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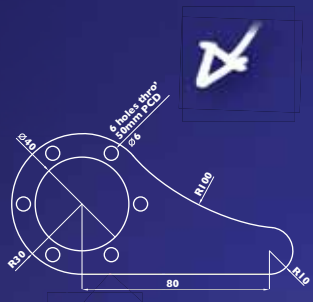

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Record breaking six months boosts XYZ Machine Tools' year-end figures

Given that recovery from lockdowns was slowly gathering pace, XYZ Machine Tools was understandably happy when, in the first six months of its just ended financial year, sales totalled £12 million. This figure was seen as encouraging and extremely pleasing. However, better was still to come with the last six-months of the year, far outstripping that performance and adding a record breaking £21 million to the turnover, giving a total of £33 million.

"At the end of the six months, we were happy with the sales in the first half of the year but to set a company record for a six month period to close out the year is a fantastic achievement and is testament to the hard work and dedication shown by everyone at XYZ Machine Tools," says Nigel Atherton, managing director. The sales of £33 million bring the business back to pre-covid levels with the resurgence driven, in part, by the latest ProtoTRAK RX touchscreen control system used across the company's bed mill and lathe ranges as well as the improving situation in the education and general industrial sectors, with confidence running high among customers in the general subcontracting arena.

The challenge now is to maintain this growth and the opening of two brand new showrooms in 2022 will play a role in achieving that. XYZ Machine Tools has just received the keys to its new facility in Poland. It is confident this will become a very good market for the company and will enhance its presence within the eastern European markets. In addition, a further UK showroom in Huddersfield will open its doors in the near future to better serve customers in the North East and North West of England with ease of access along the M62 corridor across the Pennines.

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Measurement Solutions Ltd joins Renishaw Channel Partner Programme

Scanning and metrology provider becomes a premium partner for UK & Ireland

Renishaw, one of the world's leading precision engineering and scientific technology companies, has announced the appointment of Measurement Solutions Ltd (MSL), the Peterborough, UK-based scanning and metrology provider, to its Channel Partner Programme.

The partnership between the two companies sees Measurement Solutions Ltd become a Premium Partner, providing access to the portfolio of Renishaw CMM, styli, gauging and fixturing products. The company serves manufacturing customers throughout England in market sectors including automotive, aerospace, manufacturing and education.

The Renishaw Channel Partner Programme aims to continually enhance levels of local customer service and product support throughout the Europe, Middle East and Africa (EMEA) sales region. Partner companies are carefully selected on the basis of their sector-specific experience and expertise in a range of cutting-edge metrology and manufacturing disciplines.

The programme comprises three different levels of commercial partnership and a dedicated partner portal provides a complete suite of up-to-date technical, marketing and sales support resources.

Andrew Tagg, managing director at MSL says: "We are particularly excited about our new channel partner status with Renishaw, as we believe UK manufacturing is now acknowledging the need to re-invest, improve efficiencies and seek productivity gains in line with industry 4.0 and a global shift in supply chain demands. MSL has the experience to deliver a CMM retrofit integrating Renishaw's 5-axis systems, whether that be the REVO® scanning capabilities or a PH20 touch trigger system. We see CMM retrofit as an opportunity to improve productivity, not just to keep an old machine alive."

Measurement Solutions Ltd (MSL) has rapidly become one of the most trusted UK partners for end-to-end design, manufacture and inspect solutions and is renowned for providing products and services to some of the UK's leading automotive, aerospace, manufacturing and educational organisations.

MSL, industrial metrology, 3D scanning and additive design software reseller, is immensely proud to officially become a channel partner of Renishaw. With almost 25 years' history, MSL brings a wealth of engineering experience to metrology it only selects partners with integrity, offering innovative solutions to improve manufacturing processes and it goes without saying that Renishaw cannot be surpassed in this.

Renishaw is one of the world's leading engineering and scientific technology companies with expertise in precision measurement and healthcare. The company supplies products and services used in applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery. It is also a leader in the field of additive manufacturing, also referred to as 3D printing, where it designs and makes industrial machines which 'print' parts from metal powder.

The Renishaw Group currently has 79 offices in 37 countries, with over 4,400 employees, of which over 2,500 people are employed within the UK. The majority of the company's R&D and manufacturing is carried out in the UK and for the year ended June 2020, Renishaw achieved sales of £510 million, of which 94 percent was due to exports. The company's largest markets are China, USA, Japan and Germany.

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TJM Capital Partners purchases the machine tool solutions division of the UK's 600 Group

TJM Capital, a private equity investment firm focusing on lower and middle-market growth businesses, has purchased the machine tool solutions division of the UK's 600 Group. This acquisition includes Colchester Machine Tool Solutions, with offices in the UK, Germany and Australia as well as Clausing Industrial, Inc., headquartered in Michigan, USA.

"The Machine Tool Solutions division is a perfect fit with our growth strategy," states TJM chairman Tom McDonough. "These companies supply well-known, high-quality products for metalworking applications and give us scope to provide more solutions to our customers.

The Machine Tool Solutions division has a strong reputation in the market for metal turning machines. Products range from small conventional machines for education markets to CNC workshop machines and CNC production machines. Incoming CEO Micah Coleman says: "Our customers remain the Group's highest focus. The addition of this new technology continues to build on our vision to become the partner of choice for complete manufacturing solutions." He also serves as CEO of Timesavers LLC, Midwest Automation and Dubois Equipment Company.

The strong leadership teams at both Colchester Machine Tool Solutions and Clausing Industrial will remain in their current roles under new ownership. Jonathan Wright, managing director of Colchester and Kevin Mungovan, president of Clausing Industrial, have a combined 50 years in the machine tools industry and will continue to lead their respective companies.

Colchester Machine Tool Solutions has been trusted in the industry for over 100 years and continue to supply machine tools which are renowned for high quality and performance across various market sectors.

Recent growth in the UK market has led to the necessary appointment of additional sales support staff. UK managing director Jonathan Wright says: "The recent acquisition of Colchester Machine Tool Solutions is exciting for the continued growth and expansion of the company and we look forward to the future under the new ownership."

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Vision Engineering reinforces UK manufacturing base with Milturn acquisition

Vision Engineering, a 64 year old British leading designer and manufacturer of high-quality visual instrumentation and a significant supplier of machined components/sub assembly services to other industrial sectors, has announced the acquisition of Milturn Precision Engineering, of Hinckley, Leicestershire, a precision engineering specialist.

The acquisition of Milturn fulfils a strategic objective to significantly improve Vision Engineering's position global position as a leading designer and manufacturer, by adding scale and capability to the company's existing UK and USA manufacturing base.

Established in 2001 and one of the first UK firms to achieve ISO 9001 2015, Milturn Precision Engineering has 21 highly skilled machinists and anodisers specialising in high quality components, including high performance lens cases for the optical/movie/camera industries, marine and automotive engineering and high-end shop/hotel fitting. Milturn also has an anodising facility to improve the quality and durability of finished components.

Mark Curtis, Vision Engineering CEO, says: "The strategic acquisition of Milturn Precision Engineering strengthens Vision Engineering's global manufacturing capability and improves our ability to deliver high quality precision manufactured parts, assemblies and finished products to our combined existing and new customers. It also consolidates our manufacturing services division with substantial high end milling, turning and anodising skills and experience."

Ian Mustard, Milturn owner and director says: "Milturn has worked with Vision Engineering for years and I know their commitment to highly skilled operators, whether machinists or anodisers, producing quality components. We have built up a demanding, high-end customer base in specialised sectors. I am confident that Vision Engineering will implement strategy

and investment to take Milturn Engineering and Bowfran, our anodising division, forward and continue the success built on the capabilities of our staff."

Vision Engineering Ltd is a multinational designer and manufacturer of innovative, patented ergonomic stereo optical and digital instruments used, for inspection, manipulation, measurement and analysis of manufactured parts, by the world's leading manufacturers and their suppliers.

Vision Engineering Ltd
Tel: 01483 248300
www.visioneng.com

Single-hit production of aero engine parts results in big savings and reduced lead-time

A few years ago, T&R Precision Engineering in Foulridge, East Lancashire started manufacturing parts from Inconel 625 castings for the hot air side of the GE-Safran LEAP-1A turbofan that powers the Airbus A320neo family of single-aisle jets. The problem was that the work involved a labour-intensive sequence of three or four operations on separate machines. Not only was there a significant risk of introducing human error but it also necessitated the production of a batch of eight components. To start each day, each batch will take one week to complete.

A more efficient process route for the drilling, milling, chamfering and turning operations was therefore sought by the aerospace components supplier, which employs more than 70 people. The ideal solution identified by engineering manager Graham Gilbert involved the purchase from NCMT of a Japanese-built Okuma MU5000V 5-axis Vertical Machining Centre (VMC) equipped with a Dutch-made Cellro 30-station pallet storage and retrieval system served by a 6-axis industrial robot.

Tim Maddison, managing director of T&R Engineering comments: "The improvement in production performance has been enormous across the four different LEAP-1A castings that we machine. All parts are now produced in one hit in a one-hour cycle, which means that eight components are now ready the same day rather than after a week.

"The substantial saving in lead-time is accompanied by vastly less workpiece handling and work-in-progress on the shop floor, while at the same time fewer free-issue Inconel castings need to be supplied by our US customer at any given time, saving them money as well."

A further benefit is a 50 percent reduction in total processing time compared with when the parts were produced in three or four separate operations. An additional saving that Tim Maddison describes as "massive" comes from inspecting every completed part in the VMC in a 10-minute routine at the end of the cutting cycle. So instead of 100 percent inspection on a Coordinate Measuring Machine (CMM), only one part per day now needs to be checked offline.

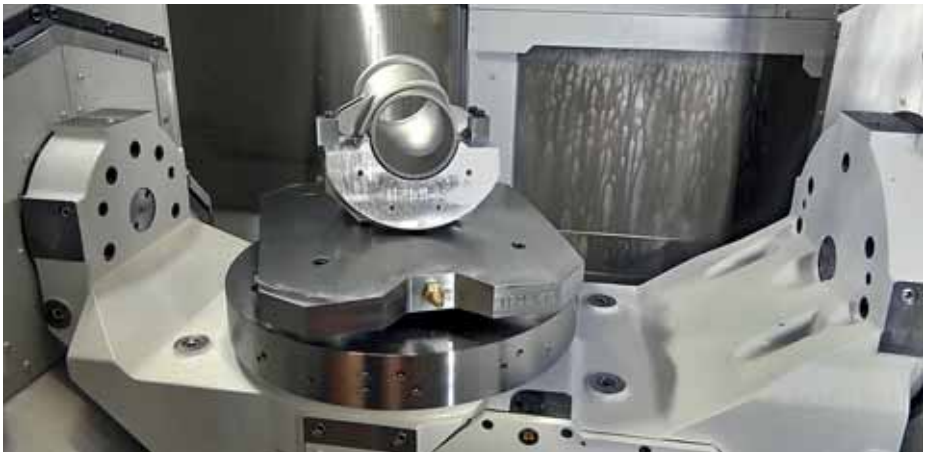
The production cell was installed in November 2019, shortly before the start of the pandemic. The aircraft build rate promptly collapsed from 63 per month to zero, but Tim Maddison advised that by the start of 2022 it had recovered to 50 per month, will return to pre-COVID levels by

the end of the year and is predicted to rise by a further 20 percent during the course of 2023.

The contract machinist could not have coped with these increased volumes without investment in the Okuma/Cellro plant, but is now in a position to take full advantage. The layout of the equipment is such that, if future volumes dictate, there is space for a second Okuma MU5000V to be installed adjacent to the first and to be served with pallets of pre-fixtured components from the same Cellro robotic store. It was this potential that steered the manufacturer away from sourcing a machining centre with its own integrated pallet storage and retrieval system.

A number of notable technical advances have been incorporated into the latest production cell. One is the provision of Okuma's turn-cut software in the proprietary OSP machine control that allows, without the need for special fixturing, turned features to be produced that are not on the centreline of a component. Three of the castings require this technology to be used.

Features are machined by rotating a turning tool in the VMC spindle, circular interpolating the X and Y axes at the same rotational speed and feeding the spindle forward in Z. Had interpolation turning not been available, it would not been possible to produce all the parts in one hit. There is no production efficiency penalty through the use of relatively slow turn-cutting, as it is not feasible to turn Inconel at high speed anyway due to the material becoming difficult to machine when hot.



To compensate for there being a lot of variability in the shape of the castings, another process improvement is the use of a combination of Renishaw's Inspection Plus and Productivity Plus probing software packages running in the control coupled with spindle probing of the workpiece. The various elements of a casting can be measured and manipulated by the measurement cycles so that the workpiece can be placed in a position where it can be machined successfully and, if it cannot, the part will be rejected.

Alternatively, if any given feature is predicted to be out of tolerance, the customer can be informed so a decision can be made as to the feature's relevance and whether machining should go ahead anyway. The importance of harnessing all these technologies can be gauged by the fact that the raw castings are so expensive that machining adds only 20 percent to the cost of a finished component. For the same reason, scrap is assiduously avoided, accounting for only 0.015 percent of cell throughput.

Another feature of Okuma machines that T&R Precision appreciates is the Thermo-Friendly Concept design, involving both the machine structure and the spindle. It allows the aero engine parts to be machined to within ± 25 microns, despite a significant variation of temperature on the shop floor in Foulridge.

Space for 30 machine pallets in the Cellro store allows up to 30 hours' production without operator attendance, so there is no need for a manned night shift and full advantage can be taken of lights-out operation at the weekend. With an Overall Equipment Effectiveness (OEE) in excess of 80 percent, it adds up to a highly productive facility in its present form, while the flexibility to add a second VMC has the potential to double output and extend unattended running further.

Graham Gilbert adds: "The support provided by NCMT throughout the project was fantastic. It was useful to be able to visit Okuma's European headquarters in Germany with them to prove out various parts of the process.

"The engineer the agent deployed in our factory for several weeks after installation was knowledgeable and very patient with us during the training period.

"This was important as, although we operate a couple of dozen multi-axis CNC machining platforms on a daily basis here in Foulridge, the MU5000V was the first machine we had bought from this source so we were on a steep learning curve at the outset."

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Starrag STC 1250 machining centre expands large-scale subcontract services

The use of a Starrag twin-pallet, 5-axis STC machining centre is not only enabling Switzerland-based Berhalter AG to "significantly reduce" machining costs by enabling the machine to be fed with long-running 5-axis parts or multiple-loaded work but the machine's extensive axes travels and capabilities are also enabling it to out-compete local competitors by processing extra-large components for its aerospace customers, as well as handling workpieces in a range of materials.

Berhalter is a leader in flatbed punching technology. For more than 45 years its machines have been used by stamping and printing shops, as well as food manufacturers, to produce lids, films and labels for bottles and beverage containers, pharmaceutical products, detergents and animal foods.

Fredi Hasler, head of business unit at Berhalter's tec-spiration

The company is, however, also a successful manufacturing service provider where its 'tec-spiration' service combines technology and inspiration to work in partnership with customers and on machining projects where Berhalter ideas are often integrated into solutions that provide added value for customers.

Around 75 percent of the tec-spiration business is with customers from the aerospace, automotive, power generation and mechanical engineering industries. Processing materials such as aluminium, steel, titanium, corrosion-resistant steels and alloys such as Hastelloy and Inconel together with the aerospace industry, in particular, was driving growth until the beginning of 2020.

The Starrag STC 1250

The company has been certified for aviation work since 2017, which has opened the doors to some well-known companies and led to a number of demanding yet interesting orders. Then Coronavirus arrived, but the pandemic did not hit Berhalter quite as hard as others and it continued to receive orders from the aerospace sector, contracts for rocket and satellite parts as well as for components for helicopters and drones.

It was, in fact, the machining of aerospace parts that initially led the company to the re-engineered Starrag STC 1250 which, with X, Y and Z axes travels of 2,200 mm by 1,600 mm by 2,100 mm and a 240-tool tower magazine, was installed in 2020 for processing larger parts.

Starrag developed its STC machines for the economical processing of demanding aerospace structural components, multi-blades and casings with long cycle times. The machines' excellent static and dynamic properties as well as their tried-and-tested swivel head set the benchmark for simultaneous 5-axis, heavy-duty cutting.

Such demands are not just a necessity for the aviation and energy production industries, however, as Berhalter also uses its STC 1250 for challenging machine and pump parts of stainless steel which require high stability for the accurate production of large holes. Indeed, a positioning accuracy to one hundredth of a mm is consistently achieved along the STC's full travel range. In addition, the option of multiple clamping for small parts adds another level of flexibility.

The 5-axis capability of the Starrag machine also put it ahead of the large machining centre previously used by Berhalter. In addition to its three dynamic linear axes, the CNC rotary table acts as the fourth simultaneous axis, it has a high-torque, a high-damping drive and can be clamped hydraulically. The swivel head is the simultaneously controlled fifth CNC axis and, thanks to the robust screw drive and the stable roller bearing on both sides, this is particularly suitable for heavy-duty cutting.

Another advantage over the previous machine is the two-pallet changeover system which enables setup while the machine is cutting, something that was previously not possible.

"This is a crucial feature," says Berhalter, "as it allows us to keep the machine running permanently and fed with either long-running 5-axis parts or used in a multiple clamping setup during minimally-manned shifts. In turn, this high utilisation allows us to significantly reduce machine costs."

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Innovations in 5-axis machining

GROB's Universal Machining Centres represent an innovative step for 5-axis machining technology. These horizontal machining centres deliver optimal chip fall and enable the production of larger parts within a relatively small footprint. The Universal Machining Centres are designed for efficient, effective machining in a wide range of applications.

GROB's G-Series Universal Machining Centres are available in four sizes: the G150 with 320 mm; the G350 with a 400 mm pallet; G550 with a 630 mm pallet and G750 with an 800 mm pallet. Additionally, all three sizes are available in mill-turn versions. These are identical to the standard G-Series centres but for a different table and spindle while the access-series provides compact versions of the G350 and G550 in the form of the G350a and the G550a.

The A and B axes operate with gear-free torque motors, thus ensuring a minimum of necessary maintenance and rapid, dynamic operation. The machines feature a Y-axis in the table itself. This Y-axis moves the part up and down during machining through the use of two ball screws and, in the larger machines, a counterbalance. The horizontal machine orientation ensures optimal chip fall and evacuation to avoid chip interference during machining.

The G-Series centres feature the longest Z-travel path in this machine class. What's more, unlike in other machines where an increased part size means decreased allowable tool length, the G-Series allows the largest possible part in the work area to be machined with the maximum tool length. As a result, smaller overall machining centres can be used in many applications, leading to a smaller footprint and lower overall cost. All three G-Series products feature a 230° swivel range in the A-axis. This means that the machine can reach all sides of the part, even when machining multiple pieces simultaneously.

The unique, horizontal Z-axis design features three sets of bearings, rather than the two found in competing vertical machines. What's more, the long distance between the front- and rearmost Z-axis bearings ensure optimal lever function and Z-axis rigidity. Additionally, this distance between bearings and the relationship of the levers do not change during Z-axis stroke, this results in constant milling conditions. A GROB machine is most rigid out at the workpiece.

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Mazak machines power rapid progress for Scottish subcontractor

A new name in Scottish subcontracting has continued its upwards trajectory and expanded its machining capacity through further investment in high-quality machinery from machine tool supplier Yamazaki Mazak.

Aberdeen-based 247 Machining Services was founded by husband-and-wife director team John and Aileen Forrest in 2018, after 30 years working in the steel fabrication and engineering sector. The company specialises in providing performance-critical parts for the oil and gas industry and traditionally produces low-volume, high-quality batches of components.

Having previously purchased multiple Mazak QUICK TURN turning centre machines over the company's three-year history, including a QT-COMPACT 200M and two QT-350MY machines, the Forrests have now invested in a INTEGREX i-400 full 5-axis Multi-Tasking machining centre to increase the complexity of its production capabilities.

"When we first formed 247 Machining Services, we knew it was key to employ a highly skilled team of machine operators if we were to enjoy the strongest start possible," explains John Forrest.

"So, while we had found a premises to begin operations, we were reliant upon the recommendations of our employees when it came to specifying the right machine tools for the business.

"The quality machining offered by our existing QT turning centres meant that when we were looking to expand our portfolio further, Mazak was our first choice. We wanted to make the move into high-volume, high-quality batch machining for the oil and gas sector as well as looking at branching into additional industries in the future and the INTEGREX fitted the bill."

The latest generation of Mazak's highly popular Multi-Tasking series of machine tools, the INTEGREX i-series, offers higher performance machining and greater workpiece capacity than alternatives in its class. With a maximum machining diameter of 658 mm and capable of processing on the X, Z, Y, W axes, the unit is ideally suited to 247's ambitions to produce a wider range of more complex parts.

With Mazak machinery now making up three quarters of 247's factory floor, the Forrests are optimistic about the future and are considering further expansion, as Aileen Forrest explains. "The lockdowns over 2020 and into 2021 obviously posed challenges, but as social restrictions have fallen away, the oil trade has really picked up and demand for parts has grown with that.

Aberdeen-based 247 Machining Services specialises in providing performance-critical parts for the oil and gas industry and traditionally produces low-volume, high-quality batches of components

"Our combination of highly trained operators and cutting-edge machine tools, of which Mazak makes up the majority, have been key parts of our continued growth. These, alongside a rigorous quality control process, has meant we have been able to go from an empty floor to a situation where our current premises may not be large enough to service growing demand levels. We can't wait to see what the future holds."

Managing director UK, Eire and national distributors at Yamazaki Mazak, Alan Mucklow adds: "247 Machining Services' exceptional progress since its founding in 2018 is a textbook example of the impact Mazak machining tools can have on a business's production capability. "Whether they are newly formed or well-established, all subcontractors, regardless of industry, have one thing in common: the need for high-quality, precise machine tools. We are proud to have provided 247 Machining Services with the capabilities it needed to hit the ground running and establish itself in such a competitive market."

Aberdeen-based 247 Machining Services has invested in a INTEGREX i-400 full 5-axis Multi-Tasking machining centre to increase the complexity of its production capabilities

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Belotti FLA 5-axis CNC machining centres

Since its foundation in 1979, Belotti has distinguished itself as one of the leading Italian manufacturers of CNC milling machines thanks to the state-of-the-art features of its CNC technologies. For over 40 years, Belotti's solutions have contributed to the success of its customers, bringing innovation, reliability, precision and production performance. The deep-rooted know-how acquired over the years designing and manufacturing 3- and 5-axis CNC machining centres in Italy, has allowed the company to market to a wide range of application sectors such as aerospace, automotive, rail, marine, medical, design, moulds and thermoforming industry to name a few.

The demand for Italian numerical control machines is generated by numerous international markets, attracted by the innovation and technological excellence endemic to Italian manufacturers. Several application sectors are driving the development of this demand and Belotti, thanks to a courageous entrepreneurial

vision, has succeeded over time to support such demand and its increasingly higher quality standards, becoming one of the leading manufacturers of numerically controlled milling machines.

The Belotti FLA Series represents the best mix of high machining speed and rigidity of the mobile bridge system. The excellent dynamism of the axes and the customisable operating units, revolver or automatic tool changer, guarantee production efficiency for specific applications in many industrial sectors including automotive, aerospace, patterns and moulds processing.

Belotti FLA 5-axis CNC machining centres combine the productivity of a high-speed milling machine and the potential of a mobile bridge machining centre in a single solution. The special technical features offer the necessary requirements for the trimming of plastic and composite materials, carbon fibre, glass fibre and Kevlar and for the milling of resin and light alloy products. The tool changer, with a modular design, is extensively customisable with models from eight to 48 positions.

For greater productivity, the FLA machining centres can be configured with automated loading and unloading systems, rotary tables and "Twin Shuttle" parallel loaders, for a quick tooling of the milling machine. The model with rotary table reduces the setup times of the equipment, simplifying and speeding up the loading/unloading operations of the workpieces.

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Successful Heller Open House in Germany

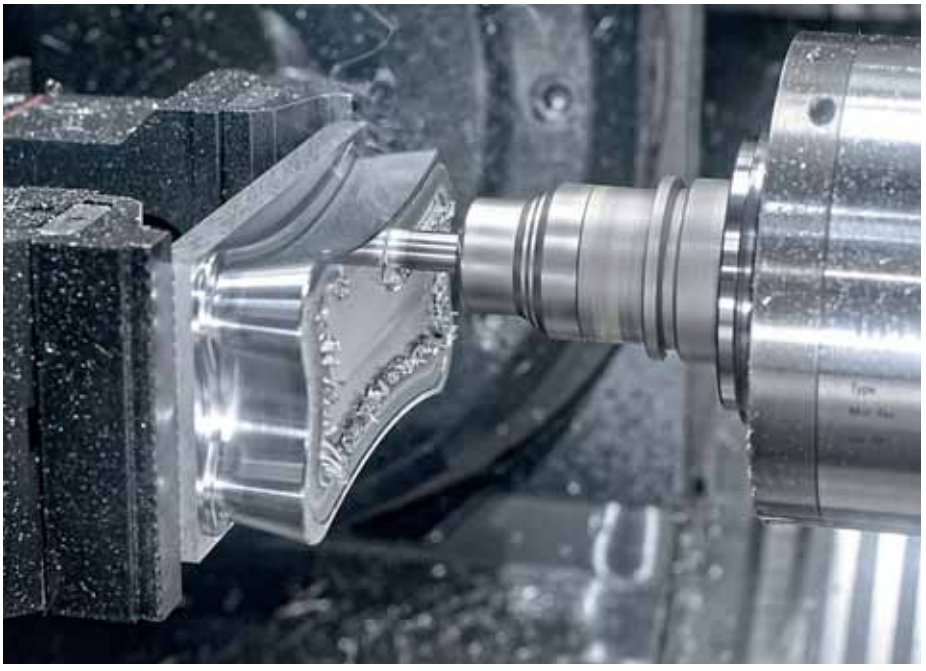
Horizontal-spindle machining centre manufacturer Heller Maschinenfabrik GmbH held an in-house event at its headquarters in Nürtingen, Germany in May, which attracted around 850 visitors. It focused on the company's latest generations of 4-axis and 5-axis machining centres and presented innovative technologies such as power skiving and friction stir welding, along with future-proof digitisation and automation solutions.

Reinhold Groß, the company's new CEO says "It was my first Heller in-house exhibition. Our subsidiaries GSN, Paatz, STS and Wenzler as well as more than 20 partners and suppliers also presented their solutions.

"A total of six different guided tours provided insights into our networked manufacturing and assembly of machining centres, spindle manufacture, component repair and our modern training factory for machine tool engineers of tomorrow."

Second-generation HF 3500/5500 5-axis machining centres were on display, with emphasis on their greater flexibility, productivity and precision. There was also a spotlight on the fourth generation of the H 4000/6000 4-axis machining centres that once again demonstrated their dynamics, stability and high performance. Additionally, the CP 6000 5-axis mill/turn machining centre demonstrated powerful complete machining on a single platform.

For the first time, Heller presented friction stir welding technology. The process for bonding different workpieces was integrated into its 4-axis and 5-axis machining centres. The joining process enables complete machining and welding in a single setup, offering advantages in terms of productivity and precision.



Two methods for manufacturing gears on 5-axis machining centres were presented. Production of different external and internal gear teeth by power skiving on a standard machine with turning functionality was demonstrated, as was hobbing of external gears. Software and a programming interface for both processes can be retrofitted.

In addition to conventional mill-turn functionality for complete machining, the Nürtingen-based machine tool manufacturer showed an alternative option, interpolation turning. New software has been developed by Siemens, for which Heller provided exclusive support. The flexible system is an attractive alternative for users who rarely need to produce rotational features on a machining centre. The two turning options are complemented by Heller's U-axis facing and boring head that can be integrated into its spindle heads.

Automation for maximum system availability

Heller automation solutions ensure maximum machine availability and are flexible as well as easy and intuitive to operate. Visitors to the Open House were able to see the HF 3500 with RSP rotary pallet magazine from STS for automated handling of machine pallets. Additionally, an FPC pallet container from Fastems and a robotic workpiece loading solution from STS on an HF 5500 with flexible workpiece handling were demonstrated. Heller also highlighted automated tool loading and unloading with a Kuka KMR Cybertech on an HF 3500.

Digital solutions

The Heller Open House made a point of promoting digital solutions. The machine tool manufacturer presented its mobile

Shopfloor Interface, which provides a holistic view of all data relevant to an assembly process. The Services Interface ensures increased transparency at the machine, higher productivity and a reduction in unscheduled downtime. A range of modules were on display, including for collision protection and tool magazine optimisation.

Complementary services

The Heller Academy provides customers with targeted and effective support in the form of practical, customer-specific training courses throughout the lifetime of a machine. The training areas and equipment were available to view and financing and leasing offers were explained, as well as flexible usage models and the new myHELLER customer portal that helps keep track of machines on the shop floor. Orders can be placed and service requests easily made.

Combustion engine cylinder bore coating

A further announcement was that from Autumn this year, it will be possible to coat the internal surfaces of small cylinders in engine blocks as Heller will be launching a system called CBC 10 equipped with new technology based on single electric arc wire spraying. It will be the smaller sibling of the CBC 200 thermal coating system based on twin-wire technology which has been established for more than ten years.

The aim of this development is to make the coating process used for two to three litre engines available for the production of smaller engines up to 125 cc. Engines manufactured with this technology are much more environmentally friendly, as it not only reduces friction and wear but also fuel consumption and emissions.

Heller was founded in Nürtingen, Germany in 1894 as a small craft business. Today, the global group of companies employs more than 2,600 people. It develops and produces CNC machine tools and manufacturing systems for metalcutting applications. Five production facilities in Europe and Asia as well as North and South America ensure reliable supply to customers in many different sectors. The manufacturer is represented in all major markets through its sales and service subsidiaries as well as via qualified service partners.

The Heller product range comprises: 4-axis and 5-axis machining centres, mill/turn machining centres, special-purpose machines including for crankshaft and camshaft machining and thermal coating systems. The portfolio is supplemented by modular services and an expanded range of solutions for the digitisation and automation of production.

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Hydraulic cylinder manufacturer installs third 5-axis machining centre

Established in 1988 and employing over 150 staff, family-owned Irish manufacturing firm PB Machine Tech produces more than 5,000 customised hydraulic cylinders per week at its factory in Bagenalstown, County Carlow. To boost production capacity, in November last year the company purchased its third Taiwanese-built Leadwell V-40iT 5-axis vertical machining centre.

Supplied by sole sales and service agent in Ireland and Britain, Towcester-based WH-Lead, the 12,000 rpm BT40 machine was required due to increasing demand for the hydraulic products from manufacturers around the world in the agricultural, access platform, construction, environmental and materials handling sectors. More than 80 percent of output from the Bagenalstown factory is exported.

Ray Kehoe, general manager of the component division at PB Machine Tech says: "We introduced one-hit manufacture in our factory some years ago following heavy investment in turn-mill machines. The benefits in terms of speed of production, reduced lead-time and better accuracy were immediately apparent.

"We were therefore keen to replicate this on the prismatic machining side of our business. We started that process in June 2018 by augmenting our 3-axis VMC capacity with the purchase of our first 5-axis machining centre, a Leadwell V-40iT.

"From a quality point of view, the ability to guarantee the geometry of parts is really important. Previously, we designed jigs to try to ensure good geometry, but that approach was reliant on proficient operator training and execution.

"With one-hit machining, perfect components are produced easily every time. Multiple sequential clampings on several

machines are a thing of the past, as is the manufacture of expensive fixtures."

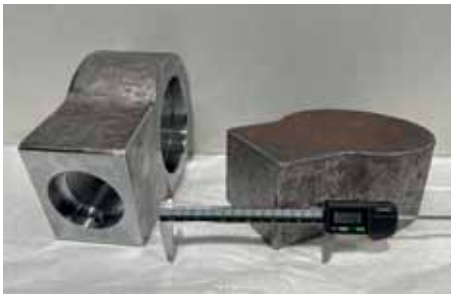
He added that another benefit to PB Machine Tech is shorter throughput times and hence reduced work-in-progress, which allows the company to respond promptly to urgent orders. After production starts, partial deliveries of components can begin almost immediately, if necessary, to allow the hydraulic cylinder manufacturing process to keep going.

After seeing the benefits in terms of raised quality and reduced lead-times resulting from installation of the first V-40iT, its capacity was quickly filled, prompting investment in a second at the end of 2020 and now a third. Control is by a Fanuc 0i-MF Plus that, in the case of the machines supplied to Bagenalstown, is able to interpolate four CNC axes simultaneously, although full 5-axis operation may also be specified.

4+1 capability, which is more economical than full 5-axis control, is ideal for PB Machine Tech as its machining cycles are not particularly complex. A variety of rectangular blocks needs to be machined on multiple faces and a vast majority of cycles are therefore 3+2, with the rotary table and swivelling trunnion positioned and locked for XYZ machining.

Ray Kehoe provided an interesting insight into why a trunnion-type vertical machining centre was chosen rather than another configuration, such as with a swivelling B-axis spindle. In his opinion, the trunnion gives the operator a large overall usable working volume, as the XYZ axes are allowed their full traverses, in this case 846 mm, 635 mm and 488 mm respectively. This is important to the hydraulic cylinder manufacturer, as some parts require deep hole drilling at various angles and good tool clearance is vital.

The material machined on the Leadwell VMCs in cycle times ranging from 10 to 40 minutes is almost exclusively S355J2 low carbon steel in the form of sawn flat bar or oxy-fuel-cut pieces. General tolerance is ± 0.2 mm but can be as tight as 0.05 mm and batch size ranges from 10-off to around 400 pieces. Programming is mainly carried out manually offline on a PC or at the machine control, although some blocks within in a cycle, such as thread milling and high-feed milling, are generated with the aid of Autodesk Fusion 360.



Ray Kehoe comments: "We first became aware of this make of machine from a subcontractor using them to manufacture parts that it supplies into our hydraulic cylinder plant.

"On their recommendation and from our research, we discovered that the machines are robust, reliable, spacious, capable and good value for money and our experience has certainly confirmed this. Additionally, the 200 kg table capacity means we never run into issues machining large, awkward parts."

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Process-safe 5-axis universal machining up to 1,000 kg

The DMU/DMC 85 H monoBLOCK is as flexible and productive as a universal machine and as reliable as a horizontal machining centre

With the DMU H monoBLOCK series, DMG MORI has successfully implemented its customers' requirements for flexibility, process reliability and automation. Now the machine tool manufacturer has introduced the new DMU 85 H monoBLOCK and DMC 85 H monoBLOCK version with pallet changer as a consistent expansion of the series. The new size is aimed, in particular, at users from the mechanical engineering, mould & die, aerospace and semiconductor sectors.

The new DMU/DMC 85 H monoBLOCK aims in particular at users from the mechanical engineering, die & mould, aerospace and semiconductor sectors

Thanks to the ideal chip fall, horizontal 5-axis simultaneous machining allows process-reliable production of complex workpieces. In the case of the DMU/DMC 85 H monoBLOCK, travels of 850 x 1,150 x 900 mm serve a wide range of components. The long Z-travel makes this size ideal for deep hole drilling. The swivel rotary table, which is mounted on both sides, can support a load of up to 1,000 kg, 800 kg for the version with pallet changer. It can be used for 5-axis machining of individual parts as well as series components on clamping towers. The solid basis for precise machining is provided by the inherently rigid machine bed, the horizontal gantry concept, the thermosymmetrical design and the integrated cooling concept. Linear drives in the X and Z axes and a direct drive in the C-axis also ensure maximum dynamics, while speedMASTER spindles also allow high-speed applications.

Flexible automation solutions for single-part and series production

To increase productivity, the DMU 85 H monoBLOCK and DMC H 85 monoBLOCK can be automated according to customer specifications both for individual parts and in series production. For the former, for example, the new PH Cell 2000, a retrofittable handling system for up to 21 pallets and workpiece diameters up to Ø1,100 mm, is available. The DMC H 85 monoBLOCK has an integrated pallet changer, which already enables setup in real time.

Various automation solutions further increase the productivity of the DMU/DMC 85 H monoBLOCK

A Linear Pallet Pool (LPP) and the PH-AGV are available for linking several machines with an automation system. The WH FLEX is also available for series production with a changing parts spectrum. This makes the DMU/DMC H 85 monoBLOCK an investment for the future that enables users to produce economically from batch size 1.

Various automation solutions further increase the productivity of the DMU/DMC 85 H monoBLOCK.

Future-oriented digitisation and technology integration

On the control side, the DMU/DMC 85 H monoBLOCK features CELOS with SIEMENS or HEIDENHAIN. With the condition analyser and the exclusive DMG MORI technology cycles, users also increase process reliability. In addition, there is the option of technology integration. Like the DMU 65 H monoBLOCK, the DMU/DMC 85 H monoBLOCK will also be available with integration milling-turning technology and can therefore serve numerous applications, especially in the semiconductor machine building and aerospace sectors.

With large traverse paths of 850 x 1,150 x 900 mm, the DMU/DMC 85 H monoBLOCK serves a wide range of components

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Time critical deliveries enhanced with XYZ ProtoTRAK mill

Seal Team Systems creates bespoke leak repair systems works for customers such as food manufacturers, energy generators, water suppliers and hospitals. It provides on-site leak sealing technology to minimise any disruption or downtime, which can be expensive or life threatening. The leaks that it rectifies can be anything from 150 psi steam in industrial and hospital scenarios, through to super-heated steam at over 1,000 psi, 70 Bar, at temperatures up to 700° C. Time is therefore critical in manufacturing a range of components that, when combined, can create an effective leak repair that can be made permanent at the next scheduled maintenance shutdown.

With every on-site leak posing different problems, the parts manufactured by Chesterfield-based Seal Team Systems are truly bespoke. The process starts with a customer site visit by a trained technician who reviews the problem and takes detailed measurements, with manufacturing starting on his return to the factory. All of this can take 2-3 days, a situation compounded by a reliance on manual machining. This time loss is unacceptable to many customers, with one quoting a £3 million cost for a 3-day shutdown.

To address this, Seal Team Systems has invested in an XYZ RMX 5000 bed mill fitted with the latest ProtoTRAK control system. "We recognised a need to automate the process as much as possible, especially as finding the skilled people to create the parts we need was becoming harder," says Andy Mills, director for Seal Team Systems. "With the XYZ RMX 5000 the technician, who was also the machinist, can now simply text all the details to us and we can start machining straightaway, turning what was a 2–3-day process into a next day service."

The XYZ RMX 5000 is the largest machine in the ProtoTRAK bed mill range and is equipped with a 7.5 hp programmable and variable speed spindle, with 3-axis CNC provided by the touchscreen ProtoTRAK control. With a table measuring 1,930 x 356 mm and axis travels of 1,524 x 596 x 584 mm it is large enough to handle most jobs. A key feature for Seal Team Systems is the TRAKing facility built into the control. This allows operators to use the handwheels

to move through the CNC program, at a speed they are comfortable with, even allowing the program to be reversed if required. Once happy, the cycle start button can be pressed and the control takes over completely.

"The move to the RMX 5000 with the ProtoTRAK control was a logical step up from manual machining, the training was straightforward and we were operating it very soon after installation," says Ken Black, director of Seal Team Systems. "The time savings we are making are significant, and typically amount to a 66 percent reduction in lead times. Being new to CNC we were also impressed with the support given by XYZ Machine Tools. Prior to ordering we had a number of demonstrations where we brought our own difficult to machine materials. XYZ also modified the showroom machine to provide air cooling to the cutter, rather than coolant, which was our preference, nothing was too much trouble."

The arrival of the XYZ RMX 5000 also brought other changes to Seal Team Systems with an investment in Autodesk's Fusion 360 CADCAM software. "With the RMX 5000 we are able to machine parts we couldn't attempt before on our manual machines, like round/oval parts such as valve bonnets. This has opened up new possibilities for us and the software allows us to be more creative and make use of Finite Element Analysis, meaning we can give added reassurance to customers and avoid over-engineering parts as we have had to do previously," says Ken Black.

Business for Seal Team Systems was good prior to the arrival of the XYZ RMX 5000, but since its arrival it has seen an increase in turnover and the result is the need for additional people to handle the extra work being generated.

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Replacement sliding-head lathes greatly increase turn-milling capacity

Good quality machine tools operate reliably and hold tolerance for two decades or more. The problem is that technology moves ahead so fast over such an extended period that the productivity of older machines cannot match that of their newer counterparts.

This was the situation Redruth subcontractor DP Engineering found itself in until it purchased three new Cincom lathes from Citizen Machinery UK. They are an L20-XLFV installed three years ago, an identical machine that arrived in autumn 2021 and an M32-VIIILFV bought at the end of last year. The latter two machines were direct replacements for equivalent 20 mm and 32 mm capacity sliders of similar type and make bought around the turn of the millennium, several machine generations ago.

DP Engineering's sales and marketing director, Philip Anthony comments: "The faster rapid traverses and higher power and speed of the main and sub spindles as well as of the driven tools on the new lathes have increased our capacity considerably. One stainless steel aerospace part we previously turn-milled in one hit on an L20 that is 20-plus years old now takes half that time to produce on its modern replacement.

"It is a similar story on the 32 mm machine, which is more user-friendly than the former generation lathe and has better access and visibility into the machining area. Moreover, the addition of a rotary B-axis on the gang tool post enables us to machine more complex parts than was previously possible on our sliders."

LFV programmable tool oscillation for automatic chip breaking

A notable technological advance from Citizen since DP Engineering purchased the earlier Cincoms was the introduction five years ago of its proprietary Low Frequency Vibration (LFV) chip breaking software running in the Mitsubishi control. It has resulted in a significant increase in productivity when machining malleable materials such as titanium and stainless steel.

It is particularly beneficial for the subcontractor, as one-third of its turnover is derived from the aerospace sector in which the use of such materials is commonplace, as it is in the medical industry, which has also generated more work since the start of the pandemic. Normally during machining, stringy swarf often entangles itself around the tool and component, risking damage to both and necessitating lathe stoppage to clear it from the machining area.

Phillip Anthony explains: "The first L20 we bought in 2019 was LFV. We knew about the technology and sent a team of engineers to Citizen Machinery's Brierley Hill centre to see demonstrations of the chip breaking function in action.

"For certain parts of cycles, it is very effective at ensuring that what usually becomes a bird's nest of swarf is broken up into shorter chips, avoiding having to stop the machine to remove it and the consequent loss of production.

"The best part is that LFV can be programmed to stop during a cycle when it is not needed by inserting a G-code, minimising the slight reduction in metal removal rate during the periods when the tool oscillates away from the component's surface to break the chips.

"On some jobs, even when cutting stainless steel, we don't have to use LFV at all. It depends on the component design, the tolerances that have to be held and the tooling used. However, it is fantastic to have it there for when we need it."

He added that, in practice, LFV is particularly effective at controlling swarf on the L20s during turning and drilling operations, while on the M32 it speeds roughing and also plays a role when thread cutting. Overall, having complete control over swarf generation ensures that processes are more reliable and repeatable, added to which tool life is noticeably increased.

Guide bush-less operation saves costs

Another attribute of the latest three Cincom lathes that increases their versatility, apart from the extended periods of spindle

uptime and unmanned running made possible by the LFV chip breaking software, is the ability to turn-mill shorter components in fixed-head mode without the guide bush, which can be removed and replaced within half an hour.

This allows lower quality, unground bar to be used, increases by several mms the maximum diameter of stock that can be accepted and also reduces bar wastage due to much shorter remnant lengths. Consequently, this mode of operation is frequent in the Redruth factory, especially for the significant amount of kanban production fulfilled by DP Engineering for its customers.

Phillip Anthony remarked that overall, taking into account the higher speed of machining, the LFV chip breaking function and the option of guide bush-less operation, the latest three lathes give DP Engineering not only considerably higher productivity but also a lot more flexibility when allocating jobs to the 18 turning machines around the factory, including the current tally of five Cincoms.

A couple of dozen jobs have already been transferred from multi-turret fixed-head lathes to the new sliding-head models for one-hit machining, freeing up the former for other production duties. Such versatility is ideal for a subcontracting environment, leading to faster deliveries to customers, enhanced reputation and more orders.

Phillip Anthony also pointed out that as space on the shop floor in Redruth is fairly limited, replacing machines with models that are much more productive is an ideal way to grow the business without the expense and disruption of having to move to larger premises. This is especially important in respect of his turned parts production, which accounts for three-quarters of throughput.

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Haas machine fits the bill for Redman Engineering

Trust is the key component to Redman Engineering's relationship with its customers. Working closely with clients to achieve a true partnership has built respect over 45 years in business.

"We grow as our customers grow," explains managing director Bill Redman. "For many of our customers, intellectual property is a critical asset to their business. We machine every component in-house, which gives confidence in two ways: quality of the finished product and confidentiality of the manufacturing process."

Originally an aerospace manufacturer, when Bill Redman took over from his father in the 90's, the Essex-based company moved to making mechanical parts for biochemistry and optoelectronics. Redman Engineering is now in these leading-edge market technologies.

Bill Redman continues: "Our involvement begins once the customer has established a concept and parameters for the product. From here we have input concerning the mechanical aspects within their multi-disciplined team. Upon completion of prototypes and testing, production batches typically ranging from five to 40 are manufactured. It's very intricate and demanding work at times. For example, we recently produced the mechanical components for a high-speed camera capable of capturing images of a projectile fired from a barrel. The incredible detail provided goes as far as showing the surrounding shock waves.

"It's important for us to have the necessary kit to handle the job as efficiently as possible. The Haas machine fits the bill admirably."

Redman Engineering recently took delivery of a new VF-2SS Super Speed vertical machining centre, part exchanging its existing 18-year-old Haas VF-2 as part of the deal. The VF-2SS has a 12,000-rpm spindle, 30+1 high speed side mount tool changer and was equipped with a 210 mm rotary table for full 4-axis operation. Bill Redman explains: "We've found cycle times have improved by 40 percent already and we're still experimenting with some jobs so we're expecting that figure to rise. The machine is noticeably faster and more responsive.

"Our manufacturing team have over 150 years' experience between them and they really rate the Haas. They are very comfortable with the machine. We use FeatureCam and OneCNC for our CAD designs and we do a lot of offline programming. Because we have the VF-2SS, we can jump straight on the machine and start cutting."

Redman Engineering also made the decision to invest in the Haas wireless probing system. "We've found it very useful", explains Bill Redman. "It allows us to easily set work and tool offsets, it confirms parts are loaded correctly and it inspects parts in-process on the machine. Our consistency has significantly reduced the level of monitoring as parts come off.

"You get a lot of well thought out accessories as standard with Haas. We didn't use things like fixturing and air blast at first, but we've found out how useful they are as we've got going."

He continues: "When we began looking for a new machine we found that the Haas website gave us precisely what we needed to know. This gave them a real edge as we didn't have to keep calling; the information was all there. Then when we wanted to order, the process was quick and easy, including part exchanging our existing machine. The whole process was well controlled and it inspired our confidence, which is just how we like to work with our own customers.

"We had one day on-site training to cover the new features and that's all we needed. One of our operators hadn't programmed a machine before, but he was able to start programming by the end of the day. Our guys really like the Haas Tip of the Day videos on YouTube and any queries we have can often be answered online and, if not, then a quick phone call does the job. It's all very accessible.

Bill Redman concludes: "Haas really makes you feel valued as a customer and part of something much bigger."

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ETG Ireland takes subcontractor from manual to CNC machining

Founded in 1992, P&T Precision Engineering has an established reputation as a subcontract manufacturer that specialises in the production of jigs, fixtures and machined components for the food, medical and pharmaceutical sector. Historically a manual machine shop, the County Kildare company has made the transition from manual to CNC machining with the support of the Engineering Technology Group (ETG) Ireland.

Discussing the transition from being a manual machine shop to a CNC facility, Darragh Walsh from P&T Precision Engineering says: "We were a small family company with six employees and we decided to invest in CNC equipment from ETG. We ended up buying quite a lot of new equipment. This has helped us to grow in the industry sectors that we need to grow in and it has helped our customers to get more products with shorter lead times. In a short space of time, we have gone from six staff to 22, but we have also grown our number of machines and we hope to grow that into the future as well."

Jamie Fletchmore from ETG Ireland says: "P&T was an up-and-coming family run business that was coming from manual machines into the CNC world. They approached us and said they wanted to make that advance from manual to CNC machining. We sat down and spoke about the first machining centre and we introduced them to the Qauser MV184. From there, we migrated on every two years and they were buying more technology, which included the Nakamura AS200L turning centre and then two years later they purchased another Qauser MV184."

The first step the Naas based company took was to invest in the Qauser MV184 vertical machining centre. The Qauser MV184 provides a spacious work envelope with X, Y and Z axes of 1,020 by 610 by 610 mm that travels over a 1,200 by 600 mm bed with a load capacity of 500 kg. The BT40 taper spindle machine provides a maximum spindle speed of 12,000 rpm that is supported by a 30 position ATC.

"This type of machine is a big step up from where they were, machining parts on manual machines in multiple operations. With the Qauser MV184, P&T were able to take those manually machined parts from drawing and CAD model straight into the machine with a finished part coming off. So, they were able to get the parts through the shop floor much faster and that also reduces the downtime involved with going from one operation to another with the manual process. Investing in our machines and technology has enabled P&T to move through different types of components and different kinds of materials, especially harder materials. This has allowed P&T to get into markets that they were not used to working in," continues Jamie Fletchmore.

"It has opened doors and opportunities that has led the company to then look at the Nakamura AS200L turning centre. This machine opened P&T up to a new range of products that they were able to look at. They were making parts in multiple operations from a lathe point of view and now, by using the Nakamura AS200L turning centre, they can finish those parts complete in one operation. P&T is now able to do all of the milling, drilling, tapping and then also transfer parts to the second spindle, so the part is coming off the machine in one complete operation as opposed to multiple operations."

The Nakamura AS200L twin-spindle turning centre from ETG Ireland is a 65 mm diameter bar capacity machine with an 8" chuck that offers a turning capacity up to 340 mm diameter with a maximum turning length of 570 mm. It provides sufficient capacity for the requirements of P&T. With a powerful 11/15 kW 4,500 rpm main spindle motor and a sub-spindle unit with 5.5/7.5 kW and 6,000 rpm, the Nakamura AS200L is perfect for the productive turning of all material types with its perfect blend of power, torque and spindle speed. This is complemented by a driven tooling unit with capacity for up to 15 driven tools with a maximum spindle speed of 6,000 rpm and 3.7/5.5kw spindle power.

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New precision subcontract machining operation has Doosan multi-tasking machine tools at its heart

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has recently supplied Volz Engineering Ltd, part of the internationally renowned Volz Group and a wholly owned subsidiary of Volz Filters UK, with two, new FANUC-controlled multi-tasking machine tools.

The machines, a compact 8" chuck Lynx 2100LSY turning centre, equipped with a sub-spindle, Y-axis and driven tooling and a best-selling DVF 5000, 5-axis, machining centre equipped with an 18,000 rpm spindle and a 120-tool position ATC, were installed at the company's 10,000 sq. ft facility in Rochdale in December 2021 and February 2022, respectively.

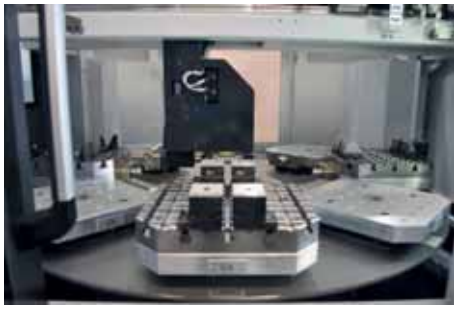
To increase the productivity potential of each multi-axis machine still further Volz Engineering, through discussions with technical sales staff at Mills CNC, augmented its investment by placing orders. The order comprised of a Hydrafeed Multifeed 65 short magazine bar loader, to be integrated with the Lynx lathe, alongside a Doosan 8-pallet station Automatic Workpiece Changer (AWC), to be integrated with the DVF 5000 machine.

Managing director of Volz, Alan Reeson says: "As part of our ambitious growth strategy we have recently rationalised and refocused the scope and scale of our operations: divesting low-growth and less profitable business activities in favour of ones that offer a better growth trajectory and a more favourable return on investment."

As a consequence, Volz Engineering's focus moving forwards will continue to be on the manufacture of high-quality components for its parent company as well as on the design, development and manufacture of specialised, application specific automated filtration production machines. To meet global demand, it is anticipated that the company will significantly ramp up production of these machines in the future.

In addition to focusing on these 'core' business activities, the company has also made the strategic decision to diversify its operations and create a high-quality, precision subcontract machining operation located at its existing facility.

"This is where the real opportunity for significant and sustained business growth lies," says Alan Reeson. The acquisition of the two new Doosan machines and its investment in automation technology demonstrates the company's commitment to making a success of the new venture. Volz Engineering's precision subcontract machining business is intended, in the first instance, to provide local, regional and national manufacturers with high-quality machined and competitively priced components delivered on time, every time.



Alan Reeson continues: "The danger, when setting up any subcontract machining operation, is to lack focus and attempt to try and be 'all things to all people'. This approach invariably means that you can end up chasing your tail and are tied up dealing with unprofitable work.

"For our operation we have adopted a different route and implemented a 'sniper' strategy, targeting those sectors and specific companies, where we know we can provide real value and develop long-term, mutually profitable relationships."

Prior to launching its new precision subcontract machining operation, the company did its homework and spent significant time and resources creating a robust and comprehensive business plan.

Alan Reeson explains: "By researching the market and understanding customer needs and requirements, as well as competitor strengths and weaknesses, we have been able to create differentiation in the market based on quality, service and reliability and cost-competitiveness."

The scope and scale of Volz Engineering's subcontract machining operations determined, in part, by its market research activities and combined with the significant experience and expertise of key members of staff, is focused on the milling and turning of complex, precision parts made from a range of materials and characterised by their tight geometric tolerances and high surface finish requirements.

James Alletson, operations director says: "Like every company we have limited space available. In setting up our precision subcontract machining operation we clearly had to keep in mind these limitations as well as the footprints of the new equipment we required. Another aspect of our subcontract

service was on our ability to machine one-offs and prototypes, through to pre-production parts and low-to-medium volume batch series."

Having identified where the business opportunities existed, Volz Engineering implemented an action plan to bring the new venture to life. The plan included a programme to refurbish and modernise its existing facility, in order to comfortably house the subcontract machining operation, as well as an outline CAPEX budget that would be used to acquire the new machining technologies and equipment required.

The success of Volz Engineering's subcontract machining operation depended on its ability to make complex, precision parts faster, better and more economically than the competition. In order to do this the company made a number of strategic investment decisions. It was decided, early on in the process by senior managers, that the new subcontract service would have and rely on new, as opposed to used, machine tools and equipment.

James Alletson states: "While there are no doubt some excellent used machine tools on the market we decided, from a reliability and performance perspective, that our new precision subcontract service would have new machines and equipment at its disposal. As we want to break into, consolidate and grow our position in advanced, hi-tec markets, it was important, from the outset, that we created a favourable impression with customers. New machines don't just look the part, they are also less prone to breakdowns, inspire confidence with customers that you can meet their expectations and signify to customers and internal staff the commitment to the new venture."

Senior managers at Volz Engineering decided, early on in the process, that the new machine tools they wanted and needed for the subcontract machining operation would be Doosan machines. Doosan machines have a reputation for quality, value and reliability and they are sold and supported in the UK and Ireland by Mills CNC.

James Alletson concludes: "A number of staff had gained experience operating and programming Doosan machine tools from previous employment. They liked the

machines, were familiar with the controls and the machines' layout and configuration and also recognised and appreciated the strength of the pre-and after-sales service and support provided by Mills CNC. By undertaking research into the market and through talking to other component manufacturers, it was also clear that Doosan's partnership with Mills was highly regarded and respected throughout industry."

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Seventeenth Holroyd EX Series rotor milling machine for premier air compressor manufacturer

One of the world's leading air compressor machinery specialists has ordered what will be its seventeenth EX Series rotor milling machine from UK-based PTG Holroyd. Scheduled for build at PTG-Holroyd's Rochdale-based technology centre later this year, the machine, a 3EX-R model, will be installed at one of the air compressor company's North American manufacturing facilities. Able to rough mill rotor blanks of up to 350 mm in diameter, it will be used to produce rotors for portable and stationary air compressors.

"Over the years, we have sold more than thirty of our advanced machine tool technologies to this organisation," comments PTG Holroyd sales director, Mark Curran. "In fact, they purchased their first Holroyd machine back in the 1950s. Models sold to date include EX Series rotor milling machines, CS Series cutter sharpener machines and TF Series test fixture machines which are used to ensure the accurate measuring of rotor profile clearances. If repeat orders are an indication of the trust a company places in a supplier and the quality of its technologies, service and support, this latest order is a tremendous accolade for our business."

PTG Holroyd's EX Series CNC rotor and pump-screw milling machines have earned global acclaim for their high speed, high precision, high levels of efficiency and unrivalled build quality. Delivering class-leading reliability and performance, the EX range begins with the 2EX: a machine capable of milling helical components of up to 250 mm in diameter and offers stepped increases in capability, right up to the 8EX, 850 mm maximum component diameter, rotor milling machine. There are models with the additional capability to mill Roots-type blowers and a 'custom-build' 10EX machine for milling blanks in excess of 1,000 mm in diameter.

EX machines cut a full-depth groove by traversing the cutting tool through the material at the relevant helix angle, whilst at the same time rotating the component in the C-axis. Accurate synchronisation

between the axes is maintained via CNC, with digital drive technology controlling all axis movements. The cutting head is able to remove so much material in one step because the majority of heat generated is transferred to the swarf chips. These are then removed from inside the machine by means of a conveyor system.

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The key to more sustainable watchmaking

Can luxury watchmaking go green? While there's a growing onus on watchmakers to be more sustainable, they must also fashion masterpieces of micro engineering from some of the world's toughest materials, like ceramics. But these materials can cause serious issues with regards to tool life. Here, James Thorpe, global product manager at Sandvik Coromant, explains how advanced tools, including its CoroDrill® 862 micro drills, can give enhanced wear resistance for more sustainable production:

Perhaps the most extreme recent example of sustainable watchmaking is the so-called Garbage Watch by Vollebak, a radical design-led British clothing brand that makes clothes and accessories using emerging materials, with new technologies and processes. Vollebak says its products are "of the future" while also being sustainable. Despite its name, the Garbage Watch is a coveted made-to-order item that has featured in the world's top design publications.

"I thought, you must be able to build a watch out of e-waste," Vollebak co-founder Nick Tidball told Esquire magazine earlier this year. Esquire's article mentions findings from the UN's Global E-waste Monitor report that a record 54 million tonnes of electronic waste was generated by all industries globally in 2019, which was up 21 percent in five years. Precious metals with a value of $1.7 billion were recovered from this e-waste, but this was only 17 percent of the total recyclable amount. The overall value of the precious metals would have been closer to $10 billion.

This figure shows how far industry is falling behind in making full use of recyclable e-waste. But steps are being made to rectify this, including by watch manufacturers. Let's look at another e-waste material, ceramics. They are solid compounds that consist largely of inorganic and non-metallic components bound by strong chemical bonds, are fully-recyclable and are becoming more popular among watch designers. According to SwissWatchExpo, advantages of ceramics include their exceptional hardness, especially when compared to steel and gold and they are a good material for all-black watches which continue to gain popularity. But ceramics are often very difficult to machine.

The answer lies in more wear-resistant tools. Sandvik Coromant has evolved its tool offering by introducing two new micro drill families to its product range: CoroDrill 462 with XM geometry and CoroDrill 862 with GM geometry. Each offers a wide range of cutting diameters and lengths. Both tools are designed to be ideal for precision machining in industries dealing with small parts, while also offering more sustainable performance.

In particular, each tool is designed to offer superior wear resistant properties that deliver outstanding performance with challenging materials within all ISO applications areas, including ISO P, M, K, N, S, O and H. This is further enhanced by the option of purchasing the micro dill with a PCD vein cutting edge. Based on successful tests of PCD drills on micro parts made from platinum, Sandvik Coromant has found that PCD is up to 100 times more wear resistant than solid carbide and, in addition, is more accurate and can produce tighter tolerances than solid carbide tools.

The tools are also suitable for machining ceramics and semi-fired ceramics. In one test, a Sandvik Coromant CoroDrill 862 tool with a veined PCD cutting edge was used in a horizontal machining centre to drill 8.38 mm, 0.330 inch, deep blind holes in an alumina ceramic workpiece, a fine ceramic material well-known for its chemical and physical stability, with no pecking. The tool was run at a diameter of 1.70 mm, 0.067 inches, a cutting speed of 53 m/min, 174 ft/min and feed rate of 0.025 mm/z, 00.001 in/z.

In the end, 933 holes were drilled and the hole quality and tool life were both excellent. Aside from these results, the key takeaway is the lifecycle advantages of CoroDrill 862 micro drill. Customers can achieve longer-lasting, reliable and predictable performance that better-complements the plant's sustainability strategy. Sandvik Coromant's engineers also recommend PCD to those seeking to drill micro-sized holes in notoriously difficult-to-machine materials, such as titanium, aluminium, glass and also ceramics. It's critical to have quality coolant delivery to effectively evacuate chips when performing deep-hole drilling with micro tools.

Sandvik Coromant
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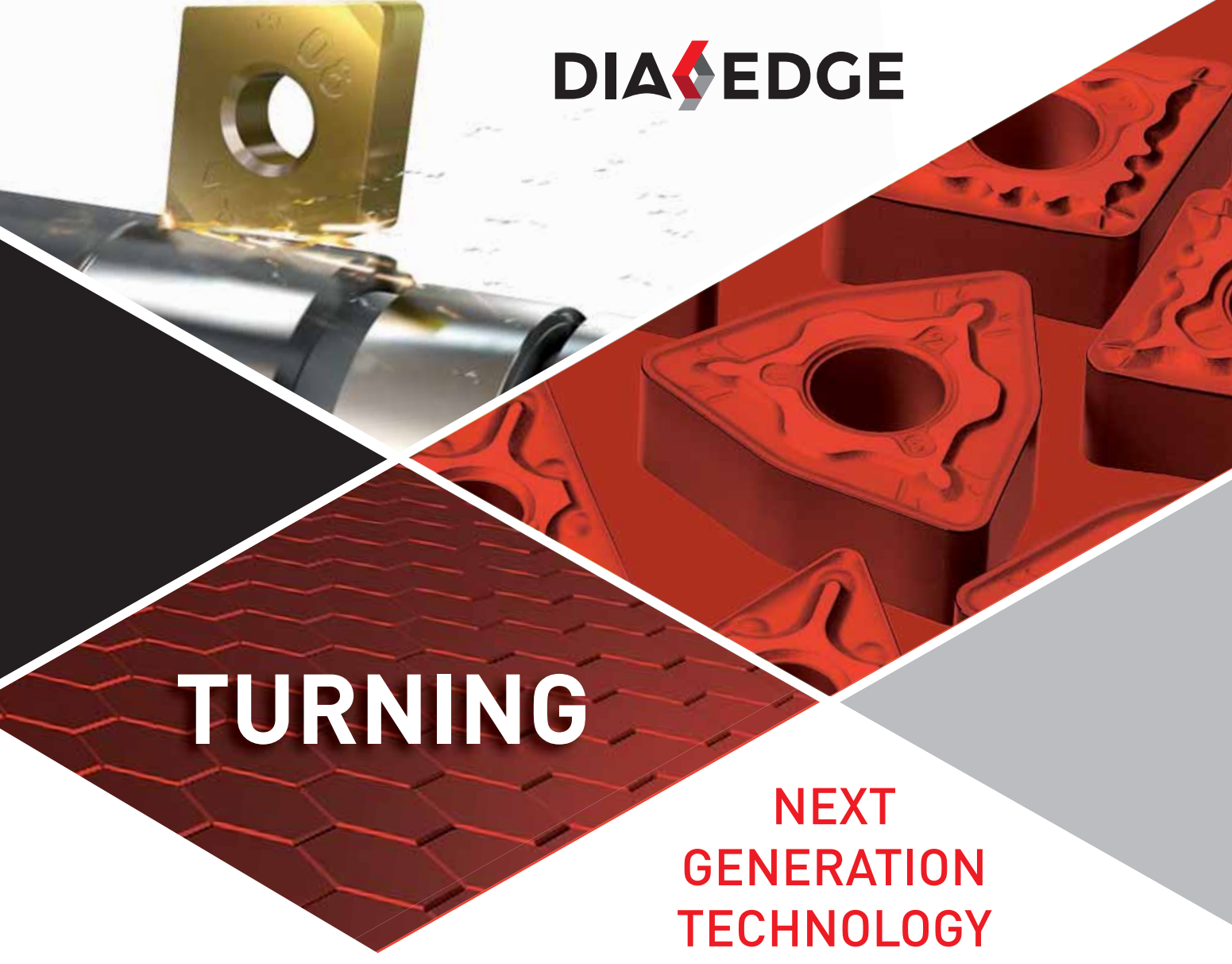
DIA EDGE



TURNING

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MITSUBISHI MATERIALS

Cut longer with Kennametal's KCK20B and KCKP10 indexable milling grades

New grades offer higher wear resistance and longer tool life, increasing productivity in cast iron and compacted graphite cast iron machining

Kennametal has introduced the KCK20B and KCKP10 indexable milling grades for higher wear resistance and up to 30 percent longer tool life when machining cast iron and compacted graphite iron components. Both grades offer higher productivity and consistent, repeatable performance during roughing, semi-finishing and finishing operations.

Available for many indexable milling product lines, the new grades come with a golden top layer for fast, easy wear identification, ensuring maximum tool life for each cutting edge.

"The new grades feature High-Power Impulse Magnetron Sputtering (High-PIMS) technology that provides a smoother insert surface and optimal layer adhesion for less flank wear, one of the leading causes of insert failure," says Kennametal product manager Gil Getz. He notes that the new coating technology also increases cutting edge strength. "The result is high-performance milling in a broad range of cast iron alloys, including grey cast iron, ductile cast iron, and compacted graphite cast iron."

KCK20B and KCKP10 are suitable for wet or dry cuts. These include rotor hubs used in windmills, pump housings, steering knuckles and gear housings for heavy equipment and automotive components like crankshafts and cylinder heads. While KCK20B delivers higher productivity in roughing and semi-finishing operations, KCKP10 is applicable for finishing operations, but also works exceptionally well when profiling and copy milling cast iron and steels up to 45HRC.

Gil Getz concludes: "For customers where high tooling cost and downtime associated with tool changes are especially important, KCK20B and KCKP10 grades promise to increase tool life tremendously," and for those who wish to increase throughput, the new grades deliver there as well. Either way, it is a win-win for any shop machining cast iron."

A technology leader

Kennametal was founded on the strength of a technological breakthrough, and a list of highlights demonstrates that it has continued to lead its industry in innovation.

In 1946, the company introduced the Kendex line of mechanically held, indexable insert systems that accelerated tool changing and increased machining precision.

Kennametal's unique, patented thermit process for producing impact-resistant macrocrystalline tungsten carbide today remains the best way to produce extremely tough tool materials for demanding applications such as mining.

In 1964, Kennametal introduced tungsten-carbide-tipped Kengrip tire studs. Although studs clearly contributed to safe winter travel, they became controversial amid speculation about their role in road deterioration. After legislation limited the use of carbide studs, Kennametal left the business in 1977.

The company took the lead in the development of silicon-nitride based "sialon" ceramics for the machining of exotic aerospace materials. It was the first to develop cobalt-enriched substrates for coated inserts and was the first to commercially introduce Physical-Vapour-Deposition (PVD) coated cemented carbide cutting tools and created the first commercially viable diamond-coated carbide inserts.

It developed quick-change tooling systems that today lead in versatility, speed and accuracy.

Kennametal maintains its technological leadership through its $30 million technology centre in Latrobe, Pennsylvania and complementary facilities in various locations around the globe. The facilities are dedicated to rapid development of products engineered to meet specific customer requirements.

Kennametal has been named a four-time best-practice partner for excellence in world-class product development and portfolio management processes by the APQC, a non-profit organisation and leader in benchmarking, knowledge management, measurement and quality programs.

Kennametal UK Ltd
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Floyd taps into complete threading range

Floyd Automatic Tooling has been announced as the new UK and Ireland distribution partner for German cutting tool brand JBO. Recognised as one of the world's leading manufacturers of precision tools for manufacturing and checking threads, the JBO range will undoubtedly enhance the threading portfolio available from the Baldock-based cutting tool experts.

Established in 1849, the heritage and quality of the JBO brand is beyond reproach and this high-quality brand is now available to UK manufacturers through the 'go-to' tooling company for sliding head turning workshops. The JBO brand encompasses thread milling cutters, shell type thread milling tools and combination tools, PCD, CVD and CBN tools, high-performance thread cutting dies and rolling dies and precision thread gauges.

With such an expansive range of options, Floyd Automatic will be paying particular attention to the thread milling, threading dies and gauges. With more than 80 pages in the JBO thread milling catalogue, the options now available from Floyd Automatic are extensive. As an overview of the thread milling options, JBO manufactures threadmills for all metric, metric fine, Whitworth, UNC, UNF, UN, UNJF and NPT plus a host of other thread form designations. Within the thread geometries, Floyd can offer everything from standard solid carbide threadmills to tools with chamfers, special tools, coated tools for challenging materials and combination tools from M1 upwards.

Optional threadmill geometries and designs take the JBO range beyond anything else feasible from alternate suppliers in the UK and that is before getting into special tool requests. With such a wealth of options, JBO has also developed JBOtronic: This programming software enables customers to programme threading cycles with unparalleled ease-of-use.

Like the expansive threadmilling series, the threading dies are equally impressive with all recognised thread designations and pitches available with solid carbide, coated, high-precision solutions and thread rolling options. The range is expanded to meet the needs of the individual user with special options available. JBO retains stock of over 13,000 die sizes and types for threading from 1 to 250 mm so, whatever the requirement, Floyd Automatic can solve your threading issues.

With the unsurpassed range of threading tools available, JBO has an equally impressive range of precision thread gauges to match. It has more than 10,000 different thread dimensions and tolerance bands from 0.5 to 300 mm available for quick delivery to UK manufacturers via Floyd Automatic.

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ITC tools take centre stage at Signcraft

Located north of Stockholm in Taby, Signcraft AB is a sign manufacturer that is celebrating its 30th year in business. The Swedish business offers a comprehensive service that ranges from company signage and displays through to 3D scanning, vehicle decoration and decals through to digital print, banners and roll-ups. For 20 years, the company has been purchasing its cutting tools from Industrial Tooling Corporation (ITC).

The company started in 1992 when company founder Henry Barker was asked to sign-write two Dodge vans. Despite having no experience, he undertook the task and soon purchased a Gerber Sprint plotting machine. The business was initially a hobby for him while driving HGVs around the world, at the time, touring with the world's largest rock bands from Rolling Stones and David Bowie to Bon Jovi, the Eagles and countless others. It was a Roxette tour in the late 90s and a conversation with a stage carpenter that landed Henry Barker the contract to help produce the stage floor for the 'Mamma Mia' stage show. Throwing himself in at the deep end, Henry bought an AXYZ router and machined the plywood and birch stage flooring, as well as all the acrylic stones and decorations used on the stage.

It was a trip to the Sign & Digital Exhibition in 2002 where Signcraft AB first encountered Tamworth cutting tool manufacturer, ITC. As Henry Barker recalls: "At the time, we only had our routing machine a couple of years and we were using tools from another supplier. The range of tools was quite limited and made some jobs quite challenging. We didn't know how limited the tools were until we met Sally from ITC. Sally introduced us to the ITC range and this encompassed everything from square and ball nose tools to tapered tools, long series tools and much more. We could certainly see the potential benefits of implementing these tools on our shop floor and over the next couple of years, we bought more and more from ITC. Of course, it wasn't just the diversity of the range from ITC that kept us buying tools; it was the outstanding quality. The tools were almost impossible to break and the service and technical support from Sally has been outstanding. If we have a particular challenge or need a special tool, the technical support from Sally and the ITC team has been exemplary."

Looking at some of the jobs where technical support from ITC and its ability to manufacture bespoke tools with a fast turnaround has helped Signcraft AB, Henry Barker recalls: "We had to produce 3 m high hands as stage props for a popular Swedish TV programme and this job was machined with ITC tools. The 3 m high stage props were produced by layering 105 35 mm sheets of Styrofoam that were all machined on our router with ITC tools. To machine the thicker 100 mm Styrofoam sheets, ITC supplied a 150 mm long solid carbide tool with an 8 mm diameter that had been necked for 105 mm of its length to prevent the shank from rubbing against the component. To further improve rigidity, the flute length was just 40 mm and was perfect for machining the 100 mm thick Styrofoam boards."

More recently, the company has manufactured 3.4 m high stage prop 'hands' for the Swedish version of 'The Voice' TV programme. On this occasion, Signcraft AB applied the 20 mm diameter ball nose tools from ITC to cut more than 20 cubic metres of Styrofoam. "We use a lot of the ITC LG Series of single flute tools for machining all our plastic materials and the STA Series for machining aluminium or similar materials. Upon occasions, we also use special ITC

tools for machining stainless or other more challenging materials," says Henry Barker.

In Sweden, the government has committed a percentage of its infrastructure and new buildings budget to creating art. This means that all new public sector buildings will have sculptures or other artistic features. One artist commission for a project to create sculptures for highway roundabouts approached Signcraft AB to manufacture Selectric Typeballs from 1970's typewriters. Standing at 2.5 m high, the spherical Selectric Typeballs had to be constructed from 22 cast aluminium sections measuring 1 m by 750 mm that were welded together. The respective aluminium sheets had to be cast in a foundry. Signcraft AB made the mould tools from high density polyurethane sheets. The 3D forms were rough machined on the company's Kimla CNC routing machine with a 20 mm diameter ball nosed LG Series tool from ITC. The finishing operations were undertaken with a 6 mm diameter ball nosed LG Series tool.

Henry Barker concludes: "What we have found with ITC is the quality of the cutting tools is exemplary. The tool life, quality and performance is outstanding. Downstream from the machining process, the quality of the tools and the surface finishes they generate also eliminates many secondary hand finishing operations. This is a combination of the quality of the cutting tools and also the technical support from Sally Hunt at ITC. It is this technical expertise that ensures we are optimising our machining parameters and maximising the potential of the cutting tools."

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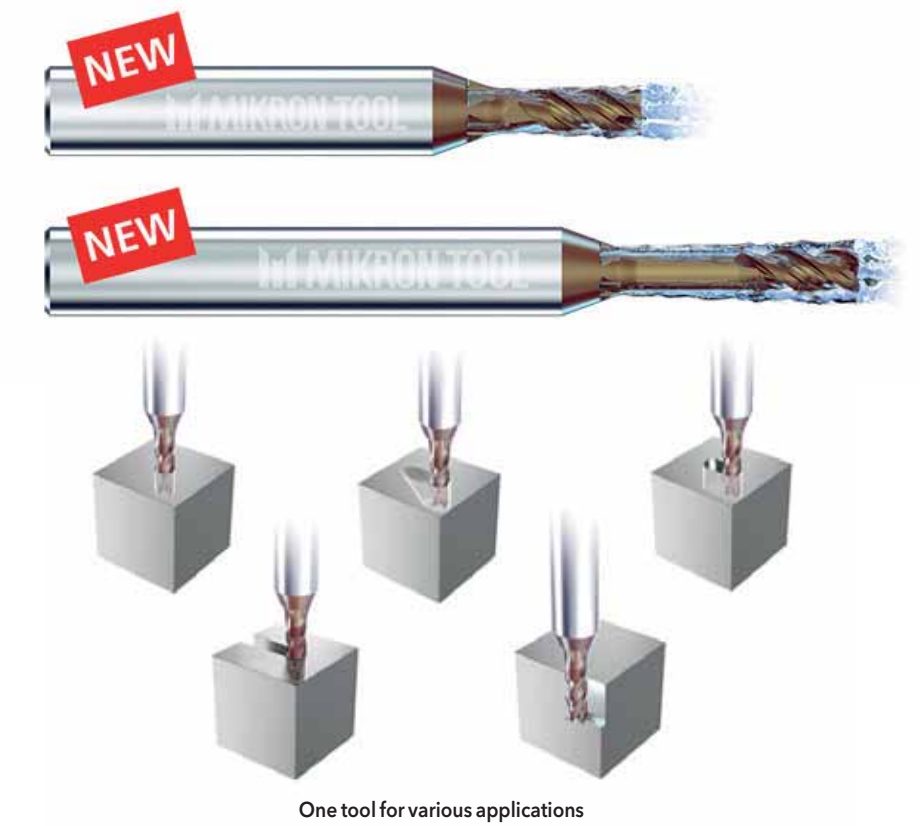
A well-rounded solution

Mikron Tool has expanded its successful CrazyMill Cool P&S milling cutter family, developed for roughing and finishing operations, with a toric version. The new tool combines the strengths of milling and drilling and is designed for machining stainless steel, titanium, CoCr alloys and superalloys. Like its cylindrical predecessors, this drill/milling cutter can plunge perpendicularly into the material up to 1xD and then continue machining laterally. It mills slots and pockets in the tightest of spaces with no problem at all. When a corner radius is required, it is in its element with the right tool for each shape.

It is available in the diameter range of 1 to 8 mm/.039" to .315" in two versions: Type A: 2.5 x d CrazyMill Cool P&S Corner Radius, cutting length 2.5 x d, Z3; Type C: 5xD CrazyMill Cool P&S Corner Radius, cutting length 2.0xD, Z3.



One tool for various applications

A geometry thought out in every detail

New cutting-edge geometry enables process-safe, low-vibration plunging (drilling). The first task was to stabilise the centre of the cutting edge, which must be sharp and robust at the same time. This caused quite a few headaches. An ingenious solution was found that reduces the risk of cutting-edge breakout while, at the same time, reducing the cutting force. The extra-wide chip space in the head section allows chips to be collected during the drilling process and evacuated laterally into the likewise extended flutes. Adjusted rake and clearance angles as well as stable cutting corners assure smooth wall finish and avoid breaking out of cutting edges due to vibration, which is one of the central difficulties when "drilling" with a milling cutter.

Keeping cool is the key

But that's not all. The cooling channels integrated in the shank direct the coolant straight to the cutting edges and guarantee constant and targeted cooling in every position. The cooled cutting edges allow high speed and feed rates. In addition, thanks to the massive cooling jet, the chips are continuously flushed out of the milling zone. This prevents the chips from remaining in the recess and being repeatedly chipped, which causes damage to the milling cutter and the milled surface. The result is long tool life and excellent surface quality.

Attention to the choice of materials

For this milling cutter, Mikron production specialists use a specially developed ultra-fine grain carbide, which is characterised by high toughness and meets all requirements in terms of mechanical properties. Thus, the robust carbide shank supports stable and vibration-free milling and highest precision and surface quality are guaranteed.

The high-performance SNP coating not only increases surface hardness, but also enhances wear resistance and heat resistance. The sliding resistance during chip removal is also reduced to prevent the cutting-edge buildup. The result is optimum chip evacuation and a long tool life.

High performance becomes a matter of course

The combination of these factors enables impressive chip removal rates, which are possible thanks to the high cutting and feed rates and an infeed, ae, of 1xD each. The drill milling cutter impresses with its long tool life and excellent surface quality starting from a one mm diameter.

Useful practical data

To enable maximum milling power, Mikron Tool clearly defines the milling processes and also provides detailed cutting parameters. In addition, milling strategies for creating keyways are listed according to their dimensions so that the right tool can be determined quickly. Throughout, these parameters have been proven in live tests with corresponding materials and individual tools.

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www.mikrontool.com

Tiger·tec Silver WSM45X range expanded

Tiger·tec Silver WSM45X indexable inserts for other shoulder and copy milling cutters from Walter

Walter now offers the high-performance Tiger·tec Silver WSM45X indexable insert grade for ISO S for titanium and heat resistant alloys and M for austenitic stainless steels. It is for the Xtra·tec XT range of M5130 shoulder milling cutters, the M5468 copy milling cutters, the M5008 high-feed milling cutters and the BLAXX F5041 and F5141 shoulder milling cutters.

The combination of the special substrate, which is wear-resistant yet tough, with an aluminium oxide coating is the only one of its kind on the market and ensures a high level of process reliability. The coating protects the substrate against excessive heat and is extremely smooth enabling a high level of productivity and superior resistance to the formation of build-up on the cutting edge. This makes the Tiger·tec Silver WSM45X grade a proven problem-solver, particularly when it comes to roughing titanium alloys in the aerospace industry and when machining stainless steel. The two-tone Tiger·tec Silver coating is designed to ease the detection of edge wear. Typical components that are machined using the WSM45X grade are exhaust turbochargers, turbine blades and titanium structural components for the aircraft industry.

In addition to the new program extension, the Tiger·tec Silver WSM45X range of inserts is already available across the previously launched Xtra·tec XT and M4000 universal milling system platforms which include face milling cutters, shoulder milling cutters, high-feed milling cutters, octagonal insert and copy milling cutters.

Walter AG was founded in 1919 and is now one of the world's leading metalworking companies. As a provider of specialised machining solutions, it offers a wide range of precision tools for milling, turning, drilling and threading applications. Walter works together with its customers to develop custom solutions for fully machining components for use in the aviation and aerospace industries, as well as automotive, energy and general engineering.

Walter GB Ltd
Tel: 01527 839450
www.walter-tools.com

MRO catalogue helps find the right tool at the right time

Maintenance and Repair Operations (MRO) represent a vast number of applications across all engineering segments, requiring a broad range of cutting tools.

This is critical to keeping equipment and plant operational. Dormer Pramet manufactures a comprehensive program of products that can be used in an MRO environment, making the company an ideal choice for your needs.

Product applications include holemaking, threading, milling, reaming, countersinking and deburring. To support awareness of its wide assortment, it has launched an MRO catalogue, which focuses on its Dormer round tools range and tool sets. This includes solid carbide and HSS drills, taps and milling cutters, reamers and countersinks, dies, rotary burrs and cutting fluid.

The publication has more than 330 pages of cutting tools, technical information and support detail. It is available in 11 languages and across various digital platforms, including the Dormer Pramet library app.

A key element of MRO applications is having the right tool at the right time. Reliable solutions are critical for "first-time" success and reducing machine down times. As a full-service supplier, Dormer Pramet is committed to assisting customers in implementing their machining processes efficiently, with productivity as the goal.

New-look website

Dormer Pramet's new-look website and eShop is now live. It is investing in its channels to provide users with easy access to a wide assortment of cutting tools, from support information through to purchase.

Additional improvements and developments are continuing to be made to both the main website and eShop. All the product items available in your market can now be found in the eShop. You can use the main navigation menu or the improved search bar to find the tools you need, their key features, benefits, machining capabilities and related imagery. Also, access is now provided to live business transactional updates, such as payments, stock availability, pricing and order status, while making the site user-friendly across multiple devices.

Product information, key features and benefits, digital content, such as videos and pdf literature, as well as company announcements and news, alongside distributor information, continues to form an important part of dormerpramet.com.

More content and functionalities will be published as the website is progresses and visitors are encouraged to keep visiting to access the latest updates. Alongside the new eShop, the new website will make it easier to access the information you need, when you want it, in whatever way you choose to access it.

The company's goal is to provide visitors with a unified and simple online experience. If you require any further support, reach out to a member of the Dormer Pramet team.

Dormer Pramet is a global manufacturer and supplier of tools for the metal cutting industry. Its comprehensive product program encompasses both rotary and indexable drilling, milling, threading and turning tools for use in a wide variety of production environments. An extensive sales and technical support service operate from 20 offices, serving more than 100 markets worldwide. These are assisted by dedicated production facilities in Europe, Americas and Asia, along with a highly developed distribution and logistics network.

Dormer Pramet
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www.dormerpramet.com

New multi-flute VQN end mills

VQN, the top of the range series of carbide end mills from Mitsubishi Materials, has recently been expanded to include two new innovative types. These latest additions have been specifically designed for specialised applications in nickel-based heat resistant super alloys such as Inconel.

Coating and ZERO-μ surface

A lot of the reliability and high performance of the VQ series can be attributed to the (Al,Ti,Si)N group-based coating which delivers substantially improved wear resistance. The extreme heat and oxidation resistance and lower coefficient of friction of the new coating means this next generation of end mills can maximise performance and help prevent tool wear even under the harshest of cutting conditions. Additionally, the surface of the coating has been given 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, but with the unique ZERO-μ Surface the cutting edge retains its sharpness while still remaining protective during harsh cutting conditions.

VQN4 and six flute types

The number of flutes has been optimised in accordance to the outer diameter to achieve excellent chip evacuation and increased tool rigidity. The new flute geometry in combination with the (Al, Cr)N coating provides the class leading wear resistance needed for such tough materials and is therefore the ideal choice when machining heat resistant super alloys. The corner radius geometry features improved fracture resistance and the negative rake angle for the corner R cutting edge allows the smooth flow of chips.

Irregular helix flutes

To further enhance reliability and prevent vibration, the helix angles vary from flute to flute by up to four degrees.

Availability

The new four and six flute types join the existing family of VQN 2 and four flute ball nose end mills: VQN2MB, VQN4MB, VQN4MBF.

MMC Hardmetal UK Ltd
Tel: 01827 312312
Email: sales@mitsubishicarbide.co.uk
www.mmc-hardmetal.com

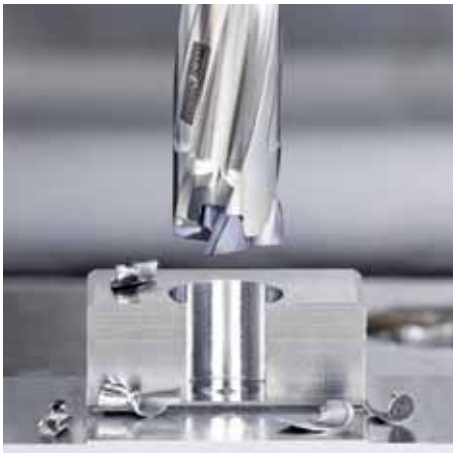
Where innovation never stops

"Where Innovation Never Stops" is the slogan that appears on the walls of the production facilities at ISCAR headquarters and has been synonymous with the company for several decades. The COVID-19 pandemic did not interrupt the innovation process and, between 2020-2021, ISCAR introduced the NEOLOGIQ marketing campaign comprised of advanced cutting tools and tooling solutions for modern metalworking. "Machining with no boundaries" is the NEOLOGIQ mindset.

Holemaking news

CHAM-IQ-DRILL, the family of assembled drills that mount exchangeable carbide heads, has been upgraded with new heads in the diameter range of 33-40 mm. These heads can be mounted on any drill possessing the appropriate pocket size. The main feature of the new heads is a multifunctional cutting geometry, which enables effective drilling of various engineering materials such as steel, stainless steel, heat-resistant special alloys and titanium ensuring hole precision within IT10-IT9 accuracy grades. ISCAR's customers will benefit from using the new heads which guarantee to maintain less stock of tools for machining diverse materials.

The ISCAR LOGIQ-3-CHAM is also based on the concept of exchangeable carbide heads with three flutes for improved productivity and is now supplemented by new carbide heads for achieving a nearly flat bottom hole. Flat bottom holes are necessary for screw head sockets, spring seats and washer ports. The heads ensure drilling up to an eight-hole depth-to-diameter ratio without a pre-hole. The new design facilitates generating holes with a nearly flat bottom by use of a single pass. The heads are mounted on existing LOGIQ-3-CHAM tools that significantly expand the application range of the family and reduce inventory costs. So, how do you increase the drilling depth? Use a longer drill?



MODUDRILL is a family of modular drills with replaceable carbide heads that carry indexable inserts and provide an alternative solution. Mounting an exchangeable extension holder on a drill body increases the drilling depth by an additional 200 mm when machining holes in a diameter range of 33-40 mm.

In high-speed reaming, a combination of a carbide reaming head with a rolling device in one single tool results in a short operational time for achieving accurate hole diameter along with a mirror-like surface finish.

Key aspects in turning

A modular tool concept is the way to reach high versatility. NEOSWISS, a new tool system with quick-change heads, follows this concept. There are different types of heads for indexable inserts. The system is suitable for turning, parting, grooving and threading applications. By use of a unique high-clamping-force mechanism, the heads are mounted on a toolholder and the mechanism provides an accurate cutting edge position each time and utilises high position repeatability. The system, intended mainly for Swiss-type machines, enables removing heads and replacing inserts within the tight confines of CNC machining centres.

ISCAR has developed a new lever dual lock securing mechanism for improved clamping rigidity intended for ISO turning inserts. The new design, referred to as the COMBI-D-LOCK family, combines the advantages of two conventional clamping methods by the use of a lever and a top clamp. An insert is locked in two directions from the top and the bottom. This provides better stability and rigidity and, in comparison to the conventional lever, improves tool life and increases productivity.

LOGIQ-F-GRIP features a new highly advanced tool family for parting solutions. The central component of the family is a robust tool block that mounts a four-pocket adapter. There are cases when the rib, a reinforcement element of the block, interferes and prevents clamping the block on typical turret positions. NEOLOGIQ overcomes this problem by providing additional blocks with the rib placed on the alternative side of the block. The revolutionary LOGIQ-F-GRIP parting system was designed to achieve extra stability and vibration-resistant high productivity parting and grooving operations. The highly engineered LOGIQFGRIP is an assembled tool block that comprises a unique durable holder and a high-stiffness quad blade with pockets for mounting inserts.

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Tungaloy launches brand new ranges

Tungaloy UK has now introduced its latest advanced product offering with a new product campaign that has been presented by Tungaloy Corporation chairman and president of the IMC Group, Jacob Harpaz. The company's ADDFORCE global launch introduces the latest innovations in metal cutting tools from Tungaloy.

The ground-breaking new products have been developed to improve customer productivity by significantly accelerating machining operations. Jacob Harpaz has undertaken a world tour to present the new innovations with presentations already given to customers in Japan, Asia, Europe and North America. The new ADDFORCE products include the latest cutting-edge technology for turning, milling, grooving and holemaking applications and are destined to build upon the already impressive results provided by Tungaloy's existing product lines.

To celebrate the launch of this exciting and expansive new range, Tungaloy UK will run a series of promotions on product ranges such as the new AddForceCut, the AddInternalCut, TetraMiniCut, TungFeedBlade and TetraForceCut parting and grooving series. From the turning portfolio, Tungaloy UK will be introducing the new AH6225, the PS and PM chipbreaker inserts and IsoEcoTurn turning inserts, the MiniForceTurn and TungTurnJet turning lines.

From the tranche of new milling products, Tungaloy UK will introduce the new AddDoFeed high feed milling series, the Tung-Tri and TungForceRec shoulder milling

line alongside the extended TungMeister range of interchangeable milling heads and the Drillmeister interchangeable drilling system. For further information on how you can take advantage of the new lines from Tungaloy that improve productivity, reduce costs and enhance machining performance, contact Tungaloy UK.

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www.tungaloy.com/uk

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Automation raises lathe's productivity by 25 percent

German subcontractor Euler Feinmechanik, based in Schöffengrund, north of Frankfurt, has invested in three robotic machine tending systems from Halter in the Netherlands to automate loading and unloading of DMG MORI lathes. The Halter range of LoadAssistant robotic machine tending equipment is available in the UK through Salisbury-based 1st Machine Tool Accessories.

Established more than 60 years ago and with around 75 employees, Euler Feinmechanik machines complex turned and milled parts such as optical bearing mounts, components for camera lenses, rifle scopes for hunting and the military, medical and aerospace parts and housings and stators for vacuum pumps. Materials machined are mainly aluminium, brass, stainless steel and various plastics including PEEK, acetal and PTFE.

Managing director Leonard Euler explains: "Our production processes include milling, but are centred mainly on CNC turning of prototypes, pre-production batches and series parts.

"We develop product-specific manufacturing strategies for our customers, for example Airbus, Leica and Zeiss and support them from the development and production stages through to surface finishing and assembly.

"Automation and robotisation are important aspects of our continuous improvement. We are constantly thinking about whether we can optimise individual processes so that they interface even more smoothly."

In 2016, Euler Feinmechanik bought a new CTX beta 800 4A CNC turn-mill centre from DMG MORI for the production of particularly complex components for vacuum equipment. The company knew at the time that it wanted to automate the machine, but first had to establish a reliable process to produce the workpieces to the required high quality.

That was the responsibility of Marco Kühnl, senior technician and team leader of the turning department. He says: "In view of the increasing order quantities for the components, we purchased our first loading robot in 2017. It has allowed us to increase productivity from the new DMG MORI lathe while getting labour costs under control."

Several brands of machine tending equipment were considered, as Leonard Euler was keen to find the best solution and make a future-proof choice on which the subcontractor could standardise.

He adds: "DMG MORI itself was also in the running, as it had just introduced its own Robo2Go robot. This seemed to us to be the most logical combination and it is indeed a nice product, but it can only be programmed when the lathe is not running.

"However, Halter is a specialist in this field and not only had a good automation solution, but also great references and a working demonstration that showed exactly what we wanted. In the end, we opted for one of its Universal Premium 20 cells."

There were various reasons for the decision, one of which was the use of high-quality components in the construction, such as a FANUC robot, Schunk grippers and a laser safety system from Sick. Additionally, the robot cell is manufactured in Halter's factory in Germany, where the software is also developed.

As the manufacturer uses its own operating system, programming the cell while the robot is running is straightforward.

In addition, while the robot is loading the machine at the front of the cell, an operator is able to insert raw material into the system from the rear and remove machined parts. Being able to do all this simultaneously avoids having to stop the turning centre and lose production.

Moreover, the mobile Universal Premium 20 can be moved quickly from one machine tool to service another, providing a high degree of production versatility on the shop floor.

The cell is designed for automatic loading of billets and unloading of machined workpieces to a maximum diameter of 270 mm. A customer can choose from a large selection of grid plates of different capacities for buffer storage, which accommodate rectangular as well as round workpieces and tall parts.

To facilitate connection of the loading robot to the CTX beta 800 4A, Halter equipped the machine with an automation interface. This service is a big advantage compared that provided by competitors. Halter is able to interface with any brand of CNC machine, regardless of its type and year of manufacture.

The DMG MORI lathe is primarily used for machining components from 130 mm to 150 mm diameter. Owing to its twin-spindle configuration, two workpieces can be produced in parallel. After automating the machine with the Halter cell, productivity increased by about 25 percent.

A year after purchasing the first DMG MORI turning centre and retrofitting it with automated loading and unloading, Euler Feinmechanik bought two more lathes from the same source. One is another CTX beta 800 4A, while the second is a smaller CLX 350 devoted to producing about 40 different components for the optical industry.

The two new machines were immediately equipped with Industry 4.0 compliant Halter loading robots identical to the first. Production on all three twin-spindle lathes can continue unattended for an average of half a shift, which maximises productivity and reduces labour costs.

Automation has improved production efficiency to such an extent that the subcontractor intends to continue automating its plant. A Halter LoadAssistant is planned for an existing DMG MORI lathe on the shop floor and asking Halter to add additional functions like workpiece polishing and grinding to the automation cells is being considered.

Confident of the future, Leonard Euler concludes: "Automation has improved the utilisation of our CNC machines, increased output and quality and reduced our hourly rates. The lower cost of production plus even faster, more reliable delivery has strengthened our competitiveness.

"Without unscheduled machine downtime, we can plan production better and are no longer so reliant on staff being present, so we can more easily handle holidays and absences due to illness.

"Automation also makes jobs more attractive, so it is easier to find staff. Younger employees in particular show great interest in and commitment to the technology."

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FANUC hits five millionth CNC milestone as European expansion gears up

Robotics and automation specialist FANUC is celebrating after reaching the milestone achievement of producing its five millionth CNC, cementing its position as a leader for factory automation. This achievement comes as FANUC ramps up its presence in Europe. A €130m investment in 2022 will see the Japan-based company strengthen its technical support, training and service offering to European customers, while a new €20m technical centre in Germany is expected to go live in 2023.

Alongside robots, cobots and other factory automation solutions, CNCs are at the heart of FANUC's portfolio. The company has a production capacity of 36,500 CNCs per month and its latest FS 30i/31i/32iB Plus and FS0i-F Plus series offer state-of-the-art CNC and servo technologies, as well as numerous AI-based functions.

"Artificial intelligence in CNC control helps to make technological processes more efficient, as well as improve machine running times and production quality," says Shinichi Tanzawa, President and CEO of FANUC Europe Corporation.

The focus is also on user-friendliness. A special PC software, CNC GUIDE, offers a superior development environment, allowing the user to add the PMC ladder and machine signal simulation capabilities. When combined with other FANUC software, such as FANUC LADDER III, FANUC PICTURE, C- and MACRO EXECUTOR, CNC GUIDE provides a more efficient development environment for the machine tool builder. The software is also available as an academic version, meaning it can be used as CNC training software.

Like all FANUC products, its CNC controllers come with a guarantee of lifetime maintenance and repair. "Of all the CNCs that we repair in Europe, around a third are over 20 years old," says Shinichi Tanzawa. "We believe that our business policy contributes to the sustainability of our customers' factories."

Alongside sustainability, training and development are crucial to FANUC's plans

in Europe. In 2017, a European development centre was opened at the company's German subsidiary in Neuhausen, near Stuttgart. FANUC is now building a €20m, 6,000 m² technical centre at the site, scheduled to become operational in 2023 and is also investing heavily at other locations. In the twelve months to the end of March 2022, it spent around €130m to strengthen its technical support, training and service offering to its European customers, including a warehouse and distribution centre in Luxembourg to shorten delivery lead-time. Further investments are planned in the coming years.

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New cost-effective toggle clamp range provides flexible and secure workpiece holding

WDS Components Ltd has released a new range of durable and economical toggle clamps, expanding clamping flexibility at a lower price-point. Available in three formats, the designs provide flexible clamping options including use in space-constrained areas. The launch enables customers to achieve durable and secure clamping previously achievable only with premium clamps. The new clamp range offers a high holding force up to 227 kg, making them suitable for a range heavy duty uses, as well as compact clamps for more intricate applications.

The new toggle clamps are a fast and secure way of holding workpieces for applications such as wood and metal work. Clamping via a pivot and lever mechanism, the devices work on an over-centre action, providing either a locked/closed or open position.

Six new toggle clamps with more economical price points join WDS' existing range. Horizontal action toggle clamps provide a maximum holding force of 227 kg with an overall lever length of 228 mm, down to a compact 78 mm long lever that can clamp up to 27 kg. As per all the new toggle clamps, they feature an adjustable spindle for flexibility and precision in clamping.

Toggle clamps with a vertical clamping action are available in two main styles. The standard version has a total height of 157 mm and also provides the high holding force of 227 kg. Meanwhile, a T handle grip version has a compact height of 64.5 mm and provides 50 kg of clamping force.

WDS has also released a new push/pull toggle clamp allowing the user to manually apply pressure to a horizontal or vertical workpiece. While many push/pull clamps require 180° rotation of the handle to achieve the lock position, the new clamps only need 90° movement and do not require surface edge installation. This enables them to be used in confined spaces and positioned with greater flexibility.

The clamps are highly durable and are constructed in mild steel with zinc plating for resistance to corrosion. The red handle is made from oil resistant red vinyl for extra grip.

Full product specifications including CAD drawings, as well as 3D images that can be viewed by non-specialist software, are available from www.wdscomponents.com Extensive stocking means WDS can provide single item orders through to multiple units, and same day shipping is available.

WDS Components is the home of standard parts and machine accessories. Established in 1952, 'Woodside Die Sinking Company' made jig and die parts to speed up production in tool rooms, WDS Components has grown from humble beginnings to become a leading European manufacturer and global distributor of high-quality durable parts at competitive prices. It supplies components, standard parts and machine accessories to original equipment manufacturers, maintenance engineers, small businesses and individuals all over the world. Over 98 percent of its range is available from stock and can be shipped the same day from its global distribution centre in the UK, using best in class worldwide logistics companies.

The company is proud to support some of the most prestigious engineering companies and brands in the world, who all trust WDS Components to service their needs.

It is committed to engineering excellence and continuous improvement. Its team of in-house engineers has expertise spanning several decades and is a blend of highly experienced and new generation graduate engineers who focus on the latest developments in design and manufacturing technology.

The entire range of products is available to purchase on its website where designers and manufacturers alike can download 3D models of all components in the widest range of formats available.

WDS Components provides solutions for customers who require a wide and growing range of high quality, competitively priced products, coupled with incredible product availability and same day despatch, backed up by easily accessible technical support.

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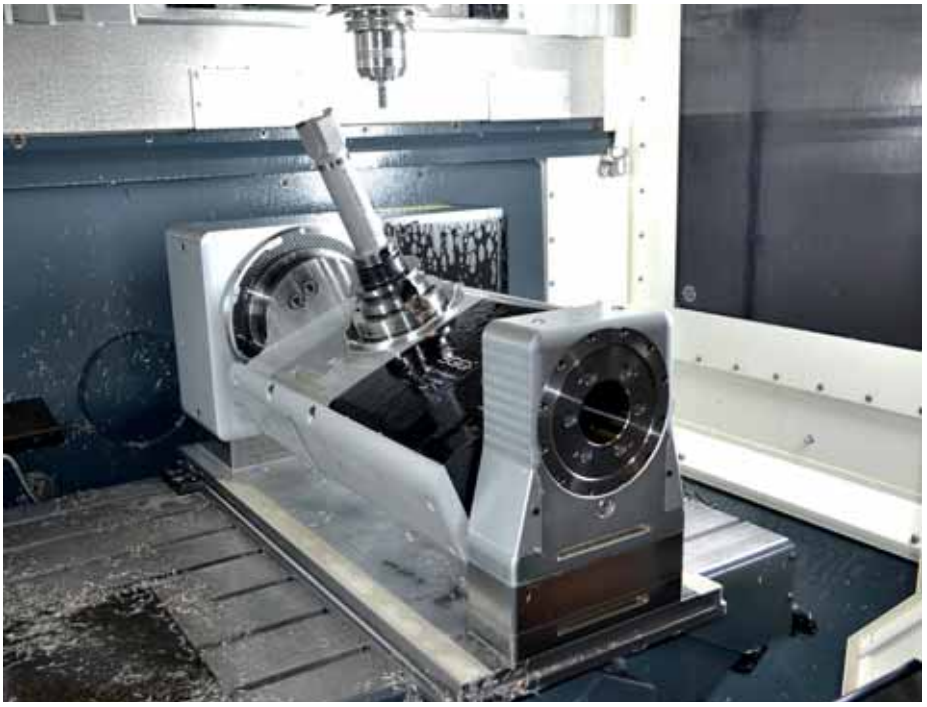
pl Lehmann rotary table keeps Exactaform at the 'cutting-edge'

Headquartered in Coventry, Exactaform is a specialist in the design and manufacture of diamond and carbide tooling for a rapidly expanding domestic and international customer base. The business prides itself on being large enough to be regarded a trusted tooling partner to many of the world's progressive aerospace, automotive and motorsport businesses, whilst being small enough to provide a personal, technically superior service.

Having achieved prefared supplier status to many businesses in the global composite industry over the past decade, Exactaform is experienced in providing advanced PCD machining solutions that are able to effectively and accurately machine non-ferrous materials such as aluminium, MMC, carbon fibre and glass filled resins. In addition, the company designs and manufactures cutting-edge carbide tooling that is able to efficiently machine a wide range of 'exotics' such as Inconel.



In order to remain at the 'cutting-edge' of tooling manufacture and to help keep pace with growing demand for its output, the staff of Exactaform continually searches for advanced production equipment that will further improve the businesses impressive capabilities. The latest addition to the company's machining aids is an advanced rotary table purchased from Swiss manufacturer Pl Lehmann.

Explaining the company's recent purchase and the rotary table's intended use, Exactaform research and development director, Martyn Biddle says: "The global tooling industry is rapidly evolving. Now, customers don't have to rely on off-the-shelf cutting tools from large global OEM's. Rather than supply a 'best-fit' or 'compromise' tooling solution, at Exactaform we are dedicated to boosting our customers' productivity and reducing their costs by supplying optimal tooling answers that reduce lead times, saves money and increases machining performance.

"Our skilled staff are able to design progressive tooling geometries that can overcome a wide range of application challenges. We now supply an ever-growing range of super-efficient, long lasting PCD and carbide tooling, including countersinks, drills, milling tools and reamers.

"Our highly developed manufacturing systems allow the highly-efficient production of tools to take place. As well as aiding our industry leading lead times, our in-house manufacturing efficiencies enables the delivery of high-quality PCD and carbide tooling at extremely cost-effective prices.

"Exactaform's skilled staff apply their considerable expertise and use state-of-the-art software to design our tools. Although, to further guarantee that our tools deliver superior machining performance, high levels of dimensional accuracy and long-lasting qualities, we also perform exhaustive machining trials. Through the use of our machining trials the effective operation of tools can be monitored and verified. Alternatively, designs can be further developed until optimum levels of performance are achieved.

"To further develop our capabilities in the important area of tooling trials we recently searched for a large, heavy duty CNC rotary table that would provide the high precision 5-axis machining that we need and that could be retrofitted to our DMG MORI DMC 1450 machine tool. After carefully assessing the alternative products from several major manufacturers, we came to the conclusion that an advanced rotary table from pl Lehmann best matched our demanding needs.

Martyn Biddle continues: "The knowledgeable technical staff of pl Lehmann quickly understood our needs and suggested a T1-520530 TOP3 model, the largest 5th axis rotary table in the company's range. As we were aware of pl Lehmann's excellent reputation and as the T1-520530 TOP3 ticked all of our boxes, we were happy to place an order.

"Following the trouble-free fitting into our DMG MORI DMC and integration into the machine's Siemens controller, our new rotary table soon began to deliver the levels of performance we were promised. The 5th axis provided by our pl Lehmann rotary table and its impressive speed and precision are now making significant contributions to our tooling machining trials."

pL Lehmann has been at the forefront of the design and manufacture of high-quality, durable rotary tables for over four decades. The Swiss company's expertise is reflected in the premium quality of its products. To help reduce the required part count across the company's comprehensive range and to

enable the availability of Swiss Quality CNC rotary tables at a cost-effective price, pL Lehmann rotary tables are constructed on an advanced modular design concept. This highly efficient arrangement enables a wide range of first-class, cost-effective options to be made available that are able to meet customers' various machining needs and budgets.

Pl Lehmann CNC rotary tables are divided into geared and direct drive rotary versions and offer great flexibility. The company's powerful designs offer many useful features, such as a built-in booster for spindle clamping, an internal monitoring system of all important functions and Bluetooth access for remote service. Its product line also offers a wide range of workpiece clamping possibilities, including options for fully automatic loading and unloading by robots.

The T1-520530 TOP3 model, as installed in Exactaform's DMG MORI DMC 1450 machine, is pl Lehmann's largest available CNC, 5th axis rotary table and is able to accommodate workpieces of up to 600 mm diameter and weighing up to 200 kg. Despite the rotary table's generous capacity, its clever design means that it occupies a relatively small space within the

machine tool. Given the demanding machining applications it is designed to undertake, the robust rotary table boasts high clamping forces of 2000 Nm rotating/ 7000 Nm tilting.

Aiding machining efficiency, the T1-520530 TOP3 provides 50 rpm rotating and 25 rpm tilting speeds. The advanced pl Lehmann rotary table is lifetime pre-loaded, adjustable and backlash free and delivers impressive accuracy and repeatability figures of 12 arc sec. and 2 arc sec respectively.

The machining of complex workpiece geometries requires robust, flexible workpiece clamping and rapid, precise compound movements within the machine tool compartment. Throughout the world and across multiple machine tools and challenging applications, pL Lehmann CNC rotary table's deliver all of these needs. Now used on more than 40 different machine tool brands and on over 160 different machine models, the scope of pL Lehmann's range means that optimal solutions can be supplied to the vast majority of machining applications. The company's products can be fitted to new machine tools or retrofitted to existing machines. In addition, the flexible rotary tables allow trouble free Integration into all known CNC control systems, including Fanuc, Siemens, Heidenhain, Haas, Winmax, Mitsubishi, Brother and Mazatrol.

pL Lehmann
Tel: 0121 368 0843
https://www.lehmann-rotary-tables.com/en/home

The invisible force in workpiece handling

SCHUNK magnetic grippers offer a vast array of advantages including minimal interfering contour, short cycle times and high energy efficiency. They handle ferromagnetic parts reliably over the long term and leave no traces. Two new variants now provide even more design freedom for robotic applications.

Not everyone knows them yet: the EMH electro permanent magnet grippers from SCHUNK. They combine the strengths of magnetic technology with the benefits of 24 V technology. As the electronic system is completely installed in the gripper and it is actuated extremely easily via the digital I/O, the components require neither space in the control cabinet nor an external electronic open loop control system. This saves costs and minimises the wiring and commissioning effort. For years now, these grippers have been used in the automotive industry, aerospace technology, or the machine tool sector, among others. They are reliable partners when it comes to gripping ferromagnetic components and small components.

Flexible handling in any position

SCHUNK is now complementing its magnetic gripper portfolio with new variants. The double-pole EMH-DP and the four-pole EMH-MP are being added to the family which includes the single-pole EMH-RP. They are all space-saving and cost-efficient, but each variant also has its own special strengths. The single-pole EMH-RP grips flat and round parts with equal reliability and repeatability. Featuring a pole quartet, the EMH-MP is the tool of choice for handling sheet material among other things. Its digital four-stage gripping force control allows even very thin steel sheets to be separated. The double-pole EMH-DP really demonstrates its strengths in bin picking, which involves the gripping of jumbled parts. Its sides are magnetic too, allowing it to also grip small components that are tightly sandwiched between the gripper and the chute wall. The range of parts can be further expanded via standard pole extensions. Since magnetic gripping is generally performed from above, users always benefit from the minimal interfering contour of the grippers. This is particularly attractive in the field of e-mobility. There, for example, battery cells often have to be placed close together to fill battery packs or trays.

A safe hold even in emergency stop situations

Available in different sizes, the EMH grippers cover an enormous range of workpiece weights from 3.5 kg up to 175 kg. The workpiece is always held safely by the grippers' mode of operation, which is based on a combination of electric and permanent magnets and reliably maintains the magnetic flux even when deactivated. A short electrical current pulse is only required to activate and deactivate the system, meaning that the gripping force is not compromised even in the event of a power failure.

Components are simply gripped from above. The gripping force can be adjusted in four stages

At a time when companies are paying more and more attention to their energy footprint, the magnetic grippers are also a real plus in terms of efficiency. They are powered by economical 24V electronics that are installed directly in the gripper and are easy to connect. It is also these electronics that report the magnetisation status back to the user and indicate via an LED display whether a workpiece is present. At the SCHUNK CoLab robot application centre, interested parties can have their application validated by experienced engineers.

SCHUNK develops, manufactures and optimises powerful, economical products and solutions for the machine and machine room that are tailored to the individual needs of each customer and application. The standard of its work raises the bar for such products and sets new benchmarks in the ongoing development of clamping technology. It has been doing so for more than 50 years.

SCHUNK Intec Ltd
Tel: 01908 611127
Email: info@gb.schunk.com
www.schunk.com

Gripping battery cells quickly and reliably, among other things: the magnetisation time of the SCHUNK EMH, shown here in the single-pole variant, is a mere 200 ms

OK-VISE workholding clamps and accessories

OK-VISE® is a well-recognised international trademark, best known as an original inventor and manufacturer of the wedge-operated low-profile clamps. Today, its fixturing concept includes several systems which enable customers to build fixturing with ease.

OK-VISE products are used in workholding, especially in fixtures used in machining centres and milling machines. With OK-VISE components a variety of workpiece types, sizes and materials can be securely held on all possible workholding platforms.

Low-profile clamps

Olli Kytölä's original invention is still at the core of the OK-VISE product range. This unique workholding solution is designed to meet the demands of the modern metalworking, plastics, aerospace and electronics industries. It is known to be small in size but giant in terms of its performance.

Generic Purpose system

OK-VISE's Generic Purpose workholding system adapts easily to various workpiece sizes, and the components of these systems can be reused and reconfigured easily for a variety of applications and workpieces.

Dedicated fixturing

OK-VISE's Blank system is a system for building dedicated fixturing. Normally only one setup of one workpiece can be clamped with these fixtures. This is typical in high-volume production or when special optimisation of the fixture is needed.

Automated clamping

As the original inventor of the wedge-operated low-profile clamp, OK-VISE has introduced hydraulic actuators that are optimised to utilise the well-known properties of the OK-VISE clamp: extreme clamping force in a small space combined with the accuracy of the clamping force.

As an integral part of the OK-VISE fixturing concept, hydraulic actuators can be used to build truly modular fixtures. Hydraulic clamping can be used in combination with automated or manual workpiece loading, vertical or horizontal machining centres and 5-axis machines and live systems or decoupled system.

OK-VISE is continuously developing new automated modules for robotic loading and also for manually operated systems where automation saves operator's loading time and improves ergonomics.

OK-VISE Oy
Email: ok-vise@ok-vise.com
www.ok-vise.com

Kurt Workholding sets up new robot-fed turning centre for the Kurt Hydraulics division

Kurt Hydraulics in Nebraska, USA is set to get a production boost from a new Doosan 2100A 2-axis horizontal turning centre and a Techman TM12 collaborative robot. The machining centre is designed to machine and sort multiple coupling variations with minimal tending. Kurt Workholding applied the talents of its engineers and robot programmers on this new installation with several more similar units to follow.

Why automation?

With demands on capacity and production speed at an all-time high, it's been necessary to introduce more automation wherever it makes sense. Kurt's Workholding division has rapidly increased automation to boost production and to eliminate repetitive lifts and other physically demanding tasks that increase wear and tear on the workforce. Consequently, the employee knowledge base continues to grow with engineers and programmers capable of designing, building and installing complex systems.

The team

Kurt Workholding's in-house expertise in robotic loading and unloading and round-the-clock operation is contributing to the success of the Kurt Hydraulics division. The multi-disciplinary robotic-automation team for this project included: Connor Rose, lathe-side programming, Matt Ruud, mechanical design for the project, Andrew Porter, electrical engineer for the electronics and communication for the new station and Igor Tretyak, robot programming. This main group was augmented by a handful of others at the workholding division as needed.

Working with a new machine and robot

Initially, the biggest challenge for the team was working with a new robot and machine they hadn't interfaced together in the past. "We pretty much learned a new robot from scratch," says Igor Tretyak. "There were some communications protocols that required a PLC to relay information between the machine and the robot. Andrew Porter was instrumental in figuring all that out. The advantage of getting through this first machine is that several more similar systems are in the works for the Hydraulics division."

What's the part and process?

The new machining centre will increase production in the hydraulics facility in Lyman, Nebraska adding unattended-machine operation and lights-out capabilities to the coupling production line. The new setup performs secondary machining on a coupling blank that's been turned from hexagonal bar stock with one of its many screw machines. The blanks are sorted in a bowl feeder and lined up and robot fed into the Doosan lathe for a 1-minute operation that cuts threads and bores the coupling. The system is designed to machine up to 30 different coupling variations.

"One of the nice features of this system is that it's designed to automatically run and sort different part designs," said Tretyak. "This will allow different quantities of different parts to run without operator input. For example, the system can be programmed to produce 15 of part style A, 50 of B, 72 of C and so on without intervention as one style is complete. The communication between machine and robot will separate each style into a different bin."

Founded in 1946 in Minneapolis, Minnesota, USA, Kurt helps businesses succeed through best-quality contract machining, aluminum die casting, screw machining and custom product solutions. Kurt's engineering expertise and legacy of excellence come together to produce best-in-class products.

Kurt Workholding
Tel: 001 877 226 7823
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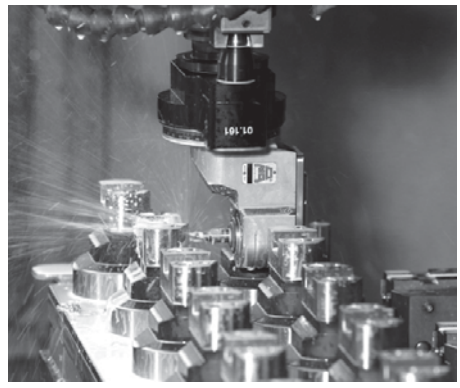
The ultimate heavy duty angle head



Since YMT's inception in 1981, the company's profound understanding of machining applications has allowed it to source an unmatched range of cost-effective equipment that enables machine tools to realise their full productive potential. Rather than being an added cost, the efficiencies made possible by YMT's tooling division provides users with rapid ROI's and improved profits. A perfect example of YMT's range is the popular OMG products.

With over 50 years of experience within the global machine tool business, OMG has developed high levels of expertise in the design and manufacture of high-quality tapping spindles, multi spindle heads and spindle speed increasers. The company boasts a comprehensive series of robust, high quality angle heads that cover a wide range of application.

The OMG TA range

The comprehensive OMG TA range is now regarded as the ultimate heavy duty angle head series by users throughout the world. Whether a requirement is for higher spindle speeds or to machine components at various angles, OMG's high-quality TA spindles are able to increase machining capabilities and to boost efficiencies. The use of OMG's TA Angle Heads allows users to release the full latent potential of their machine tools, to broaden the scope of the work they undertake and to enter new markets.

Recognising the need for high levels of adaptability, complementing its application specific range of TA Angle Heads, OMG has developed an advanced modular TA Angle Head system that allows users to achieve cost reductions and to increase profits. Also, on the rare occasion that a product from OMG's standard TA Angle Head range will not meet a customer's specific requirements, the company is able to design and manufacture special angle heads to satisfy the most challenging of applications.

All OMG TA Angle Heads are supplied with an internal channel coolant system. OMG TA Angle Heads' standard torque arms allows the head to be changed automatically. The coupling system between the conical pin, which can be axially adjusted, with the "V"-housing of the stop-block, allows the closing of the space between the parts. This results in a rigid, backlash free system that delivers maintenance savings, in addition to extending both tool life and bearings life.

Also available, for maximum stability, are the OMG TriBlock and QuadBlock torque arm systems, each with an adjustable pin.

YMT Ltd
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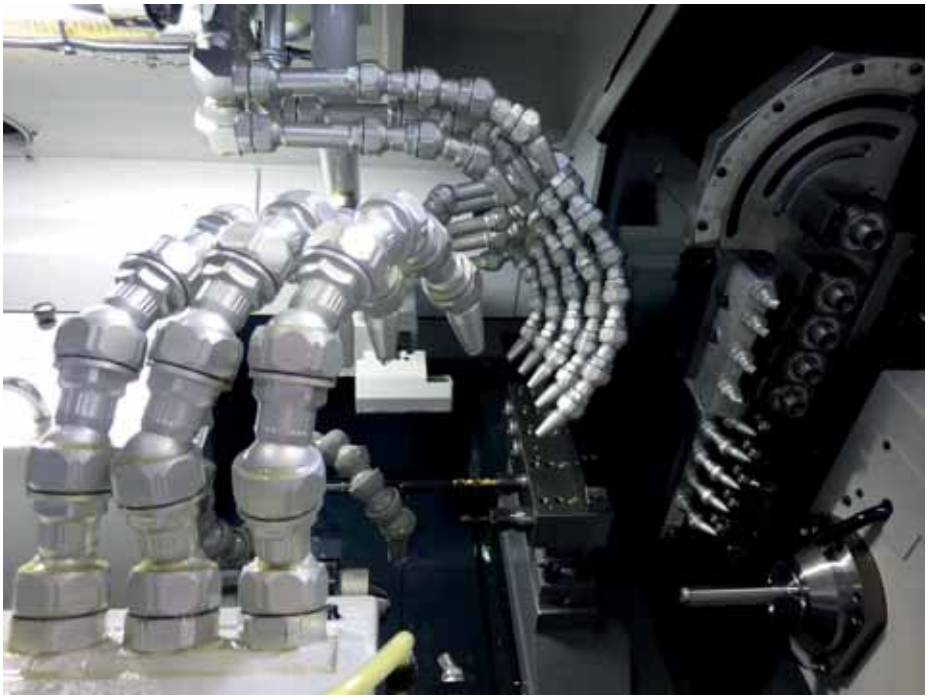
Email: sales@ymtltd.co.uk
www.ymtltd.co.uk

Piranha range from Leader takes a bite out of product inefficiency

Workholding and manufacturing ancillary specialist Leader Chuck International includes the Piranha Clamp range of high precision centring vices in its extensive product portfolio. The 100 percent Swiss manufactured range offers several performance advantages for machine shops using prismatic machining techniques.

It is no coincidence that the vice range is called Piranha, named after a fish that has a reputation for a strong bite and, relative to body mass, achieves one of the most forceful bites measured in all vertebrates. In place of the usual dovetail guides found on many vices the Piranha features parallel, twin cylindrical jaw guides that ensure high precision and an unbeatable clamping force. Designed to act much like a hydraulic press, the hardened and specially coated spindle guides provide an increased surface area for load distribution, while the drive spindle has been tested to withstand torque levels above 1,300 Nm.



This capability supports high pressure workpiece clamping with a minimal depth of just 3 mm, so raw material waste is kept to a minimum. The nature of the twin guide design results in an open construction for easy chip evacuation, with any swarf flushed away by the coolant and an extremely low construction height that makes the most of any machining centre's working envelope. The very low built-in zero-point clamping system on the base of the product also provides the optimum interface with the machine tool's worktable and achieves a repeatable loading accuracy of 0.01 mm as standard. However, the quick-change location system can be specified to fit any existing manufacturers' zero-point design with adapter plates making the vices totally interchangeable.

Two base sizes are available: the Piranha Clamp 170 is 170 mm long by 90 mm wide, while the larger Piranha Clamp 300 is 300 mm long by 120 mm wide. The base can be specified with changeable top jaws where a patented quick-change system for the jaws uses an eccentric 'cam' pin to support production efficiencies. Within just a few seconds, a wide range of different standard or pre-machined clamping jaws can be quickly and accurately exchanged. These include aluminium and steel 'soft' jaws, that can be machined to profiles that match the workpiece, as well as straight and serrated 'Snapper' jaws designed to secure raw billet materials.

Alternatively, the vice can be specified in 'Snapper' format, where the base is fitted with serrated jaws as standard. The two rows of teeth on the Snapper jaw face effectively 'bites' into the raw material, pulling it down with the bottom row of teeth and providing an extremely secure hold with the upper row for aggressive machining applications. With the Snapper jaws, the raw material does not require pre-stamping, saving time on every workpiece machined, the initial capital expense of purchasing the necessary hardware to perform the stamping operation and the on-going regular expense of sending the stamping dies back to the vice manufacturer for regrinding.

Managing director, Mark Jones says: "Designed for the efficient processing of prismatic components or billet raw material, especially using simultaneous 5-axis machining techniques or aggressive raw material removal toolpaths, the Piranha Clamp range of centring vices with Snapper

or changeable jaws can improve the precision and productivity of almost any machine shop. The clamping forces achieved are phenomenal and, as you would expect from a Swiss manufacturer, the quality and precision is class leading. Tested against established vices that use pre-stamped raw material, at the same clamping pressure the deflection measured in the Piranha range is just one-tenth of that measured in the competitor's vices. This makes the vice more accurate for both first operations and more repeatable for second operation work."

Leader offers rapid change results with MicroCentric

Available from exclusive UK and Eire agent, Leader Chuck Systems, the MicroCentric KSF RC high-precision power chucks offer machine shops a number of advantages. Available in two diameters, the chucks feature MicroCentric's patented rapid change jaw system that can reduce changeover times on CNC lathes and turning centres to an absolute minimum.

The KSF-08/RC is a 210 mm diameter chuck with a 66 mm through hole while the larger KSF-10/RC is 254 mm diameter with an 82 mm through bore. Both are rated up to 5,000 rpm and can be specified with A2-5, A2-6 or A2-8 spindle mounting plates.

Featuring a boltless design, the rapid change jaws on the KSF range offers a full jaw area for clamping. Supplied soft as standard, with hard jaws available as an option, they can be exchanged in seconds but remain precise. The KSF chucks have a repeating accuracy of 0.0025 mm, such that when top jaws are finished machined on the chuck, MicroCentric guarantee that parts will run within 2.5 micron radial and lateral TIR if the top jaws are not removed from the chuck. After machined top jaws are removed and then replaced onto the same base jaw they were machined on, a maximum runout of 0.025 mm TIR is guaranteed. A graduated scale engraved into the master jaw facilitates quick precise positioning of the top jaws during changeover.

If a higher level of accuracy is required after top jaws are changed, the radial runout of KSF chucks can be adjusted. Since the spindle adapter mounts to the spindle nose and the chuck then mounts to the adapter plate, the radial runout of the clamped part can be corrected to between 10 and 20 micron by a unique MircoCentric feature.

The chucks feature four radial adjusting screws on the outer diameter of the chuck body to achieve this and once the runout of the part has been adjusted the repeatability of the chuck is assured for subsequently clamped parts.

Precision fit master jaws minimise lift with a wedge design securely pulling the jaw down onto precision serrations. Pitched at 1.5 mm the serrations aid the extremely quick location of each of the three jaws while hardened chuck bodies, actuators and master jaws ensure long-term accuracy and performance.

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Norgren's Adaptix Soft Jaw makes its UK debut

Norgren presented Adaptix™ Soft Jaw, its unique universal soft jaw solution, for the first time in the UK at MACH 2022 in April.

Offering the same robustness as a traditional aluminium soft jaw, Adaptix Soft Jaw adapts to flat and unique part geometries to provide the necessary forces to hold the workpiece securely. Its ease of configuration and interchangeable pin tips, mean machine operators can radically reduce setup and changeover times and their associated labour costs.

As well as the opportunity to investigate the revolutionary Adaptix Soft Jaw solution in action, visitors to the Norgren stand were also able to see the wide range of supporting system components such as tips and stud, which enable the soft jaw to adapt clamping forces and grip dependent on the material.

Norgren's team of expert application engineers were on-hand to answer technical questions, as well as demonstrate its bespoke ROI online tool which can calculate an instant return on investment for Adaptix Soft Jaw compared to traditional soft jaw solutions.

Senior director for Growth Initiatives at Norgren, Tom Wood says: "We were delighted to unveil Norgren's unique Adaptix Soft Jaw to the UK market at MACH. It is the first universal soft/vice jaw solution that offers the same high force, repeatability and unbeatable accuracy as a traditional aluminium soft jaw yet can adapt to most part shapes.

"It delivers game-changing time and cost saving benefits for the CNC market by eliminating the need for an extensive soft jaw inventory and the provision of ultra-quick new part shape adjustment to aid production efficiency objectives. With built-in flexibility thanks to an array of interchangeable pin tips and a guaranteed performance level for clamping forces, users can add it to their tool portfolio with confidence."

To support Adaptix Soft Jaw, Norgren has developed an in-depth white paper specifically for the machinery market, outlining the solution's impressive features, together with the tangible benefits machine operators can realise with it.

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VERICUT and AML join forces to simplify complex machining demands

After a decade of using VERICUT machine simulation, verification and optimisation software, Advanced Manufacturing (Sheffield) Ltd (AML) is extolling the virtues of providing industry-leading protection for its high-value capital assets and expensive parts. VERICUT from CGTech is a key component of business success at this rapidly expanding precision machining company, which serves a plethora of customers in sectors such as aerospace, energy and defence. More recently, AML has embraced the efficiency and productivity gains offered by VERICUT's Force™ module, which is driving tool life gains and cycle time reductions in the order of 30-40 percent.

Originally a spin-off from the award-winning Advanced Manufacturing Research Centre (AMRC) at the University of Sheffield, AML is today a recognised leader in delivering flexible manufacturing capability at the leading edge of machining technologies and efficiencies. The company is AS9100-certified and carries a Rolls-Royce Certificate of Approval. In addition, AML is part of the SC21 framework for '21st Century supply chains' to accelerate the competitiveness of aerospace and defence companies.

To manufacture the market's highest quality precision parts, the company utilises the very latest technologies, including VERICUT simulation, verification and optimisation software from CGTech.

"We've had VERICUT from day one of manufacturing at AML, which dates back around a decade," explains engineering manager Jason Mills. "VERICUT is our safety net; it looks after our complex components, some of which are machined from expensive

forgings that cost in excess of £50,000 before we've even drilled a hole. There is no margin for error. We use all of the features in VERICUT, including gouge detection, collision detection and, more recently, the FORCE module. The software also looks after our machine tools through virtual simulations, which are critical because a replacement spindle could cost around £40,000 for the hardware alone."

From receipt or generation of customer CAD, forging and stage models, AML engineers start building up what it calls the 'Tech Pack' from its Siemens NX CAM system, including documentation and any relevant paperwork. The company will then start importing the component, fixture and tool models into VERICUT. Here, AML can take advantage of its VERICUT NX Interface, a function that provides an easy and convenient way to verify, optimise and analyse individual NC programs, a series of selected tool paths or a complete sequence of operations, directly from within Siemens NX.

"We then start simulating the tool paths, checking for everything that could possibly go wrong, from collisions and near misses, to spindles running in the wrong direction." explains Jason Mills.

AML has seven seats of VERICUT base and essential modules that include Verification which detects program mistakes and verifies part accuracy, CNC Machine Simulation which detects collisions and near misses between all components in the machining zone and Multi-Axis which simulates multi-axis milling, turning and mill-turn operations.

The latter is vital as AML has 15 DMG MORI CNC machine tools on site, almost all of which are high-specification, multi-axis NT series mill-turn models. These include a large NT6600 with 6-metre bed and the latest arrival, an NT4250 DCG, which is capable of simultaneous 5-axis mill-turn operations with a direct-drive motor installed in the B axis.

"Business is extremely busy, so we also have a DMG MORI DMU 125 FD 5-axis machining centre on order and are looking at two more assets in the near future," says Jason Mills. "We are not shy of investment if it makes sound business sense."

The company also takes advantage of several further VERICUT modules, including AUTO-DIFF™, which compares a CAD design model with a VERICUT simulation to automatically detect differences, weaknesses or mistakes in the design.

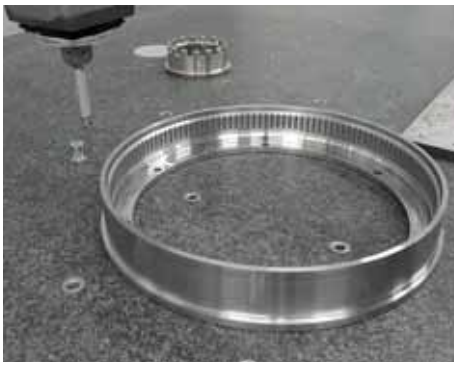
"We use AUTO-DIFF on every component as part of our Standard Operating Procedure [SOP]," states Jason Mills. "With AUTO-DIFF, anyone involved in the manufacturing process can identify an incorrectly processed job. We find that it often flags up errors, especially as we have numerous mill-turn machines. The tools on mill-turn machines can be flipped round either way, so if they are not set up correctly, VERICUT will capture it."

Additional VERICUT modules on site include CNC Machine Probing, which checks for probe collisions and TDM Systems, which provides a live, on-the-fly connection to TDM. The company is now building tools in TDM for direct import into VERICUT.

Most recently, AML has added Force - Milling to its list of modules. VERICUT Force

makes optimising an NC program fast and easy by calculating the contact between the tool and material, cut-by-cut. Force also takes the cutting-tool edge and material into account, adjusting the feed rates accordingly so they are optimal and constant.

"We've seen up to 40 percent more tool life and 30-40 percent savings in machining cycle time when using VERICUT Force," says Jason Mills. "The module is invaluable for our production work as it provides us with a competitive edge. It's quite easy to use and understand. We simply pick the material from the database and input the cutter geometry, which we get from the tooling manufacturer. Force then does its calculations in the background."



AML has come a long way since spinning out of the AMRC and the company remains a tier-two AMRC member to this day.

"We have 30,000 ft^2 here now, which is a tenfold increase in 10 years," explains operations director Mark Hands. "We've gone from eight staff to 66; from two CNC machines to 15 and are imminently about to sanction another two." It is all about continuous improvement at AML, a strategy that is spurring ambitious goals for the years ahead.

"VERICUT brings security to our business," says Mark Hands. "Not just because our parts are expensive, but because some are one-offs with no margin for error. We also rely on VERICUT to protect our CNC machines; large, expensive assets that are costly to repair. If we're not protecting our machines or our parts, then we're not protecting the customer programme, nor the relationship we have with them. Right first time within the business is a must and VERICUT is a vital part of that."

Jason Mills concludes: "I can't ever see us changing from VERICUT. We're comfortable and happy with the software, as well as the level of support we receive from CGTech. Today we apply VERICUT to all of our parts."

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Autodesk and ModuleWorks announce strategic partnership

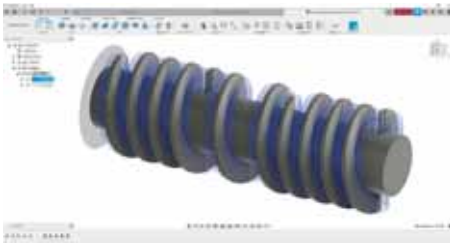
Autodesk and CADCAM software specialist ModuleWorks have announced a long-term partnership. The partnership enables Autodesk to continuously enhance and extend its Fusion 360 software platform with the powerful ModuleWorks toolpath calculation technology.

Fusion 360 is a Cloud-based 3D modelling, CAD, CAM, CAE and PCB software platform that offers unified workflows and a consistent user experience for product design and manufacturing. An integral part of the platform is the software that generates high-performance, collision-free toolpaths for efficient multi-axis milling and turning. The new partnership gives Autodesk ongoing access to the advanced toolpath calculation algorithms developed by the CADCAM specialist ModuleWorks. Integrated seamlessly into Fusion 360, the ModuleWorks components enable Fusion 360 to continuously evolve the performance, quality and functionality of its digital manufacturing workflows while maintaining its familiar user experience.

As Stephen Hooper, VP of design & manufacturing at Autodesk explains: "With the Fusion 360 six–week release cycle and the fast pace of ModuleWorks technology development, this strategic partnership will help us to deliver a continuous flow of new functionality and performance enhancements to our global community of Fusion 360 users. I'm excited to see the impact that the ModuleWorks partnership will undoubtedly have in 2022 and beyond."

Dr Yavuz Murtezaoglu, managing director of ModuleWorks says: "Our software components are designed for fast and seamless integration and it's exciting to see how Autodesk is using our technology to accelerate the development and deployment of innovative machining solutions. We look forward to a successful cooperation and future advances in the technology."

ModuleWorks is a leading software component provider for the digital manufacturing industry. With over 200 employees and 1,000 person-years of software development, ModuleWorks' expertise in toolpath creation and simulation is recognised throughout the industry and its software components are already optimising the performance and



quality of over 500,000 installed seats of CADCAM and CNC software around the world. From standard products to exclusive development projects, ModuleWorks helps companies to bring the vision of Industry 4.0 to life.

Autodesk is changing how the world is designed and made. Its technology spans architecture, engineering, construction, product design, manufacturing, media and entertainment, empowering innovators everywhere to solve challenges big and small.

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FARO launches end-to-end 3D digital reality capture and collaboration platform

Integrated Cloud-based workflow enables easy, fast and accurate 3D model creation

FARO Technologies, Inc., a global leader in 4D digital reality solutions, has announced the launch of an unprecedented, ultra-efficient data capture and collaboration platform. Utilising cutting-edge technology, the platform provides the industry's most efficient Cloud-based workflow combining three innovative new solutions: the FARO Sphere™ digital ecosystem for the most effective exchange of data possible; the FARO Focus Premium Laser Scanner for fast, accurate and complete field capture and the FARO Stream mobile app for real-time data verification.

FARO president and CEO, Michael Burger says: "With FARO Sphere as its backbone, our new end-to-end 3D capture platform provides customers with industry-leading ease-of-use, accuracy and speed.

"Real-time data capture validation and remote collaboration will transform how customers generate, access and utilise 3D data models. For our shareholders, Sphere is expected to generate meaningful high margin Software as a Service (SaaS) recurring revenue over time as customers increasingly realise the benefits of our Cloud-based solution."

The next generation Focus Premium is the fastest, most accurate and best data-sharing-enabled scanner on the market today, featuring entirely new components with a proven design. The new Stream app, which is available for Android and iOS devices, used with the Focus Premium enables on-site scan data validation, preregistration and can be immediately synched to Sphere for registration and collaboration.

Sphere centralises the collection and management of all 3D data projects and can be accessed by global stakeholders through the secure, single point sign-on. Sphere also provides a one-stop user experience across FARO's leading software applications and customer support tools, including HoloBuilder: a global construction progress management solution that delivers hardware agnostic image capture, registration, and viewing targeted to the fast-growing Digital Twin space. Additional workflows that enable customers to realise even greater value will be offered in future Sphere updates.

"Beta customers have found the complete platform solution to dramatically enhance data delivery and analysis, improving their time to decision by up to 50 percent," continues Michael Burger. "We're excited by the initial feedback, which supports our approach of deeply understanding customer needs to transform how they work in a 3D-enabled virtual world."

"We are very excited to see the advances FARO has made," says Travis Voss, leader of innovative technologies at Helm Mechanical, a US construction company. "The combination of the new Focus Scanner, Stream and Sphere and how that all flows together is going to cut our scanning and processing time down by 60 percent easily. This time saving will allow us to examine scanning projects more frequently, scanning projects we normally wouldn't have because of time constraints and expanding our offerings to customers."

FARO serves the 3D metrology, Architecture, Engineering & Construction (AEC), facilities, Operations & Maintenance (O&M) and public safety analytics markets. For over 40 years, it has been a pioneer in bridging the digital and physical worlds through data-driven reliable accuracy, precision and immediacy, providing industry-leading technology solutions that enable customers to measure their world and use that data to make smarter decisions faster.

Dr Simon Raab, FARO co-founder and former CEO, says: "We are thrilled that the innovation of the FARO organisation continues to accelerate and continues to be recognised. This is a direct reflection of our continuing investment in our human intellectual property, as well as our longstanding commitment to move the market forward by delivering not only technology-forward product and solutions, but also in breakthroughs in the man-machine interaction."

Michael Burger concludes: "FARO has always led the way in developing solutions that narrow the gap between the real and virtual worlds. As we increase our focus on Cloud-based software applications, we'll continue to introduce innovations that bring measurable business value to those who work in manufacturing, architecture, engineering and construction and public safety."

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Successful Control exhibition for Bowers Group

Bowers Group is celebrating the success of Control 2022 following a 3-year hiatus due to the COVID pandemic. The team very much enjoyed catching up with contacts old and new, including a number of its valued distributors, at the Stuttgart Exhibition Centre last month.

The company was proud to display a range of connective metrology solutions in Hall 7 and delighted to welcome distributors, customers and valued contacts to the stand. Visitors enjoyed live demonstrations of effective data transfer between measurement equipment and applications, as well as being introduced to Bowers' brand-new digital external micrometer, DigiMic.

Richard Grocott, Bowers export sales director said: "It was great to be back at Control for 2022. Not only has it been a great opportunity to meet many of our distributors face-to-face, we were also delighted with visitors' reactions to the DigiMic and the opportunity to demonstrate how our range of bore gauges, micrometers and indicators can participate in data exchange. The new rotary axis option on the Baty Venture XT was also extremely well received and generated a lot of interest and demonstrations.

It was a pleasure to be able to showcase our extensive selection of bespoke measurement solutions for a variety of gauging applications. Visitors were particularly interested in our application heads which can be fitted directly onto our XT range of digital bore gauges to create a flexible, modular measuring system whether you're measuring threads, grooves, splines, or deep holes."

Bowers provides the widest choice of cost effective, quality measuring instruments currently available. Supplementing its own range of gauges, its sole UK agent status means that it can offer UK customers superior products from many preeminent metrology companies, such as Trimos, Sylvac, Gagemaker and Wyler.

In response to customer demand and as a result of the company's continued investment in cutting-edge technology, it now produces an increasingly comprehensive range of affordable, quality instruments intended for other applications, such as depth and external gauging.

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Laser scanning from Manchester Metrology

When complex or large environments need to be recorded, or small manufactured parts need to be inspected, laser scanning can provide a convenient and cost-effective solution to data collection.

The history of laser scanning dates back to the 1960s. Primitive equipment setups consisted of cameras, projectors and lights. Traditional scanning systems were very time consuming due to heavier user input for data processing. Advancements in laser scanning capabilities later resulted in these basic scanners being replaced with LiDAR systems, high-quality scanners that use laser beams and shadowing to collect data relating to objects and surfaces.

In present day we have modern laser scanners and structured light scanners, with the ability to collect dense point cloud data. Modern software allows for the generation of mesh models to view in 3D instantly.

Laser scanning systems emit light, which then bounces off surfaces and reflects back to the sensor on the scanner. The sensor can then determine how far away the surface is by measuring the time taken for the light beam to complete its journey. This process is known as the "time of flight" measurement. The distance measured is then used to calculate a coordinate for each of the millions of points samples by the light. All of this occurs in just seconds, and during a single scan, a laser scanner will accumulate millions of 3D coordinates.

Modern laser scanning has significantly transformed the 3D scanning world. Laser scanners speed up reverse engineering exponentially, providing reference data for CAD design. Outside of design through reverse engineering, laser scanning is often used in metrology and inspection. By using 3D scan data along nominal CAD data, laser

scanning provides a post-production non-contact method for inspection. 3D scan data is often used to perform CFD, CAE, FEA and other engineering analysis, often to see how modifications have affected designs. Thanks to the efficiency of laser scanning, time, money and materials are significantly reduced.

Manchester Metrology has a range of laser scanners available for hire or purchase.

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Saws UK wins exclusive contract to sell Meber Saws in the UK

Saws UK has announced a partnership with Italian machine manufacturer Meber to distribute its industrial cutting products in the UK

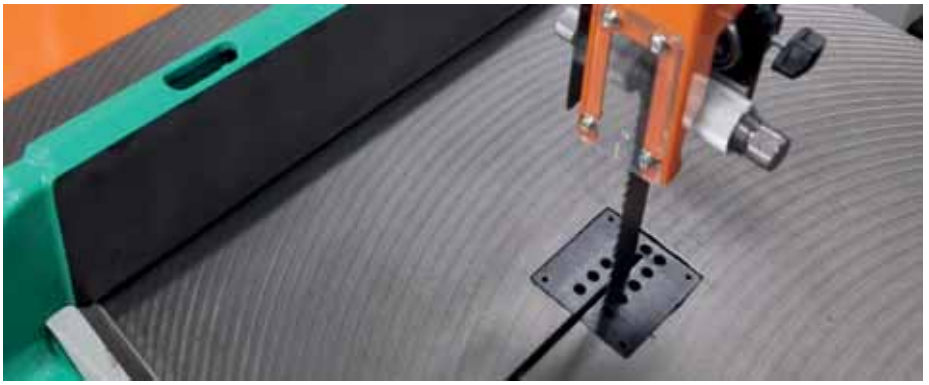
The 60-year-old family-run company manufactures an impressive range of wood, steel, aluminium, cast iron and plastic cutting bandsaw machines, creating customised machinery in order to cut materials requested by customers.

According to the company itself, investing in a Meber product guarantees you'll have a product that will last a very long time, thanks to its robust design, reliability and how expertly it has been assembled by skilled tradesmen. Saws UK is pleased to be the only company in the UK to supply Meber products to the UK market. As a result, it is looking forward to a productive business relationship. In fact, the first delivery of Meber machines have already arrived and can be seen on the shop floor of its Crowborough showroom in East Sussex.

In terms of products, Meber offers a range of manual and semi-automatic machines, including double mitre fully-automatic CNC machines. The type of companies who can benefit from them vary, from one-man workshops and small steel fabrication companies, to steel stockholders and large industrial environments, such as the automotive industry and other heavy industries, as well as production engineering firms.

Meber can also manufacture customised in-feed and out-feed material handling systems. These are equipped with different material end stops to suit individual company requirements. Saws UK can offer a very short lead time to produce and deliver the majority of items in the impressive Meber range.

In addition to Meber, other big saw manufacturers that Saws UK stock include: Alligator, DoAll, Carif, ACM Italy, Macc, TMJ, Bonetti, Opus, Forestor Sawmills and Startrite bandsaws. It also has its own new range of Education Sector Bandsaws.



New range of education bandsaws

The new range of education bandsaws have been designed with children and young people in mind and configured for use in a training environment. The education range include enhanced safety features, with key-locked security on the doors and isolators and emergency stop buttons.

Saws UK is the exclusive supplier of Meber Bandsaws in the UK and these are a great choice for schools and colleges. All the machines are delivered assembled, with the right bi-metal blade in place. They feature a cast-iron bandwheel which is balanced so the machine won't shake at high speed and yet these bandsaws are still fast enough for perfect cutting of plastic, woods and hardwoods.

The education range features a key system so only the authorised keyholder can use it, as well as emergency stop and kickstop buttons which will stop the machine within ten seconds. An additional safety features is that as soon as the guard is opened the machine will also stop within ten seconds as well.

As Saws UK provides a fully built machine, it is extremely easy to get the machine running. These bandsaws also come with a pushing stick, a size guide fence for cutting straight and nozzles for dust extraction. The machinery complies with all current safety standards and is comfortable to operate. The sawblade and all moving parts are protected while the electric installations are certified to ISO 9000 – EN 29000 standard. All machinery is tested to comply with European standard noise levels and sawdust emission.

For technical advice on the use of any of the Meber range, give the Saws UK team a ring on 01892 663398.

Saws UK Ltd was founded in 1987 and today it supplies a range of bandsaw machines to suit most customer requirements. It can design or adapt machines for special applications. If you need advice, spare parts, bandsaws, blades, or a service, the company will be able to assist you.

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Simonds Saw introduces new bandsaw blade range

Simonds Saw, a US-based saw blade and file product manufacturer, has launched a new range of innovative bi-metal bandsaw blades. This newly-configured range of bi-metal blades raises the global performance standard in all metal cutting market segments and is a notable overhaul to the company's bi-metal cutting product offerings.

Multiple rounds of testing, prototyping and optimisation with professionals in the field led Simonds Saw to develop four new bandsaw blades all of which are high-performing across various functions. This new, innovative product range excels at general purpose cutting, production cutting, cutting of structural steel and cutting of tough exotic alloys.

"We fully expect our new product line of bi-metal bandsaw blades to have a global impact on the metal cutting industry," says Simonds Saw president David Miles. "We're excited for loyal bandsaw users all over the world to put these new products to good use. Whether they're cutting structural steel in the USA or cutting titanium in Shanghai, China, we now have the optimal bandsaw blade to maximise uptime and materials in any application."

Simonds Saw has now stopped production of Dieband, Broadband, Blockbuster, IC Enduro, and X51 in favour of new innovations. However, they may still be available while stocks last. Dieband, Broadband and Blockbuster, Simonds' current general purpose bandsaw blades, will be phased out in favour of Epic® GP.

Broadband and IC Enduro, Simonds' other existing general purpose bandsaw blades, will be phased out in favour of SBX GP. X51, the existing Simonds product for production cutting of tough steel and high-nickel alloys, will be phased out in favour of SiClone® XP.

After extensive field testing, the existing Simonds' SiClone bandsaw blade was determined to be high performing in its current state and so stands prepared to meet the next generation of metal cutting needs. The highly-specialised range of bi-metal bandsaw blades has been developed to meet the demands of any metal cutting application.

Addison Saws is the UK's exclusive Simonds retailer, with the full range available directly from it and its network of nationwide dealers. All bandsaw blades are hand-welded on site and to order, with many available for next day delivery or collection from its Stourbridge site.

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In a class of its own

The new HBE320-523GA automatic mitre-cutting bandsawing machine from Behringer

Opening up new fields of business, extending the performance spectrum or replacing an old machine; these are among the most frequent reasons given by users for investing in an up to date, more efficient mitre sawing machine. With the latest automatic machine from its HBE series, Behringer has come up with the perfect way of combining the benefits of modern high-performance machines for one-off sawing tasks with the solid, tried and tested characteristics of a classical mitre saw.

"We deliberately integrated various features from our Behringer high-end models into this machine, raising the HBE HBE320-523GA into a class of its own," says the company's CEO Christian Behringer with confidence. High cutting outputs, simple handling and precise angular cuts are among the key attributes of the new Behringer mitre-cutting bandsaw HBE320-523GA.

With its extensive application spectrum, it reliably covers the wide-ranging requirements of the steel construction sector and the steel trade. Potential users also include medium-sized operations in which the new automatic HBE is required to run unmanned for part of the time.

Christian Behringer explains: "Process reliability and speed play a decisive role here. The machine must be capable of sawing a wide range of different materials rapidly and neatly." With a cutting range in flat materials of 520 x 320 mm, bilateral mitre cuts of 45° and up to 30° on the left, this machine is the perfect all-rounder for all kinds of sawing operations.

"For reasons of cost and flexibility, profiles are generally purchased in starting lengths of up to 12 m and then sawn to size," Christian Behringer adds.

The new mitre cutting bandsaw is easily able to cope with both structural steels and stainless-steel profiles.

In design terms, the new mitre saw has many features in common with the HBE Dynamic series, which has already proved a resounding success. The guidance system in its torsionally rigid gantry design and the bilateral band wheel bearings ensure quiet running and precise cuts. The band guiding components are made of vibration-damping grey cast iron, which has a highly positive impact on the quality of the cut surface, but also makes for a longer blade life. Electrically powered chip brushes clean the saw blade of adhering chips synchronously with the saw drive system, an added bonus in terms of process reliability.

The inclined position of the band wheels helps prolong the life of bandsaw blades by reducing fatigue due to cyclical bending. A fully automatic height adjustment facility for the saw frame and lowering of the saw when in rapid traverse help cut non-productive time to a minimum.

The inclined position of the bandsaw blade allows components such as girders, angled steel and U profiles as well as hollow rectangular profiles to be sawn at higher speed and with less burr.

The sawing unit is mounted for easy turning in generously dimensioned axial roller bearings and can be swivelled with a simple manual action. The closed material table simplifies material handling directly at the cutting point. The machine comes with a microspraying system as standard.

The machine can be supplemented as required with infeed and discharge roller conveyors, measuring devices and cross conveying systems, as well as NC angular adjustment. Behringer GmbH supplies these highly process-reliable customised transport solutions from its own in-house steel production facilities.

The Behringer Group is a manufacturer of high-performance bandsawing machines, circular cold saws and structural fabricating equipment. Operating as Behringer Ltd., the UK operation is located in Pitstone, Bedfordshire and is a subsidiary of the parent company Behringer Gmbh, in Kirchardt, Germany.

Behringer prides itself on building the highest quality metal sawing and fabricating equipment in the world. Its primary goal is to create value for customers, by continuously striving to achieve the highest combination of speed and accuracy, combined with cost-effectiveness.

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The blade that lives up to its name

Established in Jedburgh, Scotland in 1958, Starrett is proud to supply manufacturers and tradesmen who rely on the industry's best tools, those of the highest standard of precision and quality.

The most demanding craftsmen and professionals know that the Starrett name on a saw blade, professional knife, hand, or measuring tool means quality, exceptional service and expert technical assistance. With strict quality control, state-of-the-art equipment and an ongoing commitment to R&D, the 5,000+ products in today's Starrett line continue to be some of the most accurate, robust and durable tools available.

Its customers are the basis of its success. That is why Starrett values the quality of its service, constantly seeking to solve customer's problems by finding the best solutions to meet their needs. It has thousands of customers worldwide and each one of them is a fundamental part of its history.

The Intenss from Starrett is a general purpose bi-metal blade for none high-production applications cutting small

to medium solids, structurals and pipes. With strong high-speed steel teeth with a zero-degree rake angle to the tips, this versatile blade delivers a clean cut to a wide variety of materials such as sheet steel, carbon solid steels and profiles, aluminium, copper, brass and cast iron. It is ideal for the maintenance, repair and overhaul market, workshops, tool rooms and small machine shops with basic manual, vertical or conventional gravitational fed machines.

Also in the range, the Intenss PRO is a specialist blade with the ability to cut a huge range of solid steels including carbon steel, steel alloys, stainless steel and non-ferrous metals repetitively, even bundles, with a high production performance. The unique tooth geometry provides intense production capabilities, faster straighter cuts with a high quality finish.

Depending on the material that you will be cutting, choose the recommended speed m/minute and select the feed rate to use and Intenss Pro will deliver excellent productivity.

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ESAB launches new line of B2 filler metals for welding alloyed steels

With the introduction of its B2 SC electrodes and fluxes for SMAW, GTAW and SAW of creep resistant, 1.25 percent Cr, 0.5 percent Mo alloyed steels, SA-387 Grade 1, ASTM A335 Grade P11 and similar materials, ESAB Corporation now offers a completely modernised line of filler metal formulations for chrome-molybdenum weldments in the refinery, petrochemical, power generation and pressure vessel applications. ESAB launched a line of B3 SC filler metals last year.

"ESAB B2 SC and B3 SC filler metals have very strict control of chemistry and very low levels of impurity elements. Weldments have an X-bar, or Bruscato Factor, of maximum 10 to reduce susceptibility to temper embrittlement." says Markus Gustafsson, R&D filler metal manager for ESAB. "These new filler metals meet the demanding requirements for chemical properties and offer high toughness in the post-weld heat treated conditions, as well as after step cooling treatment. The weld metal is also designed for increased rupture resistance at high service temperatures."

The Bruscato Factor, X-bar, is a compositional formula X-bar = (10P + 5Sb + 4Sn + As)/100 (values in ppm)) to evaluate the materials susceptibility to temper embrittlement, with lower numbers indicating better resistance. ESAB's previous B2 and B3 electrodes and fluxes had a maximum X-bar of 15. All current B2 SC and B3 SC have an X-bar of maximum 10, with a nominal value of around seven for SMAW, GTAW and SAW weld metals to provide an important margin when meeting end-user requirements.

"To help our customers choose the correct filler metal and flux and ensure compliance to weld procedure specifications, data sheets for ESAB B2 SC and B3 SC products provide the chemical composition, X-bar data and mechanical properties in standard and industry applied post-weld heat treated conditions," explains Markus Gustafsson.

ESAB's new B2 SC filler metals for SMAW, GTAW and SAW of creep resistant Grade P11 Cr-Mo alloys feature modernised formulations designed for applications that require high toughness values

The new filler materials

GTAW rods: OK Tigrod B2 SC, SFA/AWS A5.28 ER80S-B2, EN ISO 21952-A: W Z CrMo1Si, EN ISO 21952-B: W 55 I1 1C1M. They are available in diameters from 1.6 to 3.2 mm and cut lengths of 1,000 mm.

SMAW electrodes: OK B2 SC, SFA/AWS A5.5 E8018-B2-H4R, EN ISO 3580-A: E CrMo1B 42 H5. They are available in diameters from 2.5 to 5.0 mm. These electrodes offer outstanding arc stability and slag detachability with almost no spatter.

SAW:

Wires: OK Autrod B2 SC, SFA/AWS A5.23 EB2R, EN ISO 24598-A: S S CrMo1. They are available in diameters from 2.0 to 4.0 mm and come in 30 kg wire baskets or 280 kg BigDrums.

Flux: OK Flux 10.66, EN ISO 14174: S A FB 1 55 AC H5. This flux offers excellent weldability, even in advanced narrow gap joints, with smooth wetting to the side wall and excellent slag detachability.

Weld metal: The flux wire combination OK Flux 10.66 + OK Autrod B2 SC is classified to SFA/AWS A5.23 F8P4-EB2R-B2R and EN ISO 24598-A: S S CrMo1 FB.

For welding Cr-Mo applications that do not require an X-bar factor of maximum 10, ESAB offers Dual Shield CrMo1, a rutile FCAW electrode, SFA/AWS A5.29 E81T1-B2M, EN ISO 17634-A: T CrMo1 P M2 H5 and OK AristoRod 13.16 and a GMAW wire, SFA/AWS A5.28 ER80S-B2, EN ISO 21952-A: G Z CrMo1Si, EN ISO 21952-B: G 55 M13 1CM.

"ESAB filler metal experts and application engineers can work with customer teams to help select the optimum filler metals, develop optimum welding procedures and recommend a complete welding and weld monitoring/weld data management system," adds Markus Gustafsson.

Moisture resistant packaging
ESAB's new B2 SC SMAW electrodes come in VacPac vacuum-sealed packages, which weigh 1.5 to 3.8 kg, depending on the Ø and feature a laminated, multi-layer aluminum foil that is hermetically-sealed around a strong plastic inner box. Upon opening, fresh and dry electrodes are guaranteed when the vacuum is confirmed. VacPac reduces or eliminates the need to scrap unused electrodes at the end of the day or re-bake them in a rod oven and the packages are also much easier for operators to carry.

To ensure moisture protection for OK Flux 10.66 Flux, ESAB recommends its 25 kg BlockPac packaging so that flux can be used directly from the package without re-drying. Like VacPac, BlockPac features a laminated, multi-layer aluminium foil with a welded seal to protect the flux against moisture re-absorption from the atmosphere, provide unlimited shelf life and guarantee fresh and dry flux when the bag is still in the block shape.

The story of ESAB is the story of welding. When its founder Oscar Kjellberg developed the world's first coated welding electrode in 1904, he launched a company whose innovation and uncompromising standards have helped create the history of welding itself. From the first steps made by its founder to its global growth, the company takes pride in what it has accomplished in more than a century with a keen eye on the future.

ESAB exists to shape the future of welding and cutting. It connects fabricators with the widest range of products under its leading brand portfolio with the latest technologies to solve virtually any industry challenge. The company backs it up with its knowledge, experience and passion to help customers be more productive than ever before.

The company is a leader in the production of welding and cutting equipment and consumables. Its innovative, world-renowned equipment and solutions are developed with input from customers and built with the expertise and heritage of a manufacturing leader. ESAB offers a world of products and solutions for virtually every welding and cutting process and application.

Over 100 years after the company was founded, ESAB serves a global market. The group is organised in the regions of Europe, North America, South America, Asia/Pacific and India. ESAB is represented in almost every country by subsidiaries or agents. Sales and support is established in 80 countries and there are 26 manufacturing plants across four continents. It is organised to deliver efficient, high-productivity solutions to meet customer requirements in a manner that exceeds their expectations no matter the market segment.

To learn more, visit **www.esab.com**

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Lincoln Electric expands Ranger portfolio

Lincoln Electric has introduced the Ranger® 330MPX™ EFI welder/generator, a compact and versatile machine that combines all the features and benefits of the popular Ranger 330MPX welder/generator with a 330A Kohler® 25-hp Electronic Fuel Injection (EFI) engine.

The Ranger 330MPX EFI welder/generator is built for all seasons, thanks to the Kohler engine's advanced design that ensures quick and easy starts in cold weather with no choke required, improved fuel efficiency, reliable operation and optimal performance in high-altitude applications.

Users can still enjoy the same benefits of the Ranger 330MPX model: compact size, smarter performance and quieter operation. The 330MPX EFI welder/generator is up to 20 percent smaller in footprint, 31 percent smaller by volume and 25 percent lighter by weight than other machines in its class making it easier to fit on a truck bed and allowing more room for other tools and equipment. It is also easier to manoeuvre once you get to the jobsite.

Advanced features like engine-driven weld modes, Crosslinc® technology, Ready.Set.Weld® quick setup and more help to streamline operations and improve efficiency. The whole experience is up to 60 percent quieter than other machines in its class, which helps to optimise comfort and improve safety at the worksite.

For an engine driven welder that's smaller, smarter, quieter, more powerful and built for optimal performance in all seasons, get the new Ranger 330MPX EFI welder/generator from Lincoln Electric.

Lincoln Electric is a leader in the design, development and manufacture of arc welding products, automated joining, assembly and cutting systems, plasma and oxy-fuel cutting equipment and has a global position in brazing and soldering alloys. Headquartered in Cleveland, Ohio, Lincoln has 55 manufacturing locations in 18 countries and a worldwide network of distributors and sales offices covering more than 160 countries.

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High performance welding with greater efficiency

Fronius is adding to its range of smart, high-end TPS/i TWIN tandem welding systems. Synchronised welding with two individually controllable arcs has never been so easy as with the new TPS/i TWIN systems and the PMC TWIN and CMT TWIN welding processes. Both systems boast stable penetration and help save time thanks to their high speed and impressive deposition rate.

When it comes to high performance tandem welding, the main challenge is successfully controlling both arcs. Achieving this allows operators in the container, vehicle and wagon construction industries to easily perform multi-layered or long welds in order to produce top-quality large-scale components. The TPS/i TWIN Push system, which is already well established on the market, is now joined by TWIN Push-Pull systems including the CMT TWIN process, which is well equipped to deal with such challenges. From now on, it will be possible to use tandem welding systems to join aluminum as well as steel.

The TPS/i TWIN Push-Pull solution is designed for use in motor vehicle and railway vehicle construction and is used to weld aluminum profiles or pressure containers using the Pulse Multi Control (PMC) process. In addition to the PMC process, the new TPS/i CMT TWIN system also uses the Cold Metal Transfer (CMT) process thereby also enabling welding of aluminum, nickel-base alloys, and high-strength steels. The controlled heat input provided by the CMT process is also particularly well suited for thin sheet applications. Penetration and weld profile can be further optimised if each TWIN arc is set to a different performance level.

In practice, the benefits of tandem welding compared to single wire welding are particularly apparent in cases where a perfect result needs to be produced at high speed. With a deposition rate of up to 25 kgs per hour and a speed of up to 4 m/min, the Fronius TPS/i TWIN systems are quite the workhorses. This is made possible thanks to a wire speed performance of around 30 m/min for each processing line. Despite this speed, a flawless finish is achieved with reliable penetration quality and no weld-seam porosity. This reduces both the number of layers and the production time.

The integrated self-regulating TWIN process ensures optimal results and high efficiency, with only the essential settings needing to be adjusted. In the background, the system independently controls the welding parameters and variables to ensure the arcs are always precise. In order to ensure completely stable welding, a high level of process reliability is required and this is guaranteed by the combination of PMC and CMT. Innovative solutions for optimal wire feeding such as the TWIN Drive or the wire buffer component ensure a steady supply of wire, thereby increasing the reliability of the welding process and taking process stability to another level. This cuts reworking and production errors to a minimum, thus saving time and resources.

The Fronius TWIN series offers a range of different functions and robot assistance systems that help welders to automate the production process as efficiently as possible. For example, Spatter-Free Ignition (SFI) prevents spatter during ignition and the innovative chipping hammer removes previously formed slag by way of reversing the wire movement to ensure a clean start to the weld. SeamTracking automatically compensates for deviations and TouchSense equips the robot with a positioning sensor that it can then use to compensate for clamping and component tolerances. WireSense measures these tolerances and transmits them directly to the robot. All this reduces welding errors, reworking time and even discards, which directly contributes to increasing efficiency in high performance welding.

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