular importance on a few special features, including installation of a perspex safety pane on the working platform to protect any worker on the platform from a crane passing close by. In addition to hearing the noise of

Loading the AGTOS Type BS wire mesh conveyor shot blast machine

AGTOS wire mesh conveyor shot blast machine outlet

Potential teaser photo

the approaching crane, the worker can also see it.

"The blasting performance exceeded the demands stipulated by us in the specification, enabling an expansion in the product range," says Fritz Dietrich.

The most recently delivered AGTOS system, a roller conveyor blast machine, blasts undercarriage supports for travelling cranes. Points of particular importance to ABUS in the first project were implemented here from the outset.

AGTOS roller conveyor blast machine features

This machine type is used for descaling and rust removal on sections/profiles and sheet metal. The rollers convey the deposited workpieces through the blasting chamber and upstream brush blower unit. The machines can be integrated in production lines with sawing, drilling, blasting and conservation stations.

The workpieces actuate the switching threshold upstream of the inlet sluice for the automatic abrasive supply of the high-performance turbines. This also ensures that shot blasting in this machine only occurs when the workpieces are in the shot blasting area. The machine at ABUS has four high-performance turbines, each with a drive power of 15.0 kW. This ensures that a high blasting speed can also be achieved with this machine.

The inlet sluice is equipped with wear-resistant rubber curtains and other sealing elements for sealing purposes. Workpieces that have passed through the blasting zone move to a combined brush blower unit. Abrasive remaining on the workpiece surface is fed back here into the abrasive circuit. Cleaning of the abrasive is also achieved through an air separation system on this machine.

The unique feature of this machine is the brush station. As workpieces with differing heights are processed on this blast machine, the cleaning brush also has bristles of differing lengths to follow the individual profiles of workpieces. This ensures that the bristles are not pressed down too far during lowering in the case of taller workpieces, as this would accelerate wear. This measure also ensures the efficiency of the process. The workpieces are also cleaned using a blower unit.

A further detail is the maintenance platform tailored to special customer requirements. It improves accessing during service assignments.

The quality of the blasting process on both machines is assured through abrasive analyses conducted by AGTOS. Cycles are initially shorter, being extended as experience is gained and the machines are run in. The operating mix is analysed and compared with previous values. What is important in this context is checking to see if too many fines are present, as these contribute significantly to wear inside the machine. Conversely, consistent quantities of coarse particles are necessary for the blasting performance, and consistent quantities of fine particles for the blasting overlap. A consistent operating mix achieves the consistent blasting performance desired and an efficient process.

Behind the acoustic insulation: the blasting chamber is at the heart of the wire mesh conveyor shot blast machine

ABUS product photos. Completed assemblies are shown, the parts for these having been processed on AGTOS blast machines.

Single-track crane trolley

Undercarriage support for ABUS travelling cranes

Maintenance is achieved with the support of a plan compiled by ABUS that, simply and clearly, depicts the steps to be realised and confirmation notations provided by personnel.

Positive collaboration and a coherent service concept bode well for future cooperation between ABUS Kransysteme GmbH and AGTOS.

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Robot loaded shot peening automation with traceability

Guyson International, the leading industrial finishing equipment manufacturer, has designed, manufactured and installed into an international manufacturing company, a large automated, robot loaded, dual media shot peening system for fatigue life enhancement, typically required in aerospace and medical applications.

The system comprises two Guyson Multiblast® RXS900 automated blast systems; one for steel shot peening and one for glass bead peening, with robotic work piece transfer between the two blast systems. The computer-controlled process was designed to meet AMS2432 standards demanded by the client. This fully integrated process with traceable record keeping delivered increased capacity with less labour compared to the existing process.

Batches of 12 workpieces in a dual indexing carousel for In/Out control are picked up one at a time by an ABB robot and sequenced through the system. Suitable for turbomachinery turbine blades or medical implants, each piece is loaded into the six rotary indexing stations of the Guyson RXS900 (Rotating indeXing Spindle) shot peening system located to its left. The components index clockwise through two shot peening stations, both equipped with two boron carbide blast nozzles, four in total, which vertically stroke up and down the workpiece, delivering the correct Almen intensity, at the correct impingement angle and providing 100 percent surface coverage.

Steel shot blast media is delivered to the blast nozzles via a 300 litre twin chamber pressure pot, allowing for continuous media flow during the long peening operation. To meet AMS2432 standards media flow rate is monitored and controlled with Magnavalves whilst closed loop peening air pressure, spindle RPM and vertical gun traverse rates are all held within tight specifications. An airwash station, separated by an internal pneumatic vertical door, removes residual dust and blast media from the components prior to removal from the blast machine.

Due to the heavy weight of steel shot used in the peening process, a bucket elevator transfers the used blast media via Archimedes type auger screw into the reclamation unit to maintain blast media quality. This unit comprises a 30" 3-deck sieve separator which removes any oversize particulates via the upper decks to a waste bin. Shot that is within size tolerance of the process is returned to the storage hopper via the lower deck. Any particulates deemed smaller than tolerance pass through the decks to a waste bin. An integrated spiral roundness classifier removes up to 10 percent of the blast media during the reclamation process and removes any mis-shapen shot, before returning good media to the system.

Large automated, robot loaded, twin blast machines, for shot peening turbomachinery turbine blades or medical implants

A large reverse jet pulse cleaning dust collection unit provides automated cleaning of the four filter elements during the operation of the blast system, this being particularly beneficial for continuous blast operations. The dust collector is fitted with secondary HEPA14 filter, back-flap valve and explosion relief valve.

Following steel shot peening, a de-contamination glass bead peening operation is undertaken. The same ABB robot unloads each station as it exits and transfers components to the glass bead peening system, where bead peening takes place in a similar blast system but using glass bead.

The RXS900 glass bead peening system differs from the shot peening system by having a Guyson built cyclone reclamator. This extracts everything from the base of the blast cabinet and separates out re-usable blast media from the dust and debris created by the blast process. The lighter particulates being drawn off into the dust collection unit, the heavier blast media flows down the cyclone body and into the media reservoir position above the pressure pot ready for reuse.

On exiting the glass bead peening system, the robot transfers the processed components to the right-hand unloading carousel, ready for the operator to remove. The operator is not able to access the blast area as both it and the robot are encased in a safety enclosure fitted with fortress interlocks. Once both systems are fully loaded, a continuous production run of one part in and one part out follows.

At the completion of the batch set the unload carousel indexes, presenting the work pieces to the operator. Simultaneously for traceability, batch processing records are written to an SD card or network computer to document and record the status of each piece within the batch.

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ACtronics Ltd has recently invested in an Aquablast 915 wet abrasive blasting cabinet from Vixen

ACtronics, based in Essex, UK, is a market leader in the rebuilding of electronic automotive components. It operates in 19 different European countries and has resellers based worldwide. It also specialises in providing electrical components for brands such as Audi, BMW, Mercedes, Nissan and many more.

Prior to purchasing an Aquablast machine, ACtronics owned a shot blasting unit, where a lot of dust was created during the process.

Manually operated, the Aquablast 915 machine is particularly effective for creating a satin finish on stainless steel along with a wide range of other metals. The Aquablast range is designed to simultaneously blast and degrease components in a quick and easy dust-free process, which achieves outstanding finishing results on a variety of components.

The key to Vixen's wetblasting process is that the finish is produced through flow of water borne abrasive and not by media

impact. This helps to create a finer finish due to the lubrication and flushing action of the water during the process. Vixen's wet blasting process eliminates media impregnation into the component, and as a result, is vastly becoming a popular choice for companies across the world.

Christian Planting, technical manager at ACtronics Ltd, says: "Having recently purchased the Aquablast 915, we are pleased with the impact it has had upon our work. Compared to the shot blasting machine, the Aquablast 915 is much quicker and cleaner. The machine ensures that our products have a high quality finish, which in turn makes our company look professional and customer satifaction is therefore increased."

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Automating titanium selective electroplating: why, where and how

Plating on titanium is increasing in popularity thanks to the metal's unique properties, but the process comes with many challenges. Derek Kilgore, engineering manager at SIFCO ASC discusses how automation and selective electroplating can overcome these hurdles safely, efficiently, and cost effectively

Titanium is an abundant and remarkable material which is widely used in industry. Though lightweight, it has an exceptionally high strength to density ratio. It also has a high melting point, low thermal expansion and outstanding resistance to corrosion, all of which make it the material of choice for many demanding applications, ranging from automotive, marine and sports equipment through to mission critical applications in aerospace and healthcare.

However, due to tribological properties, including a high friction coefficient and poor abrasive and adhesive wear resistance, titanium alloys have limited use for essential components, for example aircraft landing gears and automotive internal combustion engines, unless they are plated effectively. Doing so can enhance the metal's properties, including surface fatigue, anti-galling and fretting behavior. Plating can also introduce other key performance characteristics such as improved lubricity, corrosion resistance and conductivity, as well as heat reflection and emissivity. Plating also improves the metal for brazing and can be used to resize, repair or salvage titanium components.

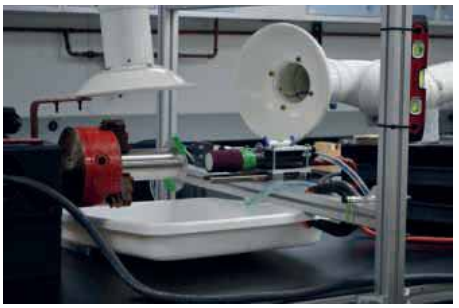
Unfortunately, titanium is notoriously difficult to plate, largely because of an oxide film which forms the moment it becomes exposed to oxygen. Acting as a protective layer, this is hugely beneficial in terms of titanium's industrial performance. However, it also acts as a literal barrier to plating, limiting the strength and efficiency of bonds. Hydrofluoric acid can be used to remove this oxide prior to plating, but it's both a contact poison and highly corrosive so introduces significant health and safety risks.

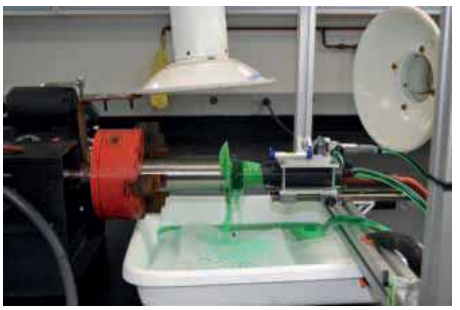
Furthermore, typical activities during tank plating, including surface roughening by abrasion, grit blasting and etching, can also encourage the oxide to reappear. In a worst-case scenario, this leads to scrappage and waste of a high value material.

In its quest for a fluoride free electrolyte and a safer and more efficient plating process, SIFCO ASC undertook extensive experiments with TI 6-Al 4-V and TI 6-6-2, two of the world's most widely used titanium alloys. The result is a plating process which includes surface pre-treatments of mechanical finishing, followed by an etch, activation, and finally the introduction of a thin layer of nickel. This pioneering approach brings all the benefits of selective plating, including versatility and convenience, together with enhanced safety and component quality.

Just as with selective electroplating with other metals, this process can be delivered manually. However, there are complications. To avoid oxidisation, the electrolyte solution must flow continuously over the component at all times.

If any aspect of this sequence is compromised, the likely result is oxidisation and scrappage leading to waste. This means that manually, the process is challenging, time consuming and must be undertaken with extreme care. These problems can be virtually eliminated through automation.





Automation: the key to productivity and safety

The benefits of automation are being felt right across manufacturing. Selective plating onto titanium is a process which lends itself perfectly to this approach, reducing the possibility of human error while also bringing many advantages.

By ensuring more reliable plating, automation improves product quality and reduces the need for machining and post-plating work. It also works around the clock. Throughput and productivity are therefore enhanced.

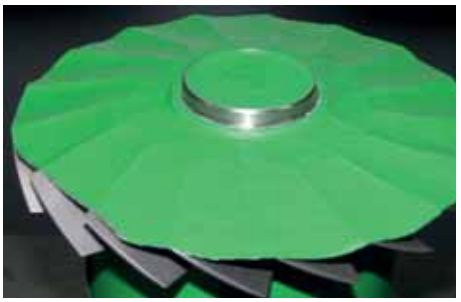
With etching undertaken in a closed loop system, SIFCO ASC's automated process also eliminates the need for hydrofluoric acid, bringing an immediate health and safety benefit. Importantly, because the entire process is fully automated, operators are no longer in regular or direct contact with plating solutions. The only requirement is to replace or dispose of solutions, greatly reducing their exposure and risk. Equally, by replacing repetitive and ergonomically inefficient manual tasks with automation, employee satisfaction and wellbeing is also improved.

Repeatability and traceability

Due to its superior properties and performance, titanium is most often deployed in mission critical applications where absolute and consistent quality is demanded. Each component must meet the

same demanding specifications with full traceability.

Here, automated systems deliver an obvious benefit. For each application, accurate settings and data logs can be stored so that parts are plated in the same way, even if there's a time lapse between lots. Deviation from settings is therefore virtually eliminated. Apart from ensuring a consistent and repeatable process, it's also fully traceable, making it easy to identify specific components should there ever be the need to investigate or recall specific products.



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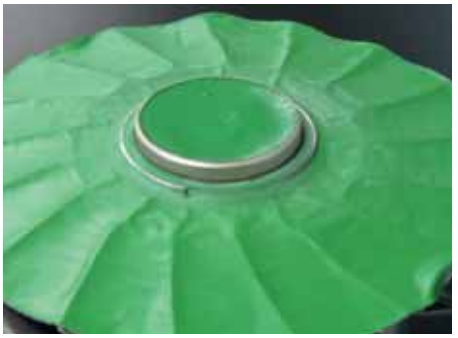

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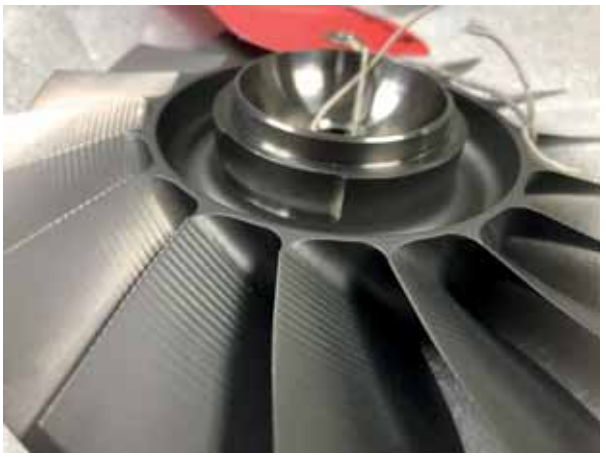

Impellar unmasked

A bespoke solution

Calling on its expertise and experience of selective plating, SIFCO ASC has developed a bespoke range of automated solutions to meet customer needs.

At one end, there are portable and programmable power packs which allow repairs or plating to be undertaken in situ. Instead of manually changing the plating parameters as in manual systems, the operator simply programs the time, amperage and thickness of deposit, eliminating human error and for titanium applications minimising the risk of oxidisation.

Alternatively, SIFCO ASC can design, specify, deliver and commission simple workbenches or fully automated workstations with robotic systems to handle components, anodes and solutions through RFID and barcode tagging. The only human intervention necessary is programming and replenishing solutions. In this respect, as selective plating deposits onto a very localised area, there's no need to use harmful chemicals on the titanium surface such as hydrofluoric acid due to the reduced risk of an oxidised layer forming, which brings associated cost and health and safety benefits.

For manufacturers with their own in-house facilities, automated selective plating therefore offers a more flexible and cost-effective solution than conventional tank plating. This includes reducing the floorspace required with tanks, immediately giving businesses either more room to undertake other activities, or to cut down on the costs associated with renting and running these spaces.

For those that rely on sending components away for treatment, other significant benefits including faster turnaround and reduced downtime, together with lower transport costs and carbon footprint. These sustainability factors are further enhanced by minimising the use of toxic chemicals in the process.

SIFCO ASC has worked with manufacturers globally to undertake evaluations of current processes and present detailed and fully costed bespoke recommendations. Training and support has also been provided throughout implementation and beyond to ensure the solution meets expectations.

Unlimited potential

In summary, titanium offers almost unlimited potential to drive improvements in the reliability and performance of mission critical components such as combustion engines and aircraft landing gears. Yet while this benefit is within reach, it has also proved challenging to grasp, largely because of the complications surrounding the all-important plating process.

These challenges can be essentially removed through investment in SIFCO ASC's automated systems. Combining the ease and convenience of selective plating, they not only reduce human error, but also introduce vital benefits in terms of quality, repeatability and traceability, as well as productivity and user safety.

For more information on how SIFCO ASC can help customers with their titanium plating and automation requirements, visit **https://www.sifcoasc.com/automated-plating-systems/**

SIFCO Applied Surface Concepts (SIFCO ASC) is a global leader in selective plating solutions. A Quaker Houghton company, SIFCO ASC provides practical, cost-effective selective brush plating solutions to improve part performance and reduce manufacturing costs through corrosion protection, increased wear resistance, increased hardness, improved conductivity, anti-galling or slip.

SIFCO ASC surface enhancement technologies and brush plating services have been utilised for over 50 years on both OEM components and on parts requiring refurbishment in the aerospace, oil and gas, general industry and power generation sectors.

Quaker Houghton is a global leader in industrial process fluids. With a robust presence around the world, including operations in over 25 countries, customers include thousands of the world's most advanced and specialised steel, aluminum, automotive, aerospace, offshore, can, mining, and metalworking companies. Quaker Houghton's high-performing, innovative and sustainable solutions are backed by best-in-class technology, deep process knowledge and customised service.

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Tenova successfully starts up two new walking beam furnaces in Mexico

Tenova, a company specialised in sustainable solutions for the green transition of the metals industry, has successfully started up two 400 t/h walking beam furnaces (WBF) at the new Ternium hot strip mill facility, located in Pesqueria (Mexico). Ternium is a leading company in the Americas that manufactures and processes a wide range of high quality steel products.

The advanced features of the two state-of-the-art technology WBFs provide reduced emissions and energy savings. The furnaces are designed to heat steel slabs (up to 39 t) at 1,250°C, with a specific consumption of 1.16 MJ/Kg, while keeping NOx emissions lower than 60 ppm. This emissions level is well below the required limit, unlike other solutions available on the market.

The furnaces features include the novel SmartBurner Monitoring System (SBMS), which enables the monitoring and optimising of the burner's performance, operation and maintenance. The SBMS is a network of embedded sensors connected to the Tenova Digital Infrastructure, through secure connection protocols and intrinsic system reliability. The collected data is post-processed locally on an edge computing unit as well as remotely on the Tenova Cloud. By constantly monitoring the status of the burner, the SBMS offers breakthrough approaches to inspection, maintenance and tuning, as well as reducing safety risks related to on-site operations.

"The Ternium Industrial Center started its first phase in 2013 focused on downstream products as cold rolled and galvanised for the industrial market. Now, we have started up the main production line of the 2nd phase, a new hot rolling mill with a capacity of 4.4 million tonnes," said Paulo Lopez, Pesquería plant director at Ternium. "The two new WBFs are part of the plant's new lines and will produce coils to be used in the automotive market in the USMCA area, granting Ternium an increased access in this sector."

"This new Tenova equipment joins the previous walking beam furnaces built for Ternium at its plants in San Nicolas, Argentina and in Monterrey, Mexico, confirming the fruitful collaboration between the two companies of the Techint Group for this type of application. This represents an important new reference for Tenova in the reheating furnaces market," stated Nicola Cavero, senior vice president Tenova Italimpianti.

Tenova, a Techint Group company, is a worldwide partner for sustainable, innovative and reliable solutions in the metals and, through the well-known TAKRAF and DELKOR brands, in the mining industries. Tenova employs a workforce of over 2,300 forward-thinking professionals located in 19 countries across 5 continents, who design technologies and develop services that help companies reduce costs, save energy, limit environmental impact and improve working conditions.

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Indestructible Paint helps to protect iconic aviation

The performance paint and coatings expertise that has long seen Indestructible Paint Ltd play an important role in commercial and military aerospace has now extended into one of the most celebrated sectors of the industry. The Birmingham-based company has developed coating solutions for a series of propeller blades that have been fabricated for the famous Spitfire, meeting specific challenges associated with the wooden material used.

Hercules Propellers, has a leading reputation for the production of propeller blades for the leisure aircraft sector and has been commissioned to manufacture propellers as part of a Spitfire restoration programme being undertaken by the Biggin Hill Heritage Hangar. The need to ensure each blade is fully protected from the rigours of operation and the elements has prompted the organisation to make the most of Indestructible Paint's expertise.

John Bourke, technical sales manager at Indestructible Paint, emphasises key considerations that have had to be accommodated: "Spitfire propellers are manufactured from hydro lignum, an extremely dense wood substrate that requires the protective coating to bond and perform to the highest standard. We have therefore worked with Hercules Propellers to design a coating system that comprises a two-pack epoxy base coat, two-component erosion coating, yellow tipping paint and a clear semi-matt polyurethane lacquer."

The coatings were applied following the shaping of the propellers from timber in a dedicated machining centre installed by Hercules Propellers at its premises in Stroud. Trials were completed on a non-flight prototype to prove the system before the first set of four propellers for flight was completed.

"There can be few aircraft that are better recognised or more iconic than the legendary Spitfire, which has a history that will be acknowledged by millions of people in this country and much further afield," adds Brian Norton, Indestructible Paint's managing director. "We have extensive experience in developing coatings that are used in aerospace manufacturing and maintenance worldwide so are delighted to apply this knowledge to a dedicated and significant part of the industry.

"Rupert Wasey, managing director at Hercules Propellers, and his team deserve huge credit for the work they do in helping to keep memories alive, with a little help from the most advanced and modern coatings technology available."

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