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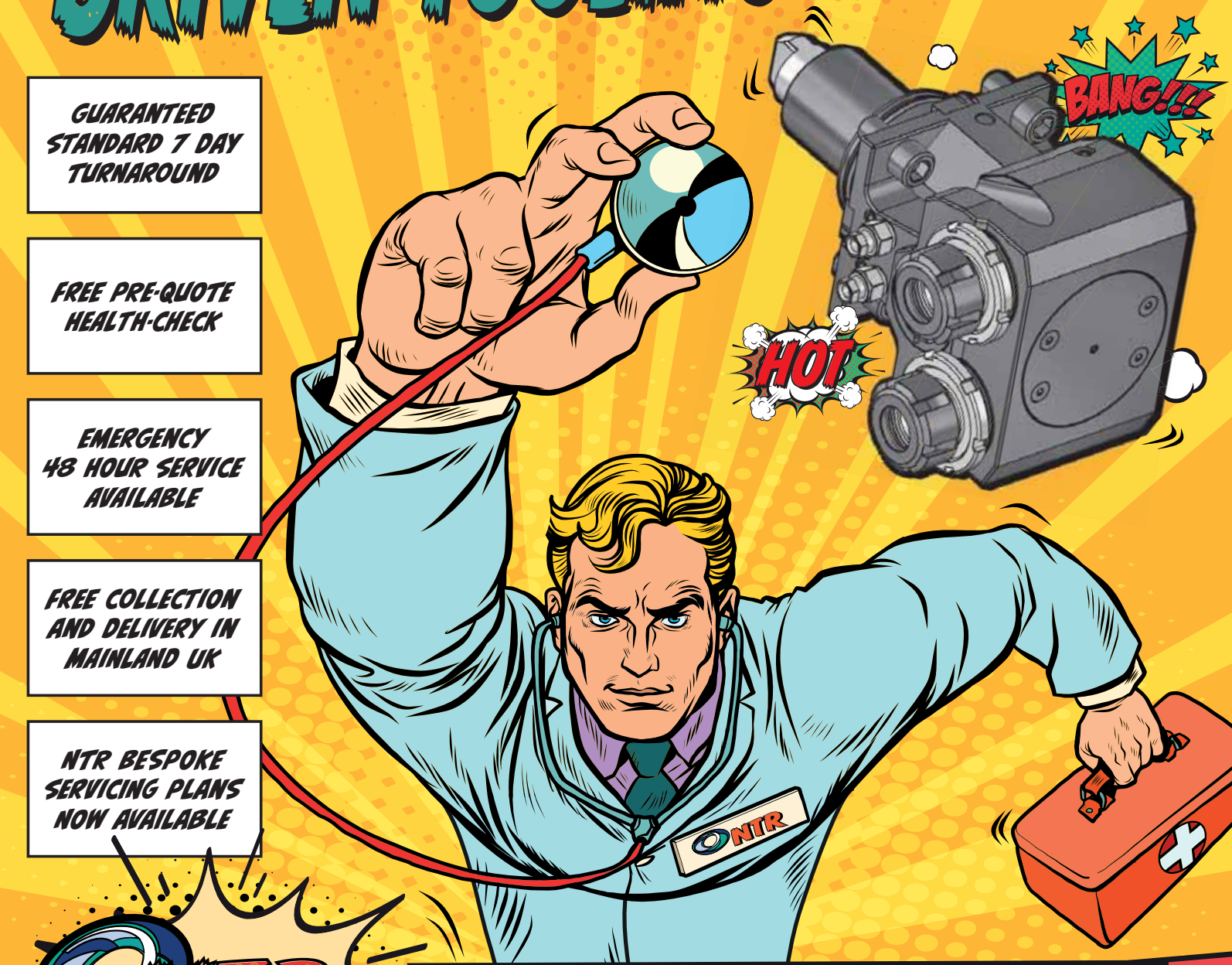

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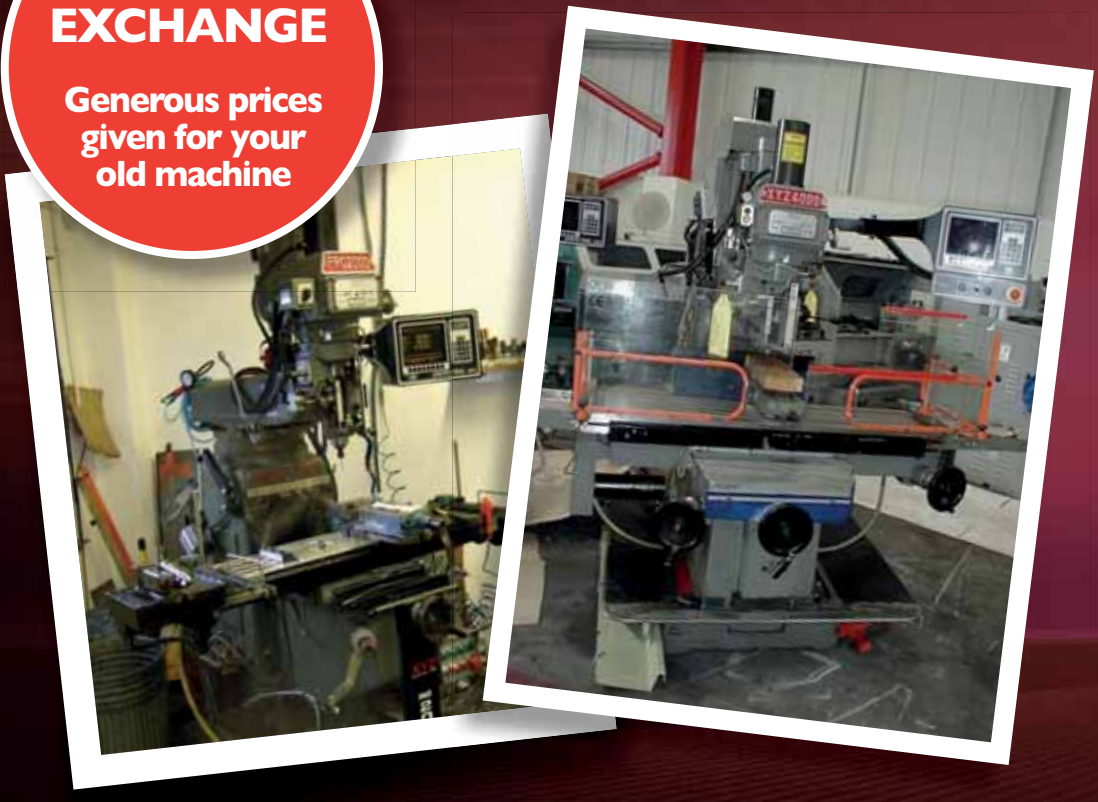

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Publisher/Editor:
John Barber
Email: john@rbpublishing.co.uk

Accounts:
Jackie Barber
Tel: 01403 563791

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

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Tending to the health of your Driven/Live tooling

For 46 years, NTR Ltd has been the go-to team for the repair, servicing and remanufacture of tooling across the UK and Europe. The self-proclaimed Tool Health Heroes, including NTR's infamous Tool Dentist, are leaders in recycling and the reclamation of metal cutting tools in the UK.

The team is delighted to introduce the Driven Tooling Doctor who, for a decade, has worked tirelessly from his purpose-built Repair and Service Centre in Wetherby, to ensure the health and well-being of Driven/Live tooling and angle heads for customers around the world.

Chris Weeds, owner and managing director, puts customer service at the forefront of NTR's operations. The Doctor's Driven/Live Tooling Service Centre offers a simple, cost-effective solution to keep client's machines running day in, day out. This offering has now expanded to include bespoke servicing plans individually tailored for customer requirements.

Based in Wetherby, West Yorkshire the company serves 15 countries across the UK, Europe and USA with over 400 regular customers employing its services. Although recycling is the very basis of its roots, the NTR Team are also a true precision engineering company with decades of experience in servicing and repairing Driven/Live Tooling.

This combination of skills and expertise means that the same technical knowledge and quality control is maintained across all areas of the business. NTR serves a diverse range of industry sectors, from aerospace to automotive, construction to rail. From household named conglomerates to independent engineering companies.

Chris Weeds and the team are proud of the history of the business which has steered stormy seas in the past but finds itself in a strong period of growth and investment. It is thanks to the hard work and dedication of everyone who has worked for the company over the decades, that NTR has gone from strength to strength and never forgotten that precision engineering is at the heart of everything it does.

Contact NTR today to find out how The Doctor can tend to the health of your Driven/Live Tooling.

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Celebrating 20 years of Engineering Subcontractor magazine

Engineering Subcontractor was introduced in September 2004 as the first dedicated magazine of its kind in the UK. Precision engineers and metal fabricators were invited to source the latest products and applications in order to increase productivity. Independent research showed that this sector is responsible for approximately 80 percent of all machine tools and equipment purchased in the UK, hence the need for their own magazine. Highly relevant editorial content and a reader-friendly format ensured that Engineering Subcontractor was well received and a publication that subcontractors wanted to read.

Now celebrating its 20th year, the magazine has provided the ideal vehicle for UK subcontractors to source the latest cutting-edge technology. It has gone from strength to strength over the years and remained relevant in an ever-changing world. Popular with readers and advertisers alike, its easy-to-read format and easily digestible content ensures its continued value to production engineers, engineering managers and directors.

Technology has changed over the past twenty years and Engineering Subcontractor has had to adapt to the times. The website, **www.engineeringsubcontractor.com** works alongside the printed publication to provide regular news stories and to promote upcoming key events and exhibitions. Visitors to the website will find a wealth of articles

and resources to ensure they are well informed of the latest news and changes in their sector. There are also opportunities to advertise via web advertising or company videos.

Reaching the right audience remains key and Engineering Subcontractor is the perfect tool to ensure companies are reaching the right customers. With its dedicated and targeted print circulation of 10,000, advertisers know the magazine is reaching key personnel and decision makers.

Maintaining the correct balance of advertising to editorial content, the magazine continues to make advances in providing tailored editorial content and continues to seek out the very latest information for readers. With easy-to-find features, each edition includes clearly defined sections to ensure your advert or article is always included in the best possible position in the publication.

Recognising the increasing importance of digital media, the printed publication remains at the forefront, but there will be some readers who prefer to digest the latest information online. Every issue is available to view and download via our website.

Published six times a year, regular sections include cutting tools, metal cutting,

workholding, measurement and CADCAM. Subjects covered in the form of features include 5-axis machining, automation, metal marking and laser cutting to name a few. Special reports on the aerospace, medical and motorsport sectors complement the publications editorial offering and ensure a healthy mix of content covering the key areas in UK manufacturing.

Founding publisher Roger Barber handed the reigns of the publication over to myself in 2022. His hard work, belief and passion for the publishing industry were key to its success over many years. Although now enjoying his retirement, he maintains a key

interest in the business that he built up and its ongoing success. It would be remiss of me to not give a special mention to our production manager Anna Rodrigues. She has remained a key member of our team since the magazine first launched in 2004 and has always been well liked by the many clients that she deals with.

Finally, the magazine would not have enjoyed a successful twenty years without the support of our many advertisers. We are grateful to all those who have supported us in this way and to the many PR companies, writers and of course our loyal readers who continue to appreciate Engineering Subcontractor's role and place in the print and online arena.

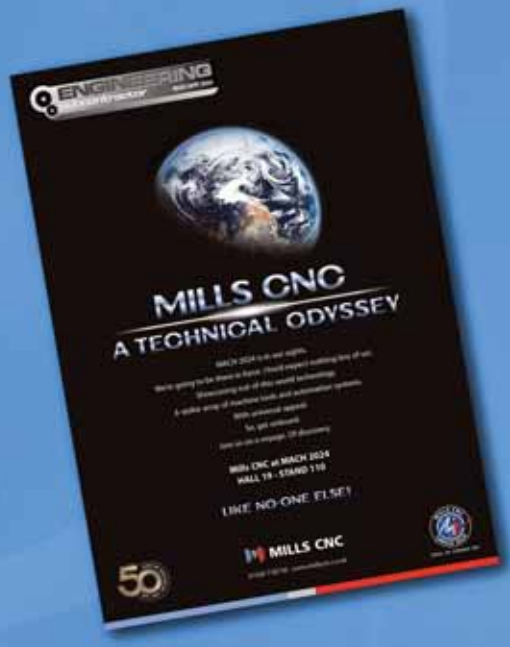
Thank you for your ongoing support and here's to the next twenty years!

John Barber
Publisher

ENGINEERING subcontractor

20 YEARS ANNIVERSARY

2004 - 2024



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EuroBLECH 2024: The Power of Productivity

From 22nd to 25th October, the 27th international sheet metal working technology exhibition, EuroBLECH will open its doors again at the Hanover Exhibition Grounds in Germany. It is the world's largest exhibition for sheet metal processing, covering the entire supply chain in 15 different technology sectors. Visitors can look forward to an impressive amount of live demonstrations and world premieres, giving opportunity to explore, assess and discuss the benefits and gains of specific technology solutions for their own production process.

The uptake on stand space has been immense, in particular from international exhibitors, with more than 60 percent of exhibitors joining from outside Germany. As such, the show mirrors the global significance of the sheet metal sector in the wider economy. Besides Germany, the major exhibitor countries are Italy, Turkey, China, Spain, the Netherlands, Switzerland, Taiwan, Belgium, Austria, France and the USA.

EuroBLECH provides numerous opportunities to watch innovative machinery live in action. It is worth noticing that more than a quarter of EuroBLECH visitors do not attend any other trade shows. They feel EuroBLECH already offers the best access to the broadest possible spectrum of tech suppliers, with exhibits covering literally anything to do with the processing of metal sheet, tubes, profiles, plastic hybrids and other related applications.

Exhibits at the show will include: stamping presses, CNC punching machines, press brakes and other machines and tools for cutting, punching and forming, joining, welding and fastening, surface treatment and finishing, process control and quality assurance, machine elements and components; CADCAM systems, warehouse and factory equipment, material recycling and much more.

New for 2024: Guided visitor tours

For the first time, visitors will be able to book carefully curated visitor tours. Also reflected in this year's motto for EuroBLECH, 'The Power of Productivity', the organised visitor experiences focus on productivity-enhancing technology. The tours will include 10-minute presentations at each stop, followed by a short Q&A session. There are two different tour options to choose from:

Tour 1: "Industrial Internet of Things (IIoT)" covers key topics such as big data, remote analysis, predictive maintenance, production monitoring and part traceability. Participants will discover various products, tools and software to help them plan, optimise and monitor production with a view to improving their overall productivity, efficiency and sustainability.

Tour 2: "Automation and Robotics for Efficient Production" demonstrates how integrated, bolt-on or stand-alone automation and robotics systems can streamline production operations for greater sustainability and productivity, even for small batches. These can range from handling, sorting, conveyor, storage and stacking systems to robots, co-bots and Autonomous Mobile Robots (AMRs).

Further information on how to book the Guided Visitor Tours will be published on the EuroBLECH website closer to the show.

EuroBLECH 2024 Speaker Forum for valuable insights

In addition to the innovations and numerous live demonstrations on the exhibition stands, attendees can benefit from the popular EuroBLECH 2024 Speaker Forum, two dedicated presentation theatres for expert talks and panel discussions. Sessions run on all four show days and offer exciting insights into the latest projects and product developments, as well as valuable networking opportunities and meaningful exchange amongst peers. The speaker agenda will be published closer to the show.

EuroBLECH 2024 Industry Awards for technical excellence

The prestigious EuroBLECH Industry Awards are making a comeback at EuroBLECH 2024. Recognition will be given for the most innovative products, solutions and digitalisation concepts in various categories. The winners will be selected by industry professionals via online voting, starting in autumn 2024 and the awards will be presented at the exhibition. More details will be published in the run-up to the show.

Last minute stand bookings

Over 90 percent of available stand space has already been booked. Companies planning to present their products this year are advised to contact the Show Team immediately. All relevant exhibitor information can be found on the show website. Available stand options include the myEuroBLECH easy package with a shell scheme offer and the super convenient first time exhibitor package which includes a turnkey solution plus marketing package to a very competitive price.

RX
Tel: 01727 814400
Email: press-rxsta@rxglobal.com
www.euroblech.com

Mills CNC's Training Academy becomes official HEIDENHAIN training partner

Mills CNC's Training Academy has become an official HEIDENHAIN Training Partner and is the first and only training organisation in the UK to have achieved this accreditation. Following an extensive and intensive auditing and training process, the CNC Training Academy, the training division of Mills CNC, has announced that it has recently become an official Training Partner for leading German machine tool CNC control manufacturer, HEIDENHAIN GmbH.

Although there are a number of HEIDENHAIN Training Partners, globally, the CNC Training Academy is the first and only training organisation in the UK to have achieved the accreditation. The process for becoming a HEIDENHAIN Training Partner began in earnest for the CNC Training Academy back in October 2023 and involved, in the first instance, two members of staff: Karen Earley, training academy manager and Darren Clarke, trainer, visiting HEIDENHAIN's operation in Traunreut, Germany to undertake an intensive, week-long advanced training programme.

This was followed, a couple of weeks later, by them returning to HEIDENHAIN's facility to take three exams culminating in both having to run specific and separate live training courses for training personnel.

Having successfully passed their exams and the live training practice element, the official HEIDENHAIN Training Partner standard was awarded to the Training Academy in March 2024. The accreditation means that the CNC Training Academy is now an approved HEIDENHAIN Training Centre, enabling it to teach milling courses to HEIDENHAIN's rigorous standards.

The Academy now has two fully trained instructors able to teach the new HEIDENHAIN TNC7 CNC control system to customers and, as a consequence, is able to access and employ the latest software upgrades and updates within the courses it offers. The new TNC7 control, launched by HEIDENHAIN UK at MACH 2024, is touchscreen based and features a number of improvements over the, older, iTNC 530 and iTNC 640 CNC control systems.

As part of its new relationship with HEIDENHAIN, the CNC Training Academy now have access to a 'digital twin' of a DN Solutions' DVF 5000 simultaneous 5-axis machining centre, one of Mills' best-selling 5-axis models. The digital twin facility, built by HEIDENHAIN in close collaboration with Mills CNC, enables Academy 5-axis course attendees to create and run programmes on a digital DVF 5000, as if the machine was there in the classroom.

HEIDENHAIN (GB) Ltd
Tel: 01444 247711
Email: sales@heidenhain.co.uk
www.heidenhain.com

Mills CNC Ltd
Tel: 01926 736736
Email: sales@millscnc.co.uk
www.millscnc.co.uk

5-axis productivity flows for Rivercircle

As a manufacturer of purpose-built leak test machines, process automation and special purpose machines and multi-cavity mould tools, Rivercircle Ltd manufactures and appreciates high-quality machines. That is why the Peterborough-based company has invested in two AXILE G8 5-axis machining centres. Available in the UK and Ireland from the Engineering Technology Group (ETG), Rivercircle installed its first AXILE G8 in 2021 with the second machine arriving in September last year.

As well as manufacturing special-purpose machinery, the company is also heavily involved in the toolmaking industry for automotive, pharmaceutical and medical applications to name a few. It is the machining of pre-hardened tool steel and larger components in this department of the business that has brought the addition of the two AXILE G8 machining centres.

Jonathan Theobalds from Rivercircle says: "We bought our first 5-axis machine about five years ago. We were one of those companies that has had 3-axis CNCs for many years and we had been to all the shows and looked rather enviously at the 5-axis machines, but we couldn't see one at a price point for us. Eventually we dived in with our first one and then almost surprising to us, 18 months later we introduced a second machine."

"The initial foray into 5-axis machines was a big leap for us but we very quickly learnt that actually having a 5-axis machine doesn't mean that you have to have 5-axis work on the machine all of the time. Our traditional 3-axis work can be done more efficiently and effectively on a 5-axis machine. The important thing for our business regarding the selection of the machine was we needed something with power, strength and rigidity. We are machining hardened and pre-hardened tool steel, so we need that capability to get a lot of metal removal quickly at the beginning and then move into the fine delicate cavity work."

Discussing one of the big advantages of investing in the AXILE G8 machine from ETG, Jonathan Theobalds says: "With a 5-axis machine you are not doing multiple setups, so if we can strap the billet to the machine once and do all the heavy-duty coring-out work and then use the same machine for the delicate finishing, there is a huge efficiency advantage for us there. When we selected our original 5-axis, this gantry construction was very important. This gives us strength and rigidity and we are not compromising surface finishes on fine machining or cycle times on heavy cutting."

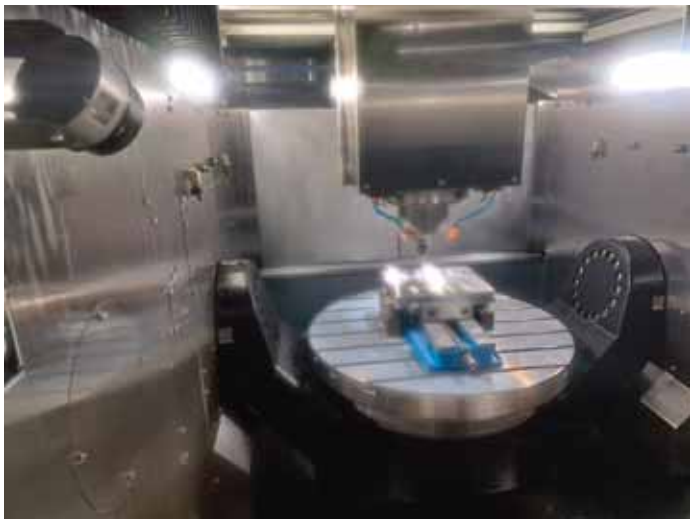
The move from a previous manufacturer to the AXILE brand was down to capacity as very few machines can match the versatility, flexibility and speed of the AXILE G8 while holding up to 1,350 kg on the bed. The smaller 5-axis machines have a capacity limit in the realms of 650 kg, half the billet size that can be held in the AXILE G8.

With the ability to hold 1,350 kg on the moving bed of the 5-axis AXILE G8, Jonathan Theobalds adds: "As machine builders ourselves, we really appreciate how the AXILE machines are built. The Y-axis has twin spindles and twin drives and the tilting B-axis has a motor on each side, it's not just driven from one side. This gives the machine excellent rigidity and accuracy. Furthermore, the AXILE has a powerful spindle with 20,000 rpm and high pressure through spindle coolant. This allows both heavy-duty roughing and high-speed finish machining.

Jonathan Theobalds continues: "It has enabled us to produce even higher-tech tooling. So, a lot of the large tools that we have been doing on these machines recently have large bolsters with cores that have to match within microns. The tools produce very thin-walled products that have to have the accuracy to match how those tool cavities interface with the core parts and this is absolutely essential for our customer to produce a top-quality component."

"We are really proud of the team that we have here. The expertise starts with the design and procurement through to tool path programming and obviously machining then fitting and assembly. It is our job to invest in and utilise the best quality machines to get the best out of the skills of our team. This has

led traditional mould making to evolve into precision prototyping of parts and having this 5-axis machine where we can do parts in a single setup rather than multiple setups, has enabled us to get our lead times down which is a requirement for prototyping. Furthermore, it enables us to keep our high levels of precision and quality of toolmaking for those parts. That is the thing that always impresses our customers when they visit us. They know that they are getting mould quality in prototype parts."



Referring to the user-friendliness of the AXILE G8, Jonathan Theobalds concludes: "We programme our machines off-line with Mastercam and then send the files to the machines. As a predominantly HEIDENHAIN machine shop, the AXILE G8 is equipped with the latest HEIDENHAIN TNC640 CNC system that provides familiarity for our team. The AXILE G8 is also equipped with the latest software that enables ETG to remotely access, assess and rectify any issues we may have with the machines. Additionally, Ian Deacon from ETG has been extremely supportive of any teething issues we have encountered. For the operator, the AXILE is fast and efficient and this can also be seen in the machine design. The ergonomic design of the loading doors give easy access to the work area for the operator as well as excellent clear vertical access for large parts that need to be hoist lifted into the machine. Even the tool loading system is horizontal, which makes tool changeovers much easier for staff. Overall, we are delighted with the AXILE machines and the service from ETG."

Engineering Technology Group (ETG) Tel: 01926 818 418
Email: sales@engtechgroup.com www.engtechgroup.com

Compact, 5-axis multi-tasking machining centre

All-round speed of operation is the essence of the new Speedio M300Xd1 30-taper, 5-axis mill-turn centre from Japanese manufacturer Brother, whose products are sold into the British and Irish markets by Whitehouse Machine Tools, Kenilworth.

The machine is proficient at milling and drilling within a 300 x 440 x 380 mm working envelope and is equally well suited to turning components on the C-axis torque table, which is mounted on a -30 / +120 degree swivelling A-axis trunnion. Components up to 450 mm in diameter and weighing 75 kg may be machined.

Single setup multi-tasking avoids additional setups, promotes high accuracy machining and minimises component handling. All machining takes place in a compact footprint of fractionally over four sqm.

Rivalling 40-taper prismatic machining equipment in terms of rigidity and high metal removal rate, the M300Xd1 is more agile and significantly more productive. It typically draws 80 percent less power, giving it industry-leading environmental performance and low running costs.

The working area of the Brother Speedio M300Xd1 30-taper, 5-axis mill-turn centre from Whitehouse Machine Tools

The generous 380 mm Z-axis travel is nearly a quarter longer than that of sister Speedio model M300X3, providing the new machine with a larger volume for fixturing components and allowing longer tools up to 250 mm to be used. New also is the ability to specify a 28-tool magazine, rather than one with 22 positions.

Research carried out by Brother indicates that electric and hybrid vehicles will account for more than half of global sales by 2030. With its prismatic machining and turning capability, the M300Xd1 is ideal for production of complex traction motor cases and other components used in such vehicles, so this is an important target market for the machine tool manufacturer. So also is the conventional car manufacturing sector, as well as the valve, roller bearing and medical industries.

Tool spindle speed is 10,000 rpm, or 16,000 rpm with the BIG Plus dual-contact spindle option, with through-spindle coolant up to 70 bar available on request. Automatic detection of the unwanted presence of chips within the spindle/tool interface after automatic cutter exchange prevents the production of defective parts. Tool change is also monitored, as is machining load for detection of cutter wear.

Non-productive time is minimised by repositioning the X, Y, Z, A and C axes simultaneously during tool change, which takes place in 1.6 seconds chip-to-chip. Fully simultaneous 5-axis machining at up to 30 m/min cutting feed rate maintains a high level of productivity, while 450 Nm of C-axis clamping force, plus 1,080 Nm securing the A-axis if both sides are clamped, ensure that accuracy is maintained.

The CNC D00v control has a modern graphical user interface, a host of apps and support functions as standard to assist the operator and optionally 3 GB of memory. Tool centre point control with up to 1,000-block look-ahead ensures excellent surface quality on the machined component.

Linear rapids are 50 m/min, which accelerate at 2.2g, and the A and C axes move at up to 50 and 200 rpm respectively, indexing time for both rotary axes being 0.7 second per 90 degrees. A new function in the rotary axes is the inclusion of inertia estimation to ensure optimal acceleration to match the weight of the component. The spindle motor's fast acc/dec and a highly responsive servo control enable a start-up and stop time of 0.2 second.

Turning operations can be carried out on the M300Xd1 using the C-axis torque table, which is mounted on a -30/+120 degree swivelling A-axis trunnion

All Speedio machining centres are equipped to interface directly with a purpose-built Feedio vision-based robotic component handling system. Jointly developed by Brother and ABB, whose 6-axis robot loads and unloads components from the side, the plug-and-play unit is able to serve one or two Speedios, which may be dissimilar models.

The M300Xd1 is also available as a 3-axis CNC variant, as well as in a smaller size, the M200Xd1, with a 200 x 440 x 305 mm working volume.

Whitehouse Machine Tools Ltd
Tel: 01926 852725
Email: sales@wmtcnc.com
www.wmtcnc.com

GROB high precision 5-axis machines

GROB Systems, Inc., a leader in the development of manufacturing systems and machine tools, has announced a new partnership with Hendrick Motorsports, bringing precision 5-axis GROB machines to the 14-time NASCAR Cup Series champions at its Concord, North Carolina campus. The synergistic partnership will make a significant impact on the performance of the Hendrick Motorsports four-car Cup Series organisation.

In production at Hendrick Motorsports are three GROB universal 5-axis machining centres including two G350a machines and one G550a machine. The machines are GROB Access-Series machining centres which offer economy as well as fully featured technology to meet demanding application requirements. The machines feature a rigid spindle axis, efficient machine cooling and a unique overhead function with excellent chip evacuation and reduced thermal load in the part.

"GROB proudly announces our partnership with Hendrick Motorsports, bringing together two companies of precision engineering with a shared legacy of excellence," said Michael Hutecker, CEO of GROB Systems, Inc. "With GROB's trusted machinery bolstering the team's renowned capabilities, we hope to pave the path for future triumphs on the track. As longtime partners of General Motors, we're excited to fuel Hendrick Motorsports' success with our cutting-edge equipment, driving innovation, and performance to new heights."

"GROB is very well suited for components that we want to make," said Michael Tummond, Hendrick Motorsports' engine engineering manager. "They have a strong relationship with General Motors and a long history of manufacturing engine parts, namely cylinder heads and engine blocks.

"A lot of the standard features with these machines will allow us to make extremely accurate parts down to the micron level. There is a direct correlation between accuracy and power. Ultimately, it is going to result in faster race cars. That is the whole goal here."

Engineering has been a key to Hendrick Motorsports' on-track success in NASCAR's top series. The 2024 season sees the organisation celebrating its 40th anniversary. After its win in the 2024 DAYTONA 500, the Rick Hendrick-owned team has won a race in 39 straight seasons and holds the all-time series marks in every major statistical category, including wins, pole positions and laps led.

GROB Machine Tools UK Ltd
Tel: 0121 3669848
Email: sales@uk.grobgroup.com
www.grobgroup.com

Burnley College puts 5-axis skills at the heart of its curriculum

The North-West of England, once a hotbed for textiles, has reinvented itself as a centre for hi-tech manufacturing, with the region now boasting one of the largest aerospace clusters in Europe.

While economic performance has been impressive, the skills required to service this growing manufacturing base have been slower to develop.

The good news is that many traditional colleges are joining together to form Institutes of Technology (IoT), armed with government funding to invest in both people and the training equipment they need to develop the skills of the future.

At the heart of one IoT is Burnley College, a longstanding provider of training and education to its local community with multiple course types available from A Levels through to BTEC qualifications, Apprenticeships and T Levels.

The college prides itself on being open to a wide demographic, from school leavers undertaking apprenticeships through to those aspiring to go on to university and adults looking to re-skill.

With multiple divisions, from construction and engineering through to business and professional studies, the college is at the heart of the local community. The engineering and advanced manufacturing faculty in particular is at the forefront of the outreach to local business, training between 700 and 800 learners of all ages each year.

Neil Burrows, director of skills and innovation says: “Our focus is manufacturing, advanced engineering, health and digital. We’ve always had an on-site machine shop with three Mazak machines, but we knew from talking to local employers that we needed to upgrade our technology. We asked them, ‘what type of work are you doing and what skills do you need?’ The answer came back that they needed a range of skills, from AutoCAD and Autodesk through to automation and tool management, but one of the biggest issues was finding 5-axis skills.”

The decision was taken to acquire two new Mazak CV5-500 simultaneous 5-axis machines, one of which is equipped with robotic automation.

Neil Burrows continues: “We’re helping local businesses in two ways. Firstly, by offering them a pipeline of skilled people, but we’re also finding that once we get one of our students into industry, their employers will also start using our new machines to increase their own capacity. As an example, we’re currently working with a Tier One aerospace supplier making components that they need to get out quickly. We’re effectively opening our doors to business on the proviso that, if you’re going to use our machines you’ve got to help us give our students real-life work experience.

“We've got students who are coming out of the college and are familiar with Mazak CNC, which is one less thing for an employer to be worried about as part of the onboarding and induction process.”

The Mazak technology message also resonates with parents. Neil Burrows explains: “You have students come in with their mums and dads having a look around the facility. It has a real wow factor now and is showing young people and their parents that engineering remains a good career with a modern work environment.”

One of the driving forces behind the college’s curriculum has been the formation of an advisory board from industry to consult on new courses. Neil Burrows states: “We see the Advisory Board as a forum for employers to tell us what they want, not us telling them what's on offer. Employers have been very clear that what they want is not necessarily a qualification, but a skill to get their people from point A to point B in as short a time as possible. So, we’re talking a lot about short courses to bring their people up-to-speed quickly. We've adapted and changed our curriculum to support what businesses need.”

In the future, Neil Burrows says: “The intention is to maintain dialogue with both Mazak and local employers to ensure the college’s courses remain relevant.” Neil Burrows concludes: “We need to be looking at different processes, such as additive manufacturing and 3D printing. Industry will push forward with new technologies, and we’ve got to be able to give them the people they need. We're going to keep moving and looking at what our local businesses are going into.”

Yamazaki Mazak UK Ltd
Tel: 01905 755755
Email: info@mazak.co.uk
www.mazakeu.co.uk

Medical equipment manufacturer brings milling and turning in-house and starts own subcontract machining division

Medical systems manufactured by Hollingworth Design Ltd (HDL) at its Stockport factory now contain components milled and turned in-house, avoiding the unreliability and cost of sourcing them from subcontractors. Only sheet metalwork continues to be produced by third parties. The first CNC lathe and mill were installed in 2017, followed by another turning centre and then a German-built Index G200 twin-spindle, triple-turret, turn-mill centre supplied in 2020 by sole agent Kingsbury.

Since then, the number of lathes and mills on-site has doubled to eight, including a smaller capacity Index C100 and HDL's first automated prismatic machining cell, a robot-fed, 5-axis, HSK-A63 spindle C12 from Hermle, Germany, also represented exclusively in the UK by Kingsbury.

The same period has seen the arrival of a CNC mitring saw, an Aberlink coordinate measuring machine, a Keyence optical inspection system and the company's first quality control inspector, Simon Tweedie. Other new members of staff are Richard Binks, who is dedicated to subcontract sales and Nick Mort, lead engineer in charge of the CNC section.

Nick Mort comments: "The subcontract side of our business has increased fivefold to 25 percent of turnover in the last two years and we are aiming to increase it to 50 percent by 2026."

The 65 mm bar capacity Index G200, which is fitted with a three-metre bar magazine, is playing a major role in fulfilling the growing number of contracts. The upper, double tool carrier has a 360-degree B-axis and a ± 65 mm Y-axis. On one side there is a 14-station, live tool turret rated at 16 kW/16 Nm and 7,200 rpm maximum speed. On the other side there is an HSK-A40 22 kW/52 Nm (25 percent DC) milling spindle with automatic cutter exchange, enabling considerable machining versatility in combination with the two lower turrets that also serve the 6,000 rpm/32 kW main and counter spindles.

Arranged in mirror image, each lower turret has an independent, ± 45 mm Y-axis and an identical rating to the turret at the top. To optimise productivity, it is possible to utilise all three turrets simultaneously at either the main or counter spindle, without interference. Alternatively, simultaneous machining the front end of a component at the main spindle and the reverse end at the counter spindle, in contrast to sequential machining on HDL's earlier lathes, has cut cycle times dramatically. To produce a typical turned, threaded and engraved brass manifold component, for example, the typical cycle time has been reduced from 4 to 1.5 minutes and similar efficiency is gained when producing subcontract parts for other OEMs.

Given the lathe's high power and versatility, it is not surprising that there was a tendency to prioritise the use of this Index turn-mill centre when considering which machine to employ for producing a new or existing part, even if it mostly entailed prismatic machining using the driven tools. So another lathe from the same source, an Index C100 having 42 mm bar capacity and a more conventional three-turret configuration, was bought to produce most of the turn-milled components for internal use, freeing the larger lathe to fulfil mainly subcontract work, which is often more complex and generally larger.

Nick Mort adds: "We had no hesitation returning to Kingsbury for another Index lathe, as the first proved very reliable and the backup from the agent was prompt, efficient and friendly."

For that reason, in early 2023 when HDL wanted to acquire its first automated machining centre, it selected Kingsbury again for the purchase of the Hermle cell. It was preceded by a stand-alone, 5-axis, 30-taper mill-turn machine from another supplier that was being used almost exclusively for producing aluminium parts for a bicycle manufacturer in the north of England.

In addition to the medical and bicycle manufacturing sectors, today HDL regularly serves motorsport, aerospace and the marine industry. It also supplies tight-tolerance, mainly titanium parts that go into test equipment built by Hyderogen, a hydrogen technology consultancy owned by Kris Hyde, who is joint managing director of HDL together with the company founder, Paul Hollingworth.

Kingsbury
Tel: 023 9258 0371
Email: solutions@kingsburyuk.com
www.kingsburyuk.com

Fabricator rebalances business towards subcontract machining

Twenty years ago, Gareth Davies started Burton-on-Trent company TAS Engineering as a steel, stainless steel and aluminium fabrication shop serving food and beverage customers, the pharmaceutical and automotive sectors and industry in general with fire escapes, factory staircases and secondary steelwork.

In 2014, he established a machine shop to add extra value to the products the company was shaping and welding. Today, there is a pair of 3-axis, vertical-spindle machining centres on-site and three CNC lathes, the latest of which is a second-hand Cincom L20 sliding-head turning centre from Citizen Machinery UK.

What prompted the purchase in October 2023 of this 20-year-old lathe, the company's first sliding-head model, was a desire to turn more efficiently components in a range of materials from bar up to 20 mm in diameter. A case in point is the ongoing production since 2020 of a 16 mm diameter, 316 stainless steel magnet holder, which is welded to a small, laser-cut and bent plate to form part of a safety unit for industrial switchgear. The turned component, of which 200 are required per month, was previously produced complete on one of two fixed-head, twin-spindle lathes, that have since been sold, in a 2.5-minute cycle.

Gareth Davies had previous experience of programming and setting sliding-head lathes, albeit from 40 years ago working for a subcontracting firm in London that happened to be the first ever customer of the Citizen sales agency at that time. The lathes were equipped with servo-driven cams and while the technology has moved on enormously over the decades, the underlying principle of operation is still similar.

It was apparent that the steel magnet holder could be produced more quickly on a modern Citizen L20 twin-spindle, sliding-head turning centre than on a fixed-head lathe due to the faster axis motions of the gang tool carriers on the former compared with the turret movements on the latter. However, Gareth Davies was surprised to find that the part could be machined more than three times faster on the Cincom, the cycle now taking just 48 seconds.

The sliding-head turning centre was installed and commissioned in October 2023, so it is still early days. Nevertheless, four additional jobs had been won by the end of the following January as a result of having the capacity available on the shop floor. None of this new work has anything to do with the fabrication side of the TAS Engineering's business. One contract involved the production of 1,000-off brass parts for a customer in industrial gases, which ran 24/7 for one week, despite Gareth Davies being new to sliding-head lathe operation.

The other jobs were 70-off engine parts produced from steel bar in one hit rather than in two operations on a fixed-head lathe plus another on a mill; 3,000-off heritage railway carriage brass fixing pins and another component for the industrial gases sector machined from 0.75-inch diameter CZ121.

Gareth Davies comments: “Although all the parts are relatively simple, some tolerances are tight. The bore on one of the components for industrial gases has to be held to 0.05 mm total and the engine shaft OD must be within 0.04 mm.

“Despite the Cincom being 20 years old, provided we run it at sensible feeds and speeds we achieve this level of accuracy easily.

“Not only that, but we have confidence leaving the machine running unattended to get on with other tasks, as all dimensions repeat from part to part to within 15 microns.”

He went on to mention that although the purchase price of the lathe was only about one quarter of the investment needed for a modern 20 mm capacity Cincom in the manufacturer's L-series, he was treated by all Citizen Machinery UK staff as though he were purchasing a new L20: “They went above and beyond what would normally be expected for the sale of a used machine and the delivery, commissioning and training were exemplary. I cannot sing their praises highly enough.”

TAS Engineering is currently undergoing a metamorphosis whereby, while fabrications will continue to play a part in the business, in the future it will only be if they undergo prismatic machining or contain turned parts. Already this policy has seen the contribution of chip removal, mostly metal and also plastic, in the factory rise from 10 percent to

90 percent of turnover. It is a progression that was accelerated by the Covid pandemic, when on-site visits to provide customers with fabrication services were forbidden.

Another insight offered by Gareth Davies is the formidable financial advantage of purchasing a good quality used machine tool, provided that one can be sourced, which is not always easy. His L20 had only 40,000 hours on the clock when it arrived, equivalent to having run for a single shift every weekday. It is notable that, for the jobs completed so far, repayments on finance for a new Cincom would not have been viable.

On the other hand, paying back only one-quarter of the amount puts TAS Engineering in a strong position to quote for work very competitively, especially if it is not especially complex. Moreover, small quantities are also practicable, provided that the machine can be set up quickly. Gareth Davies often uses Citizen's Alkart Wizard software running on his laptop to speed programming and downloads the code to the control.

Applications engineers at Citizen Machinery UK are always on hand to assist when needed. A recent instance was when Gareth Davies was worried about possible damage to the steel engine shaft as it was ejected from the sub spindle. Within an hour, a response was received advising him to omit an M-code at the end of the cycle and replace it with a specific line of alternative code that worked perfectly as soon as it was implemented: “Such after-sales engineering back-up is invaluable, especially if you are new to sliding-head turning,” he concludes.

Citizen Machinery UK Ltd
Tel: 01923 691500
Email: sales@citizenmachinery.co.uk
www.citizenmachinery.co.uk

Mobility aid manufacturer uses XYZ Machine Tools

XYZ Machine Tools is helping Handicare to maintain the accuracy, rigidity and quality of its stairlifts by machining the mating surfaces of its tubular components using an XYZ RMX 3500 for straight sections and an XYZ RMX 4000 for curved sections to achieve a perfect fit.

Handicare is a leader in its industry covering accessibility, patient handling and vehicle accessibility and can trace its roots back to 1886. Its objectives are to offer solutions and support to increase the independence of physically challenged or elderly people and to enable them to live an active life on their terms as well as to facilitate work for their care providers and family.

Handicare's headquarters are located in Stockholm, Sweden and it sells its products and solutions globally and is active in more than 40 countries. Of the group's total revenue in 2020, Europe accounted for 71 percent, North America for 28 percent and the rest of the world 1 percent.

One of its UK manufacturing facilities is at Kingswinford, Birmingham where it designs and manufactures straight and curved stairlifts, producing more than 50 every day. Each stairlift is bespoke, designed to fit its customers' individual stair configuration. The key element of each stairlift is a pair of tubular runners with gear racks welded to them. These support the seat and, with its pinion drive and rollers, allow it to transport the customer smoothly and safely between floors. Each set is unique and carefully designed to fit the stairwell.

During the design phase of each stairlift, consideration has to be given to handling the tube sections and accessibility for installation and assembly. This means that the set of tubes needs to be made in sections ready for assembly on site. Some shapes for curved stairlifts can be complex, for example moving the seat to a park position around a newel post, so these need particular care during manufacture.

Nabil Mohamed, production engineer at Handicare explains: "For straight stairlift sections the tubes and gear rack are robot welded together and they are then cut to length. We leave an excess of 0.5 mm which is then machined off on the XYZ RMX 3500. We do this to make sure that the gear profile on the rack is perfect when we join the tubes. If we didn't do this and left a slight mismatch on the gear profile, the customer would feel an uncomfortable jolt every time the seat went over a joint."

The XYZ RMX 3500 is dedicated to straight sections and has a set of fixtures on the bed each designed to lock into the gear profiles to position the tube in the exact position required to mill across the end and generate an accurate gear profile and perfect tube length. The open design of the bed mill makes it possible to work with long tube sections which overhang the bed. The machine's ProtoTRAK® control has the different programs already prepared so that it is easy to select the one required for the fixtures being used.

For curved profile stairlifts, the process is similar with tube sections being machined on the XYZ RMX 4000. This has a larger bed 1,474 mm x 355 mm and has fixtures loaded to suit the machining of the ends of curved sections, again locating the tubes on the gear rack to ensure end machining is accurate.

Further special purpose machinery cleans the burrs inside and outside the tubes, while etched marks on each component give reliable identification. To join tubes, straight sections can be connected with crimped inserts and cross drilled bolt holes, while curved sections are robot welded together with an internal collar. Special purpose machines clamp components together for these operations to ensure on site assembly goes smoothly before physical inspection and surface finishing.

Nabil Mohamed continues: "Every component goes through one of the XYZ RMX machines, so they are a crucial part of the process, and their record of reliability is very important to us. Being able to accurately machine the ends of every tube and gear rack is a vital part of the quality, performance and reliability of our products."

XYZ Machine Tools
Tel: 01823 674200
Email: sales@xyzmachinetools.com
www.xyzmachinetools.com

Dugard announces new machine brand

As one of the UK's premiere machine tool suppliers, Dugard Machine Tools has announced that it is now the UK sales partner for Kenyou machine tools. The high-end brand of vertical turning, boring and turn/mill centres were introduced at MACH last month where show visitors could discuss the merits of this new partnership with Dugard representatives.

With an agreement signed just weeks before the UK's showcase event, Dugard will be keen to discuss the heavy-duty range of machines that perfectly complement the existing range of Kitamura, SMEC, Hanwha and Mylas machine tools. Stepping beyond the realms of its existing portfolio, the Kenyou range of vertical turn/mill centres includes the impressive VT and VTM series that have a table diameter from 1.25m 3m with the ability to accommodate workpieces up to 20,000 kg.

This colossal capacity provides end users with a working area of -200 to 1,400 mm in the X-axis, a Z-axis up to 1,400 mm with a W-axis of 1 m with 10m/min rapid traverse rates. Offered with the familiar FANUC or Siemens CNC and BT50 tooling interface, the work table has a 2-speed gearbox driven by a 30 kW motor for extremely heavy-duty turning operations. Likewise, there are a range of milling spindles available with 11 to 22 kW power ranges for remarkable material removal rates. The more advanced 'C' range of Kenyou models feature a Y-axis that makes turning and milling components possible in a single operation, significantly reducing setup times and improving productivity and component quality for the customer. In addition, the series has a fully developed grinding option on all models.

With a completely flexible line-up that provides a complete choice of machine, table, spindle, tooling configuration and power ranges, the Kenyou range has quality built into every facet of the machine. This is emphasised in the quick change tooling magazine, the patented pull force tool clamping system, the extremely rigid machine column and the direct drive milling spindle. As expected from a high-end machine tool brand, the Kenyou machines from Dugard have a multitude of optional extras that include everything from CNC controls, gear reducers, two-speed gearboxes and a choice of swarf evacuation systems through to oil and coolant chillers, work lights, flushing systems and automated workpiece and tool measurement to name a few.

C Dugard Ltd Tel: 01273 732286
Email: sales@dugard.com www.dugard.com

Busting the automation myths

Seven reasons to embrace robotics

By Carl Patrick, robot sales manager for machine tool automation, FANUC UK

Carl Patrick, robot sales manager for machine tool automation, FANUC UK

The UK is currently the world's sixth largest economy and eighth largest manufacturing nation. But despite being the third biggest aerospace manufacturer and boasting a world-leading premium automotive sector, there remain concerns around labour shortages and our low productivity rate. These issues are and, always have been, linked to automation.

In order to remain competitive, industrial companies need to produce more goods, to a higher quality and in less time. Since the first industrial revolution through to the current fourth iteration, automation has been proven to boost productivity. Yet whereas the UK was once the world leader in its adoption, we now rank a lowly 25th in the world for robot density, with 98 robots per 10,000 workers. Germany, the leader in Europe, boasts 415.

There are some signs of improved take-up, however. 2,534 new robots were installed in the UK in 2022, 54 percent more than in 2015. The productivity gap persists and reluctance to invest in automation is still a major challenge, especially among SMEs. Much of the lingering reluctance is around a long-held fear of automation, largely based on myths that are well past time for busting. Here, we counter seven of the most popular misconceptions around robotics and explain why there's never been a better time to make the move to automation.

Myth 1: Automation solves everything

Automation is not a magic bullet. If a manufacturer is looking to solve a bottleneck, then automating the process will just mean parts arriving at the bottleneck faster, exacerbating the issue. Neither will problems with quality and consistency be solved simply by installing a machine.

Instead, factory owners should seek advice from an automation expert, such as FANUC or one of our system integrator partners about their exact needs and what they want to achieve. We can help to identify problems with existing processes and advise on how best to employ automation to deliver the required objectives: greater efficiency, shorter cycle times, more consistency and higher quality, leading to improved competitiveness and profitability.

Myth 2: Automation is too complicated

It really doesn't have to be. Businesses can start small, with simple functions such as a palletising/depalletising cell and progress from there. Our automation experts can help identify where manufacturers can get a good return, quickly.

When it comes to operation, this doesn't have to be complicated, either. FANUC's user-friendly software tools, such as FANUC Ladder III, FANUC PICTURE and C-Executor, feature command systems with drop-down menus and choice paths that look comfortingly familiar, making them extremely user-friendly.

Myth 3: Automation will replace valued employees

The right automation solution will replace tasks, not people. The best way to approach a robotics project is to look at what is happening already and identify ways to do it better. Automating processes that are dull, dirty or dangerous help reduce staff injuries and overcome quality issues born of boredom, freeing up employees to take on more value-added tasks. This can improve staff retention rates, boosting morale and positively impacting productivity.

Automation can also help to capture experienced employees' expertise. A successful project will involve talking at length to the people who carry out the task and discussing with them how to do it better. By actively engaging shop floor workers, their expertise can be retained. This last point is particularly pertinent, given that almost one fifth of employees in the UK manufacturing industry is aged 55 or over, with 20 percent of the workforce set to retire within the next decade.

Myth 4: Why fix something that isn't broken? Our current equipment has been working fine for decades

There's no reason why embracing automation should require any company to ditch their current equipment, especially if it is working well. FANUC robots are regularly integrated into existing lines, complementing older machinery to enhance working

practices and increase efficiency and boost productivity. What's more, these modern alternatives are designed to last for decades.

Not only are today's automation solutions fast, consistent, flexible and adaptable, but they are also extremely reliable. Older machinery can require more maintenance to keep it running, meaning more time offline and resulting in unproductive downtime and growing repair costs. By contrast, advanced condition monitoring has almost completely eliminated unforeseen breakdowns and unnecessary part replacements in modern robotics, enabling longer service intervals and increased uptime. FANUC's robots are known for their outstanding reliability with an eight-year mean time between failures, while our CRX collaborative robot (cobot) series boasts eight-year zero maintenance. Failure to update and invest in new technology erodes competitiveness and ultimately risks putting a company out of business.

Myth 5: We lack the in-house skills to programme a robot

The amount of knowledge and expertise that businesses already have on site often comes as a surprise. If employees are used to setting up CNC equipment, they will find it much easier to set up a robot. FANUC software does not require in-depth knowledge of coding. Simple drop down 'nesting' menus with standard procedures and a range of Yes/No choices make today's advanced automation systems far simpler and more adaptable than previous iterations and easily capable of being programmed by in-house staff.

In addition, we offer training, either at our UK headquarters in Coventry or at customers' premises, as well as a dedicated after-sales support team for any queries that may arise throughout the robot's lifespan.

Myth 6: Any automation system we install will quickly become obsolete

Robot technology and tasks, such as pick, turn and place, have been around for decades. What has changed is control software and the tools that can be attached to them. Robotic tools will last at least as long as ordinary tools but deliver far more value throughout their lifespan.

Regarding operating software, this is supported at FANUC with ongoing, automatic upgrades, including to cybersecurity processes. Our lifetime support promise ensures that we will continue to upgrade, support and repair our products for as long as the customer wishes to use them.

Myth 7: Automation is prohibitively expensive

The key here is only to buy equipment appropriate to need and to focus on the total cost of ownership, rather than the initial purchase price. By speaking with an experienced automation provider, manufacturers can ensure that their system is not over-specified, and that it will deliver a good return on investment over the planned lifespan of the installation.

The UK government is encouraging the purchase of capital equipment with annual investment allowances that enable machinery costing up to £1,000,000 to be fully offset against profits in a single year. And the rise in corporation tax means that tax reliefs are now even more valuable. In addition, banks and finance companies offer a range of financing packages, including leasing, that can spread costs by offsetting them against taxable revenues.

By working with a reputable, experienced automation expert, manufacturers of all sizes can reap the benefits of robotics and ensure their business continues to thrive for years to come. For more information on how FANUC's range of robot and cobot solutions can transform your manufacturing enterprise, visit **www.fanuc.eu/uk/en**

FANUC UK Ltd
Tel: 024 76 05 3130
Email: sales@fanuc.co.uk

Automated loading of components for deep hole drilling

Most automatic machine tool tending systems involve standard, plug-and-play equipment for robotically loading and unloading CNC lathes and machining centres for turning and milling. In an unusual application, Dutch firm Halter CNC Automation has supplied a special variant of its LoadAssistant robot cells that allows deep hole drilling to be similarly automated.

The advantages of the installation at Ott-Jakob Spanntechnik in Lengenwang, Germany, are described by the sales agent for Halter in England, Wales and Scotland, 1st Machine Tool Accessories. The company advises that it is able to supply such special solutions in addition to the principal's standard range of automated machine tending cells.

Ott-Jakob Spanntechnik is a manufacturer of manual and automatic tool clamping systems for machine tool spindles. Materials processed in its 7,000 sq m factory are mainly high-alloy steel, plus to a lesser extent aluminium and non-ferrous metals. Series production team leader Florian Hartmann comments: “Four-fifths of our 2-axis lathes are equipped with bar magazines and we are always looking for opportunities to automate other machines on our shop floor.”

This policy has been extended to a TBT ML250 deep hole drilling machine that produces the holes via which coolant will subsequently flow through the spindle. The dimensions of workpieces processed on the machine vary widely. Shafts are mainly from 20 mm to 50 mm in diameter and between 75 mm and 550 mm long and almost any combination of these dimensions is possible.

Until recently, the machine was used in two-shift production where one employee,

who was also busy in other areas of the factory, manually loaded the TBT ML250 with raw parts and removed the finished shafts. With cycle times ranging from three minutes to about half an hour, depending on the size of the workpiece, the operator needed to be more or less permanently in attendance, hence the desire to automate the machine.

Programming of all movements and thus the entire robot kinematics has been modified and a workpiece storage system has been installed on the left-hand side of the machine at the front. The robot arm is equipped with a double-sided end effector with workpiece-specific gripper fingers that are adapted to the shaft diameters to be handled.

The robot cell entered service in March 2023. To provide component storage, it has a standard, 176-position grid plate able to hold shafts that are 20 mm to 35 mm in diameter and 75 mm to 250 mm long. In addition, an 88-position grid plate for shafts from 35 mm to 50 mm in diameter and up to 550 mm long has been supplied.

Four shafts are transferred one by one from the grid plates to two buffer storage locations positioned immediately in front of the working area. To minimise machine idle time, the process is completed while the deep hole drilling machine is producing the previous four components. The purpose of the additional transfers is to reduce the distance parts subsequently have to travel when the TBT machine has stopped and loading and unloading is in progress.

When the drilling cycle finishes and the doors have opened, the robot uses its gripper to pick up the first new shaft, extract a finished component from the machining area, load the new workpiece to be drilled, and deposit the machined component into one of the same two buffer storage locations. While swapping a new shaft for a deep hole drilled component, the system checks the position of the part in the machine and, if necessary, measures the length of the shaft again via an integrated sensor to prevent a possible collision.

The unloading/loading procedure is repeated three more times in a continuous cycle, after which the buffer stations contain four finish-machined parts and four fresh shafts are in the machine for drilling. The drilled components are transferred by the robot, again in parallel with machining of the next batch of shafts, to the rear of the robot cell from where they are removed by hand. Replenishment of the grid plates with raw material at the front of the cell is similarly carried out manually.

1st Machine Tool Accessories Ltd
Tel: 01725 512517
Email: enquiries@1mta.com
www.1mta.com

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KUKA Cobot simulates 10 years of coffee grinder use

The Bavarian company Gronbach specialises in the development and production of technical assemblies or complete products, such as coffee machines, induction hobs, steam cookers and much more. Under the LIGRE brand, the company is now entering the market as a manufacturer of high-end machines for coffee preparation.

A completely new feature of a coffee grinder in the consumer segment is the ability to preset the amount of coffee to be ground to the exact gram. To this end, the research and development experts at Gronbach in Niederndorf in Tyrol subjected the new coffee grinder to intensive quality control and relied on the support of the KUKA Cobot LBR iisy in a test setup.

Preparing coffee in a continuous loop

The underlying assumption was that the coffee grinder would process around 500 kg of coffee over a service life of around ten years. To obtain correct test results, the test setup had to be as precise, repeatable and fast as possible. After all, the results had to be reliable and the knowledge gained had to be incorporated into future developments and improvements, a perfect task for a robot.

An enormous advantage of the LBR iisy is its simple programming. You can guide the collaborative robot by hand and teach it the desired tasks simply by pressing a button. Thanks to its intuitive handling, the cobot offers flexible application options and works precisely and repeatably. “The Cobot solution is an invaluable advantage for the flexibility required in a test laboratory. Other industrial robots with complex fuse structures would be out of the question for test series like ours due to the high effort involved, as the costs would be disproportionate to the relatively short period of use,” says Peter Kopfensteiner, research and development for the appliances division at Gronbach.

For the two-month test, the LBR iisy Cobot carried out 55,000 coffee grinding and weighing processes with the portafilter of the coffee machine in continuous operation. The fully automated process was logged, allowing deviations to be detected quickly and quality to be ensured.

55,000 test cycles as a warm-up exercise

“The grinder worked so well that the service life after simulated use over ten years showed practically no signs of wear, meaning it would last significantly longer,” says Alexan Fahringer, technical development and test engineer at Gronbach. Incidentally, processing the 55,000 test grinds is hardly worth mentioning for the Cobot. “It's only just well run in,” says Michael Reindl, account manager at KUKA, referring to the several million cycles that KUKA robots achieve as standard.

The company's R&D team is certain that this use of the LBR iisy at Gronbach will not be the last. “As automation engineers, we are already thinking about how the cobot will support us in further quality controls and processes,” says Alexan Fahringer.

KUKA is a global automation corporation with sales of around 4 billion euro and around 15,000 employees. The company is headquartered in Augsburg, Germany. As one of the world’s leading suppliers of intelligent automation solutions, KUKA offers customers everything they need from a single source. From robots and cells to fully automated systems and their connectivity in markets such as automotive with a focus on e-mobility and battery, electronics, metal and plastic, consumer goods, e-commerce, retail and healthcare.

KUKA Robotics UK Ltd
Tel: 0121 5059970 www.kuka.com

Storage and handling system for automated prismatic machining

New from machine tool company DMG MORI is the PH Cell 500, a modular system for handling machine pallets carrying one or more fixtured components into and out of the working area of various models in the manufacturer's monoBLOCK machining centre range. They are the DMU 65 and DMU 75 second-generation, vertical-spindle machines as well as the DMU 65 H horizontal-spindle model. Maximum transfer weight including the pallet is 500 kg.

The compact storage and retrieval system offers similar advantages to those of the larger PH Cell 800 for handling loads weighing up to 800 kg. Depending on the configuration of the rack modules, the PH Cell 500 has space for up to 32 pallets. Maximum workpiece dimensions are 500 x 500 x 750 mm.

As part of its machining transformation drive, DMG MORI for many years has been developing and introducing customisable handling systems for automatically storing, loading and unloading components into the working area of its machine tools, either fixtured on pallets or directly as individual workpieces. Such configurations enable flexible, efficient production, even of small batches and one-offs. In practice, the PH Cell 500 can increase productivity by up to 300 percent and reduce unit production costs by as much as 50 percent by rapidly presenting parts to the spindle.

The new cell is supplied as standard with a single storage module equipped with three shelves having space for twelve 400 x 400 mm or nine 500 x 500 mm pallets. An alternative version with four shelves can accommodate 16 of the smaller or 12 of the larger pallets. A combination of different pallet sizes is possible.

The PH Cell can be retrofitted if the machine has been prepared at the factory for automation. The same applies to extending the pallet handling system with a second rack module, allowing up to 32 pallets measuring 400 x 400 mm to be stored.

All PH Cell handling units are of stable design, with the pallets clamped and released by means of an integrated cone arrangement in the machine table. It means that zero-point clamping is not required, saving costs. At the same time, chip evacuation is improved. Easy and ergonomic operation is ensured by the rotating setup station, which is also standard and the use of Pallet Master software via a touchscreen control.

DMG MORI UK Ltd Tel: 0247 651 6120
Email: info@dmgmori.com www.dmgmori.com

Automated mill-turn cell from Brother is optimal for subcontractor's unattended production

A shortage of skilled engineers and a desire to continue with single day shift operation over an existing pattern of a four-day working week have all played a part over the past five years in prompting JWA CNC to research the best way to automate its production. This led, in early March 2023, to the purchase of a Brother 30-taper M200X3 mill-turn centre with integrated BV7 component stocker and robotic handling. Installed in one of the subcontractor's two factory units in Leicester, the turnkey cell was supplied by the Japanese manufacturer's sole sales and service agent for the UK and Ireland, Whitehouse Machine Tools, Kenilworth.

Currently serving mainly the aerospace and defence industries as well as the emerging hydrogen fuel cell sector, JWA CNC produces a lot of prismatically machined components in mainly non-ferrous materials such as aluminium, stainless steel, copper, brass and plastics, often to single-figure micron tolerances. They are required in relatively limited quantities in the range 30- to 100-off, sometimes fewer if they are for R&D projects, so the company needs automated production systems that are fast to change over to a new batch run.

Pete Wood, operations director at JWA CNC says: “Automation of lathes is easy using bar magazines and we have numerous such turning cells on our shop floor. However, autonomous production of milled components is more problematic because of the high diversity of shapes and small batch quantities.

“The typical selling price of prismatic parts going through our factory does not justify the purchase of a machining centre with a pallet storage and retrieval system, as they tend to be expensive and are also space-hungry. So robotic handling of the components themselves into and out of the machining area was a necessity.”

An early move towards this type of automation to compete with manufacturers in low-wage countries was made three years ago when the company decided to add a 6-axis cobot to a 4-axis BT40 machining centre on the shop floor. Operating with a single tray of parts, it works well unattended but has a couple of drawbacks. First, it is relatively slow to exchange a finish machined component for a new billet, taking around 3.5 minutes and second, the automation takes up a lot of space.

In contrast, the Brother system avoids both of these negatives by executing component exchange in well under half a minute and by compressing the machining centre complete with its automation into a 3.5 m x 4.1 m footprint, only a little larger than that occupied by the cobot alone. With space at a premium at the Leicester facility, the compactness of the new cell is an important plus-point.

The integral robot effecting load/unload of the individual workpieces has four CNC axes, three rotational and one linear into and out

of the machine via an automatic door. It carries twin grippers with the end effectors opposed to each other at 180 degrees. They load and unload parts into and out of a pneumatically-actuated fixture on the rotary table mounted on a trunnion that swivels from +120 to -30 degrees. According to JWA CNC's technical director Tim Shillabeer, the fact that a 4-axis rather than a 6-axis robot performs component transfer reduces setup time and gives him confidence in a high level of ongoing operational reliability.

Three notable aspects of the Brother M200X3 are that it is the third BT30 machining centre in the factory but the first with a face-and-taper spindle; the second 5-axis model on site and the only milling centre with a torque table capable of turning components in the same setup. Several parts produced by JWA CNC require pre-turning before prismatic machining, so there will be a saving by performing both operations on the Brother, especially if the subsequent 5-axis milling and drilling allows parts to exit the machine in fewer setups, or perhaps even one.

Another advantage of 30-taper machining centres is that they are highly productive. The

Brother machine, for example, has 50 m/min linear rapids and fast rotary motions that reposition a part for the next cut while the 1.4-second chip-to-chip tool change is taking place, avoiding undue idle time. The 22 cutters in the tool magazine are deployed by the dynamic, 16,000 rpm face-and-taper contact spindle that combines speed with precision.

An often-overlooked additional benefit of a 30-taper machine over a 40-taper model is that, due to the former's high productivity, a typical part is produced faster and therefore with less energy. Combined with numerous efficiency measures within the machine, such as reduced air consumption, hybrid drive motors with power regeneration, high efficiency pumps and auto-off functions, it results in less power being consumed per part manufactured.

Brother claims an overall reduction in energy consumption of around 80 percent compared with using a 40-taper machine to produce any given component. With the M200X3 installation being so recent, JWA CNC is unable to substantiate this saving. What it can say, however, is that with electricity costs having nearly quadrupled in the first six months of 2023, every little helps.

Whitehouse Machine Tools Ltd
Tel: 01926 852725
Email: sales@wmtcnc.com
www.wmtcnc.com

ISCAR is about to change metal cutting again

ISCAR is set to revolutionise metal cutting once again with its latest product launch, "LOGIQUICK". This new brand name signifies ISCAR's new marketing theme and encompasses three key words: "Logic", "IQ" and "Quick". The previous campaigns by ISCAR have already highlighted the importance of intelligent cutting tools for advanced machining, providing logical solutions that meet the primary of modern production. These tools have become a market standard in numerous workshops worldwide. However, the addition of "Quick" in the logo brings forth a sense of anticipation. What new challenges will the campaign products present? Is it simply a catchy brand name or a fundamental concept? Let's explore the meaning of the logo and its implications.

In the field of metal cutting, the productivity is directly linked to the Metal Removal Rates (MRR). To enhance machining rates, the metalworking industry strives for "fast metal removal", which refers to processes that efficiently and swiftly remove material using cutting methods. These processes involve the utilisation of machines, strategies, techniques and cutting tools that enable faster more effective machining, thereby reducing cutting time. However, in many cases, the primary obstacle to fully harnessing advanced, highly engineered machine tools and promising machining strategies lies in the cutting tool itself. The cutting tool often becomes the weakest link in the entire machining process, limiting potential gains in productivity and impeding the reduction of machining costs and the growth of profitability.

ISCAR believes that the ultimate objective of a tool manufacturer is to supply cutting tools that ensure efficient metal removal. These tools should not only possess effective working characteristics to enable metal removal rates, but also exhibit qualities such as repeatability, versatility, user-friendliness and a high utilisation factor. These attributes collectively represent the IQ of tool, which is essential for leveraging the full potential of advanced machine-tool capabilities. This principle guides the development of cutting tools, harnessing the expertise of tool-design engineers, technologists, metallurgists, manufacturers and all those involved in creating innovative tool solutions for intelligent machining in the metalworking industry.

ISCAR's latest campaign unveils a range of groundbreaking cutting tools, including turning, parting, grooving, hole making and milling products. Let's take a closer look at the LOGIQUICK portfolio to fully immerse ourselves in the campaign's essence and delve into the details of these exciting new developments.

Rotating tools

Steel construction beams play a crucial role in building structures and frameworks, requiring the drilling of numerous holes prior to assembly. However, the clamping mechanisms on machines often lack rigidity, posing a challenge for drilling tools. To address these limitations, it is essential for drilling tools to have an adaptive design that compensates for non-rigid conditions and optimal drilling performance. Currently, finding an efficient drilling tool for beams is a top priority. ISCAR has developed a new solution (Fig. 1) based on the established SUMOCHAM concept of assembled tools with an exchangeable drilling head made from tungsten carbide. This solution incorporates three key elements: cutting material, cutting geometry and body design. The specially developed PVD-coated IC954 carbide grade offers exceptional resistance to deformation. The new IHP-BP exchangeable head features a dedicated-centring cutting edge, ensuring secure material penetration, while the sharp corners of the head effectively prevent the formation of burrs. Additionally, the reinforced drill body enhances dynamic rigidity. As a result, the new SUMOCHAM product provides an effective solution for drilling relatively thin beam sections under unstable conditions.

Introducing another innovative rotating product, the modular SUMOCHAM drill head with MULTI-MASTER adaptation combines the strengths of two leading ISCAR product lines. This new drill head is designed to accommodate any of the SUMOCHAM exchangeable heads, providing the versatility of a modular tool assembly. It is specifically designed to be on a wide range of MULTI-MASTER shanks, allowing for easy customisation in terms of shape, overall length and diameter. This not only reduces the tool inventory for but also minimises the need for special drills. The combination of SUMOCHAM and MULTI-MASTER creates a promising synergy effect, offering tremendous potential.

Efficiently removing a large volume of material through milling is crucial in the production of critical duty loaded parts, such as aircraft components made from titanium alloys. Extended flute indexable milling cutters, also known as "milling porcupines", are highly effective for this type of machining, particularly when milling cavities, pockets, wide edges. The success of such tools

Fig. 1

depends on a combination of productivity, reliability and cost-effectiveness. Introducing the QUICK-X-FLUTE (Fig.2), a new family of 90-degree extended flute shell mills with double-sided square inserts. These mills are designed with an optimised flute shape that strikes a balance between tool rigidity and effective chip flow, enabling high Metal Removal Rates (MRR) with substantial radial engagement. The developed flute profile enhances vibration resistance, especially during workpiece entry and exit allowing for increased cutting data and improved productivity. The inner channels of the mill have replaceable nozzles and frontal outlets, facilitating direct High-Pressure Coolant supply (HPC) to the cutting zone. This improves cooling and lubrication, contributing to effective chip control. Additionally, the double-sided square insert offers eight indexable cutting edges greatly increasing insert material utilisation.

Non-rotating tools

To achieve success in machining High Temperature Superalloys (HTSA), the selection of the right cutting tool material is crucial. Introducing IC1017, a new tungsten carbide grade specifically designed for ISO-standardised inserts used in turning HTSA. This grade boasts a high-hardness submicron structure and is coated with PVD enabling higher cutting speeds for enhanced productivity.

Introducing LOGIQ-6-TURN (Fig. 3), a newly designed triangular insert that offers a cost-effective solution for semi-finish and finish turning with a focus on achieving high

surface quality. This double-sided insert features a 55° corner angle and positive rake cutting geometry, providing 6 indexable cutting edges. It presents a significant alternative to the standard ISO-type rhombic insert of DCMT type, which only offers two cutting edges. One key advantage is the ease with which LOGIQ-6-TURN inserts can be mounted on turning tools designed for triangular TNMG inserts.

Maximising profitability through efficient use of raw materials during the parting process is crucial. ISCAR's highly regarded DO-GRIP parting and grooving family has recently grown with the addition of three new sizes of double-sided inserts, specifically designed for narrow parting operations (Fig. 4). These inserts are primarily targeted for Swiss-Type lathes, enabling optimal material savings when parting small-diameter bars, tubes and thin-walled workpieces.

The new tools are just a few examples of the various products introduced by ISCAR as part of the LOGIQUICK campaign. The numerous other product releases have significant interest and will soon be tested by manufacturers. With the increasing demand for quick metal removal, the need for advanced cutting tools continues to grow. This drives the development of tool designs and shapes the logic behind intelligent tool development.

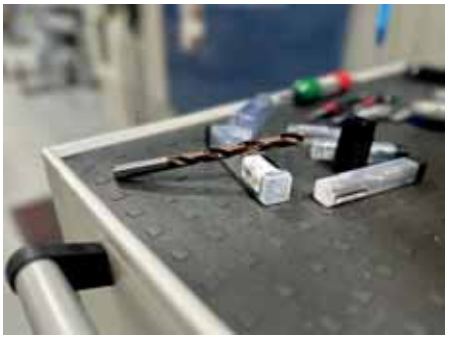
Iscar Tools Ltd
Tel: 0121 422 8585
Email: sales@iscar.co.uk
www.iscar.co.uk

Guhring builds lifelong relationship based on results

LMS Precision Engineering has trusted its tooling supplier for over 35 years. With a relationship that dates back more than three decades, many manufacturers would ask 'why?' The simple answer lies in the fact that Midlands-based LMS works with Guhring UK, one of the world's leading manufacturers of cutting tools with UK manufacturing facilities and expert engineers on hand to deliver optimal machining solutions, whatever the challenge.

Scott Street, a partner at Droitwich-based LMS Precision Engineering says: "We are a family-run business that has been operating for over 40 years. Our main sectors of interest are aerospace and general subcontract machining. We have always had a great relationship with Guhring."

Discussing the relationship, Chris Bush from Guhring says: "LMS and Guhring have been working together for over 35 years now. LMS use the whole spectrum of our cutting tools, whether that's milling cutters, drills, taps or thread mills. In fact, everything through to the tool management vending machine. LMS were one of the first customers to see the advantages of a tool management vending machine. Allowing them to put their resources in providing components rather than manually ordering tools, looking for tools and managing tool stocks. The TM machine automated all this and much more. The relationship has evolved so much over the years. In that period, cutting tool technology has changed and evolved hugely, as has the LMS business, the technology it invests in and the size of the company. The customer base at LMS has evolved as well and they are machining a lot of different materials. Over the course of the 35-year relationship, it has been exponential growth and change on both sides. However one thing remains and that is the strength of our partnership."



The Guhring Tool Management vending solutions can be built to a customer's requirements and are available in open drawer type for maximum versatility or 100 percent secure single tool dispensing. The system will control and monitor tool consumption and spending with reporting for complete visibility. The main benefits of the Guhring Tool Management vending solutions include 24/7 controlled tool availability and prevention of production stoppages due to tool availability. It will also eliminate loss and theft, create employee awareness of tooling costs and the system can communicate with customer IT systems.

Recalling specific product lines that have supported LMS Precision, Scott Street continues: "We had a lot of joy with the Guhring VA Series drill and now there is the new InoxPro drill as well, so this is bringing us even greater runtimes than ever before. We use Guhring on everything, from end mills such as the high-speed rippers, the through coolant drills, high-speed steel drills, stub drills; absolutely everything."

Adding to this, Guhring's Chris Bush says: "LMS use a complete range of our tools and they machine so many different types of material, they have to have material specific cutters as well as general-purpose cutters. They use the whole spectrum of our tooling range. With the range of stainless steel that LMS machines have, the new InoxPro is perfect for them. The Inox Pro introduces a new grade of carbide, so it is a much tougher carbide with a new geometry that is specifically for titanium and stainless steel. We also have the new Perrox coating on there as well. This is a much tougher wearing coating that is a lot smoother and this delivers optimum swarf evacuation."

"The benefit of using Guhring as a supplier is that we manufacture our carbide. We can make our own grades for specific applications, so we have made tougher grades of carbide that are not as brittle as carbides from other manufacturers. This makes it perfect for challenging applications in titanium and stainless steel."

Chris Bush concludes: "We have built a brilliant relationship and we are looking forward to the next 35 years. LMS have got exciting new projects coming through and new machines that they are investing in. Combining their technology and the advancement of materials, there will be plenty of exciting new challenges ahead and we relish the opportunity to deliver results long into the future."

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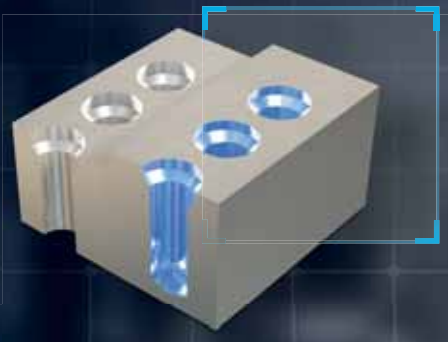

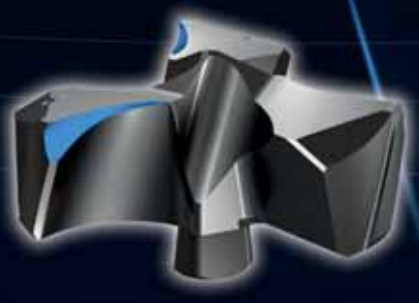

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Powerful and efficient

Solid carbide tools in metal working - every metal cutting application requires an ever more complex machining process and an increasingly difficult choice of materials to achieve the best results. However, without the right tools, you will quickly run up against obstacles

Solid carbide tools prove their efficiency in such cases time and time again. Nevertheless, it is essential here to use tools that are precisely adapted to the process, the material and the batch size. If you rely on a supplier who has extensive application experience, a wide range of products and provides expert advice, he will maximise the benefits for you and certainly reduce the size of your investment.

The efficiency of solid carbide tools has long been proven. Their wear resistance and the consistent quality of machining results are impressive for producing large batches. This allows users to quickly achieve economic results in their production and they outweigh the higher prices of the tools. Nevertheless, production managers should not blindly rely on solid carbide tools in the hope of having a universal all-round tool. This is because developments in solid carbide technology mean that it is now possible to produce a wide range of tools for different purposes.

Many details are important for solid carbide tools

Once you select the right material with the right coating, the expertise of the tool manufacturer then has a decisive impact on the quality of the tool. For example, a supplier must know exactly what grain and which grinding finish are the right ones to use with steel, hardened steel, cast material,

aluminium, non-ferrous metals or exotic materials such as titanium, Inconel or Hastelloy. Other factors to consider are whether the process requires roughing, finishing, dry or wet machining, HSC machining, what are the cutting depths, the helical pitch and so on.

With so many vital details, it quickly becomes obvious that there is no such thing as a universal all-round tool for all processes and materials. Trustworthy suppliers should therefore offer a wide range of products. Arno Werkzeuge is a supplier that takes this complexity in production together with the plethora of possibilities very seriously. It has extensive knowledge of materials, numerous applications and enormous expertise. The family-owned company offers a wide range of solid carbide tools for a variety of applications as well as specific requirements.

Suppliers with a wealth of experience and a wide product range have the leading edge

"Thanks to the relationships we have built up with our customers over many years, we have amassed a large pool of application knowledge. This is why our expertise allows us to offer exactly the right solid carbide tools for a wide range of machining processes and materials," says product manager Marco Staiger from Arno Werkzeuge. You realise this straight away when you browse through the 400-page catalogue of solid carbide milling cutters, drills and thread-milling tools. But if you are then put off in your search for the right tool, Marco Staiger reassures you by emphasising: "Our application consultants will help you select the right solid carbide tools quickly and competently."

Of course, the range also includes tools for general applications that cover a specific universal range. For many users, the Arno-FP milling cutter is an ideal entry-level tool that covers a wide range of metal-cutting operations on steel, stainless steel and cast materials. The universal milling cutter made of powder metal HSS steel is TiAlN-coated, extremely tough and wear-resistant. This ensures a longer tool life and maximum cutting performance. The AF solid carbide milling cutter is also suitable for general machining applications including steel and cast materials. It is just as suitable for wet and dry machining as it is for conventional or high-speed milling.

Customers appreciate the diversity of the range of solid carbide tools from Arno Werkzeuge. Many customers recognise they can achieve tight tolerances using the fully ground, high-precision tools that are also extremely sturdy and sharp.

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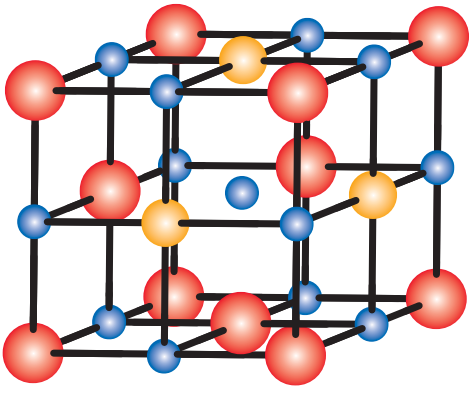
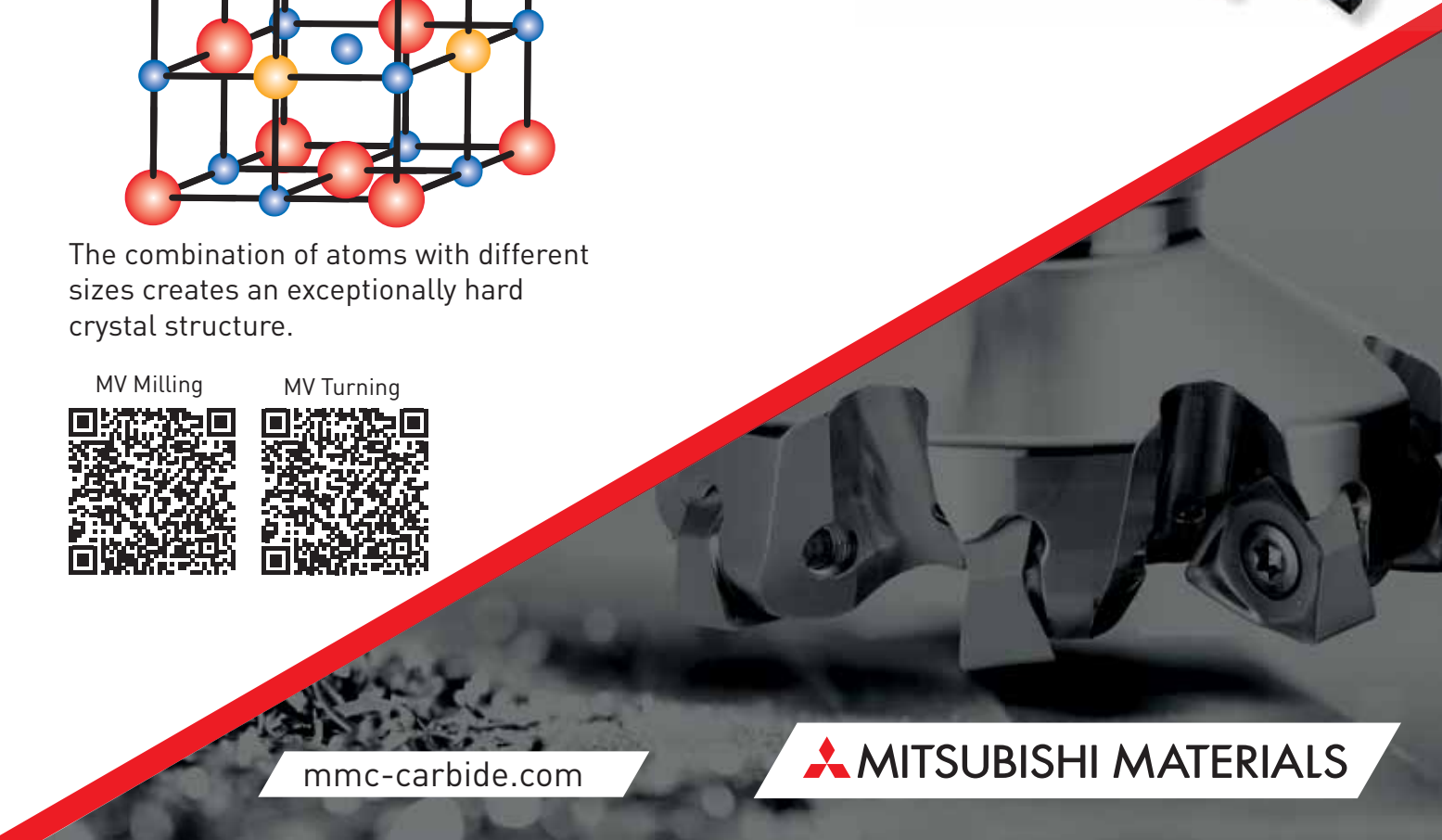
(Al,Ti)N coating



The combination of atoms with different sizes creates an exceptionally hard crystal structure.

MV Milling

MV Turning



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MITSUBISHI MATERIALS

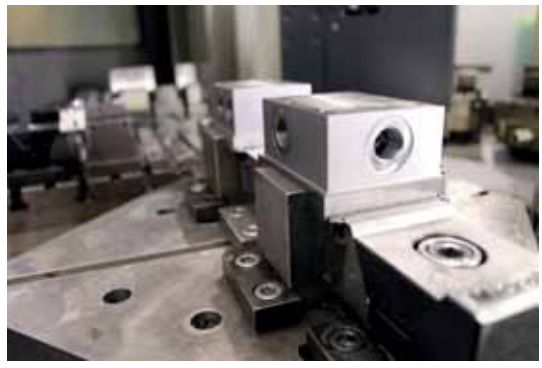
CERATIZIT helps Volz Engineering enhance its manufacturing processes

James Alletson (left) pictured with Matt Derbyshire (right)

Based in Rochdale, Greater Manchester, Volz Engineering is a subcontract machining company which services the automotive, aerospace and agricultural industries. With six CNC machines running 18 hours a day, Volz sends out more than 500 parts a week and there is no sign of this engineering firm slowing down the pace anytime soon

Volz, as it is today, began its journey just over three years ago by managing director Alan Reeson. What started as a manufacturing company, Volz gained its reputation by making highly precise parts to exact specifications. Eventually expanding its services to also include engineering design, Volz now oversee every step of the manufacturing process from idea, to design, to finished product.

Having worked with CERATIZIT UK & Ireland Ltd. prior to Volz, James Alletson, operations manager at Volz Engineering, was keen to have CERATIZIT involved in Volz's manufacturing processes. Regularly visited by technical sales engineer, Matt Darbyshire and application sales engineer, Stuart Brooks, the engineers at Volz approached both CERATIZIT engineers with technical queries and tooling advice. Always looking to further optimise machine processes as tooling and cutting tool technology advances, the CERATIZIT engineers recommend tooling on a company-to-company basis, considering the best interests of each business above all else.



For Volz, a standout example of a tooling recommendation which had the greatest impact was for a bespoke step drill. Required for a job where one hole needed to be drilled, but with different diameters at different depths, Volz has previously been using multiple inserts to complete this job. Swapping tools throughout the process, however, meant that the overall reliability and accuracy of the finished product was reduced and made it difficult for Volz to achieve the critical tolerance of 0.02 mm. The machine process, with the necessary changes to tooling, took a total of 26 minutes. This is where Matt Darbyshire identified an opportunity to optimise this process for Volz.

Purposefully created to fulfil Volz's exact specifications and needs, CERATIZIT designed and manufactured a totally unique step drill. After installing the drill, there were instant positive implications from switching to the step drill. The total machine process had been reduced by more than 50 percent, taking the time needed to drill each part to just over 10 minutes. Moreover, the step drill allowed for just one machine process to achieve the different diameters needed. So, with no machine changes or tooling swaps needed, the overall accuracy of the final products increased, allowing Volz to easily achieve the precision they required.

The step drill from CERATIZIT UK & Ireland (middle)

James Alletson commended that "the step drill was a game changer for us. Not only did the time taken to machine each part dramatically decrease, but with no machine interruptions we could achieve a greater level of precision. Since having the step drill delivered, we haven't had to replace the tool yet, despite the 500 parts a week it is drilling."

Impressed by the initial results of CERATIZIT tooling, Volz began to switch more tooling out for CERATIZIT's products. With an increased demand for CERATIZIT tooling, a vending machine was installed on their shop floor 18 months ago and the company has continued to be impressed by the results ever since.

As well as having the machine regularly serviced and restocked, Volz have 24/7 access to technical support and advice. Regularly picking up the phone to Matt Darbyshire outside of his visits to Volz, the engineers have built a solid rapport with CERATIZIT that continues to benefit the company.

Matt Darbyshire comments: "I've worked with Volz for a while now and with James for even longer, so I've gotten to know the company and their processes really well. Having such a good working relationship with a company is important as transparency and honesty means that I can make better tooling recommendations for them."

With a professional relationship that continues to grow, engineers at Volz look optimistically toward the future. Aiming to expand their repertoire of what they can offer, Volz have their sights set on achieving more aerospace certifications and accreditations which would allow them to manufacture flying parts for aircraft.

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Tel: 0800 073 2073
Email: info.uk@ceratizit.com
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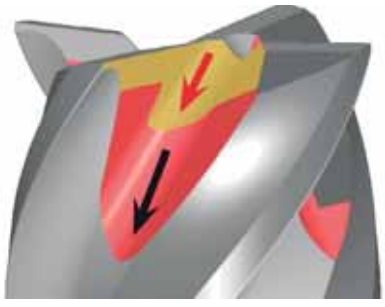
New VQ4 MVM end mills from Mitsubishi Materials

VQ, the top of the range series of carbide end mills from Mitsubishi Materials, has recently expanded to include a new innovative type, the VQ4MVM.



This latest addition is ideal for machining stainless steels and difficult-to-cut-materials including titanium and heat resistant super alloys. The modern metal cutting world also demands versatility and a reduction of cutting tool inventory, therefore it is also suitable for carbon and alloy steel applications.

This latest addition is ideal for machining stainless steels and difficult-to-cut-materials including titanium and heat resistant super alloys. The modern metal cutting world also demands versatility and a reduction of cutting tool inventory, therefore this new end mill is also suitable for carbon and alloy steel applications. VQ4MVM is also multi-functional with a strong ramping capability of up to 30° on a wide range of materials. This eliminates the need for a pilot hole when machining pockets, thereby reducing costs through tool consolidation. Compared to direct plunge cutting, ramping enables simultaneous multi-axis feed at high speeds. This method is ideal for machining wide and shallow pockets.

The reliability and high performance of all the new VQ4MVM end mills can be attributed to the (Al,Cr)N coating which delivers substantial resistance to wear. Additionally, the surface of the coating has undergone a smoothening treatment resulting in better machined surfaces, reduced cutting resistance and an increased chip discharge capacity. With conventional coatings the sharpness of the cutting edge can be affected and rounded off but with the unique ZERO-μ Surface, the cutting edge retains its sharpness yet still provides protection during harsh cutting conditions. In tests when cutting 304 stainless steel, a Ø10 mm VQ4MVM at vc=50m/min at feed rate of 0.1 mm/rev in a full width ramping operation, the VQ4 end mill could use a much higher ramping angle and a provided a smooth component surface finish.

The special ramping capability of up to 30° is made possible by several innovative features:

- The end face geometry includes two separate gashes. These combine to provide super-efficient chip evacuation that far exceeds conventional designs when ramping.
- Irregular helix flutes and the micro relief angle exerts a margin effect that plays the role of a guide during machining.
- Combined with irregular helix flutes, improved vibration damping and suppression of burrs brings the advantage of reducing extra finishing and deburring operations.

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ITC provides complete solution for composite experts

As a company that has continually evolved over the last 40 years to become a leading global force in composite and GRP development and manufacturing, KS Composites is at the very cutting edge of innovation. KS Composites pushes the boundaries in the motorsport, marine, energy, rail, aviation and defence sectors and the Melton Mowbray company relies upon the expertise of the cutting tool experts at Industrial Tooling Corporation (ITC) to deliver results.

Operating out of a 48,000 sq/ft manufacturing facility that accommodates more than one hundred staff, KS Composites services and facilities include everything from design and manufacture to FEA, CFD, kit cutting, wet clay composite shop, autoclaves and ovens, fitting and assembly and a modern machine shop. Some of the company's recognised clients and projects include the Jaguar Project 8, Revolution Racecars and a multitude of prestigious F1 projects.

KS Composites has a longstanding relationship with Tamworth-based ITC Dan Johnston, business development manager at KS Composites explains why the company continues its relationship with ITC: "We use ITC cutting tools due to the great working relationship we have with the team and the longstanding great service we receive. Whether discussing new advancements in tooling technology or looking at building up a package of tools to support a project, ITC has always given us great advice. Even better is the on site support in running tooling trials to confirm that tooling works as stated."

Looking at the cutting tools KS Composites use, Dan Johnston continues: "We use a large variety of ITC tools from face mills, endmills, bullnose, ball nose endmills, drills and taps amongst other niche tooling. This variety of tooling is needed to support the many different items we machine, including but not limited to patterns, moulds, jigs, components, inserts, props and models. Add into this mix that we machine an array of materials and it is very clear that we need a tooling supplier with a huge variety of

options. We also have an on site vending solution from ITC with a comprehensive stock level that ITC keep fully serviced to support our business."

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rose plastic ErgoLine cases are now available made from 100 percent recycled plastic

If you are looking for functionality and aesthetically attractive plastic cases to protect sensitive equipment and instrumentation, rose plastic has the solution with the RoseCase ErgoLine. The ErgoLine is extremely adaptable to specific product requirements and it can be configured to your exact needs. The ErgoLine range is also available in Bio HDPE and Post-Consumer Recycled (PCR) material.

From a functional perspective, the ErgoLine is available in a vast range of standard sizes with bespoke solutions available. To ensure unparalleled protection for your products and instruments, the ErgoLine is manufactured from a robust, hardwearing Polypropylene with the option of plain, convoluted or custom-made foam inserts.

The RoseCase ErgoLine combines functionality with fashion, incorporating modern design while offering customers a complete range of colour combinations, interior designs, polished or textured surfaces, ergonomic handles with 'soft-touch' options, concealed hinges and sturdy feet. Customers can choose from a selection of lids and bases that can be custom printed with logos. If you want to combine functional user-friendly design with attractive aesthetics, the ErgoLine protective cases are the solution for your business.

Would you like more information? rose plastic can post out its catalogue or send you the information on email.

rose plastic is located in Rotherham, South Yorkshire, bordering the Steel City of Sheffield, the birthplace of Stainless Steel. rose plastic UK serves corporate customers throughout United Kingdom and Ireland. Its packaging experts will work with you to ensure it provides you with the optimal packing solution to suit your products.

With a comprehensive product portfolio, it sells plastic packaging for a wide variety of applications: In particular, manufacturers of cutting tools, industrial components, medical packaging as well as suppliers of DIY stores,

the tool trade and manufacturers of consumer products count on its decades of experience in the development and manufacturing of packaging solutions. The company attaches great importance to a close, trustworthy cooperation and long-term working partnerships.

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NTR's Driven Tooling Doctor will see you now...

When Chris Weeds first described NTR Ltd's repair and servicing of Driven/Live Tooling as a health MOT, he knew that the team needed to call on one man: The Driven Tooling Doctor. Thanks to investment in The Doc's Yorkshire-based surgery, he and his team promise to spot symptoms, diagnose issues and bring Driven/Live Tooling units back to full health.

Founded 46 years ago, NTR Ltd has gone from strength to strength, since its acquisition by Chris Weeds and his fellow investors back in July 2016. Based in Wetherby, West Yorkshire, the business serves the UK, 14 countries across Europe and USA and boasts an enviable customer list.

NTR has repaired close to 1.5 million damaged tools since inception, with the service growing in popularity due to two inescapable factors: economics and the environment.

It was an obvious progression, as tooling experts, that NTR would evolve its services to include other maintenance and repair solutions. The can-do attitude of their engineering team has meant that the company now apply its expertise to a range of customer needs.

Driven/Live Tooling

Driven/Live Tooling was one such example, when existing customers complained about the standard of repair services and turnaround times within the sector. When the sales team brought this information back to HQ, it was obvious to operations director Sam Wood that the skills were already available in-house and a new NTR service as born.

As an obvious complementary service to NTR's tooling repair and reclamation services, its Driven/Live Tooling Service and repair facility was instantly supported by over 30 specialist engineers, who collectively enjoy over 700 years of experience within the tooling sector.

Sam Wood explains: "As a manufacturer, we understand that keeping machines running is crucial to a business. A machine down often means missed deadlines, resources not utilised and most importantly, unhappy customers. Offering a repair and service package has meant less downtime for numerous high-profile clients."

"Every unit is pre-inspected, ultrasonically cleaned prior to a quotation being generated and awaits customer authorisation before work commences. At all times, customer visibility and transparency is key to our business ethos and value proposition."

Failure modes

As with all mechanical devices that house bearings, gears, actuation and fastening mechanisms, they rely heavily on high quality grease, expert assembly and accurate running verification.

Craig Bishop, manufacturing engineer and one of NTR's Tool health heroes shared: "On a daily basis, we receive many units for both servicing and repair from our regular UK and overseas clients. They often share the various failure modes, such as the tang being damaged, the unit is running noisily or the unit cutters are running out of tolerance. In some cases, the rotating shaft is seized and doesn't function at all. Quite often the customer won't know the point of failure and that's where our detective work and expertise comes into play."

Over the years, NTR has developed detailed operating procedures supported by OEM drawings. In parallel, a comprehensive skills matrix has been developed, which has allowed the tooling engineers to hone their repair and servicing skills in a multitude of failure modes. In addition to this, NTR has invested heavily in disassembly and assembly tooling from a range of bearing and live tooling OEM manufacturers all housed in a designated temperature controlled clean room.

The Doc's 10 step process

1. **The unit arrives on site at the NTR surgery**
   The unit is booked in and allocated a works order tracker number. It is then checked for aesthetic damage.

2. **The unit is stripped down and assessed for service/repair**
   A free thorough pre-quote health check is undertaken with photographs and/or video where applicable.

3. **Full quotation with photos are emailed within 48 hours**
   An assessment of the unit's requirements is produced for every unit prior to commencement of service/repair.

4. **When the PO is raised, the unit enters the service/repair process**
   The unit is allocated its own unique NTR Passport Tracker Number, which stays with it through its service life.

5. **A report with a detailed replacement parts list is created and picked**
   NTR keeps OEM spares in stock for a quick turnaround while special order items such as gears are ordered directly.

6. **The unit is carefully reassembled and gradually run-in**
   Using a light load to stabilise all moving parts, further tests are carried out to verify noise and heat generation.

7. **The Doctor tests and verifies TIR, temperature and noise**
   The NTR Passport fully records the results for each unit to build a complete health history.

8. **Finally, moving to speed step verification**
   The unit is taken through a range of speeds and, if required, loadings, which gives the customer confidence that all parameters are correct.

9. **Certification is signed and the NTR Passport stamped**
   NTR's Customer Service Team will contact you when your next service is due, which typically, will vary between six to 12 months depending on usage.

10. **The unit is packaged and despatched by the NTR Health Team**
    Along with your certification and NTR Passport, your unit is packed in recycled packaging using 'green couriers' to deliver your unit safely.

Green credentials

While research has shown that only around 29 percent of UK manufacturers class Net Zero as a priority, NTR has found that most decision makers from large conglomerates to smaller private engineering companies are considering the environmental impact of their businesses.

Repairing, servicing and re-conditioning Driven/Live Tooling back to OEM performance is not only a cost-effective way to manage your tooling assets, but also a more environmentally-friendly process. Working with local suppliers where possible, and producing fewer carbon emissions, repairing, servicing and reusing your Driven/Live Tooling is great for your budget and better for the environment. It's estimated that NTR, last year alone, recycled hundreds and Driven/Live Tooling units.

With ISO 14001:2015 environmental management targets and companies tasked with lowering their carbon emissions, NTR have become a key element of its client's environmental strategy, with cost effective solutions, seven day turnaround minimising downtime and crucially recycling is critical to the environment.

Servicing plans

With tightening production schedules and stringent quality standards, NTR know that the performance of Driven/Live Tooling can be critical for business. When tooling failure is not an option, regular and expert maintenance by NTR is a must. That's why many of NTR's customers opt for The Doctor's Service Plan.

The NTR Health Team create a bespoke service schedule based on customer needs and operational demands, while all service plans are delivered by their experienced tooling service engineers.

In the unlikely event your production tooling goes down, we can offer an emergency 48 hour turnaround quickly.

The benefits of the NTR Service plan include:

Less downtime
Regular scheduled maintenance minimises the likelihood of breakdowns and keeps Driven/LiveTooling running smoothly.

Higher quality output
Continuous servicing ensures high quality performance, delivering accuracy and repeatability.

Lower operating costs
Regular maintenance reduces the risk of unforeseen breakdowns and repairs.

Replacement of wear parts
By regularly replacing wear parts, smooth running continues until the next planned preventive maintenance service.

Competent engineers
Fast resolution of issues and efficient maintenance by experienced NTR technical service engineers.

Early detection
Our technical service engineers thoroughly inspect all parts of your driven/live tooling and let you know if changes are necessary

Cost-saving
What is clear, talking to the team at NTR, is that they are a business that truly understand tooling, manufacturing efficiencies, and production issues.

Mike Reilly, NTR commercial director, explains: "Everything we aim to achieve for our customer, is about saving resources, avoiding unnecessary costs of replacement tooling and removing the inefficiencies associated with manufacturing downtime. As a team, we are extremely proud of the cost-saving services we provide. If you would like to learn more about how NTR can take care of your Driven/Live Tooling health, we would love to hear from you."

Contact The Doctor now, he's waiting for your call.

NTR Ltd
Tel: 01937 845112
Email: sales@ntrltd.co.uk
www.ntrltd.com

Efficient production planning and setup process optimisation in one

Production planning and setup are issues of increasing importance for efficient production. The Handling Line recently introduced by HAINBUCH goes beyond conventional setup technologies. It is an innovative system for the storage, transport and setup of clamping devices. The Handling Line not only facilitates the setup process, which is especially important in the case of small lots, but also optimises upstream and downstream aspects, such as the storage and transport of clamping devices. The entire system integrates seamlessly into the work processes of those who use the centroteX quick change-over interface.

The Handling Line consists of a setup hoist, a mobile crane for the transport and assembly of clamping devices. The monteq changing fixture is compatible with the setup hoist, thus enabling setup of clamping devices from the centroteX series. System accessories for storage and transport with a pallet include clamping device holders, as well as a frame attachment and cover.

Flexible production without an overhead crane

The setup hoist, which is an advanced mobile crane, is the core element of the Handling Line. It allows fast clamping device change-over in any production hall, without an overhead crane. The low base height with a surface area the size of a Euro pallet and a turning radius of 1.7 m allow the setup hoist to approach every machine. Loading from the front is therefore always possible, regardless of the door opening.

Safety prompts ensure stability before starting the actual setup process. The cantilever arm of the setup hoist consists of four single segments, which are connected by a joint. This design allows the arm with the winch to swing 10 degrees to the side, for precise, flush positioning of the clamping device even on hard-to-reach spindles. After the change-over process, the setup hoist is also useful for loading heavy workpieces into the machine. With a lifting capacity of 120 kg, the setup hoist can be used for virtually any clamping device combination. In 3-shift operations with three changeovers per day, the rechargeable battery for operation of the electric swing arm and winch lasts about a week.

The setup hoist allows preparation of the clamping device for setup at a different location than the machine. When it is time for the change-over, the setup hoist with the required clamping devices is moved to the machine. This gives users of the system more flexibility in both pre-production planning and the production process.

A monteq changing fixture can be mounted on the winch of the setup hoist. This mounting aid enables a sensitive change-over process for consistent accuracy and fast change-over of centroteX clamping devices. A quick-release bolt secures the clamping devices during the setup process. Built-in spring assemblies prevent jamming of the clamping device and the negative transfer of force to the spindle. The swivel mount of the changing fixture simplifies alignment and locking. Even in the case of large and heavy clamping devices, fast and ergonomic clamping device change-over is ensured, with no interference or damage to the spindle.

Storage and transport included in concept

Clamping devices can be stored securely and well protected on a pallet. Each pallet is the size of a half Euro pallet. The pallet is placed on the surface of the setup hoist for secure transport. Pallets can be equipped with a stackable frame attachment and cover. This protects them from dust, dirt and damage. Protected storage helps to maintain the precision of clamping devices even after they are used numerous times.

For centroteX clamping devices from HAINBUCH, the Handling Line includes custom-fit clamping device holders. Firmly mounted on the pallet, they prevent the clamping device from tipping or falling during transport. Each pallet has the capacity for the secure storage and transport of two standard clamping devices or three smaller add-on clamping devices, with no compromises in precision. Clamping devices are removed upward from the pallet using a changing fixture.

HAINBUCH UK Ltd
Tel: 01543 278731
Email: sales@hainbuch.co.uk
www.hainbuch.com

LANG presents new stamping unit and a complete new series of 5-axis vices

Next generation of the Makro•Grip® series

FS - two letters that stand for major upgrades in the workholding technology of LANG. With a revised stamping unit, a new type of stamping serration, as well as a complete, additional series of 5-axis vices, LANG continues to develop its "original". The stamping technology has been setting the bar for top-notch quality in 5-axis machining through its form-fit clamping philosophy for years. Now, Makro•Grip FS is taking this to a whole new level with an even more impressive milling performance. The abbreviation "FS" stands for fully serrated/full serration and describes the new, continuous holding serration on the clamping jaws of the 5-axis vice, which apart from this remain identical in their design. The new form-fit between the continuous holding serration and the matching contour in the pre-stamped workpiece blank increases the holding force by up to 60 percent, depending on the material and stamping depth. For machining, this means: Even more reliability and safety in workpiece clamping. This in turn allows higher cutting performance and ensures faster milling processes.

LANG Technik UK Ltd
Tel: 01296 796576
Email: sales@lang-technik.co.uk
https://lang-technik.co.uk/

Stamping unit and trolley with many new features

The new stamping units with adapted stamping serrations impress with numerous new features and make operation even easier and more effective. For example, the process of setting the stamping pressure can be significantly accelerated thanks to the new stamping depth gauge. The setting is now data-based by reading off the dial gauge instead of visually checking the workpiece. The new centring unit also makes it child's play to insert the workpiece blank exactly in the centre. The newly designed stamping trolley as a version without or with t-slot plate, is now able to support three stamping units at the same time. By optimising the stamping base bodies, the new stamping unit versions now cover even more vise lengths and clamping ranges.

Full compatibility with the previous Makro•Grip series

The new 5-axis vices of the FS series are available in all previously known sizes and models and also in a new mini version - the Makro•Grip micro. The FS series will initially run alongside the well-known Makro•Grip series, but is expected to replace it in the medium term due to its performance advantages.

Customers who already use the Makro•Grip 5-axis vice in production can continue to use it with the new stamping unit. Pre-stamped workpiece blanks with a continuous contour can be held by form-fit in the previous holding serration of the 5-axis vice without any problems - even at even higher holding forces than before. What applies to the 5-axis vice in terms of compatibility also applies to the stamping unit. For those customers who decide in favour of the new FS vices but are already working with a stamping unit in their machine shop, a conversion set is available. This enables the use of new types of stamping jaws on existing stamping units.

The new FS Series of 5-axis vices is available now. Stamping units can also be ordered and will be available from spring 2024. Conversion sets for existing stamping units are already in stock.

New wireless bench and handheld 2-in-1 marking system

Connect Series Comby

The new Comby Dot Peen System is redefining the boundaries of permanent marking to give the user a wireless bench dot peen marking system that can be changed to a handheld in less than 10 seconds. This makes it ideal for marking all sizes of components, both flat and cylindrical, from very small parts in bench mode to large parts in situ whilst in handheld mode.

Comby provides a secure and completely wireless system driven by an android tablet. The intelligent and intuitive app means that anyone can easily use the marking system with no previous marking experience. The cast aluminium all-in-one column and base delivers quick and precise positioning thanks to the side adjustment wheel on the column. It is compact, robust and stable and the universal base grooves offer a variety of options for fixturing as required.

With a 120 mm x 60 mm marking window and a range of 11 force settings enabling marking at different depths, the Comby is a versatile and adaptable machine. It allows a wide range of materials to be marked including metals, plastics, wood and even some leather. Deep marking is still visible after painting and other post marking treatments as well as on painted surfaces. With Technomark's patented IDI technology, the software automatically detects any difference in height on the surface of the component to allow for a consistent quality mark when facing a height difference of 3 mm - 8 mm during the marking cycle. An optional rotary drive enables marking around the circumference of cylindrical components.

A wide variety of data types can be marked including alphanumeric data, logos, QR codes and datamatrix as well as text on an arc. Variable data, such as incremental serial numbers, can be added to any marking file to facilitate either batch or one-off marking. To automate data entry and eliminate human error, the scan licence enables the option for 1d and 2d barcodes to be scanned for data input. A font creator licence is also available to allow custom fonts to be designed. It also has multi-lingual capability to provide flexibility in any production environment.

The app has two operator modes with different levels of security available. The

administrator mode allows programs to be created, edited and machine parameters changed. The production mode only allows the operator to select a file and enter variable information. This ensures that no files or parameters are changed by an unauthorised operator or by mistake.

With the marking head in handheld mode it is ergonomic and manoeuvrable. Its design allows 360-degree orientation, so it can be positioned at any angle to mark. This is made easier by the fact it only weighs in at 3.2 kg. It has a robust construction with drop-proof protective bumpers as well as an illuminated marking area for increased visibility.

Advanced 22V lithium battery technology allows for uninterrupted marking all day. This state-of-the-art battery has been designed specifically for Technomark to guarantee the machine's lightness, performance and durability. The battery is integrated into the marking head, mitigating any risk of misplacement or theft. Its Battery Monitoring System provides real-time information on the life and health of the battery, as well as the number of marks produced, the Wi-Fi connection status and which marking file is currently being used.

When in handheld mode, the 5-in-1 multi-functional marking head foot gives extra stability when marking ferrous surfaces using four rare earth magnets in the base. The multifunctional non-slip support foot also features two pairs of centring V's making it easy to mark on curved surfaces, such as pipes and tubes, as well as an optional

support guide for marking on the edge of plate metal.

Universal Marking Systems are Technomark's sole partner in the UK and offer full support to help you find the best solution for your marking application. Minimal maintenance is required for the Comby system but the company are always on hand and offer long-term support.

Universal Marking Systems
Tel: 01420 565800
Email: info@ums.co.uk
www.ums.co.uk

TLM Laser and FOBA make their mark with Irish academia

The link between industry partners and academic institutions is longstanding and widely recognised as providing value to both parties. From the academia point of view, students can gain access to industry experience and expertise through company sponsored projects, which can in turn lead to career development opportunities. Industrial companies can benefit from collaboration on research projects or product development exercises, making it possible for companies to innovate more quickly and gain a competitive advantage in the market.

Bromsgrove-based TLM Laser has always understood the benefits which can result from proactive collaboration with academic institutions and the recent announcement of a collaboration between TLM Laser, its supplier partner FOBA and the Technological University of Shannon (TUS) in Limerick consolidates this philosophy.

At the heart of this collaboration is a new FOBA M2000 laser marking system which has been installed at TUS's state of the art workshop. The FOBA M2000, distributed within the UK and Ireland by TLM Laser, is an advanced laser marking system designed for precise, safe, and traceable marking on various materials within high compliance sectors, such as the medical device, automotive and aerospace amongst others.

The compact and self-contained M2000 provides high-speed marking with customisable parameters, ensuring consistent and durable markings which exceed current industry standards. The system integrates user-friendly software for easy operation and supports a range of marking techniques. The robust construction of the M2000 delivers a durable and highly reliable solution for laser marking within research, development or industrial environments.

TLM's Andy Toms comments: "This collaboration with TUS means that they now have at their disposal leading edge laser marking technology which can be used to further the development of young engineering students who are set to be the future of both the UK's and Ireland's manufacturing industries. Also, Ireland is recognised as one of Europe's largest manufacturers and exporters of medical device products and FOBA's laser marking technology offers the optimum solution for marking medical devices of all types. This capability will also help TUS foster closer links with the Irish medical device sector."

The partnership between the three parties was celebrated at a recent launch event, structured as a day of networking, system learning and sharing of future prosperity plans. The event also made it possible for Irish medical manufacturing businesses and students to network and celebrate the essence of this forward-thinking collaboration. Those present at the launch event included TLM director, Andy Toms, FOBA's global vertical manager of medical, Christian Söhner and TLM service engineer, Dave Beavington, together with TUS's president Vincent Cunnane and lecturer Ciaran O'Loughlin.

TLM has built up a comprehensive portfolio of laser processing technologies. These are supported by ancillary equipment ranging from laser safety eyewear, extraction systems and right through to complete laser safe enclosures, designed and built around the specific application. Add to this the company's hard-won expertise in applying lasers for cutting, welding, marking and cleaning applications and potential users of laser technology can leverage from a truly holistic approach to laser system integration.

TLM Laser Tel: 01527 959 099
Email: sales@tlm-laser.com www.tlm-laser.com

Introducing the MarkMate Laser

The ultimate desktop marking solution

Engineered with cutting-edge technology and user-friendly features, the MarkMate Laser is designed to meet the demands of a variety of marking applications with incredible accuracy and speed.

At the heart of the MarkMate Laser is a fibre laser capable of delivering crisp, permanent marks on a wide range of materials including metals, coated metals, plastics, ceramics and more. Whether you need to engrave serial numbers, logos, barcodes, or intricate designs, the MarkMate Laser offers exceptional versatility and precision to meet your marking needs.

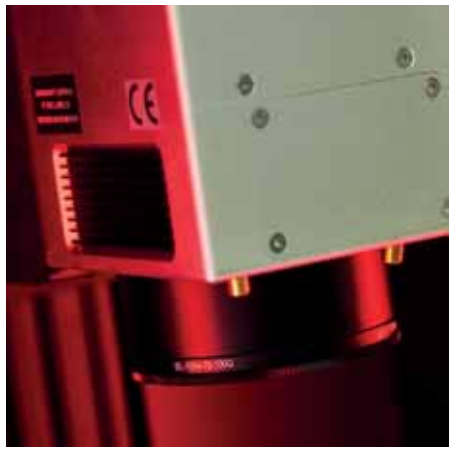
Designed for simplicity, The MarkMate Laser comes with Pryor Marking's leading Windows based Traceability Software designed for ease of use. The software has a versatile, intuitive interface that allows users to quickly set up marking parameters and adjust settings with minimal effort. Its compact, desktop design makes it ideal for space-constrained environments, while still offering ample workspace for marking various sized parts and items.

Equipped with advanced safety features, including interlocks and shielding, the MarkMate Laser ensures operator safety without compromising performance. Additionally, its efficient cooling system keeps the laser running smoothly even during prolonged use, minimising downtime and maximising productivity.

Whether you are a small business looking to enhance product branding, a manufacturer in need of reliable part identification, or a hobbyist, crafter or jeweller wanting to add personalisation to your creations, the MarkMate Laser delivers unmatched performance and precision, making it the perfect choice for all your laser marking needs. Experience the power and versatility of the MarkMate Laser and take your marking capabilities to new heights.

The MarkMate Laser joins the rest of the Pryor laser marking product range: the Bench Laser, Workstation Laser, Portable Laser and Integrated laser system. Pryor Marking technology celebrates its 175th birthday in May. This new desktop sized laser is the latest product in a long history of pioneering marking and traceability solutions from its head office in the heart of Sheffield.

Pryor Marking Technology, the trading name of Edward Pryor and Son Ltd, is a leader in the manufacture and design of both traditional and innovative marking, identification and traceability solutions. Founded in 1849 in Sheffield, UK, a hub of manufacturing and the birthplace of stainless steel, the company's success is built on providing marking and traceability solutions for all manufacturing industries. A family-owned business up until 1978, Pryor is now proudly owned by a charitable trust.



Operating from sites in the UK, USA and France, Pryor serves an extensive customer base, supported by a comprehensive distributor network in countries across the globe.

Edward Pryor & Son has grown to become a single source supplier, offering a complete portfolio of solutions for permanent part marking; ranging from a simple hand stamp through to turnkey, bespoke systems with multi-axis computer-controlled marking heads, machine vision and traceability software.

The combination of its 170+ years' experience, engineering excellence and vision has created a customer centric organisation renowned for the highest levels of quality and durability.

There is, however, much more to Pryor than its products. Pryor is committed to the local community and is proud to be owned by a charitable trust. It takes pride in its employees, who continually impress with qualities of vigilance, determination and creativity. It is passionate about helping develop the skills of younger generations through training and apprenticeship programmes. The company is also taking steps to minimise the environmental impact of its activities, continually improving environmental performance and adopting greener alternatives wherever possible.

Pryor Marking Technology
Tel: 0114 2766044
Email: info@pryormarking.com
www.pryormarking.com

Marvel at the precision

In the ever-evolving landscape of manufacturing and product identification, laser marking and laser engraving stands as a beacon of precision and efficiency. Its applications across industries continue to expand, driven by the need for permanent, high-quality marks on various materials. Sussex Lasers has the very latest laser engraving technology which allows it to meet its clients' wide range of needs. As technology advances, it can expect laser marking to further refine and redefine the way it labels, traces and personalises the products that shape our world.

In the realm of modern manufacturing and product identification, laser marking has emerged as a revolutionary technology. From industrial components to consumer goods, laser marking has found applications across diverse sectors, offering unparalleled precision, permanence, and efficiency.

The benefits of laser marking

The use of laser marking is driven by several key advantages:

Precision and accuracy
Laser marking provides unparalleled precision, allowing for intricate designs and fine details, even on small components.

Durability
Laser marks are highly resistant to wear, ensuring the longevity of the labelled information.

Non-contact process
As a non-contact method, laser marking reduces the risk of damage to delicate materials and eliminates the need for consumables like inks or dyes.

Versatility
Laser marking can be applied to a wide range of materials, including metals, plastics, glass, ceramics, and much more.

Speed and efficiency
The speed at which laser marking can be performed makes it highly efficient for high-volume production processes.
Laser marking is a versatile technology, with a whole host of applications in various industries. One of the key benefits is that every mark can be slightly different, rather than just repetitive marking such as screen printing.

Sussex Lasers offers laser metal marking services suitable for a wide range of different metals. It can laser mark stainless steel, aluminium, even titanium and many more metals as well. It only uses the very latest cutting-edge technology, which ensures that the marking is clear and very durable.

Sussex Lasers
Tel: 01342 590515
Email: sales@sussexlasers.co.uk
www.sussexlasers.co.uk

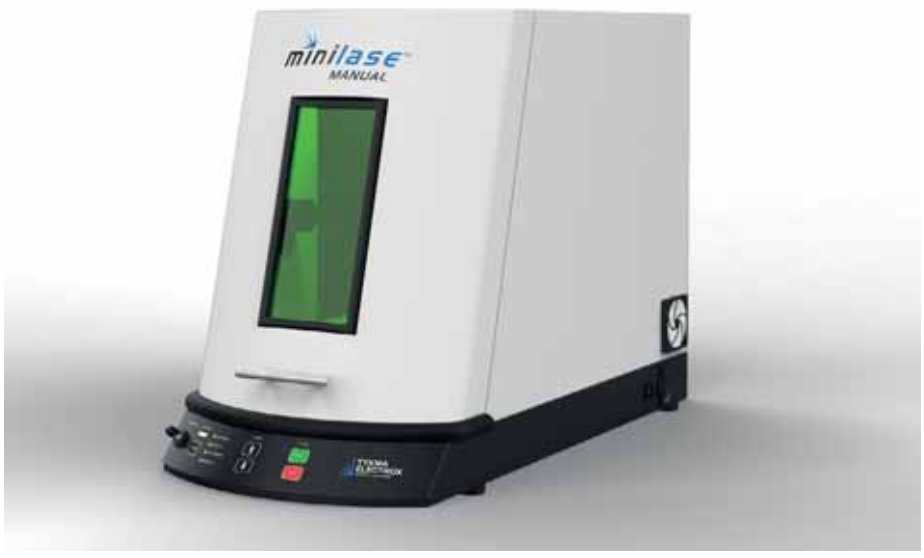
Navigating trends and innovations in laser marking

Laser marking originally emerged in the late 1960s to early 1970s with the creation and development of the CO_2 laser and as technology has advanced, laser marking has earned its place as a reliable tool for permanent marking. Today, laser marking systems are versatile enough to be used for diverse applications in many industries around the world.

Since technology will only get more advanced as time goes on, the possibilities for innovating laser marking equipment will continue to expand.

With the help of increased laser power, improved beam quality, higher speeds and enhanced control systems, laser marking systems have expanded their capabilities and use across various industries.

From shorter wavelength machines that make marking on more materials possible to the development of femtosecond lasers for ultrafast marking, the industry continues to make discoveries that expand marking abilities.



Lasers with shorter wavelengths for achieving better accuracy

Using laser marking machines with shorter wavelengths helps to achieve better resolution and contrast on your materials. Examples of machines that have shorter wavelengths include systems featuring UV lasers and green lasers. Not only are these systems precise, but they also are compatible with a variety of materials, making them the perfect solution for diverse applications.

UV lasers are known for their ability to facilitate "cold marking," which is a method that does not result in extreme heat stress being applied to the surface of an object. This is ideal for applications that involve softer materials like gold, silver or copper.

Green laser marking is also designed to conduct cold marking on materials and is the best solution for materials that are not reactive to other wavelengths. Green lasers are often used to achieve foaming, which is used in some cases to mark plastic, rubber and other similar materials.

Both of these laser types are ideal in a world where there is a high demand for clear and sustainable ways to create long-lasting marks on products.

Femtosecond lasers for delicate applications

Another notable trend in the laser marking industry for 2024 is the use of femtosecond lasers for more delicate applications. This approach applies ultrashort laser pulses to the surface of an object to create a mark that is clear but doesn't damage the surface in any other capacity.

This method is great for marking transparent surfaces like glass and optical fibres. The process of micromachining optical fibres is very complex and not easy to achieve using other methods, which is why this is a worthwhile advancement for the industry.

Within the medical field, femtosecond lasers have been greatly beneficial for non-marking procedures like laser cataract surgery, the treatment of tractional vitreous attachments and more. For marking, they have also been used to prevent the fraudulent production of drugs that are in tablet form.

A look at laser marking globally

Manufacturing operations in China and India have utilised laser marking systems for many years since the process provides such a reliable means of traceability and compliance.

However, this saw a shift during COVID-19 as the strict lockdowns in these areas caused disruptions to the supply chain. Manufacturing in the United States, meanwhile, was able to survive and thrive because some workers were allowed to practice remote work to keep operations underway, and others were permitted to work on site as they were deemed essential to national production.

Worldwide, laser marking is used by many fields, but especially the automotive industry since the marks that are produced are resistant to thermal stress, acids, gasoline, oils and beyond.

The future of laser marking

One innovative way that laser marking is being used is to embed data into glass and crystal media. This makes it possible to create memory crystals, which are a newer, highly efficient form of data storage.

The growth of AI and other machine learning tools has led to the technology being used for design software and algorithms to create a more efficient marking process, something likely to only continue in the future.

In terms of emerging laser marking tech, quantum dot semiconductor lasers are also growing more popular with their ability to use tiny semiconductor particles that emit light when exposed to a laser.

TYKMA Electrox
Tel: 001 740 558 8481
Email: sales@permanentmarking.com
www.permanentmarking.com

Funnel Integrated Technology hits the stage

Over the last 30 years there has been a boom in the traceability and identification of manufactured components. Many industries want to directly laser mark these, however there are some parts that are just getting larger and larger.

Casting and pressing companies sometimes have such large parts that they simply cannot fit these into a standard sized Class 1 laser enclosure leaving many companies wondering how they can mark them.

Even though it launched a new range of large XXL-Box class 1 enclosures in 2022, SIC Marking saw this problem as a new challenge for 2023. It has now launched its Funnel Integrated Technology (F.I.T. for short) as a complete all-in-one solution that combines all of the necessary components and settings to mark larger parts in a simple, safe and economic way within the customers production line and budget.

The FIT tunnel eliminates the need to enclose the entire part for the laser marking process by enclosing just the marking area. The compact design allows for the FIT system to be retrofitted easily into an existing robotic cell.

This ready to integrate and secured laser marking system comes as a 'Tunnel Style' Class 1 compliant enclosure. It is a compact and easy to integrate solution with a single connection to a PLC. The F.I.T. can be mounted to a robot head for presenting to a stationary part, or fixed in position allowing the robot to present the part for marking.

Not only is the F.I.T. adapted for production environments with its maintenance drawer for the cleaning of the lens, it has built-in shock protection preventing the funnel from damage. The F.I.T. tunnel can be adapted to your marking needs with three window sizes available as standard: 24 mm x 32 mm, 100 mm x 32 mm and 100 mm x 100 mm. Custom sizes can also be accommodated.

The F.I.T. is available as a basic chassis or as a complete solution with protective covers, a cooling system, electrical cabinet and tooling as well as an optional integrated Cognex vision system for 2D verification/ validation or 3D lens for marking curved or angled surfaces.

For a demonstration of the new F.I.T. and/or any of the other laser marking systems in SIC Marking's extensive range, please get in touch with SIC Marking UK in Warwick, UK on 01926 830372 where one of the very knowledgeable engineers will be happy to talk to you.

SIC Marking UK
Tel: 01926 830372
Email: sales@sic-marking.com
www.sic-marking.co.uk

Cheshire experts offer complete tool investigation service

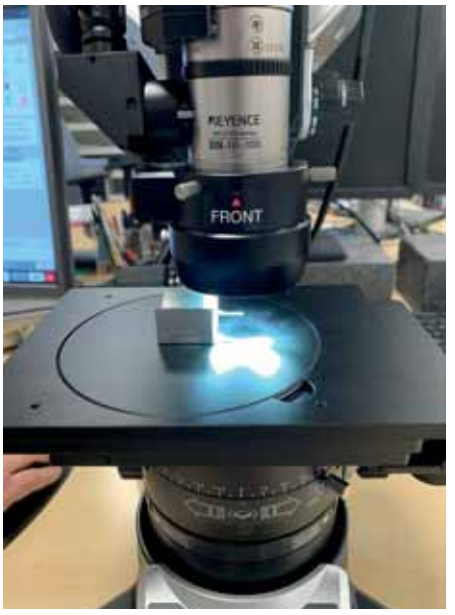
Leading the way in the provision of micro-machining solutions, Rainford Precision, has invested in a Keyence digital microscope to provide a complete tool investigation and consultancy service for its customers in the UK and Ireland.

Rainford Precision, based in Cheshire, is recognised as a micro-manufacturing industry benchmark. The company boasts a portfolio of products that include KERN ultra-precision machining centres, Finecut micro waterjet cutting machines and an unrivalled range of cutting tools from the likes of Union Tool Japan and Louis Bélet Switzerland to name just two. With extensive ranges of drills, end mills, reamers, threadmills and complementary tools, from universally standard dimensions down to the micro range, it is here that Rainford has its niche. It is in this micro range that the new Keyence VHX-970FN digital microscope will enable Rainford to assist their customers to diagnose and maximise the performance of micro and precision cutting tools.

The company supplies numerous cutting tools to the micro and precision engineering industries that are beyond the remit and scale of other cutting tool vendors. Striving to optimise and enhance its service and performance offering for its clients, Rainford has invested a significant amount in the Keyence system.

Commenting on the new investment, Rainford Precision managing director, Miles Evans says: "When you are servicing customers with tools below 0.2 mm in diameter, diagnosing and optimising tool life and performance is a challenge. The Keyence system will enable us to provide a unique service to our customers within the cutting tool marketplace."

A close examination of a drill from Rainford on the new Keyence machine



Close up inspection with the Keyence system at Rainford Precision

With a magnification range from 100 to 1,000, Rainford's experts can analyse standard and micro-tools then investigate and resolve the barriers to optimum performance.

Cutting tools smaller than 0.5 mm in diameter can naturally pose issues when investigating performance and tool life issues. With the Keyence VHX-970FN, Rainford can provide an after-sales service that is aimed at delivering improved tool life, machining performance, productivity and consistency. By investigating the wear characteristics of customers' tools and armed with the cutting data, the experts at Rainford can diagnose issues from a multitude of factors. For example, if the cutting speeds, feeds and machining parameters are impacting performance, Rainford will be able to diagnose this from investigations with the Keyence microscope. Likewise, concentricity, toolholding and the associated concerns of rigidity, balance and stability could also be diagnosed and potentially rectified through Rainford's exceptional service and product portfolio.

A cutting tool expert using the Keyence system at Rainford Precision to examine cutting edges

This unique service is available for all customers. For existing customers, the service will provide a comprehensive feedback loop with full reporting and recommendations to maximise the machining performance of tools purchased through Rainford. Additionally, all potential customers who may be experiencing issues with their current cutting tools, whoever the manufacturer may be and want to investigate potential solutions will be able to send their tools to Rainford's experts. It will endeavour to optimise performance and make a reliable consistent process with tooling from Rainford.

Miles Evans concludes: "We wanted to find a way to enhance our offering to our customers and feel that, by offering this new service and combining it with our niche expertise, it will provide our customers with true benefits."

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Tel: 01744 889726
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Moore & Wright legacy shines on with new exhibition at Hawley Tool Collection

The history of Bowers Group's Moore & Wright brand is being brought to life by The Hawley Tool Collection as its new "Britain's Tool Factory" exhibition launches at the Kelham Island Museum in Sheffield.

With a history dating back over 100 years, Moore & Wright is one of the most prominent names in measurement tools and one that is deeply rooted in the history of the steel city. Famous for its huge range of high-quality tools and measuring equipment, this new exhibition tells the story of the brand and its products, as well as some of its former employees.

Bowers Group marketing manager, Ellie Skinner, says: “This new exhibition really demonstrates the impact that Moore & Wright has had throughout its history and it's exciting to have our brand being celebrated in its birthplace. Sheffield has such an important legacy in industrial and manufacturing Britain and it's a real eye-opener, even to us within the business, of just how much Moore & Wright meant to the people of the city. The display really encapsulates the history of Moore & Wright; from the earliest tools manufactured to the latest in our line of digital micrometres, the team at the Hawley Tool Collection has done an incredible job.”

The exhibition offers a captivating journey through the brand's history, showcasing its renowned products and featuring personal stories from former employees. Two years in the making, highlights of the display include a BBC video spotlighting Moore & Wright's groundbreaking Micro 2000, hailed as the world's first digital micrometre.

Moore & Wright, known as "Britain's Tool Factory", is still, to this day, one of the most prominent names in precision measurement around the world. Visitors can re-live the experiences of former apprentices such as David Barber, John Peace and Steve Nettleship, while archived photographs capture the company's vibrant community spirit. For those who have connections to Moore & Wright, the exhibition presents an opportunity to reconnect and maybe even spot familiar faces among the displayed images.

Founded in 1906 by engineer Frank Moore and businessman Charles Wright, Moore & Wright quickly became a recognised name in the manufacturing industry, establishing itself as a leading producer of precision measuring instruments and tools.

The company's roots were deeply planted in Sheffield, South Yorkshire, a city renowned for its industrial heritage. Over the years, Moore & Wright expanded its product range to include a diverse array of high-quality tools and instruments, earning a reputation for accuracy, reliability and innovation. With a commitment to excellence and a focus on meeting the evolving needs of its customers, Moore & Wright continued to thrive throughout the 20th century and beyond.

Today, as part of the Bowers Group, Moore & Wright remains dedicated to upholding its legacy of craftsmanship and precision while embracing new technologies to drive continued growth and success in the global market.

The Moore & Wright exhibition is expected to be displayed within the Hawley Gallery, alongside the wider Hawley Collection, until the later part of 2024.

The Hawley Collection itself is an internationally important material record of tool making, cutlery manufacture, and silversmithing from Sheffield, created and hosted by a team of passionate volunteers. Funded by donations and grants from the likes of the Heritage Lottery Fund, this collection offers a unique glimpse into the city's manufacturing heritage by showcasing tools both old and new, providing insight into the intricate processes involved in their creation.

With a wealth of published catalogues, archival materials, photographs, tapes and films on display, it walks visitors through the evolution of Sheffield's manufacturing techniques and products, as well as the expertise of its skilled artisans.

Over a span of fifty years, Ken Hawley meticulously curated the collection, gathering tools, catalogues, photographs, and insights related to Sheffield's tool industries. With three decades spent running his own tool shop in Sheffield, his unparalleled knowledge of the city's industrial heritage fills the collection with significance and authenticity.

His vision was for the collection to remain in Sheffield, serving as a tribute to the craftsmanship, skills and excellence displayed by Sheffield's firms and workers throughout history.

Bowers Group
Tel: 01276 469866
Email: sales@bowersgroup.co.uk
www.bowersgroup.co.uk

SICK develops OD7000 precision sensor for demanding micron measurements

Developed for ultra-high precision in the micron range, SICK's innovative and compact OD7000 displacement sensor reliably measures tiny distances in challenging applications cost-effectively. Comprising a separate controller and sensor head that are both extremely compact, the OD7000 is purpose-built to fit into the tightest machine spaces.

The SICK OD7000 is a 1D laser distance sensor that measures differences in height accurately even on challenging materials. Its tiny light spot precisely targets the object and outputs a precise measurement regardless of the colour or surface material and even measures curved surfaces accurately.

The SICK OD7000's chromatic confocal technology enables highly-precise measurement on a wide range of materials, from black to transparent, diffuse, reflective and even curved surfaces. The SICK OD7000 can inspect, for example, whether a target object is smooth or is positioned correctly. It can measure holes or check if a material has the desired thickness. Using one sensor head, it can measure up to three very thin layers simultaneously, even if the material is transparent.

It is therefore ideal for diverse measurement duties where micron precision is required, mastering challenging applications in electronics component manufacture or consumer goods packaging. It is likely to find applications in EV battery manufacture, measuring the thickness of glass and films in consumer goods and pharmaceuticals, or multi-ply toilet and tissue papers, for example.

"SICK has worked hard and taken some time to develop the OD7000 meticulously," explains Nick Hartley, SICK's UK product manager for distance measurement. "The result is a highly-precise instrument that offers manufacturers with some of the most challenging measurement requirements a real opportunity to output precise data, without complicated setups or super-expensive equipment.

"Using a 1D laser distance sensor with the performance of the OD7000 enables machine

integrations to achieve high levels of material inspection and thickness determination, that might otherwise only be possible with much more expensive equipment."

Two controller types both with EtherNet interface and a choice of 3 sensor heads span measurement ranges of 600 µm, 4 mm and 10 mm with corresponding resolutions of 25 Nm, 180 Nm and 400 nm.

The OD7000's engineering tool has an easy-to-use graphic interface that allows the user to visualise the installation and configure the controller rapidly, while additional settings are available for more advanced applications.

SICK (UK) LTD
Tel: 01727 831121
Email: info@sick.co.uk
www.sick.com

Hexagon's industry-first optical 3D scanner provides unparalleled flexibility for inspecting complex parts

Hexagon's Manufacturing Intelligence division has announced the launch of a new type of high-productivity structured light scanner. Built on a completely reengineered platform, the SmartScan VR800 is the first optical 3D scanner on the market with a motorised zoom lens that enables users to adjust data resolution and measurement volume entirely through software settings. This greatly improves the productivity of quality inspection and further improves workflows with more efficient post-scanning alignment processes, including the ability to combine scans of different resolutions within a single project.

Whereas conventional structured light scanners have a fixed optical configuration, the combination of dual stereo cameras and optical zoom-enabled projection makes the SmartScan VR800 far more flexible, allowing users to define in exactly which form they collect their data. Three new software functions: Smart Resolution, Smart Zoom and Smart Snap allow the user to customise inspection resolution and measurement volume with no mechanical alterations to the system. That means data-heavy high-resolution scans can be focused on the feature-rich areas that matter most, while other areas can be covered more efficiently by larger and/or lower resolution scans.

Pirmin Bitzi, general manager for portable metrology devices at Hexagon explains: "The need to change optics for different use cases has always been a key challenge when implementing structured light scanning inspection solutions. Finding a solution to that industry-wide problem was a key motivator for us. We wanted a way to meet the demands of the many applications where it's not efficient to scan everything at high resolutions and neither acceptable to scan everything at lower resolutions. That's what we've strived to achieve with the VR800."

Structured light scanning, otherwise known as white light scanning or simply optical 3D scanning, is a camera-based measurement technology that can deliver extremely high-resolution part data in seconds. Other structured light scanners on the market are stereo-camera systems, with typically two 5-16 MP camera units. The VR800 uses four 20 MP cameras in a dual stereo setup for a wider range of measurement volumes. This is uniquely combined with an optical-zoom digital projection unit that makes it possible to measure different volumes, three from each camera pair, as well as vary the resolution within each volume.

Additionally, the system's integrated controller unit provides fast pre-processing of scan data on the device, ensuring the data heading into the metrology software is cleaner and easier to use. A custom-built carbon fibre frame ensures thermal stability and allows for longer intervals between calibrations.

The VR800's Smart Snap function in particular delivers significant workflow efficiency, even on parts where everything needs to be scanned at higher resolutions. This mode uses the larger-base camera pair to take an LED flash-supported alignment image at the same time as the smaller-base camera pair performs a full high-resolution 3D scan. Because each scan section is now paired with an alignment image, knitting the scan data together is both easier and more efficient. There is no more need for overlaps of data-intensive high-resolution scans that require heavy-duty processing power to achieve an aligned mesh.

These new scanning capabilities can be applied to a broad range of measurement applications, with significant advantages for the type of parts commonly produced though additive manufacturing, tool and die and casting and moulding. Manufacturers that perform turbine blade measurements for instance, will see significant efficiency improvements from a system that can scan leading and trailing edges at very high data resolution and deliver lower-resolution alignment data for the rest of the blade form.

Similarly, moulded parts often combine small details that demand high-resolution data within a larger object that doesn't need such detailed data capture to create an accurate model. The VR800 provides the flexibility to make these measurements in a single continuous workflow, using a single structured light scanner with no need for mechanical adjustment by the user, both saving time and reducing the processing power demanded by the inspection process.

As with other structured light scanners from Hexagon's range, the VR800 can be paired with a turntable or turn-tilt unit to enable semi-automated measurement workflows. The VR800 is also ready for integration within robot- or cobot-based fully automated inspection systems.

Hexagon
Tel: 0870 4462667
Email: enquiry.uk@hexagon.com
www.hexagonmi.com

Renishaw extends its range of AGILITY 5-axis technology multi-sensor CMMs

Renishaw, a leader in measuring and manufacturing systems, now offers an extended range of AGILITY® Coordinate Measuring Machines (CMMs). The range of AGILITY CMMs has been designed and made for speed and accuracy, building on Renishaw's unrivalled reputation for innovation in the most demanding industry sectors. It is optimised for Renishaw's REVO® 5-axis multi-sensor system and delivers new capability to the shop floor.

Nathan Fielder, Renishaw's product manager for the AGILITY CMM range, explains: "We took the award winning REVO 5-axis multi-sensor system and asked ourselves: how can we turn this into an even better solution to meet the challenging demands of high-end manufacturers? The result is the AGILITY range, CMMs which deliver the advantages of the REVO multi-sensor system where they matter most; close to the point of manufacture. The tried and tested range of AGILITY CMMs now includes machines for the measurement lab, offering high throughput platforms capable of using any one of the seven dedicated REVO sensors."

The multi-sensor CMMs enable manufacturers to carry out multiple measurement processes and report results on a single device. The full range of REVO sensors is available to AGILITY CMM users, which includes tactile touch-trigger and scanning, surface roughness, temperature, ultrasonic thickness measurement and non-contact probes.

The machine's structure combines granite and anodised aluminium to provide excellent

strength and stability while ensuring accurate metrology throughout the measuring volume. Critical elements such as bearing design and placement, the innovative cable track arrangement and frictionless linear motors, ensure a stable and repeatable platform when the REVO system is scanning at high speeds. Minimal contacting parts prevent friction and thermal instability, while also reducing wear and maintenance requirements. The elevated and protected Y-axis drive system minimises the moving structural mass and prevents contamination.

Renishaw's AGILITY S shop floor CMMs provide a highly accurate and robust solution for inspecting manufactured parts in a production environment where clean air and temperature control cannot be guaranteed. They are available with working volumes ranging from 700 x 900 x 600 mm up to 1,600 x 2,400 x 1,200 mm, X x Y x Z, plus variants with a raised working volume to accommodate pallet loading systems or rotary tables. All shop floor models have elevated Y-axis guideways for further stability and protection from airborne contaminants. The larger S frames feature a dual drive and dual scale Y-axis configuration.

AGILITY L machines, designed for the

metrology lab, are specified for a temperature range of 18 °C to 22 °C and provide high-performance, multi-sensor 5-axis measurement in clean rooms. The single-sided raised Y-axis design with an outrigger leg expands accessibility for manual part loading when automation is not required. AGILITY L frames are available with working volumes ranging from 500 x 500 x 500 mm up to 1,600 x 3,500 x 1,200 mm (X x Y x Z).

The AGILITY range of CMMs combines the broad range of technologies and end-to-end manufacturing expertise that have built Renishaw's reputation for innovation and quality. Leigh Elsworthy, CMM customer services manager says: "In addition to the machine frame itself, the probing system, encoders, machine controller, linear motors, styli, part fixturing, measurement software and even the laser-based mapping and verification systems, are designed and made by us. Renishaw has total control of the supply, installation and maintenance of the CMM throughout its life."

Every machine is error-mapped and certified using Renishaw's laser calibration systems. Only certified installers will carry out installation and service, with an option for UKAS or A2LA accreditation.

AGILITY CMMs are also compatible with Renishaw Central, a powerful manufacturing data platform which enables reporting and closed-loop process control on the shop floor. Renishaw Central uses measurement data to identify deviations and automatically send correction updates to the appropriate manufacturing machines.

For further information on AGILITY CMMs, visit: **www.renishaw.com/agility**

Renishaw plc
Tel: 01453 524524
Email: uk@renishaw.com
www.renishaw.com

From old race car to new race car

VERICUT takes pole position

Long before a racing season concludes, the Mercedes-AMG PETRONAS Formula One Team is already thinking about improvements to the following year's car. This complex process sees the majority of car components redesigned. In production, they rely heavily on VERICUT verification, simulation and optimisation software from CGTech, a core production engineering resource at Mercedes-AMG PETRONAS Formula One Team for over two decades.

The process of new car development has evolved over time. Not so long ago, a Formula One car would undergo a complete redesign each year, with the exception of commodity parts like fasteners. With the introduction of the cost cap at the start of the 2021 season, all that changed. Non-performance components or parts already performing at the right level can be carried over to the following season. Today, Mercedes-AMG PETRONAS Formula One Team carries over a much larger quantity of machined car components each year, in comparison to pre- cost cap seasons.

Robert Brown, machine shop manager at Mercedes-AMG PETRONAS Formula One Team, says: "It's changed the nature of how we work. Now, as soon as a decision is taken to carry over a component type, we can use some of our spare 'summer capacity' to manufacture the carry over, meaning we can focus on redesigned performance parts when they start arriving in time for the following season."

Close liaison between design engineering and production engineering has become more important since the cost cap implementation. Historically, designers would simply create the part they wanted without much consideration for machining costs.

"It's different today: we can point out a small design change that might reduce the machining cost by two-thirds, for example," says Robert Brown. "The voice we have in the design cycle is much louder than a few years ago."

James Peddle, production engineer, goes deeper into the process: "When we receive a redesigned performance part, we start by assessing how many operations the machining process will require to produce the component in the most efficient way possible. We then look at the fixture requirements and start programming."

This stage of the process also sees the creation of a routing and an estimate of cycle time, which the team can use to approximate a cost. What follows is the beginning of the optimisation phase, where production engineers look to reduce the lead time even more. Here, the team relies on tools such as the VERICUT Air Cut Optimisation module, which can cut cycle times considerably.

"Air Cut Optimisation is a very safe optimisation to apply," says James Peddle. "It doesn't work the cutters any harder or affect part quality: it simply reduces the amount of time that cutters are not in contact with the component.

"To ascertain the time required for the machining element of making a component, we simply use the output time calculated by VERICUT. The machine kinematics in VERICUT's virtual environment are such that we're confident the time reported will match the real run time."

Producing complex redesigned components economically and safely is seemingly unthinkable without the help of VERICUT.

"Primarily it would be unsafe and massively labour intensive," states Robert Brown. "I think the days are gone when you can just read the X, Y, Z co-ordinates of the G and M codes on the screen, not with the complexity of parts today. At peak times, one operator will be responsible for multiple machines, running brand new CNC code. Ensuring the machines run safely without using VERICUT? Forget it."

James Peddle adds: "A lot of our programs have millions of lines of code. We don't have enough people to run through that on a line-by-line basis without VERICUT. We would probably need to double our labour resources."

Among the many beneficial features of the software is CGTech's NX® Interface, which provides an easy and convenient way to verify NC programs directly from within NX, the CAM system in use at Mercedes-AMG PETRONAS Formula One Team.

The interface can verify individual CNC programs, a series of selected CNC programs or a complete sequence of operations. All CNC program and tooling information transfers automatically to VERICUT. Design, stock and fixture models also transfer automatically in their proper orientation. Notably, the VERICUT process runs external to NX so users can continue working in the CAM software while verifying the CNC program.

"The interface between NX and VERICUT is very impressive," says James Peddle. "We know with confidence that we're simulating exactly the same scenario as intended in our CAM session. Moreover, VERICUT simulation is quick. Even with a complex part like an axle, which has a run time of around 45 hours, it doesn't take long to check for collisions, gouges and excess material."

Every year, the redesigned parts coming through at Mercedes-AMG PETRONAS Formula One Team seem more challenging. Weight reduction, without compromising functionality, is at the heart of many modifications.

"This always creates a challenge for production engineers who must keep the component stable during machining," explains Robert Brown. "We might need to apply special tools or cutting strategies; get really creative about how we machine certain features such as very deep face grooves. The ability to simulate those operations and replicate custom tools in VERICUT is really useful and gives us so much confidence.

"For example, a component may have a very thin wall thickness through the bore. There's no way of using a conventional boring bar in the Z axis of a CNC turning centre due to the profile. We therefore use modified boring bars and machine the bore at various angles. It's complex, but by applying VERICUT we knew it would be safe. Without the software it would require a skilled operator to be present at the machine, listening for things like a change in harmonics to try to understand what is happening in the cut area inside the bore."

Robert Brown concludes: "VERICUT gives our designers the confidence to be creative. Without simulation we would probably be asking them to reign in their creativity, potentially compromising performance. We know from experience that VERICUT not only has a hugely beneficial impact on production, but also on design."

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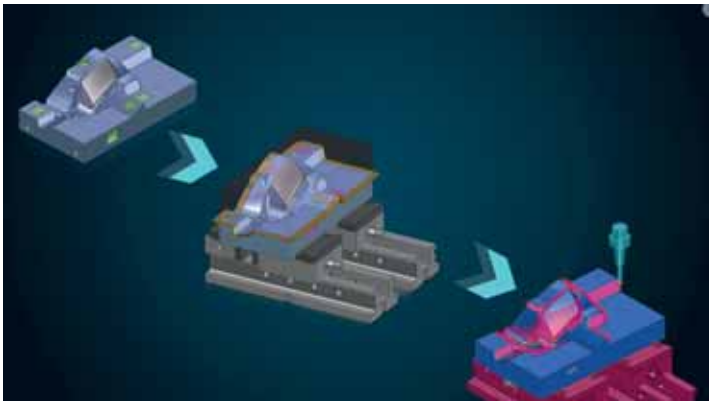
Increase productivity and profitability with Tebis CADCAM template technology

Tebis parametric template technology stores company's manufacturing knowledge specific to CAD and CAM. CAD and CAM templates enable faster and more efficient manufacturing and they also ensure standards and uniform quality. Companies are less dependent on the expertise of individual specialists and new employees can get up to speed faster and start contributing productively to the company's success in the shortest possible time.



Faster preparation for manufacturing: Highly automated and flexible preparation of CAM programming with parametric CAD templates

Every data set needs to be prepared for CAM programming in design. Tebis automatically performs many of these necessary individual steps: placing bores for clamping systems, defining tilt axis systems, designing fill surfaces, creating blanks, generating connection points for setups, positioning clamping devices and specifying retract planes. All of these steps work with Tebis parametric CAD templates. The templates can be extended as needed and can be modified to meet customer-specific requirements. Users can still be highly flexible: Changes like selecting a different clamping system can be controlled directly and conveniently. Use parametric CAD templates to fully automatically position clamping devices and generate auxiliary geometries and blanks.

Faster programming with modern NCJob technology in Tebis

Take advantage of the opportunity to automatically apply interactively defined milling areas from previous NCJobs in milling. That's how you'll reduce manual intervention in CAM programming and calculate entire NCJob sequences at once. CAM programming is also considerably simplified, you can easily manage combined machining operations in an end-to-end CAM template.

Automated part setup

Tebis automatically and safely positions workpieces and clamping devices on the machine table based on preconfigured connection points. When clamping electrodes, this even works fully automatically and accounts for the holder. This significantly reduces programming work. Individual elements can be rapidly and easily replaced afterwards.

Tebis (UK) Ltd Tel: 02476 158178
Email: info@tebis.co.uk www.tebis.com

Flow celebrates 50 years of innovation and excellence in waterjet technology

Flow International Corporation, a leading developer and manufacturer of ultra high-pressure waterjet cutting systems, is celebrating its 50th anniversary, marking five decades of innovation, dedication to quality and exceptional customer service.

Flow employs approximately 700 employees with offices in North and South America, Asia, and Europe. Globally it focuses on technology leadership, a full continuum of products that provide complete manufacturing solutions, application expertise and unmatched service with a commitment to customer success across the world.

Since its inception in 1974, Flow has been at the forefront of revolutionising waterjet cutting technology, transforming industries and empowering businesses worldwide. From the development of the world's first intensifier pump to becoming a highly trusted name in precision cutting solutions, Flow has continuously evolved to meet the ever-changing needs of its customers.

Over the past 50 years, the company has pioneered numerous advancements in waterjet technology, pushing the boundaries of what is possible. Early on, in 1975, Flow commercialised the intensifier pump for 24/7 production. Shortly thereafter, Dr. Mohamed Hashish, who remains at Flow today, invented the abrasive waterjet. Many years and inventions later, Dynamic Waterjet® was introduced, giving customers a way to compensate for stream lag and taper on the fly. In 2006, after a decade of testing and perfecting the technology, the HyperJet® pump, rated at 94,000 psi, was released, providing continuous commercial HyperPressure™.

The advancements haven't stopped and Flow's commitment to innovation continues to evolve as the industry does. Flow has remained committed to delivering cutting-edge solutions that drive efficiency, productivity and profitability for its customers.

"Reaching this milestone is a testament to the dedication and hard work of our team, as well as the trust and support of our customers around the world," says Brian Sherick, president of Flow. "As we celebrate our 50th anniversary, we reflect on our rich history of innovation and look forward to pushing the boundaries of waterjet technology in the years to come."

As Flow celebrates this milestone anniversary, the company reaffirms its commitment to excellence, innovation and customer satisfaction. With a strong foundation built on decades of experience and expertise, Flow looks ahead to a future filled with continued growth, success, and groundbreaking achievements for its customers.

A history of innovation

- 1974: Flow Waterjet is formally established.
- 1975: Flow commercialises intensifier pumps for 24/7 operation.
- 1979: Abrasive waterjet invented by Dr Mohamed Hashish, cuts virtually any material.
- 1981: UltraPierce™ Vacuum Assist safely cuts composites, glass and stone without delamination, cracking, chipping or breaking.
- 1986: Direct drive triplex pump is released. Flow is the only manufacturer offering both intensifier and direct drive technology.
- 1995: FlowMaster®, which will go on to become the world's most popular waterjet software is released providing an easy-to-use yet powerful control.
- 2001: Dynamic Waterjet is released which virtually eliminates stream lag and V-shaped taper errors.
- 2006: After a decade of testing and perfecting the technology, the HyperJet pump rated at 94,000 psi, is released to provide continuous commercial HyperPressure™ cutting.
- 2009: Dynamic Waterjet XD brings the unique accuracy of Dynamic Waterjet from the flat stock world to beveling and 3D applications. FlowXpert™ Software suite greatly simplifies the programming of a bevel or 3D part for Dynamic Waterjet XD cutting.
- 2015: Advancements in FlowXpert® cutting software capabilities, CADCAM integrated waterjet software suite
- 2016: Compass™ patent-pending contour following and collision sensing solution introduced as the most precise contour following available in waterjet. Flow introduces the Mach 500 workhorse of waterjet, an all-new waterjet unmatched in accuracy, quickness and speed.
- 2017: FlowCare service and support, industry-unique care for waterjets is introduced. Three levels of service are created to best serve customers' needs.
- 2017: Full new line of Mach Series is introduced featuring state-of-the-art technology, software and service advancements in one complete package Pivot+ Waterjet™, a robust, compact cutting head is also introduced. Delivering multi-axis taper compensation for accurate and flexible waterjet cutting.
- 2021: MotoJet™ X, the industry's first long-life intensifier, is released.
- 2022: The unique, fully-enclosed waterjet system, EchoJet, hits the market and the comprehensive FlowXpert Infinity 2D and 3D software launches.
- 2023: The Mach 200c is a one-of-a-kind solution that offers maximum workspace and flexibility for 2D or 3D cutting.

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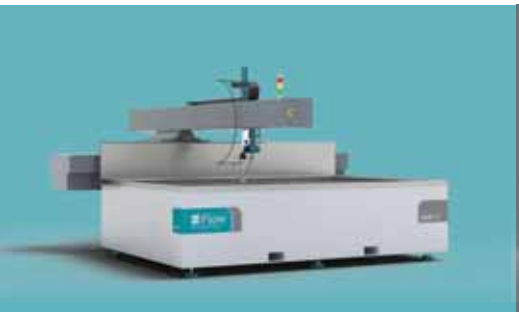

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New micro cutting technology installed

Nanoker, based in Spain, specialises in technical ceramics and advanced nanocomposites for various extreme applications. It is now pushing the boundaries using micro waterjet technology. After winning a tender from CERN, it scanned the market for a suitable machine system. After a thorough evaluation, the company opted for a NCM 10 Micro Machine from Water Jet Sweden. The first challenge was to win the tender, second to find and select the right machine system and now, thirdly, to implement the new technology into its own production flow.

Preparing the team

Ahead of the scheduled machine delivery, CADCAM and machine training was conducted in order to prepare the Nanoker team for its new workstation and technology. All Water Jet Sweden's customer training follows the same basic agenda, but each session is adapted to the customer's specific application and previous experience of the participants.

Christian Persson, system engineer at Water Jet Sweden, says: ''The operators of this machine had good general knowledge and previous experience from CADCAM and CNC machines which was a big advantage. That enabled us to also go more into detail about their specific tasks.''

The software training could be conducted online, but the machine training was carried out at Water Jet Sweden HQ in Ronneby, Sweden, as part of the factory acceptance tests. Except for the basic machine operation skills, the training covered workflow routines on how to adjust settings before cutting new parts or when changing material characteristic or thickness. For every new set of parts, the machine needs to be fine-tuned to get perpendicular cuts with tolerances at +/- 0.02 mm.

Setting up the workstation

While training was conducted in Sweden, the factory in Spain was preparing the area of the new workstation. It would be placed adjacent to the rest of the CERN production line but in a separate room to screen out things like noise, damp and abrasive dust. Connections for water, electricity, air and a designated space for the machine was all set when the machine arrived.

"We unloaded the machine with a forklift, but since the ceiling height was lower where the workstation would be, we had to put it in place with skates," says David Olsson, technician at Water Jet Sweden.

Measuring the perpendicularity of the machines after installation is standard procedure at Water Jet Sweden. But for the NCM 10 Micro machine, laser measurement and ball bar verification are also conducted after installation, unlike traditional waterjet machines. Other machine models are just laser measured and ball bar tested in the factory, before delivery.

The layout of the workstation was thoroughly designed early in the project to have a small footprint and yet be easy to service and operate. The high-pressure pump is placed inside the safety zone, since it is started up in the beginning of every shift and then controlled from the operator panel.

The tip-container for abrasive waste is also placed inside the safety zone. When it gets full it is easily removed with a pallet jack, pulled out through the safety door and emptied with a forklift outside the premises. But the abrasive pressure vessel was placed outside the safety zone to be able to refill abrasives while running the machine.

Getting started

Training is always finalised at the customer site in their own environment, making sure the customer gets started with the type of production the machine was purchased for, as part of final testing and machine acceptance procedure.

David Olsson states: "After installation we also had complementary operator training to repeat handling, maintenance and safety around the workstation. It is good to repeat this after the workstation is in place in the environment it is supposed to be operated.

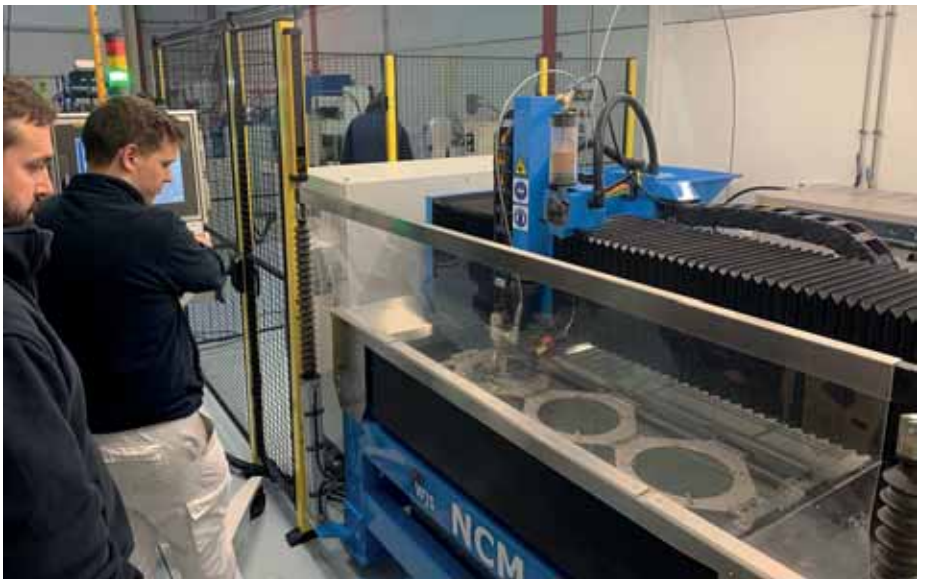
"Since waterjet cutting is about controlling natural forces, it is an advantage to have good knowledge of the specific machine and

materials to get the perfect compensation and cutting speed, when processing at fine tolerance. An electronic microscope with a handheld device was used to recurrently check tolerance and surface quality."

A handheld microscope was used to pre-check shape and surface roughness

David Olsson continues: "I stayed until the customer had produced a series of approved parts. After leaving, I have not heard anything from our customer support team, which is positive. When I left, they did all the finetuning themselves and I believe they are well prepared to run their production for CERN as expected."

Sergio Rivera, product and business development manager at Nanoker Research S.L., says: "The micro-waterjet machine provides Nanoker with the access to a very precise technology to cut very hard materials in "close-to" 2D geometries.



Apart from the business related to Big Science industry, it will present new avenues for the company to produce parts according to customer specifications with a different machining strategy. This technology will enable Nanoker to access other markets as well, such as industrial market. The production of this "close-to" 2D geometries in hard ceramics were limited to electrically conductive materials by using wire-EDM, and now, thanks to micro waterjet, Nanoker can machine both electrically and non-electrically conductive materials."

WJS UK Ltd
Tel: 01937 845499
Email: info@wjsuk.com
www.waterjetsweden.com

Kerf cuts bottleneck out of subcontractor's business

As a subcontract manufacturer, Q-Laser offers laser, waterjet, press brake and fabrication services throughout the UK. When the main division at Washington realised its waterjet cutting department based in Hebburn, South Tyneside was reaching full capacity, the company needed a solution. Kerf Developments provided the answer with a Semyx Optima 420 twin abrasive waterjet cutting machine.

Located on the outskirts of Newcastle upon Tyne, Q-Laser provides its rapid-turnaround cutting services to the marine, offshore, automotive and general manufacturing sectors, cutting everything from exotics, stainless and mild steel to aluminium, armoured plate and virtually any material the customer requires. Founded in 2012, the company setup its waterjet cutting division in 2019 to complement its laser, press brake and fabrication services, starting with a 5-axis waterjet machine. Except for the pandemic, the waterjet division has grown exponentially and the existing waterjet machine was struggling to meet the capacity demands of the business, so Q-Laser turned to Rochdale-based Kerf Developments for the solution.

The Kerf solution was the Optima 420 twin abrasive waterjet machine with two cutting heads. With two cutting heads, the 4 m by 2 m bed machine instantly doubled the cutting capacity in comparison to the existing machine. In a sector where clients expect a quotation in hours and components cut and delivered in less than a week, the addition of the machine has alleviated the bottleneck, created additional capacity and immediately reduced lead times.

Discussing the evolution of the waterjet division of Q-Laser, company director Colin Hewitt says: "We set up the waterjet department for two reasons. Firstly, a laser is typically limited to cutting material up to 25 mm thick. Secondly, unlike laser, waterjet cutting does not generate excessive heat that can impact the structural integrity of the material. This is of critical importance in aerospace, MoD and many automotive applications. We started our waterjet division with a 4,000 sq/ft facility, one man and a machine, this rapidly became three staff. We have to react to the 'round the clock' demands of customers and as the business has grown at pace, we had to invest in additional capacity."

Q-Laser chose Kerf as its waterjet supplier, Colin Hewitt adds: "We have a longstanding relationship with Paul at Kerf, so we opened discussions regarding our requirements. We

were assured that Kerf could meet our needs for impeccable service and support with guaranteed consumable supply, so the next thing was to trial the machines. We gave Kerf a range of trial parts. The productivity, precision, cut quality and edge finishes were beyond anything else we had seen, so our decision to invest was made. A few months after the installation, Kerf has excelled in its service and consumable supply and this was a critical element for us. Kerf stocks all spare parts for the machine in the UK and they are available on a next-day service. This gives us complete confidence."

As a company that manufactures anything from one-off to production runs for clients, machine uptime and productivity are as critical as cutting speed. The two cutting heads in the same machine footprint of the Optima 420 have slashed cycle times by more than 30 percent. However, the benefits are far further reaching. Unlike the cantilever design of the existing technology at Q-Laser, the Optima incorporates twin-sided drives that deliver astounding acceleration and machine kinematics. With features like 40 mm diameter precision ballscrews, the Optima delivers exceptional levels of precision and speed with unparalleled rigidity and stability. This is complemented by a powerful 50 hp hydraulic intensifier pump that leads the industry in performance and reliability. As Colin Hewitt continues: "Some of our customers are machine shops that want pre-machined profiles. We can cut these to tight machining tolerances which means that many of our customers no longer need to rough machine their components. This level of precision is winning plaudits from our customers and generating additional business."

From a productivity standpoint, the Optima 420 has accelerated throughput by cutting production times by more than 30 percent. Furthermore, the acceleration and speed of axes travel also contribute to reduced cutting times. As Colin Hewitt adds: "Our lead times can typically range from 24 hours to seven days depending upon our workload. Before the arrival of the Optima, the lead times would extend beyond 10 days, so the machine has made a huge impact on our throughput. Additionally, we can fulfil our order book with fast turnaround for customers without putting demands on our staff to work around the clock."

From a shop floor perspective, the Optima 420 has a greater bridge clearance than the current machine at Q-Laser. This enables the Optima to cut material up to 300 mm thick, regardless of the material type. As Colin Hewitt adds: "Our existing machine only has a cutting height of 170 mm, so the additional capacity of the Optima 420 is another major plus point. It futureproofs our business to cater for whatever demands the industry throws at us. This also provides greater accessibility for the shop floor staff to access the workpieces and cutting heads. The machine also has a larger hopper for the abrasive material than our existing machine, this means we can fill the machine and it will run for extended periods without operator intervention or downtime. Furthermore, the machine also incorporates the latest IGEMS CADCAM software suite, which our staff find intuitive and very easy to use."

The IGEMS CADCAM suite provides leading nesting with automatic and adaptable CAM features. It also provides customised and detailed reports on jobs and nesting plus intuitive technologies that enable customers like Q-Laser to retrieve more parts from each sheet of material generating significant material cost savings. The software also has an extensive material database with optimised feed rates and compensation tables to increase productivity while operators can simulate their jobs with comprehensive NC code previews and crash control features to eliminate errors.

Concluding on the acquisition of the Optima 420, Colin Hewitt says:

"We are delighted with the new machine. The build quality and performance of the machine are outstanding and the service from Kerf is everything they promised it would be. The machine will be a cornerstone for the growth of our waterjet division as it offers the flexibility and productivity to cater for the diverse demands of the marketplace."

Kerf Developments Ltd
Tel: 01706 757 670
Email: sales@kerfdevelopments.com
www.kerfdevelopments.com

Starrett targets UK bandsaw market with new sites and strategic shift

In a strategic move aimed at reclaiming leadership in the UK bandsaw segment and enhancing direct engagement with customers, Starrett, the world's largest manufacturer of saw blades, has unveiled its expansion plans in the UK and Ireland. This initiative will see the addition of seven new hires and the establishment of two new weld centre locations in the Midlands and Northern Ireland, marking a significant step in Starrett's commitment to provide local market expertise and customer-centric innovation.

"After taking a critical look at our approach to market engagement and product innovation, our single Jedburgh location revealed itself as a logistical bottleneck, hindering our ability to meet the just-in-time demands of our customers. Furthermore, our product portfolio needed rejuvenation to compete on the UK stage. We have been offering cutting solutions for almost 70 years and have a history of delivering solutions globally. We want to share our experience with customers across the UK and Ireland," says Robert McKechnie, commercial director at Starrett.

"As the UK market continues to evolve and with customers increasingly desiring direct interaction with manufacturers, Starrett will lead the way. Our strategic expansion into Nottingham and Carrickfergus is more than just a geographical shift; it represents our dedication to being at the forefront of the industry, closer to our customers and more responsive to their needs than ever before.

With the introduction of the two new UK facilities, we are not just opening new doors we are setting a new standard. These centres will not only serve as hubs for manufacturing and distribution but also as symbols of our commitment to customer-centricity. Our strategy for direct engagement and enhanced distribution capabilities is to provide unparalleled value to our customers, reinforcing our position as the world's largest saw blade manufacturer and paving the way for a future defined by growth, innovation and leadership in the UK market."

Robert McKechnie adds: "By confronting our past and investing in our future, Starrett is not just navigating the present; we are shaping the future of the UK bandsaw industry. Our journey forward is one of revitalisation, not just for our brand, but for the entire ecosystem of customers, partners and communities we serve. Together, we start this exciting new chapter, ready to reclaim our leadership position and redefine the standards in the industry."

The new Starrett manufacturing sites will be in Easter Park, Nottingham, England and Carrickfergus, Northern Ireland and will offer a plethora of benefits including:

• Placing the company at the epicentre of England's most industrious regions complementing other key locations in Scotland and Ireland. This strategic positioning ensures that Starrett is at the crossroads of commerce and industry, offering access to the infrastructure necessary for success.

• The proximity of the new facilities to major transport links allows Starrett to offer same-day deliveries and collections. This significant competitive advantage that aligns with the demand for rapid service in today's fast-paced market.

• The selection of sites in both England and Northern Ireland speaks to Starrett's commitment to a true UK footprint, ensuring a uniform presence that covers a wide geographic area.

• The Nottingham location's proximity to well-known transport links, paired with an enhanced customer experience through a purpose-built showroom and interactive training and demonstration facility, underscores Starrett's focus on making its operations more accessible and customer centric.

• Will serve as an ideal launchpad for food division, catering to niche markets with high-quality requirements.

The L.S. Starrett Company is a leading manufacturer of saw blades, precision tools and metrology systems. Engaged in the manufacturing of over 5,000 products for industrial, professional and consumer markets, the company has a long history of global manufacturing experience and currently operates four major global manufacturing plants. Starrett focuses on the metalworking, construction, machinery, equipment, aerospace and automotive markets. The company offers its wide array of cutting and measuring products to the market through multiple distribution channels worldwide.

Starrett
Tel: 01835 866333
Email: sales@starrett.co.uk
www.starrett.co.uk

New Roentgen FIT and FIT Set bandsaw blades

In a significant leap forward for the metalworking sector, Roentgen, a renowned German leader in industrial cutting solutions, has unveiled its latest innovation tailored for the sawing nickel-based alloys. The Roentgen Fit Set and Fit Bandsaw Blade have been engineered and manufactured to elevate cutting performance, extend tool life and eliminate the need for traditional run-in procedures, ultimately saving valuable time and resources for metal manufacturers and engineers.

Nickel-based alloys such as Inconel 718 and 625 are known for their exceptional strength, corrosion resistance and high-temperature properties and are challenging for conventional cutting tools. These materials demand precision cutting solutions that can withstand the rigors of machining while delivering superior results consistently.

The Roentgen Fit Set and Fit Bandsaw Blade rises to this challenge with a blend of cutting-edge technology and precision engineering. Designed with a keen focus on durability and performance, these tools are

optimised to tackle the unique characteristics of nickel-based alloys with unmatched efficiency and reliability.

Key features of the Roentgen Fit Set and Fit Bandsaw Blade include:

Extended blade life

Utilising advanced materials and cutting-edge manufacturing techniques, Roentgen has developed blades that offer exceptional longevity, significantly reducing the frequency of blade changes and associated downtime.

Elimination of run-in procedures

Traditionally, new cutting blades require a run-in period to optimise performance. However, the Roentgen Fit Set and Fit Bandsaw Blade are engineered to deliver peak performance right out of the box, eliminating the need for time-consuming run-in procedures.

Superior cutting performance

With a focus on precision and efficiency, these blades deliver clean, accurate cuts with minimal heat generation, resulting in improved surface finish and reduced material waste.

Cost savings

By extending blade life and eliminating run-in procedures, the Roentgen Fit Set and Fit Bandsaw Blade offer significant cost savings for metalworking operations, enhancing overall productivity and profitability.

Energy savings

With the ability to reduce cut times these unique bandsaw blades can reduce cut times and invariably reduce the amount of energy required, making them a greener option for businesses.

KR Saws
Tel: 02476 610907
Email: sales@krsaws.co.uk
www.krsaws.co.uk

KATANA E series high-speed profile band sawing machine from Ficep

The Katana “E” series was born from the optimisation of the previous belt cutting solution, with the addition of a significant number of interventions to improve its performance and versatility while lowering the value of the investment for the end customer.

The new band sawing machine Katana is a machine capable of remaining compact while performing inclined cuts even on important workpiece dimensions. It is equipped with solutions that optimise the working condition of the blade by increasing performance, durability and cutting quality. This is complemented by automation systems for functionality of the system itself or for feeding and unloading operations of the cut pieces, ensuring it is efficient in any production context. The machine is designed with a modularity concept that sees it function as a stand-alone machine that is perfectly integrable in a complete profile and production line, downstream of the main machine that performs drilling, milling or other machining. All with a view to developing a solution equipped with the best components while containing the size of the investment, thus making Katana accessible to an even wider pool of potential customers.

Working area

The structure of the machine base has been completely revised with a view to increasing the support area of the material to be processed as much as possible. This expedient makes it possible to automatically process the feeding and unloading of even large, short parts.

Change in structure

Another clearly visible change, again in the structure, concerns the main arc within which the blade rotates, which is inclined by 15° with respect to the vertical axis of the machine. The benefits of this configuration are many, including:

- Reduction in the twisting of the blade, resulting in reduced stress and increased blade life.
- Reduction in the length of the section subjected to torsion, resulting in a much more compact structure without reducing the working range.

The structure is a cast iron one-piece, which allows for a more rigid structure that is less sensitive to forces generated by blade tension and vibration, putting Katana in a condition of high dynamic stability.

This new dual-position blade tensioning solution makes the blade more stable during machining. In the case of straight cuts or small angles, the forward position reduces the free length of the blade, making the system more rigid. In the case of inclined cuts, on the other hand, the system returns to the backward position to free the entire blade and allow machining at major angles on large workpieces.

Katana is also equipped with a system built into the cutting unit that can absorb the vertical vibrations to which the blade is subjected, further increasing process reliability and cutting quality while reducing machine noise.

Cutting under control

The entire cutting unit can slide vertically and smoothly thanks to two guides positioned on one side to act as hinges and a single guide on the opposite side that covers the function of a carriage. The structure thus does not deform because it is not constrained on either side, and sliding on the guides themselves is smooth resulting in increased cutting quality. Movement along the vertical axis is entrusted to electric drives, which replace hydraulic ones, as they allow finer adjustment of the speed ramps of the blade descent, a key action in the case of variations in the thickness of the material being cut. Correctly adjusting the speed at the different cutting stages is definitely an advantage in terms of productivity but also in terms of process reliability, because the blade advances at a speed proportionate to the amount of material to be cut. To make this

adjustment happen automatically, Ficep has developed a mathematical model that recognises the profile to be machined and on which it reconstructs the most suitable machining strategies.

From hydraulic to electric

Rotation of the cutting unit to perform inclined cuts also relies on electric drives replacing hydraulic ones. In this case, the main motivation is related to the greater precision of the movements that can be managed with electric solutions, which are less sensitive to temperature variations and more consistent in the precision of movement, as well as a significant increase in positioning speed with the consequent reduction in cycle times.

Easy integration

The care given to every aspect of the machine can also be seen by looking at the solutions adopted for material handling. The profile feed system is a motorised track equipped with a gripper that feeds the machine by pushing the material into the work area. Positioning accuracy is ensured by the use of racks with high accuracy class. In the unloading area of the cut part there are

motorised roller conveyors that bring the part to the unloading area where automatic unloading benches can be installed. It is also possible to increase the degree of machine automation with the addition of a magnet unloading system that clamps the part and, sliding along an axis, brings it to the unloading area of the machine. This system is often equipped with additional shutter or traversing beam devices for unloading short workpieces.

The machine is operated directly by a CNC numerical control installed on board the machine, but its hardware and software architecture allows it to be quickly and easily incorporated into a line and easily managed through a line controller.

Ficep UK Ltd
Tel: 01924 223530
Email: info@ficep.co.uk
www.ficep.co.uk

Understanding the intricacies of bandsaw downfeed systems and making a worthwhile investment

When delving into the world of bandsaw machinery, a fundamental aspect to grasp is the relationship between the saw bow's descent speed, the applied pressure and the resistance offered by the workpiece. This understanding is crucial for optimal operation and precise cutting.

Investing in a high-end bandsaw brings notable advantages, especially with sophisticated downfeed systems designed to fully harness the capabilities of the latest bimetal and carbide-tipped blades. These enhancements substantially boost productivity.

Diverse downfeed systems: From simple to advanced

Downfeed regulation systems in bandsaws vary significantly. Some are straightforward, featuring an adjustable hydraulic valve in the guide system that responds to material resistance. More advanced systems include load detection on the blade drive motor, integrating an interface with a proportional downfeed valve in the hydraulics. Additionally, some machines employ a ball screw system connected to the interface for downfeed control.

A pivotal feature in some bandsaws is blade deflection detection. This technology automatically slows the downfeed to prevent crooked cuts when the blade begins to dull towards the end of its lifespan.

Modern control systems often include a material directory, enabling operators to set reasonable downfeed rates based on workpiece size. However, this requires accurate data input and may not account for the annealed state of the material, where load detection systems can provide additional guidance during challenging cuts.

Justifying the investment: What do you gain?

The question arises: Can one justify spending up to £100,000 more for a bandsaw that fundamentally performs the same task? The answer lies in evaluating several factors:

- Expected service life: High-end machines often promise longer durability.
- Precision of cut: Less material is wasted on out-of-tolerance work, ensuring higher quality.
- Ease-of-use: User-friendly features can significantly reduce operational complexities.
- Speed of cut: Enhanced productivity is a key benefit, with faster and more efficient cutting.

Navigating the market for sawing machines can be daunting. Many specialist dealers are available to assist with your decision-making process. While some may guide you towards a stock machine or options at the extremes of your budget, it's essential to look beyond sales pitches and choose a machine that truly meets your needs and justifies your investment.

Saws UK has been trading since 1989 offering bandsaws, bandsaw machines, metal cutting bandsaws and bandsaw blades to all sectors of industry. Its trade mark Alligator Bandsaws, Comet Circular Saws and Alligator Bandsaw Blades have been leading saw brands for many years. The company offers all types of industrial bandsaws and metal cutting manual, semi-automatic, automatic, CNC band saws to suit many different applications. It is a UK agent for Doall, Carif, Meber, Macc, Bonetti, Rusch, Simec, Uzay, Forestor Sawmills and Startrite bandsaws. Saws UK also has a new range of education sector bandsaws. Do you require a demonstration of a particular machine at its showroom? Need help choosing a newer or replacement machine? Want to find the right roller table to use with your particular metal cutting machine, bandsaw or circular saw? Do you need advice on measuring systems? The Saws UK expert team can help.

Saws UK
Tel: 01892 663398
Email: sales@sawsuk.com
www.sawsuk.com

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