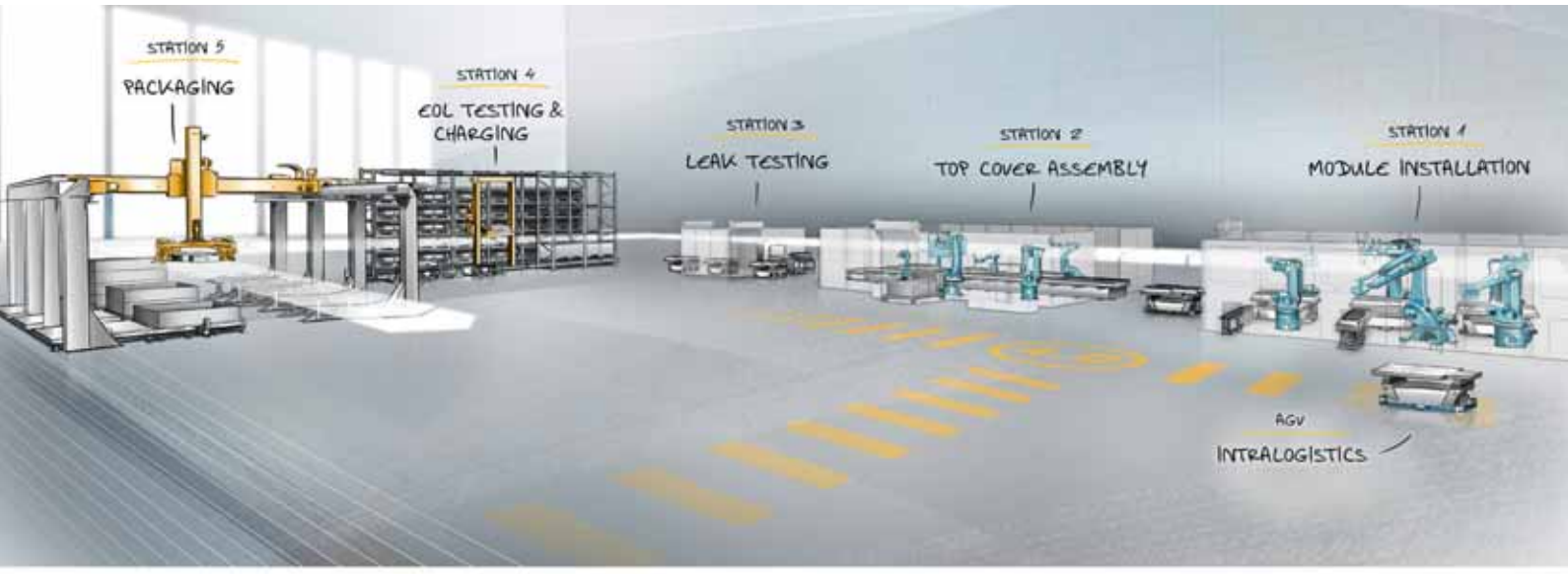
GRINDING & SURFACE FINISHING

JUNE 2021

New York City skyline ground on the ShapeSmart®NP50

A reliable partner for e-mobility



Modular solutions for the automated battery pack assembly

- Flexibility: turnkey solutions from small batch manufacturing to mass production
- Scalable product kits: heavy-duty handling systems, linear gantries, industrial robotics, storage solutions, intralogistics, control system
- System capability: integration of product-specific processes
- Process reliability: fast cycle times, minimum footprint

Liebherr-Verzahntechnik GmbH
Phone: +49 831/786-0
E-Mail: info.lvt@liebherr.com
https://go.liebherr.com/313m47

LIEBHERR

JUNE 2021
VOLUME 19 | No.3 ISSN 1740 - 1100

GRINDING & SURFACE FINISHING

www.grindsurf.com

Published by Roger Barber Publishing
Enterprise House, Foundry Lane, Horsham, West Sussex, RH13 5PX

Publisher/editor: John Barber - 01403 266022
Email: john@rbpublishing.co.uk

Accounts: Jackie Barber - 01403 563791

Production manager: Anna Rodrigues - 01472 210712
Email: studio@rbpublishing.co.uk

Design & Production: Roger Barber Publishing
Print: Holbrooks Printers Ltd, Portsmouth, Hampshire

Grinding & Surface Finishing is a controlled circulation magazine, available free to selected personnel, at the discretion of the publisher.

NEXT ISSUE - SEPTEMBER 2021

- EMO 2021 Preview
- Aerospace Report
- Filtration
- Surface Measurement
- Tool & Profile Grinding

Technological evolution and unparalleled performances

With a choice of four and five CNC axes, both ShapeSmart® precision pinch and peel grinding machines are based on the proven method of pinch grinding, a technology invented by Rollomatic, that ensures polished surface finishes and unmatched performances achieving micron precision.

There are two grinding methods, the first one consists of peeling the part in a single pass with simultaneous engagement of a roughing and finishing wheel. For large material removals, the second process is a series of roughing passes followed by a final roughing/finishing pass. This reduces wear on the roughing wheel and still provides excellent accuracy and minimal run-out.

Designed for unmanned production of both long and short batches, the ShapeSmartNP50 and NP30 cover a range between Ø 0.025 et 25.0 mm.

Two innovations mark this generation of ShapeSmart:
The roughing station enables different wheel positions with a rotation change from 0° to 10° and 90° in just a few minutes, offering a huge savings on setup times and an unlimited flexibility in the choice of applications to be applied.

The two synchronous spindles provide excellent torque and quiet operation, and their power increased to 14 kW allows roughing operations to be carried out simultaneously on both axes, offering a considerable productivity gain. In addition, the direct drive of the rotational part axis ensures high-quality surface finishes.

Advanced Grinding Solutions Ltd
Tel: 024 76 22 6611
Email: sales@advancedgrindingsolutions.co.uk
www.advancedgrindingsolutions.co.uk

GrindTec gears up for the future

GrindTec 2022 will focus on further internationalisation and cooperation with DeburringEXPO

GrindTec 2022
International Trade Fair for Grinding Technology
15 - 18 March · Messe Augsburg · Germany

The leading forum for grinding technology can look back on an impressive story of success: from a very manageable industry show, which did not even fill an exhibition hall, under the equally careful and forward-looking direction of the organiser AFAG and the technical sponsor FDPW, GrindTec has developed into the leading international trade fair for grinding technology today. With more than 50,000 contacts to experts in grinding technology, the network, which has grown over the many years and is increasingly being expanded internationally, forms the strong basis of GrindTec.

The new GrindTec exhibition provided the industry for the first time with a dedicated platform. Experts in grinding technology could meet in a concentrated manner, both on the exhibitor and visitor side. The idea and the concept of this special trade show were coherent and have convinced the industry to this day. Successful exhibitors and enthusiastic visitors all appreciate the familiar and collegial atmosphere of this high-quality and yet still down-to-earth trade fair.

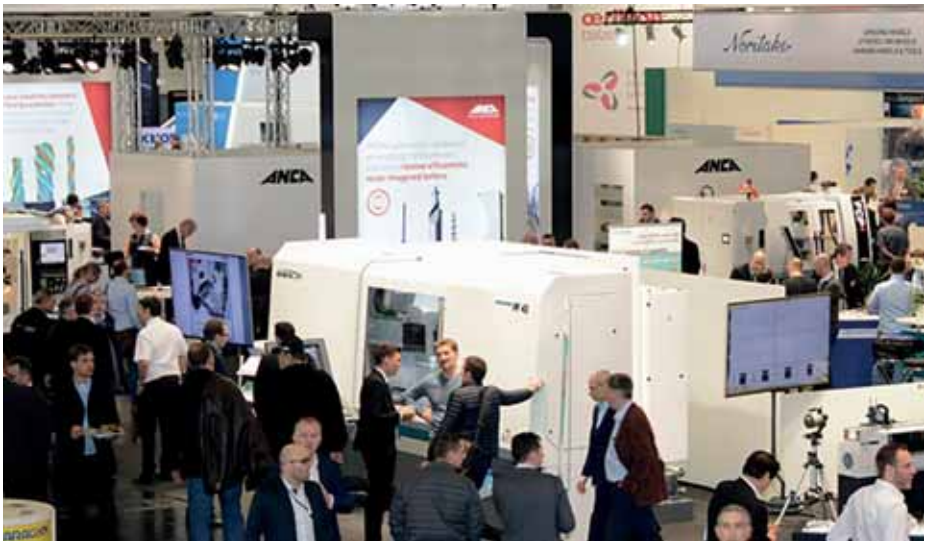
Focusing on further internationalisation

Around 200 registrations have now been received for GrindTec 2022, and no significant changes in the composition of the range of exhibitors can be seen at present. The international composition of the exhibitors is also comparable with previous events: a good third of the registrations currently come from abroad, with 14 nations currently represented. The international reach of GrindTec is to be further accelerated, based on cooperation with partners in China, Japan and India, as well as within Europe. Progress is particularly good in Italy with 29 companies already registered for the 2022 event.

Cooperation with DeburringEXPO

GrindTec organiser AFAG is currently working on an expansion of the range of products and services at the world's leading trade fair for grinding technology. Thus, a cooperation with the DeburringEXPO in Karlsruhe organiser fairXperts GmbH & Co. KG will expand the mapping of the process chain at Grindtec.

An obvious possibility is the mutual exchange of theme parks. This means that as early as next October, a presentation on the topic of "Grinding Technology" will be shown at DeburringEXPO (12 -14.10.21) In return, a theme park on "Deburring Technology" will be launched at GrindTec 2022 in Augsburg in March 2022.



Tool Grinder of the Year

In 2020 they were already in the starting blocks and in March 2022 the five finalists of the "Tool Grinder of the Year" competition will finally be able to show how good they are. Together with Schneeberger GmbH and the FDPW Academy, the trade magazine fertigung will be looking for the best of their guild at GrindTec 2022. In addition to high technical competence and great craftsmanship, an eye for what is economically feasible is also required.

For further information, contact:

AFAG
Tel: 0049 821 589 82143
Email: winfried.forster@afag.de
www.grindtec.de

THE ORIGINAL SINCE 1998

GrindTec 2022

World's leading trade fair for grinding technology

15 - 18 March | Messe Augsburg Germany

Home of grinding technology, platform for success

Information + participation documents
www.grindtec.de

Organizer: AFAG Messen und Ausstellungen GmbH
86159 Augsburg • Germany • www.grindtec.de

Expert Sponsor: FDPW Fachverband der Präzisionswerkzeugmechaniker • www.fdpw.de

New GrindingHub in Stuttgart opens its doors in 2021

23 grinding technology market leaders already committed to new event

GrindingHub, the first edition of the new leading trade fair and the center for grinding technology, will be held from 17 to 20 May 2022 in Stuttgart. It is scheduled to be run every two years by the VDW (German Machine Tool Builders' Association), Frankfurt am Main, in cooperation with Messe Stuttgart and the "Machine Tools and Manufacturing Technology" industry sector of Swissmem (Association of the Swiss Mechanical, Electrical and Metal Industries) as promotional supporter.

"We're really looking forward to the launch of this three-way team effort," says Stephan Nell, managing director of the major Swiss grinding machine manufacturer United Grinding in Bern. "The industry is growing strongly and needs a suitable international shop window to showcase its expertise and technical innovations. The proposal they presented for the GrindingHub fair had me convinced immediately," he affirms.

The new industry hub for grinding technology holds a great deal of potential thanks to its international orientation and its location in Stuttgart, which is central and easily accessible from all over the world. The organisers are part of a worldwide network, which includes Messe Stuttgart (numerous foreign agencies), the VDW (experience in organising EMO Hannover and METAV as well as contacts in the associations of all major manufacturing nations), and Swissmem (also with significant experience in organising joint stands at metalworking trade fairs all over the world). "The concentrated expertise of the organisers considerably raises the new GrindingHub's chances of success," says a convinced Jürgen Hauger, sales director at Vollmer Werke in Biberach.

The main areas of the GrindingHub will be Technology/ Processes, Productivity, Automation and Digitalisation in Grinding Technology. There are also plans to present special solutions in show areas. "VDW and Messe Stuttgart combine in-depth industry know-how with extensive trade fair experience to offer a fully integrated concept. This includes sales, international marketing and media relations, the establishment of wide-reaching communication channels and the integration of international media partners," says Roland Bleinroth, managing director of Messe Stuttgart, outlining the advantages of the new GrindingHub. The two partners have already enjoyed successful trust-based collaboration over many years, be it at the AMB in Stuttgart, the AMB Iran or the Moulding Expo, explained Bleinroth. The first step towards internationalisation has already been taken by bringing Swissmem on board as the institutional patron. "Switzerland is a big player in the field of grinding technology," says Christoph Blättler, secretary general Machine Tool Manufacturers at Swissmem. "That's why we're so pleased to be involved in this future-oriented concept, to be contributing our experience in the global trade fair business and to be inputting fresh ideas," he affirmed.

The event concept includes a digital dimension and a supplementary web conference in the odd-numbered years. "Modern trade fair concepts also have to offer online formats which allow exhibitors to increase their international reach and generate greater visibility," says Dr. Wilfried Schäfer, executive director of the VDW. Messe Stuttgart and VDW have already gained extensive experience in the use of digital formats. "Responsible for implementing the digital part of the fair is IndustryArena, a further partner with a wide range of experience and more than half a million registered users all over the world, meaning that it already has a large and highly production-savvy pool of users to draw on."

Christoph Blättler, Swissmem, Roland Bleinroth, Messe Stuttgart, Jürgen Hauger, Vollmer Werke, Stephan Nell, United Grinding, Dr Wilfried Schäfer, VDW

All the partners are convinced that the GrindingHub will be uniquely equipped as a trade fair to meet the future challenges in the industry. 23 market leaders in the grinding technology industry have committed themselves to taking part in the first edition of the new event. These are Agathon, Anca, Blaser Swisslube, Buderus Schleiftechnik, Danobat-Overbeck, DVS Group, DVS Tooling, Emag, Geibel&Hotz, Haas Schleifmaschinen, Hembrug, Isoma, Kapp-Niles, Liebherr Verzahntechnik, Naxos-Diskus, Präwema, Reishauer AG, Rollomatic, Saacke, Supfina, Tschudin, United Grinding and Vollmer.

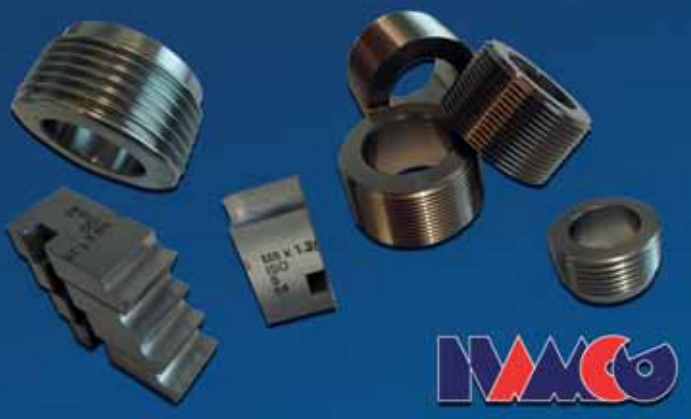
"The clear support shown by the companies which took part in the meeting where the concept was introduced is an indication of how the Stuttgart-based trade fair approach meets with the full approval of the industry," says Roland Bleinroth. "We are delighted by this commitment and feel sure we'll be able to offer a highly attractive event for the grinding industry from 2022 onwards," adds Wilfried Schäfer.

Grinding is one of the top four manufacturing processes within the machine tool industry in Germany. In 2020, the sector produced machines to the value of 870 million euros. Almost 80 percent were exported, with about half going to Europe. The largest sales markets are China, the USA and France. Germany, Japan and Switzerland head the list of top global producers. The grinding technology sector produced 4.9 billion euros worth of machines in 2019.

For further information, visit
www.messe-stuttgart.de/grindinghub

Visit GrindingHub also on the social media channels:

https://twitter.com/GrindingHub
www.linkedin.com/company/grindinghub
https://de.industryarena.com/grindinghub



RETIREMENT SALE

TO BE SOLD TOGETHER OR SEPARATELY

Namco Tooling is the UK's leading manufacturer of high production external threading tools. Ideally located in the heart of the UK, our 12,000 sq. ft. rented manufacturing facility combines the latest CNC technology with the traditional craftsmanship of a skilled and dedicated workforce. Investment in new equipment and training continues as part of our on-going philosophy "to set and maintain standards of quality and performance that exceed customer expectations".

Thread Cutting Product

All good grinders have their day and the businesses get new owners. It could be you...

The complete tooling, machinery, tech info, stock. Work in progess and customer contacts to produce Coventry Chasers and NAMCO Threading Products are for sale.

This is an ideal Bolt On product or New Start At approx £150,000 sales per annum and rising It will bump up your gross profit, as it did mine

I am asking for offers around £190,000 for this world-renowned specialist tooling business

Includes saleable stock and work in progress value £60,000

Thread Rolls Product

Relocatable Grinding Business For Sale - Bolt on or New Start

This is a product line making Thread Rolls using surface and thread grinding machines. Your gross profit will bump up instantly as mine did when I purchased it. I am now retiring hence the reason for sale.

Sales (circa) £300,000 per annum

I am asking £380,000 for the complete set up

Including: Machinery • Stock • Tooling • Order Book • Know How

Includes work in progress £70,000 and saleable stock value £20,000

THESE PRODUCTS ARE SOLD WORLDWIDE CONSTANTLY WITH FEW COMPETITORS, UNLIKE THE RISKY SUBCONTRACT WORLD.

Please contact Graham Cooke • Coughton Lodge, Coughton, Alcester, Warwickshire, B49 5HU

Tel: +44 (0)1789 764600 • Mob: +44 (0) 7887 763951 • Fax: +44 (0)1789 400150

• Email: enquiries@coughtonlodge.co.uk • www.coughtonlodge.co.uk

Fritz Studer Online Press Conference 2021

The last STUDER Motion Meeting took place over a year ago. Although STUDER had experienced a decline in sales at that time, the company still recorded the third-best year since its founding. However, the economic situation had already deteriorated sharply. "Machine manufacturing is notoriously a very cyclical business and you need to be able to manage these fluctuations in order to survive," explains Jens Bleher, CEO of Fritz Studer AG. However, a new threat was appearing on the horizon for the world economy: the Covid pandemic. "Initially it was a matter of protecting the staff and safeguarding the company," continues Jens Bleher.

STUDER reacted quickly and consistently introduced extensive protective measures, with the STUDER Corona Task Force going into action from the outset. This meant that outbreaks in the factory could be prevented and STUDER was able to always provide a full service for its customers. The company is doing everything in its power to ensure that this remains the case.

STUDER has successfully withstood Covid and the downturn and overall the situation is considerably better than during the financial crisis ten years ago. The company has reacted to drops in sales with the proven annual work-hour model and, where necessary, with short-time working. Major developments have been continued and the product portfolio further developed. Numerous group projects from "UNITED GRINDING Digital Solutions™" play a key role in connection with digitalisation. Structural alterations and investments in new products, machinery and equipment have also been considered. "STUDER invested in 2020 and will continue to do so this year." says Jens Bleher. "All in all, we consider ourselves to be well positioned, which is a decisive advantage, particularly in the current competitive environment."

STUDER Management

Apprenticeships at STUDER were also affected by the pandemic, but even in these times STUDER has stuck to its tried and tested vocational training. "The number of STUDER apprentices remains high and they make up over 11 percent of the workforce," explains Jens Bleher. STUDER was also able to always ensure professional training. This is reflected by the success of the apprentices in their final year, all of whom were able to prepare thoroughly and all passed their final exams. In addition, an internal follow-on solution could be offered for all. STUDER is continuing to invest in apprenticeship training, such as a new NC lathe for the apprentice workshop. In addition, STUDER vocational training once again produced top-level performances last year. All four STUDER participants won medals at the SwissSkills in the disciplines of poly-mechanics and automation. With one gold, one silver and two bronze, they achieved the best results in years. "STUDER thus has the current Swiss champion in polymechanics and will be represented again at the next WorldSkillls." concludes Jens Bleher.

STUDER Apprentices

Sales performance

STUDER made a promising start to 2020, until the point in March when one country after another around the world implemented drastic and strict lockdown measures. "Even in a year like this, it is important to hold on to the positive," says Sandro Bottazzo, CSO of Fritz Studer AG. "Thanks to the very good order intake

towards the end of last year, particularly from Asia and Latin Europe, but also in some cases from Central Europe, STUDER generated a substantially higher order volume than during the last major crisis in 2009. This was a positive development because the general market decline was similar to that experienced during the financial crisis more than eleven years ago," he adds. The strong December also put the company in a positive mood. "Many of our customers are expecting a stronger second quarter or second half of 2021 in particular, which is precisely why many grinding machines were still ordered in December," summarises Sandro Bottazzo.

"Another key factor of STUDER's success is the broad portfolio of different universal external, internal, production and conventional cylindrical grinding machines." The new S33 launched in 2019 was by far the best-selling STUDER cylindrical grinding machine last year, followed by the internal grinding machines as well as the new S31 and the new favorit. Sales of the favoritCNC entry-level external grinding machine have also developed very positively.

Summing up the market in general, the order situation in Germany in particular, was low compared with previous years. This is partly due to the COVID-19 pandemic, but also to the ongoing structural changes in the automotive industry. Order intake in 2020 from Asia, North America and North-Eastern Europe remained at a very pleasing level. This was mainly due to high demand from the job shop and aerospace industry segments. Latin Europe was also quite positive, thanks to the strong end-of-year spurt from Italy. "In total, we sold our grinding machines in over 40 different countries worldwide in 2020," explains Sandro Bottazzo.

Another key success factor over the past year was STUDER Customer Care. "Thanks to our local, customer-focused network of over 130 STUDER service technicians worldwide, we were able to provide our customers with continuous support during the pandemic, despite international restrictions," confirms Sandro Botazzo. This global network of service technicians is unique in this form in the universal cylindrical grinding machine market, a network which STUDER will continue to expand. "We are convinced that sustained success is only possible, if we are and remain close to our customers," emphasises Sandro Bottazzo.

STUDER has also further developed its portfolio of digital services. Customers can

Sandro Bottazzo, CSO of Fritz Studer AG

now purchase the complete UNITED GRINDING Digital SolutionsTM retrofit package with a maintenance contract at a special price. With a very wide portfolio of services, STUDER offers everything from one source throughout the entire life cycle of a cylindrical grinding machine.

Insights into STUDER production

The UNITED GRINDING Group has developed a digitalisation roadmap, which STUDER is now implementing step by step. "In addition, we also use all the technologies that we offer to our customers in our own production," explains Stephan Stoll, COO of Fritz Studer AG.

UNITED GRINDING Digital Solutions™ can be mentioned as an example. The Production Monitor provides an overview of the operating status of the company's manufacturing and assembly production equipment at any time. It shows customers in real time whether and which machines are in operation and can display the corresponding production history. This is not only of particular interest and benefit for managers on the shop floor, but also for machine operators of unmanned machines. Not only can STUDER machines and other machines from the UNITED GRINDING Group be integrated into this app but, via the standardised umati interface, a wide variety of external production equipment and manufacturers can also be integrated. "At the workstation, the system also allows many detailed analyses and status reports, including information on order statuses, maintenance intervals, and any servicing that may be required," says Stephan Stoll.

Digital tools are another step towards digitalisation: work instructions, test processes and checklists are largely paperless and are always available in the latest version. "Tablets and screens have already become indispensable aids for the STUDER assembly specialists and are used in a suitable form depending on the workstation," concludes Stephan Stoll.

Technology development is at the heart of STUDER

At the STUDER Tech Centre, innovations are created, and customer-specific requirements are put through their paces. Digitalisation is also a key issue in technology development. "Today and in the future, we need a transparent yet secure connection, so that process information can be easily transferred to external systems," explains Daniel Huber, CTO of Fritz Studer AG. These are precisely the advantages offered by the STUDER OPC-UA solution. In the Tech Center all machines are also connected by means of OPC-UA to our UNITED GRINDING Digital SolutionsTM applications according to the umati universal machine tool interface standard and equipped with additional sensors. A technology innovation is the laser measuring technology with STUDER LaserControl™. STUDER has many years of experience in basic research on the use of machine-integrated laser measuring technology for measuring grinding wheels or workpieces. Based on these findings and the latest laser measuring technology, STUDER has further developed the tool monitoring systems used in other industries, to measure workpieces on grinding machines. The latest generation of the STUDER laser measuring system LaserControl™ is suitable, not only for the contact-free measurement of tool cutting edges in the toughest conditions but also for rotating workpieces, which considerably reduces measuring time. It is unbeatably fast, precise and reliable, thanks to premium laser optics and the latest evaluation technology. Highly dynamic and contact-free measurements also allow quality assessment of high-precision PCD tools.

EMO Milan

Although STUDER gives an insight into the company's technology, one future-oriented area remains under wraps. STUDER and the whole UNITED GRINDING Group are looking forward to surprising you with several innovations at EMO in Milan. Visit the exhibition stand at EMO Milan from 4-9 October 2021.

Fritz Studer AG
Tel: 0041 33 439 1111
Email: info@studer.com
www.studer.ag

A flexible automation system for battery pack assembly

Liebherr is embracing technological change towards alternative drives and has developed a modular automation system solution for the assembly of battery packs for electric cars, from small batch manufacturing to fully automated mass production. Liebherr automation is system compatible and offers process reliability, fast cycle times and flexibility.

Alternative drives have been an important topic for some time at Liebherr. Many of its products, from concrete mixers to mobile cranes, already feature electric drives. In view of predicted future developments in the field of e-mobility, it was a logical step to take a closer look at Liebherr's automation systems portfolio with regard to the requirements associated with electrification in the automotive industry.

A development project with scientific support from KIT Campus Transfer GmbH, a spin-off of the Karlsruhe Institute of Technology (KIT), and PEM Motion GmbH, a spin-off of RWTH Aachen University, came to the conclusion that Liebherr is the perfect partner when it comes to the automated assembly of battery packs for vehicles with electric drives. Up to now, the majority of the production has been done manually or is only semi-automated. However, increasing demand and the resulting orders can only be fulfilled with more extensive automation solutions. In terms of serial production of components for combustion engines, automated assembly has long been the core business of Liebherr automation systems.

Challenges in battery pack assembly

The conditions that prevail in the assembly of combustion engines cannot be transferred one-to-one to the assembly of battery packs. One of the challenges in handling battery packs is the weight; a fully assembled pack weighs up to 800 kg in the automotive sector. Liebherr's handling systems are ideally suited to this weight class. Another challenge is the safety-relevant properties of battery parts. Strict customer requirements and safety regulations in system design are, however, already a matter of course for Liebherr.

Thomas Mattern, head of development in Automation Systems, explains, "We can draw on existing experience, especially in production lines for the automotive industry. The big difference is that this is a workpiece that is subject to different assembly and technological processes. In addition, special requirements arise due to specific properties the workpiece should possess, such as the ability to contain hazardous substances, the degree of flammability and the electrical charge. But it is precisely such challenges that offer certain incentives for which we are well equipped." Here Liebherr excels with its system capability and expertise in process integration. Product-specific process stations such as metering units, screwing stations or leak testing, which are not part of Liebherr's core competences, are solved together with suitable partners and suppliers and integrated into the overall process.

Flexible solution with modular product kits

Liebherr attaches great importance to modular design, scalability and networking of components. The user has an entire product kit at their disposal: handling systems specifically for heavy transport loads, linear gantries for fast cycle speeds, industrial robotics for complex tasks, storage solutions, intralogistics and the corresponding control systems. Thomas Mattern draws a vivid comparison: "It's like a Lego building set, the skill is in assembling the individual modules together. Our systems have universal interfaces like the nubs of Lego bricks. From this, we configure a completely individual system according to our customer's requirements". This unique capability of Liebherr automated systems allows for semi-automated systems for small quantities or fully automated lines for large serial production can be designed in a scalable way. Liebherr is an experienced partner when it comes to issues such as interfaces, parallel processes, reproducibility, emergency strategies, and availability and tracking of parts. "For battery pack assembly, we can supply everything from a single source to individual process stations that can be combined to a complete turnkey system. Not many can do that," says Jan Pollmann, development engineer for Automation Systems, summing up the scope of possibilities.

Thomas Mattern is optimistic about the future: "We have brought the 'old' and the 'new' world together and are well prepared for alternative drive systems."

Liebherr-Verzahntechnik GmbH
Tel: 0049 831 3285
www.liebherr.com

There is much more of Ghiringhelli than you can imagine!

In many everyday products that you use, there is our small but significant contribution. We are talking about components, ground “within microns” by our centerless grinding machines. The Rettificatrici Ghiringhelli is aimed at the sectors of automotive, aerospace, motorcycle, electrical tools and tools wherever perfection is required.

EMO MILANO 2021 fieramilano 4-9 October

We are waiting for you!

GHIRINGHELLI Centerless Solutions

Rettificatrici Ghiringhelli S.p.A.
Via Asmara, 19 - 21016 Luino (VA) - Italy
Tel. +39 0332 543 411
Fax +39 0332 537 468
e-mail: info@ghiringhelli.it
http://www.ghiringhelli.it

UCIMU

Follow us on:

Global centerless solutions for E-Mobility

by Claudio Tacchella

The automotive industry has always been the most dynamic sector focusing on technology, innovation, and is one of the most demanding in production technologies. In this field the Italian company Rettificatrici Ghiringhelli - headquartered in Luino (VA) - excels among the manufacturers of centerless grinding machines thanks to high-tech solutions able to satisfy these strict requests.

Even before the spread of the Covid-19 pandemic, the automotive sector was already facing an important process of transformation mainly due to the future of the endothermic motors. Developments were focused more on smart and eco-friendly mobility with supply diversification among vehicles equipped with combustion, hybrid, and fully electric motors. The health emergency then, with its restrictive measures, production shutdown and the sharp decrease in the sale of machines, deeply affected this transformation with a negative effect on investments of the whole manufacturing industry. However, even in the current economic climate, the supporting measures and the increase in government incentives contributed to support the demand for electric motor vehicles (Full Hybrid, PHEV and BEV) which, only at EU level, raised of about 10%.

The Ghiringhelli M100CNC6A is a centerless grinder with 6 NC axes suitable for the grinding of components with O.D. from 0,5 to 20 mm

All centerless grinding machines can be equipped with different customized types of automatic feeding and loading systems

"This trend has been confirmed by our main customers of the automotive industry – says Mrs. Patrizia Ghiringhelli, Joint Managing Director of the company. After an initial slowdown in the final quarter of 2019, we have seen a progressive suspension of the projects for the grinding of components for the endothermic motors, while all the investments concerning the hybrid or electric motors remained active. Starting from the first quarter of 2021 we have had a further increase in the enquiries for grinding of these types of motors and automotive components".

In fact Ghiringhelli is active all over the World both directly at big manufacturers and sub-contracting companies. For example, it designs for them solutions for the centerless grinding of the components of injection units (diesel and petrol), the "shaft" and the "bearing" of the

turbocompressor group, the engine valves, the torsion bars, the shafts for the electric starter motors for the handling of seats, windscreen wipers, the "spools" for the automatic gearboxes, etc.

"Our company – Patrizia Ghiringhelli continues – has always been proactive with technology and forward looking with our centerless grinding machines enabling Ghiringhelli to support our customer with current and future production. This strategy, in circumstances like this one, proves to be rewarding especially where we counterbalance our market supplies towards the manufactures of electric motors and their OEM that are growing. We hope these positive indicators confirm a recovery trend, even if we know this transformation will be progressive and geographically different; in the Asian market for example, the demand for electric vehicles is already growing faster than in the western countries".

The wide range of the Ghiringhelli solutions is suitable for high-productivity integrated productions, performing and compliant with the principles of eco-compatibility and high-reduction in energy consumption. A recent application case is interesting. One major group which works as a primary supplier for the automotive (Tier1) with plants in Europe, Asia and America, needed a solution to cope with the marked increase in the production of motor shafts for the electric parking brakes, installed both in endothermic and electric motor vehicles. In addition, the components had to satisfy severe quality requirements and final geometrical accuracies with very restricted tolerances.

Detail of the feeding system composed of hopper bowl feeder, orientation and positioning unit of the components

In synergy with the customer, the Ghiringhelli engineers analysed the production requirements and developed a new machine configuration. By considering the dimensions of the pieces to be ground, the solution provided was customizing a grinding machine Model M100 CNC6A able to grind up to 4 pieces per cycle.

The grinding machine was moreover supplied with a special loading automatic system - designed by Ghiringhelli – complete with a gantry type loader with axes driven by linear motors, a hopper bowl feeder, an orientation and positioning unit of the components, and a specific unloading conveyor belt positioned under the workrest blade holder. The compact M100 centerless grinding machine can grind pieces from Ø 0,5 to 20 mm. It is provided with 6 CNC axes for the grinding wheel dressing with two interpolated axes through diamond tool (X/Y axes) and the control wheel dressing (X1/Y1 axes). The grinding wheel head is equipped with a spindle on 2 hydrodynamic bearings suitable for wheels with Ø 450 mm x 130 mm width, power up to 11 kW, constant peripheral speed up to 63 m/s and automatic wheel balancing. The control wheel head, fixed on the upper slide, can be inclined +/-5° and has a spindle on special high precision bearings and wheels with Ø 200 mm x 130 mm width for a 3 Nm couple. Mineral casting frame granting excellent material absorption and thermal stability with best possible heat inertia, very good mass / rigidity ratio, perfect ecological balance. The CNC Siemens 840D SL (optionally SinumerikOne) integrates the exclusive Ghiringhelli HMI characterized by diagnostics, wheels-profiles libraries, cycle programming, statistic calculations for dimension corrections during working cycle and predictive maintenance.

"The centerless grinding solution supplied - concludes Mrs. Patrizia Ghiringhelli-, successfully contributed to improve the efficiency of the entire customer's production process, by achieving the required accuracy, quality and reliability, and with a substantial production increase of about 25%, of the machine autonomy, by consequently reducing the machine supervision times as well."

The Siemens 840D SL NC unit includes the exclusive Ghiringhelli HMI

Rettificatrici Ghiringhelli S.p.A.
Tel: 0039 0332 543 411
Email: info@ghiringhelli.it
www.ghiringhelli.it

Producing automotive gears with 100 percent in-process inspection

Introducing the world's first system for hard finishing of automotive gears in higher volumes with in-process gear measurement and Closed Loop feedback

By Dr Antoine Türich director for product management of hard finishing solutions Gleason Corporation

In the high-volume production of automotive gears, quality control is carried out only randomly. This is due to the significantly longer measuring times required in comparison to the actual production time and limited measuring capacity. It is not unusual in continuous generating grinding to measure only one or two components per dressing cycle.

Depending on the dressing cycle, this corresponds to only about 5 percent of the components actually produced. In order to guarantee an almost 100 percent reliability, statistics are instead used to validate most of the gears produced. Typical measuring characteristics can be represented and statistically evaluated on a Gaussian bell curve. By deliberately narrowing down the tolerances on the actually measured components, it is possible to guarantee compliance with the required drawing tolerances with a sufficiently high probability, typically > 99.99 percent.

This method is commonly used for machine and process capability studies and is recognised worldwide. The machine or process capability values cmk and cpk, frequently taken as a basis, are usually above 1.67. Statistically, the reject rate is only 0.57 components per one million manufactured components, but this means that only about 50 percent of the intended drawing tolerances are available as manufacturing tolerances.

A better way

In today's world, that's not good enough. The constantly increasing power density of gears and the growing importance of noise behavior are leading to increasingly tight tolerances. Clearly, the heavy reliance on statistics poses a significant problem for a growing number of gear manufacturers. Gleason's new GRSL roller testing device with integrated optical measuring technology opens up a world of new possibilities by reducing measuring time so that it can realistically be done within the actual production time. This provides the possibility of up to 100 percent inspection of all manufactured components. As a result, there is no need for additional narrowing of tolerances and the 100 percent inspection of all manufactured components can be accomplished in process.

Many technologies, one system

With the introduction of Gleason's Hard Finishing Cell (HFC), manufacturers of automotive gears now have the ability to produce hard finished gears where 100 percent of these gears have been fully inspected in-process. HFC is a fully automated system with robot loading that integrates modules for auxiliary processes in order to meet specific customer requirements easily and flexibly. The complete process sequence includes gear grinding, washing, laser marking, measuring and part handling in a stackable basket system. The HFC approach can be taken with any desired process, with a single system replacing a number of machines in a Closed Loop system. HFC's 100 percent inspection capability results from the new Gleason GRSL analytical and composite inspection unit which is fully integrated into the system. The component to be tested is loaded by the robot onto the double-flank rolling test device. During the gear inspection, a laser scanner is used to measure all gear characteristics. Thus all relevant information for profile, pitch and

runout and, if desired, lead measurement is available. This is done for each tooth and not, as is usually the case, only on four teeth distributed over the circumference. Deviations are fed back directly into the production machine by means of a closed correction loop.

Both fully automatic correction and real-time adjustment of the corresponding parameters can be achieved. Compare that to the conventional measurement process in the quality lab, where 45 to 60 minutes may well pass between removing the component from the machine and providing the measurement result. With HFC's in-process inspection and closed loop, the desired correction, ensuring optimum quality during the ongoing production process, is much faster. Components whose characteristics lie outside the tolerances are automatically rejected. It is also possible to create extensive trend analyses of individual features and perform further gear noise analysis.

Gleason-Pfauter Maschinenfabrik GmbH
Tel: 0049 714 14040
Email: gleason.pfauter@gleason.com
www.gleason.com

DONE-IN-ONE COMPLETE MEASUREMENT AN AWARD-WINNING INNOVATION

KLINGELNBERG receives the German Innovation Award 2021

KLINGELNBERG

GERMAN INNOVATION AWARD '21 WINNER

❶ GD&T dimensional measurements ❷ GD&T form and position measurements
❸ Roughness measurements inside ❹ Roughness measurements outside ❺ Contour measurements

The precision requirements for components and assemblies are steadily on the rise. To meet these demands, as many measurement tasks as possible should be combined into a single sequence – ideally directly on the shop floor rather than in the measuring room. A Klingelnberg Precision Measuring Center (G variant) has rapid measurement capability for dimensions, shape, contour and surface roughness in one automated cycle, on one machine, which can be set up directly in the production environment. By combining measurement tasks traditionally performed on up to four different devices, it is possible not only to lower investment costs, but also to reduce setup times and quality costs.

‘PDQ’ precision grinding with KELLENBERGER

Yeovil-based PDQ Precision Ltd was established in 2012 by managing director Martin Thrower after the company he then managed was sold by its owners. With the help of local machine tool company YMT and the support of several local engineering businesses, he quickly established the foundations of what is now a comprehensively equipped, flexible manufacturing company.

Over the past decade, PDQ’s philosophy of offering a cost-effective, end-to-end range precision machining services has resulted in the company enjoying phenomenal levels of growth. Amongst other demanding sectors, the ISO 9001:2015 registered business now serves the aerospace, medical, motorsport and packaging industries. In addition, PDQ has gained approvals from multi-national businesses such as Leonardo Helicopters.

Precision grinding is one of PDQ’s key strengths. The company’s well equipped grinding section enables first-class centreless, universal, fine grinding and surface grinding to be undertaken. The latest addition to PDQ’s impressive grinding provision is a recently installed advanced KELLENBERGER CNC Universal Grinder.

Martin Thrower explains: “Although PDQ has expanded over the past 10 years and now counts several multi-national businesses as customers, we still adhere to our founding principles of helping customers to solve their problems, even if it means producing precision parts that most companies would turn down. We also offer overflow, single operation machining to other engineering companies. As our skilled staff have access to a wide range of high-precision machine tools, our old fashioned values even extend to situations such as helping the man in the street who needs the cylinder head of his car to be skimmed.

“Although we have earned a reputation as a comprehensive one stop shop machining facility, if we have a speciality it is in the area of precision grinding. Our finish grinding capabilities are known throughout the South-West and increasingly beyond and we are used as a sub-contract grinding facility for many engineering companies.

“To enable our grinding section to keep-pace with ever increasing demand we recently searched for a highly-efficient universal CNC grinding machine that was able to produce high-accuracy work. In addition, as we generally grind relatively small volumes of components, we looked for a flexible machine that had quick setup capabilities.

“Although a couple of the universal CNC grinding machines that we looked at satisfied certain aspects of our needs, it was an advanced KELLENBERGER machine that fulfilled all of our requirements. Our new KELLENBERGER universal CNC grinding machine is now delivering on all the promises made and producing the required large volumes of high-quality precision components.”

PDQ’s KELLENBERGER universal CNC grinding machine is optimised for the highly-efficient grinding of small to medium batches. The innovative, compact machine delivers 100 percent reproducible universal grinding and is ideal for use in situations were high levels of adaptability, speed and precision are demanded.

The cost-effective machine’s Z-axis movement uses traditional guideways which guarantee a high degree of damping, whilst the machine’s X-axis movement utilises roller guideways which deliver non-stick/slip positioning. Heidenhain high-precision nano-resolution linear scales are used in both axes.

The space efficient KELLENBERGER machine was designed with two external and one internal grinding spindle, selected via a programable B-axis. The machine’s swivelling workhead is suitable for both grinding between centres and for chucked work, further flexibility is provided by a manually operated swivelling upper table.

The machine’s wheelhead exhibits excellent thermal stability characteristics thanks to the use of optimised spindle bearings and water-cooled motors, in addition the use of thermally-optimised bearings guarantee the highest standards of roundness and dimensional accuracy. To minimise the negative thermal effects of coolant, the machine’s coolant tray is separated from the machine bed.

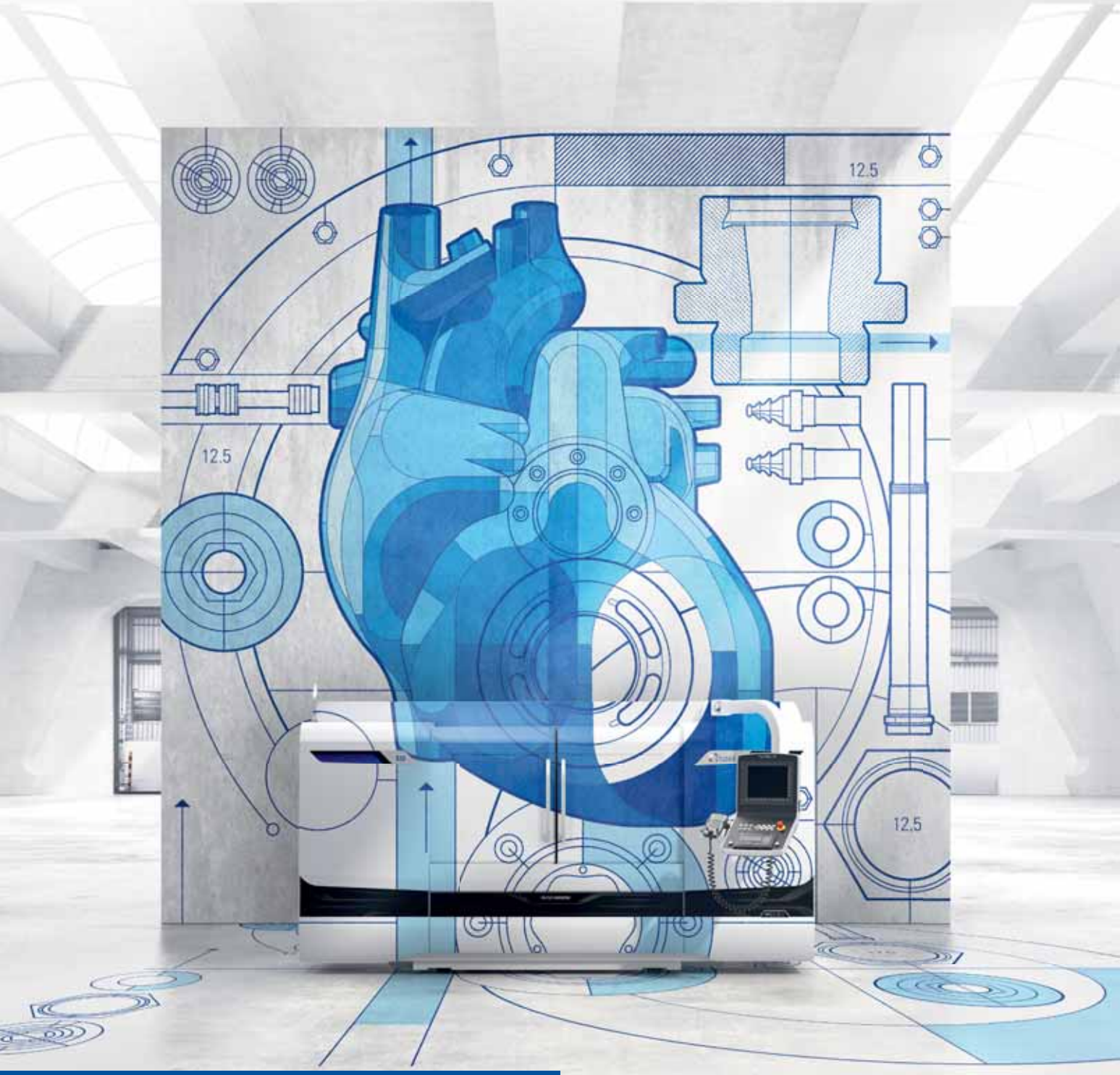
Ideal for use by experienced grinding professionals or less experienced staff, the innovative grinding machine benefits from an easy-to-use operation system, therefore no previous programming knowledge is necessary. Further aiding ease-of-use, a FANUC 0i CNC control system enables straightforward operation thanks to the use of user-friendly menu-prompting.

Designed with advanced ergonomics in-mind, excellent visibility of the grinding process is provided by the advantageous arrangement of viewing windows and a beneficial centre height. Ease of manual loading and unloading is ensured thanks to the machine’s low base height, whilst rapid setup times are facilitated by the use of a useful travelstick and handwheel.

DF Precision Machinery Ltd
Tel: 0116 201 3000
Email: mike@dfpmach.com
www.dfmach.com

THE ART OF GRINDING.

BECAUSE OUR HEART BEATS FOR THE HIGHEST PRECISION AND QUALITY.



Fritz Studer AG, established in 1912, is a market and technology leader in universal, external and internal cylindrical grinding as well as noncircular grinding. With around 24,000 delivered systems, STUDER has been synonymous with precision, quality and durability for decades.

studer.com

STUDER

NUM adds power skiving to its portfolio of gear production CNC solutions

CNC specialist NUM has further extended the functionality of its renowned NUMgear family of gear production technology with the addition of an extremely flexible software option for power skiving.

NUM's new power skiving option provides the enabling technology for CNC machine tool companies to address a key market opportunity in the nascent compact gearbox manufacturing industry. It is now possible to create an entirely new generation of gear production automation that offers combined hobbing and skiving capabilities on a single machine.

Gear manufacturers currently employ a variety of machining processes, including hobbing, shaping, broaching and grinding. To a large extent, the processes that are used are dictated by the type and size of the gears and splines being produced. Hobbing is ideal for external gears, while shaping and broaching are best suited to the production of internal gears, but the latter is only really practicable with small gears. Power skiving, on the other hand, is potentially a much faster and more efficient way of creating external and internal gears of any size.

However, despite being developed and patented more than 100 years ago, it is only recently, with the advent of multi-axis machine tools capable of precision high-speed synchronisation, that the technique of power skiving has become a practicable proposition for industrial-scale use.

Based on NUM's high performance Flexium+ CNC platform, the new power skiving solution forms the latest addition to the company's NUMgear suite of gear production software. Originally developed specifically for gear hobbing applications, NUMgear is continually enhanced to meet industrial requirements and nowadays offers solutions for a broad range of gear manufacturing processes; it is used by many leading manufacturers of gear production machines.

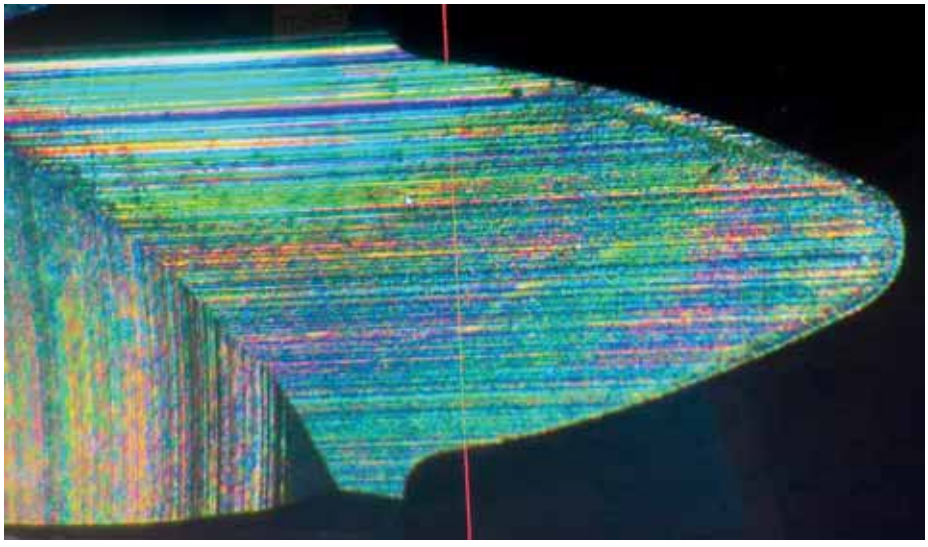
A hobbed helical gear and a skived straight gear on the same shaft

Compact gear shafts produced using combined processes

The new power skiving software capitalises on the speed and precision of NUM's advanced multi-level electronic gearbox (MLEGB). This very high performance unit is capable of unprecedented speed and accuracy; it can handle up to 25,000 rpm on the leading axis and uses look-ahead algorithms to predict both the speed and the acceleration of axes, in order to minimise synchronisation time.

The characteristics of the MLEGB are user-defined in the part program. Any axis can be nominated as leading or following, linear or rotary, and the ratio between the leading and following axes can be controlled by a user-defined fixed parameter or a dynamic machine-cycle variable (curve table). Flexibility is even further enhanced by the fact that multiple MLEGBs can be cascaded, a following axis in a dynamic gearbox can be used as a leading axis in another MLEGB, and either the leading or following axis in an EGB can be real or virtual.

A single multi-role CNC machine tool that offers gear manufacturers the ability to hob large gears and to power skive smaller gears on one shaft, or whenever tool space is constricted, such as in a compact gearbox, would almost certainly enjoy rapid industry take-up. Thanks to NUM, the CNC control technology, together with the necessary precision servomotors and drives, is now a reality.



The tooth of a skiving stool under a microscope

NUM's new power skiving software option can be installed and used on any Flexium+ CNC system running Flexium software version 4.1.00.00 or higher.

Follow NUM at
https://twitter.com/NUM_CNC

NUM (UK) Ltd
Tel: 024 76 301 259
Email: sales.uk@num.com
www.num.com

ADVANCED
GRINDING AND FINISHING SOLUTIONS
FOR
DEMANDING APPLICATIONS

We provide the most advanced technology to the UK's engineering industry, offering the best of Europe's grinding and finishing products, all from one UK partner. Our range of high precision machinery is drawn from Europe's leading machine tool manufacturers, featuring the very latest technological advances in machine tool design and process development.

We are a highly valued supplier of products and services to a wide range of engineering companies whose areas of expertise cross all industries. We are your partner for providing truly innovative, economical, efficient and world class forward thinking solutions to give you the crucial competitive advantages that you need to ensure manufacturing success.

GRINDING, LAPPING AND POLISHING MACHINES
DEBURRING MACHINES, COATING MACHINES
GRINDING WHEELS & SUPERFILTRATION SYSTEMS
AND MORE

ADVANCED GRINDING SOLUTIONS

Unit 80 Hotchkiss Way · Binley Industrial Estate · Coventry · CV3 2RL
Tel: +44 (0) 2476 22 6611
sales@advancedgrindingsolutions.co.uk · www.advancedgrindingsolutions.co.uk

Roll grinders go green

Tenova receives an order for two heavy-duty combination roll grinding machines with digital advanced solutions

Nucor Corporation, through its Nucor Steel Brandenburg division, has awarded Tenova, a leading company specialised in sustainable solutions for the green transition of the metals industry, a contract for two heavy-duty combination roll grinding machines for its green field project for a new plate mill plant in Brandenburg, Kentucky, USA.

The new roll grinders, manufactured by Pomini Tenova, worldwide leader in production of roll grinders, will continuously supply ground rolls to the new Nucor plate mill complex, which is expected to start up its operations in late 2022. The two heavy-duty combination roll grinding machines will be designed for grinding roughing and finishing stand work rolls with or without chocks and backup rolls of both stands without chocks. The roll grinders will also be equipped with an automatic caliper for measuring in cycle roll alignment, profile, roundness and eccentricity. Additionally, the Pomini Tenova Inspektor3 will be integrated for on-line inspection of roll surface and subsurface with the aim to detect the presence of cracks and bruises with eddy currents and ultrasonic waves.

The roll grinders will also be equipped with Tenova EDGE, an Industrial IoT Edge gateway, which collects process variables and data, providing the latest Industry 4.0 developments, such as machine Condition Monitoring and Pomini Process Monitoring.

"We are glad that Nucor Steel Brandenburg recognized Pomini as a reliable partner and appreciated our approach centered around listening to customer's specific needs, responding with optimised solutions, and creating a partnership with the customer. This project will add a valuable reference in the field of roll grinding for plate mills, both for the importance of the customer and for further expanding our presence in the region," states Alfredo Brambilla, Vice President Sales Pomini for Tenova Inc.

In the mid-nineties, Pomini Tenova had already installed three heavy duty grinders that are still successfully operating in the CSP plant located at the Nucor Steel Gallatin LLC sheet mill in Kentucky, about 100 miles from the new complex in Brandenburg. These three roll grinders will be upgraded this year with a state-of-the-art Pomini automation and operation software. The addition of a fourth grinder and the modernisation of the automatic roll loader crane will increase the roll shop production capacity, witnessing the trust Nucor has in these solutions.

The modernised Nucor Steel Gallatin facility and the new roll grinders at Nucor Steel Brandenburg will establish an important pole of operation of Pomini equipment, allowing both users an easy exchange of best practices and benefit in terms of efficiency in technical services.

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

For more information, contact:

Tenova
Tel: 00 39 0331 444 111
Email: communications@tenova.com
www.tenova.com

PRECISION
MACHINERY LTD

THE HOME OF HIGH PRECISION

Official Global OEM Spares & Service

JONES & SHIPMAN

Okamoto

KELLENBERGER
HAUSER
VOUMARD
TSCHUDIN

DF Precision Machinery Ltd is not only the official global supplier of Jones & Shipman spares, service and support, holding the OEM records & software and the largest J&S spare parts stock in the world.

DF also supply proven solutions from individual machines through to turnkey cells from world renowned suppliers of Cylindrical, Universal, Surface, Profile, Vertical, Rotary, Internal, Creepfeed, Jig Grinding, Polishing & more.

Contact us to experience the DF difference

www.jonesshipman.com **www.dfpmach.com**

DF Precision Machinery Ltd. **Tel** 0116 201 3000 **Email** sales@dfpmach.com

Kayson Green keeps on track

KAYSON GREEN
ABRASIVE TECHNOLOGIES

Kayson Green Ltd has made a significant impact on the abrasive industry for almost five decades. With technical knowledge and expertise. backed by its manufacturing partners, there are not many applications where Kayson Green cannot be of assistance. Working as a sole distributor for four European major manufacturing partners enables it to work quickly and efficiently to give the customer the most suitable product for their application. In conjunction with Atlantic GmbH, a highly regarded grinding wheel and honing stone manufacturer based in Germany, Kayson Green develops and supplies a wide range of products for high precision grinding applications. Markets supplied include but not limited to automotive, aerospace, medical, bearing and steel roll manufacturers. Since 1987 Kayson Green has been part of the Lukas-Erzett group of companies, an abrasive and tool manufacturer also based in Germany. This long-standing relationship and product range has enabled Kayson Green to supply a wide range of industries including foundry requirements with mounted points, nut inserted cones, TC burrs, abrasive belts etc.

Regarding high precision applications, Lukas internal vitrified CBN wheels are supplied to bearing and automotive companies. These products are manufactured within a tight tolerance band and with a high degree of consistency.

Polishing applications in the production of medical implants is also a strong product sector. When it comes to superabrasives (CBN and diamond wheels) for tool and cutter manufacturers, various bonding systems from partner Cafro based in Italy have the answer for the most demanding of applications. The latest partnership is with a specific division of the Biffignandi group of companies, Precision Polishing, an Italian-based manufacturer of microfinishing and polishing film. Kayson Green has impressed customers with a high consistent quality and fast service. With the option of slurry and electrostatic products in aluminium oxide, silicon carbide and diamond, Kayson Green has the full range of qualities for most applications. Available in roll, sheet, disc, belt and to customer specific requirements with a grit range from 0.5 µm to 125 µm.

Kayson Green in the bearing industry

The production of bearings incorporates most of the high precision grinding applications including, internal, external, cylindrical, centreless, track and more. The importance of geometry, finish, accuracy and consistency in the production of bearings is paramount. It is therefore crucial that the grinding tools used in every stage of production fulfil the stringent demands. The vast experience and technical knowledge of Atlantic GmbH in this industry is extensive, and covers most, if not all, grinding and honing applications.

On the right track

Internal and external track and bore grinding are one of the most demanding applications for grinding and finishing. Combination of wheel life, surface finish requirements, geometry and cycle time are always a crucial factor. For external track grinding, Atlantic wheels contain premium aluminium oxide grain mixed with a specially developed vitrified bond which provides an excellent profile holding capability and surface finish; in addition, this bonding system eliminates the chance of burn,

reduces wheel wear, grinding cycle and dressing frequency. Fine grit wheels using silicon carbide have also achieved a final grinding surface finish of under 0.1Ra, which eliminates the first step in the honing process, a considerable saving in production costs. Wheels can be manufactured with a maximum peripheral speed of 125 m/sec.

In most cases, internal track and bore grinding can often be best accomplished by using internal vitrified CBN wheels. The Lukas CBN range, specially manufactured for your application, have been proven in the field for many years, being supplied to some of the most well-known bearing manufacturers in the world. Lukas CBN wheels are renowned for producing consistent results with a high degree of precision and cost effectiveness. Various grain sizes and qualities can of course be manufactured to suit customer requirements. In addition, cooling slots and thru bores, with various shank options are available. Wheels can also be manufactured to a customer's specific drawing.

Kayson Green can develop and ultimately supply all grinding wheels and honing stones to assist in the production of bearings. Contact the technical sales team to discuss your individual requirements. Trial products can be supplied for test.

During the last 12 months, Kayson Green has launched its new website, which contains a wealth of information and useful downloads. It is certainly worth taking a look if your task is to grind or polish steel workpieces.

Kayson Green Ltd
Tel: 01206 751500
Email: sales@kaysongreen.co.uk
www.kaysongreen.co.uk

Supplying New & Used Machines since 1951

The widest range of Grinding Machines, from a single supplier in the UK

PERFECT Precision Surface Grinders with grinding capacities upto 1,600 x 6,000mm

Growing numbers of workshops are bridging the skills and technology gap with the latest in **PERFECT** Surface Grinding technology.

From a compact 6" x 18" manual machine to the latest **PERFECT** X Series of High Precision PLC & CNC machines with the ADP or SIEMENS 828D control, offering upto 0.001mm programmable resolution

ROBBI Universal & Internal Grinding machines

The 'HMI' between machine & operator is decreasing the grinding cycle process. The level of program cycles in the range of Italian manufactured **ROBBI** machines, make a significant increase in productivity in workshops across the globe with reduced cycle times.

- Conventional, PLC and CNC models
- From 600mm to 6000mm between centres
- Upto 1000mm dia. swing over the table

DELTA Horizontal & Vertical Spindle Surface Grinding machines

Reciprocating, Travelling column construction:

- Maximum rigidity
- High material removal rates and
- Flatness guaranteed

Rotary Table models:

- Vertical spindle models upto 500mm dia
- Horizontal spindle models upto 1,200mm dia with hydrostatic slideways.

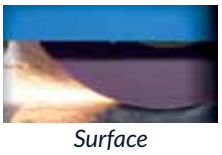
JAINNHER High Precision Grinding Machines. Quality, Responsibility & Innovation capability.

Established nearly 40 year ago, JAINNHER has an unrivalled experience & developed a complete range of grinding machines including:

- Centreless grinding
- Cylindrical grinding incl. Angular & Plunge
- Internal grinding
- Thread grinding
- Double spindle grinding
- Vertical spindle grinding
- Centre hole grinding

Turning | Milling | Grinding | Drilling | EDM
Thread Rolling | Sawing | Sheetmetal


Universal & Internal


Surface


Centreless

The widest range of machine tools & support from a single source, UK supplier.

RK International Machine Tools Ltd

Tel: +44(0) 1322 447611
Email: sales@rk-int.com
Web: www.rk-int.com
Instagram / Twitter: @rkimachinetools

Agile and unmanned grinding automation

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

Grinding automation drivers and outcomes

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

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

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

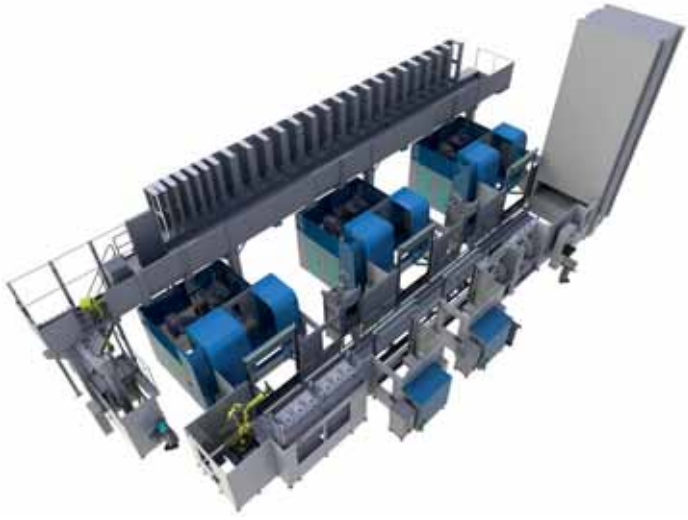
What makes the difference?

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

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

Example of agile and unmanned grinding automation

Leigh Tricklebank enthuses: "Here you can see the first tool automation solution for 5-axis grinding centers in the whole world. Tool automation means that the tools are loaded and unloaded automatically to the grinding machine magazines allowing automatic setup changes for different batches, automatically and at the right time. As grinding processes usually feature lots of tools, this creates significant savings in tooling cost and more flexibility on production as the system is capable of 'any-part-any-time-any-machine' production leading to economic batch size one.



Furthermore, the system features an adaptive grinding process which means that the grinding process is automatically adjusted based on the integrated CMM data."

The case systems consists of the following equipment:
- 3 grinding centres (below the gantry)
- Centralised tool gantry storage
- 2 CMM devices (opposite side of the rail vs grinders)
- 2 air-blow stations (between the grinders)
- tower storage for empty pallets,
- separate storage for loaded pallets (bottom right)
- 2 loading stations for material input/output and loading the pallets by the operators.

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

As a summary of everything discussed so far, we see intelligent automation to consists of these following main parts, enabling manufacturers to reap the full automation benefits available today. Automation suppliers need to handle especially points 3-5 and have an important role in point 2 as well:
1. Choosing the right equipment vs production requirements
2. Integrating value chain (process) steps while making processes stable
3. Flexibly automating all (applicable) physical movements
4. Automating production resource management
5. Automating proactive production planning and analytics

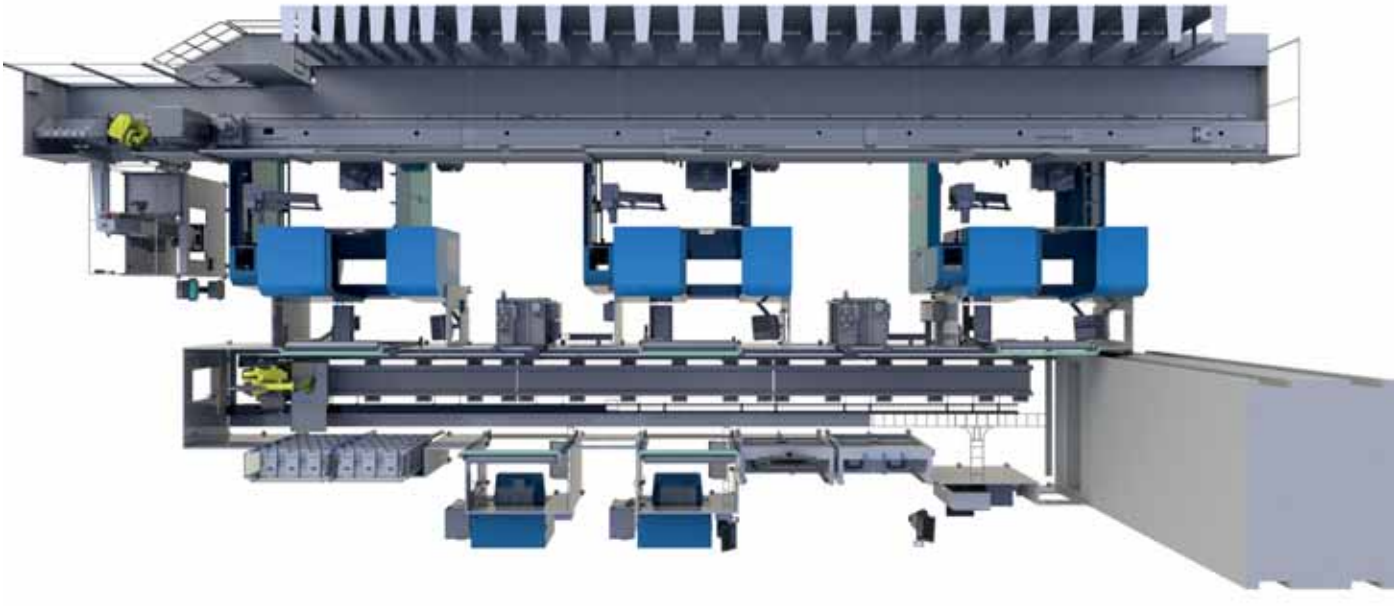
Keep in mind that, despite the quite extensive scope of the example solution, grinding automation can come in many forms and sizes that can give an access the automation benefits just as well. For those readers utilising other kinds of processes, one could also be integrating for example robotic finishing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

Long history and experience

Solutions like the one explained require expertise. As an open integrator with four decades of metalworking automation experience, Fastems has integrated over 100 machine tool brands along with a wide array of auxiliary devices. In practice, the automated CNC machines consist mostly of mostly milling, turning and grinding machines, supported by tactile and optical CMMs, robotic deburring and other finishing, marking and cleaning applications. In total, Fastem's fleet sizes have grown to over 4000 systems globally. Solution scope vary from single machine automation to more complex system explained here. Furthermore, a part the installations have been carried out as 'EMTA' or Existing Machine Tool Automation. This means that automation and it's benefits are not only a privilege for the companies investing to new machine tools but for everyone.

Have questions or want to know more? Contact Leigh Tricklebank on 07749 071 681 for your free survey to include automation layouts and application feasibility.

Fastems
Tel: 07749 071 681
Email: leigh.tricklebank@fastems.com
www.fastems.com



Here's the plan-view of the system. Grinding machines are in the middle with tool gantry storage above and part-robot and ancillary equipment below. To the right is material storage, ensuring lights-out-manufacturing is achieved

Sheffield Forgemasters adopts pioneering robot assistance

Sheffield Forgemasters has adopted pioneering collaborative robotic (Cobot) assistance for some of its foundry operatives, dramatically reducing exposure to vibration, improving safety and increasing productivity within its fettling operations.

It is one of the first foundries in the world to employ the 6A10 Grinding Cobot from French firm RB3D, which works with operators of heavy grinders to stabilise and take the weight of the grinder, amplify its operational pressure and dramatically reduce the level of vibrations for the operator.

The Cobot initiative is a significant change for Sheffield Forgemasters, which relies heavily on grinders to fettle or prepare the complex 3D shapes of its castings, allowing operators to safely increase their working time on each job by reducing fatigue load.

John Sanderson, foundry operations director at Sheffield Forgemasters, says: "We are conscious that manual grinding tasks are inherently difficult and pose challenges for operators, particularly from vibrations, stress injuries and fatigue.

"The Cobot is a robotic, electric-motor driven arm, which takes the full weight of our pneumatic grinders and is guided by the operator, but does not require any programming.

"Trials of the Cobot have transformed what we can achieve on such tasks, by improving the health and safety environment, reducing the chances of a grinder slipping from the work surface, and by removing fatigue and vibrations from the process, which dictate how much time an operator can safely work for."

For manual grinding tasks, vibration levels require a maximum working duration of three hours for the safety of the operator, but the Cobot allows operatives to conduct full days of grinding tasks without any of the associated risks posed by manual grinding.

RB3D designs and provides equipment to assist manual workers and has developed Cobots and exoskeletons, which protect the wearer from lifting and straining injuries and enable heavier loads to be handled safely.

Olivier BAUDET, sales director at RB3D, says: "We are pleased to be supplying Sheffield Forgemasters, one of the world's leading foundries and an early adopter of our Cobot technology.

Sheffield Forgemasters, pioneering the use of Cobots

"We want to contribute to the challenge of reducing musculoskeletal disorders, which represent a human challenge because of the suffering caused to the people concerned, and also a financial challenge because of the very high cost of collective social protection within companies."

The Cobot operates from a mobile cart and is currently configured for smaller, ground level jobs, where it can access around 60 percent of the work surface compared to an operator manually handling a grinder.

Peter Davies, senior development engineer at Sheffield Forgemasters, adds: "The benefits of this initiative are immense and purely from a health and safety point of view, set the requirement for us to further explore the benefits of this technology.

"We are also seeing a 50 percent uplift in productivity and are now looking at the potential of a jib-mounted Cobot to efficiently access larger components and higher working levels."

Sheffield Forgemasters International Ltd (SFIL) is a world leader in supplying engineering solutions to the most demanding applications on darth, supplying global markets including defence, civil nuclear, oil & gas, petrochemicals, power generation and steel processing.

SFIL manufactures ultra-heavy bespoke engineered products including castings of up to 350 tonnes and forgings of up to 170 tonnes, produced to the highest specifications and quality standards. It is a leading innovator in the development of safety-critical castings and forgings to the world's civil nuclear power generation markets and carries ASME accreditation as a materials supplier.

SFIL is the world's leading supplier of castings to the offshore sector and has designed and manufactured more than 46,000 tonnes of components. The company has operated in the global market for more than 20 years and its products are tried and tested in structures around the world.

Sheffield Forgemasters
Tel: 0114 244 9071
Email: sales@sfil.com
www.sfil.com

Automated grinding machines

Recognised as a leading solutions provider, GCH Machinery designs and builds turnkey automated grinding systems for customers worldwide. Its proven approach to machine rebuilding, honed over five decades, begins with a thorough understanding of customers application and their unique manufacturing criteria. By paying close attention to the specifications, required tolerances and production rates, it delivers a world-class customised manufacturing cell that yields superior products and maximum performance. Over the years, it has partnered with companies worldwide to bring automated grinding machine projects to reality.

Turning an older machine into a modern turnkey grinding system involves an in-depth knowledge of the system's mechanical, hydraulic and electrical systems as well as software and automation. Skilled in these disciplines and well-versed in global automated grinding operations, the GCH Machinery engineering and manufacturing teams are a rare find among machine builders. Coming from industry, its engineers and craftsmen understand the challenges that customers face and will offer innovative, customised solutions for automated grinding needs.

The company takes responsibility for the entire grinder automation project, from design through installation. It eliminates the complications, time and cost of coordinating and working with multiple vendors. GCH Machinery has a long list of references from global manufacturers who will vouch for its ability to deliver projects on time and within cost.

Experience across a broad array of industries

GCH Machinery has been successfully helping customers improve their grinding operations longer than any other machine builder. Since it first cut its teeth on grinding applications over five decades ago, it has been consumed with the improvement of customers' grinding operations. Some of the industries that it specialises in include automotive, bearings, aerospace, cutting tools and fasteners, among others.

The company can meet even the tightest specifications, providing test results generated in its in-house metrology laboratory.

Comprehensive application assistance

Its multidisciplinary team will examine processes, suggest improvements and then design and build an automated grinding machine to match. Through its global network of field service technicians located on five continents, it is ready to support and service a system wherever it is located.

GCH Machinery
Tel: 001 586 771 1500
Email: info@gchmachinery.com
www.gchmachinery.com

Norton blazes a trail with new BlazeX fibre discs

As the first quarter of the year witnesses a leap towards recovery for UK production, manufacturing and construction markets, abrasives specialist Norton is launching its next generation of fibre discs, the BlazeX.

With experts labelling this new line of discs a trail-blazer in maintenance and repair operations, the BlazeX speeds up grinding time and reduces overall abrasives costs for metal fabricators. Set to become a popular new addition to an already established portfolio, the BlazeX delivers up to 50 percent higher cut rates on carbon steel when compared to its counterparts and is available in a range of diameters and grits to suit all grinding needs.

Ideal on a wide range of both hard and soft metals, including carbon and construction steel, the BlazeX offers enhanced operator control in stock removal processes such as metal preparation, weld grinding, chamfering and edge bevelling. The self-sharpening ceramic grains on each disc, combined with a durable fibre backing, makes effortless work of tough jobs, removing metal quickly and accurately. Operators will notice a smoother and more controlled process, resulting in less vibration through the machinery for safer and more precise grinding.

These factors ensure a job can be completed quickly, smoothly and concisely for a longer product life with fewer disc changeovers, resulting in less labour time and overall cost savings.

Howard Prince, technical support manager at Saint-Gobain Abrasives, comments: "We're thrilled to be able to support fabricators with this release of the BlazeX range. In recent years, the Norton Blaze product range, with its distinctive orange colour, has become synonymous with superior quality and performance; and this addition is no exception.

"Brand new engraving technology allows fabricators to easily identify which Norton product is the best for the job, with the recommended metal stated on the backing of each disc."

Saint-Gobain Abrasives is positioned at the leading edge of innovation and service, providing the most comprehensive abrasive solutions packages to its customers via a portfolio of highly recognised brands such as Norton, Norton Clipper, Norton Winter, Flexovit and Rasta.

Saint-Gobain Abrasives offers powerful, precise and user-friendly solutions which enable customers to shape and surface finish all types of materials, even in the most complex and challenging applications. By working closely with its customers and by leveraging its global presence, Saint-Gobain Abrasives designs and provides optimised comprehensive solutions and accessories to secure the best cost/performance for its customers. Saint-Gobain Abrasives serves all sectors of the market and has a strong presence in every continent, serving customers through structured sales operations in over 27 countries and employing over 10,000 people.

Norton has cared a lot about abrasives for more than 130 years. It cares so that when you need the right sandpaper for your bathroom makeover or the right grinding wheel to streamline production in your plant, it delivers choices that matter to your workforce, the environment and your bottom line. Norton is constantly looking for ways to improve your working conditions and simplify the job by eliminating dust or noise, reducing total costs by increasing the number of parts you can finish in an abrasive application, as well as considering the ergonomics of the application to improve worker comfort. 'Right' means different things to every customer and if it doesn't have the solution you're looking for today, you can count on Norton to be developing that solution for tomorrow.

Abrasives form a key part of the High Performance Materials Division of Saint-Gobain, which is one of five key areas of activity in which Saint-Gobain operate.

For more information on the Norton BlazeX or Blaze portfolio, contact:

Saint-Gobain Abrasives
Tel: 01785 279569
www.nortonabrasives.com

Surface Conditioning:
TYROLIT have a solution for every application

As a leading supplier of grinding and dressing tools, TYROLIT already offered a comprehensive portfolio of grinding solutions for many industries. With the integration of the highly specialised Bibielle range, TYROLIT is now able to meet all grinding, polishing, finishing and surface conditioning needs, right down to the most niche customer requirements. The non-woven abrasives consist of a woven fabric of nylon fibres that are bonded together and impregnated with abrasive grain and resin. This creates a three-dimensional material that is pliable, flexible and very durable. They are therefore the ideal complement to bonded abrasives and coated abrasives.

Non-woven abrasives are often used where other abrasive products reach their limits. The "spring-like" construction of non-woven abrasives reduces the risk of undercutting or gouging the workpiece.

The less aggressive nature of nylon and the abrasive grain used make them excellent and resistant finishing tools. Even distribution of the abrasive grain across the nylon mesh ensures a continuous supply of new grain as the old grain and fibres wear down during use. Non-woven abrasives can be used on a range of metals, including aluminium, brass, copper, nickel, chrome plate, stainless steel and titanium, as well as other difficult-to-grind materials such as ceramics, glass and plastics. Non-woven products allow the user to achieve an even, uniform finish and adapt to irregular surfaces with minimal smearing and discolouration of the workpiece.

Non-woven products are particularly suitable for roughening, cleaning or finishing a surface. The base raw material fibre (PA 6.6) is produced in-house and is used in countless non-woven applications as well as in surface conditioning materials. This keeps the supply chain compact and short, offering great strategic growth potential even outside the traditional target industries. The broad portfolio for finishing, masking and satinising, combined with the high tear strength, provides the optimum prerequisite for the best finish wherever a perfect surface is required.

The product range can be roughly divided into 5 categories. SCM belts and discs (Surface Conditioning Material), rolls, convolute and unitised compact wheels as well as rough cleaning wheels.

SCM – Surface Conditioning Materials are produced either as wheels or as belts made from the fibre fleece, which is attached to a reinforced core and bonded with resin. Surface conditioning focuses on changing the surface of a product without removing or damaging the base material. The many applications of SCM wheels and belts include simple deburring without deforming the workpiece, reducing roughness, removing paint residues, smoothing and cleaning welds, and general finishing and matting. The flexible and open structure enables the typical properties such as extreme resilience and long service life and working with low process temperatures. Of course, the products are available in different grain sizes, tailor-made for the respective application.

For numerous manual applications, non-woven abrasives are produced in various qualities, grains and grain sizes and converted into rolls. They are produced from non-woven fibre filaments and are a particularly dense material mixed with abrasive grain and resin. The special sharpness of the three-dimensional abrasives and the open structure make it possible to achieve an even, satin finish even on irregularly shaped parts.

Convolute wheels are made of non-woven fibre filaments containing abrasives and bonded with resin. They are wrapped around a centre core. These wheels are

available in various diameters, densities and grain sizes. Due to the coiled design, both direction and speed of rotation must be considered. Convolute wheels are used where less material removal is required without deforming the workpiece. Like all non-woven products, they have a long service life and are particularly suitable for light and heavy deburring, edge breaking, removing parting lines, removing paint lines or scratches, polishing weld seams or for a decorative finish.

Unitised wheels are made by pressing fibre filaments mixed with resin and abrasive grain. These special tools are available in various thicknesses, diameters, densities and grain sizes. Unitised wheels are mainly used where fast material removal combined with a perfect surface is required. The extremely resistant wheels are perfect for light and heavy deburring and, unlike convolute wheels, can be used in both directions and at higher speeds. Unitised wheels, however, are mainly used for polishing mechanical parts, smoothing edges or removing contaminants and coatings.

Applications for both types of compact wheels range from design objects, surgical instruments and implants, turbine components to stainless steel and metal parts, boat parts, tools, cutlery and food processing containers. Unitised and convolute compact wheels are very similar products but have important differences. For example, unitised wheels usually have a diameter smaller than 150 mm and are therefore ideal for use on portable machines or for machining complicated shapes. Convolute wheels, on the other hand, are usually produced with diameters larger than 150 mm and are therefore ideal for stationary machines.

For rough cleaning wheels, a particularly aggressive abrasive grain is bonded to stiff, extruded nylon fibres with flexible resin and processed either into wheels with a hole or on fibre cores. The open structure of rough cleaning wheels prevents smearing and makes the wheels ideal for cleaning welds and removing corrosion, rust, paint and scale without excessive stock removal or preparing surfaces for welding, anodising and brazing.

TYROLIT Ltd
Tel: 01788 824500
Email: john.willis@tyrolit.com
www.tyrolit.com

Reducing roughness correctly

By Ralf Heimann, product manager for fine grinding and polishing tools, PFERD

Even though it's always about obtaining the right roughness, working on surfaces is only effective if all the factors are balanced correctly. If we're talking about surfaces, essentially it's always about getting the right roughness, because that what defines surfaces. But in practice what seems so clear and simple often turns out to be an extremely complicated application that regularly fails if you don't know what the influencing factors are.

Surfaces and their functions

The first question to answer is what a surface actually is. Technically speaking, surfaces are defined by their properties, for example roughness. We can also describe surfaces in terms of their function, for example protecting against mechanical damage caused by wear or friction, protecting against corrosion by performing a barrier function, but also a visual function like reflection, absorption or aesthetic design. The planned use of the relevant component defines the requirements that then have to be produced, but as the product manager knows, that is often where there is a lot of uncertainty. Production of functional surfaces involves a lot of influencing factors. To achieve the optimum result technically and economically, it's vital to balance these factors effectively when it comes to choosing the method, tools and drives used.

Conditions for the perfect surface

The general conditions are determined by the material to be worked on, the initial situation and the desired result. The choice of tools for cleaning and smoothing a steel weld seam, for example, is totally different from that for brush matting of stainless steel. This is because the materials and the applications have very different requirements in terms of the tools used. Likewise, the dimensions of the surface to be worked and its accessibility play an important role. Small, tight locations require different tools from large, easy to reach surfaces.

Range with no gaps

Even when each individual factor that makes up the general conditions can be clearly described, the complexity of work on surfaces comes from the combination of all the variables. The variety of materials alone demands a huge range of different abrasive grain types, as not every abrasive can be used on every material. Depending on the initial situation and the result to be achieved, the tools used generally start with rough working, then fine and very fine grinding and finally polishing. A modern range of grinding tools has to cover the full breadth and depth of these requirements and within the range the relevant solutions have to be coordinated precisely with one another. To systematically reduce the roughness to get the desired surface finish, I need tools that are precisely designed for the individual steps. That is why the PFERD range of grinding, fine and very fine grinding and polishing tools is based on the needs of those carrying out the work and the results they are aiming to achieve. There cannot be any gaps.

Likewise, the shapes and designs of the tools have to be sufficiently varied for them to be suitable for any application. It is common for users to be faced with a situation in which they have the right tool but cannot reach the location they need to work on, for example because the shank of the tool is too short or the cutting point faces backwards and cannot be reached with a face-down grinding tool. In this case, we think about different usage scenarios. We offer the same tool for use in face-down, belt, peripheral or hand grinding - and in lots of different dimensions. As a result, we

can be sure that work can always be carried out, no matter where the surface to be worked is located and how I can reach it.

From this perspective from rough to mirror polished and from face-down to belt and peripheral grinding to manual applications in different shapes and dimensions, we have a range that covers almost all possible applications for tools and work on surfaces and we know the best working strategy in each situation.

Know-how

As part of its expert advice service, PFERD identifies solutions for the customer's specific application situation. We look at exactly what the customer is doing, where they want to go with their working and make suggestions for improvements. Primarily, our aim is to ensure that the best possible result is achieved from a technical point of view. We pay particular attention to achieving the maximum possible efficiency and creating lean processes. Ergonomic working also places an important role and has effects in three areas: On the work result, on efficiency and, last but not least, on the person performing the work, who has to be looked after. If we can literally get

together with our customer at the workbench, we always achieve a significant improvement in the work result and the process. The work invested here pays off very quickly.

We have advised lots of users and found solutions for their problems. When we finally have the solution in front of us, customers are frequently surprised by how easily, quickly and effectively we managed to solve their problem. When it comes down to it, it's always just about reducing roughness - but doing it properly.

PFERD Ltd
Tel: 01484 866149
Email: info.uk@pferd.com
www.pferd.com/uk

Single-pass bore finishing for high precision tolerances

by Bob Marvin, director Global Bore Honing Operations, Engis Corp.

There are various processes and techniques that can be used for finishing the bores in components to high precision tolerances. These include fine boring, precision grinding, reaming, honing and hand lapping. Each process offers certain advantages over the others, as well as limitations. For example, hand lapping normally produces better bore geometry and surface finish than conventional honing, but is much slower and more labour intensive. Precision reaming can generally remove more material than conventional honing but cannot achieve as high of bore precision. This has led to the development of a hybrid process that combines aspects from each of the other processes to allow for higher production rates and overall bore precision: superabrasive single-pass bore finishing.

Superabrasive single-pass bore finishing (Fig.1) was originally developed in the 1970's as a means for precision finishing through bores in cast iron valve bodies. Over the years, the process has been refined to a point where almost any application, in a wide variety of materials can be finished in production. Ongoing research and development programs continue to find ways of improving the process and the tooling to push the envelope of what can be achieved in regard to bore precision and productivity.

Fig. 1 - Superabrasive single-pass bore finishing system

The single-pass process

Utilising a combination of superabrasive plated tools, preset to exact dimensions, the tools are passed through a bore, rotating as they complete the honing operation. While in most situations, each tool completes a single pass through the bore, certain part geometry and finish requirements may require a multi-stroke pattern. In the example below, to achieve the desired bore dimension and finish, four tools are required. (Fig. 2) Tool #1 will perform the roughing operation, removing the most material, with the largest superabrasive particles. As we progress to Tool #2 and #3, the amount of material removed decreases, the superabrasive particles gets finer, as we get closer to the final specification. The final tool, #4 will have the finest grit of the tool set, and remove the least amount of material. Factors that determine the number of tools are amount of stock to be removed, surface finish requirement, and geometrical requirements. The geometrical requirements may be roundness, concentricity, bow, or size. Using a tool set of different particle sizes allows tools with larger superabrasive particles to remove relatively large amounts of material, and tools with smaller superabrasive particles that have finer surface finish capabilities, to be used progressively for maximum efficiency.

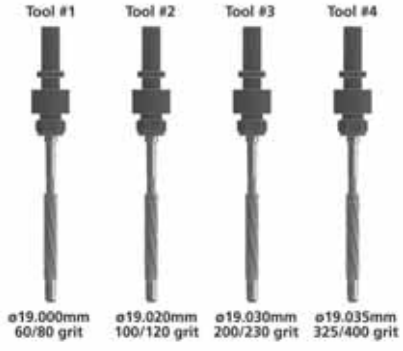


Fig. 2 - Typical single-pass tool progression

The single-pass process is in contrast to conventional honing where the tool or part is reciprocated many times while the abrasive portion of the tool is gradually expanded and retracted during each cycle. (Fig. 3) It is this pre-set sizing characteristic of the tool, combined with the slow wear of the superabrasives, that allows the single-pass process to achieve the tightest bore size requirements with unmatched statistical process control.

Fig. 3

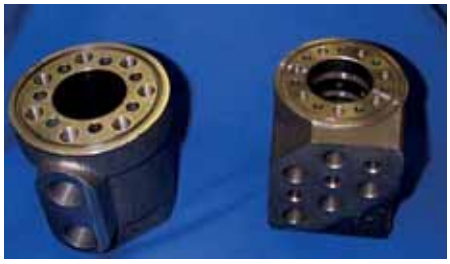
Improved size control

Many hydraulic and automotive sub-assemblies require extremely tight clearances between mating components such as a spool and valve sleeve. Traditionally these types of components would be separated into classes for matching during assembly, or painstakingly matched during the finishing operations. The ideal method would, of course, be to make all of the components to an exact size and eliminate the need to match altogether. However, in most cases this has not been possible in production. The following case history illustrates how bore size tolerances to under +/-0.0013 mm are now being achieved in production while maintaining statistical process control:

In order to achieve the best possible bore precision with the single-pass process, it is very important that the cutting tools are allowed to follow the centreline of the existing bore with as little force as possible. This is accomplished by allowing either the component or the tooling to float. For applications where the part length is over three times the diameter of the bore, both axial and radial float should be applied. Due

Case history 1

STEERING HOUSING		REQUIREMENTS	
Material:	Ductile Iron	Bore Tolerance:	+/-0.0013mm
Bore Size:	42.164mm	Roundness:	0.0013mm
Type:	Semi-Blind	Straightness:	0.0013mm
Length:	96mm	Surface Finish:	0.5Ra



to the shape and weight of the steering housing in #1, it was determined that it would be best to hold the part rigid and float the tooling; spring loaded holders were used to provide the radial float for the tool assemblies and a special free pivoting union was incorporated inside the mandrel of the tool for additional angle float (Fig. 4).

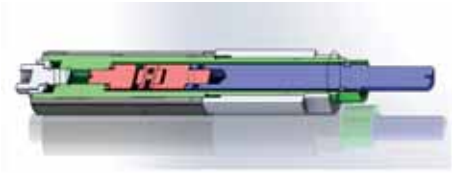


Fig. 4 - Tool assembly illustrating internal float mechanism

Once the single-pass tooling is properly broken in, size can be maintained for relatively long periods of time. It is extremely important to not only monitor and control the size of the final finishing tool but that of each individual tool in the progression as well.

For this application up to 0.038 mm of ductile iron material needed to be removed. The bore had limited clearance at the bottom for the tool to pass through so a semi-blind bore finishing tool design needed to be incorporated. With this design, the taper of the mandrel runs the opposite direction from standard tooling (larger diameter in the front of the tool) and the adjustment nuts are located behind the superabrasive sleeve. The tooling progression utilised a series of six tools ranging from 40/50 down to 200/230 mesh diamond (Fig. 5).

In order to achieve the required bore precision each phase of the process had to be correct. This includes the superabrasive tooling, part holding fixtures, floating mechanism, machine tool and gauge system. To be statistically capable for size,

	DIAMETER	GRIT SIZE
Station #1:	42.130mm	40/50
Station #2:	42.147mm	40/50
Station #3:	42.157mm	40/50
Station #4:	42.161mm	60/80
Station #5:	42.163mm	100/120
Station #6:	42.164mm	200/230

Fig. 5 - Tooling progression

the actual process tolerance needed to be held within a total range of 0.7 µm, including variation in bore shape and overall gage accuracy and repeatability (Fig. 6).

BORE QUALITY	REQUIRED	ACHIEVED
Size:	+/-0.0013mm	0.0007mm (1.67Cpk)
Roundness:	0.0013mm	0.0003mm
Straightness:	0.0013mm	0.0007mm
Surface Finish:	0.5Ra	0.25Ra

Fig. 6 - Application results

Single pass bore finishing system

Anti-lock brake systems were developed for automobiles in the late 1960's. Their primary use was to avoid wheel locking by rapidly pumping the breaks when engaged. Since the actual time that the system would be employed is very short, life cycles of some of the components could be measured in minutes rather than hours. Advanced features on modern automobiles such as "Electronic Stability Control" and "Adaptive Cruise Control" have greatly increased the usage of these components and, in turn, require a much longer service life.

The hydraulic pump is the heart of an anti-lock braking system, providing the proper fluid pressure. The major components for this sub-assembly are the cylinder and the mating piston. To increase performance and overall life of the sub-assembly, it was found that one of the major factors was the surface finish of the cylinder bore. As is the case with many similar applications, having too rough of a surface finish can cause excessive wear of the bore and mating piston during use. Conversely, if the finish is too smooth then proper lubrication between the mating parts may not be possible. To solve this complex problem the surface finish requirement of the cylinder bore had to be more clearly defined, specifying a certain depth of valleys to contain oil for lubrication, and a smooth, finer finish on the outer most material that could come into contact with the piston.

SURFACE FINISH	
Parameter	Requirement
Rpk:	< 0.15
Rk:	> 0.40
Rvk:	> 0.30

Fig. 7 shows the ideal surface finish parameters for the cylinder bore that would help achieve the desired performance of the sub-assembly

It was quickly discovered that conventional bore honing processes would not be able to produce these results in mass production with any acceptable statistical capability. The manufacturer ultimately settled on an Engis Bore Finishing System customised specifically for the application and particular surface finish requirements (Fig. 8).

Fig. 8 - Special designed tooling specifically for the application

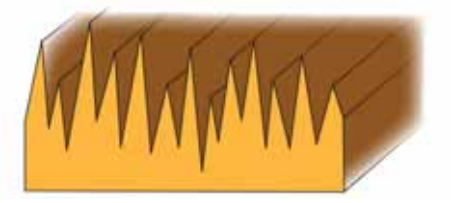
The customised system utilised a machine tool with six spindles and a rotary table that could use the single-pass process for

maximum productivity. The part holding fixtures were on a gimbal base that would allow for angular float. Since the bore of the cylinder had limited clearance at the bottom, blind bore style tools had to be used. This style tool also required self-centring floating tool holders for radial positioning.

One of the advantages of using a multi-tool process is that each tool can be set to achieve a certain parameter within the surface finish requirement. For this particular application, it was broken up into four distinct stages:

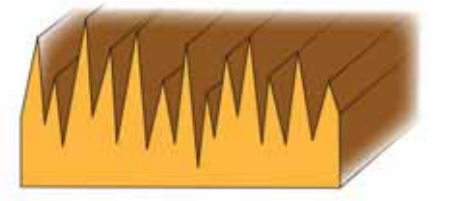
The first stage was to use a 100/120 grit diamond tool to remove the majority of the incoming material and achieve a very specific size and maximum surface finish. By doing so it could be assured that the deepest scratches would not damage the final results.

Stage #1	
Size:	-0.004/-0.006mm
Finish:	< 3.5Rz



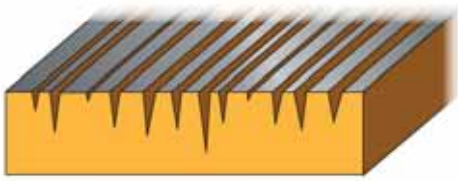
The second stage was to use a 200/230 grit diamond tool to produce a finish that would establish the valleys in the final surface texture.

Stage #2	
Size:	-0.001mm
Finish:	1.75 to 2.50 Rz



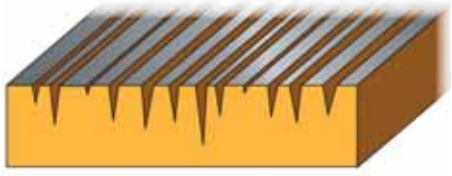
The third stage used a 325/400 grit diamond tool that was set to only remove the peaks of the finish produced in stage two.

Stage #3	
Size:	Final Size
Finish:	< 0.15Rpk



The fourth stage used a very fine diamond brush that did not measurably change the bore size but did remove microscopic torn and folded debris from the surface.

Stage #4	
Parameter:	Final Size
Rpk:	< 0.15
Rk:	> 0.40
Rvk:	> 0.30



With the specially designed system the parts were able to be consistently finished to the required surface finish at high production rates. Each machine automatically finished 240 parts per hour and with an overall perishable tool cost of under $0.03 per finished part.

Dual diameter finishing (step-bores)

Many new hydraulic valve applications are being designed with high precision, dual diameter spool bores. The traditional methods for final honing of these parts have proven to be insufficient for achieving the final precision in production. Besides needing to control the cylindricity and size of both bores, overall concentricity between the two bores must also be improved. This is very important so that the honing tool be able to finish both bores simultaneously while maintaining near perfect concentricity of the cutting surfaces.

The original dual diameter, single-pass tool designs were very similar to standard thru-bore tooling, only with a step-diameter in the diamond sleeve. The concentricity between the two diameters was relatively easy to establish, however individual size control was not possible. To get around this issue, most applications used an additional standard tool to remove the final microns of stock in one of the bores.

New designs now utilise single-pass tooling with individual diamond sleeves on the same mandrel, with independent size adjusting features. As shown in (Fig. 10), the diameter of the front diamond sleeve can be increased by turning the front adjusting pilot nut. The second diamond sleeve is larger in diameter than the front sleeve, and diametrical size can be increased by inserting a removable adjusting nut over the tool and engaging the threaded portion of the mandrel located behind the sleeve. In both cases the adjusting nuts are designed to push the sleeves up the taper of the mandrel and increase the cutting diameter in a very controlled manner. Typically, size adjustments to under a micron are possible.

Fig. 10

Continued development of the superabrasive single-pass process has led to many breakthroughs that are now being employed throughout the automotive and hydraulic industries. Bore size, geometrical shape, and customized surface finishes are now being held to higher precision levels than previously thought possible in mass production. In fact, bore size control has now surpassed what can be achieved with the outside diameter finishing of the mating components and has reached the limits of current air gauge capability.

Engis UK
Tel: 01491 411117
Email: sales@engis.uk.com
www.engis.com

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

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

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

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

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

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

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

For more information contact
Sunnen Products Limited
at +44 1442 393939 or visit www.sunnen.com

SUNNEN®
Partnership · Precision · Performance

Fast setup and changeovers on a wide range of parts

Three models of new deep hole drilling system deliver tight diameter control, straightness and superior surface finish, signalling the next wave of Sunnen's total-bore solutions

Sunnen Products Company, the global leader in bore sizing and finishing technology since 1924 now offers a cost-effective BTA drilling solution in the shape of the Sunnen SHDD Series Deep Hole Drilling Systems. Sunnen used voice-of-the-customer input to develop its latest cost-effective deep hole drilling solution, resulting in an array of standard features.

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

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

Standard heavy-duty 3-jaw chuck

Solid drilling tools

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

The SHDD series is a great choice for applications spanning many industries, such as oil & gas, shipbuilding, aerospace, hydraulics/pneumatics, mould & die making and military armaments. Typical applications include: drill collars, drill pipes, submersible pumps, hydraulic fracturing components, ship rotor shafts, landing gears, turbine shafts, refuelling pipes, large hydraulic cylinders and wind power turbine shafts.

The SHDD series standard configuration includes features such as a 3-jaw chuck, part counter rotation, ballscrew driven tool feed, rack-and-pinion-driven pressure head, Beckhoff PLC control with 394 mm (15 in) color touch screen on a moveable slide, combination light curtain/fencing safety system, and a 1,650-gallon (6,245-litre) coolant system with a chiller and four 10 µm bag filter units.

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

Automatic chip removal system

The new Sunnen SHDD series with heavy-duty tool drive shaft vibration dampeners

Sunnen's BTA deep-hole drilling tool and accessories include: solid drilling tools, trepanning tools, counter boring/reaming tools, bottom forming tools, deep hole machining oil, cutting inserts; guide pads. SHDD machines are engineered and built in the USA and are covered by Sunnen's 3-year warranty.

An American saga

In 1923, Joe Sunnen knew he was onto something. He was 22 years old and had just patented his first product, a valve lifter tool he designed while working in his brother's auto garage. All he needed was a way to build it and a place to sell it. He would find both in St. Louis, Missouri. Joe moved to the city with his wife, Cornelia, in 1924. Lacking the funds to open a storefront of his own,

Joe Sunnen

Joe got creative. He converted his 1916 Hupmobile into a camper and took his business on the road. As he visited garages and job shops across the region, Joe's tool sold itself.

The success of Joe's first tool spurred him to design another and another after that. In 1928, he designed the first manual cylinder hone, firmly planting Sunnen's roots in precision manufacturing. A modern version of the product is still found in tool rooms around the world.

To this day, Joe's story of commitment and resilience reminds us of how far we've come and inspires us to push the boundaries of what's possible. What began in the back of a Hupmobile has grown into a massive operation bringing innovative machinery and advanced tooling to some of the world's greatest manufacturers. Sunnen is proud to take the legacy forward.

With world headquarters in St. Louis, Missouri, Sunnen is the largest fully integrated company in the world specialising in precision bore creation, sizing and finishing equipment. A Sunnen solution might include honing, lapping, skiving/roller burnishing or deep hole machining…or a combination of those processes.

13 international subsidiaries and over 40 authorised distributors allows it to deliver top quality Sunnen machines, tools, service and training wherever they are needed around the globe.

Sunnen Products Ltd
Tel: 01442 393939
Email: hemel@sunnen.co.uk
www.sunnen.com

A cost-effective methodology for efficient effluent treatment

The ActOn Automatic Centrifuge System AAC-36

Treatment of effluent is essential to comply with environmental regulations and local discharge consents. ActOn Finishing offers suitable treatment systems as a responsible measure towards the environment and also to facilitate recycling in certain applications to reduce processing costs.

The AAC-36 Automatic Centrifuge allows for treating of waste water discharged from mass finishing machines. Using cost-effective methodology, it provides efficient effluent treatment by removing the solids before discharge into drain, and water recycling to be further used in finishing processes.

The system has several advantages such as:

- Easy to maintain
- Compact footprint
- Interactive HMI, made it easy for operators to use
- Features such as holiday modes, sim card for remote support, pH control

The process flow of the AAC-36 system

The discharged effluent from the mass finishing equipment is collected in a lifting station which is fitted with a float and an agitator in order to prevent the effluent from settling.

From the lifting station, the effluent is transferred via an air operated diaphragm pump to an effluent collection tank. This as well, is fitted with a float and an agitator to ensure the effluent does not settle. The capacity of the effluent collection tank ensures that the effluent can be stored and can reach the full capacity before it is transferred to the effluent treatment tank.

From the effluent collection tank, the effluent is dispersed to the effluent treatment tank. The two separate tanks allow for repeatability in the effluent treatment process. Rather than continually adding effluent in a single tank, this allows for the water to be treated simultaneously whilst effluent is being collected in the collection tank. In line treatment options are also available.

Coagulant and Flocculent are added into the treatment tank, where the agitator ensures that the suspension is kept in an agitated state to prevent settling. If needed, a pH control system can be added (depending on the requirement) which provides a feedback, regulating the pH of the effluent sent to the centrifuge.

From the effluent treatment tank, the effluent is sent to the centrifuge for separation using a high velocity rotational drum, thereby separating the solids. The solids are scraped off using a sludge knife and collected by a sludge wagon. Excess water is collected via the drip catch tray and sent to the residual water tank, which feeds it back to the effluent treatment tank.

ActOn Waste Water Treatment System on hgh energy finishing

ActOn, boasts an exclusive subcontracting facility which includes high energy finishing machines. These machines are used daily for processing components sent by our customers.

The waste water discharged from these high energy machines is treated using ActOn's Waste Water Treatment System.

Here are just a few typical values of a sample before and after the treatment stage: COD required specification is 3000; while the raw sample value is 3880, the value after treatment is 1640. The required amount of nickel in the waste water should be under 5 mg/l, while the raw sample value is 6.525 mg/l, the value after treatment is 3.285 mg/l. Also, the required number of solids in the waste water should be under 10,005 mg/l; while the raw sample value is 14,605 mg/l, the value after treatment is 1,845 mg/l.

Alternative options from ActOn Finishing

Other effluent treatment solutions from ActOn Finishing include: batch centrifuge suitable for recycling or discharge to the foul drain as dictated by the process; paper band filter which has been designed to separate the solids from the effluent discharged from the vibratory and grinding machines via a filter paper; recirculation tank - a highly cost-effective solution when processing small quantities of effluent; a settlement tank connected to the drain of the finishing machine allows to discharge the effluent from the vibratory machine into the tank.

ActOn Finishing Ltd
Tel: 024 76 466914
Email: sales@acton-finishing.co.uk
www.acton-finishing.co.uk

Demand grows for improved water treatment systems

Stringent discharge rules for trade effluents are fuelling enquiries into the benefits of the latest wastewater processing technology, says Axium Process.

The filtration specialist has seen a rise in demand for customised membrane systems as environmental responsibility, operational costs, and discharge limitations put increasing pressure on companies to find improved solutions for trade effluents.

Derek Davies, business development director at Axium Process, says: "A growing number of industrial companies need to balance their discharge consent against increased levels of production and spikes in output linked to manufacturing processes. Failure to do so can result in hefty fines, snap inspections, and reputational damage.

"Even similar industries have very different filtration requirements, so the ideal solution is a purpose-designed treatment process for each application. To identify and optimise the best solution, our engineers first conduct investigative pilot trials on the feed material either at our test facility in Swansea or the manufacturer's premises. The trial results will clearly identify the main requirements for the project and associated benefits."

Advances in effluent processing techniques mean that crossflow membrane filtration can filter raw effluent and recover high quality water. It allows highly customised solutions to be developed that can meet ambitious sustainability goals. As it is a physical process no chemicals are required to separate suspended or dissolved materials. The technology has the potential to significantly reduce effluent disposal costs while recovering up to 95 percent clean reusable water.

Water recycling systems from Axium Process can be used in almost any industry, including pharmaceutical, food, drink, textiles, chemical and automotive. They can also be used to complement other waste treatment processes such as anaerobic digestion.

Axium Process is an ISO 9001 registered company and operates rigorous procedures to ensure that all aspects of material selection, design, production, packaging and delivery conform to customer specification.

Axium Process Ltd
Tel: 01792 883882
Email: info@axiumprocess.com
www.axiumprocess.com

Diamond-lapped skate blades on course for success

In 2012 it was Felix Rijhnen whom LACH DIAMANT congratulated for his successes in the second German skating championships in Berlin. In the current season, it is keeping its fingers crossed for Ole Jeske, who also made the leap into the squad of the national speed skating team.

Felix Rijhnen (photo above) and Ole Jeske (photo below) on diamond-lapped skating blades

A clamped skate during lapping operation with LACH DIAMANT paste 3 µm and spray can Fluid »MF« to reactivate dried up paste

Both swear by LACH DIAMANT pastes. Success not only on the ice but also in the entire tool and mould-making industry, which is able to use the hardest material of all, the diamond, for fast surface removal up to the finest mirror finish.

The pioneer LACH DIAMANT offers diamond pastes traditionally filled into syringes and diamond spray »MF« from grit size ¼ to 90 µm for the fast surface application. You will find more detailed information about the range of the "quick and reliable assistants" for tool- and mould-making, for example LACH DIAMANT files and grinding pins, diamond- and CBN grinding wheels, diamond dressing tools, at **www.lach-diamant.de**.

Diamond Spray »MF« in action

LACH DIAMANT
Jakob Lach GmbH & Co. KG
Tel: 0049 6181 103822
Email: office@lach-diamant.de

Mirka's tooling evolution continues with pneumatic belt sanders

Mirka's innovative product portfolio is expanding with the launch of two new Pneumatic Belt Sanders (PBS) and two new file belts, designed for the transport and industry sectors. These products have been designed to ensure users have access to a complete solution that meets the constantly evolving requirements of their daily tasks and jobs.

The new Mirka® PBS 10NV and Mirka® PBS 13NV have been developed to be the optimal tool for general grinding and cleaning up welding seams. The R&D team in Jeppo, Finland, designed these tools with the user in mind and focused on their overall useability and ergonomics. The PBS' design ensures low vibration sanding, and its rubber handle ensures the user has a comfortable grip, so the tool can be used for a sustained period, while reducing the stress on the hand and wrist.

The grinding speed is easy to set with a top-mounted selector. The belts can be quickly changed with the help of the tool's tension mechanism, and the arm angle can be quickly adjusted with one key that is stored in the handle.

To complement the pneumatic belt sanders, Mirka is also expanding its abrasives line-up with the new ceramic and zirconia file belts, which are suitable for use on metals and can be used across multiple applications. The ceramic file belt is available in P36 -P120 grits. Its innovative design offers a high wear resistance for increased usage and its blend of self-sharping grains allows for maximum stock removal for the lifetime of the abrasive. The Zirconia file belt is available in P24-P120 grits. It provides users with a hard-wearing heat resistant abrasive that offers high stock removal alongside a consistent scratch pattern. In addition, the Zirconia's versatility enables it to be used across multiple applications, ranging from paint removal and stainless steel to high alloy steel, non-ferrous metals and cast iron.

Pete Sartain, national sales manager industrial of Mirka UK, says: "As a brand we want to provide users with a complete solution that enables them to complete jobs quickly and efficiently. The new Pneumatic Belt Sander and file belts have the versatility to enable users to work across multiple applications with ease. We are confident they will reap the benefits of the products' performance from the first use to the last, delivering a high-quality, consistent end finish."

Mirka (UK) Ltd
Tel: 01908 375533
Email: sales.uk@mirka.com
www.mirka.com

Van Geenen B.V. Metaalfinishing 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.

For 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 unrecognisable. Now 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 the €2 million investment in the Timesavers 81 Series grinding machine, which places the business firmly in the 21st century.

Nico (r) and Bart van Geenen (l) with their Timesavers 81 Series machine, an investment driven both by the heart and head

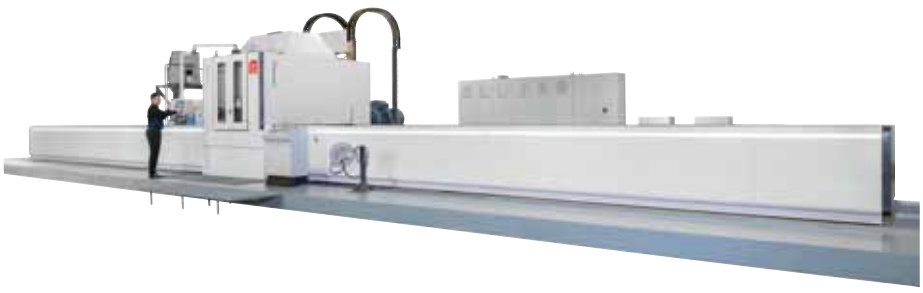
From those early days, the company began to specialise, particularly in stainless steel and other exotic materials. The emphasis is firmly on producing sheet and tube material to the highest quality in terms of surface finish (right up to Mirror 8 grade), with greater efficiency and consistent technical 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," says managing director, Bart van Geenen. "We are always looking to improve efficiency and our investment in automation has boosted productivity. As such, our partnership with Timesavers continues with this major investment in the 81 Series machine, an investment that 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," continues Bart van Geenen. The scale of the 81 series will also future proof production at Van Geenen; at an overall length of 24 m, 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.

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 and 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 Geenan.



The Timesavers 81 Series grinding machine can reduce process times by eliminating other machining processes

Positive customer response

Encouraging for van Geenan has been 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 genuine 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

The development of the Timesavers 81 Series came about following conversations with suppliers of sheet material, particularly titanium and other exotics such 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 with Timesavers introducing potential customers who may not be in a position to justify the purchase of an 81 Series just yet to Van Geenen. The machine is being made available to Timesavers as a real-world example for customers to see the potential of this grinding technology. "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," concludes Bart van Geenen.

Timesavers has produced a video with more insight into the 81 Series machine at van Geenen **https://youtube/ZvlMaldakmA**

Timesavers is represented in the UK and Ireland by Ellesco.

Ellesco
Tel: 01202 499400
Email: sales@ellesco.co.uk
www.ellesco.co.uk

Q-Fin keeps developing and is 4.0 ready

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

Q-Fin machines 4.0 ready
Q-Fin supplies its deburring and finishing machines with program selection in the operating menu. The machine operator can choose from a number of preset programs on the HMI screen, e.g. for a large edge rounding, in combination with the correct material thickness. In addition, the operator has the option of inserting own programs for products that regularly return to his company. After calibrating the brushes and selecting the correct program, the machine automatically sets the correct rotation and feed speeds. The program indicates which abrasives have to be mounted for this program. The smart software is also ready for connection to a barcode scanner.

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

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

Double-sided finishing
The application of a reversing unit for double-sided machining fits in this picture of "solutions around the deburring machine". It's often heavy and/or large steel plate parts that must be provided with a large radius on both sides for a good adhesion of powder coating. These parts must be passed through the machine twice and turned over in between. The latter is often done by hand or with the help of an overhead crane. This takes up a lot of time, it is strenuous work for the operators and not one hundred percent safe. According to Q-Fin's GrindingPower philosophy, the products can only be provided with a large radius at high speed giving pressure on one side and Q-Fin has therefore developed the Q2S reversing station in widths of 600, 1,200 and 1,500 mm. Incorporated in the deburring line, this reversing unit provides

batch-wise double-sided machining at an unprecedented high throughput speed. The system can be operated and maintained by one operator.

Heavy slag removal

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

In the production line we see an integration of the DS600 or DS1200 between the plasma cutting or oxy-fuel cutting machine and the deburring machine. The necessary manual removal of the slag is eliminated in this process. We have seen increasing automation around both the cutting and deburring machine in recent years. For example, the cutting machine can be unloaded automatically, the deburring machine can be loaded by a cobot and after deburring the products can be identified and/or marked again.

However, for many metal processing companies, a drifted conveyor belt or return belt on the deburring machine already offers a lot of ease-of-use, so that the process can be carried out by one operator.

Deburring, edge rounding and finishing

Q-Fin develops, builds and sells leading machines for deburring, edge rounding and finishing of sheet metal parts and extracting grinding dust. Its solutions allow its partners to work finer and faster and make products more beautiful. Together with customers, Q-Fin determines the best individual solution and takes care of the installation including safe, wet-working extraction system. It ensures maximum GrindingPOWER® in every situation.

The showroom of Q-Fin Quality Finishing Machines in Bergeijk, The Netherlands is open for a visit after making an appointment, taking into account the prescribed measures, so that you can test the new machines and the new software yourself.

Q-Fin Quality Finishing Machines
Tel: 0031 497 581018
Email: info@q-fin.nl
www.q-fin.nl

Magnetfinish deburr technology for cutting tools

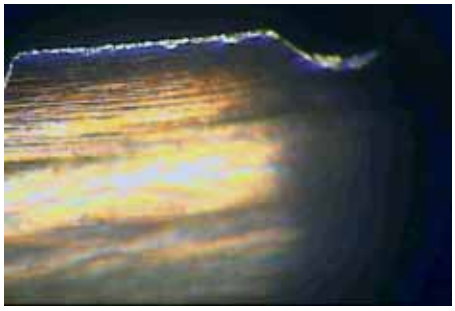
The Magnetfinish range of machines have been designed to finish all types of cutting tools and to vastly improve tool lifetime and performance.

Magnetfinish has supplied many machines to specialist tool manufacturers and regrinding companies who are using this new technology to offer end users within the aerospace and mould and die industries premium solutions whereby the finest and most highly precise cutters are required for arduous machining tasks.

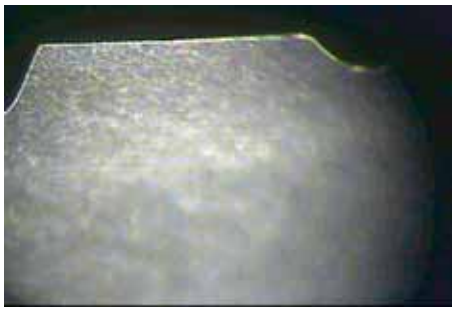
After being produced by a grinding process; cutting tools of all types can suffer from having jagged cutting edges and micro sized burrs. These impact heavily upon the lifetime of cutting tools and can affect their performance during heavy cutting. When milling, drilling or tapping at extreme speeds the resulting high temperatures that develop at the cutting edges are the main source for such problems because the tool becomes highly susceptible to wear. The patented Magnetfinish technology addresses this problem.

The Magnetfinish process polishes the flutes on all types of HSS and carbide rotary tools such as endmills, form cutters and drills, provides the perfect conditioning or "edge honing" of the cutting edges (micron rounding of the edge) and is also used to polish profiles on taps and coated cutters. The Magnetfinish polishing process of the tools flutes results in a superior chip flow leading to the increased productivity of the tool. The tools primary cutting edges are machined to allow a defined and reproducible radius of between 3 µm and 50 µm to be created. This edge preparation process can increase the lifetime of tools such as ball nosed end mills by a factor of four and also allows more consistent machining results to be achieved as from using the tools for the very first time. The processing times for cutting tools are extremely fast with the average machining time for smaller tools being in the region of 5 to 10 seconds.

Mass deburring of parts for the automotive sector



Ground cutting tool edge before processing on the MF machine



Cutting tool edge after processing on the MF machine

The processing times for cutting tools are extremely fast and, for example, a typical deep hole carbide drill of 6 mm diameter x 180 mm in length can be machined in just 20 seconds with the average machining time for smaller tools being in the region of 5 to 10 seconds.

Hard milling solutions typically use two-flute ball nose cutters for final finishing and these need a highly precise radius and perfectly edge honed cutting edges. The accuracy of the radius has to be extremely tight so that a high or low flute does not cause uneven metal removal, thus affecting part geometry, surface quality and also cutting tool life. The cutting edges of the flutes must have no jagged edges, chips, cracks or other surface irregularities. The presence of these defects would otherwise mean that the cutter edges would be subject to very early wear as soon as they contact the workpiece for the first time and would also lead to a rougher surface finish being created and a shortened tool life.

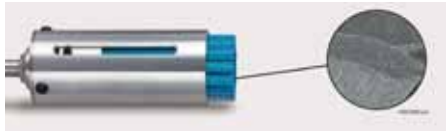
The entry level manually loaded MF61 machine has a general capacity for cutting tools from 0.1 to 20 mm in diameter and for tool lengths of up to 300 mm and is equipped with a simple laser-based safety curtain to allow for parts to be manually exchanged at ease without the need to constantly open and close a door. Tools are manually loaded and unloaded to a centrally positioned pneumatic gripper unit that will accept cutters of various diameters and lengths.

Processing on the MF Machine

This machine in the automated MF61A version can be specified with an optional 45 position automatic part loader. Both machine versions are operated by a simple to use touch panel operator control screen and all tool data can be stored for subsequent recall. Furthermore, it is possible to mix different types and sizes of cutters within the optional auto-loader with the entire batch of cutting tools then being processed without any operator involvement. Both variants are very compact machines requiring the minimum of floor space for installation near to adjacent cutter grinding cells.

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

How to deburr and not demur



During most machining operations, components become burred and sharp edges or material compression occurs. These effect the quality of the part and can create issues with assembly and failure of parts due to break off of material during working life. Removal of burrs is often critical to many of the lapping and polishing processes Kemet develop for customers, to prevent damage to lapping/polishing support materials, to maintain geometry after lapping and extend their life.

Kemet is always monitoring technical developments around the world and has a range of processes to offer a comprehensive deburring solution.

The comprehensive range of precision power hand tool systems, including Nakanishi, Diprofil and Flexible Drive Systems, with attachments and abrasive consumables suitable for grinding, smoothing, polishing, and deburring, has been expanded to include the full range of Xebec deburring and polishing products.

The Xebec products cater for either hand use or for in process, CNC/robotic use, with tailored tools for the full range of deburring challenges, including: after face-milling; end milling and drilling; threading and drilling; polishing brushes, to remove cutter marks on top surfaces, side, inner diameters and channels. A simple check whether the Xebec brush range is suitable for removing the burr is to see if it can be bent by your fingernail. If they can be bent, then the brushes will work.

Traditionally, abrasive loaded nylon brushes have been used for deburring, but Xebec brushes use abrasive ceramic fibre. One single bristle consists of 500-1,000 ceramic fibres that work as cutting edges, providing excellent cutting ability. This offers a number of features to improve CNC deburring and polishing.

The unique ceramic fibres are the abrasives with a fibre content ratio of more than 80 percent. Cutting edges that are made up from the tip of each fibre bristle create enormous grinding power, 60 times more than nylon brushes and this power rapidly removes the burrs.

Due to the structure of the ceramic fibre, new cutting edges are constantly being exposed and the brush maintains a consistent cutting performance right up until the fibres have worn down to the end.

Unlike nylon brushes the ceramic fibres do not deform with use and the Xebec brush maintains its straight shape and does not spread out like a toothbrush even after repeated use. This makes it perfect for CNC deburring and polishing in mass production lines.

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

Effective dust control solutions

Selecting the most suitable dust control equipment is not an easy task. Many manufacturers will encourage businesses to buy equipment that happens to be in their own product portfolio; but is it always the right equipment for the job? Choosing the right dust control equipment requires expertise, knowledge and experience due to the multiple design considerations for each individual application and varying characteristics of dusts that needs to be captured.

This article examines each type of technology and includes a product selection guide to offer an insight into the main considerations required when making a filter unit selection.

Application considerations for dry and wet filter systems and when and how to apply them

Of the many types of solid particulate filtration systems available to industry in general, there are two main categories which encompass the vast majority of equipment supplied for this purpose; 'dry' filter units and 'wet' filter units.

We are going to examine the defining characteristics, limitations and application of each type of technology to offer an insight into the main considerations required when making a selection:

Fundamentals of dry filter unit separation

These types of units typically utilise elements made from permeable filter media in various degrees of efficiency and finish to separate solid particulates from a gas stream utilising the four main components of membrane filtration mechanics; impaction, interception, diffusion and electrostatic attraction. Usually, dry filter units used in industrial applications utilise some method of automatic cleaning to dislodge filtered particulate from the media (dynamic filters) however this is not always the case, some units are designed to be simple barriers without the need for media regeneration (static filters).

Inertial impaction is where the gas stream passes around the filter fibre but inertia causes a dust particle to come into contact with the fibre itself. Interception is where a dust particle follows the path of the gas and comes into contact with a filter fibre. Diffusion is characterised by the random motion of a dust particle coming into contact with a filter fibre.

Electrostatic attraction causes a particle to be drawn into contact with a filter fibre

As particulates accumulate on the filter elements there is an increase in differential pressure (the static pressure measured each side of the filter media) and depending on the type of application this will either need to be periodically cleaned (usually high dust load applications with automatic cleaning systems) or the filter element(s) changed completely (low dust load applications without a cleaning system such as secondary HEPA filters).

Membrane type filtration offers very high levels of efficiency which can be over 99.99 percent at 0.3 microns (E10 rated*) with primary automatically cleaned media, and up to and even past H14* efficiency on static filters. Dry filter systems are suited to a myriad of different applications in multiple industries and offer a reliable, low maintenance and high efficiency solution.

*According to EN 1822

Limitations of dry filter units

Dry filter units that utilise membrane type medias usually contain filter elements in one of the following formats; pleated cartridges, pleated cassettes, tubular bags or flat bags.

Common constraints across all of these formats are that they are all essentially using a permeable media which requires filtration to occur on the surface and through the depth of the material in some cases. As such these types of filters are challenged if there are high moisture levels (in liquid form) in the extracted air which can saturate the filter media or the particulates being filtered are very adhesive in nature and difficult to remove with an automatic cleaning system.

For particulate in liquid form, there are

other extraction solutions available on the market not covered within this paper, but details of which can be found at **www.filtermist.com**.

High moisture levels that exist in a gaseous state i.e.the relative humidity of the air passing through the filter, is not necessarily an issue as long as any temperature differences between the extract air and the filter unit are considered in terms of not letting the air cool to 'dew point' which is where condensation into a liquid will occur. This is usually addressed by the addition of trace heating and/or lagging to minimise dew point issues.

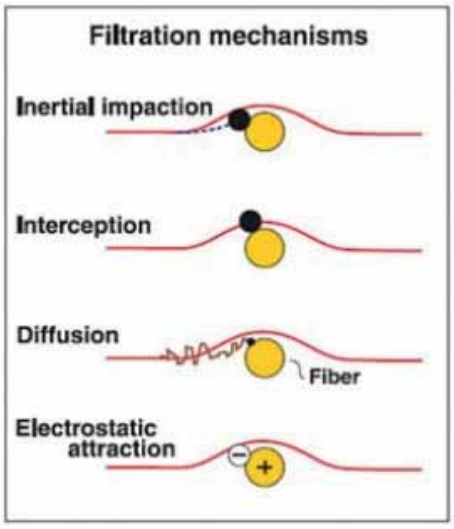
Other considerations for the application of dry filters are where potential ignition sources are introduced into the system by the process itself e.g. metal grinding producing sparks, and limitations of protection when handling highly explosive and volatile dusts.

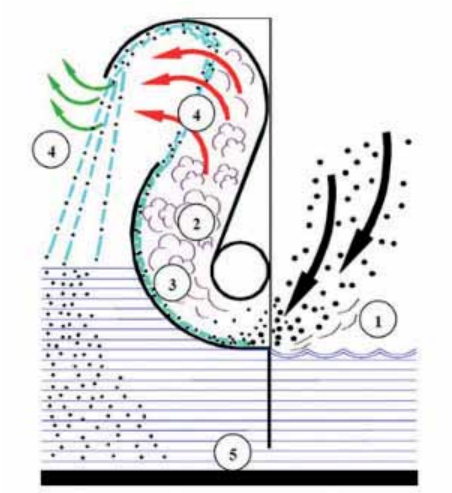
Most dry filter medias are flammable and introduction of ignition sources can pose a risk of fire unless some means of protection is implemented such as spark extinguishing or similar. If the dust being extracted is explosive then the risks are even greater if ignition sources are known to be present as there is a potential mix of fuel and an ignition source co-existing. Even with adequate explosion protection in line with ATEX Regulations, this type of application may pose a high enough risk to move away from a dry filter solution.

A limiting factor with dry dust filters is also the maximum level of explosion protection available. In terms of explosibility the vast majority of particulates handled in industry are well within the capabilities of a dry filter system however care should be taken when handling ST3 rated dusts with a KST value >300 bar m/s (as per BS EN 14034 - Determination of explosion characteristics of dust clouds). These high explosibility levels are usually found when handling reactive white metals such as aluminium, magnesium etc. and can reach levels of 1,000 bar m/s or more. In this instance it is unlikely that a dry filter unit could be made strong enough and with enough explosion vent area to handle the application and the customer is also likely to deem the potential risk and significant repercussions of such a violent explosion, should it occur, too great and to seek an alternative.

Dustcheck Maxi 328 & Compact 120 Dry Dust Collectors

Dustcheck Nonflam Wet Dust Collector





Fundamentals of wet filter unit separation

A wet filter unit typically separates solid particulate from a gas stream by passing it through an atomised liquid whereby particles get encapsulated by droplets and subsequently submerged into a tank where sedimentation occurs. As the method of separation is provided by a liquid which is recovered and reused within the unit, there is no requirement for replaceable filter elements such as those in a dry unit.

Wet dust collectors, or wet dust scrubbers, are mass separators. The efficiency of wet dust collection is determined by the mass of the dust particle present in the extracted dust cloud relative to the size of the water droplets generated.

Wet collectors are more suited to particles with heavier mass and they function by generating very fine droplets or aerosols in the 'spray generation zone'. These droplets will impinge on, and encapsulate dust particles of similar momentum.

Wet units usually require dusts of relatively high specific grav 500 kg/m^3) and with particle sizes >10 µms to achieve acceptable filtration efficiencies of >99 percent.

Wet collectors are recommended when machining reactive white metals such as aluminium, titanium and magnesium etc. due to their highly volatile nature and are also ideal for handling sticky particulates or dusts extracted with liquid moisture.

Filtration efficiency based solely on particle size is limited when compared to dry units. Typically, the mean particle sizes in a wet unit need to be >25 µm to achieve the same levels of efficiency as dry units handling dusts at 5 µm and less therefore careful consideration of required filtration efficiency and particle size distribution should be applied before selecting a wet unit. The main applications for wet filtration are based around mechanically generated dusts such as polishing, linishing, grinding, crushing and fettling, typically in the metals and stone masonry sectors, as the particle sizes and specific gravity of dusts generated from these processes generally fall within the capabilities of the equipment.

For more information, contact:

Dustcheck
Tel: 01952 290500
www.dustcheck.com

Healthy Business

Dust extraction specialist now certified in accordance with ISO regulation on Occupational Health & Safety

Dustcontrol AB has been officially certified according to ISO 45001 on Occupational Health and Safety, further highlighting its commitment to provide a reduced ecological impact and safer working environment.

According to the International Labour Organisation, more than 7,600 people die from work-related accidents or diseases every single day, underlining the importance of implementing health and safety regulations that systematically collaborate, plan, support, examine and improve working environments.

With this greater onus on reducing workplace risks and improving employer safety, ISO 45001 ensures that the wellbeing of staff is preserved at the forefront of an organisation's ethos.

As well as being certified according to ISO 45001, Dustcontrol is also certified with ISO 9001 on Quality Management Systems and ISO 14001 on Environmental Management Systems, demonstrating the company's commitment to deliver high-quality products with a reduced environmental impact and in a safer working environment.

Founded in 1972, Dustcontrol has a wealth of experience in developing dust extraction solutions and centralised vacuum systems to fit client requirements in the manufacturing, engineering, food processing, construction and demolition industries. It is an experts in capturing dust at its source, both where and when it is created.

James Miller, director of subsidiary Dustcontrol UK, says: "We're proud that our factory has been certified under ISO regulations on the continued improvement of the working environment. At Dustcontrol, we are never satisfied with just selling products.

We aspire to manufacture and customise high-quality portable dust extractors and industrial extraction systems with very high levels of filtration, in the most environmentally-friendly and sustainable way possible.

"The environmental policy complies with current environmental legislation, rules, requirements and standards, and works to ensure continuous improvement regarding sustainability, physical wellbeing and a safe working environment. The removal of dust from the workplace isn't just an environmental and health issue, but also a business issue, so the cleaner the workplace the better the end result."

Dustcontrol UK
Tel: 01327 858001
Email: sales@dustcontrol.co.uk
www.dustcontrol.co.uk

AirBench launches Modrack modular accessory system

In response to customer demand, AirBench has launched a standardised range of assembly bench options to be fitted to any AirBench model.

The Modrack assembly bench system includes various enclosure systems, supporting power and air supplies, lighting and tool racking. Modrack allows for construction of a full assembly area workbench without modification to standard AirBench units. Customers can specify requirements from a range of standardised components. Almost every standard AirBench model can be supplied with the full Modrack range.

All AirBenches are assembled in the factory in Colchester, Essex and are designed to improve efficiency and reduce energy usage. By recirculating clean air, they avoid the heat losses of ducted systems. AirBench requires minimal operator intervention and are very quiet at under 70 dBA across the range, so no requirement for protection. The company can also help you comply with COSHH regulations. AirBench complies fully with the many areas covered by HSG258 guidance.

To try an AirBench for free, book a demo and one will be brought to you. Visit **airbench.com/modrack** for more information.

AirBench Ltd is the UK's leading manufacturer of downdraft benches and cross draught 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, it is actively helping businesses across many industries solve their workplace dust and fume issues.

AirBench
Tel: 01206 791191
Email: sales@airbench.com
www.airbench.com

NEW Dustex Clearblast 1000

RVT has a new solution to help control dust and fumes created during maintenance works, repairs and ship building projects During these processes, RVT work with clients and contractors to ensure there is a consistent and agreed level of dust and fume management during any works to meet current HSE legislation expectations. It is also important to protect client and contractor workers health during tank entry and during any welding or grinding activities.

With this in mind, RVT Group has announced a new unit available for hire, the Dustex® Clearblast 1000. This high-pressure unit is suitable for the extraction of dust and fumes from welding, soldering, brazing, grinding, sanding, sawing, cutting and a number of other on site activities. Due to the number of extraction points, this system can also be used as a centralised vacuum system across multiple storeys. The Clearblast 1000 contains an integrated HEPA filtration system.

Due to extremely high pressures, this unit can provide extraction and filtration over long distances. The four extraction points can be split into multiple extraction points to provide a centralised vacuum system across a large site or multiple storey building. The unit has four x 102 mm extractor ports, suitable to connecting 100 mm diameter ducting. The ducting can be further split into any number of extraction points depending on site requirements.

Where to apply the Dustex Clearblast 1000 unit

To extract welding fumes and grinding dust during repairs to boilers, furnaces, and ships. The centralised extraction system is for construction projects and on-tool extraction and it can extract GRP dust and resin odours during repair works.

Impressive features

Efficient and effective local control for a range of applications, including for use with flammable dust while up to four extraction ducts can be further split to provide maximum flexibility. Automatic filter cleaning uses integrated compressed air supply and the fully enclosed system keeps harmful dusts and waste contained. It eliminates manual handling and other associated health and safety issues such as poor air quality and a range of tools and nozzles are available to attach to flexi hose allowing access to hard-to-reach areas

Waste material feedback to one central location and various waste discharge options are available for easy disposal into skips,

This diagram shows an example of 3 of the extraction points in use. More extraction points can be made available if required

bins, onto conveyors, or back into process which saves both time and money.

ATEX approved for use with flammable dust

The Clearblast Filter Unit must be used in accordance with the ATEX Directive. ATEX Workplace Directive 1999/92/EC places the responsibility on the end-user to make a suitable risk assessment, particularly in the extraction of potentially explosive dust. Optional accessories include a hose reel on stand as well as floor and table cleaning vacuum hoses for the system in 50 mm.

RVT Group
Tel: 0808 1783286
Email: info@rvtgroup.co.uk
www.rvtgroup.co.uk

ANCA announces key European appointments

Leading Australian manufacturer strengthens its leadership team and commitment to servicing the region

ANCA Europe has announced that Edmund Boland takes the role of general manager Europe; Martin Winterstein, an external appointment, will take the position of sales manager Europe and Jan Langfelder moves to Global Key Accounts manager. ANCA has been operating for over thirty years in Europe and the new appointments mark an ever-expanding local footprint.

The company has a purpose-built technology centre in Weinheim, Germany, a UK facility and local sales and technical support in most European countries. The almost 70 strong European team provide a premium customer experience with expertise covering sales, customer training, application support, service, operations, engineering, finance and administration. Customers from across Europe can visit the state-of-the-art machine demonstration area to experience ANCA's latest products and see first-hand the technology in action.

Edmund Boland moves into the role general manager Europe, having led global operations from ANCA's headquarters in Melbourne. He says: "I am very excited to join the team in such an important market. ANCA is in my blood and years of experience in our Australian headquarters has built a deep understanding of the business to help me further develop the European team's capabilities to better listen to and service our customers."

"Much of ANCA Europe's success has been due to the deep market knowledge, technical acumen, strong customer relationships and leadership of Jan Langfelder. Taking on the new role of Global Key Accounts manager is another exciting development for ANCA with Jan focusing on strengthening our customer relationships in a critical time."

Martin Winterstein, sales manager Europe says: "It is a pleasure to join ANCA, a leader in the cutting tool industry with a strong reputation for accuracy and performance. Having worked in the European manufacturing market for many years at Gehring Technologies and more recently at Liebherr Verzahntechnik, I see many opportunities for ANCA to grow. Europe is a unique region with unique needs and ANCA offers the solutions and the expertise to provide a premium local experience."

Edmund Boland and Martin Winterstein

ANCA invites all its European customers to visit its facility for demonstrations on its products. Later this year, ANCA's newest product, the AutoMarkX will be shown in Europe for the first time. The laser marking station is an automatic stand-alone laser marking station, replacing manual and labour-intensive processes. Visitors can also see the new GCX Linear for skiving cutters, CPX blank preparation machine, MX7, FX7 and complementary product the Mitsubishi Wire EDM in the Weinheim office.

Edmund Boland has worked at ANCA for 15 years in across several roles. He brings a broad range of expertise having worked in ANCA's finance, operational and application teams. He has most recently led the Global Supply Chain including successfully bringing ANCA through the COVID pandemic, the most disruptive supply chain event in living memory.

Martin Winterstein has led global, multi-national teams in a number of successful machining businesses. Most recently, he worked as the chief sales officer, managing director at Gehring Technologies GmbH in Ostfildern. Prior to that he was the director Global Market Sales and Market Service at Liebherr Verzahntechnik GmbH in Kempten. He has also worked for MAG Europe GmbH in a number of roles and at ThyssenKrupp MetalCutting, Hüller Hille GmbH in Ludwigsburg.

ANCA CNC grinders are used for manufacturing precision cutting tools and components across a diverse range of competitive industries including cutting tool manufacturers, power generation, woodworking, automotive, aerospace, electronics and medical.

ANCA is a market leading manufacturer of CNC grinding machines. It was founded in 1974 in Melbourne, Australia where the company still has its global headquarters. ANCA Europe has its main technology centre in Weinheim, Germany and a smaller facility in Coventry, UK with expert teams covering service and sales, applications, customer training, operations, engineering, finance and administration. Regular customer demonstrations and events are conducted at the Weinheim technology centre. To offer customers a local experience.

ANCA (UK) Ltd
Tel: 024 76 447000
Email: ukinfo@anca.com
www.anca.com

Fast and accurate?

The answer's YES

Darex

Drill sharpeners

From 1st MTA, the UK's leading machining accessories supplier.

Email: enquiries@1mta.com Freephone: 0800 783 0510
Fax: 0800 783 0517 www.1mta.com

1st MTA MACHINE TOOL ACCESSORIES

VOMAT ultra-fine filtration technology for the tool grinding industry

Keep coolant extremely clean for a long time in large batch tool production

The larger the batches in tool grinding and the more grinding machines are involved in the process, it becomes more worthwhile to employ efficient central filtration systems or large filters for cleaning contaminated grinding oils or aqueous coolants as offered by German filtration specialist VOMAT.

VOMAT offers systems that can be individually adapted to customer-specific production needs. One example is the compact system KFA 1500. The KFA 1500 is a highly efficient, low-maintenance ultra-fine filtration system for grinding carbide and HSS materials with a filtration capacity of 1,500 l/min. (397 gal/min). The KFA 1500 keeps the cleaned coolant in the system for extremely long periods and does so in an energy-efficient manner, even with handling large tool batches.

The selection of the right filtration system is an important aspect for success in tool grinding. VOMAT (Vogtländische Maschinen- und Anlagentechnik) from Treuen is a specialist in filtration technology for cooling lubricants in the metalworking industry. The product portfolio includes stand-alone, modular and central systems. VOMAT also designs and builds one-off customer-specified units with central and decentralised functions.

Vomat ultra-fine filter systems are available in various sizes ranging from 70 litres (18.5 Gal) up to large filtration or central systems with 960 or 1,200 liters (254 or 318 gal) flow capacity per minute. In case filtration capacity requirements increase, when for example a host of grinding machines are to be supplied with clean oil centrally, then the large VOMAT ultra-fine filtration systems come into play.

Steffen Strobel, technical sales manager at VOMAT says: "Tool manufacturers or re-grinders can also order VOMAT filters, which can be scaled-up in 1,200 litres/minute (318 Gal.) increments. The large selection of modules and additional optional features allows for maximum flexibility.

"Our KFA 1500 compact system is a fine example of how economical ultra-fine filtration can work when grinding large batches. These systems can filter large amounts of dirty cooling lubricant at constant temperatures. The extremely cleaned oil can remain in the system for a long, long time."

KFA 1500 for large tool lots

The tank system of the VOMAT KFA 1500 consists of the dirty oil inlet tank, the clean oil tank and the disposal unit. The tank volume is 10,000 litres (2,645 gal.). The KFA 1500 filters with a cleaning capacity of 1,500 litres/minute (396 gal./min.)

Modern, low-maintenance and user-friendly technology ensures energy-efficient full-flow filtration, in which clean and dirty oil are separated 100 percent. Modern high performance pre-coat filters (KFA 1500 footprint: 6,610 x 2,530 x 2,620 mm (L x W x H) filter to NAS 7 for a very long time. This corresponds to 3 to 5 µm.

Steffen Strobel continues: "The KFA system filters and flushes as the need arises. This means that the backwash cycle is initiated automatically and individually for each filter element, depending on the degree of contamination. Meanwhile, the other filter elements ensure a continuous supply of clean oil. This not only ensures that the filter and grinding oil can remain in the system for a very long time, but also that the system operates in a particularly energy-efficient manner. The fully automatic monitoring and control system of the KFA 1500 keeps energy and operating costs low.

The cooling performance of the cold water cooling system of the KFA 1500 operates at 200 kW with a constant oil temperature of 24° in continuous operation. The temperature accuracy is within a tolerance range of up to +/- 0.2 K. This means that the grinding oils used have long life cycles. As an option, VOMAT offers compressor cooling systems with external condensers and high control accuracy.

Due to the use of pre-coat filters, there is no contamination of the swarf by any filter aids. The residual moisture of the metal chips is between five and 10 percent and the recyclable material is disposed directly into a suitable transport container provided by the recycling company. Thanks to the PLC control and software technology, remote maintenance of the KFA 1500 is also possible without any problems. A wide range of optional features make the VOMAT KFA 1500 filtration system extremely flexible. The VOMAT KFA 1500 can be adapted to a wide variety of work conditions and can be easily integrated into any workflow due to available optional equipment, for example there are various pre-filter systems (material-dependent) and drying units.

With the KFA 1500 filtration system, the machine manufacturer VOMAT, provides 163 tool manufacturers and re-grinders with a highly efficient, low-maintenance ultra164 fine filtration system that promises optimum quality even in large batch production

Steffen Strobel says: "State-of-the-art grinding technology in combination with VOMAT ultra-fine filtration technology gives the tool manufacturer the certainty of producing consistently high tool quality with ultimate process reliability, even in a large batch tool manufacturing environment."

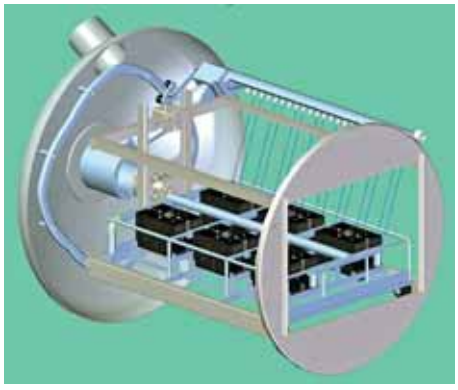
With the KFA 1500 filtration system, the machine manufacturer VOMAT, provides tool manufacturers and re-grinders, with a highly efficient, low-maintenance ultra-fine filtration system that promises optimum quality even in large batch production environments.

UK Distributor:
Oelheld UK
Tel: 01745 814777
Email: sales@oelheld.co.uk
www.oelheld.co.uk

Vector kinematics boosts cleaning efficiency

Component cleaning specialist Turbex is announcing optional functionality available in two of its industrial washing machine models, Java and Palma, that increases the efficiency of washing components, improves their cleanliness and widens the range of applications that can be undertaken. Called vector kinematics, the patented feature is in addition to process-specific, targeted cleaning, announced at the last MACH show, which is tailored to large-scale cleaning of families of similar parts.

The new vector motion extends an already advanced global cleaning method, also patented, whereby the basket of components and the aqueous spray system can be made to rotate in either the same or opposite direction, or both sequentially, within a program. What the kinematics adds is even more relative movement, shortening the washing time or increasing cleaning and drying effectiveness within the same cycle.



The Java and Palma models within the Turbex range of aqueous cleaning machines now have the factory-fitted option of vector kinematics to enhance the effectiveness of component cleaning

In contrast to a process employing an array of nozzles that are fixed in position, workpieces in the basket are not sprayed from one specific direction but from many angles, as the spray bar supplying the nozzles performs both its pre-existing rotation and a new rocking movement around its own axis by 35 degrees to either side. The basket co- or counter-rotates synchronously at an optimal speed calculated by the machine control to maximise penetration of the aqueous solution to awkward areas inside and on the surface of the components.

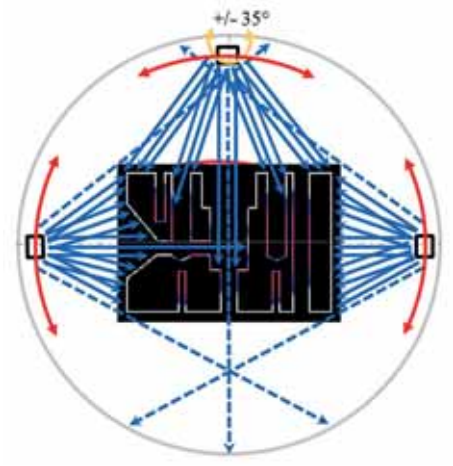
Tests have proved that this coordinated interaction between the spray bar with kinematics and movement of the basket achieves considerably more effective component cleaning. Compared with rigid nozzle systems, the number of particulates remaining on processed parts is reduced by up to 70 percent for any given set of four cleaning parameters defined in the so-called Sinner's circle: chemistry, temperature, contact time and mechanical power, which determine the overall efficiency of any cleaning procedure.

In particular, manufacturers of workpieces with complex geometries will benefit from the innovative process. The numerous angles of impact lead to significantly fewer spray shadows, so excessive cleaning of easily accessible component regions is avoided. Valuable resources are saved and the entire cleaning process is more efficient and economical. Undercuts and blind holes are easily reached during spray-cleaning, whereas previously this may only have been possible by flood-cleaning.

Processing of larger components

The heavy duty Turbex ACV-1.7-2 aqueous cleaning machine from the company's range of front-loading, spray washing and rinsing machines is also available. The latest feature of the latest-generation models, which have options for one, two or three process tanks, is a pump that is mounted vertically rather than horizontally, resulting in more powerful cleaning and much quieter operation.

A heavy duty Turbex ACV-1.7-2 aqueous cleaning machine from the company's range of multi-stage, front-loading, spray washing and rinsing machines



± 35-degree rocking of the spray bar supplying the nozzles increases penetration of the aqueous solution to awkward areas inside and on the surface of components

The machines are particularly popular in the UK for degreasing, precision cleaning, phosphating, paint removal, descaling and derusting. Manufactured from stainless steel, the ACV programme comprises both single- and multi-stage units with options for one, two or three process tanks. Standard sizes range from one to three metres in diameter, although larger versions are available.

These PLC-controlled machines provide a high level of cleaning performance due to ingenious design principles combined with elevated liquid spray pressures and flow rates achieved by the powerful pump. The spray system, also of stainless steel, rotates around a fixed load that can weigh several tonnes. Acoustic as well as thermal insulation protect operators from undue noise and heat.

Air blast and hotair drying stages are optional, as is gas instead of electric heating. Other optional accessories include steam extraction, automatic refill, an oil skimmer or separator and a detergent dosing unit. A manually operated spray lance with its own impeller pump can also be supplied, allowing particularly awkward soils to be removed. Alternatively, temporary use of the equipment as a manual spray booth is possible.

Ultrasonic lines for meticulous cleaning

The Turbex ProLine range of cleaning lines, intended for applications where a very high level of cleanliness is needed, include an

automated 550 system with three wet stages and a dryer plus load and unload stations. There are four variants in the modular, fine and ultra-fine cleaning line range: Easy, Auto, Semi and Auto+. Available in five tank sizes, they offer different levels of capability including semi-automatic handling. They also cater for various component weights and production quantities. The Auto+ model includes a noise reduction enclosure that doubles as a clean room interface.

A hallmark of these machines is multi-frequency ultrasonics, enabling a single transducer to generate two different ultrasonic frequencies. Cycle times can be significantly shorter and there is the added advantage that dis-similar components and materials can be processed in the same tank. Different drying systems are available including hot air, infrared and vacuum to allow optimum processing of different materials.

All products, which range from bespoke, multi-stage cleaning and drying lines down to small bench-top units, are aimed primarily at high-end manufacturers in the optics, medical, and precision manufacturing industries. However, companies in the aerospace, automotive, nuclear, electronics and general engineering sectors also use this equipment.

Aimed at precision cleaning applications, the Turbex automated ProLine 2 550 aqueous system has three wet stages and a dryer plus load and unload station

Turbex Ltd
Tel: 01420 544909
Email: john.huntingdon@turbex.co.uk
www.turbex.co.uk

Another MecWash Maxi provides optimum cleanliness for Grainger and Worrall

There is no compromise for component cleanliness when it comes to the demands and expectations of global OEMs involved in the automotive and aerospace sectors, as precision engineering specialist Grainger and Worrall Machining Ltd fully appreciated when it bought its first MecWash Maxi in 2016.

With blue-chip OEM customers throughout the world, the company turned to MecWash Systems of Tewkesbury, Gloucestershire, UK when it came to investing in a component washing system capable of not only meeting but exceeding the stringent standards of the automotive sector.

So, a few years later when the company was awarded the contract to machine V8 blocks and bedplates for a niche high-end OEM operating at the pinnacle of the performance car market, it again turned to MecWash.

As part of Grainger and Worrall's £3 million investment to support the low volume production cell, MecWash Systems was to provide a second precision cleaning system which was versatile enough to clean both the block and the bedplate separately at various points during manufacture and, in the assembled condition, while still achieving the highest cleanliness standards. The Maxi with its rear feed and dedicated jetting capability was the ideal choice.

MecWash Systems collaborated with Grainger and Worrall to identify the key features of the components and three bespoke fixtures were manufactured which were capable of dedicated jetting via the special rear feed, ensuring cleanliness of the oil ways, water jacket and blind machined holes.

Because of the Maxi's versatility, Grainger and Worrall subsequently contacted MecWash again when the precision machining specialist won a contract to machine the cylinder block for a new high-performance engine. MecWash was able to manufacture a new fixture which also fitted into the Maxi and utilised the dedicated jetting facility for the new block, while not impacting on the production of the V8 block and bedplate.

Grainger and Worrall, based in Bridgnorth, Shropshire, is renowned globally for being at the forefront of sand casting technology and precision engineering development and innovation, particularly for prototype and low volume production of complex prismatic parts across many industry sectors as well as body structure, power storage enclosures and electric drive units for the next generation of transport. It counts many major OEMs and Tier 1 suppliers among its customers.

The company commissioned the MecWash Maxi aqueous washing system with an Aqua-Save because of its versatility for cleaning all types of precision machined components, from small parts to blocks and heads for V8, V10 and V12 engine prototypes.

"Our customers expect a 'production like' solution, which means that whatever we are producing for them has to be as close to a mass-produced part as possible. This ensures testing is representative of the final product and significantly reduces time in bringing it to market," says Mark Davies, plant director at Grainger and Worrall Machining Ltd.

"For that to happen we have to ensure there is no compromise when it

comes to cleaning and degreasing any machined component. Even a microscopic contaminant can have a potentially devastating effect on testing and validation. That is why we must ensure we offer our customers the same levels of cleanliness on the prototype components as in the mainstream production facilities."

Mark Davies says the Maxi was a perfect solution as it is designed to clean complex and intricate machined parts, including the removal of many different types of contamination, like coolant and swarf: "Coupled with bespoke fixturing and jetting, the Maxi delivers unrivalled and repeatable cleanliness on even the most complex of components, harnessing the advantages of traditional agitation, jet wash and spray wash technologies. It is capable of cleaning components to the most exacting standards, enabling us to measure them accurately against the ever increasing and more rigorous manufacturing tolerances demanded by OEMs."

The addition of the MecWash Aqua-Save technology to the Maxi provides additional benefits for Grainger and Worrall.

John Pattison, managing director of MecWash, explains: "The Maxi is already at the forefront of aqueous washing technology. With the addition of our Aqua-Save water recycling system, the company is also reducing the amount of water it uses and cutting the amount of effluent it needs to dispose of. This ensures additional cost and environmental benefits for the company without compromising on the levels of cleanliness."

The Aqua-Save system can be used with MecWash's complete range of washing systems. Its principal advantages include a reduction in effluent disposal costs of up to 95 per cent and extending the time between changing wash solutions, reducing down time. The Aqua-Save range recycles 15 to 30 litres an hour and the systems can be used for treatment of wash water, waste coolants and general wastewater.

"Grainger and Worrall, like their global OEM customers, have no room for inefficient washing systems. They have to ensure the cleanliness standards are reaching the highest levels possible. It is a testament to MecWash and our washing systems that they have chosen a second Maxi as part of their significant investment in this process," adds John Pattison.

As part of the commissioning process MecWash works with its clients to ensure its systems are operating to the highest levels possible. This includes using its in-house laboratory to develop and provide bespoke detergents used in the washing process.

More details about the MecWash Maxi can be found at **www.mecwash.com**. Information about Grainger and Worrall can be found at **www.gwcast.com**.

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

MecWash Systems Ltd
Tel: 01684 271600
Email: enquire@mecwash.co.uk
www.mecwash.com

A super time to invest in component cleaning machines

A new change to the UK's capital allowance regime means right now is a fantastic time for businesses to invest in component cleaning machines. In March's Budget, Chancellor Rishi Sunak announced the "super-deduction" policy that will allow companies to claim 130 percent capital allowances on plant and machinery investments. The announcement may not have gained the front-page headlines of other Budget initiatives, but it is absolutely worth paying attention to.

The super-deduction is a temporary policy and businesses can only claim for qualifying expenditures incurred from April 2021 until March 2023. It works by allowing a company to deduct 130 percent of the initial investment when computing taxable profits. This means that, for every pound a company invests under the super-deduction, their taxes are cut by up to 25p. The Chancellor also announced a 50 percent first-year allowance for special rate, including long life, assets that ordinarily qualify for a 6 percent special rate writing down allowance.

Fraser Technologies has the expertise to assess your individual business needs and select the best component cleaning machine for customers to make this investment. For almost 50 years, it has been delivering chemical solutions to UK manufacturing across a range of industries. As an independent supplier of equipment and chemicals, it is well placed to offer this complete package and is able to work with customers to provide the solvent or aqueous cleaning systems that best suits their manufacturing business.

Fraser Technologies' solvent cleaning systems offer an environmentally friendly and cost-effective solution to precision cleaning needs. With minimal cost and capital investment, its new generation OpteonTM solvents can clean components to an exceptionally high standard. It has teamed up with Crest Ultrasonics, a leader in designing and manufacturing precision cleaning equipment, to supply the UK with the latest range of solvent cleaning systems.

A key advantage of the solvent equipment is the auto-sealing compression

lid which, along with the unique vapour control system, increases solvent retention. Fraser Technologies can offer standard, single and multi-stage systems with semi or full automation to fully bespoke options. This reduces costs and emissions significantly, providing a superior cleaning product that is friendly to a balance sheet and the environment.

The company also offers a diverse range of aqueous component cleaning systems.

Fraser Technologies
Tel: 01506 443058
Email: sales@frasertech.co.uk
www.frasertech.co.uk

Double-batch mass finishing system for wet and dry finishing process

Highly flexible and efficient solution for processing of zinc die-castings

Gjuteriteknik, a Swedish foundry specialising in zinc die-casting, was looking for a mass finishing system that allows the fully automatic and cost-efficient running of different finishing processes. With the mass finishing system R 420 2-CH, Rösler was able to provide the ideal solution. This system allows the simultaneous dry or wet processing of two work piece batches, including the drying of the finished work pieces, with a high degree of process stability.

In the mid 1990's the foundry Gjuteriteknik AB, founded in 1978, made the strategic decision to exclusively specialise in the production of zinc die-castings. This family-owned company, located in Värnamo, Sweden and run by the second generation owners Jonas und Peter Abrahamsson, has successfully established itself in this field and produces about one million castings per day. The company's services include the design phase for a product, the production, surface refinement and logistics. With this comprehensive portfolio the zinc die-casting specialist Gjuteriteknik is a partner to a wide range of companies active in the fields of telecommunication, electronics, automotive, furniture and construction in Europe, Asia and South-America.

The package, consisting of a rotary vibrator, a hot air belt dryer and a semi-automatic centrifuge, allows the parallel processing of two workpiece batches in either dry or wet model

A recipe for success

Jonas Abrahamsson comments: "Zinc die-casting is a relatively small segment in the foundry industry. To be competitive on an international level, as a Swedish company, we must not only be highly flexible in the fulfillment of the customer requirements but must also be very cost-competitive. We have achieved this by the implementation of highly automated processes throughout our entire manufacturing operation. Our goal is to produce casting qualities that require no additional processing. However, if the workpieces had to be deburred, we did this predominantly in fully automatic shot blasting cells. One reason for this approach was that our old mass finishing system offered only very limited processing possibilities and required a lot of manual operations."

Therefore, when the company decided to purchase a new mass finishing system, its main requirements were flexible processing possibilities, an automated process from the loading of the workpieces to their discharge after the drying operation and a high capacity. As a result of its excellent experience with the existing Rösler mass finishing and shot blast equipment, Gjuteriteknik decided to purchase a system that consists of a double-batch rotary vibrator, model R 420 2-CH, a hot air belt dryer and a centrifuge for cleaning and recycling of the process water. Another reason for purchasing the Rösler system was that it fully met the cycle time requirements of the customer.

After the bin with raw workpieces has been placed in the loading system and, the operator has selected the respective processing program, the process, including the drying of the finished workpieces and the discharge of workpieces processed in a dry operation, runs fully automatically

Efficient, parallel wet or dry processing

At the centre of the double batch system, allowing the parallel processing of two

workpiece batches, is a rotary vibrator with a gross volume of 420 litres that is suitable for wet as well as dry finishing operations.

"We already had one project for dry finishing of the workpieces and we knew that the demand for dry finishing would grow significantly. Therefore, it was very important for us to process the workpieces fully automatically, which so far had not been possible. For this reason, process flexibility had top-priority," explains Jonas Abrahamsson.

While one batch of work pieces is processed in the rotary vibrator, a second batch is passing through the separation station and, in case of wet processing, through the dryer

For the mass finishing operation

Customer-supplied bins with raw workpieces are placed into the lift and tip loading device that transfers the workpieces into a vibratory hopper. After the operator has entered the workpiece identification into the PLC, the workpiece specific processing program starts automatically. While the vibratory hopper transports the raw zinc die-castings into the rotary vibrator, the loading device moves back into its home position. This allows placing another batch of workpieces into the loader and selecting the respective program.

After the pre-programmed processing time, an unload gate in the bottom of the rotary vibrator is opened and the mix of media and finished workpieces is discharged onto a vibratory buffer with an infinitely adjustable vibration intensity. As soon as the processing bowl is empty, the unload gate is closed and the processing bowl is filled with another batch of media and raw workpieces. At the same time, the vibratory buffer gently transfers the mix of finished workpieces and media into the vibratory screen separation unit, where media and workpieces are separated. An undersized media screen ensures that during the separation, operation media that has become too small is discharged from the system. This ensures a high process stability. Within certain time intervals, new media is manually added to the system.

The area around the vibratory separation unit was designed as a separate safety zone, which can be safely entered, while the rotary vibrator is running. This allows placing empty part bins for workpieces that were finished in a dry process and discharged through a movable vibratory cross conveyor. Workpieces that underwent a wet finishing process are transferred to the two metre long hot air belt dryer R 2000 BT.

Cleaning and recycling of the process water by centrifuge

During wet finishing processes, a high water-compound flow through the rotary vibrator ensures a complete and safe flushing out of contaminants such as metal and media fines, etc. The water/compound mix flows into the rotary vibrator from the top, is discharged through bottom drains and then pumped to the semi-automatic centrifuge Z 800. To promote the separation of the solids from the process water in the centrifuge, flocculants are automatically dosed into the process water. The cleaned water is pumped to a clear water tank. As needed, compound is injected into the process water fully automatically. This guarantees a constant compound concentration and, therefore, absolutely repeatable, high-quality finishing results.

Jonas Abrahamsson concludes: "The new mass finishing system permits us to adapt our finishing processes to the workpieces and enables us to perfectly fulfill the requirements of our customers. We are very happy with the new equipment and feel that we are well prepared for any future finishing challenges."

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

Under the brand name AM Solutions, it offers numerous equipment solutions and services in the area of additive manufacturing/3D printing. Its central training centre the Rösler Academy offers practical, hands-on seminars to the subjects mass finishing and shot blasting, lean management and additive manufacturing. Besides the German manufacturing locations in Untermerzbach/Memmelsdorf and Bad Staffelstein/Hausen, the Rösler group has a global network of 15 manufacturing/sales branches and 150 sales agents.

Rösler Tel: 0151 482 4417
Email: rosler-uk@rosler.com www.rosler.com

High pressure heat treatment capability accelerates scale-up for production of AM parts

With the deployment of a QIH 60 M URC™ Hot Isostatic Press (HIP) from Quintus Technologies, Canada's Burloak Technologies is pushing the limits of Additive Manufacturing (AM) to deliver new levels of mechanical performance and strength properties in parts for mission critical applications.

As a full-service additive manufacturer, Burloak works with the most innovative companies in the space, aerospace, automotive and industrial markets to

rapidly transition the most challenging part designs to be additively manufactured at scale. The High Pressure Heat Treatment™ (HPHT™) capability of the new QIH 60 facilitates this rapid transition. Combining high pressure, heat treatment, and cooling in a single process makes it possible to remove several operations from the AM production line, generating significant savings in both cost and time.

Equipped with the world's fastest fan-driven cooling system, the QIH 60 can achieve an unprecedented peak gas cooling rate of > 1,500K/min, "rates that have never been seen before," states Ed Williams, general manager for the Americas at Quintus Technologies. The press's highly customisable cooling cycle can be programmed to stop at a specific temperature while maintaining the desired pressure set point. Rapid cooling under pressure minimises thermal distortion and non-uniform grain growth in components, producing finished parts with optimal material properties. It also allows Burloak to significantly increase production.

"This capability is critical for Burloak as a full-service supplier for all customers and, in particular, for the development of high-strength flight components," comments Peter Adams, the company's founder and chief innovation officer. "Without this in-house capability, outsourcing this process would slow down our project timelines, add complexity to our processes and risk damaging critical customer components as they would need to be shipped internationally."

The model QIH 60 press features a hot zone of 16.14 x 39.37 inches, 410 x 1,000 mm, an area large enough to process any component printed on most powder bed machines, Peter Adams notes. It operates at a maximum temperature of 2,552°F, 1,400°C and maximum pressure of 207 MPa, 30,000 psi.

The choice of the Quintus system was the result of a: "Rigorous, multi-year review of available technologies, particularly given its safety systems, innovative control logic, and rapid component cooling capabilities,'' says Peter Adams.

"We found the press to be unrivalled and, with its addition, we will be able to offer the industry's most comprehensive set of additive manufacturing services and processing capabilities."

Burloak also joined the Quintus® Care Program, becoming part of a community dedicated to the application of modern HIP technology to the possibilities that AM brings. The Quintus Care Program also offers a rigorous preventative maintenance agreement that ensures flawless production, operation and press performance at a fixed annual cost. Regular recertification of Burloak personnel and inspections will ensure highest reliability and availability.

"Burloak aims to push the frontier of Hot Isostatic Pressing with the help of the new press," says Jan Söderström, CEO of Quintus Technologies. "We are very pleased to be chosen as their strategic partner in furthering the development of additive manufacturing and we look forward to sharing our applications expertise through our Quintus Care program."

Quintus Technologies is a global leader in high pressure technology. The company designs, manufactures, installs, and supports high pressure systems for sheet metal forming and densification of advanced materials. Quintus has delivered over 1,900 systems to customers within industries such as aerospace, automotive, energy and medical implants. The company is headquartered in Västerås, Sweden, with a presence in 45 countries worldwide.

A leader in the additive manufacturing industry, Burloak Technologies provides engineering and design services for additive manufacturing, materials development, high precision CNC machining, post-processing and metrology. Burloak works with the most innovative companies in the space, aerospace, automotive and industrial markets to rapidly transition the most challenging part designs to be additively manufactured at scale. The Company is registered to AS9100D, ISO9001 and is Canada controlled goods approved. Burloak Technologies is a division of Samuel, Son & Co., Limited, a family-owned integrated network of metal manufacturing, processing and distribution divisions.

Quintus Technologies
Tel: 001614 8912732
Email: ed.williams@quintusteam.com
www.quintustechnologies.com

Rösler UK Limited| 1 Unity Grove | Knowsley Business Park | Prescot | Merseyside | L34 9GT
Tel: +44 (0)151 482 0444 | Fax: +44 (0)151 482 4400 | rosler-uk@rosler.com | www.rosler.com

RÖSLER®
finding a better way ...

KREBS & RIEDEL Schleifscheibenfabrik GmbH & Co. KG

Grinding Perfection for Every Process

- CBN and Diamond Wheels in Vitrified Bond
- Grinding Wheels in Vitrified and Resin Bonds

ADVANCED GRINDING SOLUTIONS

Advanced Grinding Solutions Ltd
Unit 80 Hotchkiss Way,
Binley Industrial Estate, Coventry,
West Midlands. CV3 2RL
02476 22 66 11
www.advancedgrindingsolutions.co.uk

Innovative Grinding Technology since 1895!

KREBS & RIEDEL
Schleifscheibenfabrik GmbH & Co. KG
Bremer Str. 44
34385 Bad Karlshafen, Germany

Phone: +49 5672 184-0
Fax: +49 5672 184-218
E-Mail: mail@krebs-riedel.de
Web: www.krebs-riedel.de

jso1gst15