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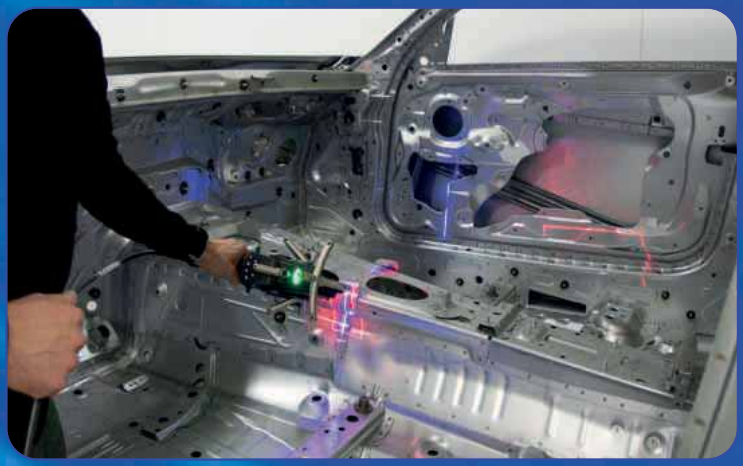

Manchester Metrology Ltd are pioneers and innovators of metrology offering specialist contract measurement services using the latest metrology technologies and equipment. Offering support across the UK and worldwide. Our attention to detail and helpful attitude towards our customers are among the many positive attributes which distinguish the company as a benchmark metrology company.

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VOLUME 19 | No.2 ISSN 1742 -5778

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Published by Roger Barber Publishing
Enterprise House, Foundry Lane, Horsham, West Sussex, RH13 5PX
Tel: 01403 266022

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

Accounts: Jackie Barber - 01403 563791

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

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

Engineering Subcontractor is mailed to a controlled circulation of readers with a legitimate interest in the content. Roger Barber Publishing stores all business data securely and does not share with third parties.

Another amazing year in metrology

Manchester Metrology Ltd has experienced significant growth over the past twelve months, which is particularly impressive in the current climate. It has invested in two new AT960LR laser trackers from Leica and purchased the latest in scanning capabilities with the AS1 scanner and cradle to run with the AT960LR. The Hexagon Absolute Scanner AS1 has been launched, with claimed 'first-of-its-kind' interoperability between portable arm and laser tracker systems.

The setup, which offers high accuracy and data collection speed of 1.2 million points per second, can be moved back and forth as needed between uses.

A modular blue laser line scanner, the Hexagon AS1, can be used together with a Leica AT960 laser tracker, to achieve 3D scanning accuracy to within just 50 microns from up to 30 metres away, handheld or automated.

For smaller applications, the AS1 scanner unit can be mounted to any existing current-generation Absolute Arm 7-Axis system, enabling precision scanning and hidden area inspection within a measurement volume of between 2 and 4.5 m in diameter.

Director Paul Bulman explains: "The big increase in workload from our larger blue-chip customers and smaller engineering companies has helped us to employ a further six metrology engineers, one business development manager and one scanning and reverse engineering engineer. We also have a combined 2021 investment of £600,000 in the latest portable metrology equipment. With new sales revenue coming from our new business development manager and our new product the PMT portable metrology arm, we aim to continue the increased growth in 2022."

Manchester Metrology Ltd is a pioneer and innovator of metrology, offering specialist contract measurement services using the latest metrology technology and equipment. An ethos of dedication to continued investment in both equipment and its team has enabled the company to build a strong reputation, working with a number of industry leaders in the automotive and aerospace sectors.

Offering a portfolio of support services across the UK and worldwide, its attention to detail and helpful attitude towards customers are among the many positive attributes which distinguish the company as a benchmark metrology company.

To find out more, contact:

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www.manchester-metrology.co.uk

MACH is poised to be the go-to event in 2022

Heading into 2022, the UK's manufacturing and engineering community has every reason to be confident. Government forecasts suggest UK growth of 6.0 percent while the incentive of 130 percent, capital allowances are in place on qualifying plant and machinery investments. Add in the COP26 global summit focussing attention on the importance of tackling climate change and 2022 is set to be a momentous year. There has therefore never been a better time for visitors to attend MACH and the new Engineering Supply Chain show to take advantage of these opportunities.

Organised by the industry, for the industry

MACH 2022 is the UK's national event for inspiring, innovating and connecting manufacturing and will take place 4-8th April 2022 at the NEC, Birmingham. Organised by the industry, for the industry, MACH is owned by the Manufacturing Technologies Association (MTA), a not-for-profit organisation. The Engineering Supply Chain will launch alongside MACH, taking place 5-7th April 2022 and is the destination of choice for engineering and manufacturing buyers looking to find world-class suppliers, exclusively in the UK engineering and manufacturing supply chain.

The 2022 events are designed to not just be a showcase for the manufacturing technologies sector, but a celebration of the manufacturing industry at its best. The development of the digital factory, new automation solutions and connected manufacturing processes, power by the hour and cost-efficiency solutions will dramatically improve production processes and help shape the industry over the next decade.

Chief executive officer at the MTA, James Selka DL explains: "There has been talk in the national media and beyond recently about the challenges facing the manufacturing industry, much of it ill-informed and spouted by those without any real knowledge of what these challenges truly are.

"The Manufacturing Technologies Association is different. Why? Because we are the industry. We are owned by the industry and we talk regularly to our members to develop a true understanding of the issues facing them and what steps are needed to create the conditions under which they can thrive and add value as an important wealth-creating component of British industry."

He continues: "Unlike other commercial multi-sector organisations, the manufacturing technologies industry is in our DNA. For this reason, MACH is not just another manufacturing industry exhibition, it is the national manufacturing and engineering industry exhibition. We are staged for manufacturers by manufacturers; our members, our Board and most importantly in this context, our exhibition committee, all work to ensure we reflect the industry's true needs and offer show content that is relevant and value-enhancing."

Green manufacturing

James Fudge, head of operations at the MTA, outlines why MACH is the place to go for manufacturers looking to develop a sustainable, competitive advantage: "With the COP26 global summit focussing attention on the importance of tackling climate change, the green agenda has never been more relevant to UK manufacturers. Manufacturers have a key role to play in helping to achieve the goals outlined by the Glasgow summit, which is why there will be a strong focus on the opportunities presented by decarbonisation during MACH 2022."

"The exhibition will have a strong emphasis on developing sustainable energy solutions, carbon reduction technology and much more. The desire to achieve sustainable manufacturing processes is now within our grasp and the latest engineering and manufacturing technologies are massively contributing to the 'greening up' of the industry. We stand at the threshold of a new era for green manufacturing with the processes required to achieve sustainability no longer a dream, but a reality. The opportunities this creates for the manufacturing technologies industry is immense."

Companies exhibiting at MACH 2022 will be demonstrating why the effective use of technology will be critical in achieving the low carbon agenda and how this will provide a competitive edge for UK manufacturing.

James Selka concludes: "There have never been more reasons for UK manufacturers to be confident. We no longer have to imagine how we are going to do this, the ability to achieve this lies in our own hands."

Visitors can now register for their entrance pass via the MACH website - **www.machexhibition.com/visit/visit-mach-2022-em**

Further information about the MTA and its members can be found at **www.mta.org.uk**

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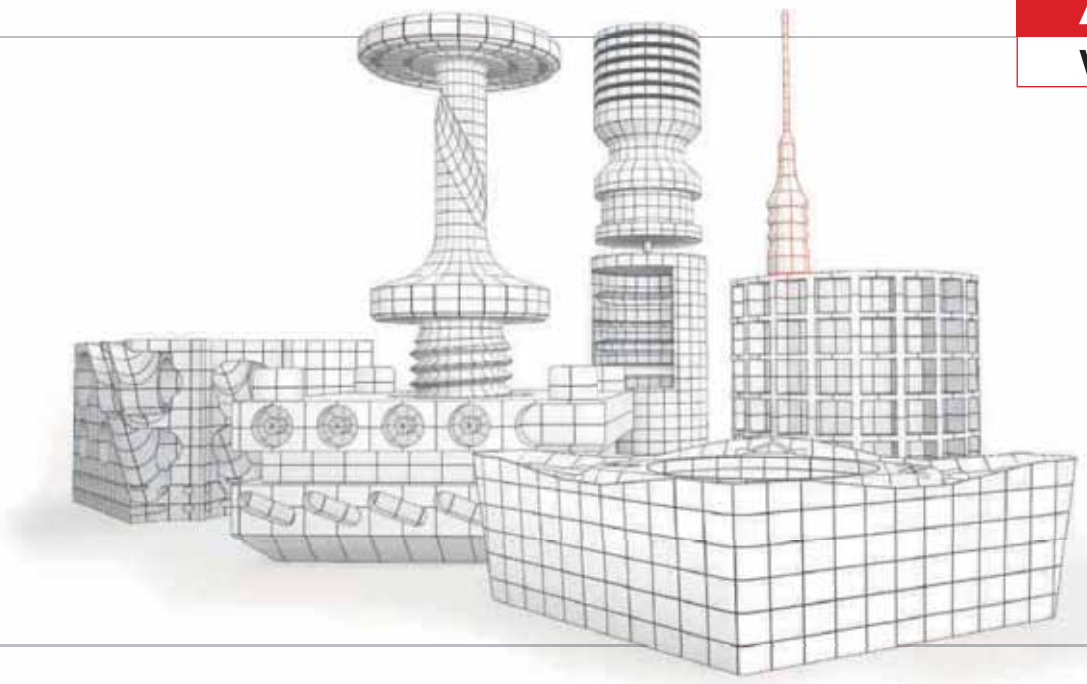

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ITC carves route to productivity gains at MACH

The MACH 2022 exhibition will provide UK manufacturers with an opportunity to witness a raft of new cutting tool innovations from Industrial Tooling Corporation (ITC). The Tamworth-based manufacturer will introduce new technology from its extensive line-up that will be complemented by next-generation offerings from WIDIA, BIG KAISER, Kemmler and Bass.

Alongside ITC's unfathomably huge range of solid carbide and PCD product lines, indexable cutting tools will be extensively catered for by the world-renowned WIDIA brand. With leading solid carbide and indexable tooling lines that deliver comprehensive turning, drilling, milling and threading solutions, ITC will provide a MACH debut for a variety of new WIDIA products. One of the MACH debutants will be the expanded WIDIA TOP DRILL™ TDMX modular drilling line. With a range of new indexable inserts added to the TDMX Modular X, it is the ultimate choice for demanding drilling applications. The addition of the new MS geometry delivers enhanced stability to modular drilling for steel and stainless-steel cutting.

The MS geometry insert now sees the TDMX platform offer three material-specific inserts. This addition broadens the platform's application capabilities to include inclined entry and exit, stacked plates and cross-hole drilling in steel, stainless steel, superalloys and cast iron. The TOP DRILL Modular X (TDMX) inserts can be reground to extend the life of the tool. The TDMX is available in both imperial and metric sizes in 1.5xD, 3xD, 5xD, 8xD and 12xD with a diameter that ranges from 16 to 40 mm.

From the WIDIA milling platform, ITC will be giving a MACH exhibition debut to the WIDIA Hanita VariMill XTREME. The new solid end milling brand delivers high-performance that is a significant advancement upon its predecessors from the iconic VariMill Series.

The VariMill XTREME has been engineered to excel in a variety of aggressive machining conditions, enhancing chip evacuation and corner stability to exceed performance expectations on a wide range of materials. Perfect for machining steel, stainless steel, cast iron and superalloys, the VariMill XTREME can undertake ramping, slotting, plunging, drilling, helical interpolation and dynamic

milling. The impressive four-flute solid carbide end mill is offered with a choice of geometries that include a square-end, sharp edges, chamfers and corner radii designs and it is available in diameters from 3 to 25 mm.

Also making a MACH exhibition debut from the milling line is the WIDIA Hanita Aluflash Series. Adding to what is regarded as the industry's most expansive aluminium milling line, the new Aluflash series is ideal for slotting, ramping, side milling, plunging, interpolating, dynamic and helical milling. The series of two and three flute solid carbide end mills are available in diameters from 1 to 25 mm with a square-end or corner radius, stub, standard, long and extra-long lengths.

From the indexable milling range, ITC will showcase the new WIDIA M1600 face mill series for roughing to semi-finishing operations in steel, stainless steel, cast iron and nodular iron materials. With a smart insert design, the M1600 performs exceptionally well under various machining conditions including low-power machines, unstable, non-rigid setups, long overhangs and weak fixture conditions.

The 16-edged, precision-ground insert with a positive geometry enables low

cutting forces and low power consumption resulting in higher tool life and an excellent cost per edge. The M1600 has one universal insert geometry in three versatile grades: WP35CM, WK15CM and WU20PM. The WP35CM grade targets all types of steel, while the WK15CM grade is designed for cast iron materials and is available in six metric diameter ranges between 50 mm and 160 mm.

Complementing the M1600 at MACH will be the new M8065HD milling system for machining steel and cast-iron materials. Designed with eight cutting edges and extra-wide chip gashes, the new M8065HD is capable of achieving deep depths of cuts while producing high metal removal rates during face and shoulder milling applications. The new milling line is engineered with a 65-degree approach angle and a 6.35 mm thick insert and is currently available with one universal insert geometry in three versatile grades, the WP35CM, WK15CM and WU20PM. The M8065HD indexable milling cutters are available in nine metric diameter ranges from 50 mm to 315 mm.

Alongside the M1600 and M8065HD will be the expanded VSM890-12 face and shoulder milling series. Hailed as one of the very few eight-edged double-sided milling lines with genuine 90 degree milling, the VSM890-12 has been increased with the arrival of its new MM insert geometry. The high performance milling can conduct face, shoulder, Z-axis and contour plunging and 100 percent radial engagement slotting. This operational diversity is a credit to the availability of a coarse, medium or fine pitch insert density.

With three insert geometries, the ALP geometry has been developed for the machining of nonferrous materials and this is complemented by the ML inserts for the semi-finish and finish machining of stainless steel. However, to extend the capabilities of the VSM 890-12 to a wider audience, WIDIA has now introduced the new MM insert designation. This new grade is a general-purpose insert that is perfect for material types from steel and stainless to iron, superalloys and hard materials. The new VSM890 series is available with a 32 mm diameter Weldon end mill configuration while the shell mill tool bodies are available in diameters from 40 mm up to 250 mm with a cartridge face mill providing a 315 mm diameter.

If you want to accelerate your machining performance, be sure to visit ITC at MACH 2022.

Industrial Tooling Corporation Ltd
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Email: sales@itc-ltd.co.uk
www.itc-ltd.co.uk

Hall 20 - Stand 555

Major turning centre launch

New Hurco TMX8MYSi turning centre with Y-axis and sub-spindle

A new range of four driven-tool CNC turning centres will be launched by Hurco at MACH 2022. The models include 8-inch and 10-inch chuck versions with the option of a programmable W-axis to position the tailstock or sub-spindle. One model, the TMX8MYSi, will be on show for the first time in the UK and will be centre-stage on the company's stand.

The new TMX turning centres offer higher specification and performance than the well-established and popular TMi and TMMi models. The major differences are higher power and speed plus a larger, heavier machine frame and the addition of a Y-axis in addition to the W-axis axis to allow more versatile machining.

The servo-driven turret carries 12 VDI 40 radial tools, rather than axial tools as on the TMMi range. Each station provides a peak output of 6.3 kW and 5,000 rpm. Hurco's V11.xx software allows the manufacturer's proprietary conversational routines to be used for milling operations, making the package very attractive for small-volume production.

Two additional Hurco CNC lathes will be on show, the TM6i XP and the TM8Mi XP with axial driven tools. The suffix denotes the 2020 upgrade of the previous models, including larger spindle bore, roller guideways, a more compact footprint and improved control system.

BX60i double-column, high-speed machining centre

On show for the first time at a MACH show will be the BX60i 3-axis, double-column, portal machining centre that maintains dynamic stability and accuracy despite having large X and Y axis travels. The next model down in size, the BX50i made its debut at MACH 2018.

Ideal for producing large mould tools or aerospace components, the BX60i has a 1,600 x 1,300 x 700 mm working volume, more than twice as large as that of its smaller counterpart. Positional accuracy is maintained via linear scales.

More 3-axis machining centres

In addition to the highly popular VM10i, which combines a compact footprint with the capacity and performance of a big 3-axis machining centre, there will be a VMX30Di with 762 x 508 x 610 mm travels and direct-drive 15,000 rpm spindle, while a large VMX60Ti with high-torque 237 Nm spindle will complete the line-up.

The Max5 control will be evident on all Hurco machines. Visitors will have the opportunity to see the latest software developments, including solid model import that now includes surfaces.

Latest VMX42SRTi 5-axis machining centre

One Hurco 5-axis machining centre on show will be the VMX42SRTi, a best-selling model, the latest version of which has directly-encoded torque motors driving both the B-axis spindle and flush C-axis rotary table. Linear scales and 20 bar coolant through the spindle are now standard features on the SRTi as well as on the 4-axis SWi swivel-head models.

The SRTi range of 5-axis VMCs is popular because these B-axis models can be used as a 3-axis machine that exploits the full working volume. That is in addition to impressive 5-axis machining capabilities, a 600 mm diameter rotary table with 500 kg load capacity and a 40-taper, 12,000 rpm motor spindle with upgrades available to 16,000, 18,000 or 24,000 rpm.

There will be a total of five machines with 5-axis capability cutting metal, including a RXP500DSC. Built by Roeders in Germany, the machining centre is of trunnion configuration and is capable of super-high accuracy and of producing a mirror-like surface finish.

An applications engineer from Germany will be available on the stand to discuss specific applications. Hurco has represented this manufacturer in the UK and the Republic of Ireland for 18 years.

Automation solutions

The addition of automation to Hurco machines is well established and relatively simple. On the stand at MACH, the two most popular will be shown. There will be a Hurco ProCobot Profeeder assisting the production of parts on a VM20i 3-axis machining centre and an Erowa Robot Compact 80 feeding the new VMX30UDi VMC.

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Email: sales@hurco.co.uk
www.hurco.co.uk

Hall 20 - Stand 510

New metrology products from Aberlink at MACH

With a history in design innovation, and having not been able to exhibit since 2018, it will come as no surprise that Aberlink will exhibit many new metrology products at MACH this year.

The Extol CMM is the 2nd generation shop-floor CNC CMM from Aberlink. Available in two sizes, and supporting touch-probe and contact scanning, the Extol CMM breaks new ground in metrology performance. Aberlink is the first CMM OEM to successfully error map the forty-two degrees of freedom found within a non-cartesian delta mechanism. Considering the X-Y-Z measuring range offered by the two different sized Extol CMMs, their overall footprint is remarkably compact, only needing a single-phase power supply and no air supply, the Extol CMM can be installed exactly where it is needed on the shop floor. Aberlink invites visitors to MACH to bring their parts for a live demonstration on its stand.

Aberlink will exhibit a new linear drive CNC CMM. Named the Horizon CMM, it breaks new ground in design and innovation and will enable the company to further extend its horizon into the high-end CMM marketplace. It is the culmination of Aberlink's 29 years of CMM design innovation and in-house manufacturing technology and sets new standards in CNC CMM performance, reliability and ease-of-use. In-house manufactured frictionless linear drives are the key to its fast and exceptionally smooth motion. The kinematic isolated drive structure is completely independent of the CMM structure and ensures that the motor thrust is directed through the centre of gravity of the moving parts. This avoids acceleration induced metrology errors and thermally isolates the linear motors from the metrology structure of the CMM.

In-house manufactured 3D printed components are used throughout the design. A non-homogenous X-beam optimises the stiffness-to-weight ratio along the entire axis. The Horizon is a standout CNC CMM with fast, smooth, silent motion that is ideally suited to fast contact scanning.

Aberlink will also exhibit a new manual measuring machine. Named the Fulcrum, it utilises a novel three rotary axis design to enable fast and accurate 3D inspection of parts as they are manufactured. This desktop measuring machine will revolutionise shop-floor part inspection by enabling high-accuracy, easy-to-use manual inspection next to the machine tools where the parts are produced. The software interface has been streamlined to make it easy for people with no previous CMM experience to start measuring parts with the minimum of training.

Aberlink Ltd Tel: 01453 884461
Email: sales@aberlink.com www.aberlink.com

Hall 19 - Stand 419

Grinding and turning take centre stage for RK International at MACH 2022

RK International Machine Tools will focus attention on its extensive grinding machine portfolio and the recently introduced EUROPA eturn VS range of manual lathes at MACH 2022. In total, seven machines will be on display with all but one under power. Grinding machines shown come from its long-term supplying partners Robbi, Perfect, Delta, and Jainnher, covering all aspects of abrasive machining through universal grinding, surface grinding, vertical spindle rotary table grinding and centreless grinding. Those looking for manual turning will be able to see and discuss the EUROPA eturn VS range represented at MACH 2022 by the mid-range VS390 gap bed lathe.

There will be two machines on show from Robbi, these being the Robbi Omicron 1000R conventional universal grinder and the company's latest development, the Robbi Omicron T7 PLC universal grinder. The Omicron1000R is the smallest in the R-series with a between centre distance of 1,000 mm, 600 mm available on the smallest R Series model. Delivering high standards of precision, with roundness of 0.8 micron and cylindricity from two to six micron, its versatility and flexibility also make it ideal for small batch production. The Omicron conventional universal grinder is also the only western European produced machine of this type. The second machine from the Omicron T7 PLC features the latest version of the company's control system with touch screen interaction allowing ease of programming for operations such as wheelhead and table positioning; multiple diameters in the same cycle; semi-automatic grinding cycles, with auto stop of the wheel feed once the programmed diameter has been reached; automatic wheel dressing cycle with compensation of grinding dimensions; plus numerous other time-saving features.

The Perfect range of grinders will be represented by the new PFG-3060DT, a new to market range of touchscreen controlled

surface grinders. With a table size of 300 by 600 mm, spindle centre to table distance of 500 mm and a 300 kg maximum table load, the PFG-3060DT is a highly capable machine whose performance is enhanced by the use of a CP4 high-precision spindle and a fully-supported rail design for added precision and stability. The easy-to-use control features multi-function grinding and dressing programs developed by Perfect to deliver optimum performance and grind quality. The Perfect PFG-400R rotary table surface grinder is representing the company's R series of horizontal spindle, rotary table models. Often referred to as a ring grinder, the spindle is a class P4 high precision angular contact bearing unit, giving run-out accuracy of 2 µm. Thanks to the spindle being a cartridge-type it is completely sealed and lubricated for extended service life. The PERFECT PFG-400R surface grinders on show will also feature full machine enclosure, a requirement that more and more UK customers are expecting from a grinding machine.

Representing the Delta range will be the LC500 vertical spindle, rotary table surface grinder. The LC500 can grind up to 500 mm diameter and up to 205 mm in height. While a manual machine as standard the LC500

can be equipped with Delta's L11E automation system. This system allows micron-level feed increments to the vertical axis. Additional features include canned cycles to automate certain functions such as material to removed, increment, min. 0.001 mm, number of spark arrestors,

number of table revs per increment. Once the cycle is complete the wheelhead is retracted and the machine comes to a complete stop ready for part unloading.

Centreless grinding is represented by the Jainnher JHC12S machine. This machine allows through-feed and plunge grinding of components measuring up to 40 mm diameter while holding micron level accuracies. Further enhancements to the grinding performance come from the servo motor driven regulating wheel which provides perfect control of linear speeds for optimum grinding results. This kind of performance has already made the JHC12S popular with a number of UK customers.

Completing the display is the brand new EUROPA eturn VS390 manual lathe with a 390 mm swing over the bed, 610 in the gap. The range also features eturn Energy Management Technology (EEMT), which helps reduce energy consumption, particularly at times when the machine is stood idle by putting the lathe into sleep mode and switching off all unnecessary power consumption. The eight machine range starts with the compact eturn VS330 with either 750 mm or 1,000 mm between centre distance, to the largest machine, the VS560 with its 560 mm swing and up to 3,000 mm between centres. Each machine comes with infinitely variable spindle speeds with the smaller machines featuring two gear ranges, moving up to three ranges on the larger machines to allow constant torque. Longitudinal feedrates are between 0.02 and 1.04 mm/rev, which also accommodate the machining of a wide range of metric and imperial thread types. All of the EUROPA eturn lathes feature a hardened and ground bed, while the headstock is equipped with high performance NSK heavy-duty taper roller bearings that will provide years of trouble-free running and DIN8605 toolroom accuracy standards.

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www.rk-int.com

Hall 20 - Stand 265

Lots to see from XYZ Machine Tools

With so much to experience from XYZ Machine Tools at MACH 2022, it has taken the decision to expand its presence with a second stand, **17-200**, that will be used to introduce the latest innovation in toolroom machining centres that will revolutionise the transition from bed mill to machining centres. Details of this new range of machines will be announced closer to the exhibition opening.

XYZ Machine Tools' main stand, **18-130**, will not be short of new products with several machines making their UK exhibition debuts including the brand new XYZ SS 65 sub-spindle lathe, a first for XYZ Machine Tools and one that is generating lots of interest due to it capability and competitive pricing. Introduced due to demand from customers looking for increased

productivity and reduced spindle downtime, the XYZ SS 65 features a 16.5 kW, 4,000 revs/min, main spindle with 65 mm bar capacity and 200 mm diameter chuck as standard. This is complemented by the 11 kW, 5,000 revs/min, sub-spindle, with a 52 mm bore and 150 mm chuck. The German-built Sauter 12-position turret has live tooling at every station, with 100 mm, +/- 50 mm, Y-axis travel. Contouring is facilitated by the C-axis on both spindles which are equipped with a brake to allow substantial milling cuts to take place. Maximum turned diameter is 380 mm and the Z-axis travel is 520 mm, providing a significant working envelope. Control is provided by the Siemens 828D ShopTurn 15 inch touchscreen control.

Also making its MACH debut is the XYZ PROTURN RLX 780 lathe. While not new to the range, the sheer scale of this machine has precluded it from being shown before. Weighing in at 8,600 kgs the machine features a swing over the bed of 780 mm, 1,090 mm in the gap and a distance between centres of 3,000 mm. The spindle is powered by a 32 kW, 43 hp, motor with the gearbox providing two speed ranges from a low of 20 revs/min through to 1,300 revs/min. Control is from the latest RLX ProtoTRAK system with its touchscreen interface with its unique software features that allow the user to go from drawing to finished component in the shortest possible time, including: Gesture Control; Constant Surface Speed; Electronic handwheels to generate tapers, radii and fillets manually; Enhanced ProtoTRAK Assistant for on-board help at the touch of the screen and the popular TRAKing® feature, which uses handwheel movement to prove the program. The faster you wind the faster it machines. Stop or reverse the handwheel and the machine does the same.

Other machines at MACH 2022 include the entry level ProtoTRAK mill, the KMX 2000, a selection of RMX ProtoTRAK bed mills and RLX ProTURN lathes, linear rail and heavy-duty and high speed vertical machining centres will be well represented including an XYZ 1060 HS machine equipped with a Detron 5-axis system. Turning centres on show will be the XYZ CT52 LR with linear rail technology and, the

XYZ SS 65 sub spindle lathe. Completing the machine range on show will be the XYZ UMC-5X simultaneous 5-axis machining centre, which since its introduction has been very well received by customers across a range of industries. Providing a highly competitive package the XYZ UMC-5X continues to generate lots of interest.

If previous MACH exhibitions are anything to go by, the XYZ Machine Tool stand will be extremely popular and, while demonstrations are freely available, there will be times when all machines are busy. To overcome this the stand will also feature four stand-alone pendants with RLX and RMX ProtoTRAK control on them. These will be available to highlight the ease-of-use of the ProtoTRAK system and emphasise how this control can simplify production and increase productivity and profitability as 10,000's of existing users can testify to.

XYZ Machine Tools
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Hall 17 - Stand 200
Hall 18 - Stand 130

GM to make MACH debut an event to remember

The GM Group is delighted to announce that it is making its debut appearance at the MACH 2022 exhibition. Since becoming the sole UK and Republic of Ireland agent for the Victor range of CNC machine tools in 2020, the Oldham-based GM Group has witnessed exceptional growth that has culminated in a factory extension, significant staff recruitment and unprecedented sales of the Victor brand.

Victor machine tools have an uncompromising reputation for build quality and stability and visitors to the GM Group stand at MACH will witness first hand why Victor machines are proving so popular with manufacturers in all industry sectors. The Victor range is remarkably diverse, catering for all segments of the industry with everything from small to large machine tools with simple or complex machining solutions that can be tailored to the exact needs of the user.

At the Birmingham NEC, the GM Group will be giving show visitors a taste of this diversity with the high-performance Vcenter AX380 5-axis machining centre appearing alongside the extremely compact and automated Vturn NP20 turning centre with the Easy Way articulated robot loading/unloading system. Also in display will be the Vturn A26-85YCM twin spindle turning centre with Y-axis milling on the tooling turret.

Hall 19 - Stand 619

For manufacturers looking for a new high-performance machining centre that is built for productivity and precision on a rigid platform that is guaranteed to deliver lifelong performance, GM is inviting engineers to take a closer look at the Vcenter AX380 5-axis machining centre. The Vcenter AX380 takes flexibility to a new level, incorporating an A+C-axis trunnion type rotary table that is 380 mm diameter and can facilitate 5-axis machining of sizeable parts up to 200 kg thanks to its generous 700 by 500 by 540mm X-, Y- and Z-axis travel. For manufacturers looking for a solution to machine larger components, the Vcenter Series is also available with the larger AX630 and AX800 variants.

The Vcenter AX380 has rigidity and precision incorporated into every aspect of the machine, something that is characterised by the trunnion type tilting A+C-axis table that has a built-in backlash-free roller cam mechanism that is seated on the machine base to maximise rigidity. The A-axis can rotate at up to 33 rpm with 2,452 Nm of torque whereas the C-axis rotation is capable of 40 rpm at 2,158 Nm.

The compact powerhouse is supplied as standard with the powerful FANUC 0i-MF CNC control unit that drives the tools around the work envelope with unprecedented precision and speed. Built to gallop around this work area is a high-speed 12,000 rpm, 15,000 rpm optional, spindle with the renowned BIG PLUS BBT-40 interface that maximises tool clamping rigidity. Powering the high-speed spindle is a continuous 11/15/18.5kW spindle motor that generates exceptional levels of torque for heavy-duty cutting of challenging materials with impressive material removal rates.

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Smaller 5-axis machining centre nearly doubles productivity

For the ongoing production of a particular component for a defence industry customer, subcontractor PRV Engineering Pontypool, has invested in a Spinner U5-630 trunnion-type, 5-axis, Vertical-Spindle Machining Centre (VMC). It was delivered in mid-2021 by Whitehouse Machine Tools, Kenilworth, sole sales and service agent for the German-built machines in the British and Irish markets.

The U5-630 is devoted to producing a fabricated steel hatch measuring approximately 300 x 200 x 200 mm for an armoured tank in a cycle time of 5.5 hours, more than 20 percent faster than when the machine first arrived on the shop floor. The subcontractor confidently expects to reduce the single-setup metalcutting cycle by a further 20 minutes as it becomes more familiar with programming the new VMC.

The previous production route was to mill and bore the three-part fabrication on either of two much larger 5-axis machining centres having a 3,000 x 800 x 800 mm working envelope, a travelling column and a swivelling B-axis spindle head. Three setups were required and the total production time was 10 hours, which meant that it was not feasible to produce one hatch per day during a single shift.

Apart from raising the efficiency of production by nearly halving the cycle time, another reason for investing in a VMC dedicated to the job was a need to free up the larger capacity plant to fulfil an increasing amount of plate work. In any case, it is more difficult and therefore more time consuming to hold tolerance on a larger machine, as the heavier moving elements tend to cause vibration, added to which the B-axis providing one of the rotary axes is not as strong as a trunnion arrangement.

PRV Engineering's managing director Simon Jones and works director Alun Cox set about researching the market for a 5-axis, trunnion-type VMC that was appropriately sized for this defence industry contract. The Spinner option was chosen partly due to its generous 630 x 530 x 465 mm working envelope in a footprint of

just 2.75 x 2.53 m. Other machines they looked at were much less compact.

High quality German build and ex-showroom availability from Whitehouse Machine Tools' Kenilworth headquarters were other positive factors that influenced the decision. The good standard specification was also a bonus, as it includes a 21 kW/135 Nm spindle motor ideal for machining S690QL and Hardox 400 steels, high-pressure coolant, a 32-station tool magazine, hydraulic clamping, and linear scales feeding back axis positions to a Siemens 840D sl touchscreen control with built-in ShopMill software.

The U5-630 has to be highly accurate, which pre-sales demonstrations in Kenilworth confirmed was achievable. Some tolerances are very tight on the hatch fabrication, which comprises three pre-machined and welded parts. The run-out of two holes bored from either side of the component after rotation through 180 degrees has to be to within 0.04 mm TIR (Total Indicator Reading), while their diameter tolerance is 25 µm total.

Better accessibility of the cutters to the workpiece on the smaller machine is a major benefit. CNC setter-programmer at the Pontypool factory, Darek Krochmalny, explained that it is possible to use shorter and therefore more rigid tools than on the larger machine, enabling faster feeds and speeds for higher productivity.

Furthermore, it is now practicable to reduce the time needed to mill some features such as a locking pin pocket by interpolating all five axes simultaneously, whereas the production cycle on the B-axis machine was entirely 3+2.

Alun Cox concludes: "Over half of our turnover is defence industry work, with the rail, high voltage switchgear and Formula 1 sectors also regularly served.

"We pride ourselves on providing a full service from design-for-manufacturability through fabrication and machining to wet spray painting and powder coating. Only heat treatment and electroplating are bought in.

"PRV relies on good service from machine tool providers to ensure maximum equipment availability so that we can be as competitive as possible. We have been particularly impressed with Whitehouse Machine Tools in this regard, a company we have not dealt with before.

"The supplier was attentive during the sales process and, being a relatively small company, is able to give prospective customers a personal service. The after-sales care in particular has been exceptional."

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Starrag Heckert X40 machining centre enters Factory of the Future

A Starrag Heckert 5-axis horizontal machining centre has joined a series of other multi-axis Starrag-supplied machines in a Starrag-dedicated machining area at the University of Sheffield Advanced Manufacturing Research Centre (AMRC) Factory of the Future.

Previously successfully applied to a dedicated machining project in another AMRC building in Rotherham, the Heckert X40 now complements Starrag STC 1250 and Ecospeed machining centres as well as a multi-axis Bumotec s191 turn-mill/ machining centre and NB251 high speed blisk machining centre in the Factory of the Future, ready to tackle varying machining and manufacturing projects.

Established in 2008, the Factory of the Future houses an array of state-of-the-art manufacturing equipment to enable partner companies and project sponsors to develop and trial new technologies and processes. The AMRC works closely with its customers and project sponsors to select the ideal machines and manufacturing technologies required to fulfil each project's individual demands.

"The X40 will undoubtedly prove just as successful alongside the STC and Ecospeed," says Phil Kirkland, head of the machining group at the AMRC, "and that will likely include extending its initial project work that embraced the machining of aluminium housings."

He adds: "Our partnership with Starrag has been built over a number of years and this addition to the Factory of the Future portfolio further cements this; we expect the strengths of the Heckert X40 to be utilised to the full.

"Forthcoming projects for the machine will no doubt illustrate how a wide range of components can be produced effectively and efficiently and the X40 technology will also enable our operators and engineers to continually upskill."

Importantly, the CNC features Starrag's Human-Machine Interface (HMI) for easier, intuitive programming and operation. It is this technology, combined with an impressive specification: X, Y and Z axes travels of 700 mm by 750 mm by 750 mm plus workpiece heights of 500 mm, rapids of 80 m/min and a 30,000 revs/min spindle offering torque values of up to 350 Nm, that will lend the X40 to a wide range of tasks at the Factory of the Future.

The Heckert X40 is one of eight Starrag machines installed progressively since 2003 at the AMRC and at sister centre Nuclear AMRC by Starrag as part of its Tier 2 membership with the AMRC.

Starrag Group is a leader in manufacturing high-precision machine tools for milling, turning, boring and grinding workpieces of metallic, composite and ceramic materials. Principle customers are internationally active companies in the aerospace, energy, transportation and industrial sectors. In addition to its portfolio of machine tools, Starrag Group provides integrated technology and maintenance services that significantly enhance customer quality and productivity.

The umbrella brand Starrag unites the product ranges Berthiez, Bumotec, Dörries, Droop+Rein, Ecospeed, Heckert, Scharmann, SIP, Starrag, TTL and WMW.

Headquartered in Rorschach/Switzerland, the Starrag Group operates manufacturing plants in Switzerland, Germany, France, the UK and India and has established a network of sales and services subsidiaries in the most important customer countries.

Starrag UK Limited, headquartered in Birmingham, is a wholly owned subsidiary of the Starrag Group and the sole distributor of the Starrag, Heckert and DS Technologie machine tool range within the UK market.

Its dedicated and highly trained UK team serve the aerospace, power generation, oil & gas and nuclear sectors plus automotive and the general engineering industries. Starrag's state-of-the-art machining systems and solutions are globally recognised as some of the most advanced products within the market.

With its highly skilled and experienced UK team of service, application and sales engineers, ideally placed to service customers, whether your needs range from a single standalone machine right through to a highly complex FMS turnkey, Starrag UK has the solution.

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Compact 5-axis vertical machining centre for high-volume production

A new, 5-axis version of the existing Makino Slim3n vertical-spindle machining centre (VMC) was showcased at the last EMO machine tool exhibition in Milan. Its focus is on high-volume production of complex parts and the machine is available with an optional Automatic twin Pallet Changer (APC). Availability of the Japanese-built machine in the UK and Ireland is through sole agent NCMT.

The production centre is FEA-optimised with a fixed, 600 x 400 mm table to maximise the working envelope, 500 x 400 x 500 mm and provide structural rigidity for heavy payloads. Combined maximum weight of the component and fixture is 400 kg. High productivity is ensured by up to 20 m/min cutting feed rate in all orthogonal axes and 50 m/min rapids.

The tall machining area makes the VMC not only compact but also the only machine in its class able to accommodate vertically-oriented fixtures. A short spindle overhang increases the structure's overall torsional stiffness and reduces vibration to enhance cutting performance.

The Makino HSK-A50 spindle, having constant pre-load, multi-plane balancing and reduced thermal growth, is designed for rigidity and high-speed running. Two specifications offer 16,000 rpm/15 kW/36 Nm as standard or optionally 8,000 rpm/ 18 kW/80 Nm to cater for a wide range of machining applications. The standard 26-pocket magazine of the automatic tool changer with integral door delivers smooth, fast indexing to support high productivity.

In the 5-axis version, the Slim3n VMC gains a 2-axis CNC rotary table and trunnion arrangement, with a FANUC Series 0i-MF control providing complex machining possibilities by interpolating up to four CNC axes simultaneously. A 4-axis machine version, with twin drive to the trunnion but without a rotary table, may be specified for machining heavier components or taking deep roughing cuts.

The coolant system has also been configured for the production environment, with nozzle and flush coolant as standard and a through-spindle coolant option. A chip conveyor can be integrated at the rear of the machine if the volumes of swarf generated are large.

In the APC version of the machine, pallet size is 550 x 380 mm and indexing time is around four to five seconds, depending on payload. Numerous other automation options and turnkey configurations are offered.

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Stepping into Nu markets with 5-axis

When a Hereford-based precision machinist company wanted to enhance its production capacity to break into new markets, it identified Yamazaki Mazak's latest, fully simultaneous 5-axis machining centre as the catalyst for change.

Moving into 5-axis work can be a daunting proposition for machine-users accustomed to more conventional 2-3 axis work. "When we were first looking for 5-axis machining solutions for our workshop, it was crucial to us that any machines we selected wouldn't just offer very precise machining capability. That had to be almost a given," says Brandon Davies, managing director of NuMachine. "The key points for us were that the machine also operated as a turnkey solution once installed, so we could hit the ground running and also that we would have the right level of support as we made the transition."

NuMachine specialises in the precision machining of small-to-medium batches of component parts in multiple materials, including aluminium, stainless steel and non-ferrous materials, such as engineered plastics. Formerly known as PK Engineering and traditionally a supplier to laboratories and the instrumentation, aerospace and process industries, the company rebranded as NuMachine in 2020 as it looked to break into the automotive and electric vehicle sector.

Key to this refocusing was identifying solutions that could meet the more complex machining requirements required of these markets, as Brandon Davies explains: "As the company took its first steps as NuMachine, we wanted to ensure our ambitions as a business were matched by the calibre of our production equipment. Having analysed the sectors we were wishing to target, we quickly came to the conclusion that we needed to invest in solutions with fully simultaneous 5-axis capabilities. Beyond this, we also wanted to work with a machine tool provider that could make our vision of high-quality complex machining a reality."

The CV5-500's extreme accuracy was ideally suited to the machining applications in the automotive and electric vehicle charging sector that NuMachine wished to undertake

The supplier that ticked all the boxes for NuMachine was Yamazaki Mazak. Mazak, whose UK applications engineering team had previously worked closely with Numachine's engineers on a prototype part for a castings customer supplying components to a supercar manufacturer. This close collaboration sowed the seeds for what would become a very close working relationship.

Brandon Davies says: "Our previous work with Mazak and the first-hand experience of the support they offered, put our minds at ease that if we were to opt for a Mazak solution, it would be fine-tuned to our exact standards prior to on-site installation."

With convenience and additional machining capability in mind, NuMachine opted to invest in two CV5-500 units; Mazak's newest fully simultaneous 5-axis machining centre. At just 2,300 mm x 2,790 mm, the machine is the most compact 5-axis machine in its class and is designed to deliver a step-change in productivity for both seasoned and new 5-axis users.

It is equipped with a 12,000-rpm spindle, capable of a peak performance of 18.5 kW and 119.4 Nm, making it suitable for the wide range of materials used by NuMachine. The machine delivers agile performance, with rapid traverse rates of 36 m/min in the X-, Y- and Z-axes and can process workpieces up to Ø500 mm x H320 mm and up to 200 kg in weight.

Additionally, the CV-500's high-rigidity bridge construction and fully supported trunnion table, combined with a constant overhang headstock that allows it to maintain machining rigidity even at the full extent of the Z-axis stroke, means it can

With convenience and additional machining capability in mind, NuMachine opted to invest in two CV5-500 units – Yamazaki Mazak's newest fully simultaneous 5-axis machining centre

deliver extreme accuracy. As such, it was ideally suited to the machining applications in the automotive and electric vehicle charging sector that NuMachine wished to undertake.

Brandon Davies continues: "Being relatively new to this role it is the first time I have personally worked with Mazak, and I've been very impressed with the level of support, training and guidance we received to integrate the new technology into our operations.

"Our investment in two CV5-500s has enabled us to machine very complex parts with one machine rather than having to use multiple machines to complete different machining operations. We're automatically more productive because we've eliminated extra setups and programmes.

"They're also really good at producing intricate profiles and forms very efficiently. On some jobs we've taken six or seven setups down to one, which has made a colossal difference to cycle times and ultimately our bottom line and profitability.

"I would say the CV5-500s' standout qualities are the Smooth X control, the compact size and the excellent build quality. And it is a real plus that Mazak manufactures the CV5-500 in the UK, so we're supporting British industry."

This combination of more efficient, streamlined and accurate machining has been instrumental to NuMachine's growing order book. With the company now able to make more complex parts at higher volumes, it has been able to offer additional services to new and existing customers. It has also been able to explore new opportunities in Design for Manufacture, or DFM, which involves optimising machined parts through efficient engineering, improving component quality and production capabilities while reducing the potential for discrepancies.

NuMachine's CV5-500s have enabled the company to achieve both a step-change in accuracy and reduced lead times, so it can deliver more precise work in less time

Brandon Davies concludes: "Having the ability to really finetune our machining capabilities on an ongoing basis has not only allowed us to get to grips with 5-axis work extremely quickly, it has resulted in optimised processes that have increased the business's competitiveness. Ultimately, our CV5-500s have enabled us to achieve both a step-change in accuracy and reduced lead times, so we can deliver more precise work in less time. Because of this, we are now looking to expand beyond our traditional UK customer base, and explore opportunities in European markets like Germany."

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Latest sliding-head lathe holds single-figure micron accuracy

Aerospace component manufacturer reinvents itself during the pandemic

Rugby-based subcontractor Technoset, with 70 percent of turnover in the aerospace sector, was not in a good situation last March, 2020, when COVID-19 grounded most aircraft and orders plummeted seven-fold. Towards the end of 2021, the company's production of aircraft parts is still below one-quarter of previous volumes.

With the business facing an existential crisis, managing director Kevan Kane and the firm's owners set about restructuring the operation, positioning Technoset as a solutions provider rather than a supplier of components. It also started targeting challenging contracts for the supply of tight-tolerance components to more industries, notably lasers, fibre optics and telecoms.

The success of these policies has seen the number of components going through the shop floor for the first time for both existing and new customers more than treble from 10 to 33 percent. A large proportion have benefited from design-for-manufacture expertise from Technoset engineers to reduce piece part costs for customers.

The first new machine tool the company has bought since the onset of the pandemic was a highly specified, twin-spindle Cincom M32-VIIILFV bar-fed, sliding-head mill-turn centre, which was delivered by Citizen Machinery UK in spring 2021. Replacing two smaller M12 and M16 Cincoms that were about 20 years old, it joined a previous-generation M32-VIII bought in 2017, all numbers representing maximum bar capacity. There are also eight twin-spindle, fixed-head Miyano bar-fed lathes on-site from the same supplier for

turning and milling components from stock up to 64 mm in diameter.

A primary reason for acquiring the latest M32 was a need to machine complex telecoms components, in particular a family of 12 mainly aluminium connector parts for use in the defence industry. Many of them are complex, with a lot of milled detail, and drawing tolerances are below 10 microns.

That level of accuracy is achieved reliably, even when running lights-out, partly because the lathe incorporates Citizen's LFV (Low Frequency vibration) software in the Mitsubishi control's operating system. Variants of the LFV function can be called up automatically in any part program to break what would normally be stringy swarf into manageable chips. It is no longer necessary to stop the lathe to untangle and clear potentially harmful swarf from the tool and/or component.

Productivity is therefore maximised, the operator is freed to carry out other tasks on the shop floor and the machine can be left with confidence to run unattended. The programmable chip-breaking software is not only beneficial when machining the aluminium connector parts but will also prove invaluable when Technoset restarts producing aircraft components in significant volumes from Inconel, titanium, Waspaloy, Nimonic and other superalloys, all of which tend to birds-nest when turned and drilled.

In anticipation of acceleration in the return of aerospace work, the subcontractor introduced a second shift in early September 2021. It is to ensure that contracts for aircraft components, which typically involve batch runs of 1,000 to 2,000-off, do not dominate the shop floor and dilute the production of new work that has been taken on in other industries. Consequently, aerospace work at the AS9100-accredited contract machinists is unlikely to exceed 50 percent of throughput in the future.

Rapid development of turning machine technology

Kevan Kane comments: "Citizen Machinery's M32 sliding-head lathe, the manufacturer's flagship model, has been the most important contributor to Technoset's business since we bought the first one in 2000.

"Something that has surprised me is the speed with which the machine technology has advanced. Our latest M32 is of the fifth generation, which has been beefed up and completely redesigned since we installed the last, fourth generation model in 2017.

"The result has been a step change in performance. I regard the machine as the epitome of sliding head-technology in terms of productivity, flexibility and speed. It is ideal for mill-turning high value piece parts."

Improvements to the turning centre include 1.5 times faster live tools powered by a 2.2 kW motor and a programmable, 9,000 rpm B-axis to enable simultaneous machining in five CNC axes rather than four. Combined with the back tool post whose Y-axis now has adjustable-angle tooling, it enables faster production of more complex

parts. Superimposed machining allows three tools to be in cut at the same time, further shortening cycle times and raising productivity.

The 10-station turret incorporates a new tooling system employing a single, heavier duty drive, also rated at 2.2 kW, to an increased number of live cutters. Only the selected tool rotates, suppressing heat generation and vibration to enhance machining accuracy and surface finish. As nearly every part that is turned in the Rugby factory also requires prismatic operations such as milling and drilling to achieve one-hit manufacture, the improvements to the driven tool stations are of considerable benefit.

Kevan Kane adds: "The upgraded specification of the M32, which includes an 8,000 rpm main spindle uprated to 5.5/7.5 kW and an identical counter spindle, much more powerful than before, means that the machine is able to match the speed of the M12 and M16 that it replaces.

"Normally, to achieve cost-effective levels of productivity when mill-turning components from smaller diameter bar, you would not put that work on a lathe with double the bar capacity or more, as you would expect it to be slower.

"That is not the case with the fifth generation M32, which means we can consolidate jobs onto one platform. The reduced mix of machines on the shop floor promotes knowledge transfer and helps to mitigate manufacturing's industry-wide skills shortage problem."

He singles out Citizen Machinery UK's engineering backup as worthy of special mention; it is applicable not only to Technoset but also to group member Technoturn, St Leonards, where a similar number of Cincom and Miyano lathes are in operation. Responsive service is appreciated, but especially beneficial is the application support.

Recently, Technoset found itself pitching for work and were stuck on a cycle time of 90 seconds, which was too long to achieve the target price. Kevan Kane contacted the supplier's Bushey headquarters by email and an engineer came back within 24 hours with an application-optimised cycle time of 60 seconds. The one-third decrease resulted in the subcontractor winning the new business.

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Sodick machine helps Erodex support R&D efforts of aerospace customers

Erodex has installed a Sodick AG60L spark erosion machine from Sodi-Tech EDM at its state-of-the-art machining centre in Halesowen. The new machine brings vital extra capacity to the facility, which Erodex operates as an R&D manufacturing centre in support of its customers, around 75 percent of whom serve the aerospace and Industrial Gas Turbine (IGT) sectors.

Since its foundation in 1974, Erodex has followed a guiding philosophy that has endured throughout the decades: the finest raw materials, when allied to first-class manufacturing techniques and the best possible service, will result in a successful business. As one of the three central philosophies, the company's advanced machining facility is subject to an ongoing programme of investment in the latest technologies.

Although Erodex already had a Sodick AQ35L, the company identified a clear need for a second die-sink EDM machine, as Chris Grice, head of strategic capabilities, explains: "In line with our growth over the past five years we've witnessed a requirement for more technical support among our customer base. At Erodex, we can see there is real added value in providing customers with outsourced

expertise, in addition to the design and manufacture of new electrodes and the production of existing electrode designs."

Erodex can of course simply manufacture electrodes to customer drawings, but because of its expertise in the aerospace and IGT sectors, the company has a deep knowledge of what customers are trying to achieve with regard to the geometry of the actual components. As a result, design and production advice from Erodex is today a pivotal part of its offer and provides important market differentiation. This advice is focused on driving down customer cost per part and might provide the customer with better yield on its consumable, greater manufacturing throughput, or reduced scrap and rework for instance.

"As well as designing and manufacturing the optimum electrode, we have the capability to spark the customer's component and thus prove-out the electrode's geometry," says Chris Grice. "We can offer a complete turnkey solution and, subsequently, become an extension of the customer's development department to improve existing production and NPI needs. We are aware of the struggle many manufacturing facilities have balancing production and NPI. If a customer does not have the resource or manufacturing assets available, Erodex can be an extremely useful resource, while at the same time allowing customers to save on internal costs."

The turnkey cost per part program is what Erodex refers to as 'Application Assist', an offer that is now even more efficient thanks to the arrival of the new Sodick AG60L die-sink EDM machine. Indeed, a number of blue-chip OEMs in the aerospace sector are already taking advantage of Application Assist, including major engine manufacturers with facilities worldwide, and its supply chains.

"Even though our customer base uses a variety of EDM machines, when it came to extending our capacity we chose another Sodick because of its reliable motion control," Chris Grice continues. "We get really good repeatability, which is vital in our line of work, particularly when we have multiple parts loaded in a fixture. In addition, one of our major customers recently purchased eight Sodick AG60L machines, so it made sense to acquire the same model."

Accredited to both ISO9001 and AS9100D, Erodex has more than 100 employees across its facilities in the Midlands (UK), Richmond (USA) and Hermosillo (Mexico), all of which are operating Sodick machines.

Installed at the company's Halesowen headquarters in the middle of 2020, the new Sodick AG60L offers the level of speed and accuracy that makes it the best-selling model in the AG series. The machine features linear drive technology and a direct link between the drive and control to ensure the fastest possible servo response and optimal spark gaps at all times. Travels in the X-, Y- and Z-axis are 600, 420 and 370 mm respectively. At Halesowen, the machine has already been proving adept at developing new ways of producing electrodes and enhanced methods of die-sinking components, all of which help reduce development time for customers in the aerospace and IGT sectors.

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Flexible turning automation from Nakamura

Now available from The Engineering Technology Group (ETG) is the new Flex Arm from Nakamura-Tome. Nakamura has developed the new Flex Arm for its turning centres to provide complete automation from workpiece transfer to chuck jaw replacement. By incorporating the Flex Arm into Nakamura turning centres, manufacturers can automate the entire process from workpiece transfer to jaw replacement.

Flex Arm is a new product that allows for automated operation for multiple types of workpieces without stopping the machine. In addition to the loading of material and unloading of finished products as with the Nakamura compact loader, the new Flex Arm has an additional gripper and chuck jaw change function.

The key to unmanned operation in high-mix low-volume production is the ability to change the types of products quickly. In the past, automation has mainly focused on loading materials and unloading finished products with product changeover being one of the biggest challenges. By using the new Flex Arm, unmanned operation with product changeover is possible, improving production efficiency even further for ETG customers.

The Flex Arm system is mounted on the machine and can be easily integrated and controlled via the CNC control panel on the machine, making this a more attractive proposition than changing parts and jaws with an industrial robot. As the system is installed in the machine, it is highly compatible and fully integrated, making installation and start-up times fast enough to be used immediately after delivery.

The Flex Arm incorporates a transfer station for billets and finished parts, a Hakobei pallet system that uses a TP standard, and a special pin unlocking system that coincides with the chuck to automate chuck jaw changeovers. This changeover is simplified with a teach mode that can be tailored by the operator to work in harmony with the chuck and the programming process. The system can accommodate parts from 32 to 100 mm diameter with a workpiece length from 50 to 100 mm. Each of the two grippers can hold a maximum of 3 kg and the Flex Arm is offered with up to three types of interchangeable grippers as standard.

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Take the bridge to success

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has introduced a new highly rigid, thermally stable and high precision bridge-style vertical machining centre into the market.

The new BVM 5700 is a premium machine that, owing to its rigid design and build, delivers exceptional accuracies, greater flexibility, unrivalled machining performance and best-in-class process reliability. The machine's stability is the foundation for its impressive performance.

A rigid, thermally stable construction ensures that thermal deformation is minimised and, as a result, that high accuracies can be achieved irrespective of the materials being machined or the machining process parameters employed.

The versatility of the BVM 5700, combined with its high accuracy credentials, make it an ideal machine for the mould tool and die, aerospace, automotive, oil and gas and power generation sectors to name but a few.

CEO Tony Dale says : "There is a tendency amongst some manufacturers to think that bridge-style machining centres are only for large part processing. This is not the case.

"With the BVM 5700, Doosan have focused their efforts on creating a compact, powerful and highly rigid machine with a wide application potential and appeal.

"Irrespective of whether high material removal or super-fine finishing are required, the BVM 5700 delivers."

The BVM 5700 is a high-performance machine with good-sized axis travels, X-/Y-/Z-axis: 1, 050 mm x 570 mm x 460 mm, and a well-proportioned worktable, L = 1,300 mm x W = 570 mm, with a maximum 1,000 kg table load.

The machine is a productivity powerhouse and boasts excellent rapids, up to 42m/min, fast acceleration/deceleration rates and a 30/40 tool ATC with a 1.3 second tool-to-tool changeover time.

The machine's powerful, built-in BT40 spindle, 37 kW/15,000 rpm, can generate 214 Nm of torque and enables component manufacturers to ramp up speeds and feeds, take more aggressive depths of cut and, as a result, help manufacturers reduce part cycle times and improve lead time fulfilment.

The BVM 5700 features the Big Plus dual contact face and taper spindle/tooling interface for achieving increased accuracies and superior surface finishes. To ensure and maintain these high accuracies, especially over long machining runs and extended operations, the machine is equipped with a smart thermal compensation system comprising multiple sensors strategically positioned around the machine.

Mills CNC Ltd
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New generation of micro drills

Sandvik Coromant launches new tools for precision machining

Sandvik Coromant has launched two new microdrill families specifically designed for precision machining. The CoroDrill® 462 with -XM geometry and the CoroDrill 862 with -GM geometry support industries that demand small parts manufacturing, such as medical, automotive, electronics and aerospace. Designed to cover a variety of workpiece materials, the new drills offer precise performance where accuracy is key.

Devices across several industries are shrinking in size. This can be seen most clearly in electronics, with modern devices offering greater capabilities in smaller packages. Elsewhere, in medical device manufacturing, the rising trend of minimally invasive surgery, using techniques that minimise the size and degree of incisions a surgeon makes, demands surgical tools are more intricate. As the size of technology scales down and its level of sophistication scales up, manufacturers demand tools that can produce smaller, more complicated parts.

Drilling specialists generally use the term micro drilling when describing holes smaller than three millimetres in diameter. This can refer to holes often encountered in the electronics industry where workpieces are just a few hundredths of a millimetre thick, but more common applications include the aerospace industry, mould and die making and medical equipment manufacturing.

The CoroDrill 462 and 862 are the next generation of micro drills from Sandvik Coromant. Available in new geometries to offer a wide variety of cutting diameters and lengths, the drills boast an increased product range compared to previous assortments.

The drills have been specially adapted to overcome challenges of micro drilling. For instance, much like macroscale applications, it's critical to have quality coolant to effectively evacuate chips when performing deep-hole drilling with micro tools. Both the CoroDrill 462 and 862 can easily drill hole depths of up to nine times diameter (xD) when using external coolant, and a through-coolant option is also available for drilling diameters of 1.00 mm and above and hole depths of up to 16xD. Not only does the effective use of coolant help the tools to drill deeper holes, but it also extends the tools' life and reduces the risk of chip jamming.

Individually, the CoroDrill 462 offers high performance hole

making up to 3.00 mm. Ideal for drilling both blind and through holes, the drill is capable of machining a variety of ISO materials, including ISO P, M, K, N, S, O and H. With a drill depth of 6xD, the CoroDrill 462 offers manufacturers a versatile drilling solution.

The CoroDrill 862 is ideal for making holes from 1.00 mm to 3.00 mm in diameter in all materials, when used with internal coolant. In addition to conventional drilling, the CoroDrill 862 supports a variety of other drilling activities, including cross holes, stack drilling and drilling convex and concave surfaces.

In addition to being off-the-shelf solid carbide tools, both the CoroDrill 462 and 862 are available for customisation. As part of the range, Sandvik Coromant has made it possible to configure the tools based on diameters, usable length, step-diameter length and shank diameter, for manufacturers who require a bespoke approach to micro drilling.

Furthermore, customers have the option of purchasing the CoroDrill 862 with a Polycrystalline Diamond (PCD) vein cutting edge. PCD is up to 100 times more wear resistant than solid carbide. In addition, PCD tooling is more accurate and can produce tighter tolerances than solid carbide tools. Therefore, customers seeking to drill micro-sized holes in notoriously difficult-to-machine materials, such as titanium, aluminum, glass and ceramics, should consider PCD.

"The CoroDrill 462 and 862 mark a new era for micro drilling," says James Thorpe, global product manager at Sandvik Coromant. "We've made significant upgrades since the launch of our last micro drills, with the aim of delivering more options to our customers.

"In today's manufacturing landscape, whether you're producing luxury watches or aerospace parts, the demand for intricacy is greater than ever. As products get smaller and with more complex components, we recognise that we too need to adapt and make our drills capable of machining smaller holes."

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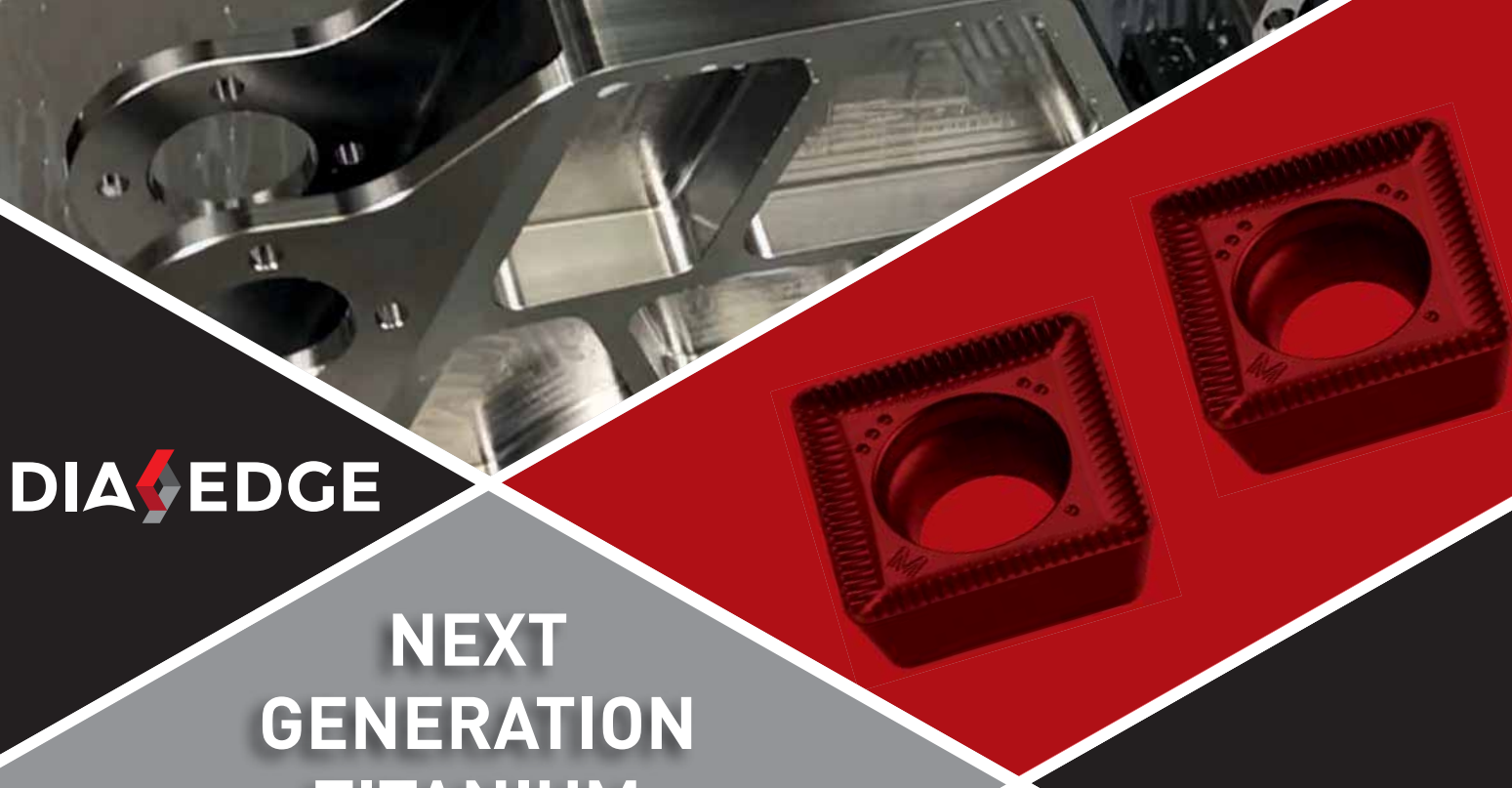

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MITSUBISHI MATERIALS

Two new types of Alimaster end mills

Mitsubishi Materials' renowned range of solid carbide end mills includes the Alimaster series, designed specifically for ultra high efficiency milling of aluminium alloys.

The latest additions to the series are a 3-flute square corner type the A3SA / DLC3SA and the A3SARB / DLC3SARB, a 3-flute corner radius type. Both types are available uncoated and also with the new DLC coating.

Development of the whole Alimaster range has progressed by optimising the micro grain carbide substrate together with the latest ideas in flute and cutting-edge geometry. The combination of these features has been proven over time and has enabled Alimaster to gain an advantage in today's ultra-competitive aluminium alloy material machining market. Some of the range now comes with a new and technologically advanced, eye-catching, DLC coating.

New coating technology

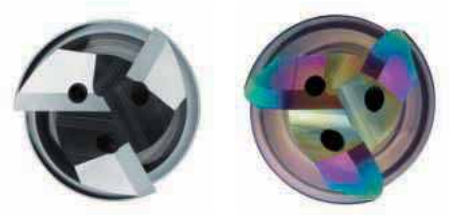
The uniquely developed DLC coating provides the ultimate welding resistance during high-speed machining and is especially effective when the coolant supply is reduced. Additionally, the low coefficient of friction reduces cutting resistance in all modes of cutting and helps to provide smooth chip evacuation to prevent the common problem of flute clogging when machining aluminium alloys at high feeds and speeds.

Helical through coolant holes

Helical holes maintain a stable coolant supply even after re-grinding. This means chip discharge during plunging, ramping and grooving have been significantly improved, for stable, high efficiency cutting.

Optimum end and flute geometry

Both of these new Alimaster types feature irregular helix and polished flutes. The irregular flute geometry suppresses chatter to enable excellent surface finishes and the highly polished flute surfaces prevent built up edge and aids chip evacuation during full width cutting and plunging. In addition, the centre cutting edges have been optimised to provide extra strength and reliability even during plunging.



To complete the innovative range of features on all of the new types, a smooth radius geometry is formed at the exit of the flutes that prevents tool overlap marks on the workpiece after deep wall machining.

The A3SA / DLC3SA square corner type is available from Ø12-Ø25 and the A3SARB / DLC3SARB also in diameters 12-25 with a range of corner radii from 1.0 mm - 5.0 mm.

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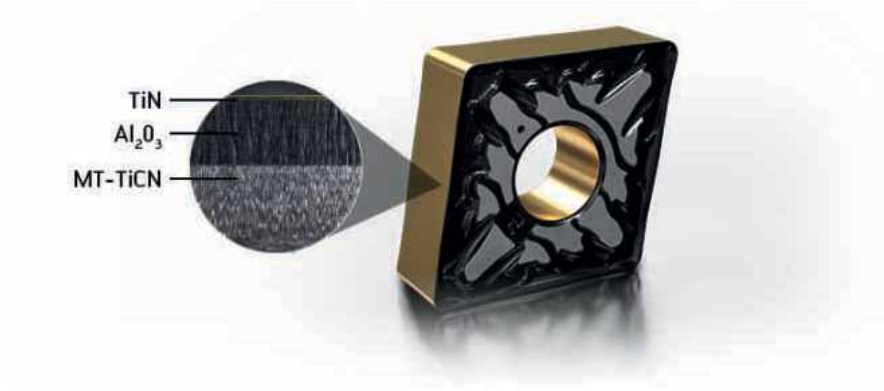
Walter Tiger·tec Gold insert grades with multi-layered MT-TiCN coating

With the WPP10G, WPP20G and WPP30G grades, Walter presents the new Tiger·tec® Gold indexable inserts, specially designed for turning operations. The aim was to reduce flank face wear by 30 to 60 percent. In reality, tool life increased by an average of 50 percent according to the results of over 130 customer tests. The primary application is steel with a tensile strength of 600 to 900N/mm². Lightweight components made of steel with high tensile strength of 1,000 to 1,400N/mm², which are on-trend at the moment, can also be machined with the new grades.

The indexable inserts are sure to be of particular interest to mass producers in the automotive, energy and general mechanical engineering sectors, where the inserts significantly reduce the cost per component. Wherever a range of materials are used, such as in the mechanical engineering industry, users can benefit from their versatility: Walter is launching the grades with nine geometries across the program for applications such as optimised chip breaking on long-chipping, low-carbon materials (MP3) and interrupted cutting (RP7) to the market.



Another key feature of the Tiger·tec Gold inserts for turning is their outstanding process reliability. This, alongside their performance and tool life, is the result of their unique layer structure: A patent-pending, highly textured MT-TiCN layer reduces flank face wear and increases toughness due to its multi-layered structure, which optimises elasticity. The highly textured Al2O3 layer additionally increases the product's resistance to crater wear.

The gold coloured top layer improves wear detection. The final multi-stage post-treatment of the inserts ensures a smooth rake face, less friction and a high level of toughness. The individual alignment of the grades makes the indexable inserts outstandingly versatile: WPP10G for continuous cuts and light interrupted cuts, WPP20G as a universal grade for 50 percent of applications and the tough WPP30G grade for interrupted cuts as well as unstable or unfavourable conditions.

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Time to get reacquainted with CERATIZIT at MACH 22

CERATIZIT UK & Ireland is eagerly anticipating the return of the MACH exhibition. It will take the opportunity to highlight four years of cutting tool toolholding and workholding innovation, along with continuing enhancements to its customer support.

With one of the largest stands in the exhibition, stand **18-210**, it will be able to showcase a wide range of products developed to enhance the productivity and profitability of its customers.

For turning stainless steel components, regardless of whether they be cast, forged or semi-finished parts, the already well-established CTPM125 carbide grade has been added to with two new cutting materials, the more wear-resistant CTCM120 and the tougher CTCM130, to provide a complete product range for turning stainless steels, both with the latest Dragonskin coating for high performance and process security.

The universal PVD-coated carbide grade CTPM125 is characterised by a well-balanced ratio between toughness and elevated-temperature hardness and promises to deliver high reliability when machining all stainless steels. CTCM120 is a CVD coated, highly wear-resistant carbide grade, which allows high cutting speeds with austenitic steels and boasts a smooth cut. It also impresses with its long tool life.

The complete range for turning austenitic, stainless steels is characterised not just by the precise coordination of the three grades, but also by the free selection of different chip breakers. Depending on their application, customers can choose from three geometries for negative indexable inserts or two for positive inserts across all three cutting material grades. As a result, CERATIZIT has seamlessly covered all application ranges for machining austenitic, stainless steels.

Reaming has been the go-to process for creating tight tolerance bores consistently and CERATIZIT has the perfect solution in its Fullmax range of solid carbide reamers. Thanks to their specialised high-performance coating and sophisticated unequal cutting edge pitch, Fullmax reamers deliver exceptional surface finish as well as significantly reduced deviations in circularity and cylinder shapes. The geometry also reduces the tendency for the tool to oscillate and form chatter marks. A recent addition to the Fullmax range is the short series with its shorter length offering numerous advantages. Improved stability and reduced vibration means that surface speed can be increased by up to 10 percent in the main application areas of steel and cast iron.

The WNT X5G-Z from CERATIZIT provides an efficient and highly precise clamping system for machining centres that provides cutting tool access from five or even six sides. The X5G-Z also improves productivity thanks to its ease-of-use which significantly reduces the setup time.

Every aspect of machining has been addressed in the design of the WNT X5G-Z as can be seen in the lean, tapered contour of the two jaws, which provides optimum access to the workpiece. The jaws also contain elastomer elements to assist with vibration damping, thereby improving surface quality and increasing the service life of the tool and spindle.

The X5G-Z system's jaws and their adapter also have a distinctive feature in that they sit on a special dovetail guide that allows jaws to be changed in just a matter of seconds, with no screws or tools required. The vice itself comes in five models and two heights, which differ in the length of their base bodies.

Hope HB130 mountain bike charity draw

Over the years CERATIZIT UK & Ireland has built many partnerships, both with customers and charities. At MACH 2022 these will combine with a charity prize draw, with a HOPE HB130 carbon-framed 'Do it all' trail/mountain bike, valued at over £6,000. Manufactured by Hope Technology in Barnoldswick, making use of CERATIZIT Tooling in its production, the HB130 the ultimate all-rounder that is at home whatever the terrain. The winning entry will be drawn at MACH 2022 by World, Olympic and European cycling champion Katie Archibald MBE.

Entry to the draw is by way of a £10, minimum, donation, which can be made online at **https://www.justgiving.com/teams/WNTEVENTS**. All proceeds will be divided between CERATIZIT UK & Ireland's preferred charities of the British Heart Foundation and Cancer Research UK.

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Modular reamers for large bores

A new, modular system for reaming large diameter holes has been introduced by Horn. Offering high precision, flexibility and easy handling, DR-Large reamers have exchangeable cutter heads with multiple solid carbide inserts, resulting in high cutting values, shorter cycle times and lower costs. The interface of the insert seats has been designed to offer precise interchangeability to within a few microns. Tool setting is unnecessary when exchanging the cutter head.

The versatile, interchangeable reaming system is suitable for bore diameters from 140 mm to 200.2 mm. Six cutter heads cover the range of diameters in 10 mm increments. Two sizes of head fit on each size of reamer shank. Modular construction and an ABS-compatible interface means the tool can be extended to any length, in theory without limit. All reamers are equipped with direct internal coolant supply to each cutting edge.

Reaming is an economical machining process. Compared to boring holes to tight tolerances, it is faster and can significantly reduce unit costs. Until now, reaming tools on the market in these larger sizes have been either special brazed tools or diameter-specific reamers with fixed inserts.

With such tools, which tend to be delicate and heavy, replacing worn inserts is a complex process and calibration can be tricky for many users. Horn offers a practical alternative with its exchangeable-head, pre-calibrated DR-Large reaming tools and its customer service department offers quick and simple reconditioning.

Horn Cutting Tools Ltd. is the wholly-owned UK subsidiary of Horn S.A. Luxemburg, a leading European supplier of grooving tools and a leader in precision grooving technology. The company was incorporated in the UK in 2008, having previously traded as Horn UK since 1995.

The Horn group of companies is led by Paul Horn GmbH, based in Tubingen, near Stuttgart, which has been developing and producing grooving, side turning and slot milling tools since 1969; these tools occupy a leading position in the market. Its products are used by automotive, general engineering, aerospace, hydraulics/pneumatics, jewellery and medical equipment manufacturers.

Since 1996, the UK operation has had local tool design manufacturing capabilities. These were significantly increased following major expansion of the Ringwood site in 2004 and further enhanced in 2006 with additional facilities dedicated to the manufacture of customised tooling.

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Škoda Auto and Seco Tools collaborate to eliminate a production bottleneck

Founded in 1864, the Škoda Auto production plant in Vrchlabí, Czech Republic, upholds a long, proud tradition of manufacturing excellence. Škoda has produced cars there since 1946, including the 1203, 105 and 120 vehicles and, more recently, the Favorit, Octavia and Roomster models. In 2012, Škoda transformed the plant into a fully up-to-date manufacturer of car components. The company produces direct-shift automatic gearboxes used in Škoda cars and other brands of Škoda's parent Volkswagen Group.

Approximately 1,000 Škoda employees work two shifts a day to produce up to 2,300 two-clutch, seven-speed DQ200 automatic gearboxes with advanced DSG direct shifting system technology. The Vrchlabí production plant is one of the region's most important industrial employers and among the most advanced facilities within VW Group. The production process uses leading-edge technologies that support Industry 4.0, including collaborative robots, autonomous transporting systems and the digital twins approach to manufacturing design and documentation.

Škoda recognises that every facility, however advanced, offers opportunities for further optimisation projects. One such project targeted removal of a bottleneck from production of a unique gearbox part. A turning operation used three different ISO cutting tools and consumed nearly 51 seconds of cycle time. The second spindle of the CNC turning centre sat idle, wasting production time while the trio of tools machined part features.

Škoda sought to reduce machining time on the turning centre and increase production capacity. Various cutting tool suppliers suggested changing inserts and cutting speeds, which did not produce the desired efficiencies. The proposals generated minimal machine time savings and increased cutting tool costs.

Škoda then decided to accept an innovative approach suggested by Seco Tools. Seco originated a project to develop and evaluate a combined cutting tool for precise, efficient machining of the gearbox component. In only four days, Seco technical specialists developed a non-traditional solution and presented plastic models of two new tools generated on a 3D printer. Work on the details of Seco's first suggestion revealed a unique solution: a single multi-purpose cutting tool that could perform all the desired operations. In just two more weeks, a production test of the tool proved its overall functionality and ability to meet the required part parameters. Škoda put this solution into regular production approximately eight weeks after the project began.

With one tool instead of three, Škoda eliminated tool changes among operations and shortened production time. Analysis of the operation sequence also enabled technicians to optimise the tool paths further and save more time.

The innovative Seco tool reduced final machining time to 40.2 seconds, savings of 10.7 seconds, or more than 20 percent of the operation's original cycle time. This outstanding result saved Škoda more than €10,000 in tooling costs within a single year.

Application engineer Milan Kudrnáč and key-account manager Petr Zeman represented Seco on the supplier side in this Škoda project. Additive manufacturing supported their efforts and enabled fast, inexpensive generation of tooling models. The models quickly and easily validated the new solution and helped uncover potential production problems. The models also provided a perfect way to present a solution to a manufacturing partner.

Škoda and Seco collaborated closely to support the project. Seco employees appreciated Škoda's active approach to the project, the auto manufacturer's interest in the development process and the opportunity to cooperate directly in the workshop. Good communication offered the key to this successful collaboration.

Vladimir Flandera, specialist for mechanical machining at the Škoda Auto Vrchlabí plant, managed his company's participation in this project. He also appreciated the importance of the active approach, speed and flexibility on Seco's part, as well as continuous and complete communication.

By reaching its main goal on this project, Škoda made significant savings in yearly tool costs Further savings resulted from the use of a single specialised cutting tool that costs less than the three ISO tools it replaced. The biggest impact, however, comes from elimination of the production bottleneck. The specially designed tool smoothed overall workflow and greatly reduced the wait before the second spindle of the CNC turning centre could perform subsequent operations on the workpiece.

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New year, new packaging

rose plastic has recently launched a number of new products as well as updating some of its existing packaging solutions and enhancing others with practical accessories.

InsertBox Connect - High-quality PCD and CBN indexable inserts need optimum protection and support during storage and transport. This clever plastic box is available with or without centring insert and is designed for storing ISO indexable and a wide variety of inserts.

TopPack FiveFrame - This accessory perfectly complements the TopPack range. It allows the individual tubes to be bundled into units of five. The frames can be easily connected together, using the practical plug-in function to create larger pack sizes if required.

ProtectiveCap - With improved protection and fit, the range of ProtectiveCap now offers advanced edge protection for cutting tools both from mechanical impacts and contamination.

TwistPack Plus - The proven TwistPack plus can now extend to a maximum length of 1,050 mm. This is made possible by simply adding the new middle section to two, standard outer TwistPack Plus parts.

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Maintaining the benefits from your investments in robotics

With robots now an essential element in many manufacturing facilities, users are benefiting from the increases in productivity, quality and consistency which these systems deliver. The high levels of reliability and uptime associated with robot systems however can sometimes lead to complacency when it comes to planning preventative maintenance schedules. This article from Stäubli's Simon Jenkins highlights the benefits which can be realised by adhering to preventative maintenance schedules for robot systems, which will in turn ensure long term performance and an ongoing return on the initial investment

There is little doubt that as part of the justification process for the investment in the robot systems currently in production across our manufacturing landscape, increases in performance and productivity would have been a key element of the submission for capital. With the systems subsequently installed and running, the anticipated benefits were soon realised and production would then continue at a pace with the minimum of human intervention, save for the provision of component parts etc.

The very fact that robots do operate for many thousands of hours at high efficiency levels can in certain instances foster the approach that "If it's not broken, don't fix it". This however will at some point result in unexpected failure, unplanned maintenance and not only costs to replace components, but the much greater costs associated with loss of production.

These events can however be mitigated through the implementation of a planned and targeted preventative maintenance schedule. Although there are costs associated with this approach they can be budgeted for ahead of time and will overall be much less than the cost of restoring production in the event of a failure.

It is an accepted practice that when we purchase a car, many of us will ensure regular servicing at the recommended intervals to maintain reliability and to continue to achieve the optimum fuel efficiency. We will also replace wear parts, such as tyres, when needed not only to adhere to legal requirements but to maintain safety and performance. The value of regularly servicing our vehicles is seen not only in the fact that they will last longer, but in their residual value which will be greater based on their service history. While we may not be considering residual value in terms of our robot systems, extending their useful life significantly, while maintaining safe operation and always attaining the highest performance levels, represents an ongoing return on the initial investment.

As one of the world's leading robot suppliers, we are able to measure the benefits from regular service and maintenance from analysis of the vast installed base which we have across multiple sectors. While we have always been pro-active with our customers in relation to service and maintenance, we are now launching a comprehensive new range of service and maintenance packages, combined with 24/7 support. This holistic approach to service and maintenance will maximise uptime and productivity levels for our customers. These new offerings are being treated differently and will be available as part of our standard product line, with the capability of being tailored to suit individual customer needs."

Another key factor in ensuring optimum performance from robot systems is that of training for operators, programmers and maintenance personnel alike. Users skilled in programming will be able to quickly make any changes needed to accommodate new part variants or even just minor adjustments to an existing robot programme. The same applies to those businesses which operate a structured in-house maintenance programme, detailed knowledge of the robot hardware and control system is a valuable asset during planned maintenance routines.

Throughout the pandemic, Stäubli has ensured the availability of training courses, initially in the form of live interactive on-line courses using robot simulation software and increasingly moving back to on-site training at the company's Telford site. Training is an essential element in upskilling and we are seeing an increase in demand for training courses as part of this process within a number of companies across several market sectors.

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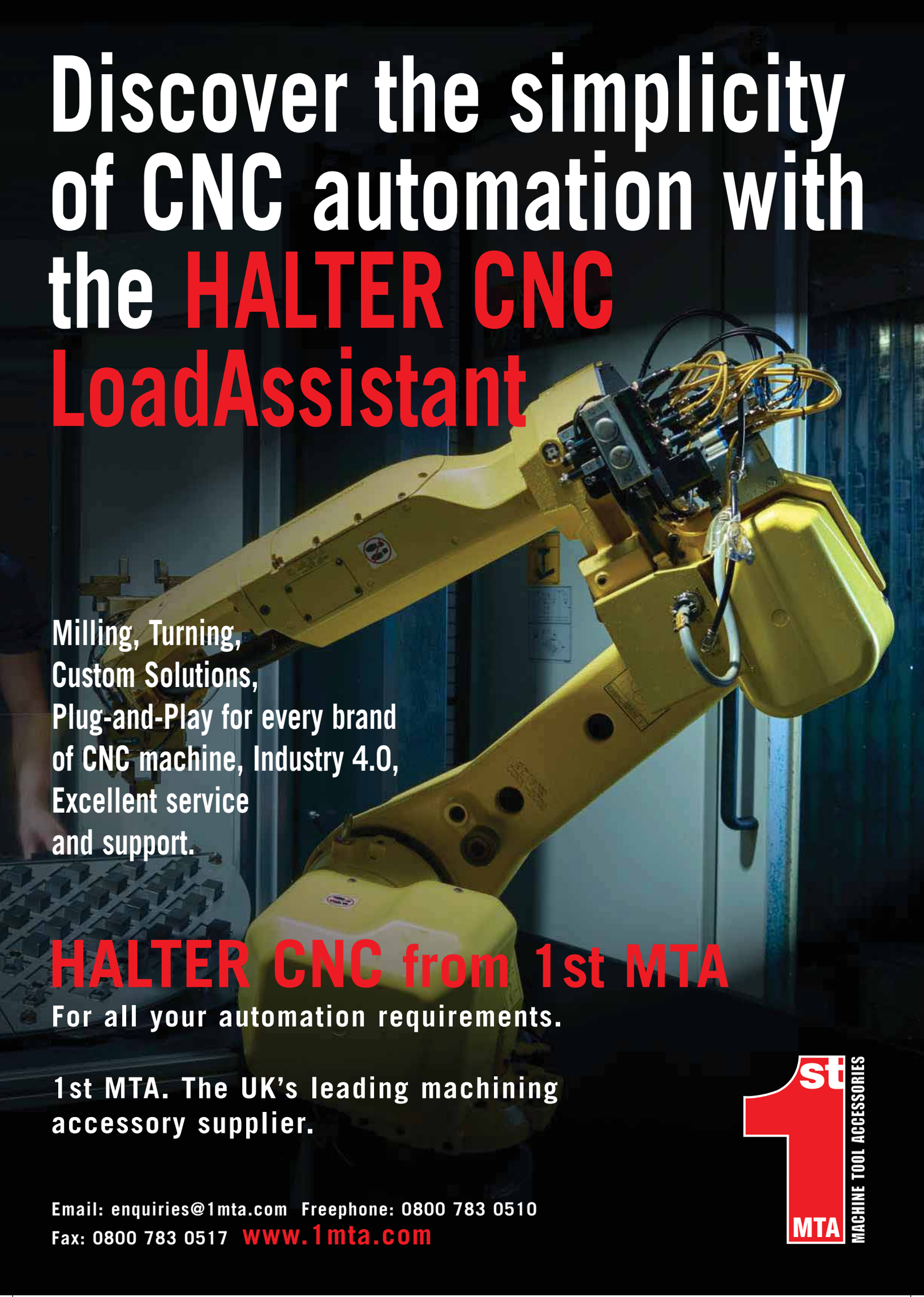
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MACHINE TOOL ACCESSORIES

Workholding from LANG aids supercar supplier's efficiency

Having identified a gap in the UK automotive market for a highly-efficient subcontractor that specialises in the production of premium quality, low volume components, the founders of Opus International Products Ltd established their business in 2013. In less than 10 years the company has grown rapidly to become a major force within its chosen sector. With customers that include premium vehicle, supercar and electric car manufacturers, Opus now works with OEMs, first tier suppliers and manufacturers at all levels of the production chain.

Given the business' relatively short production runs, to help reduce changeover times and to increase its machine tools' levels of efficiency, Opus International Products' managing director, Rob Coles recently searched for an advanced workholding system that would improve the company's machining productivity. After considering products from several leading suppliers, a selection of advanced workholding systems were purchased from LANG Technik UK. Now in constant use, the LANG Technik systems have enabled Opus International's machine tools to significantly increase their output.

Rob Coles explains: "In addition to relatively small batch numbers, many of the components we produce feature complex configurations with challenging dimensional tolerances. These factors create a range of manufacturing difficulties, not least the ability to achieve maximum machining efficiencies.

"By using our LANG Technik workholding systems on our advanced HAAS machine tools, we have achieved the incremental production increases we were aiming for. Now, before inserting a workpiece blank into one of our new LANG Makro-Grip vices, our staff are able to use our LANG Technik stamping unit to make very accurate, minute indentations into the workpiece. Then, as the 'male' features on the jaws of our LANG vices exactly engage with the workpiece's pre-stamped 'dents', we are able to achieve excellent holding power whilst only needing to apply minimal clamping forces.

"As a consequence, our LANG Makro-Grip vices are able to securely hold each workpiece with the application of minimum pressure. Therefore, we are able to securely hold, from the softest, to the hardest of materials, under all machining conditions without fear of deformation or other similar problems. In addition, as the LANG Technik stamping unit makes its indentations into only the last 3 mm of workpieces, we are able to make savings on material.

"As all of the indenting preparation work is carried-out before each workpiece is placed into the machine tool, the use of our new LANG stamping unit and Makro-Grip vices has slashed our machining downtimes."

LANG Technik's advanced Pre-stamping technology and Makro-Grip vices are fundamentally different from the clamping methodologies of other workholding manufacturers. The advantages gained from the innovative LANG Technik system means that it has become the benchmark clamping method for secure 5-axis machining.

The toothed jaws of conventional vices must satisfy two distinct functions, in addition to indenting a workpiece's material, they must also securely hold the workpiece. Conventional vices are only able to exert a maximum pressure of approximately 4 - 6 tons, therefore the effective penetration of conventional vice jaws into workpiece materials can be extremely difficult, especially when clamping harder materials.

To guarantee that the workpiece is penetrated correctly, a vice's teeth must be remain sharp to continue to be effective. Although, as vice teeth are subjected to high levels of torque and wear, their clamping ability inevitably declines over time. Also, when using conventional vices during the machining of soft, distortion prone materials, jaws' teeth also tend to lose their holding power as they are inclined to work free of the workpiece under machining forces.

The use of LANG's advanced stamping technology overcomes these problems by applying up to 20 tons of pressure during pre-stamping to guarantee the creation of precise indentations into the workpiece, even when applied to the hardest of materials. As a result, following pre-stamping, as the teeth of the Makro-Grip vice engage perfectly with the pre-stamped indents, only low clamping pressure is required to hold a workpiece securely. In addition to holding the workpiece in the Makro-Grip vice under the most severe machining conditions, the truncated pyramidal shapes of the pre-stamped indents prevent the vice's teeth from impacting deeper into the

workpiece by providing a definitive penetration limit.

Despite the application of relatively low clamping pressure, the clamping forces exerted onto workpieces held in Makro-Grip vices actually become higher the harder and more resistant the material being machined is. Also, as workpieces are prepared before being loaded into the machine tool, non-productive downtime is considerably reduced.

Also making a significant contribution to Opus' machining efficiencies is LANG Technik's Quick-Point system. In essence, the flexible Quick-Point system acts as an interface between the machine tool's table and its workholding. Designed to reduce setup times and to allow work to be quickly and accurately transferred from one machine to another with first-class levels of location repeatability, Quick-Point is available in a wide range of variants to suit all machine tools and applications. The high-precision exchange of clamping devices, fixtures and workpieces between machines using the system can be carried-out within seconds with location repeatability within 0.005 mm.

Rob Coles concludes: "The help we received from the knowledgeable staff of LANG Technik UK before we placed an order enabled us to cover the maximum amount of workholding applications with minimum LANG Technik workholding products. Such are the machining efficiencies we have gained through use of the company's systems, as we continue to ramp-up our production levels we will be returning to LANG Technik UK for further products.

LANG Technik UK has been established to provide sales and application support for new and existing customers of its leading 5-axis workholding and automation systems.

Its goal is to increase customer productivity by perfecting manufacturing processes. It offers a complete and proven package of workholding, zero-point clamping and automation for machine tools. Its pre-stamping technology is considered a 'benchmark' in workholding making its 'all in one' solution truly unique.

All of its products are beneficial to machining processes which maximise manufacturing capacity. Simple operation and great versitility make the daily work of customers easy and maximise their profits.

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Hyfore takes machining ultrasonic with new toolholders

For manufacturers faced with the challenge of machining hard and brittle materials or companies with difficulties undertaking micromachining operations, Hyfore Workholding has now introduced a new range of ultrasonic toolholders. Manufactured by Acrow and available through Coventry-based Hyfore, the exciting new ultrasonic toolholders are ideal for machining everything from carbide and PEEK through to Zirconia, Sapphire, SiC, AlSiC, Quartz, Boron Nitride and many more.

The ultrasonic toolholders can be retrofitted to virtually any machine tool and by utilising ultrasonic vibrations that resonate at a frequency range of 20 to 60 kHz, the cutting tool oscillates in an upward and downward motion at a frequency of beyond 20,000 times per second. For the end-user, this high-speed frequency exceeds the frequency of sound waves and it can significantly improve tool life and machining performance while demonstrating astounding surface finishes on the most difficult materials known to the industry.

The impressive new system incorporates an ultrasonic generator with automatic frequency detection and tracking unit that is located outside the machine and is connected to an ultrasonic toolholder. The externally connected generator has a 24 kHz frequency with 30W auto frequency tracking that generates a high-power output that is rigorously designed for machine shop environments. This generator is suitable for high precision continuous operations with its integrated electronic circuitry and the ability to automatically switch power supply for AC100-240V and 50/60 Hz.

Connecting to this externally positioned generator is an ultrasonic toolholder that is available to suit most machine tools with BT30, BT40, HSK63A, CV40 and DV40 connections available. The ultrasonic toolholders have a maximum weight of 2.4 to 3.4 kg depending on connection type and it is recommended the spindles run at a speed of up to 6,000 rpm with a maximum runout of <5 µm. With a frequency of 24 kHz and an amplitude range of 2-10 microns, the high-frequency vibration of 24,000 times per second equates to a machining speed of a staggering 240,000 rpm.

Oscillating at such a high frequency, the Acrow ultrasonic spindles from Hyfore Workholding eliminate the need for specialist high-frequency machine tools for processing the most challenging materials in the industry. Despite being a specialist product application, the Acrow ultrasonic spindles facilitate through spindle coolant and can also work with automatic tool change units, making the system suitable for most machine tools.

Hyfore Workholding Ltd Tel: 024 7699 3153
Email: sales@hyfore.com www.hyfore.com

New telecentric measurement system delivers breakthrough accuracy across multiple applications

Keyence has introduced a new range of inline telecentric measurement system which employ highly advanced silhouette-based analysis for guaranteed accuracy. Designed specifically to measure parts rapidly and consistently as they pass through the system, the TMX5000 line-up boasts an exposure time of just 25 µs, 40 times faster than conventional models, allowing accurate measurement of high-speed targets by eliminating blur from the image. It provides a versatile solution for a broad spectrum of industrial measurement applications, offering Geometric Dimensioning and Tolerancing (GD&T), outer diameter and profile measurement, abnormality detection and runout and positioning.

The specially designed telecentric optics greatly improve measurement repeatability by increasing uniformity throughout the field of view. Compared with conventional telecentric optical systems, the TM-X5000 Series offers around 100 times greater telecentricity, just 0.0001°, ensuring confidence in results even for misaligned targets.

The dual telecentric silhouette-based system provides exceptional stability while the large ±15 mm depth of field, based on telecentric lenses in both the transmitter and receiver, provides clear, sharp edges and stable measurement results, even where the target position may vary.

Users can select from two installation methods, with or without the included base. A handy optical alignment function enables rapid, simple installation, while the user interface features a wide variety of measurement tools, enabling intuitive configuration of settings.

The range consists of three models to cater for a wide variety of requirements: the compact, ultra-high accuracy TM-X5006; the standard TM-X5040 model and the TM-X5065 fore wide field applications.

Richard De Courcy, product specialist for Keyence UK vision and measurement, explains: "Accurate measurement of parts is vital to guaranteeing quality and consistency and for identifying any possible production issues at the earliest possible opportunity. Our new portfolio harnesses the power of state-of-the-art silhouette-based technology to deliver exceptional accuracy alongside ease of setup and use, ensuring consistent, reliable measurement of a wide range of parts. This will bring peace of mind to manufacturers seeking to reassure its customer of the quality and consistency of its offering."

For further information and to arrange a demonstration, visit **www.keyence.co.uk/tmxrelease**

KEYENCE VHX-7000 4K Digital Microscope helps archaeologists

The Archaeology Department of the University of Liverpool has carried out projects that have improved our understanding of how human culture developed in ancient times. Playing a key role in that research has been the KEYENCE VHX-7000 Series Digital Microscope, the world's first 4K ultra-high accuracy microscope.

Elizabeth Thomas, an Archaeology PhD student at the university, had the opportunity to use the KEYENCE digital microscope when conducting research for her Masters and PhD. This work involved analysing Egyptian mirrors, many of them dating back to the Middle Kingdom era of the 12th Dynasty.

The VHX-7000 was used to gather information on the different kinds of corrosion found on the mirrors. She felt it was important to see the different layers in the mirrors and how they were made, which was not possible using a Scanning Electron Microscope (SEM) where image delivery was in grayscale.

Essential for her work was the ability to create colour images and show extremely high levels of detail at high magnification settings. Having access to full-colour high magnification images was vital to ascertain how an artifact might have looked in its original state.

She found that another benefit of using the KEYENCE digital microscope was that it could display textiles that had been preserved in corrosion. The VHX-7000 was able to capture images of these textiles for subsequent examination by an expert.

In addition, the digital microscope made stitching images a straightforward process, whereas an SEM would require image stitching to be carried out manually using separate software. The VHX-7000 also eliminated the need for preparing samples, while the measurement capabilities of the KEYENCE system saved time.

"There are many advantages to using the VHX-7000," Elizabeth Thomas concludes. "It represents a massive jump in functionality from any previous digital microscopes I've used."

KEYENCE (UK) Ltd
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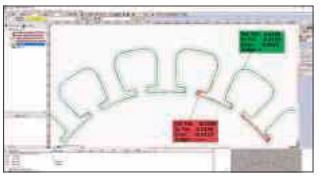
www.keyence.co.uk

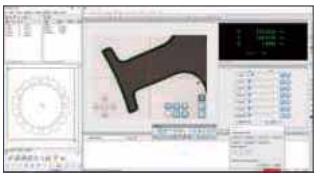
NEW Products

Mitutoyo

Flexible solutions for the EV industry

As the World moves to a more sustainable future, vehicle production and technology is also shifting. Production quality remains of fundamental importance in the manufacturing of electric vehicles. Mitutoyo understand these challenges and by utilising the latest CMM, Vision, Form measurement machines and dedicated software, along with unparalleled service and support, Mitutoyo are an ideal partner to meet your exacting quality standards.





Scan the code to discover more about the products and inspection solutions for the EV industry or visit **www.mitutoyo.co.uk/ev**

Mitutoyo helps Surface Generation develop aerospace parts

Every gram counts when designing and building lighter, more fuel-efficient aircraft, therefore the ability to economically mass-produce lightweight, yet strong high-precision composite components represents a major aim of the global aerospace industry.

When using the company's proprietary Production to Functional Specification (PtFS) systems to develop a highly-efficient and cost-effective method of producing aero engine structural guide vanes, made from carbon fibre reinforced plastic, the staff of Surface Generation Ltd worked closely with Mitutoyo UK's measurement services department to ensure the regular supply of high-precision inspection data.

Surface Generation Ltd was established in 2002 to develop and commercialise its unique PtFS process. Following two decades of technical advancements and impressive levels of growth, the company now boasts a large international customer base. Surface Generation's clients utilise PtFS to optimise their use of advanced composite materials and to enable highly controlled and efficient manufacturing to take place. The use of PtFS is not limited to fibre reinforced composites and may be successfully used to process unfilled thermoplastics, advanced metals and glass.

Surface Generation's PtFS technology integrates heating, cooling and process control systems to enable the delivery of maximum performance in both turnkey and retrofitted applications. The company's innovative systems, combined with custom software, provides the first 'digital moulding environment' where 'active thermal management' delivers massive savings in both cycle times and energy consumption. In addition, the use of PtFS leads to significant reductions in the pressures needed to process challenging materials and parts with complex forms.

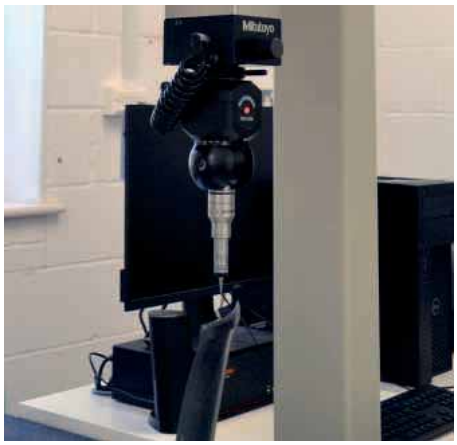
Surface Generation's Alasdair Ryder explains: "By precisely controlling temperature, displacement and force application during manufacture, PtFS provides improvements in accuracy, speed, manufacturing economies and part performance, even when using the most challenging of materials.

"PtFS provides reduced cycle time and improvements in energy efficiency. In addition to much faster delivery times and cost reductions, our users gain significant improvements in product quality. PtFS is now used throughout the world across a range of demanding sectors, including the automotive, consumer electronics, medical, oil and gas and the aerospace industry.

He continues: "Traditionally made from metal, aero engine structural guide vanes are high-precision fixed elements with critical form, finish and structural response requirements. When tasked with using PtFS to deliver enhanced process yield and a reduced cycle time, it was incumbent upon us to demonstrate that parts respected the necessary geometrical tolerances."

"Although we have a fully equipped inspection department at our Rutland facility, including a Mitutoyo CMM with tactile probing, the demanding levels of manufacturing precision we required meant that we needed to find an expert inspection subcontractor that had access to high-precision CMMs with advanced scanning capabilities. We found the ideal partner in Mitutoyo's Measurement Services Department.

"Multiple material and production variables were involved in each stage of developing the structural guide vanes manufacturing methods and each had the potential to impact upon the components' accuracy. Therefore, following the



production run of each new iteration of the components, we supplied a sample batch to Mitutoyo's Measurement Services Department. After undergoing high-precision scanning routines each part was quickly returned to us with an in-depth inspection report.

"Our use of PtFS and the detailed inspection data supplied by Mitutoyo has now resulted in the development of an optimal, production process that guarantees the extremely efficient manufacture of lightweight, strong and highly precise structural guide vanes with extremely accurate airfoil geometries"

Andrew Fifield, measurement services manager for Mitutoyo adds: "Mitutoyo's Measurement Services Department supports a multitude of UK companies across a wide range of industrial sectors. Our customers use our services when their QA inspection demands exceeds in-house capacities or when greater capability and outside help is the most timely and effective way of meeting measurement challenges. In addition to many other metrology services, our Coventry and Halifax based measurement centres offer a full range of third-party measurement, reporting and CMM programming services.

"The detailed inspection routines carried-out on Surface Generation's structural guide vanes were made with the use of a high-accuracy Mitutoyo CRYSTA-Apex S CNC CMM, that guarantees a maximum permissible length measurement error of E0,MPE= (1.7+3L/1000) µm."

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Vision Engineering launches its first 4K resolution digital microscope

Vision Engineering Ltd has announced the launch of it first 4K resolution digital microscope, Makrolite 4K.

Makrolite 4K's superb image quality, 4K resolution and wide dynamic range is suitable for a wide range of complex and high contrast applications. It provides more fine detail with greater detail shadow and highlight areas, ideal for challenging inspection routines, including reflective subjects, for example solder joints, subjects in shadow, or subjects with low contrast, such as rubber and plastic.

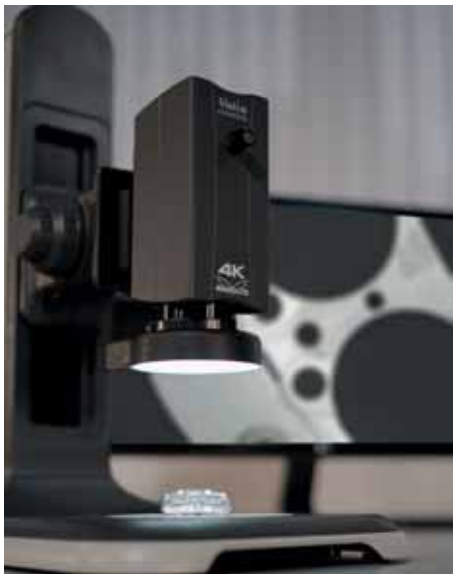
Makrolite 4K is flexible, easy to use, and provides high-definition video images with a wide dynamic range and up to 330x magnification. It delivers both versatility and high performance in applications such as production, lab research, R&D, micro assembly, quality control, inbound/outbound product checking, dissection and re-work.

Available in two versions, the console configuration provides direct HDMI connection to the monitor for live display with full control of zoom and all camera settings. Connecting Makrolite 4K to a PC

with dimensioning software, ViPlus, extends its capabilities to include image capture, annotation, on-screen measurement, live overlays, data/image report generation and a range of image processing tools.

Additionally, the Makrolite 4K solution includes a wide range of stands and objectives, making it a flexible solution equipped to deal with a wide range of demanding inspection tasks.

Paul Newbatt, Vision Engineering Group sales and marketing director says: "Makrolite 4K represents a step forward for Vision Engineering in terms of inspection microscope image resolution. It retains the core Vision Engineering values of superb image quality combined with ease-of use



and also adds 4K resolution, a choice of console or PC versions, and range of five stands, to deliver a really flexible inspection solution."

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Upgraded metrology software inspects gears automatically

Coordinate Measuring Machine (CMM) manufacturer LK Metrology has introduced a third release of its CAMIO 2021 programming and measurement software featuring numerous improvements. The most significant is the inclusion of a module that automates the inspection of spur and helical involute gears.

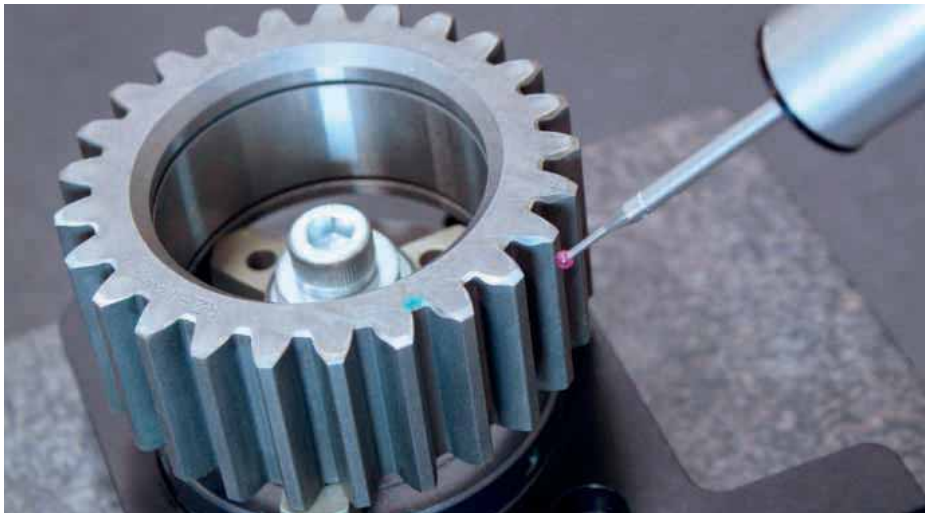
CAMIO GEARS makes it possible to begin measuring the specific geometry of gears quickly by utilising the core capabilities of CAMIO software to generate straightforward inspection programs, advanced gear reports and automated probe calibration routines.

For each gear type, the software has a unique set of definitions, evaluation algorithms and reporting graphics conveniently packaged in one add-on module, making it easy for users to bring a new capability to their existing CMM. The module supports alignment of the gear axis during measurement using any of the three CMM axes and traditional touch trigger probes or advanced scanning probes.

Several other improvements have been incorporated into CAMIO 2021 R3, the availability of which was announced at the end of November. Smart 3-2-1 datum alignment is new functionality that intelligently selects the datum axis and origin constraints, as well as the most suitable datum features using best-practice techniques. Should the user change the alignment properties manually, the selections automatically update.

Explorer Tree Datum Definition allows datum features to be defined more efficiently directly from the feature explorer, with the option of specifying the datum label. Report Table Feature Order provides new options for controlling the order in which features are reported in graphical tables, either alphabetically, by program output or in a user-defined order.

Teach-path coordinates and directions may now be defined using the CAD model. The Geometric Dimensioning and Tolerancing (GD&T) reporting algorithm has been further enhanced to be independent of the standard used. Finally, there is new capability for retrieving points from a feature measured using a tactile probe, complementing existing functionality for retrieving data from a point cloud.



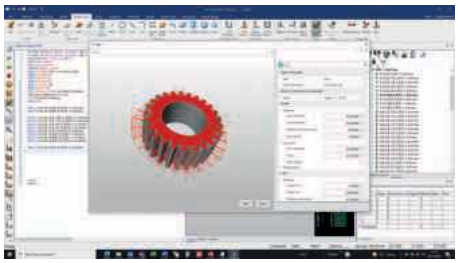
LK Metrology's upgraded programming and measurement software, CAMIO 2021 R3, includes a new CAMIO GEARS module for automatically creating programs to inspect spur and helical involute gears, analyse the results and create gear reports and calibration routines

For CAD users, exchange file versions are compatible with the latest release of Spatial's InterOp, as was the case in the previous iteration of CAMIO 2021. The interoperability software is a leader in CAD data translation that enables users to import, interact with, share and export 3D data easily across CMM platforms and manufacturing sites.

CAMIO 2021 R3 encourages novice as well as experienced users to drive the inspection process graphically from the CAD model, either online or offline, although teach-and-learn using the CMM handbox is available. An advanced user interface makes part alignment, feature inspection and dimensional tolerancing fast and intuitive.

The virtual CMM programming environment means that accurate axis movement and probe motion sequences may be simulated for collision detection and cycle time estimations. Help Files now use a version of HTML5 help that supports modern internet browsers, such as Microsoft Edge and Google Chrome, and link to locally installed help pages.

CAMIO 2021 supports Metrology Gate, Industry 4.0 software that enables production teams to view and analyse quality data and monitor all CMM activity



A CAMIO GEARS screenshot from the third release of the programming and measurement software

remotely from any internet-connected device. The web-based portal provides 24/7 access to information from any enabled metrology device for automatically retrieving inspection results and a summary of errors, a record of program changes, uptime of the CMMs and Overall Equipment Effectiveness (OEE).

Historical logs assist troubleshooting and warn when routine maintenance is due, not only of the inspection machines but also of the machine tools or other equipment on which the components are being made. The software provides a modular solution for various levels of CMM automation to raise productivity, cost effectiveness and product quality.

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Torque sensor with separate sensing head can probe deep into machinery

Sensor Technology has extended its new range of torque sensors with a model that has the sensing head and electronics in separate housings. This has two advantages: the sensing head can fit into very confined spaces and the electronics can be located in a position where they are protected from physical damage.

The new TorqSense SGR530/540 series operates on the same principle as all the other SGR510/520 units, namely a full four element strain gauge bridge. This uses four individual stain gauges affixed to the drive shaft; each measures the deflection of the shaft in a different direction as it rotates under load. The electronics collects readings from all four gauges and calculates the torque value.

Sensor Technology launched the TorqSense SGR510/520 range in 2020 as the successor to its RWT range which worked on Surface Acoustic Wave (SAW) measurement and detection. It has specialised in real-time torque measurement for over forty years and pioneered the development of wireless technologies that use radio frequency pickups rather than hard-wired solutions involving delicate and unreliable slip rings.

Initially launched in sizes up to 500Nm, interest in the SGR sensors was so high that the introduction of larger sizes up to 13,000 Nm was brought forward 6-12 months to December 2020.

The new range is designed to meet emerging user requirements, notably accurately recording transient torque spikes. In the past, transducers didn't have the bandwidth to capture these spikes, so they were ignored. However, advances in automation, continuous operation and the increasing need for accurate track and trace data has led to the need for more detailed measurement and analysis.

In use, a rotor mounted ultra-miniature microcontroller, powered by an inductive coil, measures the differential values in each strain gauge and transmits them back to the stator digitally, via the same coil. The SGR510/520 series transducers then use state-of-the-art strain gauge signal conditioning techniques to provide a high bandwidth, low cost torque measuring solution with high overrange and overload capabilities.

An advantage of the design of the SGR torque sensors is that they automatically compensate for any extraneous forces, such as bending moments, inadvertently applied to the sensor. They also offer high sensitivity and have a wide temperature tolerance.

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High speed 2D and 3D measurement made simple

Metrology specialist offers demonstrations on first InspecVision 2D and 3D system in UK

Industrial measurement systems specialist The Sempre Group now offers demonstrations on the UK's first InspecVision 2D and 3D measurement demo machine. Potential and existing customers can visit The Sempre Group's Centre of Excellence in Gloucester to see the new features of Planar and Optiscan systems, such as the automated turntable feature for 3D measurement, the SurfScan and 2D repositioning upgrades. UK and Irish manufacturers can use these additions to improve measurement accuracy and integrate 2D and 3D measurement.

InspecVision offers low-cost machinery that businesses can use to carry out one click, single-second field of view 2D, 2.5D and 3D measurements with a single click. Manufacturers, particularly in the automotive and sheet metal industries, can use these systems to measure and obtain traceable results, without the need for hand tools or manual input. They can also link the system to Computer Aided Design (CAD) models to easily show users if a part is in or out of tolerance with overlayed colour mapping.

The Sempre Group can provide expert demonstrations of the technology, including the range of add-ons, such as the SurfScan. The system is a high-resolution projector that can be simply retrofitted onto an existing Planar vertical column. This allows manufacturers to improve the accuracy of their 2D and 2.5D inspection, without investing in an entirely new and possibly costly system. The addition enables businesses to accurately inspect forms, louvres and small bends with a single click, streamlining measurement of complex parts.

Sempre can also demonstrate the 2D repositioning Planar add-on to customers looking for an unbiased opinion about the technology. OEMs can use the system's integrated optical markers to measure parts larger than the base table in one cohesive process. The systems stitches 2D scans together, removing the manual and time-consuming process of accurately repositioning parts. Ultimately, this allows manufacturers to invest in one system, rather than multiple for different sized components, potentially saving thousands.

"The LED ring around the camera is a great addition for manufacturers who want to improve the system's visibility and inspection accuracy because it automatically helps determine the movement of a 2D part," explains Mike G John, head of engineering at The Sempre Group. "When this is partnered with the Opti-Scan 1000.35 and the automated turntable, manufacturers can collect eight times the number of 3D measurements, compared to a typical scan rotation. Manufacturers can set up a demonstration to see how they can rapidly and accurately collect and analyse data to improve their productivity, ensure accuracy and reduce waste."

With the help of The Sempre Group's installation and service team, OEMs can install any of these additional components onto pre-existing InspecVision Planar systems. The Sempre Group offers a full suite of metrology solutions from a broad supplier base, including software and hardware, so businesses can find a solution that is specifically tailored to their needs.

To arrange a visit to the showroom and a demonstration of the InspecVision range, visit **www.TheSempre Group.com**

The Sempre Group, previously Metrology Direct, provides

comprehensive measurement, inspection and design solutions across the UK and Ireland. With four divisions aimed at creating a tailored experience for each partner and customer, The Sempre Group is a strategic partner in quality, automation, innovation and efficiency for manufacturers in Great Britain.

Its consultants can resolve the toughest metrology challenges across all sectors and its expert service team offers support through contract measurement and system calibration and servicing. Finally, in-house solution developers work with you on creating new and innovative ways to increase your efficiency and boost your productivity.

The company works alongside many manufacturing industries to provide solutions to a variety of requirements in quality control and automation. With extensive knowledge in OEM and industries including aerospace, medical devices and automotive, it also applies that understanding to all its supplying tiers. As it expands into new product ranges, its customer range does too. It now works with more educational and research establishments, as well as industries such as food and energy.

The Sempre Group
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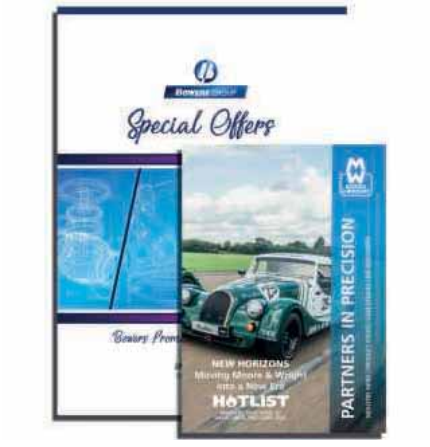
www.thesempregroup.com

Bowers Group launch new exclusive offers and Hotlist for 2022

Leading manufacturer and supplier of precision measurement solutions, Bowers Group have announced the launch of its Special Offers and Hotlist promotions for 2022.

With impressive deals available, as well as highlighting some of the most popular tools across its extensive range of metrology equipment, featuring the newly launched DigiMic external micrometer and innovative solutions such as the NEW Baty R400 FT2-E Profile Projector, these exclusive brochures are perfect for those looking to improve its portfolio of tools over the coming year.



UK sales manager, Ryan Kingswell says: "Our brand-new brochures are a great resource for anyone looking to expand its precision measurement abilities in 2022. With many fantastic offers available, as well as highlights such as case studies and an overview of many of its most popular machines and tools, the brochures are available to order physically or to view online via our website. We're expecting plenty of interest with such competitive prices and we're looking forward to helping many businesses get their New Year off to a flying start."

Bowers Group works closely with many popular manufacturers from around the world, such as Trimos, Sylvac, and Wyler and are perfectly placed to offer the UK market impressive deals on products within its special offers brochure.

With up to 10 percent off selected products, including the Sylvac scan range, the XT Groove Set and fantastic deals such as 15 percent off the brand-new DigiMic and a free accessory kit available with Trimos V7 Height Gauge, there hasn't been a better time to invest in effective and reliable metrology equipment.

Also out now, the new Moore & Wright Hotlist is a showcase of some of the newest and most impressive tools from the world-renowned name in measurement tools. A well-loved brand with over 100 years' experience under its belt, the Moore & Wright range of tools offers high quality and reliable precision.

The Hotlist offers up to 50 percent off a range of tools including an impressive 40 percent saving on the Workshop Digital Caliper 110-DBL Series, as well as 10 percent off the Bowers Mechanical XT Analogue Bore Gauge.

Bowers Group
Tel: 08708 5090
Email: sales@bowersgroup.co.uk
www.bowersgroup.co.uk/offers-spring-summer-2022

Productivity gains provided by VERICUT

With an impressive machine shop that equals many of the motorsport teams that it supplies, Blackmore Precision Engineering has invested in some of the very latest advanced manufacturing equipment to produce complex tight tolerance components of outstanding quality within demanding timescales. Helping the company achieve its promised delivery is VERICUT CNC simulation and optimisation software.

Kidlington-based Blackmore Precision Engineering's 12,000 ft² facility is equipped with a range of 5-axis CNC machining centres. They include three Matsuura MAM 72 machines each with 32 pallet stations, four DMG Mori DMU 50s some of which feature automated pallet changing and a DMU 70 for larger parts. The immaculate machine shop has grown and developed rapidly since Brendan Blackmore started the company back in 2005.

"Back then," recalls company director, Jeremy Gray, "Brendan was based in a small unit where he used a machining centre and CADCAM software to successfully produce parts on a quick turnaround for Formula 1 teams and other motorsports customers. Due to high demand, additional staff and machine tools followed with a move to a larger unit before the relocation to our existing site in 2010."

Bringing his general management experience to the company Jeremy Gray joined Brendan, who still owns the business, in 2008. "Initially it was all about turning parts around very quickly, we were accustomed to having drawings sent to us on a Friday and having to supply parts on the Monday. We still do this today, but in addition we go through the rigorous inspection criteria that is required in every industry sector," explains Jeremy Gray.

Since the business made the decision to invest in VERICUT simulation and optimisation software from CGTech in early 2021, it has further improved the efficient turnaround of customer parts. Jeremy Gray explains: "We had looked at VERICUT in the past, however when two new team members joined us, both of whom had prior experience with VERICUT, we were persuaded that was the way forward."

"From a business perspective, investing in VERICUT has been very impressive right from the start. Obviously having team members who knew how to use VERICUT was a great help, but the whole CGTech team, from sales to training and subsequently holding our hand to really get everything in place very quickly, has been exceptional. Thanks should be given to the technical support as well for getting all our machines modelled and set up in the software."

Lead CNC programmer, Jan Plovucha, was a catalyst for the application of VERICUT at Blackmore Precision Engineering. For CADCAM the company uses Open Mind's HyperMILL software which has a direct interface with VERICUT to import all of the necessary detail including the Lang high pressure clamping system and zero point plates used across the shopfloor. The goal is to 'hit' the component in one using the experience of the programmers to achieve this.

He says: "We can rely on VERICUT so our prove out time has dropped dramatically. This is vital as we are running small batches of components with complex geometries and we do not keep parts on file. Each job is treated as a new job, so every part gets the VERICUT treatment each time because it may not be run on the same machine or by the same machinist."

In fact, VERICUT substantiated its value on the very first week the software was in use as one job planned for a DMU 50 machine was highlighted by VERICUT as exceeding the limits of the machine tool. "Previously, the machine would have been set up with the

tools and run until it encountered this issue. Then it would need to be broken down and reset on a different machine, losing time and possibly accuracy as we try to match the datum points.

"We use the AUTODIFF module to check the parts for excess stock material and to eliminate gouging where the CAM program may want to go through the part stock material. VERICUT is so good we don't think about some of these problems anymore and the technical support and training provided has been first class."

At around 25 percent of the company's annual turnover, motorsport is still an important market sector, but the business has broadened its customer base and diversified over the years. Many businesses supplying the various Formula 1 teams in the UK and beyond understand the cyclic nature of the industry, which has fantastic opportunities during the 'car build' that lasts for about five or six months. However, for the company to remain busy throughout the year requires demand from other industries.

Jeremy Gray states: "We targeted work that matched our capabilities and we now supply Rolls-Royce Aerospace, Jaguar, Bentley and many Tier 1 automotive companies. We also do a lot of scientific and instrumentation work, based here in Oxfordshire there are many start-up companies that come out of the University."

Metallic materials cut include aluminium, titanium and Inconel as well as mild and stainless steels, while engineering and glass filled plastics are also precision machined. Cycle times vary between 30 minutes for a simpler aluminium part to around 30 hours for a complex casing cut from titanium.

Volumes are never excessive although the automotive batches at up to 100 parts are much higher that those demanded by the motorsport's customers. "We may have suspension parts for Jaguar and they could be batches of around 70, but they also do a lot of special builds and vintage cars and that can be as low as batches of 10 or so. The work is certainly very interesting and the rising demand of EV will bring lots of challenges but it is a big market going forward with lots of opportunities," Jeremy Gray explains.

He concludes: "VERICUT has been an important link to allow us to deliver quickly when required and always reliably. The software certainly has added benefits that we didn't consider beforehand."

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Tebis CADCAM supports Cloud-based advanced tooling library for CAM automation

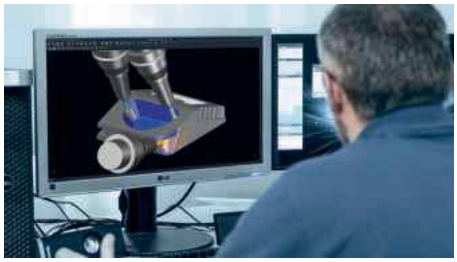
Paul Scally, operations manager of Tebis UK, explains why you need Tebis cutting tool library for CAM automation

Tebis CADCAM software offers a unique cloud-based cutting tool library to store best practice manufacturing information together with 5 other database libraries: Clamping device library, Virtual Machines with clamping devices, geometric features associated with machining features, machining cycles and machining processes. Tebis cutting tool library not only stores cutting tool geometry shape information, but also stores advanced machining parameters grouped for different materials and different machine tools as well as different toolholders.

The cutting tool library interacts with all the other libraries and can sit on a server in the cloud for administration and control. What makes Tebis CADCAM different from other software systems is the many more types of manufacturing parameters stored with it and the way Tebis deals with and uses the data. The advanced manufacturing parameters are organised in machining groups and include spindle speeds, feed rates, step-down feed rates, and corner feed rates. These stored best practice parameters are useful not only to new users, but also to experienced users so they don't need to remember the parameters or take the time to check the cutting tool manuals. Without the advanced cutting tool library, it is quite often that the best practice manufacturing parameters may not always be used so machining quality and efficiency may be compromised.

The Tebis cutting tool library is capable of storing the exact geometry of cutting tools, toolholders and intermediate toolholders and validate the assembly. This ensures these elements used by the CAM users are correct and available on the shop floor.

With the Cloud-based environment, Tebis has the master tool library sitting on the Cloud and this is the tool library which is managed by the administrator and the management to ensure consistent uses among all users even across different work shifts and sites. Tebis software automatically downloads the latest library data by activating the system and users always work with the latest data. This is beneficial to large and also small installations.



Another advantage of Tebis CADCAM is the support for lens cutters and large radius contour cutters. Tebis uses the exact contour of these cutters for toolpath calculation and is capable to accurately simulate residual stocks on the parts when these are used.

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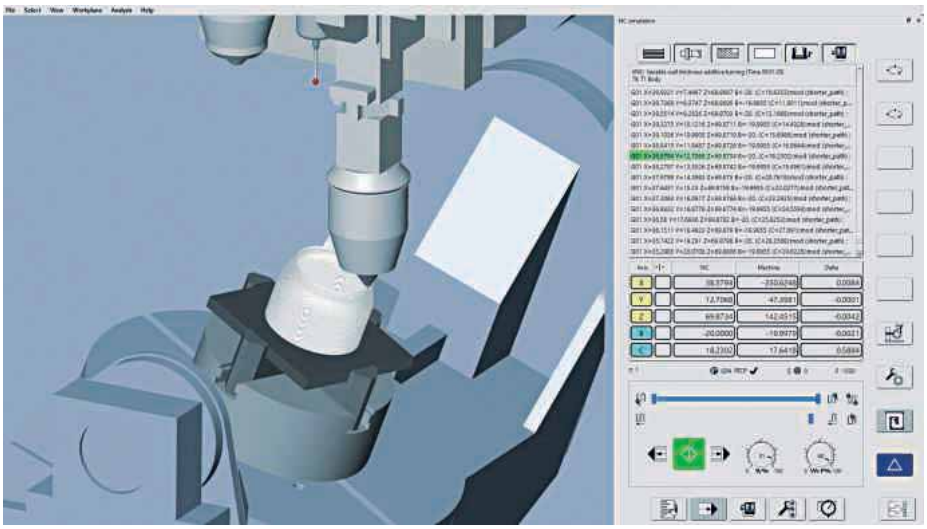
hyperMILL end-to-end CAM solution is now even more powerful

At the Southern Manufacturing Exhibition, OPEN MIND Technologies is giving a UK exhibition premiere to the latest version of its hyperMILL® CADCAM software. Version 2022.1 will incorporate more features, optimised strategies and a host of major enhancements for more powerful and simplified machine and controller independent NC programming.

On its stand at the Farnborough International Exhibition Centre, OPEN MIND experts are demonstrating the optimisations to hyperMILL that include enhancements to the 5-axis strategies in VIRTUAL Machining. This provides users with better results in terms of surface quality, new options for 2D functionality as well as efficient innovations in electrode manufacturing that deliver more convenient and faster programming.



hyperMILL VIRTUAL Machining is all about generating, optimising, and simulating NC code reliably through a collection of targeted solutions. Virtual Machining can be used to map all process steps in CNC manufacturing for perfect process control. The modular technology now also supports additive machining programs. The Optimiser module, which delivers powerful optimisation algorithms for efficient multi-axis machining, also features the 'Optimised Table-Table Logic' function for easy programming and reduced air time between cuts. The user selects a distance value, and the Optimiser automatically calculates the safety distances using the raw part, component and clamps selected in the job list.

The defined distance is maintained for all components and the movement sequences are automatically optimised. This makes the generating of ideal linking movements even easier. Also, the new feature of direct data transmission in the CONNECTED Machining module provides additional safety during tool input. Instead of the traditional manual input, the parameters are transferred directly from hyperMILL to the controller.

Seamlessly merging the virtual and real world

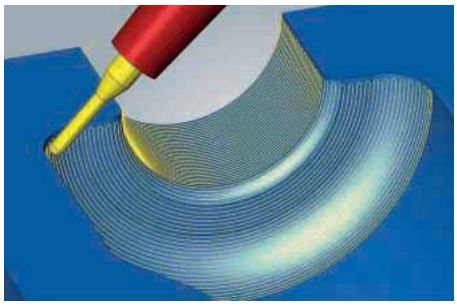
The three hyperMILL VIRTUAL Machining modules for the seamless merging of the virtual and real worlds form the core of the safe simulation solution. The Centre module virtually maps real machining situations for the machine and controller and simulates these based on the NC code. The Optimiser module provides powerful optimisation algorithms that ensure efficient multi-axis machining. It also automatically identifies the best inclination for top machining results. The CONNECTED Machining module enables in-depth networking and synchronisation with the machine.

Intelligent component alignment at the touch of a button

Another tool for ensuring greater efficiency and cost-effectiveness in machining is the intelligent real-time component alignment in CAM using hyperMILL BEST FIT. The unaligned component is probed on the machine using 3D probing, and the probing points are sent back to the CAM system in the form of a measuring log. hyperMILL BEST FIT then precisely adjusts the NC code to the actual component position. The adapted NC code is subsequently simulated in the virtual machine on the actual clamping setup and optimised automatically.

5-axis radial machining

Machining strategies for 2.5D, 3D, HSC, Mill/Turn and 5-axis applications offer the ideal solution for any machining situation. In the area of 5-axis radial machining, new improvements raise the bar in blow mould machining. The new 'Flow Equidistant' infeed strategy is the first of its kind that supports the generation of toolpaths with a constant infeed for vertical and challenging surfaces. This means that these surfaces can be integrated into the overall machining sequence and processed in a single step to provide seamless machining with a very high surface finish quality.



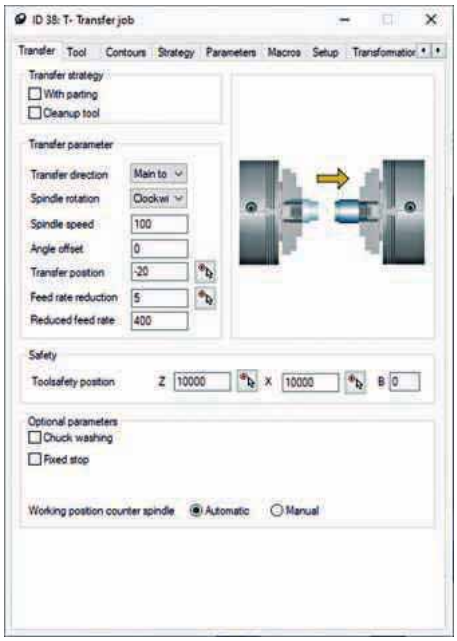
New undercut detection automatically identifies undercuts and makes the corresponding machining adjustments, if desired. This means that undercut areas can now be skipped with no manual intervention necessary. As a result, users do not need to generate additional surfaces.

A dedicated 3-axis machine mode greatly simplifies the use of radial machining on these machines, and the 'Smooth Overlap' function can be applied to the general milling area without selecting a boundary curve. For instance, the 'Smooth Overlap' function blends the transitions between two surfaces that have been milled in different

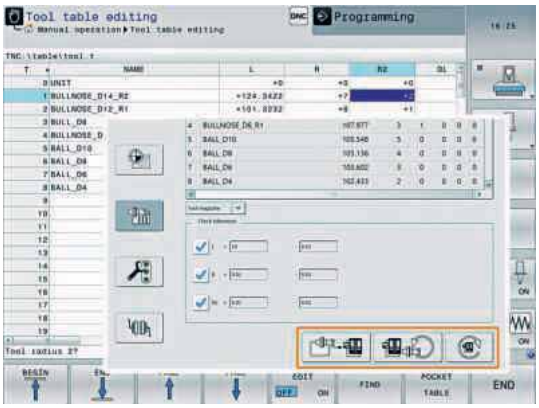
machining directions. This results in perfectly transition-free surfaces.

Programming turning processes even faster and easier

The two new feature types make programming turning processes much easier and faster. Component areas for turning or plunging are reliably recognised, structured and displayed. During this process, hyperMILL automatically divides the recognised features into several areas that can be turned, faced, groove machined or machined with a combination of these technologies. This saves users considerable time in contour selection and programming while giving them full access to all recognised contours.



hyperMILL now offers convenient programming for two-sided machining on machines with a main and counter spindle. The machining jobs are simply programmed under the 'Main Spindle' and 'Counter Spindle' containers, which assigns them to the respective machining side. The component or bar material, with or without parting, is transferred with the new transfer job. NC output from the main and opposite sides and component transfer is realised in one end-to-end NC program with a machine model and a post-processor. DMG MORI CTX machines with a Siemens control are supported release 2022.1. More manufacturers and machine types will follow.



Time-saving erosion path changes with hyperCAD-S Electrode

Thanks to the simple creation and subsequent modification of traverse paths during the EDM process with hyperCAD®-S Electrode, users no longer need to program on the controller. Three new modes are available to users for creating the traverse paths.

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Hypertherm announces release of Production Manager for ProNest CADCAM nesting software

Hypertherm, manufacturer of industrial cutting systems and software, has announced the release of Production Manager, an optional module for its ProNest® advanced CADCAM nesting software. This web-based module is designed to improve productivity, maximise machine up-time, boost on-time delivery and increase material utilisation.

Production Manager seamlessly integrates with Hypertherm's EDGE Connect® CNC, to automatically capture machine data without the need for operator intervention. In addition, it displays real-time production data so team members across an organisation can track the status of job orders, the production schedule and pending inventory requirements. Additional features include:

Dashboard view

Intuitive dashboard view provides production stats and trends in one view. Colour coded status alerts help users quickly understand the on-screen information while an interactive display allows users to drill down for additional insight.

Real-time information

Real-time machine data from the CNC is transferred to Production Manager. This enables users to track job progress from pending, to in-production, to actual completion time making it easier to respond to customer inquiries and forecast the production schedule.

Flexible intervention

Cancel or hold orders to add or remove parts based on last-minute changes. Users can view machine backlogs and ensure loads are evenly distributed across cutting machines in a way that optimises the production schedule.

Remote access

Makes it easy for users to access Production Manager via a computer, mobile phone, or tablet anytime and anywhere users have a secured network or VPN connection.

"Production Manager takes the guess work out of an organisation's daily operation by connecting everyone to the same information, in real-time to drive business cohesion and continuity," says Tom Stillwell, product marketing manager for Hypertherm software products.

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Efficient and cost-effective

The MEBA 3D 335 band saw machine

Metal 3D printing has experienced rapid growth in recent years. The 3D printing process allows a high degree of flexibility in the planning and construction of the various components. The components themselves have a high stability, functionality and durability.

A key question in the overall process is: How are the metal parts cleanly separated from the base plate after 3D printing to have high-quality parts in the end? One possibility is the cost-intensive process of wire EDM. Another alternative is the manual separation of the parts, so to speak "with hammer and chisel".

Edelstahl-Mechanik GmbH, a specialist in additive manufacturing, has found another solution for this work step: the MEBA 3D 335 band saw machine. Managing director and owner of Edelstahl-Mechanik, Josef Eisele, reports: "The additively manufactured components can be cleanly separated from the base plate with the MEBA band saw. Neither components nor base plate are damaged. We are very satisfied with the results."

Edelstahl-Mechanik can look back on more than 30 years of company history and competence in stainless steel processing. The company's portfolio begins with the development and application of laser

cutting processes, the mechanical processing of metals of all kinds, welding and apparatus construction to the production and distribution of stainless-steel products.

Josef Eisele says: "Our company has always been characterised by reliability, professionalism and flexibility. From the very beginning, we have seen ourselves as a partner to our customers, for whom we not only want to be a manufacturing company, but above all a professional consultant and service provider in the areas of development and design. It is the combination of technical know-how and customer proximity that makes up the special quality and that is consciously cultivated by us as management."

To achieve these goals, it is important for the company that the machinery at all company locations is state-of-the-art. Most recently, the stainless-steel professionals have expanded this to include additive manufacturing. As a result, they achieve the highest level of vertical integration and, according to their own statements, are among the leading companies in the industry. With the entry into additive manufacturing, those responsible in the company thought about how to separate the components from the base plate in an optimal, contemporary, and economical way. Since stainless steel mechanics have been working very satisfactorily with MEBA band saws for 20 years and MEBA was able to supply a special saw for 3D printing, Josef Eisele says, "no other product came into question for us." For those responsible at stainless steel mechanics, the arguments for the band saw seemed logical and have been confirmed in practice. The additively manufactured components are separated from the base plate with the saw in a time- and resource-saving manner. The costs and time required are significantly lower than with wire EDM or manual separation.

Quality and fine technology

The idea that parts are often manufactured with the latest technology, in the SLM or DMLS process, but then separated manually, as in the past, spurred the MEBA developers to find a better solution: an economical and up-to-date solution. As a result, MEBA has incorporated long-term, sophisticated band saw technology into the 3D saw, whereby 3D-printed workpieces are separated precisely and without damage from the 3D metal base plate. The MEBA 3D 335 is based on the straight-cut model MEBAeco 335, which is equipped with feed monitoring and a frequency-controlled ball screw drive. It is equipped with a special clamping device for holding 3D metal printing base plates. This base plate can be moved as desired via linear guides and can be precisely aligned. The MEBA 3D solution works with a 2-column guided saw frame that is infinitely driven. Cutting and feed speed can thus be adjusted very finely. In combination with the right selection of band saw blades for the respective material to be separated, even filigree parts can be separated very precisely. According to its

own information, the stainless-steel mechanism has not yet encountered components for which there were problems with separation. On the contrary: The company manufactures many different, often filigree parts, orients itself on the MEBA cutting data computer, which was delivered with the saw, and thus achieves the best results. Josef Eisele confirms: "The practical clamping system and the precise work of the band saw are convincing throughout. Compared to alternative solutions for separating the components, the MEBA saw is not only time- and resource-efficient, but also cost-effective. In addition, the components have a very high quality in the end."

The focus is on the user

In today's production world, it is important to keep systems and machines as uncomplicated as possible. This includes their simple operation and handling. The MEBA 3D saw can be operated intuitively, so that employees can be instructed on the saw at short notice. The handling as a whole or the conversion and cleaning of the machine is also child's play in a few simple steps. For Josef Eisele, this was another argument for the MEBA 3D saw: "Machine operators are very quickly trained on the saw, an important aspect in times of shortage of skilled workers. Also, the clamping of the base plate by only one screw works very pleasantly and quickly."

In addition to easy handling, the MEBA 3D saw also easily meets the occupational health and safety criteria. Equipped with the protective enclosure and an industrial vacuum cleaner for removing coarse dusts, the MEBA 3D saw provides a clean working environment. The machine operator does not inhale powder and it does not get on his skin.

Josef Eisele is satisfied with his decision. He concludes: "We needed a solution to remove the 3D-printed parts from the base plate. As a further positive side effect, the saw can also be used for standard sawing tasks and is therefore the perfect complement to the 3D printer in the overall package."

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LINSINGER RAPTOR

The innovative, INDY4, hydraulic-free saw, that's also green

As the UK's sole agent for LINSINGER's cutting technologies, RAM Engineering and Tooling is incredibly proud to offer a premiership range of machinery which offers added value, for increased productivity in your production process.

2019 saw the development of the new cold circular saw family "RAPTOR" launched by Linsinger. The manufacturer of heavy circular saw and milling machines based in Steyrermühl, Upper Austria, is expanding its product portfolio with thin-cut circular saws for mass cutting applications especially for the steel and railway industry.

In its 80-year existence, LINSINGER has been able to place over 400 large circular saws for a wide variety of applications on the global market. In the past 20 years, the company has even managed to attain the leading position, with 90 percent market share, in the sawing of forged railway wheels and axles.

The know-how gathered in this multitude of projects is now applied in the new RAPTOR product line, together with numerous innovations and technology advancements. The stable construction of the mechanical components, together with Linsingers in-house competence center developing and building gearboxes, guarantee durability and low costs per cut.

In this new machine type, LINSINGER completely refrains from using hydraulics. As a result, bulky components such as pumps, pipelines, hoses, or accumulators are completely eliminated. The removal of hydraulics allows for a quieter machine overall, with a significant reduction in noise pollution. Over the life cycle of the machine, the cost of consumables in the form of hydraulic oil, seals and filters is further reduced. The reduced risk of pollution caused by leaking oil, fires or accidents at work underlines the "green philosophy" of this machine once again.

In the future, the RAPTOR family will only use low-maintenance electromechanical components with high energy efficiency. These also allow best positioning and repetition accuracy to be achieved. In combination with thin-cut circular saw blades, optimum utilisation of the material over the entire length is guaranteed.

"The properties of modern electromechanical components have led us to take the step away from hydraulics with the RAPTOR. The RAPTOR impresses in terms of modularity, clean maintenance and condition monitoring of individual machine components and offers our customers significant advantages. Today, more than ever, we

are driven by the idea of caring for our environment. To this end, we want to contribute by avoiding hydraulic oils and instead utilising the high energy efficiency of electromechanics," says Dr. Stefan Dierneder, technical director of sawing and milling technology at LINSINGER Maschinenbau.

Cycle times can also be substantially reduced by the properties mentioned. For example, depending on the material dimension, the clamping jaws of the machine can be prepositioned into an optimised initial position much more simply. As a result, time is saved with each sawing cycle. The clamping force can be varied depending on the material or wall thickness and thus helps to prevent deformation.

Condition monitoring

In times like these, modern mass cutting plants understand the rule: "Time is money". Unforeseen machine stoppages are therefore a circumstance which must be avoided as far as possible. The simple integration of electromechanical actuators into the electrical control of the circular saw, as well as the multitude of available sensor options, in conjunction with intelligent evaluation algorithms, make extensive condition monitoring possible.

With modern integrated sensors, for example, all spindle elements of the saw and the transmission are constantly monitored. The diagnostic system of the machine evaluates the collected data and informs the machine operator in good time about measures to be taken to avoid an expensive, unplanned shutdown.

Tool and machine from a single source

20 years ago, LINSINGER took a bold step. The manufacturer of special machines and equipment for the steel industry created an in-house tool technology centre. In today's production industry, machine costs are calculated in life cycles. The running costs for tools, calculated over the life of the machine, amount to a multiple of the investment price of the machine. LINSINGER also takes responsibility for the complete solution of machine and tool from a single source.

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The Norton Clipper CM450 Junior

With over 80 years of expertise in manufacturing masonry saws, it's fair to say that Norton Clipper know what users need when it comes to onsite machinery.
With that in mind, it has introduced the Norton Clipper CM450 Junior; its latest masonry saw, which has been designed specifically for ease of transportation and use, cleanliness and user safety.

Built to cut large materials
The CM450 Junior masonry saw is built for cutting large materials and has a cutting length of 600 mm and cutting depth of 170 mm. The machine's robustness ensures it powers through large soft building blocks quickly and easily but also allows step cutting on higher materials. This saw is ideal for aerated fired clay blocks, aerated concrete blocks, and cellular concrete. For better results, the company recommends using the Norton Clipper Pro Universal Laser blade, Ø450 mm, which has been specially developed for this machine.

A transportable masonry saw
Despite the Norton Clipper CM450 Junior robustness, it has been designed to ensure that this model can be quickly and easily moved around the work site, placed out of the way, or into storage when not being used. The machine features handy transport wheels for improved manoeuvrability and folding legs that are easily and securely locked into place with safety handles when in operation.

A cleaner and more comfortable experience
Norton understands that users want to get 'more' from their machines so the CM450 Junior has been developed with an improved water system which separates the water pump from used water containing dust particles which in turn helps to extend the lifetime of the water pump. The machine also includes a new water pump plug which saves time when changing the water pump as there is no longer a requirement to open the switch and use electrical connections.

As a brand of Saint-Gobain, Norton offers a wide portfolio of cutting, grinding, blending, finishing and polishing solutions for all markets, materials and applications with the most advanced and affordable technology.

Norton | Saint-Gobain Abrasives
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LENOX introduces new technology to improve performance and efficiency for fabrication shops and steel service centres

Introducing LENOX 360 System

LENOX®, a leader in band saw performance for over a century, has introduced the LENOX 360™ System, the latest innovation to track bandsaw performance metrics. The LENOX 360 System provides access to key insights, measurements and the control of valuable sawing operations data. This new technology is ideal for steel service centres and fabrication shops as it is designed to improve decision making and maximise efficiency by capturing data in real time.

"The LENOX 360 System was designed to address the needs of LENOX customers and key stakeholders, the greatest need being visibility into the innerworkings of their sawing operation," says Daniel Fernandes, LENOX senior product manager for industrial band saw blades. "LENOX found that the solution lies within the data, as it drives bottom-line performance. The LENOX 360 System will optimise shop productivity through a lucid translation of this data, ultimately cutting costs from the shop floor."

Using a collection of sensors that are installed on the saw, performance data such as utilisation and efficiency metrics are transferred into a LENOX 360 System tower. The data is then transmitted to the cloud where it is analysed and populated into customised dashboards to arm users with the information needed to help maximise production and profits for the facility.

The dashboard can be accessed onsite or remotely through the LENOX 360 System website or mobile app across a variety of devices, such as shop floor monitors, desktop or laptop computers, tablets and smart phones.

The customisable dashboards display easy-to-read performance metrics of each machine, the entire facility, or a collection of facilities in real time. The collected data can be archived or referenced immediately. The LENOX 360 System allows stakeholders to manage and react to the data with confidence, resulting in a productive and efficient sawing operation.

LENOX 360 System customers will have access to the LENOX ADVANTAGE program, offering 24/7 support including: A LENOX Site Survey to identify facility goals, metrics, and challenges; Machine diagnostic service that includes a 13-point machine inspection; Comprehensive operator training through a LENOX-designed and led course as well as access to the LENOX Institute of Technology for continued operator learning opportunities; Detailed recommendations to improve productivity; 24/7 technical support from LENOX technical service professionals.

For more information or to request a LENOX 360™ System consultation, visit: **www.cutwithlenox.com/360**

LENOX began in 1915 with a 10-employee team and a passion for bringing customers faster-cutting, longer-lasting hacksaw blades. Now, more than 100 years later, its passion hasn't changed. It markets LENOX industrial saw blades, hand tools, power tool accessories and other products in more than 70 countries, and still designs, tests and manufactures in. East Longmeadow, Massachusetts.

Its passion for performance drives continued investment in its plant, enabling extensive research and development powered by the most advanced manufacturing technology. Customers experience the results in products that outperform conventional tools and deliver more value. The company has developed premium-performance tools for over 100 years with a unique depth of experience giving it a command of cutting science and cutting performance that's second to none.

Feed your appetite for excellence with superior-performing tools and accessories. LENOX blades deliver high performance and are designed to cut through the most demanding materials. With over a century of cutting expertise and category breakthroughs, LENOX has become a gold standard in power tool accessories, hand tools and band saw blades, helping users deliver work that is sure to stand out and be recognised on the job. LENOX is always hungry for your most demanding work.

LENOX is part of Stanley Black & Decker, an S&P 500 company and a diversified global provider of hand tools, power tools and related accessories, electronic security solutions, healthcare solutions, engineered fastening systems. For more information, visit **www.stanleyblackanddecker.com**

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ESAB launches fabricator series of heavy-duty, inverter-based systems for mig/mag and stick welding

For fabrication and construction firms that need reliable and efficient welding systems that can withstand rugged industrial environments, ESAB has introduced its Fabricator EM 401i, EM 401iw and EM 501w inverter-based welding power sources and associated wire feeders for MIG/MAG and flux cored welding. The 401iw and 501iw feature a factory-integrated water cooler. Fabricator controls simplify operation by optimising arc performance for the wire and gas combination selected with predefined settings, and operators can independently adjust wire feed speed and voltage at the feeder. For process flexibility, Fabricator also provides an MMA welding output.

These units use inverter-based technology to increase welding performance to improve mobility with lighter weight, increase energy efficiency and offer more advanced controls to boost weld quality and productivity, all at a highly affordable price. The Fabricator EM 401i and EM 401iw have an output rating of 400 amps at 60 percent duty cycle. The Fabricator EM 501iw has an output rating of 500 amps at 60 percent duty cycle.

Housed in a weather-protected IP23S-rated case, the Fabricator has an air tunnel cooling design that isolates electronics from dust, oil, metal shavings and other airborne contaminants. Thick metal side panels provide impact protection, yet the design enables easy access for service and maintenance. Large feet provide ground clearance and extra protection for the chassis, while its two ergonomic handles are crane rated. Because of their rugged design, ESAB offers a 3-year warranty on the power source and wire feeder.

ESAB Fabricator inverter-based welding systems boost productivity and quality for fabrication and construction firms that need reliable and efficient welding systems that can withstand rugged industrial environments

Inverter-based advantages

Fabricator units feature inverter-based power transformation technology. They operate at 87 percent electrical efficiency, a 30 percent improvement over step-regulated power sources, so they lower primary power consumption and are more environmentally friendly. An energy save mode reduces power consumption by 35 watts when the welder sits idle. These units also have a power factor of 0.91, which lowers primary amperage requirements. This may allow using more machines on the same circuit breaker or reduce worries about nuisance trips. All machines can operate in a wide input voltage range between 342-456V, 3ph, 50/60 Hz.

Inverter technology also provides a faster response to changing arc conditions. Coupled with microprocess controls, inverter technology enables ESAB to incorporate additional functions to enhance welding performance while simplifying operation.

Using highly visible LED displays and controls with easily understood terminology and symbols, operators start welding by selecting from one of three options: solid wire, cored wire or MMA. If a wire welding process is selected, operators then select the correct wire diameter and gas type and the Fabricator will then be set for optimised performance. Users can also adjust welding wire feed speed and voltage independently at the wire feeder. The Fabricator 400-amp models are optimised for performance with 0.8 to 1.2 mm wires and the 500-amp model is optimised for performance with wires from 1.0 to 1.6 mm diameter.

Additional controls allow operators to adjust inductance, which can reduce spatter, enhance bead wetting action and create a flatter bead profile when MIG/MAG welding in the short circuit transfer mode. Users can also set crater fill voltage and amperage at the end of the weld to prevent crater cracking, with the crater fill function activated by setting the welder in the 4T or 4T repeat mode. For MMA welding, adjustable Arc Force provides additional amperage in low voltage situations to prevent the electrode from sticking to the workpiece and can provide increased penetration.

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AMADA WELD TECH announces pulsed arc welding solutions for coil termination

AMADA WELD TECH offers a full range of pulsed arc welding power supplies for precision joining applications, ensuring exact control and repeatability. These supplies range from lab models with customisable options, to production machines offering streamlined features to match the customer's exact needs. Every item is designed and built in-house, from equipment for small-scale manual production to fully automated systems.

With a specialist product portfolio developed for precision joining of materials and spanning many industrial sectors, AMADA WELD TECH Europe can uniquely offer the correct technology to suit customers' specific needs. Each system solution is available with easy-to-program PLC or industrial PC software. Also, each system benefits from SPC integration, automatic alignment, advanced user interfaces, remote diagnostics, CNC motion, robotics, and product transport systems, as required.

The systems are available in one, two, three, and four output models to allow for a single power supply in high-speed production automation. Single output standard models include the PA-60P and PA-200P. Multiple output models are available from 20-60 amps.

Each unit produces a pulse of accurately controlled current. A specially developed arc start system incorporates a high voltage DC impulse, operating with a stabilising power supply. This ensures consistent arc ignition with minimal radiated interference. All models offer gas flow control and voltage monitoring, to detect arc failure.

Closed loop techniques ensure stable outputs independent of temperature, cable lengths, and mains supply variations. AMADA WELD TECH Europe accomplishes this through transistorised output control and an analogue feedback and drive circuit. This control system responds rapidly to process changes and stabilises output, ensuring consistency.

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QINEO StarT with integrated wire drive for manual

CLOOS has introduced a new version of the MIG/MAG welding power source QINEO StarT with integrated wire drive for manual welding. Here, the operating module, a powerful wire drive unit and the support for a 15 kg wire coil are integrated in a compact housing together with the power unit.

High-quality components with optimum price/performance ratio and excellent welding characteristics
The MIG/MAG welding power source QINEO StarT offers an easy entry into the world of modern welding technology. Due to the excellent price-performance ratio, users can weld any workpiece at economic conditions. The heart of the QINEO StarT is an inverter power unit developed by CLOOS. The outstanding arc control guarantees excellent welding results. The maximum quality standard makes the QINEO StarT a long-lasting and robust welding machine.

Modular design and extensive accessories
The configuration possibilities of the QINEO StarT are as flexible as the welding applications are versatile. This is guaranteed by the consistently modular product concept. From the capacity class to the wire tip, each QINEO StarT is customised. Due to the modular system with the Eco, Master and Premium versions, users make the QINEO StarT to be their individual welding system. The QINEO StarT is characterised by high-quality components with numerous optional functions.

Simple, quick and intuitive operation
The compact version of the QINEO StarT also convinces with its easy, quick and intuitive operation. Manual welders benefit from the comfortable operating concept that they can adapt to their individual requirements.

High-tech welding processes and pre-set parameters
In addition to the standard processes, the QINEO StarT offers further innovative CLOOS welding processes with pre-set parameters, depending on the variant. So, manual welders can get started right away without a time-consuming search for parameters. With the QINEO StarT 406 operators can also use the energy-reduced, current-controlled MIG/MAG short arc process Fine Weld. Due to the minimised spatter formation, Fine Weld is suitable particularly for thin, coated plates and fine visible weld seams.

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www.cloos.de

Fronius has the solution

Developing individual solutions for challenging welding tasks? This is where Fronius comes in, supporting industrial and commercial enterprises at its prototyping centre in Wels, Austria. Whether the focus is on feasibility studies, welding prototypes, pre-production series or contract manufacturing for small series, the customer benefits from the Fronius experts' comprehensive welding knowledge and their deadline pressure and investment risk are reduced.

Companies that want to take advantage of new trends or tap into fresh market segments are forced to leave their comfort zone because they need innovative materials and components and set new challenges for themselves in production. A big issue here is the development and construction of prototypes. This can involve large investments, including in systems, software and staff, which come with a certain level of uncertainty. To reduce risks and costs, Fronius provides companies with the option to permanently outsource the welding-relevant parts of their prototype construction. In the Fronius prototyping centre, which covers a total area of more than 900 square metres, specialists from Fronius develop customised solutions to tackle every welding challenge.

"Since we put the Fronius prototyping centre into operation in early 2021, we have developed solutions to meet a wide range of requirements for customers from various sectors," emphasises Wolfgang Scherleitner, head of the prototyping centre. "However, we don't just offer technical support. Instead, we have expanded our range of services to include a number of high-tech analyses and simulations. This enables us to guarantee high quality as well as seamless welding data documentation."

To make this possible, the prototyping centre offers a range of services including 3D equipment fabrication, 3D measurement and an offline programming option complete with welding process simulation. But not only that, heat and distortion simulation, welding seam inspection, a laser seam-tracking camera, hot active plasma technology for surface cleaning and a laboratory for metallographic examination all come as standard too. With the pioneering WeldCube software, for documenting and analysing welding data, Fronius makes it possible to trace the entire component history in detail. What is more, the welding technology specialists attach great importance to economical, resource-conserving and efficient production right from the outset.

The Fronius prototyping centre offers considerable added value, particularly when it comes to strict quality requirements and more efficient production methods. Large dimensions, complex designs, tight deadlines and brand-new products, which call for particularly intelligent welding concepts, are all covered here and considered a matter of course. The welding experts are also available to support the transition from manual to robotic welding as well as the application of new materials or welding processes.

Customers from a wide range of sectors, including the automotive and component supply industries, aerospace technology, the agricultural and construction machinery industries and commercial transport, have already taken advantage of these services. Be it battery trays for e-mobility, axles, frame sections or various applications for other industrial sectors, parts of up to 1,500 kg and 3 x 2 m can all be joined in the prototyping centre and all with one technology that sets standards around the world for simulation, process monitoring and quality control.

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