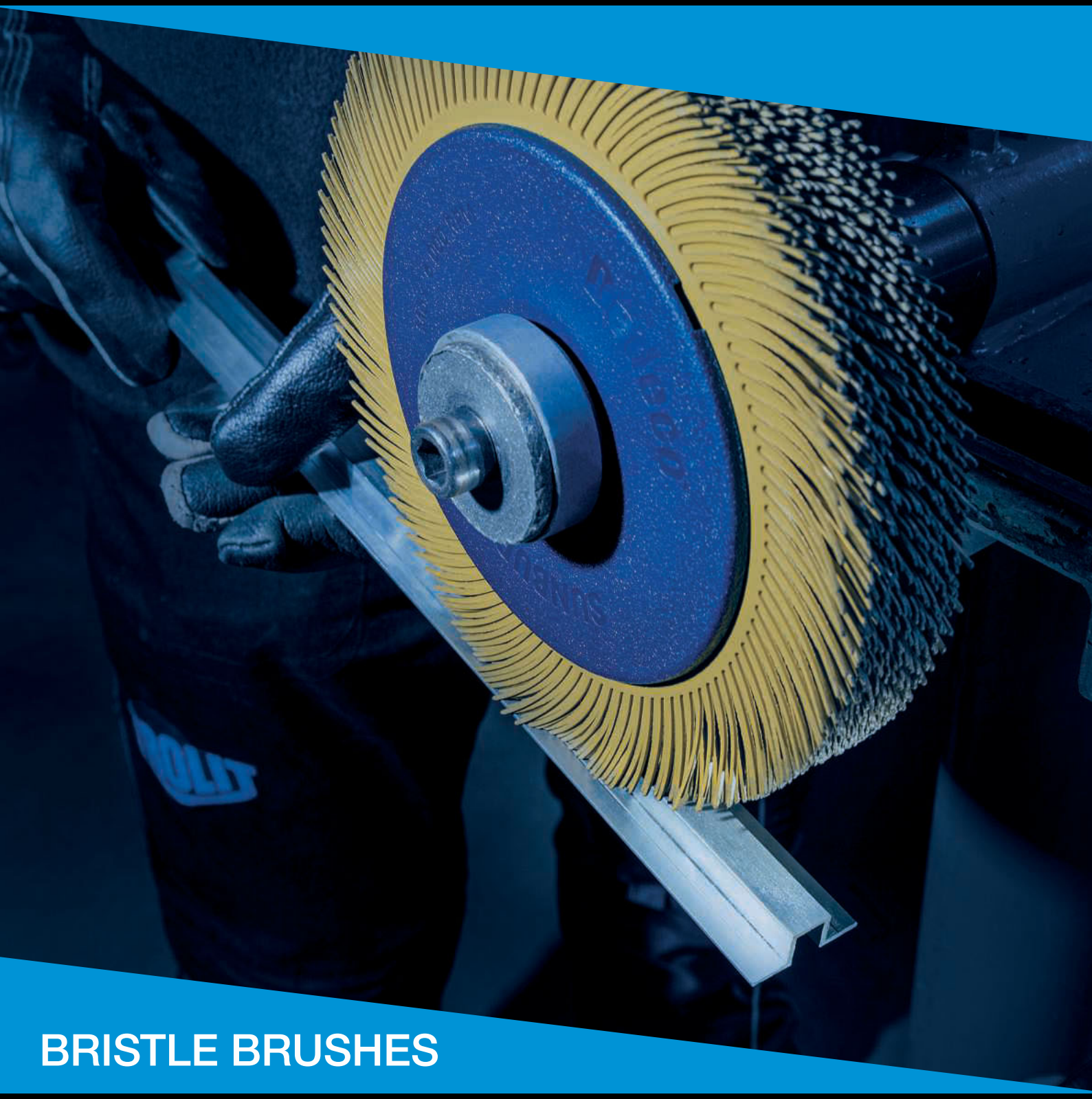
GRINDING & SURFACE FINISHING

20 YEARS 2003-2023 anniversary

FEBRUARY 2023



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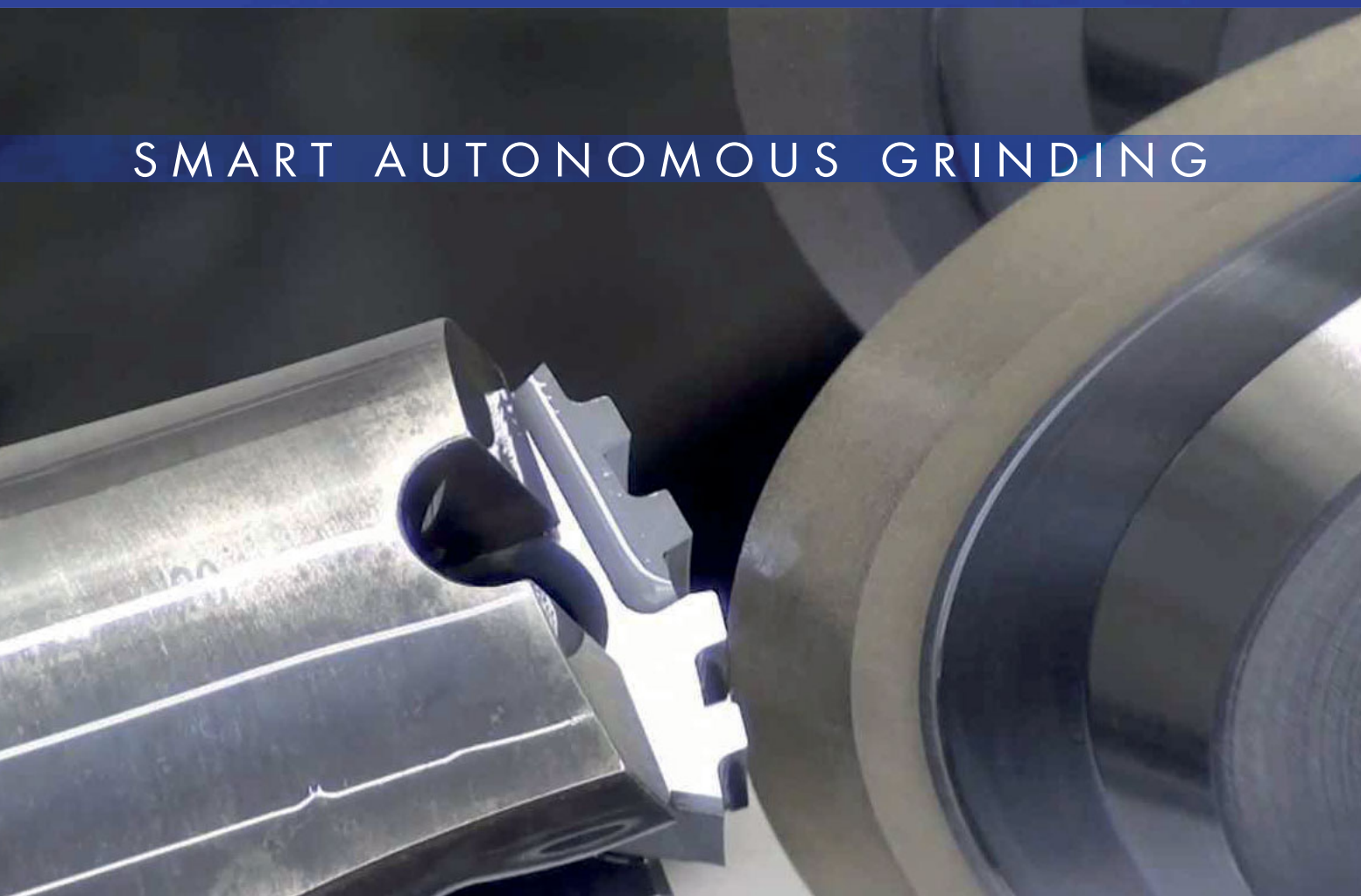

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FEBRUARY 2023 • Volume 21 • Issue 1 • ISSN 1740 -1100

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Portsmouth, Hampshire

Grinding & Surface Finishing is published five times a year and mailed to a controlled circulation of readers with a legitimate interest in the content.

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Tyrolit celebrates one year as Dedeco Sunburst distributor

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

These thermoplastic abrasive Bristle Discs & Brushes are perfect for deburring, cleaning, finishing and polishing. They offer an ideal alternative to wire and nylon applications while improving performance in a safer, more efficient and flexible way. They are available individually or in assortments of multiple shapes and sizes, with grit sizes ranging from 36 grit to 1 micron.

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How can Bristle Brushes help your surface conditioning process?

Continue reading on page 34

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Renaming and rebranding at Haas

Haas Schleifmaschinen GmbH will now be known as Adelbert Haas GmbH. Speaking with Grinding & Surface Finishing magazine, Dirk Wember, managing director of Adelbert Haas GmbH looks back and reflects on its pioneer and founder Adelbert Haas, while looking to the future.

Changing a company name and brand logo is a significant change for any organisation. Both are, after all, the epitome of reputation, trust and, in addition, a value proposition in themselves. Would you agree?

Dirk Wember: I completely agree with you on that, yet there are important occasions to do so. That's precisely why we didn't go for an extreme renaming and come up with some meaningless word creation. The need for a cautious brand evolution has become more and more imposing in recent years and now we are boldly taking this step. I would like to explain the reasons for this and perhaps one or two other machine manufacturers are also facing this challenge and can use us as an example.

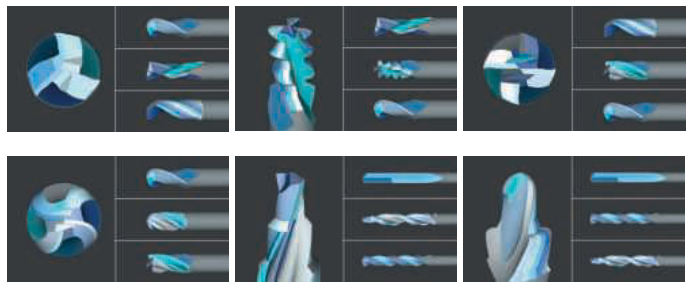
Since the beginning of 2000, Dirk Wember has been a shareholder and managing director of Haas Schleifmaschinen GmbH. He shares this task with his daughter Marie-Sophie Maier-Wember and with his long-time partner and chief technology officer Thomas Bader.

What were your reasons for taking this step?

I´ll tell you the main reason that has been on my mind for years. We have long outgrown our previous name, Haas Schleifmaschinen. The name limits us far too much and at some point, in the near future, slows down our business development instead of giving it a proper boost. We don´t build grinding machines, we develop unique technologies and are valued for our solution expertise. Our own software plays a decisive role in the requirements of the future. As a company, we are a hybrid and unique in our industry. On the one hand, we are a machine manufacturer in the grinding segment and, on the other hand, we are a software pioneer with solutions that make us interesting outside our very specific industry. When we reach limits at Haas, we want to overcome them as quickly as possible, currently with a new appearance and technologically anyway.

Is there a specific example that illustrates this?

One good example, from many, would be Styx. With our Multigrind® Styx software, we visualise and optimise complete production processes before the workpiece to be ground is even clamped into the machine. This digital test bed for 3D optimisation offers, with its 1:1 visualisation, maximum control, pixel-perfect and without restriction. This saves a lot of time and unnecessary grinding of expensive blanks. After all, it doesn't take much imagination here to envision what this technology could do in related industries as well.



More efficiency and productivity. Virtual process optimisation with Multigrind® Styx

Are there any additional reasons?

A common reason for changing the brand name is also successful internationalisation. This has also occurred in our case. We are advancing on all continents and this naturally generates conflicts. For us, a unique position in the market is indispensable. We want to clearly define ourselves with our cutting-edge technology and generate even more interest in our solution offerings worldwide. To do this, we need to differentiate ourselves to avoid any possible confusion. With the new name Adelbert Haas GmbH we strengthen the brand protection internationally and still remain flexible for what we have planned for the future.

What does all this have to do with the founder, Adelbert?

With Adelbert we want to create an awareness of our origin from the Black Forest. Adelbert Haas turns origins into the future. We have always been innovators, pioneers and "won´t work, doesn´t exist" enablers. We are consistent, courageous and always close to the challenges of our customers. These characteristics have characterised us for almost 90 years and are an immutable part of our corporate DNA. That's why the decision to go with Adelbert Haas GmbH just fell into our laps.

Isn't Adelbert Haas GmbH a bit too bulky, especially outside the language area?

Yes, of course the name is bulky and that's a good thing as a name with rough edges initially causes discussions, but pays off in the long run. We are not afraid of the tongue twister, we have become far too relevant in the market for that. It is precisely what is unusual about our Adelbert that makes it special and we want to be special for our customer, too. The company has never lacked

uncompromising courage, on the contrary. Who else in our industry would have named their new tool grinding machine Multigrind Radical? We think radically differently, act in a future-oriented way and that is exactly what our customers appreciate.

People certainly need some time to get used to the Adelbert. We are happy to take this time. Acceptance and identification are very important to us, both internal and external. Just imagine our loyal customers, the Haas brand means a lot to them and suddenly they are presented with some fantasy name? Then you take away something they valued and trusted. We want to preserve our added value and with it our attitude and our aura.

It is clear, however, that even if our motives are valid, they will of course be questioned by the public and that is a good thing. Our new name has to measure up to the previous one, so we didn't want a blank slate. We have proceeded cautiously and yet courageously. With a completely new brand name, memories are lost and we avoided that with the decision to change name to Adelbert Haas GmbH.

Why was the decision made now, our readers will ask themselves. Are there any other special reasons for the timing of this announcement?

I will make this as clear as possible so that no misunderstandings arise: There is no outside investor at Adelbert Haas. We have not merged. We were also very successful during Covid and even used the time to develop our Multigrind Radical. Our order books are full, and we are looking ahead with great confidence. Thomas Bader and I have added another managing director to the circle in the form of my daughter Marie-Sophie Maier-Wember, placing the growth themes of digitisation and software at the very top. If there are still unanswered questions, just call me as I am always happy with direct contact, especially after the past two years.

Can such a change of name go wrong?

Of course, there is no guarantee. Ultimately, it is the public that decides on success or failure. I can well remember a negative example from past years and, honestly, it still hurts today. The name change from Michael Deckel to ISOG was a fiasco, both in terms of craftsmanship and psychology. All the brand capital that had been built up so successfully, everything that the customer associated with the brand, was lost. We know the result: shutdown in April 2020.

Renaming and rebranding is certainly expensive and requires a lot of marketing know-how. Why didn't you shy away from it?

The development of a global brand, with its strategic, legal and linguistic challenges, is a real challenge and we were aware of that from the very beginning. Pioneering spirit, however, never looks at the costs first, but has the benefit and result as its goal. On the subject of marketing, that has always been my hobbyhorse and I learned the tools from scratch. If we can't communicate our topics, they won't exist in the market. That's why an offensive communication and marketing strategy is essential. In line with our attitude, we always have the best professionals at the start, also in marketing. Marketing is really fun, just take a look at our current campaign for the launch of the Multigrind Radical. We receive a lot of praise and for our competitors maybe a grey hair or two.

Thank you for sharing your thoughts and marketing concept with our readers.

Dirk Wember: I have to thank you on behalf of Adelbert Haas GmbH and on behalf of all Haas employees.

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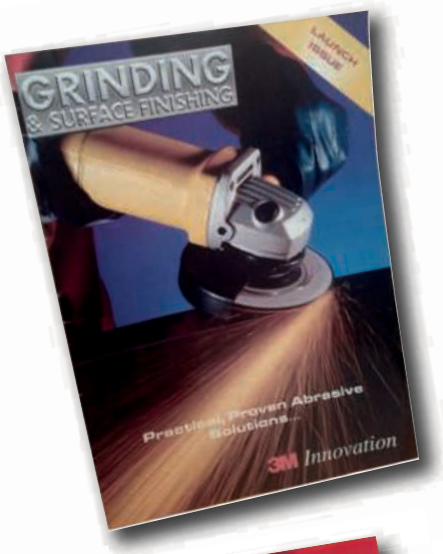
Social media example for the new Multigrind Radical

20 years and still unique



2003 was a milestone in the production engineering sector, with the launch of Grinding & Surface Finishing, the first dedicated journal covering production grinding and metal finishing for OEMs and subcontractors.

20 years later, the magazine is still the only player in this important market and for many, if not most of our advertisers, it is their journal of choice. The controlled circulation of 10,000 is constantly updated to reflect the huge changes in industry, while the website ***www.grindsurf.com*** is also an option for readers in the UK and across the world to keep in touch with the latest advances particularly for aerospace, automotive, medical and tool grinding applications.

The printed publication continues to be easy-to-read and highly informative, providing value for both readers and advertisers. Published five times a year, its readership extends from the company shop floor to the boardroom. Many of our advertisers have supported us from the very first issue and continue to do so to this day. Long-standing relationships with them have been key to the ongoing success of the magazine and have enabled Grinding & Surface Finishing to continue to grow and flourish. Likewise, our readers have provided useful feedback over the years in order to help the magazine stay fresh and relevant. Many of them still prefer a traditional hard-copy publication and this will remain the cornerstone of GSF. However, with the digital world now an important part of our daily lives, we will continue to invest in the website and our digital offerings to ensure our readers are kept as up-to-date as possible with the latest industry news.

Grinding & Surface Finishing will continue to have a presence at leading exhibitions, such as AMB, EMO, MACH, GrindTec and GrindingHub, as well as covering all the relevant press events. GSF was originally launched at a trade show in 2003 and we have enjoyed working with exhibitors and show organisers ever since. The magazine is internationally recognised by readers across Europe, USA and Australia and it carries regular articles and case studies for companies around the world.

Publisher Roger Barber was at the helm until early last year and has now handed the reins to son John, who worked alongside him over the same period of time. Production manager Anna Rodrigues has also been a constant and highly important member of the team and will continue to ensure the continuing success of the magazine and website working closely with John.

This issue celebrates this milestone for the magazine and offers our regular advertiser's the opportunity to be part of the celebrations.

We hope that you will continue to support us for many years to come. If you would like to be included in an upcoming issue, please contact:

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Celebrating 20 years of partnership with Grinding & Surface Finishing

"A collaboration for precision and excellence"

For two decades, Grinding & Surface Finishing has been the go-to source for industry professionals looking for the latest information on surface finishing techniques, equipment and trends. The magazine's in-depth articles and expert insights have helped readers stay ahead of the curve in an ever-evolving industry.

The 20th anniversary of the Grinding & Surface Finishing magazine is a significant milestone for the publication and the industry it serves and RK International Machine Tools is proud to celebrate this anniversary of Grinding & Surface Finishing magazine, the UK's only dedicated publication for the grinding industry. "This milestone is a testament to the magazine's commitment to providing valuable and informative content to its readers who are looking towards manufacturing components to today's demanding accuracies and surface finishes" comments Simon Rood, directorand general manager at RK International.

A key partner in this journey has been, Kent based, RK International Machine Tools Ltd. For many years, the company has been a trusted supplier of high-quality grinding and finishing equipment to a wide range of industries, including aerospace, toolmaking, automotive, power generation and the wider ranging manufacturing sectors.

RK International's commitment to quality and innovation has been a perfect match for Grinding & Surface Finishing's mission to bring readers the latest and most reliable information on surface finishing. RK International's state-of-the-art equipment and cutting-edge technologies have been featured in many articles over the years, providing readers with valuable insights and practical solutions.

In addition to providing top-notch equipment, RK International has also been a valuable partner in other ways. The company's team of experts has contributed articles and technical advice to Grinding & Surface Finishing, sharing their knowledge and experience with readers.

As Grinding & Surface Finishing celebrates its 20th anniversary, we are proud to acknowledge the important role that RK International has played in its success. Simon Rood continues: "RK look forward to continuing our partnership in the years to come with GSF, bringing readers the best in surface finishing equipment and expertise."

RK International offers an unrivalled range of products from renowned manufacturers such as ROBBI, DELTA, PERFECT and JAINNHER. These machines are known for their exceptional accuracy, durability, longevity, and ease-of-use, making them ideal for a wide range of industries and applications.

As a leading supplier of high precision grinding machines, RK International offers a variety of grinding equipment for customers in the UK & Ireland. "Some of our partners include ROBBI, a leading provider of high precision universal and internal grinding machines and DELTA, a manufacturer of rotary and reciprocating surface grinding machines. RK also offer an extensive range of surface and centreless grinding machines from manufacturers such as

The ROBBI Universal Grinding machine appeared on the back cover of the RK stocklist in the early 2000's. Just at this time, Grinding & Surface Finishing was launched in the UK

PERFECT and JAINNHER, as well as single- and double-sided fine grinding machines from MELCHIORRE. Additionally, RK can offer a range of grinding machine accessories and spare parts such as grinding wheels, grinding wheel adaptors, coolant systems and flanges and more including engineering support," mentions Simon Rood.

"We are thrilled to be a part of this important milestone for Grinding & Surface Finishing magazine," states Simon Rood. "We are committed to providing our customers with the highest quality products and services and this magazine is a great resource for those in the industry to stay informed and up to date on the latest developments and advancements in grinding technology."

In the early 2000's, RK International had already been established for 50 years and was increasing its relationship with grinding partners with multiple installations from both ROBBI and JAINNHER installed throughout the UK.

Since the introduction of Grinding & Surface Finishing, the RK grinding range has continued to increase, and now includes DELTA and PERFECT who provide an exceptional range of reciprocal and rotary table surface grinders with capacities of up to 1,200 mm dia rotary or 1,600 x 6,000 mm traditional type of surface grinding.

The recently launched and the latest in surface grinding technology can be seen in the PERFECT DT Series. An exceptionally

easy-to-use touchscreen control along with an increased specification provides an exceptional machine specification on rotary table, ring grinder, models to 400 mm dia and reciprocating models with up to 1,600 x 6,000 mm grinding capacity.

RK International would like to congratulate Grinding & Surface Finishing magazine on 20 years of excellence and looks forward to many more years of providing valuable information to the industry.

RK International Machine Tools Ltd Tel: 01322 447611
Email: simonrood@rk-int.com www.rk-int.com

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SURFACE

Conventional, PLC and CNC
Upto 1600 x 6000mm
Rotary & Reciprocating tables

EXTERNAL

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Upto 995mm dia x 6000mm
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INTERNAL

PLC and CNC
Upto 2300mm workpiece length
From single spindle to 4 spindles on one wheelhead

CENTRELESS

Conventional, PLC and CNC
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Up to 150mm OD grinding

"A collaboration for Precision & Excellence"

The 20th anniversary of 'Grinding & Surface Finishing' magazine is a significant milestone for the publication and the industry it serves. RK International is proud to be celebrating this anniversary edition of the UK's only dedicated publication for the Grinding (& Surface Finishing) industry.

20th YEARS ANNIVERSARY GRINDING & SURFACE FINISHING

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ANCA has been revolutionising technology since 1974 with a series of innovations to reach for the highest quality and accuracy in cutting tools

The trend for increasing automation over the last 20 years has culminated in the ANCA Integrated Manufacturing System (AIMS) for the fully connected smart factory

Two decades in cutting tool manufacture has seen the constants of precision and quality evolve to be even more technologically advanced. The world of CNC grinding thrives on innovation. Machines, cutting tools and software are constantly developing to be more efficient, streamlined and automated.

Today, ANCA is a thriving technology company with over 1,200 employees and a leading manufacturer of CNC grinding machines, motion controls and sheet metal solutions. Founded in Australia, over the last 20 years the company has expanded to include offices in the UK, Germany, China, Thailand, India, Japan, Brazil and the USA as well as a comprehensive network of representatives and agents worldwide.

ANCA CNC grinders are used for manufacturing precision cutting tools and components across a range of competitive industries including cutting tool manufacture, automotive, aerospace, electronics and medical. The last 20 years has seen ANCA's machine range grow to meet the needs of diverse industries and applications. The technology has also matured with the 5X CNC system and all ANCA grinding machines using motion linear motor technology. A passion for and the pursuit of better technology pushes ANCA to develop and manufacture leading solutions for its customers in the cutting tool industry.

R&D has always been a vital part of ANCA, generally focused on a current or anticipated customer need. ANCA has also achieved a long list of world firsts. Earlier firsts included diagnostics for machines in 1999, well before the term "industrial internet" gained currency and an electronic probe to measure tools while still in a machine, first introduced in 1987 and in 1998. CIM3D was launched as a full and true 3D simulation of the grinding process.

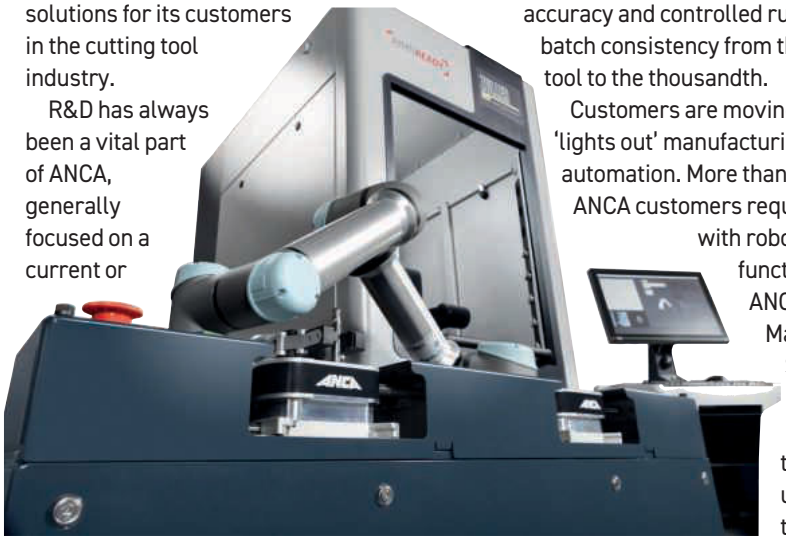
These innovations have changed the landscape of tool and cutter grinding and the company continues to build on that legacy, investing in R&D and taking bold new ideas to market.

Today's smart manufacturing is technologically driven, with solving customer challenges always at the forefront

As a culmination of ANCA's elite technology, deep industry knowledge and customer experience in grinding, the new MX7 ULTRA can manufacture large volumes of endmills and other cutting tools of the highest accuracy and quality.

With the introduction of nanometre resolution into its axis, ANCA will offer the highest accuracy and quality in a cutting tool in the market. New software, hardware and design features are combined to make significant advances in surface finish, accuracy and controlled runout to deliver batch consistency from the first ground tool to the thousandth.

Customers are moving towards 'lights out' manufacturing and automation. More than 70 percent of ANCA customers require machines with robotic functionality. The ANCA Integrated Manufacturing System (AIMS) system connects all the processes used in cutting tool manufacturing: the automation, measurement equipment and post-production processes such as laser marking as well as the grinding equipment itself.



The interconnected grinding technology solution eliminates wasteful manual handling, reduces machine downtime between batches and takes away the need to have operators constantly monitoring and adjusting production machines.

AIMS is designed for modular functionality that can be adapted to each factory's needs, from smaller-scale, data-based options to a full setup across a series of machines. AIMS delivers a connected tool production process, including transferring tools between operations with an AutoFetch robot, fully automating tool measurement and process compensation with AutoComp software module and managing data with the AutoSet hub.

ANCA is the only tool and cutter grinding machine company in the world that designs and manufactures the complete machine, including building the CNC, precision motors and spindles, and polymer concrete bases, in-house.

This means its customers enjoy the benefits of a manufacturer that understands their product completely, stands behind the quality of every element and is uniquely positioned to custom design both hardware and software to suit evolving needs.

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www.anca.com

ANCA: REVOLUTIONISING TECHNOLOGY SINCE 1974

From the introduction of diagnostics for machines, an electronic probe for tool measurement, and CIM3D as a full and true 3D simulation of the grinding process - ANCA's innovations have changed the landscape of tool and cutter grinding.

The trend for increasing automation over the last 20 years has culminated in the ANCA Integrated Manufacturing System (AIMS) for the fully connected smart factory.

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CONNECTED MACHINES, CONNECTED PROCESSES

Smart automation connects sequential tool production processes.

SYSTEM MANAGEMENT WITH ANCA FACTORY SERVER

Factory Server manages all communications between integrated production equipment.

LIGHTS OUT OPERATION

Continuous, unattended production dramatically reduces non-productive machine time.

AIMS

CONNECT, AUTOMATE, CREATE

The ANCA Integrated Manufacturing System (AIMS) optimises cutting tool production through streamlined manufacturing, automation, and connectivity. With ANCA and AIMS, customers can achieve continuous, unattended production that dramatically reduces non-productive machine time, with smart automation that connects sequential tool production processes and offers connectivity across the whole factory.

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ANCA CNC MACHINES

Gear inspection and gear noise

Making gear noise visible

We have seen a constant increase of gear noise as an important quality criterion over the last years, especially in the automotive industry. The development of electric power trains has pushed the importance of noise behaviour for gears even further. This development results in tighter geometrical tolerances and the need to access the noise behavior directly as an additional quality criterion including tolerances. In the case of noise testing, the result of the quality check is an order spectrum and typically there is a limit set for either single orders or along the whole order spectrum.

As a first step, we should look into the geometrical tolerances. Tighter tolerances typically lead to a higher measurement frequency, driving quality costs. One measure to limit cost increase is speeding up the measurement process itself. In order to achieve shorter cycle times Klingelnberg has developed optical metrology for gears.

A major challenge is the tight tolerances for the geometrical features. The accuracy of the measuring system cannot be compromised and is critical for an optical system. Klingelnberg has introduced the concept of hybrid metrology by combining a tactile and an optical system. This enables it to combine the flexibility and robustness of a tactile system with the speed of an optical system. For gear measurement, the rather fast profile and lead measurements are performed using the tactile system whereas the time consuming indexing measurement is performed with the optical system. As a result, the time for indexing measurement can be reduced by up to 80 percent. This means for the whole cycle time a gain of up to 40 percent. Introducing the optical system into the standard gear measurement software brings additional advantages. All evaluation specifics including the data interfaces stay exactly the same. Therefore, introducing the optical system into production is an easy process.

The next step is taking noise directly as a quality criterion and not via the part geometry. Here Klingelnberg has introduced the Gear Deviation Analysis (GDA) software on standard measuring centres. The GDA software evaluates waviness on gear flanks and translates it into an order spectrum representing the orders a particular gear is likely to cause in a gearbox. The basis for this analysis is just a standard gear measurement. For analysis and troubleshooting purposes, typically all gear teeth are analysed. For production monitoring instead, there is the option to use four teeth only. This means the standard gear measurement performed in production is the basis for the analysis. As a result, we get what is called the "3rd measuring sheet". It contains the orders as well as tolerances and specific values looking into waviness.

R 300 cylindrical gear testing technology

For electric vehicles, we can see a clear tendency towards 100 percent testing for noise in the industry. This requires a fast and reliable testing method. In this case roll testing for cylindrical gears is the method of choice. In fact, it has been a standard for bevel gears for quite a long time. Typically, in the cylindrical world people think of double flank testing. Unfortunately, the information about gear noise is rather limited. The standard method to apply here is single flank testing. This method shows directly the transmission error of a gear being the root cause for gear noise. With the Höfler R 300 Cylindrical Gear Roll Testing Machine, Klingelnberg offers all three methods known in order to have the necessary flexibility. It is possible to cut down the testing cycle to match the gear grinding cycle time in order to ensure 100 percent testing at affordable costs. Therefore, typically the methods Structure Born Noise (SBN) and Torsional Acceleration Test (TAT) are used since they work with rather high rotational speed and ensure short cycle times.

We can conclude that gear noise is an important quality criterion especially for automotive applications. There are different methods to ensure a good gear noise behavior based on either analytical inspection or single flank testing. Analytical inspection offers the option to combine noise evaluation with gear measurement that needs to take place anyway in production. The solution here is the Gear Deviation Analysis software. The analytical gear inspection can be sped up by optical metrology, but still will not match machining cycle times and thus is not well suited for 100 percent inspection. Single flank testing instead is the method of choice when fast testing cycles are required.

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www.micronz.com

In the future, Haas Schleifmaschinen will be known as Adelbert Haas.

Who needs a Plan B when Plan A simply can't be improved on?
A for Adelbert.

↓

Adelbert Haas GmbH
www.multigrind.com

A.HAAS

Master Abrasives thanks its partners after a decade of independence

Having recently celebrated it's 10-year anniversary of being an independent, UK-owned abrasive company, Master Abrasives' team is starting the year thankful grateful for the part that suppliers have played in the company's success story so far.

Firstly, it's partnership with Grinding & Surface Finishing (GSF) magazine is now 20 years long, as the publication is also celebrating its 20th year as the only dedicated English language, production grinding and surface finishing magazine. With the title "Our name says it all", Master Abrasives supported the very first issue of the popular publication 20 years ago and has done so ever since. Whilst Master Abrasives has evolved its product offering for different application needs, GSF has continued to grow its presence and is a leader in keeping industry up to date with new products, services and upcoming key engineering events.

In the same way that Master Abrasives invested to build on rapid growth in it's early years, the company has kept expanding its product portfolio to include a range of options for varying customer needs. It's partners in abrasives have always supported the company's development, meaning that Master can offer not only industry's latest abrasive technology, but production of the highest quality abrasive belts from premium brands of raw material.

Alongside it's consumables, Master Abrasives can offer a complete managed stock agreement via it's partner's vending machines. These can be used to cost-effectively dispense a wide range of industrial consumables on-site, reducing customer expenses by up to 30 percent and eliminating downtime.

It's partnership with BAF also means that the company can offer safe use of abrasives training to support customer's businesses, helping the workforce to select and use abrasives and tools correctly, reduce the risk of accidents and keep employees safe.

Since the launch of the Master Tool Services department in 2007, the team have been offering new, innovative brands of power tools to meet customer needs. Master can rely on the quality of their partners' tools and their ongoing support to offer the key tool services and repair required by hundreds of companies in the UK. Customers can also keep tools in top condition with managed maintenance and protect employees against ill-health from Hand Arm Vibration.

After Master became an independent, UK-owned company, being purchased by the current owners, its own brand was officially launched and, in 2016, the Master® trademark was registered in the UK and EU. This brand has been worked on by Master Abrasives technical team for years and improvements are continually made on consumables that are technically capable and marketable globally. With products from mounted points to precision grinding wheels, the brand fits excellently alongside so many of Master Abrasives' key partners in abrasives, power tools and machinery.

In 2016, Master Abrasives final piece of the puzzle, machinery and equipment, was set up as a business unit. The company's goal is to offer a complete grinding solution at cost-effective prices, from abrasive tape superfinishing attachments to high-precision surface grinders. It's partners in this category support Master in offering related products such as vibratory mass finishing machines, superfinishing spindles, metrology equipment and auxiliary equipment like coolant nozzles. The company has been able to exhibit it's array of machinery solutions to industry at manufacturing's most prestigious events, many supported and promoted by GFS.

Master Abrasives' Paul Batson, managing director for the past nine years, comments: "We have gone through a lot of changes to become a strong, independent abrasive company with a solid brand identity and couldn't have done it without the support of our partners. To mention them all wouldn't be possible, but I believe that their support has helped us to achieve a marketing orientated approach to running a business, listening to customers and engaging with them to work together on a solution or improvement in their productivity."

Some fifty-five years after its formation, Master Abrasives is celebrating a great milestone in its history: ten years of being an independent company in control of its own business future. The fact that Master is still thriving and looking for new opportunities is testament to the company's resilience and foresight as well as the quality of its dedicated workforce and management team. Master continues to look forward with optimism to maintain it's reputation for excellent customer service, high-quality products, engineering support and technical development.

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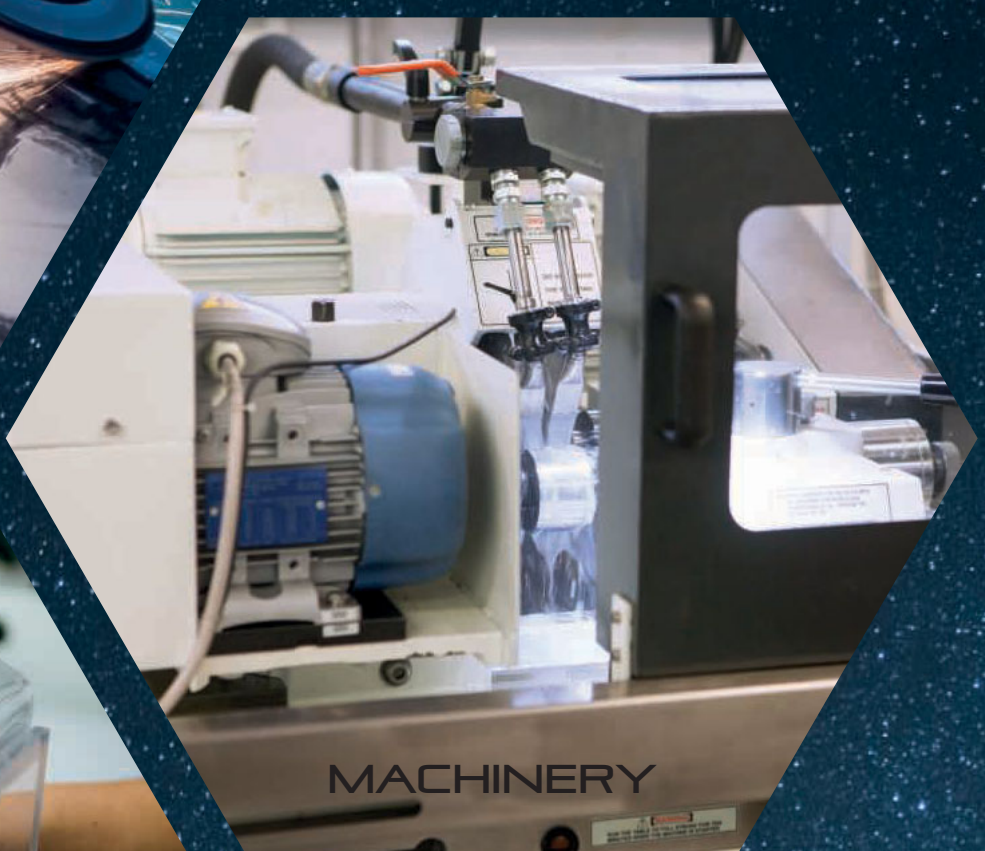

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Fast as femto – whats in a second?

By Chris Boraston, managing director of Advanced Grinding Solutions Ltd

New machines are being developed all of the time and very occasionally a new process too, but it's not that often that you come across something that is so far ahead of anything else and operates on such a high technical level that one can only marvel at how staggering the engineering development really is. This is one of those rare occasions.

Engineers are used to fighting seconds, especially when it comes to reducing cycle times. Over the years, Advanced Grinding Solutions has been tasked with achieving cycle time savings where every second counts. However, understanding exactly how Rollomatic's latest laser machine for manufacturing PCD and other very special tooling works requires an understanding, on a completely different level, of what time really is.

A good watch but one 20th of one second isn't going to help here

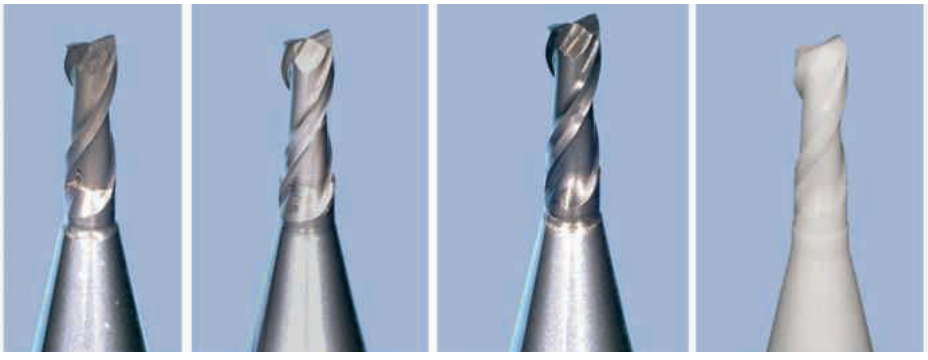
A microsecond is one millionth of a second, a nano-second is one billionth of one second, a pico-second is one trillionth of one second. All very short and fast, but the Rollomatic LaserSmart® 510 Femto Laser machine works in femtoseconds. A femtosecond is one quadrillionth of one second. It can also be expressed as 1,000 picoseconds or 1,000,000 nanoseconds or, if you like, it's actually a million billionth of one second or 1,000,000,000,000,000th of one second.

So, just how short is a femtosecond? At this level numbers can get a little hard to appreciate. One way to look at this is in terms of how far light can move in a given amount of time. Light travels about 186,000 miles in one second. That means it travels about 30 cms in one nanosecond. In one femtosecond, light travels just 300 nanometres. This is just slightly larger than the smallest bacteria.

Another way of thinking and probably the best way to understanding how short a femtosecond is this: One femtosecond is to one second as one second is to approximately 32 million years.

Since Rollomatic first launched the LaserSmart machines, showing the first one a decade ago at the IMTS exhibition in Chicago, they have been pioneered, championed and further developed by Rollomatic. They have together, with their team of engineers, successfully gone on to transform this new technology into a leading class of extra special machine tool. Noticing the developments using short-pulse lasers or so called cold source laser systems for human eye surgery by the medical industry, Rollomatic's team took inspiration from that and looked to see how the super-fast lasers could be used for manufacturing cutting tools and inserts and the Rollomatic 510 femto machine is the pinnacle of that work.

So successful has this machine been that the take up by major PCD, Diamond and CBN cutting tool manufacturers, such as Paul Horn and DTS, has now led to the laser machines being given their own dedicated production line within Rollomatic's huge machine tool plant in Le Landeron, Switzerland.

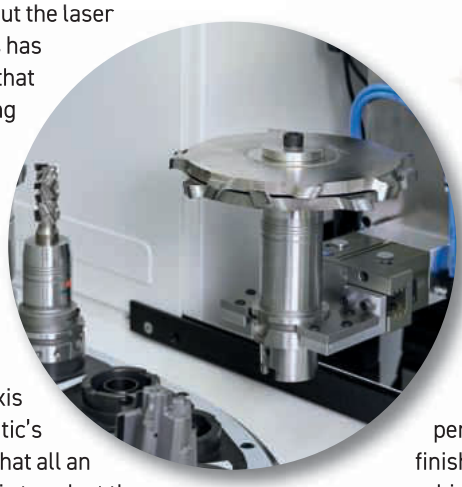


CBN milling cuttter | Carbide milling cutter | PCD milling cutter | Zirconium oxide milling cutter

Tools made on the Rollomatic Lasersmart 510 machine - from the solid - no grinding required anymore

As staggering as it may seem, it's really the case that the Rollomatic 510 Femto Laser machine does operate in femtoseconds and this brings about some major advantages when looking to manufacture PCD, ceramic, CVD diamond and PCBN cutting tools. This is the world's first femtosecond ultra-short pulse laser cutting machine for ultra-hard materials with 30 percent faster feed rates as compared to conventional laser machines, with a pulse width 1,000 faster than pico lasers. Nano lasers are typically used for marking applications and micro lasers were used for basic cutting applications.

Rollomatic is understandably secretive when it comes to specifying example machine settings but the laser machining process has many parameters that influence the cutting result. However, the main variable parameters are the power of the laser, the wave length, the frequency, the pulse length and the machine tool axis speed etc. Rollomatic's software ensures that all an operator has to do is to select the type of material to be machined and the recommended settings are automatically recalled, while allowing freedom to alter those according to personal preferences and experience.



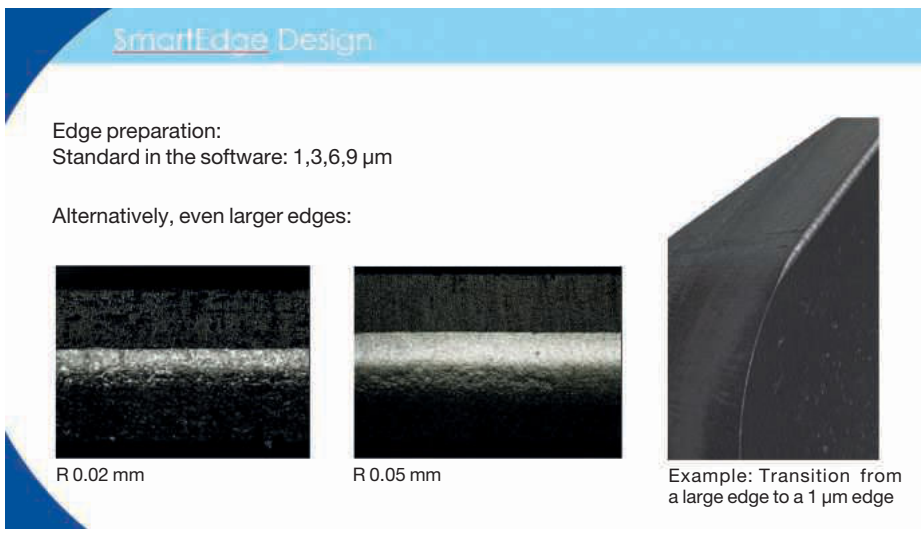
Laser pulses on the Rollomatic femto laser machine are so short that zero heat is produced. The laser beam is simply not in direct contact with the cutting tools surface for a long enough amount of time for any heat to be generated. Even when working in picoseconds or nanoseconds, tiny particles of dust are melted and you can suffer from temperature transfer issues that effects the surface structure of the cutting tool. So short are the femtosecond pulses on the Rollomatic machine that material is simply lasered away, micron by micron and is immediately vapourised with only gas being produced.

The latest Rollomatic laser machines are 450 percent faster than the last generation and some 500 percent faster than the conventional EDM process that is most often used to machine PCD tooling. Apart from the huge cycle time savings, the unique laser process creates razor sharp cutting edges with a radius of under 0.5 µm, but end-users are also able to freely define a desired edge condition with a three, six or nine micron radius.

PCD tools often require a perfect mirror like surface finish. Here, the Rollomatic machines have achieved a surface finish of just 0.048 µm Ra on a primary relief of a profile insert in PCBN material. A super mirror like finish is generally twice as rough as that and the finish was obtained with no cycle time detriment and the edge condition was also fully maintained. Finishes to this level cannot be achieved by processes such as EDM or grinding.

Rollomatic's laser process is now so fast that it's now faster at lasering out flutes on certain micro tools like endmills and drills than conventional grinding. The laser machining of chip breakers is fully catered for with quality "above industry standards" and cylindrical margins are machined in a single clamping. The programming of negative chamfers, K-lands, is covered for and uniquely so also is the ability to fully define the curtting edge radius on cutting tools.

There are now three laser machines in Rollomatic's line up: LaserSmart® 510, the LaserSmart 510 Femto and the new LaserSmart 810 XL machine. The 510 versions have been developed for machining smaller tools, whereas the 810 machine is used for producing larger PCD cutting tools as used by the woodworking, automotive and aerospace industries.

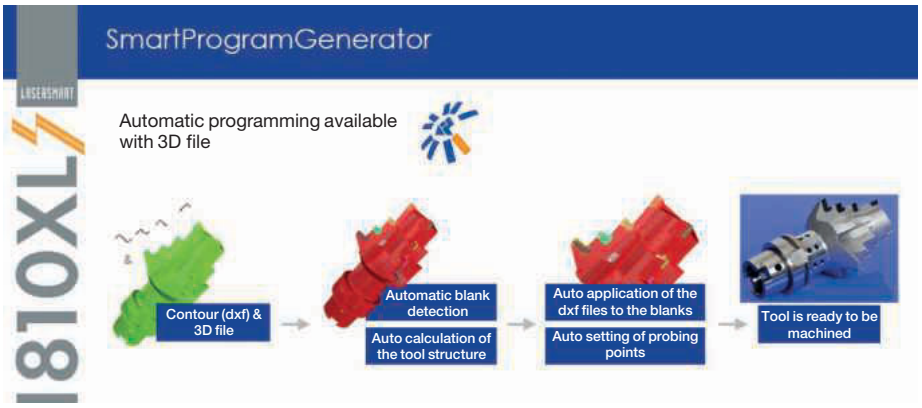


Apart from producing PCD tools, the machines are equally at home when machining ceramics, tungsten carbide, sapphire, glass or other ultra-hard materials. The machining process is automatically adapted to suit the chosen material. Diamond like coated or CVD coated carbide tools are also catered for.

Coated tools offer a significantly longer tool life compared with uncoated carbide ones, but there is a drawback in that thicker coatings makes the cutting edge dull and thinner coatings often wear prematurely. Rollomatic has developed a new process using the laser machines that sharpens thicker coated carbide tools. This involves probing the surface of the coated tool to detect its exact shape and position and then using the laser to remove just enough coating to make the cutting edge perfectly sharp. Field testing has shown that tool life is increased significantly as compared with conventional un-lasered coated tools. These tools are also a very cost effective alternative to far more expensive PCD tools.

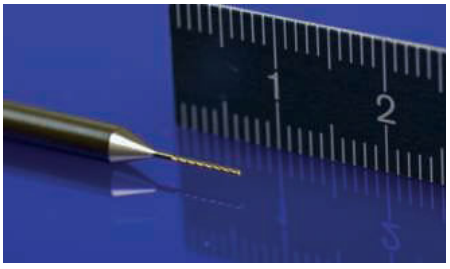
The 510 machines have a general working range for producing tools of up to 190 mm in length and from 0.1 to 80 mm in diameter. The larger 810 machine produces tools of up to 350 mm in length and up to 300 mm in diameter with a weight of up to 15 kg.

The latest 810 XL machine that weighs some 7,500 kg can be equipped with up to seven cameras to ensure that every step of the lasering process can be monitored by the machine operator during actual production. The machine also benefits from a new and patented 6th CNC axis for smoother and faster sweeps of the laser beam. The automatic loading of cutting tools is standard and is done via an integrated pick and place loader with a capacity of 30 parts.



When operating at levels using femtosecond speeds that other machines cannot hope to work with, Rollomatic did not stop development of other machine components to ensure that the machine, as well as the laser process itself, is far ahead of conventional machining. The latest 810 machine uses a granite bed but now has 3D printed ceramic axis that are some three times lighter and three times more rigid than cast iron.

Any machine is often only as good as the software that allows for the manufacture of parts and here Rollomatic has another world first on any machine tool in its new Smart Programme Generator or SPG system. Here a tool manufacturer now only needs a DXF file and 3D drawing of the tool they wish to produce and they can immediately import that into Rollomatic's SPG. Once imported, the operator makes as few as five selections and the software creates the entire machining programme and the tool is ready to be produced. This makes the complex and time consuming operation of tool programming a thing of the past. One example would be the programming of a complex step tool/form



cutter that used to take one hour to program, but now can be programmed in just two minutes.

Sven Peter, Rollomatic's laser product manager, further clarifies the positioning of the laser machines within Rollomatic's range of advanced machinery for producing cutting tools: "Many sectors in industrial production rely upon the use of diamond tooling which is now irreplaceable as a cutting material in the form of CVD layers or as a PCD tip. However, what makes it so valuable is that its unsurpassed hardness often limited the tool geometry. With the introduction of powerful laser machines from the LaserSmart series such restrictions are overcome. Using the speed and precision of the femto laser, boundaries are literally lifted, both in terms of tool design and quality. The demand for such tools across all industry is rapidly increasing and these can now be produced not only much better but also considerably faster thanks to Rollomatic's laser technology. This is lowering the costs of tooling that is further driving the market upwards for these tools"

For more information on the Rollomatic machines see ***www.advancedgrindingsolutions.co.uk***

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Tools made on the LaserSmart family of machines

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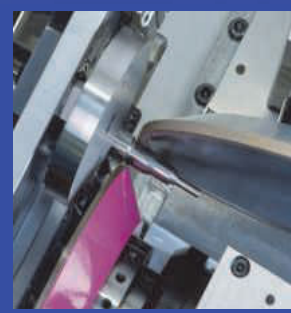

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oelheld celebrates 25 years of innovative fluid solutions in the UK

Originally founded by Carl Christian Held in 1887, oelheld has a long history of fluid technology innovation, building a reputation as a supplier of high-quality oils, fluids and lubricants for industry. Well-established in Europe but relatively unknown within the UK in 1998, oelheld UK was formed to supply these high quality EDM and grinding fluids to British manufacturers.

The division owes its creation to two men: leading EDM circuitry engineer Colin Hayter, who provided EDM machine support through his company Advanced Machining Technology (AMT) at the time and expert tribologist Dr Manfred Storr, then-managing director of oelheld GmbH. Both experts in their fields, the pair discovered a shared enthusiasm for pushing the technological boundaries of their respective specialisms, to optimise manufacturing processes. A commitment to continuous innovation has remained central to oelheld UK's portfolio development and strategic growth ever since.

Innovation for customers and the future

Using state-of-the-art laboratories, equipment and dedicated in-house EDM and grinding research centres, oelheld's products have been specifically developed to offer superior performance and meet the changing needs of the industries it serves. The company works closely with leading machine manufacturers and universities to develop products that are designed to meet the specific requirements of their machines. This kind of cooperation allows oelheld to meet the long-term needs of its customers by designing fluids that offer consistent performance over time.

Most recently, the company has launched a range of biodegradable punching oils, specifically developed to help companies protect workers and the environment. Combining a carefully blended base oil and advanced additive package, the oils are not only better for the planet, but for performance too. For oelheld, innovation is key to sustainability that benefits the environment and businesses; highly productive fluids that are made to last mean less waste and reduce consumption. As a result, customers who choose oelheld products rarely switch away and the company holds a significant number of long-standing customer relationships.

Pete Mangan, managing director of oelheld UK Ltd says: "We are proud to say that many of our customers today have been with us since the early years and some are even using the original fluid they purchased. I think 20 years is the current record, which is testament to the design and quality of oelheld fluids."

Innovation for whole system solutions

The first fluids introduced to the UK were the company's top performing dielectric, Ionoplus IME-MH™ and fully synthetic grinding oil, SintoGrind. Thanks to patented technologies designed to enhance surface-finish and extend fluid life, these flagship fluids established oelheld products as the ideal choice for quality and longevity. Soon, the full range of oils, fluids and lubricants for die-sinking, grinding, milling, turning, forging, punching, and stamping were made available to British manufacturers.

As the reputation of oelheld fluids for quality has grown over the years, so too has the company's standing as a trusted partner for full metalworking fluid system support. Expanding sales and technical teams have brought extensive EDM and tool grinding industry experience that has seen customers increasingly turn to oelheld, seeking a single source of support for all aspects of their fluid systems.

In response, the company has significantly expanded its manufacturing and servicing capabilities in recent years and formed strategic partnerships to make the very latest technologies available to its customers. Today, oelheld is the UK representative for TRANSOR Filter GmbH, Ebbco Inc and VOMAT GmbH filtration, CarlHirschmann GmbH workholding, indusa GmbH oil mist extraction and GDS Präezisionszerspanungs GmbH's range of ultra-precision tool clamping products. oelheld UK is now uniquely positioned to provide full fluid system advice, support and solutions.

Pete Mangan concludes: "The significant investments we've made to developing the team and product range reflect our commitment to offering customers the very best support and most cutting-edge technologies available on the market."

oelheld UK will be celebrating the company's anniversary throughout 2023 and running promotions across the full range of products and services to thank customers for their ongoing business support.

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Protect your machines with Kraft & Bauer

New automatic bottle weighing systems

Kraft & Bauer, whose automatic fire extinguishing systems are fitted to all kinds of machine tools, offers a complete range of systems from small 5 kg CO_2 based models to protect the smallest of machines up to huge multi cylinder variants having multiple 50 kg bottles.

One popular option is to have the CO_2 or argon gas cylinders contained within its own stand-alone cabinet that can be bolted to the factory floor and/or placed directly against a machine. These may be optionally equipped in the case of using CO_2, as the fire extinguishing media, with automatic weighing systems. These monitor the weight of the CO_2 cylinder and, in case it is empty, will not allow the machine to be run, thus providing added protection.

From its base in Coventry, Kraft & Bauer UK offers a full installation, retrofit and service facility for all Kraft & Bauer fire extinguishing systems. These must be checked at least annually by a qualified technician and signed off for companies insurance purposes. In the event of an incident, if there is not an annual service certificate in place then it is likely that any insurance claim will be declined.

It is mandatory to have fire extinguishing systems fitted to machine tools that provide some form of a fire risk. These are generally acknowledged as any machine that works with an oil-based coolant, ie. most grinding machines and turning machines and any

machine that causes a spark such as an EDM machine or laser machine. Engineering manufacturing companies must have documents for risk assessments in place and these need to highlight risks such as fires on machine tools. Companies must act using mitigating measures to overcome those risks. In the case where machines are run automatically, fully automatic fire systems need to be used that can react in seconds to put fires out.

Kraft & Bauer UK, whose fire extinguishing systems protect many hundreds of machines here in the UK, has expanded further with the addition to its fleet of a larger long bed van that doubles as a mobile workshop. A further service engineer has also been employed and

additional stock has been added to both of its storage facilities in Coventry and in Cork.

As more and more new machines are fitted with Kraft & Bauer's systems, naturally the global annual servicing of those systems increases. Kraft & Bauer notes that partly due to insurance companies being ever more vigilant and refusing insurance for machinery that's not adequately protected against fire risks, the retrofit market is driving many sales here in the UK and in Eire.

Louise Boraston, MD at Kraft & Bauer, who has been championing fire protection on machine tools for a number of years now, is naturally pleased to see the increases in sales but stresses that its far more satisfying to see sales due to companies understanding the importance of fire protection and acting responsibly rather than only reacting to fire incidents that have sadly resulted in the loss of machines and therefore production.

Kraft & Bauer urges those using all kinds of machine tools to understand the need to protect their workers and machines from the risks of fire. It points out that in the event of a machine being damaged and put out of action the replacement costs will almost certainly not be covered by any insurance policy unless a fire system has been fitted to it. Also, it should be understood, that even if end users are eventually successful in making a claim, it can take many months and then several more months to take delivery of replacement machines and very few end-customers will wait for production to recommence. Most will likely simply go elsewhere and therefore important contracts can be lost, in some cases, forever.

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AZ-Aerospace range

Global Full 4.0 grinding solutions

by Claudio Tacchella

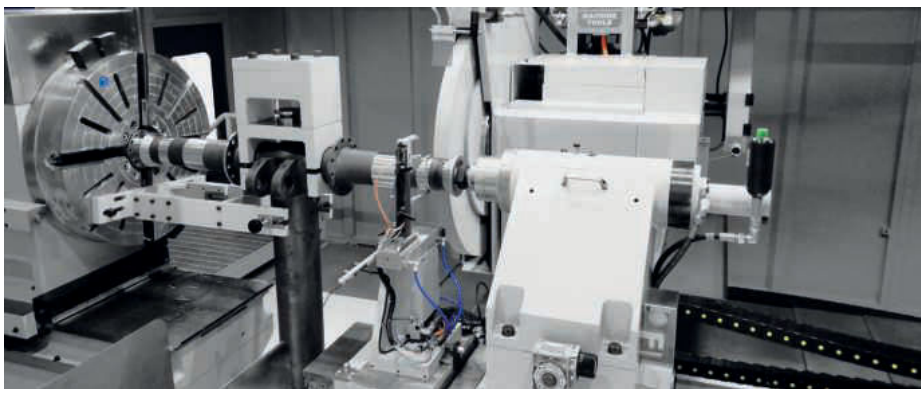
The Italian company AZ Spa of Thiene (VI) is a leading player in the aerospace industry for the primary industries of aircrafts, EOM and RMO direct and indirect, with over 40 years of experience. The company designs and manufactures an impressive range of grinding solutions called AZ-Aerospace for the production, maintenance, repair and overhaul of aerospace components.

AZ Spa is also a pioneer in the current digital transformation process from an Industry 4.0 perspective. This is demonstrated by its innovative solutions adopted on machinery and services, which have made systems increasingly digital, more interconnected, more energy efficient and smarter. Digital solutions that the company specifies to be Full 4.0 and not simply Ready 4.0 are recognised in the market as an ideal example and model for modern Smart Factories.

"For us, it was immediately clear that it was not possible to avoid the Industry 4.0 revolution and that it would be reductive to adapt to it," says Sarah Pizzolato, marketing director of AZ Spa. "Our pragmatic vision led us to consider this transformation as a great opportunity for improvement. In fact, more and more of our clients production facilities are becoming fully interconnected environments where machines are able to self-learn with Artificial Intelligence (AI) technologies, devices that enable them, people and management systems to interact to create innovative and highly efficient products, services and working environments. Serving this world and managing its complex implications is the real challenge of the manufacturing industry that involves and excites our company."

The AZ-Aerospace range uses the most advanced mechatronic solutions, all customisable, highly energy efficient, safe, reliable and fully 4.0 compliant with industry requirements

Regarding machinery, the company has started an internal process of analysing and replacing numerous components in order to improve energy efficiency. For example, electrical/electronic parts, motors, drives, pumps, heat exchangers, exhausts fan and auxiliary accessories have been replaced with new state-of-the-art models. Additionally, each grinding machine is equipped with a panel where it is possible to display energy consumption in real-time or upload data collected from machine sensors onto a centralised system to monitor the entire plant.

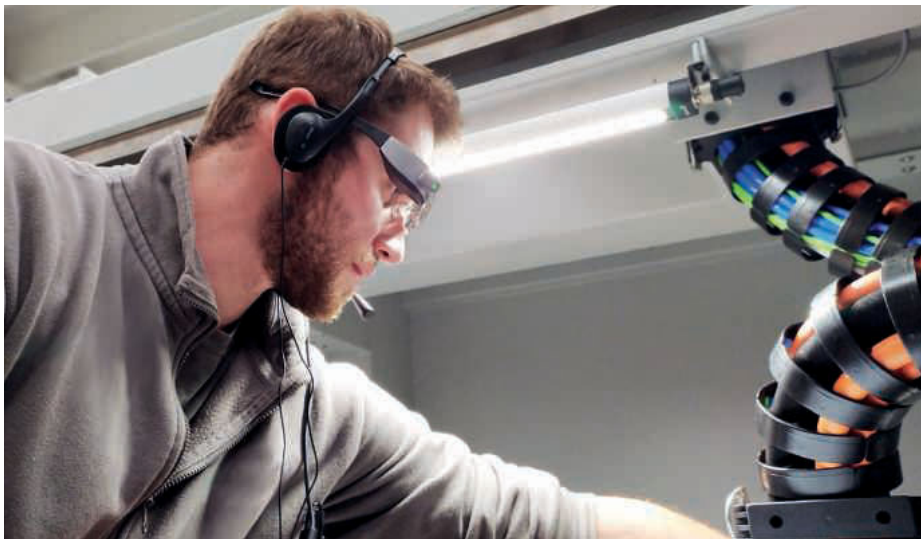


The range of AZ-Aerospace grinding machines is designed for the production, maintenance, repair and overhaul of aerospace components

Full 4.0 technical assistance and monitoring

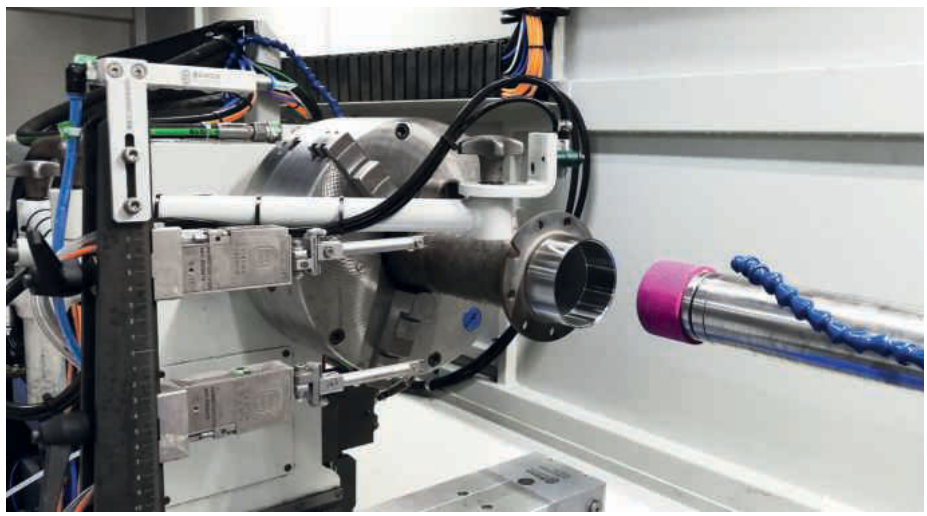
AZ Spa offers a remote technical assistance service for grinding machines, which also includes an innovative technology called AZ-SmartService. Thanks to the use of Augmented Reality (AR), it allows customers all over the world to connect with AZ's technical support. Using special vision devices called AZ-SmartGlasses, AZ's technical support can see through the operator's eyes and provide precise instructions on the correct operation to be performed in real-time. This technology reduces human errors, the risk of identifying wrong spare parts and the delivery times of spare parts, costs and technical assistance times. The AZ-SmartService technical assistance service includes the AZ-SmartGlasses visor, in a pre-configured and ready-to-use kit, integrated with an easy preinstalled interface.

In addition, AZ Spa has implemented a new software on the grinders that makes them even more "Smart". For this purpose, it has researched and developed, in collaboration with the company IXON, a solution for monitoring and maintenance of machinery. With this new Cloud-managed software, AZ is able to constantly monitor the operation and performance of its own machinery, including predictive maintenance, through PC or Smartphone,



With AZ-SmartGlasses the operator can see notes and components highlighted by AZ with the help of Augmented Reality (AR)

ensuring optimal performance of the grinders. For example, AZ technicians can modify the operating parameters of the machines directly from the platform, integrating a web page from the PLC on the dashboard. In this way, it is possible to have weekly, monthly, quarterly and annual reports on the production performance of the plant. Furthermore, through data analysis, it is possible to carry out predictive maintenance of the machine components and generate customer notifications of the proximity of a maintenance event, thus promptly organising the intervention. This avoids or drastically reduces emergency situations and, consequently, the unplanned shutdown of production. Assisting the customer in managing highly specialised machinery such as AZ grinders, offering effective assistance services and tools, is essential.



Different wheelhead configurations are available for external and internal grinding processes

For AZ, supporting the customer with maximum performance is an essential condition from the delivery of the machine itself. It is necessary to be able to monitor and intervene at any time to ensure, for example, that the geometries and grinding processes adopted are consistent with the required specifications, especially in the case of machines that can be re-equipped for productions with configuration changes for the grinding of different batches of parts. Furthermore, AZ technicians must be able to intervene remotely, worldwide, in real-time and at any time, accessing historical data and monitoring notifications relating to important machine events.

Sarah Pizzolato concludes: "All these AZ innovations in the Full 4.0 perspective have had an inevitable impact in terms of costs and resources to adapt machines, logistics and internal company organisation, but we are proud to have developed them to improve ourselves and contribute to technological progress. Today, with the implementation of our digital solutions, even the aerospace sector can benefit from the innovations brought by our grinding machines and grinding solutions that we produce."

AZ Spa will be exhibiting at the CIMT China International Machine Tools Show fair in Beijing, April 10th-15th, in Hall W3, stand A015, where AZ engineers are available to explain all the technical features and provide all information on the new AZ-Aerospace range.

The digital AZ innovations in the Full 4.0 perspective are the best solutions for monitoring and maintenance of machinery

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Developing machines for aerospace component surface finishing

In this interview with **Adrian Kofler**, business development manager for aerospace and defence at OTEC Präzisionsfinish GmbH, he outlines how OTEC machines are meeting the needs of manufacturers for ever more precise aerospace component surface finishing:

What is the key challenge when it comes to developing machines for surface finishing aerospace components?

Simply put, there is no 'do it all' machine. Aerospace parts differ immensely. There are simple fasteners, often very small, sometimes very thin and delicate. Gear wheels and turbine disks vary greatly in size and geometry while landing gear parts can be large and heavy. Then there is the complex and precise profile geometries essential to blisks, turbine and compressor blades.

At OTEC we develop and build different machines to perform optimally for a specific range of components, as well as meeting the needs of low volume manufacture up to large scale in-line production.

CF disc finishing machines, for example, are ideal for the cost-effective mass finishing of smaller fasteners however small and thin. DF drag finishing machines enable larger components to be processed without part-on-part contact in the process media. SF stream finishing machines give fine precision control of surface finishing of parts weighing up to 200 kg and they enable accurate targeting of particular surface areas.

Why are the needs of aerospace so special?

Aerospace manufacturers work to exacting standards, AS9100, Nadcap and those set by primes. They are always pushing the boundaries of development. From this we understand their need for precision without compromising geometries and tolerances. Process consistency and repeatability are also essential. Important too, are compact form factors to minimise demands on costly shopfloor space. Environmental factors such as recycling process water is important to everyone. All these feed our extensive research and development programmes into which we add valuable real-world feedback from over 60 local agents from around the globe, such as Fintek in the UK.

Fintek has been working with us since our first machine launches over 25 years ago. In addition to selling our machines, Fintek uses them to provide subcontract surface finishing services tailored to the needs of aerospace manufacturers and others. It has extensive technical insight into the application of OTEC machines, CFs, DFs and SFs. The knowledge exchange between us benefits our customers in aerospace. We also help agents like Fintek to find optimum process parameters for their customer sample parts. It is a continuous feedback loop which helps us to develop better machines.

In short, other than the ferocious development cycles of say F1 in motorsport, where we are also very active, aerospace pushes the limits.

What are some of the recent advancements?

In terms of surface finishing, we have made great strides in both homogenous smoothing and the selective smoothing of specific surfaces. This has been made more accurate by the development of our stream finishing machines.

The rounded edges of a turbine blade, for example, must be within necessarily tight tolerances for it to perform optimally.

Attempting to do this with powered hand tools, CNC machines and even robot polishing is extremely difficult and time consuming. As soon as the geometry becomes more complex, such as blades made up of guide vane segments, it is virtually impossible.

In an OTEC SF, blades are clamped so that the corners are at the top during the finishing process, almost emerging from the process medium. During the process, the blade is directed toward the stream and swings to and fro at a predefined angle to achieve a homogeneous surface finish without affecting the contour of the blade. Depending on the process medium used, the surfaces can reach roughness values of up to Ra 0.1 µm. Processing times are between two and thirty minutes.

A higher output can be guaranteed by clamping up to five workpieces at a time in a single machine. Productivity can be further increased by adding a robot cell for fully automated loading and unloading.

Another stride forward has been component size. In the new SF-HP, large

workpieces up to 650 mm in diameter and weighing up to 200 kg can be accommodated and they are ideal for stream finishing larger parts such as landing gear components and complete blisks and disks.

How is industry 4.0 impacting machine development?

OTEC has developed its own digitalisation packages so that customers can take advantage of this. Consequently, the knowledge required to operate the machines and the optimum processes and parameters can now be used on a custom, flexible basis. Machine control, remote maintenance and self-learning and self-testing provide maximum process reliability and use of capacity.

All OTEC machines are Industry 4.0 capable and we also offer an OTEC Industry 4.0 advanced package with an additional industrial PC. This gives the option of more advanced digitalisation on CF, DF, and SF machines, enabling machine monitoring and process optimisation via remote maintenance.

Supporting machines out in the field is important to us and customers. All machines require maintenance and while we strive for 100 percent reliability, breakdowns can occur. We are always seeking new ways to get customers up and running again as quickly as possible. If a local agent needs our support in the field, we can link visually with the field engineer and see what they see. Along with information from diagnostic sensors, we can fault-find and guide the repair. This puts our full knowledge base and skill set on tap anywhere and at anytime it is needed, quickly and at a lower cost than sending out a specialist from base.

What can we expect around the corner?

We are always refining the core processes of the machine. I can't give away secrets but I am sure that no article can go without mentioning additive manufacturing, so for sure this is an important focus for research and development. Machine communication and networking and also VR for remote maintenance, will all have benefits to come. I would say watch this space.

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Which issues matter most when grinding expensive aerospace parts?

Workpieces in the aerospace industry are becoming increasingly complex. The effect can be seen in both their materials and geometry and both factors boost the value of the workpieces. This applies in particular to engine turbine parts, which are often manufactured from specially developed, customer-specific superalloys. The raw material costs for these applications are inherently so high that the parts must be handled with the utmost care. Process reliability plays an enormously important role, especially for such parts. This article explains how to make sure the process runs right.

A few things up front. Smart machines are needed for these highly complex and costly part manufacturing processes. A practical example can better illustrate the problem.

Let's take a turbine blade as an example. Before it is clamped in a grinding machine, it has probably already gone through hours of processing in conventional cutting machines. Let's further imagine that an additively manufactured coating has been applied to the blade, an increasingly common choice for aerospace parts. This adds additional time and value. Yet if proper validation of the parts cannot be performed after grinding, i.e. if the measurements and material properties cannot be confirmed through the detailed quality control procedures required by aerospace manufacturers, then all that added value is lost.

Solution 1: Robot technology

Collaborative robot technology not only ensures perfect repeatability and shortens non-productive time, it can also significantly influence machining performance. Machines that are not running cool down. If they are put into operation before they have reached the correct operating temperature, then the parts they produce will be out of tolerance. Effectively designed and integrated collaborative robots allow manufacturers to reduce this risk while increasing productivity.

Solution 2: Sensors

Automation goes beyond robot loaders, however. Sensors transform grinding machines into intelligent machines that monitor everything from coolant pressure and temperature to spindle load and wheel diameter. Such controls work with retrofitted CADCAM programs that enable offline programming. What does this mean for you? Increased machine productivity, as the programs can be validated before grinding. This in turn reduces risks and increases efficiency.

Solution 3: Dressing the grinding wheel

The true crucial factor in any grinding process is the contact between the wheel and the material. Parts manufacturers for the aerospace industry need grinding wheels with materials as advanced as the materials they grind. New abrasives and advanced cutting grains can effectively machine the hardest superalloys. Dressing the wheel has also become even easier thanks to fully automatic dressing systems. The MÄGERLE MFP 30, for example, has a space-saving, double-sided dressing table that can accommodate numerous diamond rollers for different parts profiles.

MÄGERLE MFP 30

The MFP 30 is an intelligent grinding machine with advanced technology and intelligent design. It offers complete 5-axis grinding and milling operations as well as a directly driven spindle with 12,000 rpm and 26 kW. This makes it possible to machine the most complex workpieces in a single clamping. Its form is compact as, after all, every square metre counts in a production hall. The ergonomic design is suitable for both manual and automatic part loading, making it a flexible solution that can grow with the needs of a production facility.

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How can Cool-Grind help you?

Cool-Grind Technologies can offer you two different levels of support to make your process work with the required levels of quality and economics. Level 1 is supply of the basic nozzle to your specified aperture once you have done the design work. Level 2 consists of a visit to your facility to audit your current process and setup, analyze and conceptually design an improved nozzle and pumping system, provide a report, design and build nozzle hardware, and install.

Once a specific grinding application has been verified, additional kits can be supplied for installation by the customer.

Cool-Grind Technologies has over 2,000 sq ft of manufacturing capabilities. Housing CNC machines, Lathe's, Milling machines, and Manual machines, all controlled and operated by four professional employees.

Coolant application overview

Grinding is a thermally dominated process which, if done incorrectly, can lead to surface damage to the work material and unsatisfactory process economics. The power consumed by the process is partitioned into the wheel, work, chip and coolant. The amount that enters the workpiece must be cooled quickly to prevent high local temperatures and phase transformations from developing. Phase transformations are often responsible for tensile residual stresses, white layer formation, reduced fatigue life, dissolved oxygen and surface and sub-surface cracking. Cooling of the process is achieved by the application of a cooling and lubricating fluid, as well as selecting process parameters that reduce the heat being generated.

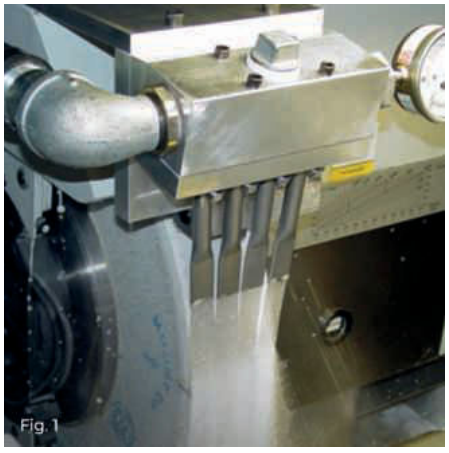
Fig. 1

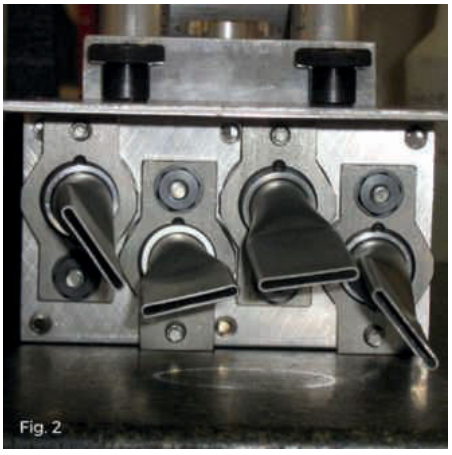
Fig. 2

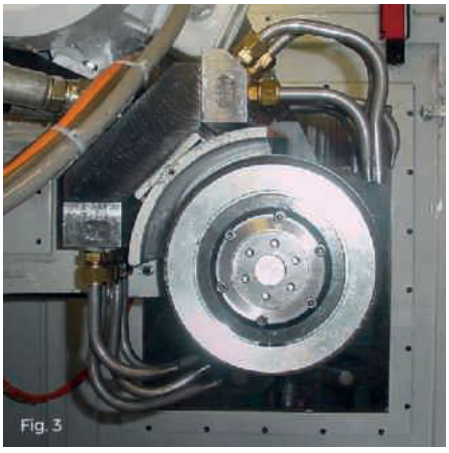
Fig. 3

Fig. 3 & 4 show a Huffman 205 grinder that is setup for grinding fir-tree root forms. The setup (Fig. 3) requires multiple bends to position the jet into the process from the horizontal facing manifold and suffers from high dispersion, rotation of the tubes in the compression fittings, difficult setup, too many nozzles and low manifold pressure. The coherent jet setup in Fig. 4 utilises a new adapter and manifold system that positions the NPT threads more in line with the grinding wheels, allowing one bend per nozzle, releasable compression fitting for adjustment and proven nozzle setups to be changed with the front manifold plate for later use. The setup also employs a hidden lower nozzle to supply coolant for dressing of the dressable CBN wheel.

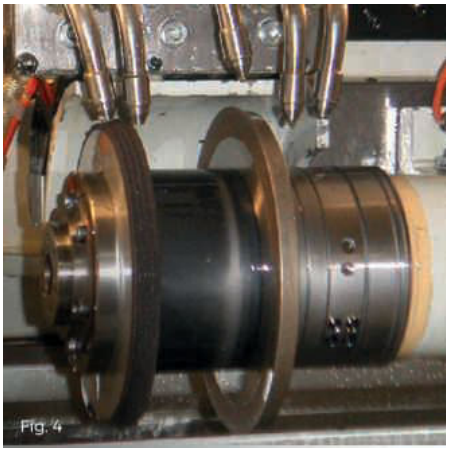
Fig. 4

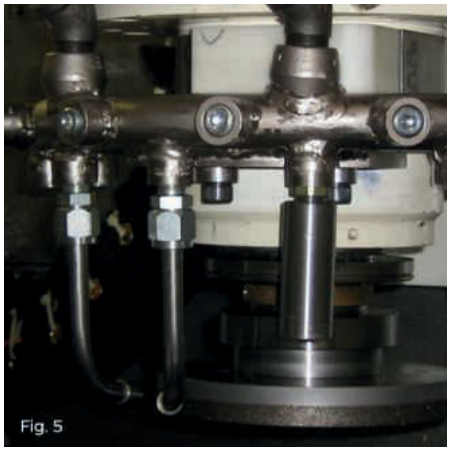
Fig. 5

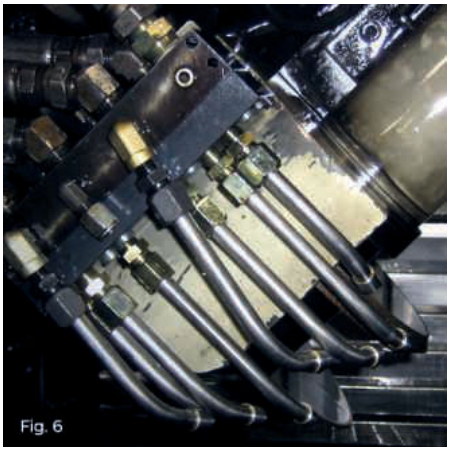
Fig. 6

The benefits the customer found with the new setup was 67 percent reduction in flowrate, double the pressure at the manifold, better precision, elimination of burn, 40 percent reduction in grinding power for same cycle conditions, 25 percent more parts per dress for the vitrified wheel, double the life of the plated CBN wheel, quicker setup, first part perfect after setup and the ability to use all of the machines in the cell simultaneously without central coolant system starvation. Cool-Grind Technologies has extensive experience with coolant application for the grinding of blades (Fig. 2 & 6), vanes, NGVs, segments (Fig. 5), IBRs, shaft (Fig. 1) from inconel, titanium and cobalt alloys.

Over the last 20+ years, Dr John Webster has developed a tried and tested philosophy for optimising the application of coolant into a grinding processes with more than 250 successful field applications installed and close technical relationships with more than 20 universities around the World.

The pressure, flowrate, temperature and direction of flow all influence the cooling ability of the fluid. The pressure controls the velocity of the fluid while the flow rate and temperature controls the rate of heat transfer into the fluid.The direction allows the fluid to remove the air-barrier that travels with the wheel. The flowrate is dependent on the type of grinding wheel and the spindle power consumed during the process.

Nozzle design

Cool-Grind nozzles are based on round and rectangular coherent jet technology and produce a laser-like stream of coolant at high pressure. When applied at the optimum coolant flowrate and pressure, these nozzles can give the following advantages over plastic, bent tube, or fabricated nozzles:

- Reduced dressing compensation required and lower natural wheel wear.

- Thermal damage of the workpiece material is reduced, allowing higher productivity and reduced burr formation.

- More of the applied flowrate will be effective, such that the overall applied flowrate is often reduced.

- Reduced push-off due to lower hydrodynamic forces and reduced grinding power.

- Reduction in entrained air, misting, foaming and vapour problems.

- Reduced disturbance of the jet from the air barrier surrounding the wheel.

- Robust setup using generic, non-profiled and easily reconfigurable nozzles by using releasable compression fittings.

- Reduced tendency for the wheel to load with work material or binder.

- Increased coolant pressure at the nozzle, due to reduced flow rate.

- Easier aiming into the critical areas of thermal energy using laser aiming technology.

- Greater distance from the nozzle to the grinding zone due to the high coherency.

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Innovations for high productivity generating grinding

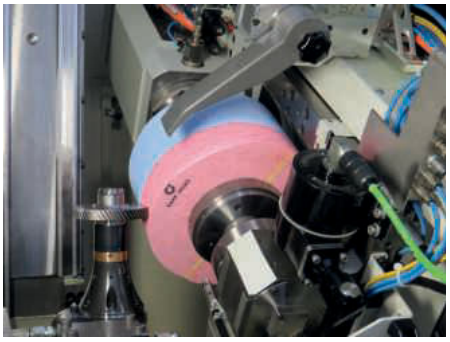
In comparison to the visionary Industry 4.0 technology, the machine tool industry can appear rather down-to-earth. However, even in a long-established technology such as gear grinding, substantial improvements in terms of speed and quality have been made. Here, the Engineering Technology Group (ETG) highlights the generating grinding machines and evolution from Kapp Niles, a leader in gear production.

Gear grinding often targets the high production volumes and series production industry, which is known for continually demanding cost, energy and environmental improvements. Machine and process developers react with solutions that cross technological boundaries. Here, Kapp Niles will highlight four developments that tap into new areas using proven technologies to improve efficiency.

Cutting speeds for generating grinding between 63 and 80 m per second yield huge productivity gains. This is accomplished with common tools such as grinding worms with a typical diameter of 300 mm and with 5,000 to 7,500 rpm. The large tool diameter presents a problem with interference contours because the tool requires room to finish its path on both ends of each grinding stroke. Typical examples are bearing seat with a hob breakout, or a larger secondary gear close to the gear to be processed.

Profile grinding of such workpieces would be very time-intensive. The generating grinding technology is a viable alternative but requires a smaller grinding worm. However, smaller grinding worms require a higher RPM to reach the same cutting speed as that of a larger tool. Traditional gear grinding machines do not measure up to the task of meeting the dynamic requirements of tool and workpiece drives.

Generating grinding of a gear with interfering geometry



Combined tool with conventional and superfinishing part

The new developments from Kapp Niles, such as the KX160 TWIN and KX260 TWIN, now offer new alternatives with dressing and grinding tools and machines specifically synchronised to handle such complex tasks.

Dr Sergiy Grinko, project manager at Kapp Niles, explains: "Thanks to high speed grinding spindles it is now possible to generate grind gears that require a tool diameter as small as 55 mm. In conjunction with the maximum possible width of 180 mm for the grinding worm, it is now possible to reach previously unattainable cycle times for critical gears with interference contours as well as cut production costs."

The tool drives of the Kapp Niles KX 160 TWIN and KX 260 TWIN machines can run at speeds up to 25,000 rpm. This necessitates the workpiece rotating at a faster speed as well. Kapp Niles has a head start here as even its standard machines offer a workpiece drive with 5,000 rpm. Dr Grinko calculated the cycle time for one workpiece for one customer and the conclusion was non-dressable profile grinding with a CBN wheel results in a cycle time of 5.4 minutes. In contrast, dressable generating grinding of the same workpiece resulted in a cycle time of 2.9 minutes with dressing intervals every 25 workpieces.

Multi-rib dressing of a vitrified grinding worm

Gear finishing can considerably improve the characteristics of a workpiece. For example, with a better surface finish on the tooth flanks it is possible to use transmission oils with lower viscosity. Consequently, the transmission improves efficiency without the risk of reduced stability. This requires an 80-90 percent bearing ratio over the contact load area, which during the finish grinding process is obtained by mechanically removing the roughness peaks of the surface.

The required surface finish has traditionally been attained via time-consuming processes, such as Isotropic Superfinishing (ISF). This process entails submerging the workpieces with small non-abrasive pellets into a vibration tub filled with a watery solution and an additive. While this offers very good results, it could very well require several hours to complete.

Compare that to a cycle time of one minute per gear that series manufacturers operate with. Dr Grinko concludes: "Series transmission manufacturers require automated process chains, ideally with a single-piece-flow. Variable processing times are therefore not practical. ISF requires chemical additives that are subject to several regulations and safety measures, as well as recycling and disposal, all of which are a burden for the manufacturer to comply with. It is, therefore, more sensible to equip existing grinding machines with superfinishing capabilities to meet production requirements."

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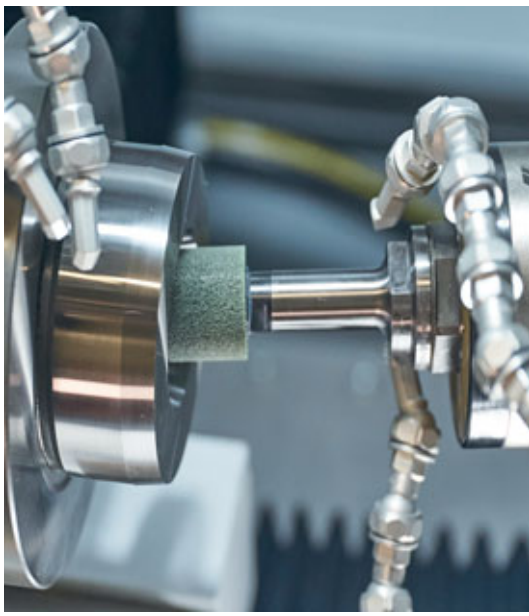

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State-of-the-art technology from Studer

At the Apex Tool Group GmbH (ATG) in Westhausen, Germany the S31 cylindrical grinding machine from Studer is proving to be truly universal. From individual components to medium series, it grinds gear and control shafts for electric and pneumatic Cleco assembly tools cost-effectively and flexibly. Cleco is one of the six global ATG Power & Hand Tools brands.

The showroom of the Apex Tool Group, formerly Cooper Power Tools, in Westhausen boasts an impressive range of different assembly tools from the Cleco brand. These include pneumatic and electric screwdrivers, either corded or with rechargeable batteries, in a straight, angled and pistol design. In addition, there are also complete assembly stations with an integrated control system that displays screwing assembly instructions on a screen, providing the necessary parameters for screwing and the monitoring and documentation of them.

"Due to the large number of variants and the increasing demand for individual features, we need to produce components in small series and even as individual pieces at very short notice," explains production engineer, Johannes Mäule. "We need to grind our motor and gear shafts in particular to an accuracy of just a few µm. This is essential to ensure the extremely quiet running and long service life of our screwdrivers," adds Niko Schindelarz. This was still very complex until just a few months ago. Only one proven grinding machine, purchased back in the early 1980s, was available for cylindrical grinding. In order to grind the large number of 30 to 650 mm, 1.18" to 25.6", long shafts with diameters between 3 and 65 mm, 0.118" and 2.56", it was necessary to laboriously reset

the machine manually, over and over again. This was contrary to a needs-based and flexible production process. "Most of all, it was increasingly uneconomical. Setup times generally took twice or three times as long as the machining times," explains Johannes Mäule. It was also difficult to achieve the required accuracies in diameters and cylindricity, especially with long, thin shafts, as Niko Schindelarz remarks: "These experts are currently retiring or will do so in the coming years. This means their know-how will no longer be available to us. However, the training of young talent is now focused on different aspects than it was just a few years ago. Manual interventions on machines are more undesirable and the emphasis is on programming and optimal parameterisation of processes."

The managers responsible at Apex decided to invest in new technology for grinding. This was because the changing technical environment results in many additional demands on machines and production systems. In addition to high flexibility, these include options for automated process monitoring and for transferring process and production data into a digital network, a smart factory. After comprehensive comparisons of different machine concepts, Niko Schindelarz. and Johannes Mäule decided to invest in a Studer S31 universal cylindrical grinding machine.

The production engineers are now able to grind the entire range of shafts on just one machine. The S31 cylindrical grinding machine is easily accessible for workpiece and grinding wheel setup, despite the complete enclosure. Niko Schindelarz praises the excellent working ergonomics in particular. The production engineers in Westhausen benefit from much shorter setup times in comparison to previous grinding machine. The special Quick-Set function only available on Studer grinding machines makes an essential contribution here. Cornelius Wecht, responsible for Studer sales in South Germany, reports: "Thanks to Quick-Set, the control stores the precise dimensions of all grinding wheels used on the grinding machine. This means you can also quickly set up frequently used and repeatedly dressed grinding wheels and use them again immediately. The control knows the precise dimensions after mounting of the grinding wheel and there is no requirement for re-measuring or even dressing on the machine." The grinders in Westhausen consider the ability to dress profile grinding wheels directly on the cylindrical grinding machine as another advantage. The StuderDress software provides the corresponding cycles. With these cycles, only the required geometries are rotary dressed on the grinding wheel profile. This reduces setup and non-productive times, on the one hand. On the other hand, it also ensures higher accuracies and better surfaces on the ground components.

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Details make perfection and perfection is not a detail

(Leonardo da Vinci)

It is a principle that we have been applying to all our grinding machines for over 100 years. We design customized centerless grinding solutions that stand out for their innovation and great attention to details. We always guarantee grinding processes to the “micron”, and perfection is not a detail.

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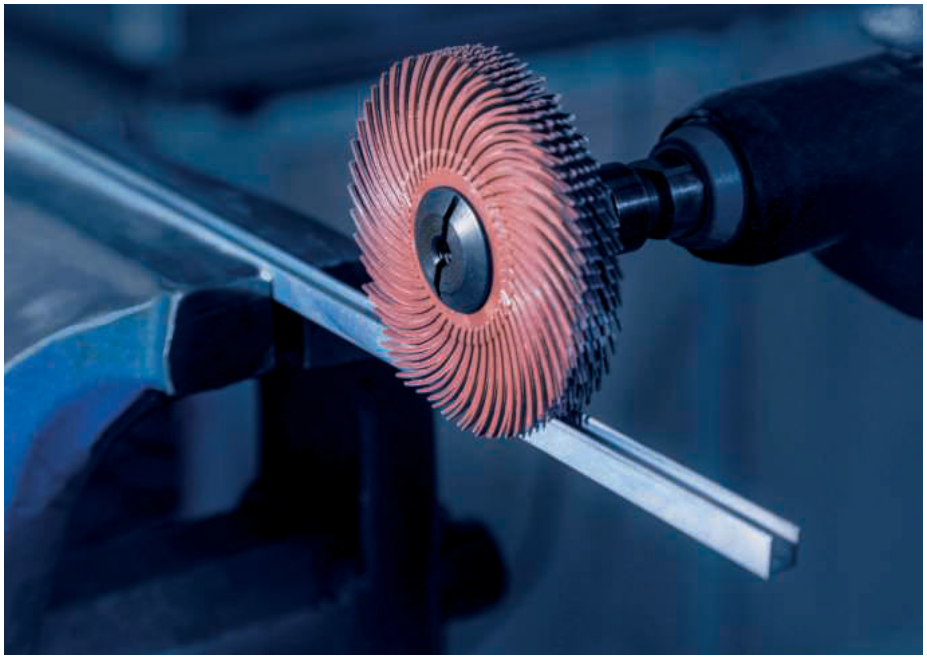
Perfecting your finishing process with bristle brushes

Tyrolit celebrates one year as Dedeco Sunbursts distributor

With only one alternative supplier worldwide for Radial Bristle Brushes, it has been a busy time for Tyrolit. It introduced Bristle Brushes into a previously exclusive UK market in April 2022 and became the exclusive industrial distributor of SUNBURST Radial Bristle Brushes in Europe.

The addition of these products has helped extend Tyrolit's surface conditioning and finishing product portfolio, enabling customers to reach more detailed conditioning capabilities.

Regardless of the material in question, Sunburst Radial Bristle Brushes are an "absolute must" for finishing and polishing requirements. The specifically treated ceramic abrasive grain imbedded through their thin flexible bristles enables them to work faster and last longer than rubber wheels, brushes, buffs and conventional sanders. The sharp and clean bristles allow for hard to access areas and the need to avoid removing detail or causing flat spots. Sunburst radial discs generate minimal dust and heat and eliminate the need for polishing compound.



Bristle Brushes are not only more efficient than wire brushes but they work faster, easily achieving a constant, quality finish with lighter pressure. The flexible bristles conform to contours, cracks and corners while working equally well on flat surfaces.

These thermoplastic abrasive Bristle Discs and Brushes are the ideal alternative to wire and nylon applications, to enable deburring, cleaning, finishing and polishing in a safer, more efficient and flexible way.

Dedeco Sunburst Bristle Brush is ideal for a broad range of metalworking applications where conformability is key, including deburring, blending, scratch-removal, finishing, polishing and cleaning.

Benefits:
Safer: Danger from high-velocity needle-like flying wire is eliminated.
Faster: Instantly removes rust, corrosion and more from all metals.
Will not scratch or gouge: Ideal for paint removal and minimises rework.
Consistent: Uniform finish and performance throughout product life.
Cool running: Reduces potential damage or distortion to the work surface.
Long-lasting: Uniformly blended abrasive bristles guarantee extended wear life.
Easy-to-use: Minimum pressure required.
Flexible: Bristles conform to contours, cracks and corners.

Through rolling out testing and training sessions with customers across the country, Tyrolit has begun to showcase not

only the benefits of these products but also the most effective ways in which to utilise them.

For customers in the aerospace industry, where deburring can be an issue, Bristle Brushes have enabled them to reach areas often difficult to conform. The flexibility of the brushes combined with the way that they deflect, facilitates a deburring process of very tight or internal radii, opening up capabilities that were often hard to achieve. Proving ideal for robotic deburring, with a wide range of conformability options and high consistency. Radial Bristle Brushes quickly removes burrs and sharp edges in end-of-arm tooling operations; delivering consistent performance through the full life of the abrasive.

Where working with stainless steel, Bristle Brushes have enabled customers to remove weld blueing left by the heat during the welding process, as well as eradicating weld burns or discolouration.

Developing in another specialist area, Tyrolit has been working closely with a tooling client to provide testing over a period of time in order to improve edge preparation for end mills and drills.

This is enabled by mounting a wheel of Bristle Brushes onto a spindle in the machine tool. After the tool has finished being ground using Tyrolit's Startec XPP+ range, the tool was then edge prepped in the same clamping procedure resulting in a quality tool with a high standard of edge finish in one procedure. An efficient process, quality finish, overall positive outcome and a happy customer.

With a durability for a lifetime, the blended bristles guarantee extended wear and a consistent, smooth finish. Through a cool running feature, the brushes generate minimal heat reducing potential damage or distortion to the work surface making them the perfect solutions for processes such as removing weld burns, discolouration, corrosion and rust, oxidation, grinding marks, stains, adhesives, paint and other surface contaminants.

Coming in at a very competitive price in comparison to similar products available, customer response has been extremely favourable with regards to the product results and overall satisfactory service.

Wondering how Radial Bristle Brushes can help benefit your surface conditioning process? Get in contact with a member of the Tyrolit team today to arrange a trial of these products:

Tyrolit UK
Tel: 01788 823738
Email: gbmarketing@tyrolit.com
www.tyrolit.co.uk

Scan to learn to learn more or book a FREE Trial Session!

Durable and consistently aggressive

High-performance VICTOGRAIN abrasive is impressively economical

"When we launched VICTOGRAIN in 2018, we looked forward to experiencing the market's reaction, as we thought that demand for such a high-performance abrasive would be limited," recalls Ralf Heimann, product manager for coated abrasives and other products at August Rüggeberg GmbH & Co. KG, the Marienheide-based manufacturer of tools for working on surfaces and cutting materials. Today we know that the cautiously optimistic expectations we had back then have been greatly exceeded."

Ralf Heimann continues: "We are receiving extremely positive feedback from users, and not only those who do coarse machining. We hear from a wide variety of users in many disciplines. They all confirm that our VICTOGRAIN tools are changing the nature of grinding and have modernised it."

Of course most users value the enormous power of the triangular, precision-shaped high-performance abrasive. "VICTOGRAIN outperforms other, established solutions by up to 30 percent with a consistently high degree of aggressiveness," says Ralf Heimann. It performs impressively in use. While other abrasives offer a similarly high level of aggressiveness at the beginning of use, it usually decreases after a certain amount of time in use. Users would usually respond by replacing the tool, but they do not replace VICTOGRAIN tools due to their sustained level of aggressiveness. This feature and a high stock removal rate make VICTOGRAIN tools highly efficient. Ralf Heimann states: "Users appreciate this, as they benefit from an efficient machining process with fast work progress, a long tool life and a reduced influx of heat into the workpiece."

VICTOGRAIN abrasive grain triangles are fixed to the substrate on one side. This means they are integrated very securely and, in conjunction with their streamlined design, they provide an extremely large chip space that makes the machining process even more efficient. "The structural design of the VICTOGRAIN triangles is specially adapted as well," Ralf Heimann continues. "The very small crystals inside the triangles ensure optimum wear characteristics." Very sharp cutting edges are always exposed and only the minimum necessary amount of the abrasive grain or the triangle breaks off.

During use, the uniformly sized and shaped triangular abrasive grains on VICTOGRAIN's cutting edge contact the workpiece at an optimum angle. This means the individual abrasive grain requires very little energy to penetrate the workpiece.

For coarse machining using angle grinders, PFERD offers three different tool types: the classic fibre disc, the patented COMBICLICK quick-clamping and cooling system, and the CC-GRIND-SOLID or CC-GRIND-ROBUST systems as a replacement for the grinding wheel. There's the right solution for every application here.

For smaller, hard to reach areas, VICTOGRAIN tools in the familiar COMBIDISC range are also available. PFERD has now added short and long abrasive belts in the VICTOGRAIN-COOL version to its product range.

Moreover, from the end of 2022, the portfolio was expanded to include grain sizes 60 and 80, meaning VICTOGRAIN will be suitable for both coarse machining and for applications involving a finer surface finish.

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

PFERDEFFICIENCY recommends a range of VICTOGRAIN tools for working for long periods with low levels of fatigue while saving resources and achieving perfect results as quickly as possible.

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www.pferd.com

Easily cut and grind aluminum with new Norton wheels

New wheels from Norton, part of Saint-Gobain Abrasives, are designed for right angle cutting and grinding of aluminum and other non-ferrous soft metals.

Featuring an extra-friable and self-sharpening aluminum oxide grain, these wheels cut and grind fast. They are also made with a non-loading, contaminate-free bond for long-lasting performance that eliminates the need for waxes and lubricants, keeping surfaces clean and defect-free.

Abrasive solutions for aluminium metalworking from Norton

A common issue with grinding aluminum is a macroscale feedback loop in which metal begins to stick to the wheel, which causes heat to build up, which then causes more and more metal to stick to and clog the wheel. The tiny features left on the surface of a used grinding wheel act as clues to unravel the microscale interactions that have taken place between the abrasive grain, bond and workpiece which have led to this failure mode.

By modifying the properties of the grain and the bond, their behaviour is changed such that they microfracture at just the right moment. This controlled fracture creates new, sharp cutting surfaces and reduces the heat-generating plowing and sliding interactions. These small changes in the microscopic interactions lead to large scale improvements in the Norton product's grinding performance.

In addition to the new Norton for aluminum wheels, Norton offers a full range of abrasive solutions for all aluminum metalworking needs, from heavy stock removal to polishing. These resources help metalworkers and fabricators understand the full scope of aluminum products offered by the company as well as the most efficient product steps for their jobs.

Product labelling has also been refreshed to be more clear and consistent across the range of aluminum offerings.

When the Norton Company was purchased by Saint-Gobain in 1990, the brand became part of a corporate entity with more than 350 years of materials history. Saint-Gobain is a leader in light and sustainable construction and it designs, manufactures and distributes materials and services for the construction and industrial markets. Its integrated solutions for the renovation of public and private buildings, light construction and the decarbonisation of construction and industry are developed through a continuous innovation process and provide sustainability and performance.

In 2002, a state-of-the art manufacturing site was built in Staverton, Gloucestershire, which mainly manufactures abrasives under the Norton Winter brand for many markets including aerospace, automotive, medical and the electronics sector. In 2012, production started at the Raleigh Hall site in Eccleshall. A £1million investment ensured the site specialised in manufacturing excellence for high performance grinding for the UK aerospace market.

After these major investments, the final stage was to improve core operations at the UK head office at Doxey Road in Stafford. To cater for the needs of its growing business, there was a multi-million-pound investment in a brand-new building on the Redhill Industrial site, just off J14 of the M6.

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X LINE production cell as a turnkey system

KADIA recently made a name for itself with a very innovative development. A leading manufacturer of mobile hydraulic components for forklifts, construction equipment and similar vehicles was looking for a new solution for honing the spool bores in valve bodies.

The accuracy of the honed bore determines the match clearance to the spool, which in turn controls the flow of hydraulic oil. Consequently, the diameter, straightness, roundness, and surface finish of the bores are key factors in determining the internal leakage of the fluid. The tolerances to be achieved are in the range of 1-2 µm.

KADIA has developed a truly unique solution for the manufacturer: three standard X line honing machines, combined into a single production cell. Each X line handles the machining of one bore diameter with pre-honing, finish honing, measuring and brush deburring. The workpiece is transported from machine to machine automatically via a robot. An infeed conveyor with part recognition and buffer function as well as a main control station featuring a central controller and process monitoring complete the turnkey system.

All quality requirements are clearly outperformed and the capability parameters are achieved without any problems. Above all, the diameter deviations are within a very tight tolerance range. This reduces the number of spool class sizes significantly. The clearance becomes more consistent and the pairing of spool and bore is more reliable. Compared with the previous system, there has been an enormous leap in productivity. Cycle times have been more than halved and output has therefore more than doubled.

In addition, an intelligent fixture design eliminates setup times during variant changes. Thanks to all these advantages, the X line production cell gives its user a clear competitive edge.

The best process for exact bores

Honing is the most precise metal cutting process for the economical high-precision machining of bores. It offers the highest precision in dimension, shape and surface manufacturing tolerances.

KADIA develops high-end honing technology for small to medium-sized bore diameters. With its Smart Dynamic concept, it offers the most advanced procedures for honing of precision components.

Honing procedure at KADIA

The company's honing processes are ultra-precise when it comes to fine machining of small to medium-sized bores and this is a worldwide unique feature. Whether for stock removal and target dimension honing, plateau, or match honing, the honing process relies on KADIA's know-how, cutting-edge software and high-tech equipment.

In order to meet the highest quality demands of customers, it only develops vertical honing processes for directly driven honing spindles with expanding honing tools.

Finest industrial manufacturing

This honing technology is indispensable wherever there is a need to improve the functional sliding, guiding or sealing properties of contact surfaces in bores. Typical applications include injection systems, vehicle transmissions, turbo chargers, hydraulic components, ceramic workpieces, small engine blocks, connecting rods, lubrication systems, medical and glass applications, as well as in the critical components of the military and aerospace industry.

Smart Dynamic honing technology
Less complexity and more efficiency

High-precision surfaces and tightest shape tolerances, this is a challenge that KADIA ais ready to face on a daily basis in its development work. As part of its innovative honing technology, it coordinates the process steps in a precise, reliable and economical manner. The only way for it to achieve a result worthy of the name KADIA is to optimally interlink all parameters involved in the honing procedure.

Less complexity and more efficiency, this is what its Smart Dynamic honing technology stands for. The concept is based on two main components: the intelligent HMC100 honing controller and the highly-dynamic LH honing spindles.

HMC100 Honing Controller
Intelligence meets intuition

The HMC100 model number from KADIA defines the honing controller of the future. It is setting new standards in the operation of honing machines. In order to reduce complexity and to make honing even easier, it is continuously developing intelligent software. The advantages of a simple navigation structure are transparency and operating safety.

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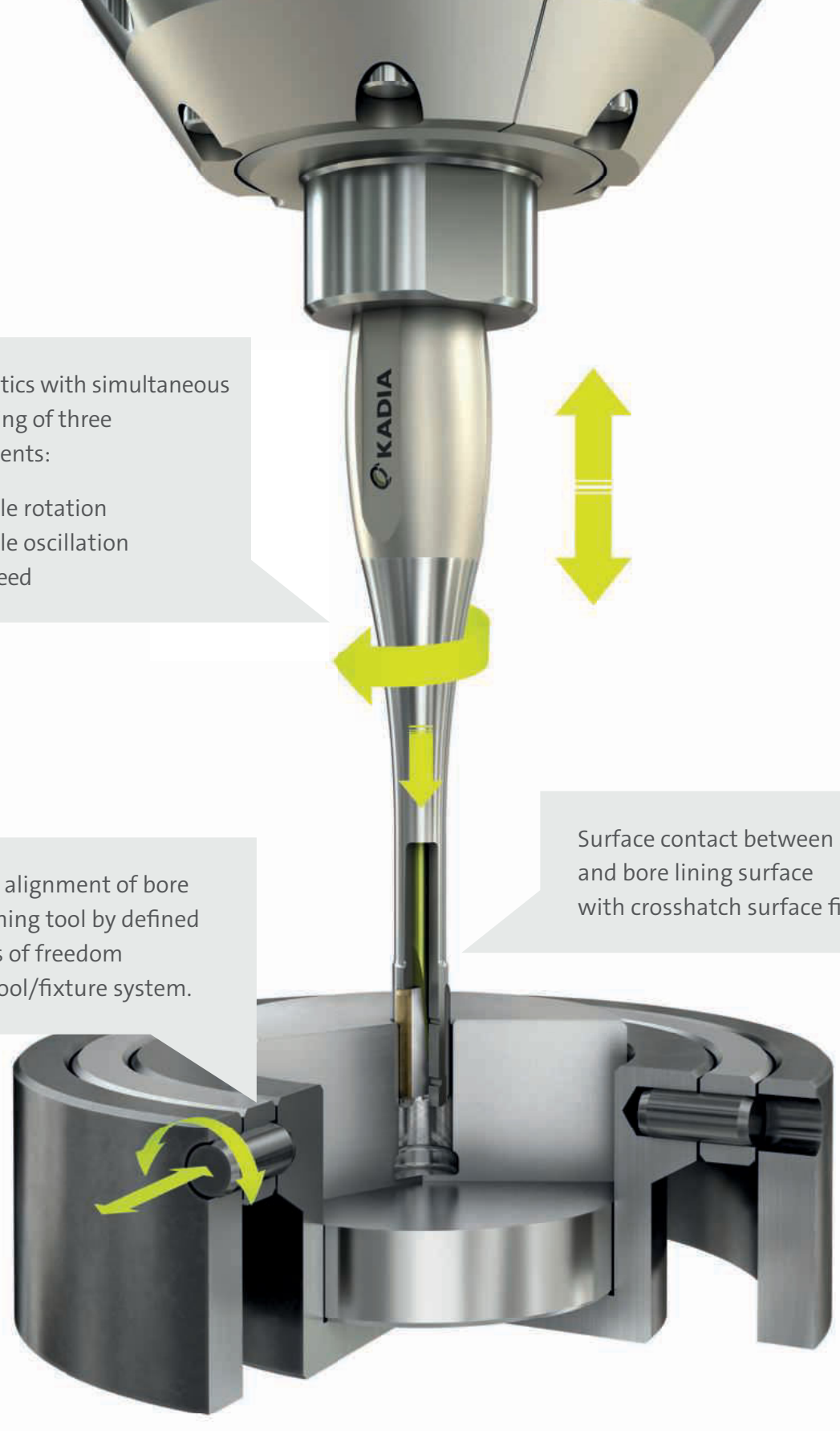


Kinematics with simultaneous overlaying of three movements:

- Spindle rotation
- Spindle oscillation
- Tool feed

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

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

WHAT IS HONING?

Animation film on our KADIA YouTube channel.

www.kadia.com

KADIA

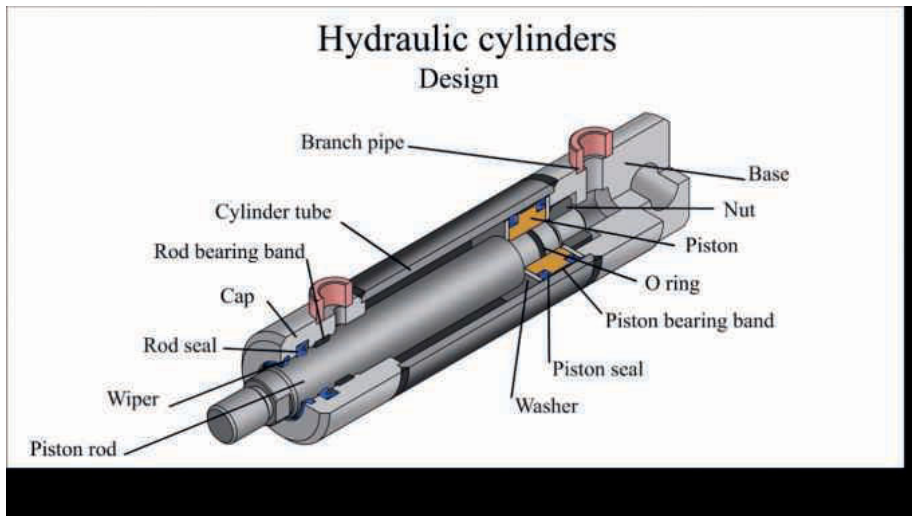
How honing reduces hydraulic system failure

A hydraulic system failure is always inconvenient and costly but, in some industries, it can put users at serious risk of injury or death. Aircrafts, for example, rely on hydraulics to move critical mechanisms, including the landing gear, brakes and wing flaps, so any system failure could result in catastrophic consequences.

The key to hydraulic system performance

CNC honing is a highly precise machining technique that is used to form exceptionally smooth, cylindrical surfaces. An abrasive, or diamond, stone is used to apply pressure to the surface of the component to size it and create particular surface finishes according to exceptionally detailed specifications.

When assembling hydraulics systems, including cylinders and pipelines, CNC honing plays a critical role. The interior of hydraulic components depends on incredibly precise volumetric measurements and must be honed accordingly to ensure it is smooth and dirt-free if optimum performance is to be achieved.



Honing reduces hydraulic system failure in several ways:

1) Superior part lifespan

In hydraulic systems, premature failure or aging of parts must be avoided. Honing helps minimise the risk of metal wear, component disintegration, or splits in pipework or tubing. Metalwork that is finely honed eradicates the surface inconsistencies that cause metal to wear unevenly, thereby avoiding the problems associated with imbalanced pressurised fluids.

2) More durable pistons

Honing the surface of pistons enables them to wear more slowly and deliver more durable performance over a longer period. Because pistons move forward and backwards quickly to move loads or pump liquid they are subjected to excessive strain, so it is essential to minimise wear, friction, and fluid resistance to keep the hydraulics system operational. By creating a surface finish which aids oil retention, honing improves the performance of the pistons and achieves more precise tolerances, while also helping to keep piston enclosures and chamber connectors sealed tightly.

3) Improved performance

By honing the interior surface of a hydraulic cylinder, smoother movements can also be achieved due to less friction, so fluid is moved more consistently through the system with less wear on key components, such as pistons. Efficient transmission of hydraulic fluid is critical if the system is to operate safely and effectively, so honing is key to eliminating the inconsistencies that could prevent the smooth movement of fluid.

'Crosshatch honing,' in which both axes are crossed at the same time, is also an invaluable honing method as it shapes a cylinder surface to be flatter for piston contact and prevents piston wear due to increased oil retention.

Contact Hone-All to find out more

Hone-All offers a high-quality and reliable CNC honing service that guarantees the finished component is safe and durable, so you can be assured that you won't be faced with substandard parts that cause an irretrievable hydraulic system failure.

To request a free, no-obligation quotation or to find out more about Hone-All honing services, call 01525 370666, visit ***www.hone-all.co.uk*** or send a message and the team will be in touch.

Hone-All specialises in manufacturing high precision, tubular components by utilising the latest in deep hole boring, gun drilling, turning and honing technology. With 9100, 9001 and a range of customer approvals including Rolls Royce, BAE, Collins, and Babcock, it is a leading company in the field.

It provides a wide variety of industries with a complete service from sourcing raw materials to producing finished components up to 3 m long. All procedures are carried out within our own facilities ensuring we continuously improve controls over cost, quality, and lead times giving you the most competitive rates and a faster, more efficient service.

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Sunnen acquires long-time partner Hommel Präzision

A partner since 1950, Hommel Präzision has represented Sunnen Products Company and its comprehensive line of bore finishing equipment, tools and accessories in Cologne, Germany. As of January 2023, the company will continue its mission of providing honing and deep hole drilling solutions as a wholly owned subsidiary of Sunnen.

Sunnen Products Company has acquired Hommel Präzision, a former division of the Hommel Gruppe and a leading provider of honing and more recently, deep hole drilling, solutions in Germany for more than 70 years. Since 1950, Hommel Präzision has been the exclusive sales and service partner of Sunnen in Germany. The company's sales and technical service teams will all remain the same, further augmented by the service and support of the Sunnen Global network.

"Hommel Präzision is a well-respected, customer-focused organisation and we are happy to have them as an official part of Sunnen," says Chris Miltenberger, president, and CEO of Sunnen. "Our customer base benefits directly from the in-country sales and technical support capabilities."

Honing has proven itself for decades as an alternative to internal grinding, fine turning, reaming and roller burnishing. Through its decades-long affiliation with Hommel Präzision, Sunnen is an established leader in Germany for honing components for the metalworking industry. As a systems manufacturer, Sunnen offers all the necessary tools, fluids, gauges and accessories from a single source and not just honing. More recently, in the past few years, it has provided a full line of deep hole drilling solutions, including machinery and the cutting tools to support them.

Sunnen's bore finishing solutions include: vertical and horizontal honing machines for single and series production; automated honing machines as processing cells or multi-linked systems; single and multi-spindle, modular honing machines with maximum variability; portable hand-honing devices for complex workpieces and individual parts and a wide range of grinding strips, honing tools, honing oils, bore gauges and tools for third-party products. Sunnen's deep hole drilling line of

products includes deep hole drilling and skiving as well as roller-burnishing machines, cutting tools, cutting inserts and accessories.

Sunnen's world headquarters and main manufacturing plant is in St. Louis, Missouri, with additional sales and manufacturing facilities in 14 countries spanning the globe. The company has over 700 employees worldwide. For additional information on Sunnen bore finishing solutions, tools and abrasives, contact the Sunnen Products Company at sales@sunnen.com

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Polishing and lapping machines from LAM PLAN

LAM PLAN polishing and lapping machines have been developed with the products of its patented LAM PLAN M'M' system. The LAM PLAN range of lapping and polishing machines respond to multiple lapping and polishing applications. These machines will respond to the market's demand in terms of high quality polishing flattening of surfaces inferior to a micron.

Machine for variable production of small parts

The M'M'8400 machine is both lapping and polishing equipment which enables users to integrate a means of flat surface finishing into your workshop at a reasonable price. Its compact size and ergonomic controls facilitate its installation and use. The simple tried and tested design, equipped with medium dimension plates, enables you to cost effectively produce small runs.

Equipped with either a cast iron plate, DIALAM®, LAM PLAN M'M' or FAS®, this range of machines lets you achieve any type of surface finish defined by your specification for example: lapping, stock removal, grinding and polishing.

The process is controlled via a touchscreen, which ensures good ergonomic and intuitive use. This range of machines also gives the possibility of saving programmes, assuring repeatability of lapping/polishing processes implemented in your workshops. The range of machines is compatible with the new LAM PLAN 709, 710, and 719 distribution systems managed directly from the machine's control panel.

It is also perfectly suited to maintenance operations on all seal part. These machines can be equipped with the patented new LAM M'M'plates, while the various proposed accessories allow for adapting the basic machine to all specific applications.

Machine for moderate production of small parts

M'M'8600 machines are a lapping/polishing device that provide the ability to add a finishing tool for flat surfaces into a workshop for a reasonable cost. The compactness and the control ergonomic facilitate smooth setup and usage. Simple and proven and equipped with a medium size plate, it enables elaborate, small production with controlled costs.

Equipped with cast iron, DIALAM®, NEW LAM M'M' or FAS plate, the machine can overcome all types of surface finishing defined by customers specification.

It is adapted to the maintenances of all sealing parts and, like the M'M' 8400, these machines can be equipped with the patented NEW LAM® M'M'plates.

Machines for intensive production of parts M'M'9480 S

The M'M'9480 S is the new 9000 series small diameter flat lapping machine. This Ø 480 mm lapping machine has all the technical solutions of the large capacity models and it is particularly robust and stable. The support plate rests on a trust ball bearing, providing strong stability while the gear motor is protected even in high pressure conditions.

It comes fully equipped in its standard version and it has an electronically controlled three cylinder arm. The machine's smaller size makes it easier for the operator to manipulate all the accessories, such as changing the plate or loading and unloading the rings. All basic functions of this lapping machine built for production are integrated in the 5.7" touchscreen in an intuitive interface based on icons. This enables control of all distributing units in the LAM PLAN range and provides the ability to save 12 programmes. The machine is particularly suitable for maintenance workshops, production of small parts and finishing process on high end watchmaking parts.

It is a compact piece of equipment of the highest quality, which responds to the highest finishing requirements as well as intensive production. All M'M'9000 series machines are fitted with an integrated modem as standard in order to carry out remote maintenance operations. They are

compatible with dedicated LAM PLAN distribution systems and can be optionally fitted with an abrasive and lubricant level sensor. Production data collection in the form of CSV files is possible via the USB interface.

The M'M'9480 S is also compatible with the AUTOPLAN system for plate flatness reconditioning. It can efficiently manage the flatness and the grooving of the plate. It is installable and removable in a few minutes thanks to fixation points integrated to the machine.

M'M' 9700

In order to respond to the most demanding specifications in terms of surface flatness and process repeatability, LAM PLAN has developed a new series of M'M'9000 machines, of which the M'M'9700 is the mid-range machine.

Fitted with a Ø 700 mm lapping plate, this machine has a new, highly intuitive touchscreen, enabling the user to quickly grasp the operation of the machine. From a mechanical viewpoint, a large dimension thrust ball bearing is inserted under the machine's basic plate. This mechanism guarantees plate stability, even under a heavy load.

This new concept also enables reduced demand on the gear motor group, assuring greater longevity of the equipment. Machine safety has also been improved with anti-pinch devices connected to the retaining arm castors of the conditioning rings. Finally, the machine's new electrical design allows easy development of machine functions and will respond to the evolution of your needs, with, for example, later integration of the AUTOPLAN system, or different types of LAM PLAN distribution systems.

Therefore, this machine is intended for use in all high production workshops.

M'M'9100

Lapping techniques with heavy loads and intensive use require a suitably durable material. This is offered by the LAM PLAN mid and large diameter range of machines. The rigidity of their structures and the gear motor group torque are especially suited to the high abrasion of LAM PLAN lapping plates.

The number of peripheral devices available make the machines particularly versatile and effective. Specific equipment can be offered according to requirements.

The S, SR and EC type lapping machines are equipped with pneumatic pressure systems of different powers. Associated with the methods developed by LAM PLAN, these machines guarantee a consistency in the obtaining of your surface condition.

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Metal polishing and finishing specialist looks to the future with Timesavers

The recent arrival of an 81 series wide belt precision grinding machine at metal polishing and finishing specialist Van Geenen has had an immediate impact. Through improved capacity, productivity and overall capability, the Rijssen, Netherlands-based company is opening up new business opportunities.

It is a business that began back in 1977 when Arnold van Geenen and his sons Nico and Gerrit joined forces to provide a hand polishing service, with the founders having to sell their cars to buy the vital tools required to get started. Van Geenen B.V. Metaalfinishing is now unrecognisable. Under the guidance of Nico's son Bart van Geenen, the company operates from 5,000 m^2 premises, housing the latest in polishing and grinding technology. The most recent arrival being its investment in the Timesavers 81 series grinding machine, which places the business firmly in the 21st century.

From those early days the company began to specialise, particularly in stainless steel and other exotic materials. The emphasis is firmly on producing sheet and tube material to the highest quality in terms of surface finish, right up to Mirror 8 grade, with greater efficiency and consistent technical quality of products. "Hand polishing remains a critical part of our business, but automation has been central to our development since our first investment in a Grindingmaster/ Timesavers back in 1984. We are always looking to improve efficiency and our investment in automation has boosted productivity," says managing director, Bart van Geenen. "As such, our partnership with Timesavers continues with this major investment in the 81 series machine, an investment that is driven both by the heart, with my father's desire for manufacturing technology and head with me focused on the commercial potential."

Quality and relationships

Van Geenen prides itself on the quality of its work and the strength of its relationships with customers. This combination has opened up new business opportunities for its polished sheet and tube products across markets including architectural, tanks and food processing. "We have always had the ability to do things that our competitors can't do and, to continue that, we recognised it was time to move into precision grinding." The scale of the 81 series will also future proof production at Van Geenen. At an overall length of 25 metres, the machine has a capacity to grind sheet or plate from 0.15 mm up to 100 mm, with stock removal rates of up to 0.2 mm/pass achievable with a table size of 2.1 m by 8.5 m to an accuracy of 0.02 mm and 0.3Ra and less.

The 81 series is already delivering significant time savings for van Geenen compared with existing processes. For example, producing a 4 m long 2 m wide by 20 mm thick sheet for a customer in the food processing industry which required a 0.8 Ra surface finish used to take between 4-5 hours to complete, this is now achieved in one hour on the 81 series. "With the level of investment in the Timesavers 81 series our hourly rate has increased, but this is justified as our throughput is much greater and lead times much shorter. That level of efficiency is vital when putting forward proposals to customers. We are also aware that none of our competitors in Europe have this capability," says Bart van Geenen.

Precision grinding vs milling

Bart van Geenen has been encouraged by the enthusiasm from customers for the use of this wide belt grinding technology with the Timesavers 81 series. The efficiency of the system allows it to replace milling as an operation, reducing the number of processes and improving efficiency. With milling at least two setups may be required for roughing and finishing, whereas with the 81 series just one operation takes the part to the finished state. This is particularly important on stainless steel parts where the clamping of the material for milling can induce stress in the part. Using the vacuum table of the 81 series eliminates this completely, while achieving improved results in terms of flatness and surface finish.

"The 81 series is a true alternative to conventional processes and it is my role to convince customers that the process is viable and meets their requirements. Thankfully, customers are open to innovation and are willing to listen and try new processes," says Bart van Geenen.

"I recently quoted a customer for some polished titanium plate, within five minutes of delivering the quote I received the order."

Partnership and collaboration with Timesavers

The development of the Timesavers 81 series came about following conversations with suppliers of sheet material,

particularly titanium and other exotics such as zirconium and molybdenum, who were facing challenges processing, accurately and efficiently these materials. The result is a wide belt reciprocating table abrasive machine that eliminates problems found when milling or grinding using stones or abrasive wheel technology. In collaboration with abrasive belt manufacturers Hermes and 3M, the 81 series can process materials much more efficiently. In some cases, such as grinding molybdenum, a conventional cycle time of 10 hours was cut to 25 minutes.

A typical Timesavers 81 series cycle consists of a fast rough grinding cycle followed by up to three spark-out passes, with the sheet, which is positioned on the powerful vacuum table, then rotated and the cycle repeated on the opposite face. The result is a thickness accuracy across the entire sheet of 0.25 µm with the major benefit of the process creating a 'short-scratch' finish.

Timesavers and Van Geenen are also collaborating with this new investment. Timesavers introduces potential customers, who may not be in a position justify the purchase of an 81 Series just yet, to Van Geenen. The machine being made available to Timesavers is a real-world example for customers to see the potential of this grinding technology. Bart van Geenen concludes: "This investment is backed by our experience of the service provided by Timesavers over many years to our company and both our companies will continue to grow alongside each other as a result of that relationship."

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Deburring reaches new heights

ARKU Maschinenbau GmbH has made deburring easier than ever. This is ensured, not only by the new EdgeBreaker® 6000 machine but also by a unique and intelligent software function called the ARKU Wizard. ARKU will work with TRUMPF to demonstrate how machines from both manufacturers can be seamlessly integrated to achieve complete automation during sheet metal processing.

This machine is the latest in ARKU's portfolio and is primarily designed to meet the requirements of laser job shops. Therefore, flexibility is at the top of the list for the EdgeBreaker 6000. Its vacuum conveyor belt and rotary brushes enable extremely uniform edge rounding. Other processing modules include the grinding belt for deburring and the finishing unit for surface finishing.

The EdgeBreaker 6000 deburring machine offers maximum flexibility

The EdgeBreaker 6000 is also popular with operators. "During laser cutting, burr formation is more likely with increasing material thickness. Eventually, you will have to rework these edges. This is more ergonomic and less expensive with the EdgeBreaker® 6000 than by hand," says Daniel Gabriel, head of laser technology at Autz + Herrmann in Heidelberg, Germany. The quality is also spot on, as he reports: "We have a new product for medical technology made of aluminum. This product is difficult to laser cut and very intricate. However, it can be processed well with the EdgeBreaker 6000, after which the actual bad side is even more beautiful than the good side."

Deburring becomes even easier thanks to the ARKU Wizard software. With this innovation, which is unique on the market, the Baden-Baden-based machine builder also demonstrates its technological leadership.

Automatically adjust processing settings during deburring

With the Wizard, operators only need to enter a few parameters: Size of the burrs, material type and thickness as well as the desired edge rounding after deburring. Further information comes from the automatic wear measurement of the rotary brushes. The ARKU Wizard can then calculate both the appropriate tools and the correct machine settings.

With the software, the deburring systems also work as economically as possible. The processing speed is optimised and the material removal during edge rounding is reduced to the necessary level. This reduces both the processing time and the wear of the tools.

Wizard helps relieve shortage of skilled workers

Wizard users save themselves numerous, lengthy attempts until the desired edge rounding is found. In addition, less experience is required for operating the deburring machine. Thanks to the optimal processing settings being stored in the machine, even less well-trained employees can quickly be utilised to operate this equipment. In times of a shortage of skilled workers, this means an important relief for

The EdgeBreaker 6000 from ARKU is the latest deburring machine in the portfolio and includes the new ARKU Wizard software

Enter material type, thickness, burr thickness and desired edge rounding – that's all the operator has to do with the ARKU Wizard

sheet metal processing companies. In this way, the Wizard also paves the way for the automation of deburring in sheet metal processing.

Deburring tools ensure a comprehensive range

ARKU does not only draw its know-how for the Wizard from deburring machines; the machine manufacturer also has its own grinding/edge rounding and surface finishing tool range.

Leveling and deburring from a single source

With 90 years of experience in sheet metal processing, ARKU is one of the leading experts for sheet metal processing and metal deburring machines.

As a leader in leveling technology, it offers the world's broadest spectrum of high-performance precision levelers. These range from levelers for thin or complex parts to straighteners for thick plates and even AHSS materials. All of these systems ensure perfectly flat, stress-relieved sheets and parts.

It also integrates its coil straighteners into finished press feeding lines, cut-to-length lines and stamping systems for coil materials along with coil preparation systems for roll forming lines.

As an innovation leader, it has expanded its range of expertise to include deburring, edge-rounding and oxide layer removal with its line of deburring machines. Leveling and deburring are perfect complements for sheet metal processing and ensure outstanding results.

ARKU offers the right tools for deburring machines

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ActOn Finishing develops innovative process

Deburring sintered automotive components in 15 minutes
A leading global manufacturer and supplier of products for automotive, commercial, aerospace, marine, rail and off-road vehicles, has acquired the ActOn DT100 Surface Finishing System to improve on their existing surface finishing process.

The British-built DT100 disc machine and vibratory dryer has been built as a replacement for an old system, which was used to deburr sintered rings. The finishing process developed by ActOn Finishing enabled the client to achieve a repeatable and high-quality result in just 15 minutes.

The project background
The customer needed to upgrade its existing system as it was inefficient, presented leakages and parts were getting stuck in the system. This resulted in components being damaged and final finishing results not being as per the industry standards.

One of the reasons why the automotive manufacturer has decided to collaborate with ActOn Finishing was the long standing relationship that was built between the two companies. ActOn has previously designed, developed and installed two other finishing systems, a VB10P vibratory finishing system and a CHE40 high energy system, both significantly improving the production output.

ActOn carried out the finishing process trials from the beginning in the disc finishing machine. This technology allows for finishing components in a shorter time, in comparison with vibratory finishing machines. To deburr and radius the sintered rings, a mix of medium abrasive ceramic media, liquid finishing compound and water were used.

While the media size and shape were chosen carefully, so that a uniform finish was achieved, the liquid compound was developed especially for the automotive industry for the cleaning and degreasing of ferrous metals. To avoid any corrosion appearing after the wet process, a one-lap process was carried out in the vibratory dryer. This drying media acts as an absorbent andremoves any moisture from the parts, when heated in the dryer. The final finish was achieved in just 15 minutes.

Fast and cost-effective finishing process
As a result of the successful trial, the customer decided to purchase the DT100 surface finishing system. This technology is HMI/ PLC controlled and it includes finishing recipes which makes the machines easy for the operator to use. Moreover, being an automated process, there's less need for manual intervention and the final finish is always as per the customer's standards.

The design of the DT100 machine allows continuous output. While the finished batch of components are separated from media and loaded into the dryer, a new batch is being processed in the disc finishing machine. The process is fully automated and controlled from the point of parts being processed to the discharge of the parts. To make this process even more efficient and solve the issue of parts being stuck during the unloading stage, a wind cycle has been installed in the new disc finishing machine.

Furthermore, to treat the discharge of the processing liquid, which includes a mix of water, compound, abrasives from media and metal fines, ActOn recommended the installation of a Batch Centrifuge. A suitable treatment system can reduce the processing costs, is a responsible measure towards the environment and facilitates recycling.

The unit bought by the automotive manufacturer was designed to work in the most effective manner to treat the discharge water from the mass finishing process. The solids are captured in the basket of the centrifuge and then disposed of based on the local regulations.

The result
- The surface finishing process enabled the customer to achieve a repeatable and high-quality result in just 15 minutes.
- The sintered rings are deburred and radiused to industry standards.
- The new wind cycle technology solves the problem of parts getting stuck during the unload stage.
- There were no leakages during the finishing process.
- The system is also environmental friendly, as the effluent was treated and recycled.

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FINAIDS announces partnership with VG Machines

Finishing Aids and Tools Ltd has been appointed as the UK agent for VG Machines, Belgium. VG has had great success with its range of edge-rounding and deburring machinery in recent years and is looking to make a big impact on the UK market in 2023 with FINAIDS as its chosen partner.

VG has been producing machines for deburring and finishing metal since 1995 and prides itself on meeting and exceeding the ever-increasing expectations for metal finishing while offering excellent value for money on its machinery.

FINAIDS sees the VG range of machines of particular interest for UK customers. The C150, for instance, is a compact and fully configurable grinding unit for small parts with options for abrasive belt, top-down brushes and 'barrel' brushes in up to four different positions.

Available with a vacuum conveyor belt and/or magnetic tracks for small parts and suitable for a diverse range of materials, the C150 uses top-down brush heads to deburr the external and internal contours of the workpiece. The speed of the conveyor and brushes are easily adjusted to match any required surface finish and the inclusion of an abrasive belt in the last position will leave the part with a linear, grained finish. It is a great all-rounder that has a small footprint and it's extremely user-friendly.

VG also manufacture the Disc Arm Grinder 2.0, a semi-automatic machine for slag removal, deburring, grinding and polishing metal parts. The arm takes the burden off the operator and allows for consistent pressure across the 1,300 x 800 mm working area. Everything can be controlled using the disc motor on the arm and the head can be rotated to swiftly switch between different operations.

Rhod Howcroft, managing director of FINAIDS says: "Our technical sales team have been receiving a lot of interest in the range since we began working with VG Machines in May 2022. We immediately identified the C150 as the best fit for our current customer base and we will be delivering our first C150 to a UK customer in February. It really is a versatile unit that can be configured to suit any process for small parts and offers an excellent return on investment where companies are looking to semi-automate or take the burden off intensely manual processes."

For further information on the VG Machinery range, visit ***www.vgmachines.be***

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Innovative leveling technology

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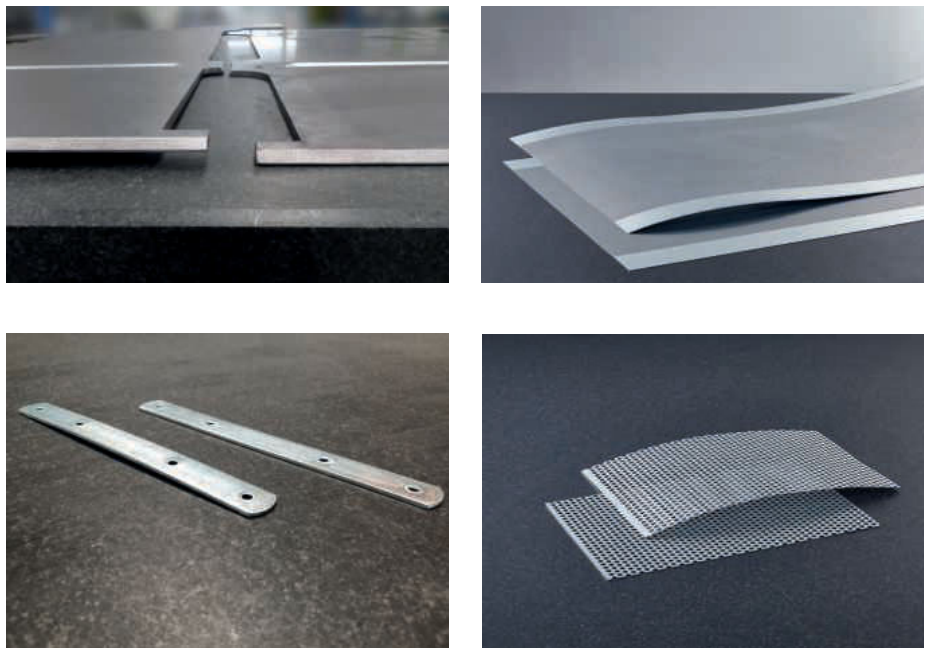
The Peak Performer part leveling machine from KOHLER reliably and precisely levels and relieves stress from sheets and part blanks. Your downstream production processes benefit from higher quality leveled parts and sheets, as there's no need for time-consuming, manual rework. The high productivity and long-term reliability of KOHLER machines ensure sustainable profitability in ongoing operations.

Parts levelers from KOHLER are available in different types of series:

• Part leveling machines for laser cut, punched or stamped parts
Typical applications: laser job shop, equipment manufacturing, electronics industry, aviation, automotive, precious metal processors and custom applications

• Part leveling machines for laser, plasma and stamped parts
Typically used in laser job shops, steel building, mechanical and plant engineering and general sheet metal production

• Part leveling machines for medium-sized and heavy blanks and sheets
Typically used in laser job shops, flame cutting shops, heavy-duty mechanical and plant engineering, the railroad industry and shipbuilding



Perfect leveling results with the KOHLER Peak Performer

• Part leveling machines with roller bending for targeted elimination of edge or centre waves
Typically used for perforated sheets and panels. KOHLER's part leveling machines have no hydraulic systems which means that, coupled with their excellent energy efficiency, they play an active role in saving resources in industrial sheet metal processing. KOHLER is breaking new

KOHLER Peak Performer part leveling machine
Precise leveling guarantees low-tension and level sheets and part blanks

ground and confirming its position as a leader with its use of direct drives and electro-mechanical leveling gap control in hydraulic-free part leveling machines.The KOHLER Peak Performer part leveling machines level sheets that are 0.2 to 66 mm thick. Quality-focused industrial companies from a wide range of industries, such as those listed below, rely on part leveling machines from KOHLER.

- Automotive engineering
- Construction and agricultural machinery
- Mechanical engineering
- Steel service centres
- Housing construction

Company Profile

KOHLER develops and produces part leveling machines and strip feeding lines for presses and automatic stamping machines, as well as cut-to-length lines, for steel service centres, mechanical engineering firms and for the automotive industry. The KOHLER product range offers optimum solutions from individual machines to linked and automated production lines.

Its headquarters and production facility

are located in Lahr in southern Germany, with further offices for sales and service in Shanghai (China) and Salt Lake City (USA). KOHLER employs 120 people and has successfully completed almost 6,700 reference projects around the world over almost 60 years. It levels sheets under contract and performs leveling trials in its fully equipped, state-of-the-art leveling centre.

It gives customers individual support and advice and will always find a customised solution to meet their needs.

As a technology leader, it sets standards in the industry through innovative solutions such as trendsetting drive concepts or by dispensing with hydraulic systems on its part leveling machines. Levelers from KOHLER produce optimum leveling results that increase sheet-metal processing quality and productivity Its highly productive and consistently reliable machines provide consistent cost-effectiveness over the long term.

Coupled with their excellent energy efficiency, KOHLER's leveling machines play an active role in saving resources in industrial sheet metal processing.

As a leading name in the market, it is focused on the development and project management to meet the needs of its customers, always with the aim of working together in a reliable, long-term partnership.

For more information, visit
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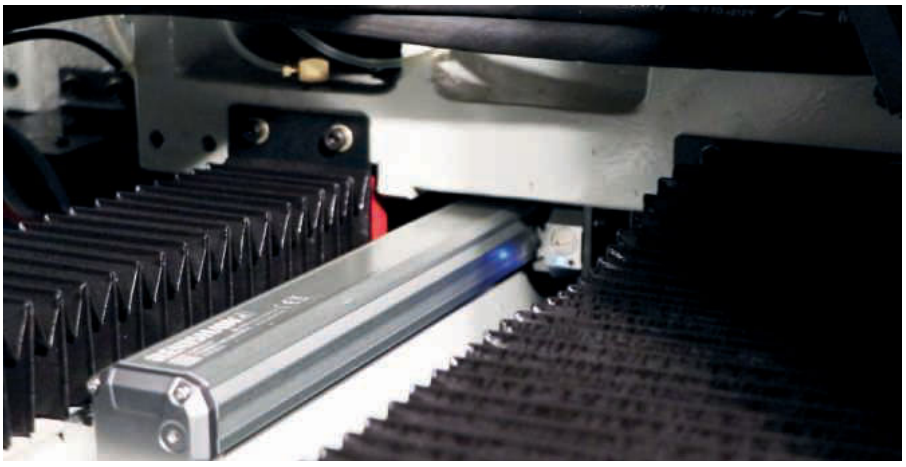
FORTiS enclosed encoder enhances grinding precision and performance

After testing and evaluation, TGT selected global engineering technologies company Renishaw's FORTiS™ enclosed encoders for its latest series of tool grinding machines. The ease of installation and other leading-edge features of the FORTiS encoder system enable TGT to optimise its machines' performance.



The machining accuracy of a CNC machine tool is affected by many factors, including machine mechanics, control electronics, machine rigidity, thermal stability and the geometric accuracy of the cutting tool.

Small cutting tools require precision grinding to ensure accurate tool geometries. Precision tool grinding is a machining-based production process that uses abrasives to obtain the required geometry and dimensional tolerances for a cutting tool.

Demand in India for precision machining has hugely increased, such that India's machine tool market is now one of the fastest growing in the world. To seize this opportunity and meet the increasing demand, India-based company, Tool Grinding Technologies Inc. (TGT), has developed a range of precision tool grinding machines equipped with linear motors and Renishaw's FORTiS enclosed absolute position encoders, which help to improve machining accuracy and process stability.

Linear motor technology has matured in recent years and has become important in industrial applications. Modern linear motor designs have achieved significant improvements in heat dissipation, thrust and cost. Automation systems and CNC machines, such as precision grinding machines, increasingly use linear motors in place of traditional ball screws. The precision and accuracy of a linear motor servo is heavily influenced by the quality of the linear position feedback from the encoder. Sub-divisional error, the measurement error within one signal period, is a critical specification for smooth velocity control, which, as tool grinding machine manufacturers know, is important for surface finish quality. Low positional jitter allows optimisation of servo loop gain.

CNC profile grinding employs small, incremental linear movements of the tool grinder's axes to produce the interpolated trajectory; therefore, accurate motion control is vital.

The working environment of a tool grinding machine is harsh and includes machining vibrations and contaminants such as cooling fluid and grinding swarf. Vibrations in the machine can coincide with the natural resonant frequencies of position encoders. Therefore, positioning accuracy is improved if the encoder has the ability to damp resonant vibrations to prevent high-amplitude disturbances from entering the position control loop. In these cases, encoders with tuned-mass damping can significantly enhance CNC machine performance.

The linear motors in TGT's latest models of tool grinder require linear position feedback from a suitable enclosed linear encoder designed for harsh environments. As a long-time customer of Renishaw, TGT collaborated with Renishaw engineers in testing and evaluating the FORTiS encoder.

The FORTiS enclosed encoder design is built upon industry proven RESOLUTE™ absolute encoder technology and provides high resistance to the ingress of liquids and solid debris contaminants. FORTiS encoders also feature integrated, specially-designed tuned mass dampers that not only deliver class-leading 30 g vibration resistance, but also ensure that vibrations at the encoder's natural frequency are strongly damped; thereby, considerably reducing the risk of disturbances to the servo control loop.

As one of the leading tool grinder manufacturers in India, TGT has pioneered the introduction of precision tool grinders with linear motors in recent years.

FORTiS optical enclosed encoders have an innovative non-contact mechanical design that eliminates components such as bearings, springs and guidance carriages. This design minimises wear and greatly reduces the risk of breakage during maintenance and servicing, thereby extending the life of the system.

FORTiS encoder readheads are equipped with Renishaw's patented LED and carefully designed installation accessories to ensure intuitive and right-first-time installation that is substantially faster than more conventional systems, even in restricted locations.

For enhanced functionality, installers can connect the Advanced Diagnostic Tool, ADTa-100, via a standard USB connector, to a PC running Renishaw's ADT View software.

TGT technicians use the ADTa-100 hardware to connect the FORTiS encoder to the ADT View software interface during the machine assembly process. This software provides a snapshot of the real-time signal strength at different positions along a machine axis such that the technician knows where to make fine adjustments and can even enable calibration of the FORTiS encoder with the machine powered down.

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The VOLLMER argon has arrived

Andreas Weidenauer, the chief representative office and business development manager at VOLLMER with one of the new VGrind models at GrindingHub 2022

The VGrind tool and cutter grinding machine has been around for almost 10 years, with VOLLMER making periodic iterations and upgrades to account for industry evolution and technological advancements. Now, the Biberach manufacturer has introduced three new VGrind variants all at once. Here, we explain the positioning of the new machines and the differences between them with particular emphasis on the new argon machine.

When it created a vertically positioned twin-spindle tool and cutter grinding machine concept back in 2014, VOLLMER broke all the realms of convention with its VGrind. Now, acting decisively on its industry research and customer feedback, VOLLMER is driving the VGrind forward with the launch of three new additions, the new VGrind neon and argon 'editions' and the VGrind 260 machine. So, what is the concept behind the new machines and what is the difference from the existing models?

With existing VGrind models demonstrating extremely high levels of productivity, flexibility, automation and above all quality, the balance of specification versus 'price-point' was potentially beyond the requirement of some manufacturers. To address this balance for particular customers, VOLLMER has introduced the new machines.

Fundamentally, the VGrind neon, argon and 260 all have precision ballscrew drives as opposed to linear motors on the existing 340S and 360S models. This reduces the 'price-point' of the new machines and then we get to the difference between the three new model variants.

Andreas Weidenauer, the chief representative office & business development manager at VOLLMER, tells us more: "The VGrind 260, neon and argon incorporate ballscrew drives whereas the existing VGrind 340S and 360S variants are linear drive machines, this lowers the cost barrier for small businesses and makes the technology more accessible.

The VGrind 260 machine is a package, it was created as the foundation base for the neon and argon variants. The VGrind 260 is the configurable base model that can be tailored to meet the exact needs of the end-user whereas the neon and argon machines have restrictions on the available options. The VGrind 260 enables customers to review the various packages and create a machine bespoke to their needs and budget.

"With the neon and the argon, we listened to the market and asked what their minimum requirements are from a machine. This is where these two new machines come from. The neon is a machine without the loading system and wheel changer.

This means the neon has a limited number of options and is fundamentally a machine package without automation that creates a price that delivers a cost-efficient solution for manufacturers and re-sharpening shops.

The argon does have automation features and sits comfortably between the manually loaded neon machine and the 260 machine that can incorporate all conceivable extras."

Andreas Weidenauer says: "If there is a company that likes to overcome short staff breaks like lunch, maybe they wish to continue producing tools unmanned for a short period at the end of the shift or 'free-up' staff to handle more machines, the argon is the machine. With this, we have provided this automation capability with an internal loading system. It introduces an internal tool loader for all of the tools. It facilitates drills, end mills and all types of tools. If the neon is a package machine without automation, the argon is a package with automation."

What's new?

Whatever the VGrind neon can do, the argon can too and then some. So, the same as the VGrind 260 then? Not quite. The VGrind 260 provides the complete option of 8 grinding wheel packages with interchangeable coolant elements as well as the external automation systems that include the HP160 pallet magazine for up to 900 blanks or the HC4 chain magazine for 158 shank tools or up to 52 HSK-A63 tool holders. The argon doesn't stretch this far. The argon provides a 4 station grinding-wheel changer and an internal pallet loader only. This machine is a step between the manually loaded and operated neon and the fully automated VGrind 260, offering increased comfort and flexibility for different batch sizes. To create this package that sits between the manual neon and the fully automated 260, VOLLMER has developed a completely new grinding wheel changer system and an entirely new internal pallet loading innovation.

New loading system

Andreas Weidenauer says: "We already had an internal loading system on the VGrind but, with the feedback from the customer, we increased the capacity by putting two pallets into the machine instead of just one to extend the range of the machine. So, the argon has a wider range and capacity and it can also be more flexible than ever before. These are three key points that we addressed and enhanced with this new loading system. Previously, we had the facility for 20 to 40 tools on a single pallet, but this depended on the tool diameter.

Now, we have a different gripper system and this allows us to put up to 300 tools/blanks on a single pallet. However, this maximum capacity of 300 tools does depend upon the shank diameter. For example, with 3 to 6 mm blanks, we can accommodate 300 tools but with 20 mm diameter tools, we can fit 32 tools. The previous internal loading system with a single pallet that was on the VGrind 360 machine could facilitate 40 tools from 3 to 5 mm diameter and 20 tools up to 20 mm diameter. The new system on the argon has a much higher capacity for tools or blanks.

"This is a major step forward in our automation technology as we have made this possible by retaining the same machine footprint. The difference between the previous system to the new one is that we have created an additional axis and more space inside the machine. Previously, we put the single pallet on the A-axis. Now we have two pallets on the A-axis and when we don't need it, or if we don't use the loader, we just slide the two pallets back out of the way.

Andreas Weidenauer concludes: "Our engineers have introduced new technologies such as an impressive new gripper system. The modification of the gripper and also the installation system has made it possible to have two pallets inside the machine."

Andreas Weidenauer at the GrindingHub exhibition where the new Vgrind was launched

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Australian manufacturer finds its niche in equine dental products using ANCA's FX machines

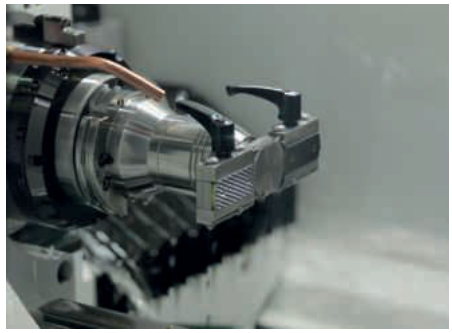
Based in Bendigo, Victoria, The Edge Equine is an Australian manufacturer of equine dental products, primarily rasps for manual horse dentistry. The company also provides commercial industrial sharpening services for the central Victorian region, specialising in high precision sharpening such as broach drills, annular cutters, saw blades and router bits for local commercial cabinet makers, sawmills and food processors. The company's focus on manufacturing equine dental products stemmed from a local horse dentist's request to sharpen his equine dental blades. Today, it is a point of differentiation as The Edge Equine have concentrated on a more traditional product while other manufacturers have moved to the electronics industry.

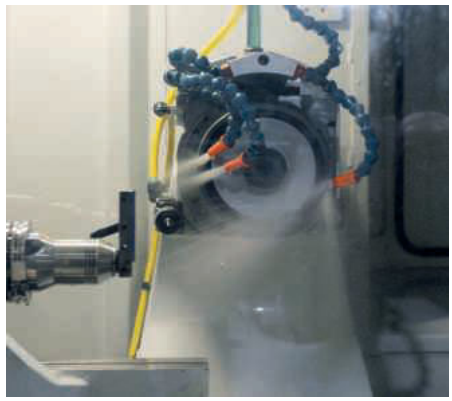
The Edge Equine prides itself on providing prompt service, made possible with on-site manufacturing capabilities that enable it to ship products within 48 hours. The company sells directly to over 40 countries, with distributors in the US, UK, New Zealand and South Africa.

Tim McMahon, managing director of The Edge Equine says: "Our relationship with ANCA started in 2005 when we purchased a second-hand TG4. Over the years we grew to have three TG4s on the floor. ANCA were fantastic, they helped us write our programs, get the machines up and going and then when we swapped to our first FX3, ANCA developed the programs to make our products which was absolutely fantastic."

"We invested in the FX5E in 2020. We were after another machine as our demand for product had grown to the point where the FX3 and the remaining TG4 couldn't cope. JakeFarragher, ANCA Asia-Pacific general manager, recommended the new FX5E as having some features that would certainly help us grow, part of that being its future ability to be automated as our growth continued. It's been a pretty seamless transition with having the FX3 and FX5E on the floor."

The Edge Equine mainly produces dental rasps and floats, devices that are used for maintenance of horses' teeth. "The average cycle time is approximately 14 to 16 minutes depending on the rasp profile that we're grinding which is two blades per cycle so it's roughly eight minutes, seven to eight minutes per blade," Tim McMahon adds. "Most of our clients around the world order on an as needs basis so a prompt manufacture and supply is important to us and our customers."





The future is bright with ANCA FX5E

Tim McMahon continues: "With the implementation of the FX5E, it has given us new scope to look at more high precision grinding in the industrial regrinding market. We do a lot of granular cutters, annular cutters or broach cutters. We're also looking at new products once again in the veterinary space. These are sectioning burrs for basically cutting out teeth that's inside the horse's head. As you can see, they're quite a long burr. So there's a lot of growth in using the capabilities of the FX5E.

"The FX5E has the capacity to have robotics fitted and it will be something to look at in the future as our market grows and with the help of ANCA, we'll develop a process to automate the process of blades.

At the moment we manually feed the machines, which still works well for us, but we have the opportunity to grow further on the automation stage.The other major benefit of the FX5E is its flexibility. It gives us the capacity to change from manufacturing our rasps through to grinding tools within a matter of minutes. As with the FX3, we do jig setups, change things over, change wheels. It becomes time-consuming. But the flexibility we have now is outstanding, we can go from one job to the next without losing any time."

Tim McMahon recognises that the company's two-hour location from the ANCA headquarters is a major advantage. He concludes: "Whenever we've had issues, there's always someone on the phone to talk to and usually they'll have a technician up here within five hours or the next morning. As our customers expect customer service from us, our expectation from ANCA is to have a high level of customer service and they certainly provide."

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The world's first automated measuring machine for micro tools as small as 0.1 mm

Walter has announced the new Helicheck Nano as the world's first automated measuring machine for 'micro' and 'nano' tools as small as 0.1 mm diameter.

Available from Walter Ewag UK, the Warwick-based source of Walter tool measuring machines as well as Walter and Ewag tool and insert grinding/erosion/laser processing machines, the Helicheck Nano has been developed to measure the small diameter tooling increasingly being demanded to meet the trend towards miniaturisation in electronics, micromechanics and medical technology.

Walter says that the comprehensive measurement of tools with diameters of less than 1 mm is usually fraught with problems and that even the use of microscopy sees human operation posing the greatest risk of error.

In addition, some measurements require the destruction of the tool. For example, when measuring the rake angle of tools with face geometry. In these cases "while users must hope that the other identical tools correspond to the one that was measured, there is no proof", comments Bernd Schwennig, who is responsible for product management metrology at Walter.

Walter's Helicheck Nano takes a different approach, offering non-destructive and operator-independent reliable measurement of tools using transmitted and reflected light. It's a process made possible by the use of new variable optics having up to 800 x magnification, the origins of which lie in microscopic incident light measuring technology. In combination with high-resolution cameras, these microscopic optics are the basis for measurements in the nanoscale.

The variable magnification also allows measurements on standard tools of up to 6 mm diameter.

Complementing Walter's other fully-automatic tool measuring machines Helicheck Pro and Helicheck Plus, the new Helicheck Nano also has a solid granite base for high-standard, certified measuring accuracy and reliable results. Its permanent

cameras are protected from dust and extraneous light by an encased measuring chamber.

The new machine offers the possibility of automation with a pallet system enabling up to 7,500 tools to be measured automatically without operator intervention.

Walter adds that the Helicheck Nano's capabilities will be expanded in the future to include functions such as cutting edge rounding, 3-D digitisation and surface finish measurement.

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Vehicle exhaust extraction at Istanbul Airport emergency station

The firefighter team at Istanbul International Airport (IGA) was, like every fire station, facing problems with handling the toxic diesel exhaust produced by the fire trucks and exposing the firefighters to hazards. IGA, which is an award winning airport and an important centre at the intersection of Asia, Europe and the Middle East, contacted Nederman in order to get help to control the air quality in the airport environment and to ensure a safe working environment for their firefighters. Nederman's exhaust extraction system for emergency stations was installed and it is the most effective solution method for capturing and eliminating vehicle exhaust fumes.

Is vehicle exhaust dangerous?

Every time the fire trucks start, thousands of dangerous gases containing cancerogenic substances and pollutants such as benzene, arsenic, formaldehyde and nitrogen oxide are emitted into the firefighter's working environment and subsequently spread around the airport and the outdoor surroundings. Exposure to vehicle exhaust is a common problem in emergency stations and likewise a challenge for the IGA firefighters. Health problems associated with diesel exhaust exposure include irritation of the nose and eyes, headache, fatigue, nausea, inflammatory changes in the airways, changes in respiratory function and decreased lung function. To prevent the firefighters from inhaling the toxic gases, the vehicle exhaust needs to be extracted directly at the source. At the same time, the fire trucks need to be ready as quickly as possible in case of an emergency and the extraction system must not add any extra time or task for the fire fighters when it´s time to go.

Vehicle exhaust extraction system for emergency stations

To create a safe and healthy working environment at the IGA fire station, the Nederman Magna Track HS system was installed. Magna Track HS is an exhaust extraction system for emergency stations with high frequency high speed runs and exhaust extraction directly at the tail pipe. The system starts automatically when the firetruck starts and moves with the vehicle to the station exit and automatically disconnects from the tail pipe at the end of the line. The Magna Track HS can easily and ergonomic be reconnected to the nozzle when the vehicle returns to the station. The automatic connection ensures less wear on the equipment and the installation in the roof of the station ensures that no supply systems are left on the floor that could be run over and damaged by the trucks.

"We are extremely pleased to use Nederman Systems, which provides a cleaner working environment and protects the health of our employees," says IGA's maintenance chief.

Clean air is a cornerstone of sustainable production. Dust and fumes generated during the manufacturing process must be efficiently captured to ensure product quality, equipment longevity, regulatory compliance and safe, healthy work environments. Manufacturing companies want to boost profitability by making their operations as efficient as possible. They must meet high environmental standards and keep employees safe from fumes and dust. Nederman can help on all counts and that is how the company creates value.

It offers products and solutions within industrial air filtration that meet high expectations on quality and profitability. It's mission is to protect people, the planet and products from the harmful effects of industrial processes. By doing that, it contributes to efficient production, environmental benefits and a safer workplace.

Shape the future for clean air

Nederman celebrated its 75th anniversary in 2019. From the very beginning, the business idea was clean air. Today, the environment and sustainability are more relevant than ever and the demands are increasing to contribute actively to more efficient production and reduced emissions in industry. The next generation of solutions for clean industrial airflows is under development and Nederman is at the forefront of this development.

Its customers are adapting to this changing world by making production cleaner and more efficient, production systems more flexible and workplaces safer. These companies want to work with suppliers that share their values and their commitment to sustainable production. Nederman shapes the future for clean air.

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Thirteen is lucky number for HEC Precision

Filtermist Systems has recently completed the installation of thirteen Filtermist oil mist filters for HEC Precision Ltd to ensure workers throughout HEC's machine shop are protected from the risks associated with inhaling airborne oil mist particles.

The London-based precision engineering company, which was formed in the 1970s, provides a wide range of machining services and finishing solutions from its 10,000 sq ft premises. Quality approvals including ISO9001, EN 9100, Airbus and BAE Systems means HEC routinely supports customers in industries including aerospace, defence and optics.

HEC originally contacted long-standing supplier Hyfore Workholding to discuss its extraction requirements, as Oli Riley, Hyfore's product manager, explains: "We have worked with HEC Precision for over five years so we were the first supplier they thought of when they needed help with the air quality in their machine shop.

Hyfore has partnered with Filtermist for a number of years and we visited HEC's site to do an initial audit and then contacted Filtermist to arrange for some sample particle load readings to be taken. These would later act as a benchmark against which we could measure the effectiveness of the extraction fitted."

Filtermist's divisional sales director for Oil Mist, Craig Woodward, subsequently visited HEC and used a DustTrak aerosol monitor to identify particle loadings around each of the thirteen machines on site.

He explains: "The solution that we specify varies depending on factors which include the application, the type of coolant being used, the volume of particles being generated and how long the machine is typically running for. HEC's plant list includes Mazak 3, 4 and 5 axis CNC mills and various Doosan Puma lathes so we recommended that they fit a combination of our ultra-compact S800 oil mist filters, as well as larger FX4002 and FX6002 units. All of the oil mist filters were installed with afterfilters and F Monitor 2 monitoring systems which help the machine operators to spot any issues with the extraction immediately."

The thirteen installations were completed in May and HEC is very pleased with the results, as director Danny Recknell testifies: "We have seen a significant improvement in the air quality in our machine shop and we were really impressed with Filtermist's install engineers. They ensured the units were fitted with minimal disruption which was great as any downtime can be costly for a business like ours."

Procuring Filtermist products and services through an existing supplier like Hyfore can make the purchasing process simpler for end-users as they do not need to set up an additional supplier on their systems. The customer can request a quote and place the order on Hyfore and then Hyfore liaises directly with Filtermist, meaning the customer can concentrate on their business.

"Filtermist is widely regarded as the UK market leader for effective oil mist extraction. Its products have been manufactured in the UK for more than 50 years and the level of service we receive from the whole team gives us the confidence to recommend Filtermist to our own customers," concludes Oli Riley.

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Welding fume and grinding dust

Auto Extract Systems were tasked with proposing and installing a comprehensive Local Exhaust Ventilation (LEV) system in a steel stockholder's new workshop to safely capture and remove the welding fumes and grinding dust before being emitted into the workplace's air during the businesses' operations. The LEV system was installed as part of a project to ensure the site meets stringent operational requirements to work strictly in accordance with HSE's 'HSG258: Controlling Airborne Contaminants at Work – A Guide to Local Exhaust Ventilation (LEV)' guidance.

In 2019, the WHO's (World Health Organisation) International Agency for Research on Cancer (IARCH) reclassified welding fume to a carcinogenic after new scientific evidence came to light. The research found that exposure to mild steel welding fumes can cause lung cancer, possibly kidney cancer and neurological effects similar to Parkinson's disease in humans. As a result, the Workplace Health Expert Committee (WHEC), a part of Health and Safety Executive (HSE) endorsed the reclassification and updated its enforcement expectations for mild steel welding fumes, stating: "Regardless of duration, HSE will no longer accept any welding undertaken without any suitable exposure control measures in place, as there is no known level of safe exposure."

It was agreed that Auto Extract Systems would supply and install two LEV systems, the first to capture welding fumes and grinding dust at source, while the second was to capture residual welding fumes and gases as part of a 'wrap-around' general ventilation system.

The first system included installing new galvanised steel ducting and fittings to accommodate seven points. This consisted of five 11 m, 9 m and 7 m long, Ø160 mm hose extraction arm. As the system was being used for both welding and grinding processes, to adhere to HSG258 guidance, welding fumes, dust and gases were fed through a common duct through to a filtration unit by a centrifugal fan.

The hose extraction arms specified featured metallic fume capture hoods, gas-powered support struts and four-way knuckle joints. The arm's design means they are fully flexible and can be turned virtually 360° to be operated above and below their

mounting height, which allows the user to position the hood at-source with a simple operation. This extraction arm also provides the workshop with 25 percent increased airflow over a traditional-styled internal knuckle extraction arm. An externally mounted support reduces static pressure airdrops and an ergonomically designed hood is ideal for the collection of hot welding fumes, gases and grinding while the capture hood includes a flat base.

For this LEV system the filtration unit specified was a modular dust bank collector filter that could accommodate four cartridge filters. The filtration unit featured the latest innovative technology and is capable of self-monitoring, self-cleaning and filtering with up to 99.9 percent efficiency. A high level of filtration is achieved in this filter by a reverse-pulse process, whereby compressed air is manually released down the inner side of the filter cartridge over internal 'torpedo' shaped filter carrier. This process allows for the pneumatic air to be used more effectively down the full length of the filter compared to conventional cage carried or shaker type filters.

The second LEV system was a 'wrap-around' system which works by capturing and expelling any residual plumes, made up of dirty hot fumes, gases and dust that have risen into the roof space. As the fume leaves the workpiece, it quickly rises to a high level and will eventually meet the cooler roof fabric which it cannot pass through. The fume will then cool and begin to return downwards to settle, but as it still has buoyancy, it can be seen to hang in the roof space, 2 m to 3 m from the roof, typically around crane track height. The 'wrap-around' system was carefully positioned in the space above the bays and will continually capture and remove fume. The system featured dampen-able grilles along a dual ducting run that was located above the gantry crane track.

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Airbench releases new welding and grinding extraction system

AirBench has released a new model in its range of VertEx Cross-Draught Extraction Systems, designed specifically for the extraction of welding fume and grinding dust.

The new VAW range uses AirBench's proven spark protection system to protect a high-grade final filter. VAW units, like all VertEx models, can be combined into a full booth configuration alongside the VB modular booth system or used as stand-alone systems to create a filter wall.

VAW unit

Working within a filtered booth provides a significantly more effective method of capture for dust and fumes when compared to flexible arms and similar systems which rely on continuous operator adjustment to work effectively.

The VertEx modular approach allows for reconfigurable production and units can even be reconfigured for different dust or fume extraction issues.

Why choose Airbench?

AirBench is a leading UK manufacturer of downdraught benches and cross draught extraction systems. It has more than 10,000 extraction systems in service in the UK and overseas.

Along with its range of coolant mist filters and air cleaning systems, the company is actively helping businesses across many industries solve their workplace dust and fume issues.

All of its dust and fume extraction systems and filtration products are built to order in its factory located in the East of England. All products are assembled from stock components allowing it to maintain short lead times. It also imports the AOF range of oil mist filters from its trusted partners in the Netherlands.

AirBench specialises in high air volume, low velocity extraction systems, providing a demonstrable working extraction solution to a wide range of dust and fume problems.

The company demonstrates its extraction systems on site prior to purchase where possible, to ensure both buyers and operators are confident that the products are the correct solution and are usable in day-to-day operation for their businesses.

It provides dust and fume extraction solutions to specific workplace problems using standard modular components and filtersets allowing rapid delivery.

AirBench also distributes the AOF range of mist filtration units, which are manufactured for its Netherlands-based partners Dormatec.

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Laser smoke and fume extraction from Flextraction

Laser fume extraction and filtration systems are important for maintaining a safe and productive workplace. As the owner or manager of an industrial workshop, keep your workforce safe and your business compliant by installing mobile laser fume extraction systems which will capture harmful contaminants before they escape into the open working environment.

Industrial processes like laser cutting and engraving present serious health risks to those working in the vicinity of these processes. The high heat of a laser can cause materials such as wood, plastic or metal substances to vaporise into hazardous air contaminants which may pose long-term health risks if a substantial filtration system is not used.

Flextraction provides a wide range of laser smoke and fume extraction units to businesses across the UK. Laser fume extraction and filtration technology is a must-have for most industrial processes that involve a laser.

The use of a mobile smoke and fume extraction system has been proven to be effective in capturing particles during laser cutting, laser welding and laser ablation. ULT's LAS system is able to accomplish this task effortlessly with innovative solutions for laser fume removal.

Flextraction has been at the forefront of the dust and fume extraction market since the late 1990's. As a leading independent UK firm that specialises in manufacturing and supplying Local Exhaust Ventilation (LEV) products, it strives to offer the best solution to your dust or fume extraction problems in the workplace. It has its own Hood Positioning Device (HPD), a spot extractor that is perhaps more commonly referred to as an extraction arm. In addition, it offers a range of products from highly credible suppliers from throughout Europe, whose products include mobile filter units, industrial vacuums, both mobile and centralised, laboratory extraction units, a wide variety of hoses, vehicle extraction reels and a selection of filter media for a wide range of units.

For wide area dust or fume extraction, be it flour dust from the food industry or ingredient weighing or mixing within the pharmaceutical sector, Flextraction offers its own Downflow Booths, providing suppression and extraction of dust away from the operator's breathing zone. Its booths are modular in build and can be customised to meet the requirements of its customers.

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Large castings reliably de-sanded using blasting technology

Well-founded expertise from more than 120 years of company existence and state-of-the-art manufacturing solutions; this combination makes the Stolle company a trustworthy and reliable partner for its customers. Even the brand name "Stolle castable solutions" expresses performance, product complexity and innovative strength. The company supplies clamping plates, measuring plates and special constructions worldwide, from planning, development, construction, model making and casting to the finished plate, including logistics and assembly.

The clamping, measuring and testing plates can reach a unit weight of up to 25 tonnes. This initially requires a very precise and sophisticated casting process. The following processing steps also have to meet requirements that are not commonplace.

Recently, Stolle invested in a new shot blast plant from AGTOS. It is a roller conveyor shot blast plant of type RT 32-10. It can process workpieces with a width of up to 3,200 mm and a height of 1,000 mm.

The aim of the blasting process is to desand the raw castings. The parts had to pass through the previously used plant in an older building complex two to three times before they passed the subsequent quality control. In addition, the parts had to be manually swept and cleaned of abrasive. The blasting process was therefore to be accelerated and automated. Florian Lorenz, production manager, says: "The special feature for us was that the plant has a very high degree of automation. We actually only have to place a product and press the start button and then the plant runs completely automatically and the product comes out clean at the back. It also switches itself off automatically. Another special feature is the space-saving concept. We actually only have the shot blast plant on the ground and above it is the complete cleaning station, the abrasive reclamation unit and the filter unit. It is very important for us that we can make good use of the hall space."

A workpiece before the blasting process

Special features of blasting technology

The process analysis showed that a roller conveyor shot blast plant, as with the previous plant, was the best option for the customer. The workpieces arrive in the hall built for finishing on plateau trolleys pulled by forklifts and are then placed on the infeed roller conveyor by crane.

From left to right: Managing director Martin Stolle, production manager foundry Florian Lorenz and head of business development and marketing at AGTOS, Ulf Kapitza in the finishing department

The design of the blast machine differs fundamentally from the previous model. For example, the pedestal bearings of the rollers of the infeed roller table were insulated by 10 mm thick elastomers. In this way, shocks caused by the crane when loading the heavy workpieces are effectively cushioned. Wear on the pedestal bearings, rollers and steel structure caused by the placement of the workpieces is reduced. The roller conveyors in the infeed and outfeed areas as well as in the actual blasting chamber are each driven separately to enable the cycle of workpieces. The chain is driven from roller to roller by a geared motor. This is infinitely variable and reversible with the help of a frequency converter in a ratio of 1:5 from 0.4 - 2.0 m/min.

The feed rate is set on the control unit and displayed digitally in m/min. In the direct blasting area, the rollers are made of highly wear-resistant material. All bearings are mounted on the outside and additionally protected against dust and abrasive by labyrinths.

The worker starts the roll feed at the push of a button and all subsequent process steps run automatically afterwards. He can therefore take on other tasks in the meantime. The workpieces arrive in front of the machine's inlet portal and are detected by a light barrier. Only shortly before the workpieces reach the blasting chamber with the high-performance turbines they start up and the entire machine is ramped up. This saves a lot of energy.

The side walls of the blasting chamber are fitted on the inside with wear-resistant,

easily replaceable plates so that vagrant abrasif cannot damage them. The inlet sluice is equipped with wear-resistant rubber curtains for sealing. Sealing from below is achieved by rubber seals. In this way, no dust gets into the environment.

When the 12 high-performance turbines, which process the workpiece in the next 8-10 minutes, start up, the fan of the cartridge filter unit, which is located in the upper area of the machine to save space, starts. It ensures the dedusting of the machine by means of a vacuum.

The highly varied, complex surface of the different workpieces have one thing in common: the top side is smooth. Holes, pockets and other geometries are found on the underside of the workpieces. Therefore, 8 high-performance turbines were installed in the lower area of the blast machine and only four in the upper area.

The geometry of the workpieces means that there are large amounts of moulding sand in the abrasive during the blasting process. Therefore, a solution was created to allow parts of the abrasive to pass through the circuit several times during and after the blasting process so that it is optimally cleaned. This measure made it possible to dispense with a magnetic/wind sifting system, which is otherwise common in the foundry sector and thus avoid investment costs.

The cleaning station that follows the blasting process receives the data from the height detection of the workpieces in order to position the brush appropriately for the surface. It is important that the bristles only touch the surfaces minimally, otherwise they wear out too quickly. Additionally installed nozzles blow off the workpieces and manual sweeping is not necessary. All the abrasive is collected in the bottom area of the blast machine, freed from coarse impurities by means of a vibro chute and passes into the upper part of the machine via a bucket elevator. Here, a well adjustable, optimally designed wind sifter ensures that sand, dust and undersize particles are removed from the abrasive. The cleaned abrasive is fed back to the turbines and the cycle is closed.

Another option allows the customer to make better use of the process heat. Thus, a summer/winter change-over flap was installed behind the AGTOS cartridge filter unit. In winter, the air that has been cleaned more than in accordance with regulations can be blown back into the hall from the cartridge filter unit. As a result, the hall air heats up. This reduces the heating costs.

The aim of the blasting is to remove sand from the workpieces

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