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

Accounts:
Jackie Barber
Tel: 01403 563791

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

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Out of this world technology designed to pull in the crowds at MACH

Mills CNC, the exclusive distributor of DN Solutions' and Zayer machine tools in the UK and Ireland and a leading supplier of advanced automation system solutions to component manufacturers, is determined to make MACH 2024 a truly inspiring and transformative event.

With a reputation for always 'pushing the boat out' at previous MACH shows, the company is doing something similar, if not better, this time around and has confirmed that it will be showcasing a total of 16 machines on its stand.

The company's technology line-up at the event includes eight milling machines, seven DN Solutions' 3- and 5-axis vertical and horizontal machining centres and a large-capacity Zayer horizontal CNC bed mill, seven DN Solutions' lathes and turning centres and a DN Solutions' SMX multi-tasking mill-turn machine.

Two of the turning centres being showcased form the mainstay machine tool elements of two, separate automated manufacturing cells. Their inclusion demonstrates the growing popularity of Mills' automation solutions and their importance to the company's future growth ambitions.

With a focus on innovation and automation, Mills' eagerly-anticipated MACH 2024 theme, currently being rolled out, will not disappoint and is quite literally 'out-of-this-world.'

Five of the machines on Mills' stand are new models that are making their MACH show debuts with pride of place going to a new XIOS G MT, large-capacity CNC horizontal bed mill with integrated turning capabilities.

Other show debutantes are DN Solutions' machines including a new Puma V9300M vertical lathe, a recently-introduced DVF 4000 compact 5-axis machining centre and two models from Mills' highly-successful DNT lathe series, a DNT 2100M and DNT 2600M.

Automation is a key theme that permeates Mills' stand with a SYNERGi Premier automated manufacturing cell and a number of machines, including a DVF 5000, 5-axis machine and a NHP 5000 horizontal machining centre, being showcased with integrated workpiece pallet changers.

Tony Dale, Mills CNC's CEO says: "Visit us at MACH 2024 for an exciting, thought-provoking and immersive 'out of this world' experience."

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

Stand: 19-110

New Knowledge Hubs initiative

Reversing UK manufacturing's poor record for adopting new technology will be tackled head on at MACH 2024 as The Manufacturing Technologies Association (MTA) launches its new Knowledge Hubs initiative, showcasing how to adopt new technology to improve productivity and efficiency in manufacturing

The programme showcases new technology that is readily available to UK manufacturers, helping them to understand the potential that adopting such technology can bring to their operation, as well as when to adopt it and how to implement it to best effect.

The Knowledge Hubs initiative will have dedicated stands across the event, each focusing on a particular type of technology including: Automation and Robotics, Sustainable Solutions, Additive Manufacturing, Consumable Tooling, and Data and Artificial Intelligence.

In recognition of the importance being placed on these hubs, each is being managed by one of the specialist centres from the High Value Manufacturing Catapult, such as the Manufacturing Technology Centre (MTC) and the Advanced Manufacturing Research Centre (AMRC).

The Catapult network is recognised for the cutting-edge research and development work being conducted at its various centres. The network collaborates with thousands of innovative businesses across a wide range of sectors, including manufacturing, space, health, digital, energy, transport, telecoms, the urban environment and many others.

The MTA, which organises the MACH event on behalf of the engineering-based manufacturing community, has been campaigning for greater adoption of new technology for some time. It will expand upon this at MACH 2024, which opens its doors at the NEC in Birmingham on 15th April, by explaining that implementing proven, readily available techniques in manufacturing processes is the fastest way to boost the UK's output.

MACH is the UK's only live, national event showcasing sustainable, innovative technologies used across the manufacturing spectrum and is the destination of choice for companies looking to adopt and invest in the digital revolution.

The exhibition is more than 90 percent sold but prime locations within the show halls are still available for businesses looking to exhibit. Nevertheless, the MTA has said companies still considering exhibiting should not delay their decisions so they can secure the locations of their choice.

James Selka DL, CEO of the MTA, says: "The MTA is part of a united front of UK manufacturing organisations, along with the Manufacturing Technology Centre (MTC) and MACH 2024 Headline Sponsor Lloyds Bank, to increase the uptake of technologies such as automation and robotics.

"Only by embracing what the hubs are trying to achieve will the UK restore its position as a sovereign manufacturer, re-establishing itself as a major player on the global stage."

The need for this approach was recently brought into sharp focus in a new report highlighting the UK's lack of investment in technology and its poor adoption of robotics in industry. The figures, from the International Federation of Robotics, showed the UK languishing outside the top 20 developed nations in terms of the global utilisation of industrial robots in manufacturing, lagging not just behind the economic superpowers, but also the likes of Spain and Finland.

The Automation and Robotics Knowledge Hub will showcase how easily the technology can be adopted into existing manufacturing operations, automating repeatable processes, improving accuracy and consistency and reducing repetitive and monotonous tasks.

The Sustainable Solutions Knowledge Hub, sponsored by Lloyds Bank, will guide manufacturers on how investing in energy efficient technology now, backed by government incentives, can help offset energy cost increases, improve business fitness for the future and help balance the 'cost of doing business'.

The Additive Manufacturing Knowledge Hub is designed to help visitors looking to learn how to develop, adopt and use additive manufacturing and 3D printing technology in their manufacturing processes.

The Consumable Tooling Knowledge Hub is where visitors should head to receive impartial advice on how to optimise their machining processes and how to deal with real-life machining challenges.

The Data and AI Knowledge Hub will explore how SME's can use this technology to drive growth and innovation in manufacturing by measuring the output of their current operation, looking for opportunities to improve and ensuring supply meets demand.

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Three UK debuts for Mazak

Yamazaki Mazak is aiming to give a further confidence boost to machine users at MACH 2024 with UK debuts for two machines and the new MAZATROL DX.

Featuring eight machines in total as part of Mazak's "Building For Your Future" offering, customers will be able to discuss their requirements and take a look at the machines that are entry-level, user-friendly, robot-ready, cost-effective and available with short lead times.

One of the highlights will be the HCN-4000 NEO making its UK debut, a high-performance horizontal machining centre with exceptional productivity, accuracy and environmental performance.

Alongside will be a second NEO machine, the VARIAXIS i-800 NEO, a next generation 5-axis machining centre for full automatic operation over extended periods. With its high rigidity construction and equipped with a 10,000 rpm spindle as standard, machine users will be investing in outstanding accuracy and productivity.

The VARIAXIS is being exhibited with the Multi-Pallet Pool (MPP), a multiple pallet stocker system offering flexible storage for 6, 12 or 18 pallets, 500 mm in size. The MPP easily handles scheduling, monitoring and resource checking using MAZATROL SmoothAi CNC, and is an ideal solution for machine users with limited floor space thanks to its compact design.

Both new NEO models achieve enhanced positioning, boasting three times better than ISO positioning accuracy and boast exceptional environmental credentials. Developed in line with Mazak's GoGreen strategy, the NEO series technology is capable of delivering a 30 percent reduction in energy consumption for the VARIAXIS and a 24 percent reduction for HCN-4000.

In recent years, Mazak has invested in its UK production facility in Worcester to increase capacity and reduce lead times on UK designed and built machines. At MACH 2024, three of these entry-level machines will be on show.

The CV5-500 - which was designed specifically with automation in mind for entry-level 5-axis users to increase their productivity and profitability, is being exhibited with an Erowa Easy robot that is capable of handling workpieces up to 250 kg.

The VCE-500, the latest addition to the VCE range, is a highly affordable vertical machining center ideal for entry-level machine users looking for superior productivity, fast payback and improved profitability. And finally, the VCN-700, a next generation vertical machining centre developed with a large 700 mm Y-axis. The machine being exhibited at MACH will be equipped with Mazak's Ultraspindle, an optional 60,000 rpm spindle for high-speed super-finishing of intricate workpieces.

Also making its UK debut is a machine that extends NEO capability and performance into laser processing. The OPTIPLEX 3015 NEO 12 kW automatically adjusts beam diameter to accommodate the cutting of various materials and thicknesses and is equipped with beam shaping technology which controls where the power density of the laser beam is concentrated. Together, these functions improve cutting speed and cutting quality for a wide range of materials.

The final UK-debut will be the new MAZATROL DX which extends the functionality of Mazak's widely popular PC-based SmoothCAM Ai software. MAZATROL DX provides customers with valuable new capability to further optimise production with rapid and automatic quotations, automated part programming, virtual machine simulation, and machine process analysis and optimisation.

In addition to machines and technologies built in the UK or making their UK debuts, the Mazak stand will also exhibit the latest INTEGREX technology, the i-200H S and the QUICK TURN 250 MSY equipped with a TA robot for increased productivity. Visitors can also view first-hand the productivity gains from connected machines through Mazak iCONNECT.

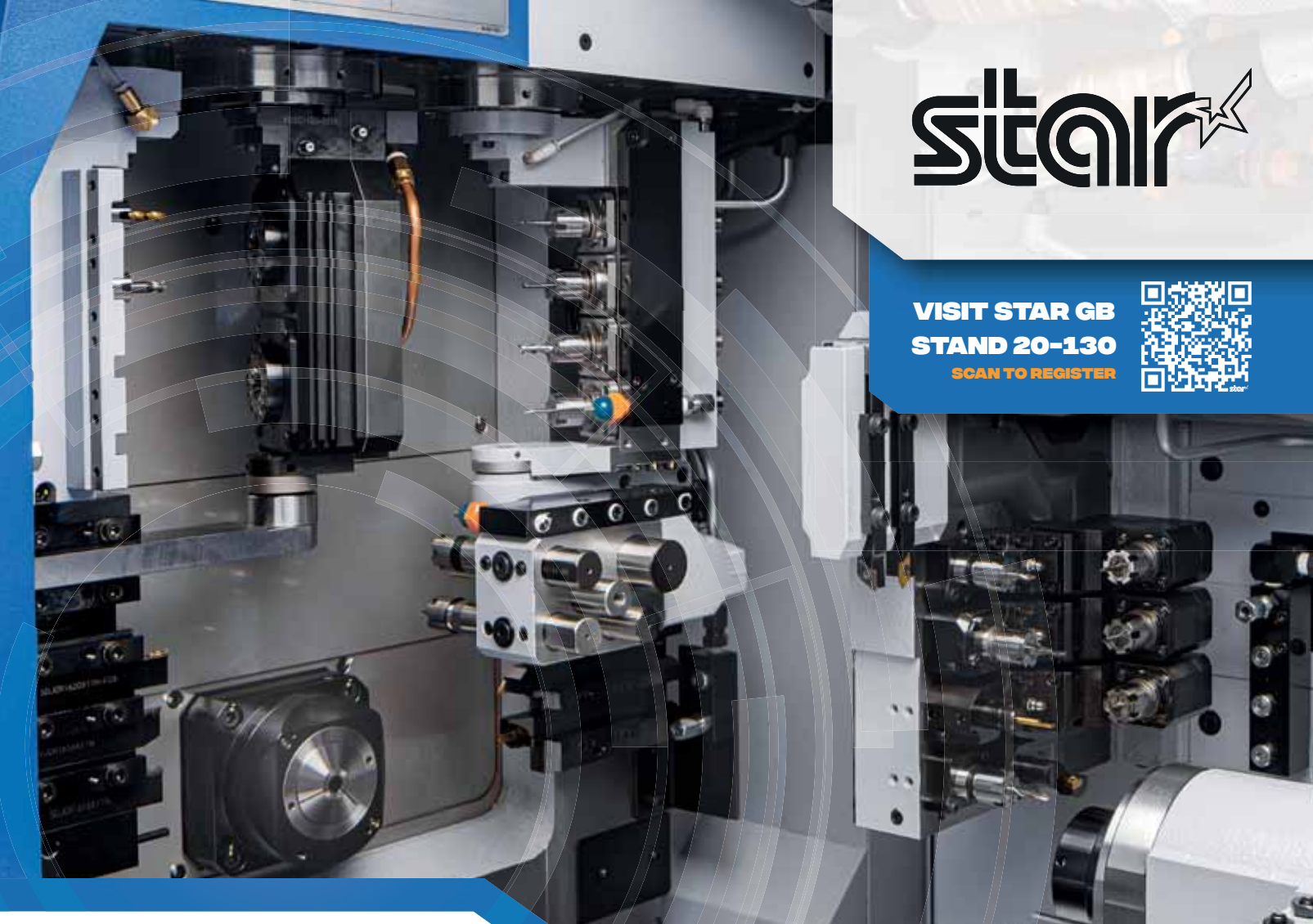
Alan Mucklow, Managing Director UK, Eire and National Distributors at Yamazaki Mazak, commented: "MACH is the flagship machining event of 2024, and we will be bringing a range of new and UK-built machines that can enable machine users to access the technology to give them an immediate boost to productivity and profitability.

"We have significantly invested in our own UK manufacturing facilities in Worcester in recent years to increase develop and manufacture a range of machines now available on short lead-times and with highly competitive and innovative finance packages.

"UK manufacturing has once again proven to be robust in the face of a challenging economy, but with confidence growing we firmly believe that this is the time to build for your future and secure competitive advantage."

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

Stand: 20-330



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The stars of the show

Star Micronics GB will showcase its cutting-edge range of sliding headstock lathes at MACH 2024. Visitors to its stand will experience a host of process demonstrations and witness a range of complex mill-turn components in production live at the event.

Following its worldwide debut at EMO Hannover, the new SP-23 sliding head lathe will be demonstrated for the first time at a UK manufacturing exhibition. An entirely new model capable of 1-inch machining, the SP Series has been developed by Star to deliver outstanding versatility and performance within a modest footprint.

The SP-23 is equipped with an 8-station front turning platen and a 7-spindle cross drilling inner tool post, on which a wide variety of tooling attachments can be mounted with five cartridge positions available. The machine features five drilling stations on the front and a 4-station back working platen with power tool capability.

Another key development within the Star portfolio, the new SD-26 Type E occupies the middle ground between the supplier's 20 mm and 32 mm bar diameter ranges. Capable of processing ⌀26 mm material, the machine offers a programmable B1 head with four front and four rear facing tool positions, plus an additional six cartridge positions for various attachments.

Superseding the popular SB-16II Type E, the upgraded third-generation SB-16III model utilises the latest generation FANUC 0i-TF Plus CNC control system. It includes Star's renowned dovetail structure for the Y-axis and features a fully programmable C-axis on both the main and sub spindles. The main spindle platen includes six turning tools, two fixed high-speed ER11 spindles for cross working, plus a further three modular cross power-driven stations that can accept a variety of cartridge attachments.

In addition, Star GB will be demonstrating a range of popular models up to 42 mm bar capacity including the SX-38 Type A, SR-32JIII Type B, SR-20RIV Type B, SR-20JII Type B and the SL-10.

As the official UK agent for FMB Machinery, Star GB will showcase the latest developments in barfeed technology including FMB's Turbo RS 4-45 and Turbo RS 3-38 automatic bar feeders.

These latest-generation bar feeders with the innovative RS technology are connected to the lathe spindle by a moving guide module, eliminating the unsupported telescopic area between the barfeed and lathe. This offers improved support for both long and short bar stock lengths, enhancing stability and reducing the risk of bar vibrations or deflections during the machining process.

Celebrating a two-year milestone since the launch of its popular Step Cycle Pro technology at MACH 2022, Star's innovative chip-breaking solution has been hugely successful with engineers looking to overcome the challenges presented by stringy swarf when processing challenging materials.

Step Cycle Pro operates by implementing an 'air-cut' chip-breaking method, which involves a synchronised oscillation of the machine's axis with the spindle's rotational cycle. This advanced feature can be applied to all spindles concurrently, increasing production efficiency by eliminating machine stoppages related to swarf entanglement. Through ongoing development, Step Cycle Pro technology is now available throughout most of the Star machine range and will be available for live demonstrations at the show.

Star's new ECO mode will be present on various machines. The software offers customisable options to reduce power usage during idle time by deactivating non-essential systems, motors, pumps and lighting.

With a focus on industry 4.0 smart manufacturing, each machine on Star's booth will be linked to its SMOOSS-I remote monitoring system. The software enables users to remotely monitor machine status, part count, production rate and history via a smart phone, tablet or PC. The popular NC Assist programming software will also be on display.

The exhibition presents a unique learning opportunity for both existing and prospective users of Star sliding head lathe technology, empowering them with new methods of overcoming their unique manufacturing challenges. On Star GB's stand throughout the week will be its applications, service, sales and marketing teams to give visitors an introduction to Star technology and offer an insight into the productivity enhancements its solutions can provide.

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The TNC7 from HEIDENHAIN

The TNC7 from HEIDENHAIN is now available with the latest Version 18 software and new hardware designs. This innovative CNC control can help companies master the present-day challenges of saving energy, reducing carbon emissions, staying competitive and ensuring a reliable automated manufacturing process. HEIDENHAIN is now showcasing the control's latest enhancements at MACH. For starters, the control's hardware portfolio has been expanded.

The original 24-inch version has been joined by a functionally identical 19-inch version, featuring a compact touchscreen and by the new TNC7 basic with a 16-inch touchscreen for 3+2-axis machines. The TNC7 basic offers an extensive package of options with characteristic TNC7 features, including DCM collision monitoring, OCM trochoidal milling and MAS 6D graphically supported setup. Taking customer feedback into account, the control's latest Version 18 software contains enhancements that optimise process reliability and user-friendliness.

Users can operate the touchscreen of the TNC7 much as they would a tablet or smartphone, harnessing all of its functions through tapping, swiping and zooming. Further usability comes from the control's context sensitive menus and a cross-operating-system design, making it easy for users to open Windows applications on the control and to incorporate data from these applications into their part programs. With its intelligent user support, the TNC7 is highly accessible for novices and lateral entrants, helping them quickly reach the necessary level of confidence for competent machining.

Not every user wants to use a touchscreen. In fact, experienced TNC experts are often accustomed to the HEIDENHAIN keyboard. Of course, the TNC7 is also available with an operating panel. Starting with MACH 2024, there are even three different models. A 16-inch and 19-inch variant are now joining the original 24-inch version. All models feature the same full-HD screen resolution. As an alternative to the large operating panel, customers who choose one of the more compact models can opt for a smaller panel containing the most essential TNC function keys. The 16-inch variant, named the TNC7 basic, rounds out the TNC7 portfolio at the lower end of the spectrum, both in terms of size and functionality. stepping up as the successor to the TNC 620 for 3+2-axis machines but with all of the characteristic benefits of the TNC7.

The quest for high first-part efficiency across all batch sizes and levels of automation requires looking beyond merely the machining phase. Machine setup, as well, needs to be fast and convenient. Faster setups cut down on non-productive time and reduce a company's carbon footprint. With its graphically supported functions for 6D workholding and workpiece setup, the TNC7 offers two major time and energy savers. This virtual support enables fast, user-friendly and reliable position probing for both fixtures and blanks, regardless of the setup's complexity. Even for clamping towers or multiple parts clamped in a row, the TNC7 provides interactive step-by-step support throughout the setup process for simple and complex parts alike. In the case of complex parts, setup with the 6D setup function can be up to five times faster than with conventional probing cycles. When applied to workholding, this 6D position probing feature is part of the enhanced Dynamic Collision Monitoring (DCM v2) function. When applied to workpieces, the new Model Aided Setup (MAS) option comes into play. The package of options available for the TNC7 includes Optimised Contour Milling (OCM), which delivers next-generation trochoidal milling by automatically calculating the best trochoidal milling strategy at all times for pockets and islands of any shape. Users simply enter the contours and apply the optimal machining parameters from the built-in cutting data calculator. As a result, roughing and milling become highly productive and impose less wear on tools.

The HEIDENHAIN exhibit at MACH includes live demonstrations of the entire machining process with the TNC7, covering turning, roughing, finishing and deburring. These product demos focus on the time savings achieved by various TNC7 functions when applied to tasks such as programming, simulation and finishing. Simultaneous turning cycles for the TNC7 enable the programming of FreeTurn tools.

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Renishaw to showcase British engineering excellence and innovative smart manufacturing solutions

Precision engineering and manufacturing technologies company, Renishaw, is exhibiting its extensive range of smart manufacturing technologies at this year's MACH exhibition.

Over the last 50 years, Renishaw has established an ecosystem of end-to-end smart manufacturing technologies designed to transform shop-floor productivity, capability and efficiency.

"Globally competitive production performance and costs are inextricably linked to smart manufacturing," says Jonathan Archer, general manager EMEA North and director of Renishaw UK Sales Ltd. "Our manufacturing technologies are designed to maximise throughput and minimise costs and waste in all its forms. We look forward to showcasing these smart manufacturing solutions on home soil."

"This year, we are particularly excited to demonstrate Renishaw Central, our factory connectivity and data-driven manufacturing platform. The software allows you to use actionable data productively for closed-loop CNC automation, visualisation and the ongoing optimisation of processes to maximise output, quality and productivity."

Renishaw Central collects, collates, and presents actionable manufacturing process and metrology data, which can be used to monitor real-time performance across CNC machine tools, measurement systems and Renishaw additive manufacturing machines. Visitors will experience a real-time demonstration as Renishaw Central digitalises, visualises and controls CNC machining and integrated metrology processes on the Renishaw stand.

In 1973, Renishaw's co-founder invented a probe that made it possible to automate measurement on Coordinate Measuring Machines (CMMs). Today, the company continues to be a leader of global developments in automation, with an extensive range of technologies for automated process control and part verification on display at MACH 2024.

"As a significant manufacturer, we have a deep understanding of the many challenges faced by our customers across a wide range of industry sectors," says Paul Maxted, director of industrial metrology. "Increasing the level of automation in your factory is the first step towards tackling manufacturing challenges including the availability of skilled people and achieving cost effective, high-precision manufacturing, 24 hours a day, seven days a week."

Making its UK debut at MACH is the world's smallest wireless machine tool probe. Renishaw's RMP24-micro measures just 24 mm in diameter and 31.4 mm in length. The tiny probe offers exceptional repeatability and an ultra-low trigger force, ideal for use in compact machines that make high-precision miniature components.

Other products on the Renishaw stand demonstrate the unique breadth of technologies available to support CNC manufacturing. The FORTiS™ range of enclosed encoders for challenging environments allows machine tool and systems builders to meet high performance and uptime requirements, while achieving energy savings up to 91 percent without risks in reliability. Scale lengths up to 4.24 metres can now be supplied for larger CNC gantry mills, turning machines, or grinders. FORTiS encoder systems with industry-leading vibration resistance are being adopted widely across a range of CNC machine tools and new emerging applications such as giga-casting for the automotive industry.

CNC machine calibration and performance optimisation products, including upgraded CARTO software, demonstrate the enhanced performance monitoring of precision machinery.

Also on display will be the latest developments in CMM measurement technology with the REVO® 5-axis multi-sensor system, featuring an increasingly comprehensive range of sensors and probes for multiple, complex inspection applications on a single CMM. The system's infinite positioning and rapid measurement also reduces the requirement for complex styli configurations and calibration time. The benefit to users is increased throughput and significantly reduced shopfloor and quality lab measurement costs.

A special exhibit on the Renishaw stand is the track bike developed by the British cycling team for the 2020 Tokyo Olympics. Renishaw provided additive manufacturing expertise to develop and build innovative ultra lightweight parts for the bike that contributed to the team winning seven track medals. This partnership has since been renewed for the development of a new model ahead of the 2024 Olympics in Paris.

Renishaw plc
Tel: 01453 524524
Email: uk@renishaw.com
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Leading technology at MACH

At MACH, Citizen Machinery will reaffirm its position not only as a leading supplier of bar-fed lathes into the British and Irish markets, but also as a pioneer in implementing attendant technologies that take that pre-eminence to the next level in terms of innovative production. The company's patented Low Frequency Vibration (LFV) chip breaking software, its wealth of options for automating production and integral laser cutting in its Cincom sliding-head lathes are three examples.

The focus will be on Citizen's proprietary LFV operating system software that ensures efficient chip breaking and every sliding-head mill-turn centre on the stand will have this functionality. 2024 marks the sixth anniversary of the technology's launch.

It has had a transformative effect on sales of Cincom sliders around the world and also of selected models within Citizen's fixed-head Miyano turning centre range, owing to the superiority of chip breaking over that achievable with conventional pecking macros and dwells. That is especially the case when machining stainless steel, aluminium, copper, various exotic materials and plastics. There is also a noticeable improvement in tool life and surface finish due to the avoidance of recutting of chips.

Problems arising from stringy swarf entangling around the workpiece and tool are prevented by vibrating the X and Z servo axes in the direction of cutting in synchrony with the rotation of the spindle. The function, which has three alternative modes, may be used with static and driven tools. It is especially helpful in generating manageable chip sizes when grooving, drilling deep, small-diameter holes and internal and external thread cutting.

A versatile variant has been added to the Cincom L20 sliding-head CNC turning centre range from Citizen Machinery. The L20-XII, which has a 135-degree swivelling B-axis mounted on the gang tool post for working at either of the opposed spindles, is now available with an Automatic Tool Changer (ATC) for swapping up to 30 mm diameter cutters in a chip-to-chip time of four seconds. Both the tool carrier and magazine move in the Y1-axis to effect tool change.

Believed to be a first in a sliding-head turning machine, the ability to exchange 12 different cutters in the lower position of the B-axis carrier greatly extends the machine's versatility when executing angled cross working or end facing operations. A 13th tool is fixed in the upper position on the carrier. While the cutters are normally live for performing drilling, slitting, hobbing or multi-axis milling, positions may be filled by turning tools if expedient.

The total number of cutters that may be mounted in the working area of the Cincom L20-XIIATC is 34, providing considerable flexibility to ensure that components are machined in as few setups as possible, normally one.

As its designation implies, the lathe is designed to turn components from 20 mm diameter bar, although oversized options allow up to 25 mm diameter material to be accepted. Another feature contributing to the lathe's versatility is the ability to switch over quickly between sliding-head operation and non-guide bush turning for more economical production of shorter components up to typically 2.5D.

Visitors to the Citizen Machinery UK stand will learn that the configuration of the 12 mm bar capacity Cincom L12-X ideally suits it to the production of dental abutments and implants, as well as medical industry parts in general. Multiple rear-facing endworking tool positions including driven stations are provided, as well as a Y2-axis to the X2 and Z2 movements on the counter spindle to match the three degrees of freedom on the main spindle.

A modular tooling system has been adopted for the gang and back tool posts and an extensive variety of tooling layouts is possible, which includes the ability to drill angled holes. The maximum number of tools that can be deployed is 38. Unlike on other Cincom L12 models, a built-in 12,000 rpm motor drives the counter spindle, reducing acc/dec times for higher productivity. Rapid traverse in all axes of 35 m/min contributes further to minimising idle times.

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Tel: 01923 691500
Email: sales@citizenmachinery.co.uk
www.citizenmachinery.co.uk

Stand: 20-361

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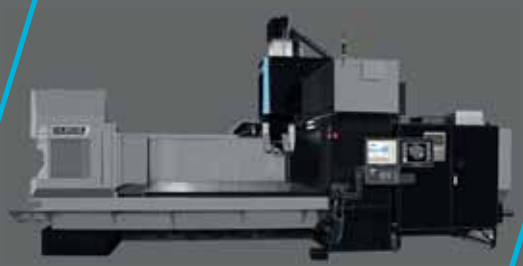

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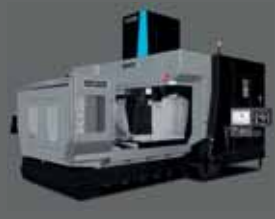

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Hurco to showcase impressive machining range

The focus for Hurco Europe's prismatic machining equipment at MACH will be on 5-axis machining as well as automation of both 3-axis and 5-axis Vertical Machining Centres (VMCs). There will be a Hurco ProCobot Profeeder assisting the production of parts on a VM20i 3-axis VMC and an Erowa Robot Compact 80 feeding a trunnion-type 5-axis model, the VMX30Ui.

The ProCobot picks and places components and removes them after machining, with the app running directly in the Max 5 control and visible on the screen. Minimal information needs to be entered to set a job, so changeover time can be as rapid as 30 minutes, making plug-and-play, small-batch automation a reality. The Erowa cell, on the other hand, transfers the workholding as well as the part on a pallet. The choice of system depends on the application. Both solutions lend themselves well to Hurco's typical customers, which tend to undertake small to medium batch runs.

Hurco SRTi 5-axis VMCs are popular because they have a swivelling spindle head and flush rotary table, a configuration that can be used as a 5-axis production centre or a 3-axis machine that exploits the full working volume. A VMX42SRTi with 1,067 x 610 x 610 mm travels will represent this range at the show. It has directly-encoded torque motors driving both the B-axis spindle and C-axis table. Linear scales and 20-bar coolant through the spindle are standard features.

Another Hurco 5-axis machining centre at the exhibition will be the cantilever-type VC500i. Ergonomically designed for easy operator access, it has a 520 x 450 x 400 mm working volume and a ± 100-degree swivelling trunnion carrying a rotary table, ideal for machining five faces of a component in a single setup. As with any 5-axis centre, it drastically reduces the number of separate operations needed to completely machine a part compared with using a 3-axis machine.

A VMX60Ti 3-axis VMC equipped with a rotary-tilt table will demonstrate the versatility of this alternative 5-axis machining arrangement, particularly for prismatic machining of shaft-type components. Capital cost can be saved, as a smaller capacity machine can often be selected compared with if a dedicated 5-axis machining centre were to be used.

In addition to the popular 3-axis VM10i, which combines a small footprint with the capacity and performance of a big 3-axis machining centre, there will be a VM ONE 3-axis VMC with a smaller Z-axis travel of 356 mm. It addresses a need, especially among subcontractors, for an entry-level machine that is super-compact, yet still capable of producing prismatic parts weighing up to 1,500 kg.

Powered by proprietary WinMax software, the Max5 control includes a solid model import option that allows 3+2 routines to be programmed on the shop floor from an IGES CAD model imported as a STEP file. It is fast, uncomplicated and takes the load off manufacturer's CAM stations.

For the last 20 years, Hurco Europe has been the sole agent in the UK and the Republic of Ireland for sales of German-built Roeders machining centres. A 5-axis, ± 115-degree trunnion, HSK E40 model will be on the Hurco stand capable of machining workpieces weighing up to 60 kg within a 500 x 500 x 300 mm working volume.

Such production centres are frequently used for rotary die manufacture, micro-machining, bottle mould manufacture and jig grinding. An applications engineer from Germany will be available on the Hurco stand throughout the show to discuss specific applications.

A new range of four driven-tool CNC turning centres was launched by Hurco at the last MACH show, during which the 8-inch chuck version was exhibited. This year it is the turn of the 10-inch chuck variant to appear, the TMX10MYSi. All models include a programmable W-axis to position the tailstock or sub-spindle. The turning centres offer higher specification and performance than the established and popular TMi and TMMi models.

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Tel: 01494 442222
Email: sales@hurco.co.uk
www.hurco.co.uk

Stand: 6-180

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Enhance operations with Ward CNC's Hyundai-Wia VTL

Numachine, a thriving Hereford-based business specialising in CNC machining and subcontract manufacturing, has embraced the advantages of the new Hyundai-Wia LV800RM Vertical Turning Lathe (VTL) supplied by T.W. Ward CNC Machinery Ltd (Ward CNC). The quality and performance of the machine have impressed Numachine, contributing to the optimisation of its manufacturing processes.

Brandon Davies, managing director of Numachine and a dedicated mechanical engineer by trade expresses his passion for problem-solving and continuous improvement. He says: "I enjoy solving problems. Even if I work 15-16 hours a day, I don't feel tired because my hobby is my job and I absolutely thrive on it. I like to come in every day, go around the shop and see how we can improve. I'd say this character is something we all share at Numachine; everyone is trying to contribute to our continuous improvement."

Numachine primarily serves industries such as automotive, medical, aerospace, laboratory/instrumentation and renewable energy, all requiring the highest quality standards. Brandon Davies keeps a keen eye on the Electric Vehicle (EV) segment, given his personal interest as an EV driver and Numachine's supply of components to prestigious automotive companies for use in EVs.

A key focus for Numachine is cost reduction for customers, achieved through value engineering across the CNC machining process. Brandon Davies highlights the company's diverse capacity: "We have a strong range of CNC machine tools, ranging from various horizontal lathes and mills to 5-axis machining centres, vertical lathes and multi-tasking machines. This extensive range provides differentiation from the competition, while our in-house quality control and measurement capability is another key factor for many customers.

"We're always thinking about how we can expand our service capacities and are now in the process of selecting a metal 3D printer. Additive manufacturing will allow us to produce prototypes much faster for our customers and, with our machining capabilities, we can achieve high-quality finished parts in a very short time period."

Design for Manufacture (DfM) is another significant service at Numachine, actively reducing the cost of machined components for diverse applications, including planes and trains to breweries and roulette wheels. The company manufactures its fixtures in-house, supporting optimised clamping mechanisms with quick turnaround times, emphasising the company's role as a one-stop-shop, catering to customer demands for high-quality, rapid services.

Numachine has recently incorporated a Hyundai-Wia LV800RM VTL from Ward CNC into its diverse machinery lineup. Renowned for its robust and heavy-duty cutting platform, the Hyundai-Wia LV800RM VTL boasts a one-piece, square-type column that delivers excellent stability. This machine is equipped with a stable shaft structure, providing a high cutting capacity suitable for handling substantial loads.

Noteworthy features of the Hyundai-Wia LV800RM include a two-step chuck pressure mechanism designed to minimise workpiece deformation and ensure optimal chip evacuation. Within the LV series, a dedicated protection device has been integrated to prevent chips and other foreign materials from entering the main spindle, guaranteeing continued high-precision performance.

The Hyundai-Wia LV800RM is characterised by its impressive specifications, offering a maximum turning diameter and turning length of 800 mm, coupled with a maximum spindle speed of 2,000 rpm. This addition to Numachine's workshop enhances its machining capabilities, reinforcing its commitment to precision and efficiency in manufacturing processes.

Working with Ward CNC

Speaking on the experience of working with Ward CNC, Brandon Davies comments "It was an entirely smooth experience. Ward CNC took care of processes such as specifying the machine based on our application, placing the order, delivery, installation, and operator training. We're pleased with the quality and performance of the Hyundai-Wia vertical lathe; it's a good addition to our range of machines. There was only one small issue a few months ago which was solved rapidly by Ward CNC and we're completely satisfied with the performance of the company's service."

He concludes: "Looking ahead, Numachine plans to enter the bespoke motorbike and mountain bike manufacturing segment, combining my passion for off-road biking with the company's manufacturing capabilities. Ward CNC is likely to play a crucial role in these future projects."

TW Ward CNC Machinery Ltd
Tel: 0114 276 5411
Email: acogswell@wardcnc.com
www.wardcnc.com

Stand: 20-474

ITC cuts a path to MACH with new WIDIA lines

Industrial Tooling Corporation (ITC) will showcase its unsurpassed range of new cutting tool solutions at MACH. The Tamworth cutting tool manufacturer will present its latest product lines as well as cutting tool solutions from BIG KAISER, Karnasch, Kemmler, Bass and WIDIA.

As the UK partner for the leading WIDIA brand of cutting tools, ITC will introduce all the latest solid carbide and indexable solutions, many of which will be making a MACH exhibition debut. The VariMill range of end mills has been the standout performer in the industry for several years with WIDIA continually evolving the industry's most dynamic range of end mills for high-performance machining. Now, the VariMill series has been improved once again with the arrival of the VariMill Chip Splitter range.

Designed for dynamic milling, ramping, helical interpolating and side milling at high speeds and feed rates, the new VariMill Chip Splitter series delivers exceptional chip control that allows the tool to run with a longer axial depth of cut while productively diving into deep pockets in steel, stainless steel and high-temperature alloys. Suitable for cutting materials ISO groups P, M, K, S and H, the new series is a genuine high-performance tool.

Presented as a 5-flute solid carbide end mill that is available in WIDIA's WP15PE and WS15PE carbide grades, the new VariMill Chip Splitter has features incorporated that improve chip evacuation by breaking the chips into the smallest possible segments. The 5-flute end mills are available with a straight or Weldon shank in 3XD or 5XD variants. The straight shank 3XD end mills are available in 10, 12 and 16 mm diameters with the Weldon shank designation also offering a 20 mm diameter variant. Similarly, the 5XD plain shank variant is available from 10 to 20 mm diameter with the Weldon shank also offering an 8 mm diameter variant. Complementing the 5-flute variant will be the new 7-flute end mills that are also available with a straight or Weldon shank in 3XD or 5XD variants.

Alongside the 5 and 7 flute end mills will be the Hanita VariMill XTREME. The 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. The impressive 4-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.

For machining aluminium, the WIDIA Hanita Aluflash Series will be showcased at MACH. Perfect for slotting, ramping, side milling, plunging, interpolating, dynamic and helical milling, the series of 2 and 3 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 once again show the 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 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 M8065HD milling system for machining steel and cast-iron materials.

Industrial Tooling Corporation Ltd
Tel: 01827 304500
Email: sales@itc-ltd.co.uk
www.itc-ltd.co.uk

Stand: 20-432

New Penta fibre laser & MSS Nitrocube technology at MACH

General machining and fabrication specialists, W&H Engineering Ltd of Leigh-on-Sea, Essex have recently taken delivery of a brand new 4 kw fibre laser cutting system from Penta Laser UK together with an MSS Nitrocube, on-site nitrogen generation system.

The fibre laser system supplied by Penta UK is a Swing VII 4 kw 3015 fibre laser featuring IPG laser source and Precitec cutting head technology. The Nitrocube system produces 25 ppm purity, 99.9975 percent, nitrogen for the new 4 kW Penta fibre laser plus an existing Trumpf CO_2 system.

Terry Edwards (Ted), production manager at W&H comments: "This new Penta laser offers us major efficiency benefits with significantly reduced running costs and incredible production speeds compared to the older system it replaces.

"W&H and Penta Laser UK are quite new to each other but so far the relationship is working very well, both the Penta Laser and Nitrocube have been brilliant for us. The first six months

operating them have flown by with no issues which is really impressive for new equipment like this. We are fully confident that the Penta and Nitrocube will both give us many years of reliable service."

The new Penta system replaces a Trumpf L2510 CO_2 laser and offers an impressive 70 percent saving on energy costs as well as offering highly flexible nesting design software options including Lantek Expert CNC control software.

Chris Smith at Penta Laser UK comments: "This impressive laser system offers all the functionality, performance and quality that much more expensive fibre laser systems provide. The addition of the Nitrocube system also gives W&H the lowest cost nitrogen on the market combined with the convenience of on-site nitrogen on tap without regular gas deliveries. Both systems combine to provide impressively low operating costs for W&H."

The Penta range offers laser powers 2 kW - 60 kW and cutting bed sizes from 3 x 1.5m to 12 x 2.5m.

Penta Laser UK offer full UK sales and aftersales support including a huge UK stock of Penta spare parts.

The company will be exhibiting at MACH and will be showcasing its impressive range.

Penta Laser UK Ltd
Tel: 01788 226 422
Email: sales@pentalaser.co.uk
www.pentalaser.co.uk

Stand: 18-121

Sodick to inject excitement to mould market at MACH

Sodick Europe and UK distributor Sodi-Tech are set to inject some excitement into the mould tool manufacturing sector at MACH. The company will introduce six leading machine tools with many of these innovations receiving their MACH exhibition premiere. For the injection mould and toolmaking industry, Sodick Europe and Sodi-Tech UK will introduce their new 30-tonne hydraulic hybrid GL30-LP injection moulding machine.

Sodick will give MACH show premieres to the new VN600Q, the ALC600G iG+E precision wire-cut EDM with new iGroove+ technology and the UX450L linear motor driven machining centre. Appearing alongside these MACH debutants will be the AD35L die sink EDM and the AL60G EDM die sink machine which will incorporate an Erowa Compact 80 robotic loading system with a Zeiss DuraMax measurement and probing system that will provide live demonstrations at the event.

The groundbreaking innovations will offer technology and productivity enhancements for every machine shop and toolmaking business. Nowhere at MACH will this be more evident than with the show premiere of the new GL30-LP injection moulding machine that is destined to be a crowd-pleaser for the injection mould segment, especially for manufacturers of small, complex and high-precision components.

Perfect for manufacturers in the medical, electronic and precision instrumentation sectors, the new GL30-LP is equipped with Sodick's unique V-LINE® technology, direct pressure mould clamping and the new Total Servo Drive system. With unparalleled levels of technology packed into a small-footprint machine, the GL30-LP demonstrates exceptional stability, traceability and usability that combine with a host of advanced injection moulding functions to improve operational accuracy, productivity, performance and energy efficiency.

As with all Sodick injection moulding machines, the new GL30-LP is equipped with Sodick's unique V-LINE® two-stage plunger injection system. This groundbreaking innovation separates the injection and plasticisation processes in one unit, resulting in extremely accurate, rapid and repeatable resin injection. This suppresses outgassing, reduces fibre fracture and prevents backflow to provide unparalleled levels of performance, consistency and quality throughout the manufacturing process. The V-LINE technology also delivers excellent plasticisation and injection performance with unrelenting stability and reliability in the plasticisation process. This contributes to accurate and highly repeatable resin injection while the hydraulic accumulator mechanism enables extremely high-speed injection with dynamic responsiveness.

From a technical specification perspective, the new GL30-LP has a compact footprint of just 3,150 x 1,030 x 1,679 mm with a maximum clamping force of 294 kN, 392 kN optional. The machine has a tie bar distance of 310 X 310 mm with a minimum and maximum die height of 150 and 360 mm respectively. Capable of accommodating tools up to 200 kg, the GL30-LP is available with three screw diameters of 14, 18 and 22 mm. Depending upon the variant selected, manufacturers can achieve a maximum injection specific pressure, MPa, from

260 to 288 with an injection volume from 4.5 to 27 cm^3 and an injection rate by volume from 57 to 190 cm^3/s.

Sodick has three core principles for its moulding machines and the GL30-LP achieves these with its consistent plasticising heat profile, constant filling volume and constant holding pressure, all of which work in perfect harmony to achieve ultra-precise injection moulding results. In addition, the mould open/close clamping mechanism adopts both an electronic system to achieve accurate positional control and a hydraulic mould clamping mechanism that ensures a repeatable and highly accurate clamping force. With a direct pressure mould clamping system utilising the merits of the electro-hydraulic hybrid system, precision and repeatability are assured.

With manufacturers increasingly conscious of energy costs and carbon footprint, the new GL30-LP incorporates Sodick's Total Servo Drive that provides even greater energy saving performance through electric servo motors for the hydraulic pump drive and the mould open/close and ejection mechanism. Additionally, the green efficiency credentials of the machine are enhanced by its quick start to production and improved ratio of crushed and recycled material and moulds.

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Tel: 01926 695 777
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Stand: 20-350

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SIC Marking UK is one of 10 subsidiaries around the World. SIC Marking Group has developed innovative, permanent marking solutions and automated identification systems for the complete traceability of industrial components for over 30 years. SIC Marking has a wide range of the most robust and state of the art Dotpeen, Scribe and Laser Marking machines available on the market today. Whether column mounted, integrated or completely portable like its battery-powered cordless eMark for example, Sic Marking can provide a machine that is suitable for both your application and budget. The company is constantly adding to the range and re-investing into R&D. The new eTouch portable Dotpeen marker offers icon style touchscreen technology and the laser systems now have a range of modular Class 1 enclosures with the XXL-Box range, offering the ability to mark parts up to 1,500 mm in length as a standard product.

The UK Team is based in Warwick, where its dedicated sales and aftersales engineers, with over 50 years' experience, would welcome a call to discuss your marking application.

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Stand: 18-555

FANUC to showcase new mill/turn option

Industrial automation specialist FANUC UK will showcase a range of real-world robotic innovations at MACH 2024, including an affordable muti-axis turning and machining solution aimed at helping manufacturers in the aerospace, automotive, utilities and energy supply chains reduce cycle times, cut costs, save space and boost production efficiency.

As well as EDM wire cutting, aerospace cobot drilling and educational solutions, the centrepiece of the FANUC stand will be an advanced ROBODRILL machine, equipped with a 24k spindle and mounted with a Nikken 2-axis high speed rotary table, featuring a built-in direct drive motor that achieves 1,500 rpm. In operation throughout the entire five days of the show, the demonstration cell will produce finished scroll compressor aluminium housings, showcasing live to visitors the cost-saving and performance benefits to be gained from combining machining and turning processes.

FANUC's affordable muti-axis turning and machining solution combines a ROBODRILL with a Nikken 5AX-201 tilting rotary table, allowing users to turn and machine components on the same unit

Affordable multi-functionality for SMEs

"FANUC and Nikken have worked together to create a combined machining/turning cell with an extended range of functionality, offered at a fraction of the cost of machines with similar capabilities," says Oliver Selby, head of UK sales at FANUC UK.

"At the heart of the solution is our D21LiB5ADV Plus ROBODRILL, which is a 3-axis machine in its core configuration. The Nikken table adds a further two axes, allowing users to turn and machine components on the same unit," Oliver Selby explains. "This is a real breakthrough, which brings the functionality of million-pound machines within reach of SMEs at a significantly lower cost, helping them to become more competitive and consider undertaking work that would previously have been unavailable to them."

As well as EDM wire cutting, aerospace cobot drilling and educational solutions, the centrepiece of the FANUC stand will be a combined machining/turning cell featuring an advanced ROBODRILL

Less than 3 m long and a little over two metres wide, the ROBODRILL/Nikken solution is a truly lean machine with a compact footprint. It features a Nikken 5AX-201 tilting rotary table with pneumatic clamping, enabling difficult-to-hold components to be quickly mounted and changed. In addition, access from all sides means the majority of operations can be completed in one hit, optimising machine tool and operators' time.

Cobot applications in action

Also available to visitors to the FANUC stand at MACH 2024 will be:

- An aerospace drilling cell comprising a CRX-25iA cobot, developed by FANUC partner Electroimpact. Delivering accessible and cost-effective pre-validated drilling functionality for the aerospace sector, it offers manufacturers improved reliability, repeatability and traceability compared to current manual practices.
- A FANUC C600iC ROBOCUT wire EDM.
- An automated robot machine tool loader, developed in conjunction with YMT Technologies, alongside a D21MiB5ADV Plus ROBODRILL.

Education for skills

Finally, as part of the company's ongoing commitment to encouraging a pipeline of new talent into engineering, manufacturing and automation, the FANUC stand will also host a turning and milling education simulator and a new-to-market ROBOT G-code solution with a FANUC Education cell. Controlled by a proprietary FANUC CNC unit, it features all the real-world functions required to teach core robotics programming and operating skills and help inspire the next generation to realise their career ambitions.

The FANUC Education cell, controlled by a proprietary FANUC CNC unit, features all the real-world functions required to teach core robotics programming and operating skills and help inspire the next generation to realise their career ambitions

The FANUC Corporation is one of the worldwide leaders in factory automation for CNC control systems, robots and production machinery. Since 1956, it is a pioneer in the development of numerically controlled machines in the automation industry. With 271 FANUC locations worldwide and more than 8,000 employees, the company offers a dense network in sales, technical support, research & development, logistics and customer service.

FANUC UK Ltd
Tel: 024 76053130
Email: sales@fanuc.co.uk
www.fanuc.eu/uk/en

Stand: 6-350

Heller to emphasise engineering support for customers in the UK and Ireland

German-owned Heller Machine Tools, whose factory in Redditch produces selected 4-axis and 5-axis Horizontal Machining Centres (HMCs) for world markets, will stress at MACH that this facility places it in an excellent position to provide customers with an elevated level of applications and service support. The Worcestershire facility, which is celebrating its 50th anniversary in 2024, is also a global competence centre within the group for top-level turnkey projects and innovative manufacturing solutions.

360° solutions is Heller's name for its pre- and post-sales services. Based on this principle, the machine tool manufacturer provides users with solutions to maximise machine availability and productivity, helping them to produce parts reliably and at a competitive cost per part in day-to-day manufacturing.

The holistic Heller service includes time studies which are accurate to ± 5 percent, evaluation of requisite workholding, consideration of automation and unmanned running requirements, built-in chillers for cooling the machine elements if they are required to achieve tolerance, tool life monitoring and broken tool detection.

John Dineen, sales and service manager at Heller Machine Tools in the UK comments: "Our 360° approach to manufacturing solutions begins with understanding what the customer is trying to achieve and this entails looking closely at the enquiry and listening carefully.

"However, there is much more to it than that. We draw decisive conclusions from the discussions and communicate our finding clearly and precisely at all contact points with the potential user.

"To achieve this, every member of staff at Redditch requires agility and flexibility, as they are needed in order to adapt to what can be a rapidly developing situation when the pace of change accelerates during a project."

A particular focus at the show will be Heller's ability to supply turnkey cells for highly efficient machining of tough titanium and nickel superalloys, notably in the aerospace industry but also in other sectors including oil and gas. In this connection, the machine manufacturer will stress the considerable range of different spindles that it manufactures in-house to suit a vast range of applications.

For example, the HMC on the stand will be an HF 3500 second-generation 5-axis model for which it is possible to select a Dynamic Cutting (DC) universal direct-drive motor spindle, rated at either HSK-A63/16,000 rpm/56 kW/180 Nm or HSK-A100/12,000 rpm/45 kW/400 Nm. There is also a Power Cutting (PC) spindle rated at HSK-A100/10,000 rpm/45 kW/360 Nm and an HSK-A100/13,000 rpm/45 kW/228 Nm Speed Cutting (SC) spindle. Two further options with an HSK-A63 interface are rated at 12,000 rpm/45 kW/228 Nm (PC) and 18,000 rpm/45 kW/103 Nm (SC). All are produced at Heller's headquarters in Nürtingen and feature the company's Zero-Spindle system for rapid interchangeability.

The 5-axis machine itself, which is built in Redditch, has a 710 x 750 x 710 mm working volume. In this case, the machine will be exhibited without a Direct Drive Turning (DDT) rotary table and spindle locking function for turning tools.

To raise cutting performance, the Gen 2 design has a short distance between the spindle nose and the centreline of the 225° swivelling trunnion and is available with twin motors and ballscrew drives for moving the trunnion/rotary table in the Z-axis, with position feedback via linear scales. The high-end PRO package offers more than 1g acceleration in all linear axes.

Engineers will be on the stand to discuss the benefits of the new F6000 5-axis mill turn machining centre launched by Heller at the last EMO trade show. It has been designed from the

ground up following extensive research carried out amongst the manufacturer's customer base.

Highlights of the new generation include new swivelling heads with integrated motor spindles developed in-house and an optional direct-drive torque table for carrying out in-cycle turning operations. A pallet changer is included as standard for first-level automation, enabling easy integration later on of a rotary or linear pallet storage and retrieval system.

To ensure that all of the above benefits are maximised in production, Heller's design engineers have focused on clear and easy operation, as well as good accessibility to all work areas. Operation is simplified by the new Siemens Sinumerik ONE control, which is fitted as standard and the convenient control unit in panel design with 24-inch touchscreen. At the same time, better access to the work area and the optional new SETUP-Assist software make it easier to prepare the next machining process.

The key to higher productivity is complete machining in a single setup and 5-axis machines like the F 6000 are ideal platforms. With this in mind, Heller has been busy recently integrating more in-cycle machining technologies in addition to milling and the customary option of turning on a torque table. Examples are various gear-cutting methods, turning with a facing head, power skiving and even friction stir welding.

The main purpose of automated manufacturing on production centres is reduction of idle times to optimise system availability. For this purpose, Heller offers proprietary automation solutions that can be optimally combined with its HMCs.

Due to the wide variety of market requirements, this portfolio is complemented by a range of specialised solutions for pallet exchange and component handling and storage that the company offers based on best-in-class partnerships, such as with Fastems and Gressel as well as subsidiary companies STS, Paatz and Wenzler. The manufacturer also has a special arrangement with Kuka KMR Cybertech for the integration of automated tool loading and unloading.

Featured at MACH 2024 will be Heller4Industry, the group's worldwide drive towards integration of its machine tools and controls into the Industry 4.0 environment. Within the multi-faceted portfolio is the HELLER4Services interface, which focuses on

transparency of digital manufacturing and maintenance. The module forms the basis for evaluating machine data and statistics to reduce downtimes. Additionally, visualisation of specific information such as status displays of axes and spindles enables a user to predict wear and implement preventive maintenance.

Heller Machine Tools Ltd
Tel: 0121 275 3300
Email: sales.uk@heller.biz
www.heller.biz/en

Stand: 19-330

Out of this world

Mills CNC to showcase a stellar array of advanced high-productivity machine tools and automation systems on its stand at MACH

Mills CNC, the exclusive distributor of DN Solutions' and Zayer machine tools in the UK and Ireland and a leading supplier of advanced automation system solutions to component manufacturers, is promising to make MACH 2024 a truly inspiring and transformative event.

With a reputation for always 'pushing the boat out' at previous MACH shows, the company is doing something similar, if not better, this time around and has confirmed that it will be showcasing a total of 16 machines on its 750 m^2 stand.

The company's technology line-up at the event includes eight milling machines, seven DN Solutions' 3- and 5-axis vertical and horizontal machining centres and a large-capacity Zayer horizontal CNC bed mill, seven DN Solutions' lathes and turning centres and a DN Solutions' SMX multi-tasking mill-turn machine.

Two of the turning centres being showcased form the mainstay machine tool elements of two, separate automated manufacturing cells. Their inclusion demonstrates the growing popularity of Mills' automation solutions and their importance to the company's future growth ambitions.

With a focus on innovation and automation, Mills' eagerly anticipated MACH 2024 theme, currently being rolled out, will not disappoint and is described as being 'out-of-this-world'.

"Our stand at MACH 2022, with its Broadway theme, is still being talked about in industry circles and raised the bar in terms of creativity and stand design," says Tony Dale, Mills CNC's CEO.

"As part of our commitment to continuous improvement, we are confident that we have 'gone one better' this time around with our MACH 2024 'SPACE ODYSSEY' themed stand."

Five of the machines on Mills' stand are new models that are making their MACH show debuts. Their presence enables visitors to make 'First Contact' and have a positive 'close encounter' with the new DN Solutions' and Zayer machine tools and experience the significant productivity and process efficiency gains offered by each.

Pride of place and occupying the largest space on Mills' stand, goes to the new Zayer XIOS G CNC horizontal bed mill.

This large-capacity machine is equipped with a built-in rotary table, 1,500 mm x 1,500 mm, a 5-axis, 45-degree milling head and the latest HEIDENHAIN control.

With its powerful, high-torque spindle, 40 kW/6,000 rpm and impressive positional accuracy, 0.008 mm and repeatable accuracy as well as 0.005 mm, capabilities, the XIOS G is ideal for large aerospace, rail, energy and oil and gas part processing, including mould and die applications.

New DN Solutions' machines making their MACH debuts include the compact, FANUC-controlled DVF 4000 simultaneous 5-axis machining centre, two models from the recently-launched DNT-series of high-performance lathes, DNT 2100M and DNT 2600 and a V 9300M vertical turning lathe.

The DVF 4000 is the latest addition to DN Solutions' popular DVF-series of simultaneous 5-axis machining centres and is equipped with a 12,000 rpm spindle, a 400 mm diameter, built-in rotary tilting table and a 60-position ATC.

Roller LM guideways and integrated thermal compensation help make the DVF 4000 a fast, precise, powerful and reliable 5-axis machine tool solution.

DNT 8/10" chuck, box guideway lathes were introduced into the market in early 2023 and are well represented at MACH.

The FANUC-controlled DNT 2100M has an 8" chuck/65 mm bar diameter and is equipped with an 18.5 kW/4,500 rpm spindle, a 12-station turret and driven tooling capabilities, up to 10,000 rpm.

The DNT 2600 is a 10" chuck/81 mm bar diameter lathe, equipped with a 26 kW/ 3,500 rpm spindle and 10-position turret.

The V 9300M is a robust and powerful 24" chuck vertical turning lathe with 20 m/min rapids, X- and Z-axes, a 45 kW/1,800 rpm spindle, a 12- station turret, 4,000 rpm driven

tooling capability and an additional, front-mounted ATC for extra productivity.

In addition to new machines making their debuts, Mills' stand also features a number of popular and best-selling models from its well-established machining centre, turning centre and mill-turn machine ranges.

It would be unthinkable for Mills not to showcase its, now iconic, DVF 5000 simultaneous 5-axis machining centre at MACH and, to emphasise its future importance to the company going forwards, Mills is showcasing two DVF 5000's on its stand; one standalone model and one integrated with a multi-level automated pallet change system.

Other milling favourites being exhibited include three DNM vertical machines centres, a DNM 4500, Siemens control, a DNM 5700, FANUC control, a DNM 6700, HEIDENHAIN control and a NHP 5000 horizontal machining centre integrated with an automated pallet changer.

"Increasingly, manufacturers are looking to increase their competitiveness by embracing automation," says Tony Dale.

"As a leading automation systems' supplier, we are showcasing a number of DN Solutions' machines integrated with pallet change systems which can significantly improve customers' productivity by enabling them to take advantage of unattended and lights-out operations."

Helping customers improve their productivity and process efficiencies were major factors in determining the turning centres and mill-turn machines that Mills has decided to showcase on its stand.

A best-selling, multi-tasking 8" chuck Lynx 2100LYB with integrated Y-axis capability has pride of place alongside a recently-introduced 10" chuck TT 2100SYYB, twin-turret/twin-spindle turning centre with dual Y-axis functionality and a 10" chuck SMX 2100SB mill-turn machine equipped with left and right opposing spindles and a B-axis milling spindle.

In recent years, Mills CNC has gained a reputation for supplying manufacturers with productivity-enhancing automated manufacturing cells. At MACH, the company is reinforcing its automation and turnkey solutions' pedigree and credentials by showcasing two robot cells on its stand.

The first of these, a SYNERGI Premier cell, comprises a 12" chuck Puma 3100SY sub-spindle, Y-axis turning centre integrated with a Fanuc industrial robot, a five-drawer,

bi-directional part load/unload station and a 17" touchscreen iHMI. The cell is driven by Mills' proprietary SYNERGi software.

The second cell, incorporating a compact 10" chuck Lynx 2600SY sub-spindle, Y-axis lathe, is integrated with a collaborative robot (cobot) and will be undertaking a range of machine tending operations.

Tony Dale concludes: "Visit us at MACH 2024 for a true voyage of discovery. We'd be delighted to welcome you onboard."

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

Stand: 19-110

XYZ brings 19 machines to MACH

XYZ Machine Tools will be exhibiting the full range of its TMC machining centres for the first time at MACH and it will also have a premier for the new XYZ CT65 LTY-S Twin/Sub spindle lathe.

In total it will have 16 machines under power on its main stand, right next to the entrance to Hall 20.

In addition, it will have an XYZ RLX 780 3 m CNC Lathe on a second stand and two XYZ 500LR VMCs on the WorldSkills stand.

The XYZ TMC range features the easy to use and famous ProtoTRAK® control which delivers simple shop floor programming complete with optional handwheels for manual operation and winding forwards and backwards through the machining cycle. Built with a solid ribbed casting and the latest linear rail technology, these machines, are not much more than an equivalent sized XYZ Bed Mill, giving the advantages of the bed mill in an enclosed safe and clean working environment with an up to 20 station carousel tool changer. These machines give the versatility to make one-off or small batch parts to full production runs with minimal operator effort.

Making its debut at MACH, the Box Way XYZ CT65 LTY-S Twin/Sub spindle lathe brings the advantages of automated one hit turned and milled components to XYZ's customers. The machine can turn parts up to 490 mm long and bar feed diameters up to 66 mm. With twin spindles, live tooling and Y and C axis, this machine can turn and mill complex parts at both ends in one operation, dropping the finished part into its part catcher for hours of unattended machining.

For heavy duty machining applications, the XYZ 800 HD includes box slideways and massive ribbed castings for maximum rigidity. Matched with the Siemens 828D control with

ShopMill and options for 4th axis rotary tables, this machine has the power and capability to machine the toughest materials.

For full 5-axis simultaneous machining, the XYZ UMC-5X can save hours in setup time especially where six sides of a part need to be milled or drilled. With suitable fixturing full machining can be done in just two setups. Repeatability on this machine is ± 2.5 microns with linear scales on X, Y and Z and high precision encoders on the A and C axes. A direct drive high torque 90 rpm motor is standard on the rotary axis and an option on the tilting axis. A 15,000 rpm spindle, Dynamic Collision Monitoring and Thermal Spindle Compensation are standard with options for 18,000 and 24,000 rpm spindles and Traori hole machining compensation making this a powerful and cost effective solution which has proved to be popular with aerospace manufacturers.

The stand will also feature the ever-popular RMX Bed Mills, KMX Turret Mills and RLX Lathes. These machines can be used manually or under full CNC with their ProtoTRAK controls. This makes learning and operating the machines very simple, quickly and easily getting to a finished component.

This year, XYZ Machine Tools is celebrating 40 years since it was founded. Now it has over 15,000 machines in daily use in the UK and across Europe where it has an extensive distribution network. It is well known for the reliability and quality of its machines and its after sales service. MACH 2024 is an important part of these celebrations and the team at XYZ Machine Tools is looking forward to meeting you at the show.

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

Stands: 20-140 & 6-72

Oil mist, metal dust and fume extraction prowess on show

Filtermist will be reminding visitors to MACH why it is a leading provider of oil mist extraction systems.

As well as its own world-renowned UK manufactured centrifugal oil mist filters, it will also be showing filtration units from sister companies Absolent and Diversitech. These will include an A.5 static filter media oil smoke filter from Absolent, and a brand-new 'Thunderbolt' Electrostatic Precipitator (ESP) from Diversitech.

The A.5 is Absolent's smallest, and smartest, oil smoke filter. The A.line range is specifically designed for CNC machines, Swiss machines and grinding machines that are running with high speeds and high coolant pressures. Thanks to Absolent's superior filter media knowledge and in-house filter cartridge manufacturing capabilities, the A.line range can be adapted to fit the requirements of many different applications.

Meanwhile the Thunderbolt ESP range features double pass technology and is efficient to 99 percent. The filters can be directly mounted to machine tools thanks to their compact size and built-in fan system. Available

in three models offering airflows of up to 2,000 m^3/hr, Thunderbolt is a highly efficient oil, mist and smoke collector that is effective on all metalworking fluids, even emulsion.

Filtermist CEO, James Stansfield, comments: "Filtermist has manufactured, marketed, monitored and maintained extraction systems for oil mist, oil smoke, dust and fume for more than 50 years and as part of Absolent Air Care Group, we have access to a wide range of products, technologies and technical expertise from other Group companies."

For companies that need metal dust extraction, a Dustcheck NonFlam wet dust collector will also be on the stand. Wet collectors, also known as wet scrubbers, are ideal for safely removing metal dusts, especially white metal dusts which can be highly explosive. NonFlam units are designed to handle the heavy loading of larger, mechanically generated dust particles from grinding, linishing and polishing processes. The range offers volumes from 720-16,200 m^3/hr and is available in either painted mild steel or stainless steel construction.

In addition to the products it offers, Filtermist will also be highlighting its extensive UK wide aftermarket services which include spares and consumables, servicing and maintenance and COSHH compliant LEV testing for all makes and model of LEV systems.

Filtermist Ltd
Tel: 01952 290500
Email: sales@filtermist.com
www.filtermist.co.uk

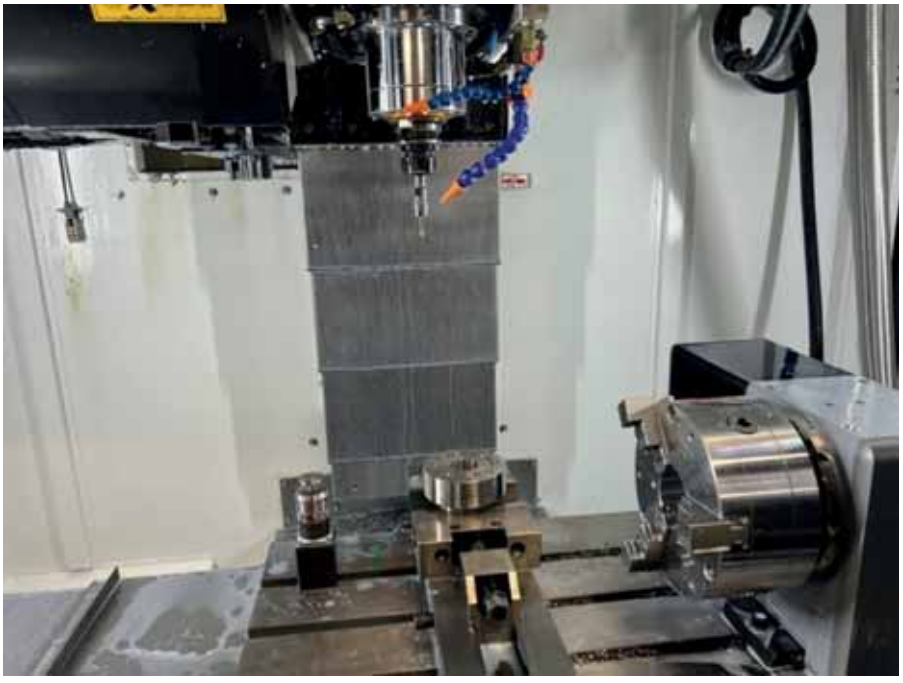
Stand: 19-521

Offshore subcontract manufacturer invests in a Vulcan VMC from ETG

Located in Moray, North-East Scotland, an area famous for its Scotch Whisky, Standfast Precision Engineering Ltd provides subcontract manufacturing services that are far more edifying than a tipple. Since its inception over 40 years ago, the manufacturer has continually invested in machine tools to serve its clients in the offshore and whisky distillery sectors. The latest investment is a Vulcan 710L VMC from the Engineering Technology Group (ETG).

Located in Craigellachie where the River Spey meets the River Fiddich, Standfast is a company that has continually invested in new technology to enable the production of high quality components in everything from one-off and low-volume runs to higher-volume production. Primarily working with the oil and gas industry, Standfast has witnessed significant growth in recent years as the offshore industry has enjoyed a renaissance. With a facility that incorporates everything from manual and CNC turning, milling and EDM machining, the ISO: 9001 company is evolving its business assets to satisfy the demands of its clients.

The latest acquisition, a Vulcan 710L VMC with a 4th axis Lehmann rotary unit from ETG was purchased to provide additional capacity and increase the throughput of its smaller components. As company owner and director Graham Wilson says: "We had a small bed 3-axis machine with a rotary unit, but the compact work area was limited even further by the 4th axis unit. This meant we could only process very small parts or we would have to transfer components to our larger bed machines that are dedicated to larger jobs, disrupting our workflow and creating capacity issues. We spoke to ETG's representative in Scotland, Ross Milne and he recommended the Vulcan 710L VMC."



"We reviewed the market, looking for a machine with a Siemens CNC in a short lead time, as our workload was ramping up and the issue was causing a bottleneck. ETG provided the solution with the Vulcan and it has been a tremendous asset since it was installed," adds Graham Wilson.

With a limited floor area, the compact Vulcan slotted straight into the Scottish manufacturer's shop floor. The outgoing machine only had a worktable of 500 mm, which was too small to fit both a 4th axis unit and a vice for 3-axis work. However, the spacious work area of the Vulcan provides a worktable of 760 by 420 mm. Commenting upon this, CNC machinist at Standfast, Scott Coull says: "With the space in the Vulcan, we can fit the 4th axis unit and a tailstock to stabilise larger parts."

Operating the machine daily, Scott Coull adds: "We program parts at the machine and the new Siemens CNC has a large touchscreen interface that improves programming speed by at least 30 percent. We typically produce batches from 10 to 20 off, so we can program 10 to 20 jobs each week with each program taking from 15 minutes to a couple of hours, so this saving in programming time is significant."

Looking at the build quality and performance of the machine, Scott Coull adds: "Compared to the previous machine, the Vulcan is a more rigid and robust machine than its predecessor and

this enables us to undertake heavier cutting conditions. Furthermore, the previous spindle had a maximum speed of 8,000 rpm and the Vulcan provides 10,000 rpm, this significantly improves our productivity, especially on softer material components such as aluminium."

The family business owned and run by Graham Wilson and his wife Michelle has also witnessed improved surface finishes, product quality and reduced downtime since the acquisition of the Vulcan. Scott Coull adds: "Whilst the Vulcan has a tool setting probe that eradicates our previous method of using a dial gauge on every new tool that we put in the machine. This can save us a couple of hours of manual tool setting on the machine each week. In addition, the rapid tool changer is at least 50 percent faster than the previous machine."

Expanding the portfolio

Known as a trailblazer in the industry with the most comprehensive range of machine tool solutions, the Engineering Technology Group (ETG) has now formed a new business division for fabrication. Always intent on meeting the challenges of the marketplace, the new 'Fabrication Division' will provide turnkey solutions for the fabrication industry with the VLB Group as one of the partners.

As with all solutions and services from ETG, the Wellesbourne company has no interest in 'shifting boxes', so the new Fabrication Division will be headed up by Andrew Smith Hughes who joins the ETG family with more than a decade of expertise in delivering turnkey solutions to the marketplace. The new Fabrication Division will incorporate a range of technologies that include everything from tube bending, flatbed laser cutting and cold roll forming to name a few, with ancillary fabrication product lines also available to support manufacturers.

The agreement between ETG and the VLB Group will provide a UK and Ireland sales and support network, bringing state-of-the-art tube and plate forming technology that will be comprehensively serviced by manufacturing experts. As the new product manager for fabrication at ETG, Andrew Smith Hughes will spearhead the integration of the new division into the ETG business structure and deliver the solutions to the industry. Commenting upon joining ETG, he says: "For more than 10 years, I have worked as an engineer, account manager and at director level in the fabrication sector, specialising in building businesses in this potentially huge market with globally renowned brands. The ethos of ETG to deliver turnkey projects is a business model that has been overlooked in the fabrication market until now. This huge market gap provides a major opportunity for ETG to service the fabrication industry to levels never before seen. This makes the new ETG enterprise a remarkably exciting opportunity for the industry."

As the first brand to be presented under the umbrella of the ETG Fabrication Division, the VLB Group are experts in tube bending and cold roll forming. The VLB Group will be present at MACH 2024 and Andrew Smith Hughes will be present.

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

GM CNC launch new Victor machine

When it comes to one-hit machining, the new VMT Series of multi-tasking mill/turn centres from Victor has it all. Available in the UK from GM CNC, the new VMT Series demonstrates unparalleled levels of flexibility and capability for one-hit machining of the most demanding components while incorporating the stability, precision and rigidity that is the hallmark of the Victor brand.

The VMT Series of multi-tasking machines are configured with 15 kW twin built-in turning spindles and a 22 kW swivelling B-axis milling spindle that defines the power, flexibility and productivity of this exceptional new range of machines. Available in four variants that include the VMT-X200, VMT-X260, VMT-X360 and the VMT-X400, the VMT Series from GM CNC is perfect for everything from the unmanned machining of small complex parts to heavy duty machining of large parts for the aerospace, automotive, offshore and heavy goods industries. With an unfathomable range of standard features and optional extras, the VMT Series has all of your turned part needs covered with this multi-tasking range.

As standard, the VMT range is equipped with a FANUC 0i-TF CNC with iMMI, AICC and MGI with a Siemens control as an option, hydraulic chuck with soft jaws, chip conveyor, a Renishaw automatic tool presetter, through spindle coolant and hybrid lubrication system. The optional list of features is equally generous with steady rest, bar feed interface, part catcher, auto doors, sub-spindle and much more. All of this can be configured upon the industry's most robust and stable machine platform that delivers unparalleled levels of confidence for heavy material removal machining with unsurpassed surface finishes, accuracy and repeatability. This is achieved through an optimally designed Meehanite cast base that provides a platform for elevated cutting parameters and improved tool life. The result is leading machining performance.

From a specification perspective, the VMT-X200 and VMT-X260 are 8 and 10-inch chuck machines with a 660 mm swing over bed and a maximum turning length and turning diameter of 1,376 mm and 1,075 mm respectively. This spacious work envelope is embodied by two 15 kW 4,200 rpm turning spindles on the VMT-X200 and a 22 kW 3,500 rpm main spindle and 15 kW sub-spindle on the 75 mm bar capacity VMT-X260. For larger components, GM CNC presents the 12-inch chuck 3,000 rpm VMT-X360 and the colossal 15-inch chuck VMT-X400, both provide 30 kW spindle power and a bar capacity of 91 mm, 106 mm optional. The largest machines in the range provide an 1,120 mm swing over bed and a maximum turning length and turning diameter of 2,148 mm and 2,100 mm. All machines demonstrate exceptional flexibility through the 12,000 rpm 15/18.5/22 kW high-winding B-axis milling spindle that can rotate through -30/+210 degrees with an impressive indexing resolution of just 0.001 degrees. This flexibility is enhanced with a 40 position ATC on the X200 and X260 machines and 60 positions on the larger X360 and X400 variants.

If you would like to investigate the potential of this exceptional range of machines, GM CNC has a VMT-X200 machine now available at its Oldham showroom in Lancashire. The stock machine has a list of impressive features that include the FANUC 31i-B5 Plus CNC with a 15-inch display with simultaneous 5-axis machining capability, circular thread cutting, helical interpolation, arbitrary speed threading, automatic doors, part catcher, barfeed interface, 48 position ATC, high pressure through tool coolant and more. This machine will be available to view from March.

GM CNC Ltd
Tel: 0161 401 8880
Email: info@gm-cnc.com
www.gm-cnc.com

Starrag to showcase latest Bumotec innovations at MACH

Starrag will be presenting its latest innovations from across the company's diverse portfolio of high-performance solution-driven machine tools. From the Bumotec machine range, Starrag will present its latest turn/mill product lines that can now be viewed in the company's new virtual showroom: ***https://showroomvud.starrag.com*** The virtual showroom is a replica of the Starrag facility in Vuadens, Switzerland and it provides manufacturers with an opportunity to investigate a wide range of solution-based innovations that range from the small and compact s128 simultaneous 5-axis machining solution to the 36-axis s1000/C transfer machine with eight machining stations in a single footprint platform.

The virtual showroom enables manufacturers to view videos of individual machine tools, application demonstrations and machine specifications from the comfort of their connected devices. As a system integrator of highly productive manufacturing solutions, the Bumotec virtual showroom gives engineers a flavour of what is possible when they invest in industry-leading technology. The virtual showroom has a multitude of machines in the demonstration hall that include the Bumotec s128, Ringma XX, s191V, S191H, the s1000/C, S100multi, the s181, s100mono, the s200, the brand new s191neo as well as the SIP5000 and SIP7000 ultra-precision vertical boring and milling centres.

Commenting upon the new virtual showroom Lee Scott from Starrag says: "Starrag is the 'go-to' machine tool partner for everything from ultra precision micro-machining through to heavy engineering applications. Our reputation as a solution integrator for clients is unparalleled across diverse industry sectors from the aerospace/turbines industry to the transport/industrial and precision/medtech markets. As a solution-based business, our new virtual showroom provides visitors with a sample of just what can be achieved through partnerships that deliver the lowest 'cost per part' possible. We encourage manufacturers to view the virtual showroom and then come and speak to us at MACH 2024 regarding what we can offer. Since MACH 2022, we have launched several groundbreaking new machines and we have also completed a company merger with Tornos, the world's leading manufacturer of Swiss-type sliding head and multi-spindle machining centres. With so much to offer at MACH, the event promises to be a mouth-watering prospect for the Starrag-Tornos Group and visitors to our stand.

Starrag UK Ltd
Tel: 0121 359 3637
Email: info-uk@starrag.com
www.starrag.com

MACH - Stand: 18-320

"The Sky's the Limit"

A thriving future for the UK aerospace industry

Airbus' strong 2023 performance paints a positive picture for aerospace industry growth

In a resounding testament to the resilience of the aerospace industry, recent news from major customer of ASG Group; Airbus, has set the stage for a transformative year. The revelation that Airbus delivered 735 commercial aircraft in 2023, marking an impressive 11 percent increase from the previous year, has sent ripples of optimism throughout the aviation sector. Simon Weston, managing director of ASG Group in Stockport, provides a compelling perspective on the implications of this robust growth for the UK aerospace industry.

"The recent surge in Airbus deliveries is a clear signal that the global aerospace industry is not just recovering; it's propelling itself forward into a new era of innovation and expansion," he explains. "This growth has far-reaching implications for all stakeholders, including suppliers and manufacturers within the UK and it aligns perfectly with our aspirations for the future of the aerospace industry."

The noteworthy figures, including a staggering 2,319 gross orders, 2,094 net, underscore a strong recovery and a heightened commitment to modernising aircraft fleets with the latest generation of fuel-efficient marvels. Simon Weston, with his keen understanding of the industry, sees this as an opportunity for UK aerospace players to play a pivotal role in the global landscape.

He says: "The emphasis on fuel-efficient aircraft is not just a trend; it's a paradigm shift towards sustainability. As the UK aerospace industry looks to the future, aligning with these environmental goals becomes a strategic imperative. It's a moment of convergence between environmental responsibility and business acumen and the UK has the expertise and capability to be at the forefront of this evolution."

The substantial year-end backlog of 8,598 aircraft further accentuates the industry's positive trajectory. Simon Weston believes this backlog is not just a reflection of current demand but a harbinger of sustained growth: "A robust backlog signals stability and confidence in the market. It creates a domino effect, fostering investment, innovation and job creation within the aerospace ecosystem."

As Group MD of ASG Group, Simon Weston envisions a future where UK aerospace suppliers, including ASG Group, play an instrumental role in supporting the demands of a thriving industry.He states: "The growth of Airbus translates into opportunities for UK suppliers to be key players in the supply chain, providing components and services that contribute to the success of these cutting-edge aircraft."

Ultimately, the strong performance of Airbus should be seen as a catalyst for the UK aerospace industry's ascent. "The sky is not just the limit; it's a canvas for innovation and progress. The UK aerospace industry has the talent, capability, and determination to make a lasting impact on the global stage," Simon Weston adds.

Reflecting on industry evolution

"In the wake of the pandemic, the aerospace sector faced its most significant challenge to date," reflects Simon Weston. While the crisis, triggered by the 2020 pandemic, disrupted global air travel, a broader perspective on the industry's resilience needs to observed given the sector's relative youth; with commercial aerospace as an industry probably little over 30 years old.

The robust return to growth in air travel have brought its own set of hurdles, including disruptions to the supply chain, material shortages and a talent drain from the industry. "Successfully navigating this ramp-up was no small feat," Simon Weston acknowledges. Replacing lost talent becomes a critical imperative, particularly in Western Europe, where experienced professionals exited the sector. The sector continues to embrace international expansion, especially in low-cost regions like India, which has become a focal point for talent acquisition.

Simon Weston notes, "A significant part of our growth is occurring overseas, where recruitment is less challenging and why the new ASG Pranavam partnership is so exciting."

Anticipating the industry's resurgence, ASG Group, under Simon Weston's leadership, have proactively sourced materials and continued site and plant investments, thanks to sustained financial support. This foresight and strategic approach, he acknowledges, are instrumental in the company's survival.

ASG Group
Tel: 0161 883 3627
Email: info@aeroservicesglobal.com
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Using digital manufacturing to machine high-quality components for aerospace and defense

Aerospace and defense products are some of the most complex products in the industry. These products and their many parts are held to stringent quality and safety standards. The powerful integration of NX CAD, NX CAM and SINUMERIK CNC solutions is enabling aerospace and defense manufacturers to produce increasingly complex parts without sacrificing accuracy or efficiency. By implementing Siemens' powerful digital manufacturing technologies, you can maximise machine tool performance, achieve leaner production, become more resilient in times of crisis and accelerate your business.

Solving complex machining problems

In this article, Siemens are featuring SIXDIGMA, a Cincinnati, Ohio, USA-based digital manufacturing company that helps manufacturers overcome challenges in 5-axis machining. The company uses the Siemens CAD, CAM and CNC technologies to solve complex part manufacturing problems.

Edwin Gasparraj, founder of SIXDIGMA, shares how the company used key digital manufacturing technologies, CADCAM and CNC, to machine a complex airfoil.

Integrating CADCAM and CNC systems to machine an airfoil

The machining of an airfoil involves three machining challenges: using innovative toolpaths for excellent surface finish, advanced probing for exact part alignment and achieving high tolerances with a closed-loop adaptive machining process. Solutions for these challenges are outlined below.

Achieving the desired surface finish of parts for aerospace

Advanced CAM systems are needed to achieve the desired finish and dimensional accuracy on parts like an airfoil. Airfoils have complex features and tight tolerances that must be met. It's difficult to program a toolpath that meets the necessary tolerance using traditional CAM systems. Advanced CAM systems can generate highly efficient toolpaths with less effort. Advanced CNC machines today are capable of much better surface finishes, but discontinuities in 3D surface geometries can cause axis reversals that will tarnish the final surface finish. Siemens' NX CAM has many tool axis and projection options, so you can generate any toolpath and tool axes to correct issues. Plus, NX CAM has integrated G-code-driven simulation technology enabling advanced and accurate digital machining validation that eliminates possible errors on the machine.

Accurate part alignment and adaptive toolpath technology

It's incredibly important to have accurate positioning and a clear understanding of surface locations when machining an airfoil. Variations in surface geometry from part to part can impact accuracy. At times, it may be necessary to correct individual toolpaths within the part program as the variation may only be present in certain areas. Running adaptive toolpaths can help maintain high consistency and accuracy from part to part.

With Edwin Gasparraj's method, the airfoil is clamped in the fixture and individually probed. These probing data are processed by the CNC, mathematically computed by using an advanced algorithm into new location data and calculated into the offset of the part and alignment of the toolpath. The part is probed a second time to fine-tune measurements and readjustments of workpiece offsets and toolpaths. At that point, actual part surface accuracy can be achieved within a few microns.

The powerful capabilities of the Sinumerik controller and NX CAM software enable the computation of this complex algorithm using massive amounts of data at an amazing speed. This makes it possible to utilise this process for serial production.

Siemens was established in the United Kingdom over 170 years ago, with office and manufacturing operations throughout the country. It has had a presence in the UK since 1843. Its founder, William Siemens, was one of the leading industrialists of the Victorian age, turning his concepts and inventions into practical solutions, many of which were world firsts.

The company is passionate about being the digital partner of choice in its industries, creating value in its technology and the data in its installed base for organisations looking to harness the power of the internet of things.

Siemens UK
Tel: 0161 4665000
Email: enquiries.gb@siemens.com
www.siemens.com

Sustainability in the waste management sector

Let's talk about sustainability in the waste management sector. It was a hot topic at this year's Southern Manufacturing and Electronics Show and we believe the message is clear: there has never been a more important time to get serious about waste.

As the desire for sustainable business practices continues to intensify, the industrial sector must prioritise responsible waste management as a cornerstone of its sustainability strategy. By embracing innovation, adhering to regulatory requirements and fostering collaboration, businesses can not only mitigate environmental risks but also capitalise on the economic opportunities found in sustainable waste management.

Did you know? The latest government data shows the UK generated an estimated 40.4 million tonnes of Commercial and Industrial (C&I) waste in 2020, of which 33.8 million tonnes, 84 percent, was generated in England. The latest estimates for England only indicate that C&I waste generation was around 33.9 million tonnes in 2021.

The large volumes of commercial and industrial waste generated by businesses is having a significant impact on the environment. Most of this waste ends up in landfills, generating greenhouse gas emissions 25 times more effective at trapping heat than carbon dioxide.

This is terrible news for our planet and consumers are not ignoring the facts.

Deloitte's 2023 Sustainable Consumer survey revealed that 30 percent of consumers had stopped buying products due to ethical or sustainability-related concerns and almost 50 percent see circularity, explained in more detail later, as essential for buying a product.

If those aren't reasons enough to reconsider waste management within your business, then how about this statistic: Every year, UK businesses can spend between 4 to 10 percent of their average annual turnover on waste disposal. That's a significant chunk of profit.

Your waste challenges may seem complex, but let's explore sustainable waste management and how you can turn your waste into savings.

What is sustainable waste management?

The term 'waste management' traditionally refers to three waste management methods: collecting, transporting and disposing of waste materials.

Quite often, waste generated is collected and sent off to landfill sites or incineration facilities. However, this method mainly deals with the aftermath of waste generation, rarely addressing the root cause of the problem.

Sustainable waste management looks at much more than just the disposal of waste. It's about achieving sustainable waste management aims, such as:

- reducing the amount of waste generated in the first place
- reusing where possible
- recycling what can't be reused
- selling what we can, 'one man's waste is another man's treasure
- only then, disposing of what's left

Sustainable waste management looks for solutions that don't harm the environment or human health and focus on reducing natural resource consumption.

It is possible to change our waste management approaches

The good news is that it is very possible to change the volumes of waste that end up in landfill. Instead of collecting, transporting and disposing of waste, sustainable waste management looks for solutions that won't harm the environment or human health and instead focus on reducing natural resource consumption.

Sustainable waste management revolves around a hierarchy:

From helping to reduce carbon emissions to improving air and water quality to commoditising waste streams, sustainable waste management has incredible environmental, economic and social benefits.

This model, where everything is reused, repaired or recycled, can also be understood as the circular economy.

Nicola Guest, Waste Mission's group marketing manager says: "We already work with a range of major electricity network operators, offering them unique services for their transformer and switchgear recycling, ensuring that nasty elements like PCBs and F Gases are safely recycled. Additionally, we are developing some unique technologies in the WEEE waste sector, allowing us to extract precious metals from WEEE waste."

Helping your business embrace a circular economy

With natural resources depleting and CO_2 emissions rising, now is the time to embrace the circular economy. Circular practices promote restoration and circularity rather than products reaching their end-of-life, linear economy. The result is less waste and a closed loop in the industrial ecosystem.

Understanding the Circular Economy

While some manufacturers are making positive steps forward, ***a 2023 report by Qflow*** revealed that although the construction industry generates 62 percent of the UK's waste, only 2 percent is reused. This report highlights an incredible opportunity for increasing the adoption of circular practices within this sector alone.

It can be challenging transitioning to a circular economy. Yet, it's important to remember that circular economy strategies can turn waste into savings. They stimulate local economies by converting waste into raw materials for production and generating sustainable employment growth.

At Waste Mission, we can educate, inspire and facilitate waste reduction for your business by collaborating with you and your supply chain to innovate and identify "waste" materials for conversion into valuable recyclable commodities.

Discover more benefits of embracing a circular economy in the latest Waste Mission ***blog***

Why UK industry needs to embrace sustainable waste management

From groaning landfill sites to eco-savvy consumers and wasted profit, there are multiple reasons to embrace a sustainable waste management strategy and reduce the amount of waste your company produces.

Plus, let's not forget how there are growing concerns around securing supply chains in an ever more volatile world. But, the great news is that sustainable waste management practices can help manufacturers ride the fluctuation in raw material prices.

Waste Mission firmly believes that to achieve a more innovative and sustainable future, manufacturers and industry in the UK need to prioritise long-term sustainable waste management goals.

And that's where the team at Waste Mission can help.

Waste Mission transforms complex waste into simple solutions

Waste Mission, is driven by its unwavering commitment to doing what's right for our clients, staff and the planet. No matter the complexity of the task, it wants to simplify waste solutions for UK industries and

manufacturers. It aims to educate, encourage and uncomplicate waste management by offering a bespoke, tailored service, all from a single point of contact.

Its responsive team of experts becomes an extension of your business, taking care of waste so you can stay focused on your core operations. It promises to:

1. Guide you to reduce waste and increase your profitability.
2. Help turn your waste into solutions, reducing reliance on new materials.
3. Navigate complex regulations for you, ensuring you meet environmental and legal requirements.
4. Provide a waste portal so you can easily access data on your waste production, recycling levels and carbon footprint.

LG Flexitallic says: "What separates Waste Mission from their competition is the level of professionalism and transparency they bring to the industry. They continue to question the status quo and propose initiatives to drive our business forward."

With over 40 years of experience, Waste Mission specialises in offering simple, sustainable solutions. Through its bespoke service, it works closely with you to comprehend your unique waste requirements, offering tailored solutions that seamlessly help you reach your sustainability targets.

If you want to learn more about sustainable waste management and are looking for a reliable partner to help navigate the complexities of your waste streams, then Waste Mission would like to talk to you.

To book a waste review or learn more, visit wastemission.com, call, email or visit the Waste Mission stand at MACH.

Waste Mission
Tel: 01438 745307
Email: control@wastemission.com
www.wastemission.com

MACH - Stand: 6-545

Coolant saver innovator Wogaard celebrates a key sustainability milestone

Coolant saver specialist Wogaard is celebrating a critical milestone: the installation of over 10,000 coolant saver units worldwide, creating a total saving of 172,000,000 litres of coolant. This achievement was driven by the company's commitment to the environment and its goal to enhance sustainability practices in the manufacturing industry. The team behind Wogaard is delighted that its coolant savers have achieved this level of recognition in the global manufacturing sector. With environmental targets increasingly on the agenda, businesses have embraced the potential of Wogaard's technology to help them reduce, reuse and recycle the coolant drawn out into the swarf bins from conveyors. The company's success so far is a big win for manufacturing as a whole, as evidenced by praise for the technology from the likes of Seco Tools, Mettis Aerospace, Renishaw, Technoset, Progressive Technology and many others. Companies value how easy the technology is to install, the cost savings it delivers and its transformative impact on the shop floor.

Reaching the 10,000-unit mark is proof that making steps forward in sustainability doesn't have to be costly or disruptive. Manufacturers looking to shrink their carbon footprint are doing so affordably and with minimal disruption through the coolant saving technology. The units are helping to reduce costs and prolong the life of equipment, while also lowering the demands of coolant and swarf handling and providing higher swarf value. While Wogaard's coolant saver units reclaim soluble coolant that accumulates in swarf bins, returning it into the machine's main reservoir, its oil saver units provide the same benefits with neat oil.

It's been quite a journey from the launch of the company's first unit just over ten years ago to the installation of many thousands of units now helping companies to reduce their environmental impact, lower costs and prolong the life of their equipment, delivering not only sustainability benefits but also financial benefits and time savings for the manufacturing sector as a whole.

Reaching 10,000 installations of its coolant saver unit marks a critical stage in Wogaard's 10+ years of supporting manufacturers. It all began when founders Preben and Christian Woergaard recognised the impact of coolant wastage created by CNC machines on the environment and on companies' costs. To tackle this issue, they developed a ground-breaking solution that harnesses wasted power from the machines themselves, eliminating the need for additional energy usage and costs. Their innovation means that companies can now save up to 50 percent in new coolant purchases, due to coolant being reused from the same machine. Businesses also see a significant reduction, up to 90 percent in disposal costs. As both types of units are automated, manufacturers also benefit from maximised labour costs because there's no need for operators to manually drain the coolant.

However, this achievement is just one part of the story. As well as manufacturing coolant saver, Wogaard also helps companies to resolve challenges with cutting fluids. So, as well as enabling businesses to improve their carbon footprint, its products also keep the areas around CNC machines clear of oil, spillages and potentially hazardous vapours, making the shop floor safer for the whole workforce.

The Wogaard team are working hard to help enhance health and safety on the factory floor in other ways, for example with the upcoming launch of their unique Beacon UV disinfecting solution. This automates the process of reducing dangerous levels of bacteria in soluble coolant to levels that comply with HSE requirements for safe working, making the workplace safer for operators as well as cutting coolant, disposal and cleaning costs.

Wogaard is also helping to enhance health and safety for manufacturers with its Keep-it-Covered swarf bin protector which safeguards against exposure to potentially harmful metalworking fluid vapours.

Legislation relating to sustainability has grown even more rigorous since Wogaard started out over a decade ago. The company continues to innovate to help its clients keep up with these changes. With manufacturers facing a range of market and financial pressures, Wogaard is also focused on helping them to save costs and maximise their budgets.

Wogaard Ltd
Tel: 020 8935 5182
Email: info@wogaard.com
www.wogaard.com

MACH - Stand: 20-40

Waste Mission

Creating a future that's a few shades greener

We are Waste Mission. We simplify waste management for businesses and prioritise sustainability.

We collaborate with you to create tailored solutions, helping you reach your environmental goals.

Our knowledgeable team is dedicated to turning waste into opportunities that help grow the circular economy.

Choose us as your dependable partner in creating a greener future.

01438 745307 | wastemission.com | control@wastemission.com

Rainford points to precision at MACH

Rainford Precision will be emphasising exactly why the company is widely regarded as experts in micro-machining at MACH. On its stand, it will give the Kern Micro HD 5-axis machining centre its UK exhibition premiere alongside its extensive range of cutting tool solutions and the impressive Finepart micro abrasive waterjet machining solution.

Kern is renowned for its unparalleled levels of precision and at MACH, the Micro HD machine that comfortably achieves precision and repeatability levels of +/-1 micron during 5-axis machining will be showcasing its incredible speed, precision and productivity. The Kern Micro HD will certainly be one of the very few in the elite echelon of brands demonstrating this level of precision at MACH. Alongside the Kern Micro HD at MACH will be a demonstration model of a Finepart waterjet cutting machine.

Like Kern, Finepart is a brand that stands head and shoulders above its rival waterjet manufacturers in the 'micro' precision field. With 3, 4 and 5-axis machines in the portfolio, Finepart machines can achieve a positional accuracy of +/-2.5 microns with a repeatability of +/-2 microns with a typical cutting tolerance of +/-10 microns. The Finepart range is perfect for cutting the smallest and most intricate of components from virtually any material, making it ideal for industries from the micro-manufacturing, semi-conductor and electronics industries to the dental, jewellery, aerospace and space industries. The machines are available in a complete range of sizes and specifications with optional extras including everything from precision measuring probes and alarm notifications to CADCAM systems, high-pressure pumps, hybrid high-frequency machining spindles, abrasive feed and removal systems and much more.

Rainford Precision will also present its latest cutting tool solutions from world-renowned brands such as Union Tool, Louis Bélet, Delmeco, Gloor, HOBE, Osawa, DTS, Iwata, 6C Tools, Swissceramill and ATOM. The respective partners are leaders in the manufacture of drills, end mills, reamers, boring bars, threadmills, slitting saws and more. Within this diverse portfolio are tools for specialist applications and material types, such as the Hufschmied brand of milling tools. The Graftor range of end mills from Hufschmied have been developed specifically for machining graphite and the range can double productivity rates and tool life when compared to rival tools. With such a diverse platform of specialist cutting tools and micro tool solutions, Rainford has recently invested in a Keyence digital microscope to provide a complete tool investigation and consultancy service for customers in the UK and Ireland.

With a niche in the micro tooling sphere, Rainford has acquired the new Keyence VHX-970FN digital microscope to assist customers in diagnosing issues and maximising the performance of micro and precision cutting tools. With dozens of tooling lines in its armoury below 1 mm diameter, Rainford operates beyond the remit and scale of other cutting tool vendors. It is here that the new service will optimise and enhance tool service life and performance for clients.

Rainford Precision Machines Ltd
Tel: 01744 889726
Email: sales@rainfordprecision.com
www.rainfordprecision.com

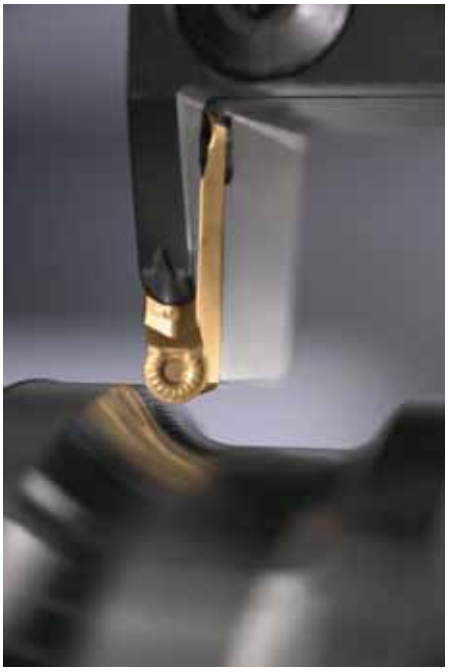
MACH - Stand: 19-409

The new Walter Tiger·tec Gold WSM33G grooving grade

As one of the world's leading suppliers of precision tools for metal machining, Walter is once again proving its pedigree with the launch of the patent-pending Tiger·tec® Gold WSM33G grade. The WSM33G is Walter's first PVD grade to be specifically developed for the high loads that occur during grooving operations.

The cutting tool material combines third-generation TiAlN with TiSiN to form a multi-layer coating with exceptional hardness and increased toughness. A special post-treatment reduces friction and ensures a smooth surface, thereby optimising chip removal and process reliability. Furthermore, the gold top layer makes it easier for users to detect wear. Walter uses the new PVD coating on single-edged SX cutting inserts with positive engagement and a self-clamping system. It can also be applied to indexable inserts from the double-edged DX18 system, where a second prism ensures stability in the insert seat.

For manufacturers, the fact that this grade can be used with both systems delivers maximum versatility as it caters for all insert widths from 1.0 mm to 10 mm. Another



advantage of the Tiger·tec Gold WSM33G grade is its adaptability, even under the most challenging of conditions. The universal grade can be used for 75 percent of all applications. This includes grooving and parting off, groove and copy turning or slot milling. The system can undertake this on a range of materials from steel, ISO P30, stainless steels, ISO M30, or materials with difficult cutting properties, ISO S30. The universal application, long tool life and high resistance of the multi-layer coating against plastic deformation and flank face wear make the WSM33G grooving inserts an incredibly productive and reliable choice.

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

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

Protect and organise your cutting tools with SystemBoard from rose plastic

Streamline the organisation and storage of your cutting tools with rose plastic's completely customisable SystemBoard solution. Created by the manufacturer of protective packaging, SystemBoard offers a modular design with a wide range of inserts to suit your equipment and needs, giving you safe, secure and customisable cutting tool storage.

The SystemBoard range consists of two main components: frames with and without a base, and interchangeable inserts to hold tools and parts of various diameters. In addition, the range includes an insert with sectional compartments designed to hold small parts such as carbide inserts.

SystemBoard's sturdy, stackable, polyamide frames can be populated to suit your tooling requirements using a range of up to 39 interchangeable inserts in various sizes, from 3 mm up to 40 mm. SystemBoard is also impact, solvent and temperature-resistant, up to 120 degrees Celsius. The inserts are colour-coded to simplify selecting the correct size.

SystemBoard can also be combined with rose plastic's LogisticSystem.These boxes are perfect for safe and reliable transportation and storage on the shop floor or for external deliveries. LogisticSystem has an option of a foam insert that will ensure the SystemBoard sits central to the transportation box as added protection.

Don't settle for a one-size-fits-all approach to storing and transporting your tools which can leave your products unorganised, damaged, or misplaced, rose plastic offers this cost-effective, reusable solution that can be set up to suit your business's unique requirements.

SystemBoard's key features and benefits:

- interchangeable inserts, diam. 3-40 mm, offer options for customisation.
- precise positioning allows automatic loading and unloading.
- usable depth 25 mm or 40 mm simply by reversal of inserts.
- sturdy design, combined with impact-resistant material ensures protection against damage.
- intermediate frame 400 B for long parts
- suitable for immersion baths for cleaning and coating.

- temperature resistant, up to 120°C.
- solvent resistant.
- ideal combination with LogisticSystem boxes 175 and 235 for even safer transport of tooling.

To find out more, read the full SystemBoard product details on the rose plastic website, or speak to its team for more information on the range.

rose plastic UK Ltd
Tel: 01709 721794
Email: info@rose-plastic.co.uk
www.rose-plastic.co.uk

MACH - Stand: 18-434

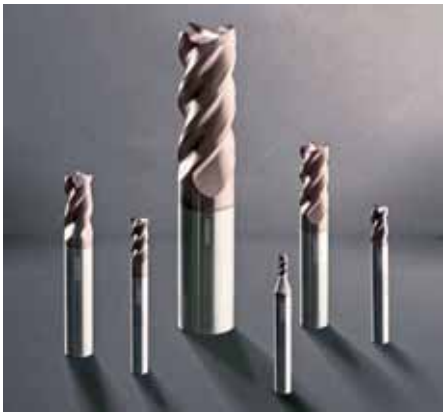
Horn to present new tools for boring, milling, thread whirling and turning

Paul Horn, the solid carbide tooling, carbide insert and toolholder manufacturer headquartered in Tübingen, Germany, has supplied more than 200,000 special tooling solutions over the years and currently offers 25,000 standard products, including five due to be introduced to the UK and Irish markets at MACH 2024. Wholly-owned subsidiary Horn Cutting Tools will be exhibiting to explain the reasons behind the launches and will also showcase a broad cross section of the manufacturer's extensive tooling range.

Superfinishing of bores

An addition to the Horn Supermini boring, grooving and chamfering system will be announced, a variant with a precision-ground rake face designed for producing ultra-fine bores. The ground cutting edge is free from notches when viewed at a magnification of x200 and the tool can be used to machine components having an inside diameter from just 0.3 mm. Sharp insert geometry ensures process reliability, even with very small infeed and cutting feed rates. The specially developed coating is suitable for stainless steels, non-ferrous metals and other metals.

The Supermini Type 105 system insert requires only one toolholder for well over 1,000 insert variants, which applies equally to left-hand and right-hand versions. The carbide inserts are available coated or uncoated in various grades for a variety of applications,



including hard machining up to 66 HRC. The patented, droplet-shape cross section has a vibration-damping effect and delivers excellent repeatability during insert exchange. Internal coolant supply to the insert increases tool life, enhances cutting performance and improves chip removal. Horn offers the tools with face clamping elements that allow the insert to be changed easily without having to remove the holder from the machine.

High-performance milling of stainless steel

Horn has developed a new, solid carbide milling cutter range for machining stainless steels, widely used in the food, chemical and pharmaceutical sectors, as well as in the watchmaking and other precision engineering industries. Due to their geometry and efficient chip breaking, the mills are suitable for machining numerous other materials as well. The combination of substrate, macro and micro geometry and IG3 coating exhibits high cutting performance and long tool life. The coating in particular offers high temperature resistance for machining steels alloyed with chromium, nickel and molybdenum.

The tools are offered in two types from stock. The DSHPR variant is suitable as both a finishing and a roughing tool and the geometry is adapted for trochoidal machining and plunging. Type DSR, with its very sharp cutting edge geometry and short design, is suitable for very small parts and unstable workholding conditions, such as are frequently encountered in the medical and watchmaking industries. In the DSHPR line, all tools are available with four teeth and in diameters from 2 mm to 20 mm, while the DSR has three teeth and is offered in diameters from 1 mm to 10 mm.

New high-performance grade for thread whirling

A new, high-performance, carbide grade from Horn, the SG3P, presents enhanced possibilities in terms of performance and tool life when whirling medical screws. It enables shorter cycle times for thread production thanks to higher cutting values, including when processing materials that traditionally are difficult to machine. In addition, the combination of an ultra-fine-grain carbide powder and a high-temperature-resistant coating raises process reliability and improves component quality. In-house coating of the inserts enables fast delivery times and the carbide grade is available for all standard Horn thread whirling systems.

The production of bone screws must be carried out using a metalcutting process, as the material for this type of screw must not be compressed, as is the case when thread rolling, for example. Titanium in particular, which is widely used in the human body due to its biocompatibility, tends to burn if the material is unduly compressed. As a thread cutting process for the medical industry, thread whirling on

Swiss-type lathes has been a standard procedure for many years.

Boring bar with adjustable damping

A long overhang can cause a turning tool to oscillate when boring internal geometries. In addition to causing chatter marks on the surface of the machined component, the vibrations can lead to a significant reduction in tool life. For unfavourable length-to-diameter ratios, even damped boring bars may vibrate under certain conditions.

To help mitigate these difficulties, Horn has introduced a boring bar with adjustable damping so it can be set to match the amplitude of the oscillation generated by the machining process. Precise adjustment enables vibration-free turning, resulting in better surface quality of the machined component and a significant increase in insert life.

The damping element, a carbide rod supported in O-rings, is adjusted from the outside by turning a screw to fine-tune the pre-tension of the rings. It allows the boring bar to be set accurately to minimise the vibration that is predicted to occur during a machining cycle. As standard, Horn offers the boring bars from stock in length-to-diameter ratios of 5:1 and 8:1. Higher ratios are available as special tools. In the case of grooving, Horn offers the

S224 double-edged system. The manufacturer's BK 224 cassette ensures a stable interface between the boring bar and insert. To increase process reliability further, the tools have an internal coolant supply.

Very hard grade for turning brake discs

Horn is also launching a new tool range for manufacturing brake discs economically. It includes solid Cubic Boron Nitride (CBN) ISO inserts, mainly used for cast iron machining and CBN-tipped full-radius and shaped inserts. The grade has no metallic bonding phase and therefore has the highest hot hardness of all cutting materials. Horn offers the solid CBN ISO S turning insert with eight cutting edges for roughing and finishing. Cutting speeds of well over 1,000 m/min, depths of cut of several mms and feed rates up to 0.7 mm/rev are typical values. Stable tool carriers are included in the offering. Depending on the operation and metal removal rate, in excess of 1,000 cast iron brake discs can be machined per insert corner.

Horn Cutting Tools Ltd
Tel: 01425 481880
Email: mikegreen@phorn.co.uk
www.phorn.co.uk

MACH - Stand: 6-210

Advanced workholding products will feature alongside integrated mould and die handling

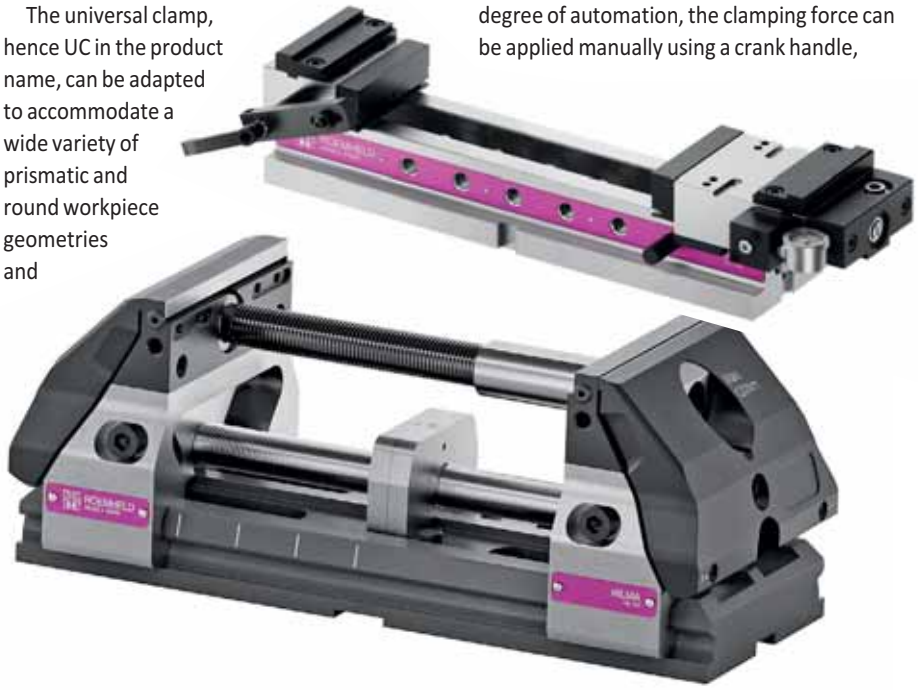
For the first time at a major UK exhibition, Roemheld will demonstrate its recently introduced, mechanically operated, centric, self-centring, machine vice. Manufactured in the group's Austrian factory in Rankweil, the new Hilma.UC 125 vice is of modular build and is intended for 3- to 5-axis prismatic machining applications.

The design ensures easy tool access to the workpiece from all sides, allowing the use of short tools for high precision machining in a single setup. Versatility in operation is ensured by having a separate vice base and two individual jaws that, when a single handle is turned, travel simultaneously inwards towards the centre to clamp the workpiece and out again to release it.

Clamping force exerted via the upper spindle is up to 52 kN. A central bearing on the lower, unloaded spindle, which is used for positioning the jaws, ensures that each component is clamped precisely in the centre of the vice. Repeatability of workholding from part to part is better than ± 0.01 mm.

As the clamping spindle is turned, force is applied to the workpiece via outer claws over the jaws. An active pull-down mechanism in the clamping jaws prevents the workpiece from lifting. Having both a tensioning spindle and an adjustment spindle prevents force being applied to the base, avoiding distortion.

The universal clamp, hence UC in the product name, can be adapted to accommodate a wide variety of prismatic and round workpiece geometries and sizes in just a few steps. The jaw opening can be extended quickly to 600 mm, one of the largest available on the market.



Numerous jaws up to 125 mm wide for securing a wide range of different raw and finished parts are offered as part of the modular system. Additional expense in buying extra workholding equipment is therefore normally avoided, even when production requirements are diverse.

There are several options for mounting the vice. It can either be secured directly to the machining centre table, or in a zero-point clamping system. Adapter plates are available for added versatility.

Available in three jaw widths, 100, 125 or 160 mm and in up to five standard lengths from 380 to 1,200 mm per jaw type, the HILMA.NC vice is a modular workholding system especially well suited to use on vertical machining centres. Depending on the machining strategy and degree of automation, the clamping force can be applied manually using a crank handle, HILMA.NC, or hydraulically by means of a power unit, HILMA.NCH.

The base of the vice can be fixed to the machine table by means of a zero point clamping system, clamping claws or bolts. Optional reworking of the base allows additional positioning and fixation options. An extensive range of jaws rounds off the flexible clamping system.

Rapid coarse adjustment is achieved by pulling out the socket pin, allowing the clamping slide to be moved freely. Fine adjustment of the jaw to the component is completed by turning the crank handle to rotate the threaded spindle, after which the clamping force builds up linearly to ensure secure workholding.

This is done by hand for the mechanical version, or actuated hydraulically to a preset force by a separate power unit or by the machine tool's hydraulics.

Semi-automatic workpiece exchange in production enables fast, efficient and safe handling of components, resulting in high productivity and quality. Several clamping locations on a machine table can be actuated simultaneously. If a foot switch is used, two-handed loading and unloading assists production if workpieces are heavy or large batches are involved.

Clamping force is reproducible and is continuously displayed to ensure a secure gripping action without deforming or damaging the component. It is consequently possible to rough and finish in the same clamping by varying the force, so there is no tolerance build-up and process reliability is ensured.

Roemheld (UK) Ltd
Tel: 01670 281400
Email: sales@Roemheld.co.uk
www.roemheld.co.uk

MACH - Stand: 6-419

HUNDREDS OF ZERO POINTS IN ONE SOLUTION

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- 250 MultiZero modules from Sinco
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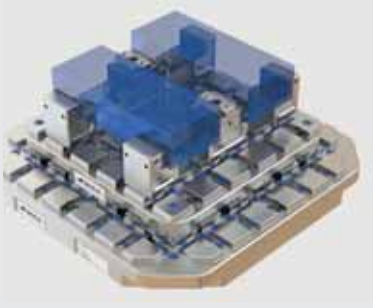
Specialists in workholding



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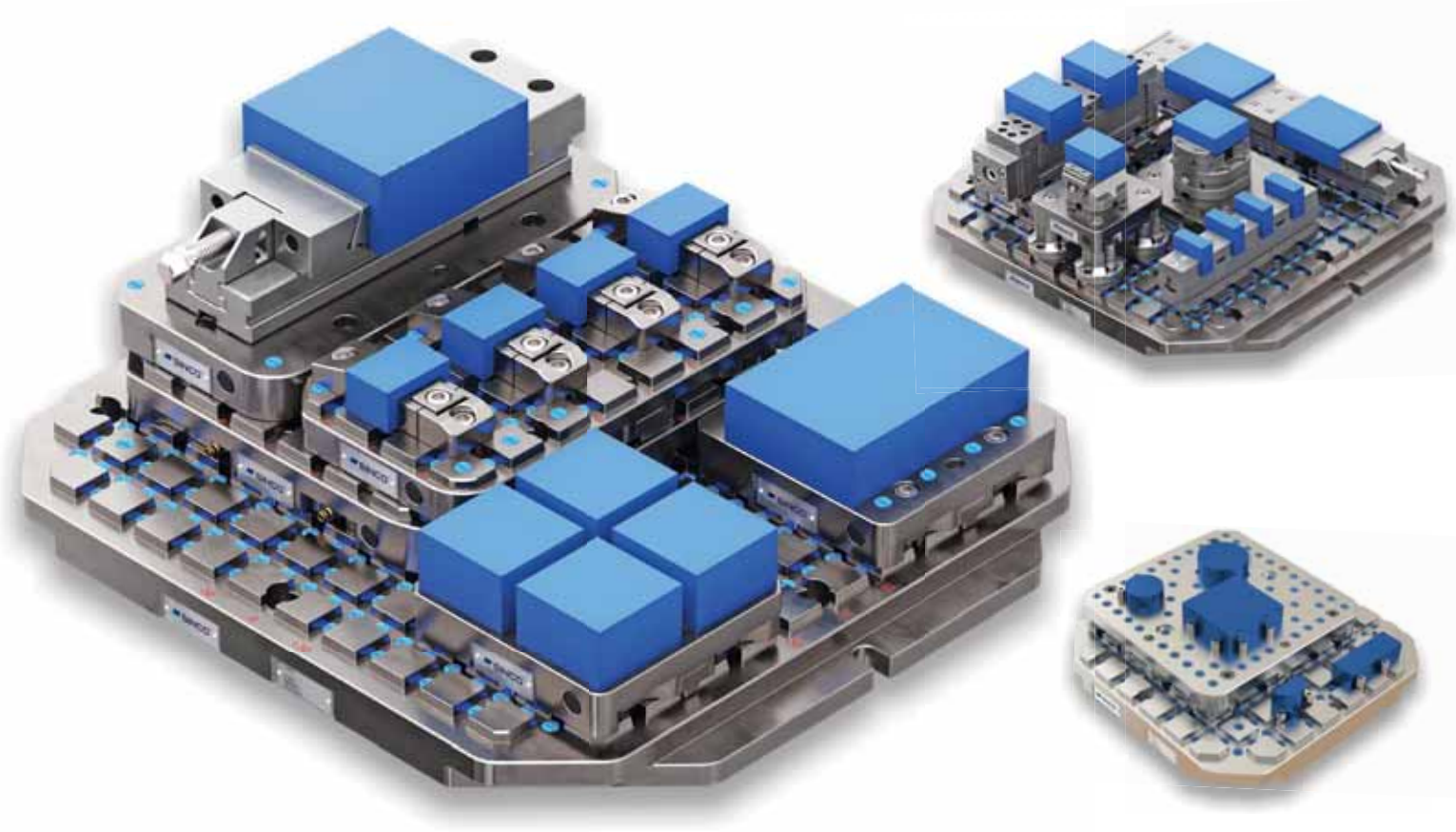

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Standard or bespoke workholding available. Call us today for a demo.

Versatile workholding ensures high productivity and accuracy at automation equipment manufacturer

Situated in Shipley, West Yorkshire, TecnAir designs and manufactures an extensive variety of pneumatic cylinders, valve assemblies, linear drives, handling equipment, controls and other products. They are used for the assembly of standard and special automation solutions requested by customers around the world, predominantly in the transport, automotive, railway, marine, offshore and semiconductor sectors.

What characterises this manufacturing activity above all else is the large amount of metalcutting involved to machine the component parts, as well as the extreme accuracy to which they must be machined. To this end, since the early 2000s the manufacturer has entrusted component clamping on its machining centres to Chick workholding products, manufactured in the US and supplied through sole UK agent 1st Machine Tool Accessories, Salisbury.

Steve Watson, CNC operations manager at TecnAir advises: "The accuracy of the sliding surfaces is critical on many of our components, so tolerances down to single-figure microns must be held to ensure they are able to perform many millions of cycles faultlessly.

"Similarly, the finish on ground, polished or roller burnished sealing faces has to be very high, so the flatness and roughness of milled surfaces needs to be excellent to allow the low Ra values to be achieved as quickly as possible.

"Fixturing is crucial, as any movement or vibration cannot be tolerated. Chick products have underpinned the required level of accuracy in our factory for the past couple of decades and continue to do so.

"Not only is rigid workholding ensured, which incidentally also prolongs tool life, but a high level of interchangeability of the various Chick clamping units also helps to minimise investment in the equipment."

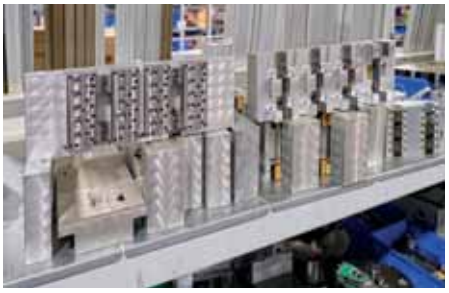
Monthly quantities are machined in batches of from 200 to 2,000 for TecnAir's own products, which account for 80 percent of turnover. Many thousands of component variants are involved, which are manufactured over a double shift pattern, five days a week plus at weekends if necessary. The remainder of throughput is subcontract design and production of parts for other companies, which involves machining anything from one-offs to a couple of hundred parts.

Supporting the prismatic machining operations on the shop floor are 15 Chick QwikLOK units, which are used on five Vertical Machining Centres (VMCs), three from Haas and two from Yamazaki Mazak. Six of the units are dedicated to pendulum machining of relatively short pneumatic cylinder bodies from aluminium extrusion in three operations: rear end cap machining, front end cap machining and inlet and outlet port machining on a Mazak VTC-530. The resulting high-density workholding has the effect of maximising the use of the available machining area and reducing the overall number of tool changes needed for machining the components.

In addition, there are 11 MultiLOK towers deployed across three twin-pallet, 4-axis, Horizontal Machining Centres (HMCs). They are a stand-alone Doosan HC400 and two Mazak HCN-4000s linked by a Palletech automated storage and retrieval system for 16 machine pallets. Materials processed are mainly aluminium and stainless steel, plus some brass, with castings accounting for 30 percent of throughput while the remainder is produced from either billet or extrusion.

The QwikLOKs use three jaws to secure two workpieces simultaneously against fixed central jaw by turning a single handle, in contrast to a traditional vice that is only able to clamp a single part. Opposing forces are cancelled and a reliable reference point is provided for machining. The Chick jaws create a pull-down action when they close, ensuring rigid workholding.

On every face of each four-sided MultiLOK tower, according to the size of component to be fixtured there is either a single-station or a dual-station jaw set, both of which employ Chick's proprietary QwikChange snap on/snap off interface. Round and diamond pins in two



bushed locating holes provide high clamping repeatability, leading to consistency of machining from one batch to the next.

Ideally, for maximum productivity and extended periods of unattended machining, components are set up on all four faces of a Multi-Lok. However, there are occasions when only two or three faces are employed, such as if components are longer than the tower width and overhang one or both sides.

Alternatively, instead of a jaw set, an aluminium faceplate can be snapped in seconds onto the QwikChange interface on any side of the towers. Repeatability of location is to within microns, providing what is essentially a zero-point pallet exchange system. The faceplate is pre-machined and may incorporate other workholding devices to configure bespoke fixturing arrangements for securing awkwardly shaped and/or multiple components quickly in a single setup.

The decision to invest in a faceplate depends on the number of components to be produced and the frequency with which batches repeat. At TecnAir, a couple of dozen machined faceplates are stored for suitable jobs. An additional advantage of this approach is that workpieces can be fixtured offline, away from the machine tool, maximising its spindle uptime.

It is similarly possible to put a faceplate onto a QwikLOK on a VMC, if an application warrants it. Moreover, based on similar considerations regarding quantities of components involved and frequency of production, bespoke machined soft jaws can be held for use on the QwikLOKs to hold securely workpieces of difficult shape, often in multiples, such as round components that would tend to spin in a normal hard jaw set.

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

LANG Technik UK brings three brand new products to MACH

LANG Technik UK is a leading 5-axis workholding and automation systems company. This April, it will be showcasing three brand new products at MACH in Birmingham.

The Quick•Point® Rail is a completely new clamping concept for machine tables and pallet systems. Its innovative approach offers enormous cost-saving potential, especially for high volumes in automation systems. In less than two minutes, the quick clamping system can be mounted and is ready for operation. Quick•Point Rail becomes a movable zero point clamping system, which solves the requirements of the respective clamping task as needed and cost-efficiently.

The Makro•Grip® FS is the new stamping unit with contour jaws. It allows higher cutting performance and ensures faster milling processes, with more reliability and safety in clamping.

New features include:

- Increase the holding force by up to 60 percent
- Accelerate the process of setting the stamping pressure
- Support three stamping units at the same time

Finally, LANG Technik UK is pleased to introduce the Makro•Grip 46 micro. Small but mighty, it is perfectly suited for multiple clamping of small components in confined spaces. Medical or precision engineering companies will especially benefit from the new micro vices.

An exhibitionappearance from LANG Technik UK would not be complete without the RoboTrex Automation System. Combining efficiency, speed and flexibility, it is one of the most popular products from the LANG Technik UK portfolio.

Almost any machine tool, whether new or already in use, can be automated with RoboTrex. It's a simple operation, no skilled labour is required and, most importantly, workholding and automation comes from one source.

Danny Brook,new business development manager at LANG Technik UK says: "We are thrilled to return to MACH, the largest manufacturing showcase the UK has to offer. We have exciting innovations to show customers in all three aspects of our business: Zero Point, workholding and automation. We believe that our new Zero Point rail system will be particularly well received as it allows customers to have more flexibility during setup, whilst reducing their investment to achieve this."

LANG Technik UK
Tel: 01296 796 576
Email: sales@lang-technik.co.uk
www.lang-technik.co.uk

MACH - Stand: 17-411

Leader presents a balanced approach to optimisation at MACH

At MACH, Leader Chuck International will present the latest innovations from its Italian partner, Balance Systems, developed to expand the company's range of retrofit solutions for grinding and dressing process optimisation. A team of experts will be available to discuss visitors' needs and describe the benefits deriving from the implementation of these new technologies in machines already in operation.

For more than 40 years, Balance Systems' mission has been to provide customisable and easy-to-integrate solutions to optimise almost every grinding and dressing process, allowing the end user to be more competitive by reducing production and maintenance costs and improving the quality of machined parts.

Whether gear, cylindrical, centreless, surface, profile or special-purpose, grinding machines are usually the last step in the manufacturing process. They support most precise geometric characteristics of the part: from dimension, profile, flatness, circularity, cylindricity, conicity, as well as good surface finish. This is why it is important to preserve machine qualities and whenever possible increase their performance.

A few examples of grinding machines upgraded by Balance Systems include: AZ, Buderus, Danobat, Earlsdon Technology, Estarta, Favretto, Ger, Holroyd, Jones & Shipman, Junker, Landis, Matrix, Palmary, Robbi, Rosa Ermando, Reishauer, Samputensili, Schaudt, Studer and Tacchella.

"Modernisation can increase the profitability of your old grinding machine," explains Mark Jones, managing director, Leader Chuck International. "There are three significant reasons to consider 'retrofitting' your grinding machines; balancing, touch detection and gauging."

Any experienced grinding machine operator knows the negative effects of grinding wheel unbalance on the surface quality of the workpiece. During turning, especially at high speeds, this unbalance generates undesirable vibrations on the spindle with subsequent irregular machining of the workpiece.

Additionally, spindle bearings, slide rails and ball screws are directly affected by this vibration causing a potentially reduced service life.

Only real-time monitoring and balancing of the grinding wheel in the machine can significantly improve the quality and stability of the grinding process. Balance Systems, has developed moment-free balancing heads, patented symmetric design, to offer both automatic balancing solutions for full integration into the machine controller and semi-automatic balancing solutions for machines without a PLC/CNC.

Touch detection controls the grinding wheel-workpiece and grinding wheel-dresser contacts, by using acoustic emission and/or power sensors. The most familiar application of touch detection is the Air Gap Elimination feature to reduce grinding cycle time. This goal is achieved by moving the grinding wheel towards the workpiece at semi-fast speed until it detects contact to immediately switch to working speed. The same technique can be used to detect the contact between the grinding wheel and the dresser to fully automate the dressing process.

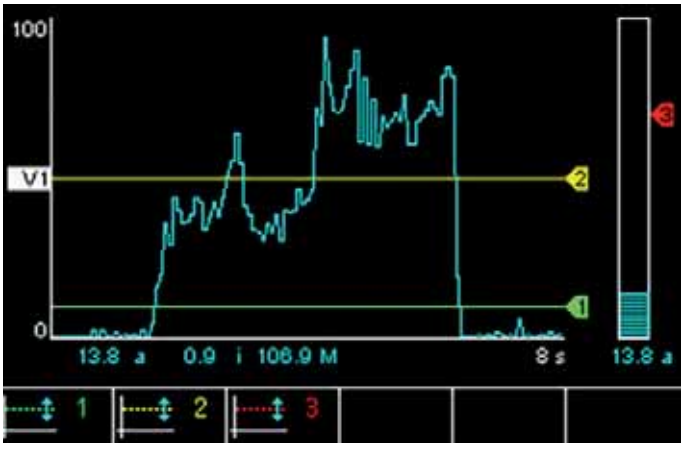
As an extension of touch detection, crash detection is a safety feature for both the machine and operator. Although machine tool operators know and appreciate this feature, it is not always properly implemented. In fact, most

solutions are based only on Acoustic Emission technology (AE sensors). Although this technology is suitable for detecting the contact of the grinding wheel with the workpiece or dresser, it cannot always distinguish normal contact from dangerous collision. Balance Systems can simultaneously use an AE sensor and a power sensor connected between the motor drive and the spindle motor. The power sensor can accurately measure the intensity of the touch, allowing reliable discrimination between a normal touch and a collision and avoiding unnecessary machine stops.

Using in-process and post-process gauging, absolute or comparative, can fully automate the grinding process through workpiece diameter measurement, geometric control and positioning functions to ensure consistent machining. Thereby increasing part quality and machine productivity.

Due to the very tight machining tolerances achieved, the measuring system must be reliable, accurate and suitable for installation in a grinding machine. Another important feature for small production batches is the ability to measure diameters from 5 to 250 mm with a resolution of 0.1 micron through a quick manual setup without changing equipment.

"Accuracy, versatility and reliability are the most important requirements for stable and optimal in-process measurement. In addition to the well-known TG200 measuring heads, the new range of TGA absolute measuring devices enables in-process measurements to be carried out automatically without manual changeovers up to 1,000 mm. Finally, the new range of TGA absolute gauges allows multi-diameter measurement from 4 up to 400 mm, without the need for any manual retooling," says Franco Riva, UK market manager, Balance Systems.



Also on display will be the latest features of the Italian Company's B-Safe System. Based on a miniaturised smart sensor, B-Safe System expands spindles and machine tool diagnostics and protection through the continuous monitoring and analysis of the operating vibrations and temperature. The presence of a microprocessor with integrated memory allows the local detection and memorisation of collision, unbalances, overloads phenomena as well as machining anomalies, tools wear and bearings diagnostics. Thanks to the wide range of available functions, including statistical and trend data, FFT analysis, spindle check-up, Fingerprinting, B-Safe System also becomes a valuable tool for the preventive planning of maintenance jobs.

Leader Chuck International has an enviable reputation for the in-house design and production of Leader chucking, stationary clamping, gripping and workholding products. A respected brand name for high quality equipment with more than 70 years' experience, the company also stocks products from the very best suppliers, such as Adaptix, AMCC, AutoGrip, Balance Systems, Blue Photon, CARVEsmart, Cucchi Giovanni, Exact Machinery, FIAL, Gamet, Hainbuch, Hewa, Homge, Jato, K T A Spindle Tooling, Lexair, Llambrich, Maprox, Mate Precision Technologies, MicroCentric, N G Toolholders, Omil, Orange Vice, Panzeri, PiranhaClamp, PosiStop, Rotomors, RotoRi, Sogimut, Tecnologie FRB, Walmag Magnetics, and ZeroClamp.

Leader Chuck International Ltd Tel: 01827 700000
Email: information@leaderchuck.com www.leaderchuck.com

MACH - Stand: 18-2

Production metrology measurement solutions from Optimax

Visitors to MACH can discover Optimax's measurement solutions for innovative production metrology. As a United Kingdom Accreditation Service (UKAS) approved supplier, Optimax delivers and supports high quality inspection and measurement systems, supporting the UK manufacturing industry.

Visitors to its stand can witness the latest instruments allowing manufacturers to achieve and uphold high-quality results.

The stand will showcase production metrology, featuring a diverse range of instruments that can be seamlessly integrated into manufacturing processes for inspection and measurement purposes. Exhibited products include: 3D scanners, vision inspection instruments, vision CNC 3-axis measurement systems, benchtop optical comparators, Coordinate Measurement Machines (CMM) and autonomous AI-based automated machine vision.

Featured products will include eviXscan, the eviXmatic 2.0 automatic scanning and measuring system. The eviXmatic is an automated 5-axis 3D scanning system that enables measuring and quality inspection of objects with minimal operator's involvement. A dedicated" Automation" module built into the scanner software allows to connect the device with the scanner in an easy way. The eviXmatic provides repetitive, fast, precise measuring and quality inspection tasks and is a valuable addition to any production line where objects of complex shapes are manufactured and need to be verified.

Another featured product on display will be the Bruker Alicona InfiniteFocus G6 3D optical metrology system. The InfiniteFocus G6 is an accurate, fast and universal optical 3D measuring instrument designed for optical surface roughness measurement and shape measurement. It is suitable for all surfaces including smooth and highly polished surfaces. Operating within the µm and sub-µm range, this device provides precise results regardless of component size, material, geometry, weight, or surface finish, all accomplished with only one optical sensor. This system can be fully automated using the MetMax software which has the core thinking of "what do I measure" and not "How do I measure". Thanks to this evolution, users do not need any specific metrology knowledge to perform robust measurements with the CMM. MetMaX

contains all the necessary knowledge on how to acquire and evaluate 3D data. The knowledge of how-to best capture and evaluate 3D data is part of the software.

A third featured product will be the Inspekto S70. This is a fully equipped out-of-the-box industrial visual inspection product with unprecedented simplicity and immediacy, that can be operationally deployed in less than a day.

It combines a unique electro-optics system with the breakthrough Autonomous Machine Vision AI (AMV-AI™) technology, to deliver a visual quality inspection solution that is versatile, extremely easy to deploy, adapts to changes in the production line and requires no machine vision expertise.

Additionally, its display will encompass HD and manual remote visual inspection borescopes, along with a selection of handheld measurement tools for everyday use.

For those seeking integrated solutions, Optimax offers tailored options by combining various products to meet specific customer needs.

Optimax's aim is to provide the most effective and cost-efficient solution, to your optical inspection and non-contact measurement requirements. It has hand-picked some of the very latest inspection technologies, from established, leading-edge manufacturers, to bring you a core of products that encompass quality, technical excellence and value for money. It enjoys seeking out the very latest innovations and designs to ensure the widest choice.

Optimax
Tel: 01858 436940
Email: info@optimaxonline.com
www.optimaxonline.com

MACH - Stand: 18-610

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Manchester Metrology

MACH 15-19 April NEC Birmingham UK 2024
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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 is among the many positive attributes which distinguish the company as a benchmark metrology company. A few of the many services we offer include hiring, purchasing and training on all portable metrology equipment.

www.manchester-metrology.co.uk

Vision Engineering adds new Midlands-based anodising facility to its UK manufacturing capability

Vision Engineering, a multinational engineering company, has relocated its anodising arm Milturn Finishing, to a brand-new facility in Measham, Leicestershire following its acquisition in 2022. The Leicestershire location is beneficial as the Midlands serves as a major hub for UK manufacturing, innovation and skilled workforce.

The new ISO9001 certified site delivers new, modern facilities which include large 3 m x 1.5 m anodising tanks, which accommodate larger workpieces, enabling efficient processing of entire components without needing to break them down. This reduces processing time and cost. Larger tanks enable deeper immersion for uniform anodising. The increased depth allows for complete submersion of parts, ensuring consistent coating thickness and quality across the entire surface and reduced handling needs for smaller parts, meaning that batch processing of smaller parts becomes more efficient, minimising handling time and potential damage.

Milturn Finishing's high load crane delivers safe and efficient handling of heavy workpieces, improved productivity and throughput including faster handling of parts and handling multiple parts at once, boosting productivity.

Services include accurate masking and demasking of complex parts pre and post anodising which delivers high accuracy selective anodising, maintaining dimensional integrity, improving process efficiency and ultimately contributing to consistently high-quality results.

Extensive experience and professional advice in anodising and finishing plus competitive pricing, fast track service, free delivery and collection, together with free quotation and sampling services complete the picture for the new Milturn Finishing offering.

Variety of applications

Milturn's long term customer base consists of manufacturers in a variety of industries, such as professional film camera, seagoing marine, automotive, high-end shop and hotel fitting and others. They are characterised by a requirement for reliable, well finished components for intensive use, sensitive or harsh environment conditions.

Commenting on the launch of the new facility, Vision Engineering's director of manufacturing, Steve Mead said: ''We are delighted to be adding these new modern finishing facilities to our manufacturing services offer. They enable us not only to improve the way we meet the needs of our existing finishing customers, but also present a real opportunity to attract new, Midlands-based customers to Milturn Finishing's customer base.'

For more information visit:
https://www.milturnfinishing.co.uk

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

Vision Engineering's contract manufacturing division offers a comprehensive contract manufacturing service. Staffed by a team of experienced designers and engineers, customers can access its latest technology and benefit from bespoke design and commercialisation packages.

Founded in 1958 and wholly British owned, Vision Engineering's Global HQ, design and manufacturing facilities are based in state-of-the-art modern premises in Woking,

Surrey, UK, with extensive manufacturing facilities in the UK and US. Regional sales and technical support offices are located throughout North America, Europe and Asia, supported by a fully trained network of distributors.

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

MACH - Stand: 18-430

Bowers Group raise the bar at MACH

MACH will be a significant occasion for Bowers Group, with the team committed to surpassing expectations with its largest ever stand and a variety of exciting new products to unveil.

Attendees will have the opportunity to find out more about the range of precision measurement equipment available from Bowers Group, including a selection of products from Bowers, Baty and Moore & Wright, as well as its trusted partners Trimos, Sylvac, ASH, Gagemaker and WYLER. From bore gauges, micrometres and indicators, to sophisticated vision systems and software, the Bowers Group stand will offer a comprehensive range of connected metrology solutions to suit all needs. Alongside its existing range, Bowers Group will exclusively unveil exciting new products during the event.

Ryan Kingswell, UK & Ireland sales manager for Bowers Group, says: "This year's MACH exhibition is going to be huge for Bowers Group. It's a show that we always look forward to and this year we're going above and beyond to deliver our most exciting event yet. We will have our team on hand to meet, greet and talk all

things precision. You can try your hand with a range of our tools, discover our new products, engage in live demonstrations, or take the opportunity to grab a free coffee from our on-stand barista."

Visitors can enjoy a wealth of live demonstrations showcasing the effectiveness of Bowers' measurements systems including impressive data transfer between measurement equipment and applications, highlighting the significant impact connectivity has had on manufacturing productivity.

Bowers Group's service team will also be available throughout MACH exhibition to answer any questions and discuss the benefits of its new and improved service package scheme. The enhanced offering promises a new level of support for customers, ensuring that needs are met with efficiency and excellence. As part of this initiative, Bowers have introduced a new customer support structure, designed to provide personalised assistance and guidance tailored to each client's requirements.

With the focus of this year's show on environmental sustainability, Bowers will highlight the latest in its ongoing efforts towards achieving net-zero targets. From new recycled and recyclable packaging to products designed to minimise the environmental impact of manufacturing processes.

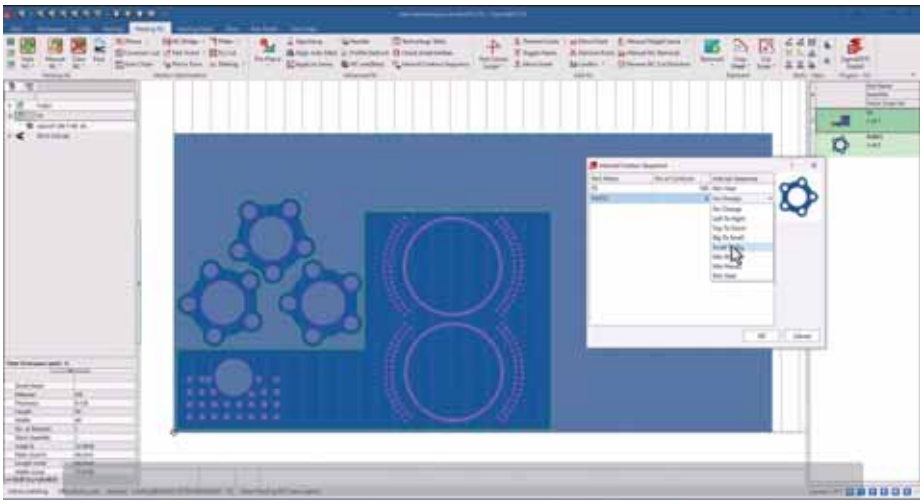
Bowers
Tel: 01276 469866
Email: sales@bowersgroup.co.uk
www.bowersgroup.co.uk

MACH - Stand: 19-440

SigmaNEST 24 Suite connects CADCAM, shop floor and business systems

SigmaNEST, a leading innovator in CADCAM, shop floor and business software for the fabrication industry, has announced version 24 of the software suite. The new release gives fabricators the tools to reach higher productivity throughout the shop, while being easy and intuitive to use. SigmaNEST 24 suite helps users in three ways: Deeper software integration, a more effective UI and CADCAM enhancements that drive predictably high-quality output at the machine.

SigmaNEST Task List gives users access to create and load jobs and apply commands to multiple jobs.



Users can set preferred cut sequence at the part level that will apply for the life of the part on any machine.

Deeper integration streamlines a Connected Shop workflow

The ability to share quoting and job metadata, part data and material inventory across the entire platform and the ERP system is crucial for smart operations.

A new SigmaBEND AP integration improves the automatic transfer of bending data for part creation, time estimation and quoting into the Connected Shop. Bend programmers will experience a faster workflow for importing parts within SigmaNEST along with rich part data such as number of bends, materials, and bending cycle time for single or batch parts. The data passes through to estimators for precise quoting and to production managers for easier oversight. Automating this data transfer eliminates user error from mistakes during manual entry.

The new SigmaTUBE 24 for SOLIDWORKS integrates completely with the SigmaNEST platform, including powerful new access to the jobs and inventory system, along with improved quoting, scheduling and load management capabilities. The integration carries onto the shop floor with the TUBE Feedback application that enables machine operators to signal actual cutting times and reorder for miscut parts. The integration of tubular and linear materials to the database allows users to quote based on nested costs and to allocate scrap as available inventory. Finally, SigmaTUBE SW data can also link to business systems for cost estimation and reconciliation.

The new SimTrans 24 gives savvy customers and IT personnel the tools needed to customise the data connections that will streamline their operations. With SimTrans feedback export, users can configure the full array of data transactions to update the ERP system on demand.

SimTrans 24 now includes the SimTrans Studio to give customers the flexibility to inspect and diagnose their SigmaNEST/SimTrans environment. The Studio window gives users access to settings for app integrity, SigmaNEST license configurations, databases and plugins, hardware environment and shortcuts. This central UI lets users quickly and reliably configure and customise their production environment to fit their needs.

More effective UI gives window to higher productivity

The ability to make decisions based on real-time relevant data offers a competitive advantage for fabricators.

SigmaNEST 24 has expanded the Task Dialog to provide greater situational awareness to the NC programmer for handling multiple projects at one time. Within the Task Window, users can create and load jobs, access workspace task reports and apply new commands to multiple tasks. Users can also monitor key statistics such as sheet consumption and scrap percentages. Beta users have reported that the new Task Window cuts programming to a small fraction of the time needed to program each job individually.

The new Shop Manager 24 lets users create dashboards and KPIs to view on any web browser device. The Sales dashboard gives sales and estimators access to KPIs such as win-loss ratio, average weekly markup and production pipeline. Production managers can monitor KPIs for material usage, uptime and number of sheets for each machine in the shop. Programmers can view SigmaNEST program information such as scrap percentage, cut times,

material data and programs processed. Shop Manager 24 also makes it easy for IT personnel to administer access levels for various groups across its applications. Individual employees can easily be added within the security groups to user, admin, or restricted access level.

The Quality Manager tab now allows users to log customer complaints for returned or damaged parts. Users can create Non-Conformance Reports (NCR) and Corrective and Preventative Actions (CAPA) for each incidence and then notify the customer by email. Over time, this record can provide root cause analysis on types of parts, materials, or machines, as well as insights on customer relationships that inform quoting for future jobs.

Version 24 also offers enhancements within the business system software. Estimators can get up to speed more quickly with the new streamlined menu for SigmaQUOTE and SigmaMRP. The simpler clearer interface is easier to learn and customise for any business model. SigmaMRP now gives the ability to set up multiple addresses for a customer delivery as well as automatically apply the local tax rate for delivering to that location.

Stronger CADCAM tools

User-friendly tools help programmers drive predictable results at the machine and on the shop floor. For laser, plasma, oxyfuel and other profile cutting processes, SigmaNEST 24 can now define the part profile sequence for any time that part is cut. This one-time setting at the part level reduces programming effort, improves process reliability and produces predictable cutting results.

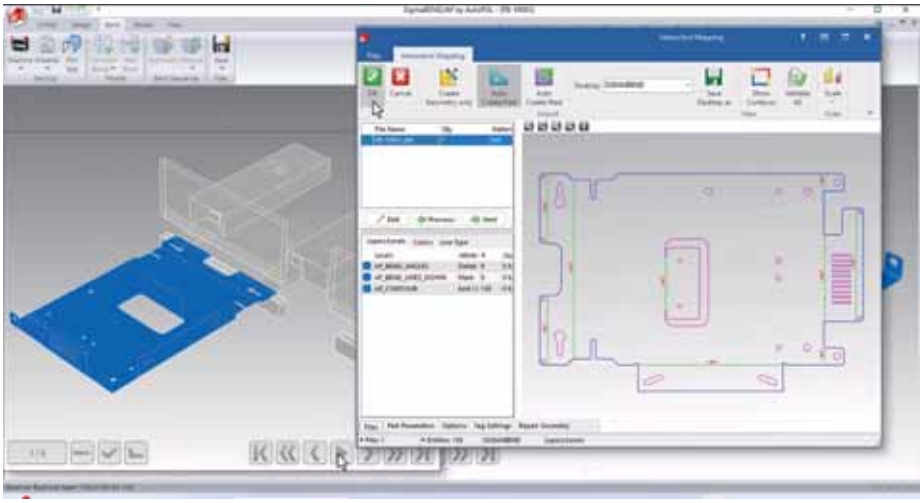
SigmaNEST 24 adds punch tool recognition into the HD SuperNest engine for auto nesting and auto tooling for punch and punch-combi operations. HD SuperNest optimises the punch tool boundaries to create a tighter nest with a consistent web width, resulting in better sheet stability, higher part yield and quality and increased machine uptime.

SigmaNEST pattern punching allows programmers to train the software to apply specific tooling for part families with common geometric features. The new Elastic Tooling expansion can detect similar use cases for any part regardless of size and automatically suggests using the specified tooling for that part feature.

A better use of remnants is a vital part of productivity. SigmaNEST 24 features remnant crosshatching to give programmers a quick visual of position, size and shape and helps to guide shop floor logistics and storage.

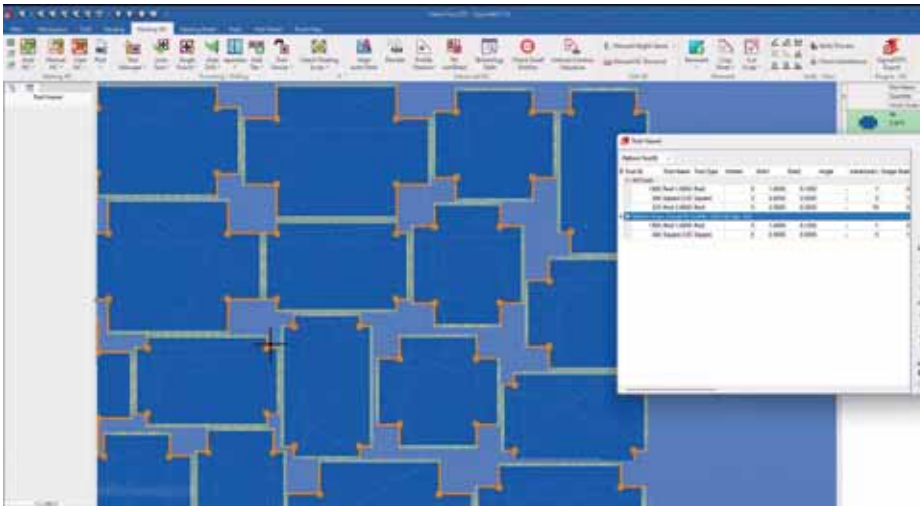
Version 24 enhancements for the 3D CADCAM products includes support for rectangular tubing with radius edges. SigmaCTL 24 allows users to create rectangular tubing and automatically recognises radius edges on imported files.

Commenting on the release, SigmaNEST president Kevin Ramirez says: “The SigmaNEST 24 Suite continues to close the data loop to drive smarter manufacturing specifically for fabricators. The seamless integration of the software creates an easier UI that leverages the data connections for higher productivity.”



SigmaBEND AP automatically imports bending data for part creation, time estimation and quoting into SigmaNEST.

Shop Manager gives greater visibility with dashboards for estimators, programmers, and production managers.



Elastic Tooling for pattern punching automatically detects and applies specific tooling for similar parts regardless of size.

SigmaTEK Europe Ltd
Tel: 024 76 982 299
www.sigmanest.com
www.cambrio.com

A leading Formula One team feels the ‘Force’

Mercedes-AMG PETRONAS Formula One Team, a user of VERICUT verification, simulation and optimisation software from CGTech for over two decades, recently completed trials of VERICUT Force™ with highly impressive results. VERICUT Force is physics-based software that analyses and optimises cutting conditions to deliver significant time savings and improved tool life. The trial use of Force on a complex radiator component at Mercedes-AMG PETRONAS Formula One Team provided notable cycle time savings of 25 percent at the first attempt.

The success of Force emanates from its ability to set the maximum reliable feed rate for a particular cutting condition based on four factors: load on the cutting edge, spindle power, maximum chip thickness and maximum allowable feed. With the Machine Shop at the Brackley headquarters of Mercedes-AMG PETRONAS Formula One Team keen to discover what advantages VERICUT Force could deliver, CGTech granted the use of three temporary licences for trial purposes.

“We’ve been intrigued by Force since it launched a few years back,” says Robert Brown, Machine Shop Manager at Mercedes-AMG PETRONAS Formula One Team.” The opportunity to run a trial was too good to turn down. It gave us the chance to have a really good look at the software; take the covers off, so to speak.”

The trial

An actual radiator assembly component from the race car was the perfect candidate for the trial. While highly complex in terms of features, requiring around 30 tools, the part is small enough to have a relatively short cycle time so the Machine Shop could quickly implement program changes as part of an iterative improvement process. The plan was to produce the part from solid 6000-series aluminium alloy bar on a Mazak Integrex 5-axis turn-mill machine. Component tolerances are in the realm of ±7.5 µm. There are also several features with true positions of 0.10 mm, tied up to multiple datums.

“At the start of the project we had one day of VERICUT FORCE training for our production engineering group here at Brackley,” explains James Peddle, production engineer at Mercedes-AMG PETRONAS Formula One Team. “We found it quite easy to use; it has a similar layout to the interface of other VERICUT products. After the training, CGTech gave us six weeks to ‘play’ with the software, applying optimisation to our trial part. CGTech returned at the end of the process to validate our work before transfer to the machine.”

The result

Machining the Force-optimised part produced outstanding results. The original cycle time was three hours and 15 minutes; post-trial it was just two hours and 27 minutes. Not only did the Machine Shop achieved this 25 percent cycle time reduction at the first attempt, but the trial involved the optimisation of just four roughing tools, two- and three-flute end mills. There is clear potential for even further gains.

“Theoretically, we could save even more time with some tweaks to entry and exit distances, and feed rates,” says James Peddle. “We could have pushed the tools even harder in some areas, although we would probably need a machine with different kinematics as the test part was quite small.”

The Mercedes-AMG PETRONAS Formula One Team confirms that the 25 percent cycle-time saving for the test part would translate financially, effectively reducing the cost for spindle time by the same percentage. With costs for labour, raw materials and energy currently very high, reducing component cycle times is today more important than ever.

The potential

"The ability to machine 10 parts in a day instead of eight, for example, would be huge for us," states Robert Brown. "Moreover, if we scale-up the savings achieved on the trial part to some of our large components with long cycle times, the savings would escalate dramatically. One of our longest-running parts requires 125 hours. Based on the trial, we could likely save around 30-40 hours on this component by using Force. That's a lot of extra capacity and cost savings."

Force calculates optimal feed rates by analysing factors that include tool geometry and parameters, material characteristics and cutting material, detailed cutting edge geometry and VERICUT Smart Part Technology. The software calculates cutting conditions using specific material characteristics, taking into account the strength of the material and the effects of friction and temperature. However, Force is about far more than cycle time savings alone. Cut-by-cut analysis of the interaction between the tool edge and workpiece material means the software is adept at predicting tool wear, delivering significant tool life gains in many applications.

"Although the trial part was aluminium, we machine around 25-30 percent of our components from titanium," says James Peddle. "Using Force on these parts would likely extend tool life and generate savings."

VERICUT Force offers a number of key tools that help visualise and identify areas with the biggest opportunity for savings in both cycle time and tool wear. Force graphs, for example, help users see cutting conditions, excessive forces, machining rates, power/torque, chip strength, material removal, tool deflections and feeds for the original and optimised programs.

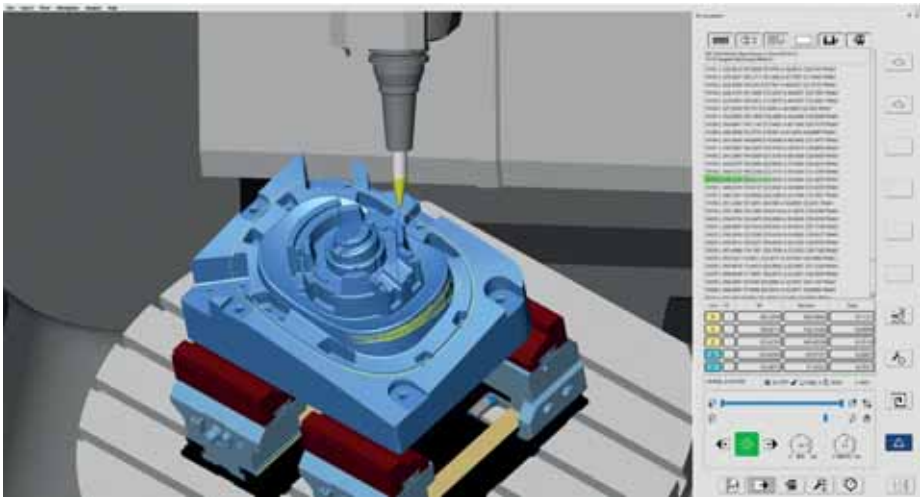
Robert Brown has the final word: "Although the use of VERICUT Force is just a trial at present, it's in our mind. We see it as a highly effective production engineering tool."

CGTech's VERICUT software is the standard for CNC simulation, verification, optimisation, analysis and additive manufacturing. CGTech also offers programming and simulation software for composites automated fibre-placement, tape-laying, and drilling/fastening CNC machines. VERICUT software is used by companies of different sizes in all industries. Established in 1988 and headquartered in Irvine, California. CGTech has an extensive network of offices and resellers throughout the world.

CGTech Ltd
Tel: 01273 773538
Email: info.uk@cgtech.com
www.cgtech.co.uk

MACH - Stand: 19-420

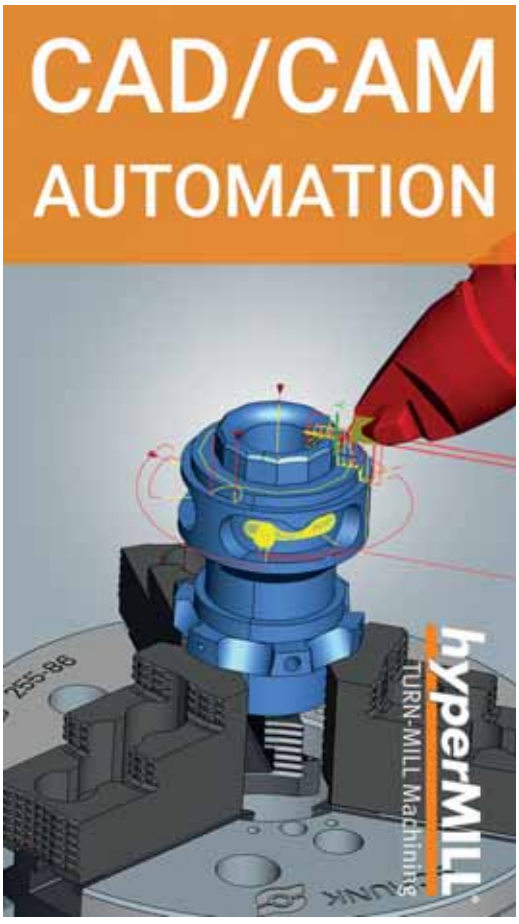
hyperMILL 2024 to arrive at MACH



CADCAM developer OPEN MIND Technologies will be exhibiting at MACH 2024 with its biggest-ever stand at the UK's showpiece manufacturing event. It will be presenting the innovative technologies of its hyperMILL® CADCAM suite with live demonstrations of the latest 2024 Version that is imminently set for release.

At MACH, OPEN MIND UK will highlight its pioneering technologies for digital process chains and showcase its innovative advancements for connected manufacturing, automation, turning, Hummingbird MES and solutions for additive manufacturing.

One of the latest innovations that is gaining huge traction in the industry is the new Hummingbird Manufacturing Execution Systems (MES). The agile MES solution that enables users to improve and streamline the planning, control, automation and optimisation of processes across manufacturing operations will be presented for the first time at MACH. Too often, the right information, data and materials are not in the right place at the right time. Hummingbird eases entry into the digitalised world of manufacturing for customers with a tailored solution that allows users to choose the modules they require to gain complete control of their processes and then expand the system step by step as needed.



The OPEN MIND UK team will also present the latest hyperMILL® TURNING Solutions that have expanded exponentially since MACH 2022. The latest updates in hyperMILL TURNING Solutions include technologies for turning, turn/mill and mill/turn machines, making the suite ideal for all corresponding machine configurations. In Version 2024, hyperMILL TURNING developments will include CAD for CAM functions for rotary contours, finishing paths for grooving, a 'remove rings' function, a 2D stretch command and a snew tool turret support that via hyperMILL VIRTUAL Machining can create a detailed map of all tools in a turret to create a seamless NC code simulation. The new enhancements will simplify the creation of chamfers, contours, radii and undercuts, create uniform allowances for finishing when grooving, reliably remove ring chips from components, quickly and easily adapt parametric 2D contours and much more. Furthermore, HEIDENHAIN CNC systems as well as Siemens controls are now supported with the latest mill/turn modules while the 'Connected Machining' interface also supports FANUC control systems. These updates identify the exponential development rate and the associated compatibility of Bidirectional communication with machine tool controls is particularly important in networking with other systems along the process chain. At MACH, there will be demonstrations of hyperMILL VIRTUAL Machining that closes the gap between the CAM system and the physical machine environment. If the CAM software can work with a digital twin of the physical machining process, then this opens up new options for generating, optimising and simulating the NC code safely. hyperMILL BEST FIT is an impressive example of this. It is a new type of component alignment system for the subsequent processing of cast, welded or additively manufactured components. This sees the NC program adapt to what is physically happening in the workspace, rather than the clamping being adapted to the NC program, which has been standard practice until now.

As well as added functionality for 5-axis machining, mill/turn, Hummingbird MES, Connected Machining and hyperMILL VIRTUAL Machining, OPEN MIND UK experts will be on hand to discuss hyperMILL ADDITIVE Manufacturing. This technology opens up the flexible possibilities of highly complex 5-axis simultaneous machining to the Direct Energy Deposition (DED) and Wire Arc Additive Manufacturing (WAAM) processes. NC codes can be conveniently programmed and automatically simulated for collision avoidance and as an end-to-end software solution, this enables efficient hybrid machining with additive and subtractive machining on a single machine.

The OPEN MIND UK stand will have no fewer than six CAM workstations at MACH and its team of experts will be able to provide live demonstrations of its CADCAM system.

OPEN MIND Technologies UK Ltd
Tel: 01869 290003
Email: info.UK@openmind-tech.com
www.openmind-tech.com

MACH - Stand: 17-240

Tebis to present intelligent manufacturing at MACH

Tebis, a specialist provider of CADCAM and MES solutions which offers leading advanced intelligent manufacturing technologies for CNC machining process optimisation, standardisation and CAM automation, will be exhibiting at MACH.

The latest releases of Tebis CADCAM software Version 4.1 and ProLeiS MES will be available for live viewing throughout the duration of the show. Tebis UK team will also have scheduled live technical presentations each day during the exhibition, focusing on CNC machining process optimisation and CAM automation:

10:30
Model/pattern machining with process templates

11:30
Mill trimming and laser cutting

13:30
Mechanical component feature-based machining

14:30
Surface machining with process templates

Tebis offers advanced solutions for your CNC machining and CAM programming. Users can benefit from simple and logical structure of Tebis CADCAM software and flexible options for CAM automation. Tebis services help to build your manufacturing environment into Tebis libraries as digital twins together with your best practice of CNC machining for optimised, standardised and reliable manufacturing processes. This allows you to minimise your setup time, reduce tool costs and optimise machine run time while ensuring machining at the same high quality.

Benefits include:

- High level automation in CNC programming for consistently high-quality machining and surface finish while reducing programming time.
- Best CNC machining practice and experience are built into Tebis libraries, to be shared among CAM engineers for efficient machining and reduction of tool wear.
- Virtual machine technology used in three stages: planning, programming and verification to ensure highest level machining safety.
- Integrated CADCAM solution for ease of use.
- Reduce CAM work difficulty and pressure, relieve shortness of skills

MACH is an outstanding exhibition for advances in the manufacturing industry brought to you by the Manufacturing Technologies Association (MTA), a UK based trade association. It is a biennial exhibition which brings together all the best innovations and latest developments under one roof from the manufacturing technologies sectors.

For further information about Tebis CADCAM/MES solutions, please talk to the Tebis UK team on Stand 24 in Hall 19 at MACH.

You can register to visit Tebis at MACH 2024 at:
https://register.visitcloud.com/survey/0pqjcdd452ppi?actioncode=NTWO000249OEE&partner-contact=3dwrmhbszbr6m

The Tebis UK team look forward to welcoming you to the stand and seeing you at MACH 2024. For further details about the event or Tebis software, contact the Tebis Team on 024 7615 8178 or visit ***https://www.tebis.com/en***

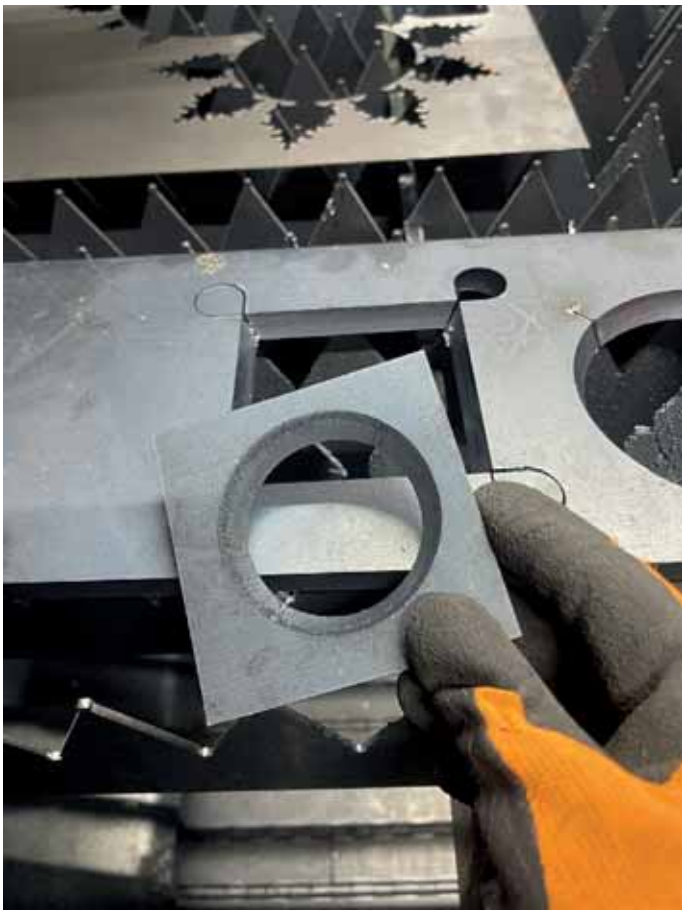
Tebis (UK) Ltd Tel: 02476 236412 Email: info@tebis.co.uk

Even for small companies an investment in Lantek Expert and Lantek iQuoting will pay dividends

Many subcontract sheet metal companies have one or two laser cutting machines and rely on a continual and rapid turnover of new and repeat business to support their business models. To achieve sufficient revenue, companies need to generate a high volume of quotations. This requires skill and experience and is very time consuming, often working with a series of Excel spreadsheets to calculate prices and margins. Lantek's strategy is to offer a suite of software that solves this problem, taking away the need for specialist knowledge, using AI and 35 years of experience in the industry to generate accurate quotations in a few minutes.

To drive their laser cutting machines, companies must have a suitable programming and nesting software package. With Lantek Expert subcontractors will get the benefit of 35 years of software development and will also be able to run virtually any make and model of cutting machine from the over 1,400 supported by the software. As well as laser machines, Lantek Expert supports punching, plasma, oxy-cut, tube cutting and combination machines, giving manufacturers the ability to choose whichever make, model or technology of machine that suits their business and budget best.

Within Lantek Expert, nesting of a mix of components or a kit of parts is easily achieved as is the ability to nest and manage remnants, maximising material utilisation, while automating the programming of parts and utilising the full capabilities of each make and model of machine to the full.



A key advantage of the intelligence within Lantek Expert is the accuracy of the processing times and material utilisation figures it produces which can in turn be used in quote generation.

Lantek iQuoting builds on this accuracy, importing CAD data and using AI and integration with Lantek Expert to generate the accurate quotations within a few minutes.

The software is in the cloud and operates as Software as a Service (SaaS) so it can be operated from anywhere at any time where there is an internet connection with a subscription model for access. CAD data can be imported and it uses AI and the integration with Lantek Expert, information about material prices, margins, non-CNC operations and subcontract operations to quickly calculate and generate a quotation. The advantage for the manufacturer is rapid response to enquiries, accurate costing and known profit margins for each job and much less administrative effort. Customers will have a much better experience dealing with the manufacturer, always getting competitive and consistent quotations. Other features allow users to examine quote to order ratios

and identify where process improvements can be made. iQuoting's intuitive operation, enables employees with little knowledge of the industry to operate the software and get accurate results, freeing up skilled employees for other tasks.

Muhammed Yilmaz owner of Mehmet Yilmaz GmbH, a German subcontractor with two Nukon lasers and five employees says: "Lantek Expert and iQuoting was precisely what I had been seeking: software that comprehends machine running times, machining durations and incorporates current material prices in quotation calculations. What previously consumed 20 to 30 minutes and several Excel spreadsheets now takes a mere two to three minutes and, above all, it's remarkably user-friendly. Even those who seldom engage in quoting grasped it effortlessly."

He continues: "Following customer acceptance, iQuoting and Lantek Expert seamlessly facilitate nesting for the quotation, determine the required materials, and calculate the feasible delivery date. At the touch of a button, the quotation promptly transforms into a work order, ready for immediate production, encompassing quantities, materials and all other necessary steps, eliminating the need for redundant data entry. This signifies true digitalisation."

Lantek is a multinational which is leading the digital transformation of companies in the sheet metal and metal industry. With its patented manufacturing intelligence software, it enables factories to be connected, turning them into Smart Factories. It rounds off its range of services with CAD, CAM, MES and ERP solutions for companies that manufacture metal parts from sheet metal, tubes and profiles using any cutting technology, laser, plasma, oxycut, waterjet, shearing and punching.

Founded in 1986 in the Basque Country, Spain, one of the main European hubs of machine tool development, Lantek enables the integration of sheet metal and metal processing technologies using the most advanced manufacturing management software. The company is currently a leader in its sector thanks to its capacity for innovation and commitment to internationalisation. With more than 32,000 customers in over 100 countries and 21 offices in 15 countries, it has an extensive network of distributors with an international presence.

Lantek Systems Ltd Tel: 01684 342345 Email: sales.uk@lanteksms.com www.lantek.com

MACH - Stand: 17-319

JVD Engineering evolves with PSL Datatrack

JVD Engineering Ltd, a subcontract precision engineering company with over three decades of industry experience, has evolved the administration of its entire production process following investment in a PSL Datatrack production control system.

Before taking on the modular software, JVD had been experiencing a number of challenges stemming from its "job table" system, which had been in place for around 18 years. This system, with material/drawings in priority order, posed hindrances in job tracking, workflow stage identification and accurate time estimation, an obstacle affecting both office and shop floor operations.

The impact of JVD's investment in PSL Datatrack has been transformative. The system provides real-time insights into the company's schedule, empowering better capacity planning across all departments.

PSL Datatrack enables JVD to quote for new jobs with precision. "Enhanced visibility into project statuses, accurate time estimation and easy retrieval of historic information has improved our ability to quote for new jobs with precision, resulting in streamlined delivery timelines and overall organisational efficiency," comments Matthew Abraham-Thomas, managing director of JVD.

Based in Leeds, JVD has been a pillar of quality and reliability since its establishment in 1991. The business has held ISO 9001 accreditation since 2008 and is now a team of 15 skilled professionals, specialising in machining and fabrication. Its expertise spans from crafting one-off items to managing large-scale production runs.

Four main departments are housed in the company's 20,000 sq. ft. facility: the machine shop, fitting, including the paint shop, fabrication and Electrical Discharge Machining (EDM) with over 20 machines running across the factory.

On its journey of continual improvement, JVD recognised the requirement for a comprehensive solution to streamline its business and production administration. This quest led it to PSL Datatrack, a renowned provider of production control software with a great reputation in the industry for adaptable modules and a user-friendly interface.

"PSL Datatrack were very approachable and helpful throughout the sales process. They took the time to listen to what we really wanted from the system and helped us create a package that worked extremely well," says Matthew Abraham-Thomas.

PSL Datatrack offered a demonstration of the system to JVD which was carried out via Zoom. "We had researched other software options prior to this, however none really felt like a good fit. After the demonstration from PSL Datatrack, we knew this was the solution to our scheduling problems," Matthew Abraham-Thomas continues.

Once the decision to invest was made, the software was installed, training provided and JVD were quickly live with the software. The implementation was straightforward and carried out remotely, as was the training. If JVD require any assistance, PSL Datatrack's UK-based support team is always happy to help.

The software is now utilised throughout JVD, meaning office-based staff have crucial business data at their fingertips and production staff have access to the modules they require in order to book on and off of jobs and see which are next in the queue. "The system is very different to how the factory used to run, but we have had very few teething problems which shows that PSL Datatrack is a perfect fit for us," comments Matthew Abraham-Thomas.

Alongside the Sequential Scheduler module, which ensures works orders are correctly prioritised and materials ready, PSL Datatrack's Status Boards have emerged as a gamechanger, dynamically displaying live operations across all departments. These boards automatically update as operations complete, offering a clear and comprehensive overview of ongoing jobs and eliminating the need to decipher handwritten notes or rely on outdated information, a previous pain point for JVD.

"We ultimately decided to go with PSL Datatrack because the software allowed us to choose the modules we felt would be beneficial to the scheduling of our workload. Our plan was and still is to run it alongside our accountancy software and this is working well," Matthew Abraham-Thomas says.

JVD Engineering Ltd's goal is complete customer satisfaction built on the firm foundations of competitive pricing and outstanding service. Its investment in PSL Datatrack therefore marks a pivotal moment in the company's journey; it is a testament to its dedication not only to maintain, but to enhance operational efficiency within the subcontract precision engineering sector.

Prospec Systems Ltd
Tel: 01344 827312
Email: sales@psldatatrack.com
www.psldatatrack.com

Hydrafeed partners with FourJaw to support business growth and sustainability initiatives

Hydrafeed, a leading manufacturer of automation equipment for CNC applications and subcontract supplier to the aerospace industry, has gained real-time visibility into its factory operations, enabling it to meet growing production demand with its existing workforce and achieve energy savings worth more than £17,000 a year within a month of implementing machine monitoring technology from FourJaw Manufacturing Analytics.

The company installed FourJaw's plug-and-play platform on 14 of its machines in September 2023, enabling it to automatically recognise when they were productive, record reasons for downtime, generate a digital work schedule to guide factory operations and improve communication with machine operators.

FourJaw's platform has provided Hydrafeed with a real-time understanding and visualisation of its factory data, enabling it to establish a production efficiency benchmark and a detailed account of energy use. This has already improved the day-to-day management of manufacturing operations and provided a clear understanding of where Hydrafeed can achieve productivity and sustainability gains.

During the first five weeks of using FourJaw, Hydrafeed was able to generate the same output in its milling cell with four fewer machines, allowing the reallocation of machine operators to its turning cell, where it has boosted utilisation by 30 percent.

Hydrafeed identified further opportunities to reduce energy usage through more efficient machine operation within days of installation. The energy savings Hydrafeed has already identified will deliver a complete return on its investment in FourJaw.

Paul Gilligan, operations director at Hydrafeed, comments: “We had a strong business before FourJaw but limited visibility of shop floor operations. We've addressed that with FourJaw and the response from management and machine operators has been positive. Everyone has clarity of what needs achieving and has bought into our plans to improve productivity and profitability.

“FourJaw has been a revelation. We've already reduced energy consumption and identified further opportunities for improvement.”

Chris Iveson, CEO at FourJaw Manufacturing Analytics, comments: “We were thrilled to

welcome Hydrafeed to FourJaw's growing community of manufacturers and pleased to see our technology provide an almost immediate return on investment. We see manufacturers who are proactively using FourJaw's technology, can typically achieve productivity gains of anywhere between 10-20 percent which can increase output capacity by as much as 30 percent, so we are excited to see what more Hydrafeed will achieve with FourJaw.”

FourJaw Manufacturing Analytics
Tel: 0114 4000158
Email: info@fourjaw.com
www.fourjaw.com

MACH - Stand: 17-362

Machine and software automation doubles capacity at LNS UK

Investment in a new automated laser cutting system and associated software has doubled manufacturing capacity for swarf management systems produced by LNS Turbo's factory in Wombwell, near Barnsley. This has allowed it to continue its strategy targeting OEMs and dealers rather than end users.

The £850,000 investment includes a 4 kW LVD Phoenix fibre laser with a 10 station Compact Tower automation system for blank sheets and finished parts. Also included in the package is a 4 m 135 tonne LVD Easy-Form press brake and LVD's CADMAN software suite.

These latest machines join an existing LVD Easy-Form press brake which has been upgraded to be fully compatible with the latest software and a small LVD Dyna-Press electric press brake.

Mark Scanlan, the European chief operating officer at LNS, first visited LVD in Belgium five years ago and realised how its technology could transform manufacturing at LNS UK. He says: "I went to look at the equipment but immediately saw the software could give me another level of automation. When people talk about automation, they tend to talk about the machine tool, but LVD has a whole suite of software that makes our engineers' job easier.

"This means they can automate the process of taking a 3D model, creating a 2D pattern, putting that through a CADCAM system and making a verified component that will be right first time. That was a big driver for the investment."

"We got our first LVD press brake seven years ago and post-Covid we bought an LVD Dyna-Press, which is great for small parts. But I had always been pushing for the LVD laser with autochanger and a second press brake and all the associated software to really automate the complete process."

The new investment coincided with a change or ownership of the LNS group which is now part of Swedish investment group Storskogen and a new market focus.

This has changed the strategy from making one-off machines for end users to targeting machine tool OEMs and dealers where it could achieve economies of scale and this required it to ramp up its manufacturing capacity.

As Mark Scanlan explains: "We have changed our market focus from making machines per order for end users, to partnering with OEMs where you are focused on making higher volumes of similar types of equipment. To meet that demand for volume manufacturing we wanted to automate not just the physical manufacturing process but also the software behind it.

"With the new LVD laser and software everything is now focused on mass production, but with a high degree of variability. The Phoenix with the 10-station tower storing sheet and finished parts gives us the ability to work lights-out."

"The whole laser package has enabled me to more than double my overall capacity from 240 machines a month to 500. The second press brake helps me to bend more parts, but the laser was the key."

Mark Scanlan continues: "The capacity increase was really important as it will enable us to have a greater presence in the OEM Market. But it was not just about capacity, it was also about upskilling people within the business.

"The focus now is that the team will eventually be multi-skilled. They will be able to operate the laser and operate the press brakes, because the touch screens are very similar. We are going to change how the overall department works. We want people to be able to operate any of the machines so that the team leader is not hands-on all the time but can run the department, managing workflow and performance.

The skills issue also comes into play with the Easy-Form press brakes.

Mark Scanlan adds: "Skills are not abundant in the labour market, so we are training people to operate that machinery from scratch so the EasyForm angle measuring technology is a great help.

Automating the software process from 3D design to finished part was vital to be able to cope with the high product mix that was now required.

Mark Scanlan explains: "If we sell 200 machines in a month there could be 160 variants. If a customer places an order for 80 units, it could be spread across eight different models with only 25 of them the same.

"Dealers will sell multiples of the same machine in a year and once we have the design and it is in our system it is easy for us to just pull that design out, call off the laser patterns and make it. But every week we get new variants where we need to program a new part and that is where the software automation comes in."

On the production side, most of the material being processed is from 2.0 to 3.0 mm, although the laser can cut up to 20 mm. The cut 2D parts

are then formed and welded to create the machine frame. Although it is thin material, it is a very robust and strong product once it has been fabricated.

The accuracy of the EasyForm press brake ensures accurate fit up of the formed parts for welding. As well as structural components, the laser cut nest will also include smaller parts such as legs, covers, brackets and so on.

Mark Scanlan states: "A lot of what we are manufacturing is for small components, but some of the machines we build are 10 m long, the biggest we ever made was 25 m long so we use 3 m sheets and bolt the fabricated sections together if we need to."

Wombwell is LNS's European manufacturing centre for swarf management equipment, with 60 percent of production destined for the UK and 40 percent for export to Europe. Other machine tool peripherals in the LNS portfolio, such as bar feeders and air filtration systems, are manufactured at sites in Switzerland and Italy.

Mark Scanlan says that, as COO for Europe, he will be taking an overall view of manufacturing processes across the sites: "The sheet metal work for the products manufactured in Italy and Switzerland is all subcontracted. One of the questions is whether we could bring that in-house."

He adds that LNS in China also has an LVD laser with Compact Tower system and a LVD Robotic Dyna-cell installed and followed from the lead of the UK operation. "We were the ones that started the LVD process, that's where we wanted to go. We saw the power of what it could do for us. After I had been to Belgium, the person who runs the facility in China came over and went to LVD in Belgium and saw the opportunity.

"The factory in China manufactures all the LNS products including bar feeders, swarf conveyors and other machine tool peripherals. The sheet metalwork for all our various products is made in that one factory, so we can see the way it works across the portfolio. So, we have good models to work off for our other factories."

Mark Scanlan says that the bottom line is that the LVD technology is really giving LNS UK an advantage in the market. He concludes: "It puts us ahead of our competition in terms of lead time. We have two customers who we guarantee a 10-day turnaround from point of order to delivery. Our competition doesn't offer that service and we have won all the work from a major UK supplier on that basis."

LVD UK Ltd
Tel: 01295 676800
Email: salesteam@lvduk.com
www.lvdgroup.com

Second Nukon fibre laser for leading north-west subcontractor

Just 18 months after purchasing the display machine from the Nukon Lasers UK stand at MACH 2022, Greater Manchester-based AD Laser Cutting Ltd has taken delivery of a second Nukon fibre laser.

Whereas AD Laser Cutting's first fibre laser was a Nukon ECO 315 4 kW model, its new machine is from the European laser machine manufacturer's REX model range. Just like Nukon's ECO machines, the Nukon REX is able to accommodate flat sheet metal sizes of up to 3 m x 1.5 m. Chosen primarily for its side-mounted loading table, to better fit with the available floorspace at AD Laser Cutting's brand-new subcontract manufacturing facility, a move driven by the company's growing order book, the Nukon REX also has a more powerful 6 kW laser. This additional power will enable AD to precision-cut stainless steel of up to 25 mm in thickness.

"We really couldn't have imagined just how much precision laser-cutting work our first machine from Nukon Lasers UK would enable us to complete," comments AD Laser Cutting Ltd's managing director, Darren Golden. "Projects undertaken have ranged from precision cutting stainless steel components for the utilities sector, to manufacturing furniture components, extraction panels and even stillages for a number of leading vehicle manufacturers. In fact, only a short while after installation, the Nukon ECO 315 machine was running at near full capacity. It is extremely intuitive to program, easy-to-use and has been trouble-free since it was installed. Moreover, the quality of cut has more than met the high standards demanded by our customers. Therefore, when it was time to grow the business and invest in a second fibre laser machine, it seemed pretty obvious that it should also come from Nukon Lasers UK. Also, from a purely commercial perspective, choosing Nukon again meant our guys could hit the ground running from day one."

With powerful 2D flat sheet metal cutting capability and optional pipe and tube cutting and marking features, Nukon REX machines have been purposefully designed for subcontractors and organisations cutting small batches of varying shapes and sizes. Nukon REX fibre lasers offer high-spec features that are standard across the wider Nukon range. These include advanced Lantek Expert CADCAM nesting software and American-made nLIGHT fibre lasers.

Installed in September 2023, the Nukon REX machine bought by AD Laser Cutting Ltd is also equipped with CutLine adaptive beam-shaping technology; an option that provides improved cut-edge finish and easy, rapid cutting of different sheet thicknesses and metals. Nukon REX models have a compact footprint, while power options range from 2 kW to 8 kW. The more powerful 6 kW model selected by AD Laser Cutting Ltd provides considerable capability and performance for cutting thicker metal sheet.

"The service and support we receive from the Nukon Lasers UK team and their sales director, Steve Haddrell, is nothing short of exceptional," adds Darren Golden. "The training provided with both machines was excellent and Nukon are always quick to respond if we ever have any questions or need advice. With two Nukon fibre lasers now in daily operation at our Littleborough premises in Greater Manchester, we have also taken the opportunity to offer a range of additional services. These include metal folding, welding and powder coating.

"It has been incredibly rewarding to work with Darren and the team at AD Laser Cutting Ltd and even more rewarding to see the huge success they have made of the business," says Steve Haddrell of Nukon Lasers UK.

"For such premium quality machines, Nukon fibre lasers are incredibly price-accessible. The extremely compact footprint of several models, such as the REX, also makes them well-suited to production environments where floorspace is limited. At the same time, the low power consumption of every Nukon fibre laser is a significant advantage in these times of higher energy bills. I wish Darren and his team every success for the future and look forward to continuing to provide the highest levels of support."

Nukon Lasers UK
Tel: 01723 582868
Email: sales@nukonlasers.co.uk
www.nukonlasers.co.uk
www.adlasercutting.co.uk

MACH - Stand: 20-550

PNJ Laser Cutting upgrade operations with expanded MSS Nitrocube system

Laser cutting specialists and manufacturers of Gearmate bespoke vehicle storage systems PNJ Laser Cutting in Alcester, has recently expanded its laser cutting operations to meet increased production demands. As part of this expansion, PNJ has also upgraded its on-site nitrogen generation equipment by adding a second MSS Nitrocube with additional high pressure nitrogen gas storage.

This expanded Nitrocube 7 system is now used to supply 99.9975 percent, 25 ppm, purity nitrogen for PNJs two high performance 6 kW Amada fibre laser cutting systems.

PNJ first installed an MSS Nitrocube in 2018 to supply its lasers alongside bulk liquid nitrogen from traditional gas suppliers. This latest installation represents a significant upgrade which now provides gas flow of 100 m^3/hr and PNJ are expecting this system to be its sole source of all laser cutting nitrogen from now on.

Nick Moberley, operations director PNJ comments: ''We have been using MSS products for five years and we've found their equipment to be very reliable and much more cost-effective compared to buying liquid nitrogen in bulk. We decided to purchase a second NitroCube 5 in 2023 following an initial successful upgrade from a much smaller MSS system the previous year. With the two NitroCubes working side by side we have significantly more nitrogen which now gives us the flexibility we need to increase our laser cutting capabilities'.

The Nitrocube 7 system provides high pressure nitrogen up to 300 bar at 99.9975 percent purity which comfortably meets the application requirements of the fibre laser. The new installation is very compact and

features integrated high pressure storage tanks. The latest generation Nitrocube is more efficient than ever using 25-40 percent less energy to generate higher purity nitrogen than achieved with older systems were capable of.

Nick Moberley adds: "On average our lasers currently run between 12 and 18 hrs each a day, cutting gauges from 0.9 mm up to 6 mm steel using the nitrogen generated. We now have plenty of nitrogen for cutting without having to worry about any supply issues. This was a major factor in our decision to move all of our nitrogen supply over to Nitrocube equipment and the machines have not disappointed."

MSS sales director, Chris Smith comments: "This is a fabulous installation and a great example of how multiple Nitrocube systems are easily combined to suit higher volume users needs."

MSS Lasers
Tel: 01788 552 299
Email: chris.smith@msslasers.com
www.msslasers.com

3D laser processing in the automotive industry

Revolutionising automotive manufacturing

3D laser processing is transforming the automotive industry, significantly improving the quality of various automotive components, reducing costs and improving the environmental sustainability of production processes. This advanced technology allows for high precision and clean cuts, ensuring that each component meets rigorous quality standards.

In particular, 3D laser cutting is instrumental in producing complex metal components such as engine parts and bodywork components.

These parts, which require the utmost precision and strength, benefit greatly from the accuracy and finesse of 3D laser cutting. By utilising this technology, manufacturers can also achieve complex geometries if it's necessary that are often challenging or impossible to create at reasonable costs with traditional manufacturing methods.

3D laser cutters employ a high-density heat source, creating precise cuts with a minimal heat-affected zone, which is crucial for the durability and performance of automotive parts avoiding severe deformations on mechanical components. The fact of heating a small portion of metal parts also ensures that changes in the behaviour of the microstructure of the metal alloys used are limited as much as possible. The process is not just about cutting; it's about achieving perfect quality in every part. With CNC-controlled cutting heads, 3D laser cutters offer unparalleled design flexibility and complexity, essential for the diverse needs of the modern automotive industry.

Having the possibility to design the mechanical components that make up the complex system of a motor vehicle more freely allows designers of industries that use 3D laser processing to create innovative solutions, saving material and optimising the weight of each part and therefore reducing fuel consumption.

This technology also significantly reduces production time, ensuring consistent part quality and faster turnaround times. In the automotive industry, time is of the essence and 3D laser processing aids in maintaining the pace of production without compromising quality. The integration of laser cutters with robotic systems further enhances efficiency, especially in processing complex 3D parts.

Furthermore, in recent years, the automotive industry has increasingly adopted High Strength Steel (HSS) for many structural components, because these alloys are characterised by greater rigidity and allow weight and, therefore, fuel consumption to be reduced. The steels belonging to this family, precisely because of their excellent mechanical characteristics, are difficult and expensive to work with traditional chip removal technologies. For this reason, 3D laser systems are becoming increasingly widespread to produce structural mechanical parts for the automotive sector with HSS.

Prima Power has specialised in developing 3D laser machines that can easily be integrated with automated production systems and that are highly appreciated in the automotive industry. The focus on precision, speed and versatility aligns perfectly with the industry's evolving needs. Its 3D laser solutions are designed not just to meet but to exceed the expectations of automotive manufacturers, continually pushing the boundaries of what's possible in automotive part fabrication.

Integrating 3D laser cutting with Industry 4.0 in automotive manufacturing

The integration of 3D laser cutting within the framework of Industry 4.0 is setting a new standard in the automotive industry. The evolution of laser technology, especially in the context of smart manufacturing systems, is a game-changer. 3D laser cutting systems, an integral part of this advancement, are proving to be more flexible, versatile and adaptable to intelligent manufacturing processes.

This topic is explored in depth in an interesting 2022 study published in the World Journal of Engineering and Technology by professors Gyasi, Antila, Owusu-Ansah, Kah and Salminen entitled "Prospects of Robot Laser Cutting in the Era of Industry 4.0".

The researchers underline that the integration of automated laser cutting machines with Industry 4.0 technologies means these systems can now be seamlessly incorporated into the manufacturing process, effectively enhancing automation and efficiency. In the study, future perspectives of

laser machines integration in automotive industry processes are also explored. According to the researchers this integration may be crucial for small and medium-sized enterprises in the automotive industry, which often deal with high-mix but low-volume production.

Prima Power is deeply invested in the continuous research and development of new machines for metal 3D laser cutting. Its goal is to meet the specific needs of different clients in the automotive sector. The company understands that each manufacturer has unique requirements and its mission is to provide solutions that cater to these diverse needs. Its commitment to innovation ensures that clients always have access to the most advanced 3D laser cutting technology, integrated with the latest advancements in Industry 4.0.

Sustainable and cost-effective 3D laser solutions

Prima Power's 3D laser solutions are at the forefront of combining technological excellence with environmental responsibility and cost-efficiency in the automotive industry. Its machines, such as the Laser Next® series, are designed to deliver first-class performance, specifically catering to the diverse demands of automotive manufacturing.

In particular, Laser Next® 1530 is optimised for meeting the demand of high-volume mass production for automotive parts, while Laser Next® 2130 is a larger machine, suitable for processing larger components for the automotive industry, such as door rings, with levels of efficiency and productivity similar to the 1530.

Prima Power understands that cost-effectiveness is crucial in the competitive automotive sector. Its 3D laser machines are designed to optimise the return on investment for its customers. By reducing the cost per part and maximising efficiency, it helps automotive manufacturers stay ahead in the market.

Its approach also prioritises not only the productivity and efficiency of the machines but also their impact on the environment. It strives to develop solutions that contribute to sustainable manufacturing practices in the automotive sector. The precision and speed of its 3D laser machines result in reduced waste and energy usage, aligning with the ecological goals of the automotive industry.

It invites interested companies to reach out to Prima Power to explore potential collaborations. The team is ready to discuss how 3D laser solutions can enhance your manufacturing processes, align with your environmental goals and improve cost-effectiveness. Together, let's drive innovation and success in your automotive production.

Prima Power UK Ltd
Tel: 0844 4996241
Email: info@primapower.com
www.primapower.com

Salvagnini presents two new automations for the L3 laser in the 6 m configuration

In the world of laser systems, automation plays an increasingly important role in improving the effectiveness of loading and unloading operations. Larger lasers face even greater challenges than 3- and 4 m lasers when it comes to these tasks. Whether it's because of the delicacy and size of the sheet or the weight of the material to be handled, it's important to note that as the size of the sheet metal increases, so does the time required for handling, both before and after the cutting process.

This long handling time is what convinced Salvagnini to develop the ADLU loading/unloading device and the MCU automatic sorting device in size 6020, for processing sheet metal formats of up to 6 m in length.

In just 60 seconds, the ADLU device automates the process of loading sheet metal from packs and unloading the cut sheets, eliminating all intermediate handling steps that are usually done by the operator. Additionally, the ADLU is a flexible solution in terms of layout, as its modular, floor-based structure can be adapted to the available spaces in the workshop.

Investing in an automatic sorting device offers several benefits:

1) The elimination of manual operations, leading to: reduced operating costs; decreased reliance on labour availability; lower risk of accidents and reduced material damage during handling.
2) Precise planning of sorting times, ensuring consistency and repeatability.
3) The ability to separate the material cut in any unmanned shifts.

Additionally, automatic sorting improves production flow by:

1) Swiftly providing material to downstream workstations.
2) Simplifying part tracking by grouping them by job, kit, or next workstation.

This advantage is particularly attractive in 6 m configurations, where more parts can be mixed, increasing tracking complexity in proportion to the sheet metal size.

The MCU automatic sorting device excels at handling parts of various shapes, sizes and weights. It can work in full multi-gripping mode, picking up several parts in sequence with the same gripping device. It activates the necessary suction cups or magnets individually.

The MCU's capabilities are quite impressive:

1) It can handle thicknesses ranging from 0.5 to 12 mm.
2) Each manipulator can handle weights up to 65 kg, or 130 kg when both gripping devices work together.
3) The manipulators are highly flexible and mobile, with a full 360° rotation capability, allowing them to pick up parts of any size or shape.

While the minimum sizes are 100 x200 mm, Salvagnini now offers the smart cluster function to overcome the dimensional limitation when unloading parts below the official threshold and to prevent automatic sorting from reducing the sheet metal yield. This feature quickly and easily joins small parts together without the need for a

cutting frame or complicating office programming, effectively reducing overall unloading times.

MCU uses NEXUS software for its operations. NEXUS is user-friendly and straightforward, automatically handling sorting programs. If needed, operators can edit these programs interactively. NEXUS provides full control over the entire production process, including individual sheets at precise points in the cycle. It also offers accurate checking through an integrated 3D simulator. NEXUS eliminates the need to select a specific production strategy during the design phase. It adapts to various requirements, whether it's for large batches, small batches, kits, or one-off batches. This flexibility makes NEXUS the ideal sorting software for both subcontractors and OEM manufacturers.

Both ADLU and MCU prioritise sustainability by using Adaptive Vacuum Control (AVC) technology. This technology monitors the vacuum level in the suction cups during gripping and activates vacuum generation only when necessary. This results in a remarkable reduction in compressed air consumption, exceeding 90 percent.

Salvagnini UK & Ireland
Tel: 01989 767032
Email: steve.williams@salvagninigroup.com
www.salvagninigroup.com

SMF UK brings 3D cutting and welding to subcontract market

SMF UK, a leading specialist in precision sheet metal, laser cutting and fabrication, is further strengthening its already formidable portfolio of high-end machine tools by investing in a new TRUMPF TruLaser Cell 7040. Able to perform both 3D laser cutting and 3D welding, the machine is now in-situ at the company's state-of-the-art 30,000 ft² facility in Leicester. The impressive TRUMPF TruLaser Cell 7040 provides the perfect subcontract solution for any company that requires high-precision 5-axis cutting and/or welding.

Offering decades of experience in sheet metal fabrication, SMF UK's specialist engineers have a particular expertise in designing solutions for a wide range of industries, including architecture, automotive, electrical and medical, to list but a few. However, this highly progressive company loves a challenge and prides itself on transparent pricing, on-time deliveries and partnership working. Whether a customer has detailed instructions, drawings and specifications, or simply a concept that needs fabricating, SMF UK can help.

Despite plenty of success and strong growth since the company's formation in 1990, SMF UK appreciates the need to evolve in line with industry demands.

"At one point in time we did a lot of straightforward laser cutting and folding, but it didn't provide much market differentiation and, with the emergence of competitors in low-cost economies, we felt the need to diversify into making actual products for customers," explains Steve Morrison, managing director at SMF UK. "By way of example, today we make chassis that form part of access lifting platforms fitted to the back of pick-up trucks."

While family-run SMF UK has all the usual sheet metal cutting, forming and fabrication capabilities on site, it is the company's more diverse investments that set the company apart from others. Adding high-end machines like a CNC panel bender and an automated TRUMPF tube laser has led to a raft of new contracts, prompting the company to think about how else to embellish its machine repertoire.

"One capability missing from our portfolio was 3D work, hence our investment in the TRUMPF TruLaser Cell 7040, which can cut and weld in five axes," says Steve Morrison.

The modular TruLaser Cell 7040 is a truly flexible machine for large 3D jobs. Those taking advantage can tap into benefits such as cost-effective production, excellent process reliability and the finest component quality.

"Speculative investments have worked out well for us previously and we're convinced the TruLaser Cell 7040 will be the same; essentially we are introducing 5-axis work into the subcontract market," says Steve Morrison. "Any companies with requirements in 3D cutting and/or welding can benefit, and we'll happily meet enquiries with a highly competitive quote. Our team here at SMF UK specialises in high-precision small-to-medium batch work, including 1-offs, our new TruLaser Cell 7040 is the ideal solution for needs of this type."

The company has an ongoing commitment to invest in new machinery and equipment as its customer expectations and technical requirements change. SMF UK is proud to have some of the latest laser cutters, press brakes, robot bending systems and welding cells at its disposal to support this ethos.

"We have a really good working relationship with TRUMPF that spans over 20 years," states Steve Morrison. "Other TRUMPF machines on site include a TruBend 7036 Cell Edition Robot press brake cell, a TruArc Weld 1000 automated welding cell and a TruMark Station laser marking cell, as well as TRUMPF TruLaser flat-bed (2D) laser cutters."

SMF has far more machines than people, a strategy that is both efficient and economical for the company and its customers, without any compromise in quality. SMF UK's entire way of working is set up to help clients manufacture quality products.

"What our customers tell us they like best about working with SMF UK is the partnership approach we bring to a project," concludes Steve Morrison.

"We help our clients solve problems, troubleshoot issues and develop cost-effective solutions to meet the project's requirements. If you want to work with a business that cares about developing long-term professional relationships, come to SMF UK."

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Welding for a better climate

In 1982, the El Niño effect was unusually strong. The water temperature in the equatorial Pacific was 7°C higher than average. Thermal energy was released into the Earth's atmosphere and global weather patterns were turned upside-down. In the same year, Robert Bloos senior revolutionised heating with wood: the resourceful inventor developed a way of automatically charging boilers with wood chips. Today, the Franconian pioneers of Heizomat Gerätebau + Energiesysteme GmbH produce up to 1,600 environmentally friendly, customised wood chip heating systems every year. In order to cope with the high order numbers, the boilers are welded using modern robotic welding cells from Fronius.

Like many great success stories, that of former truck driver Robert Bloos senior started in a garage. Even then it was clear that "we have to heat exclusively with wood," but every time he came home in the winter after a hard day's work, his apartment was cold. This is because, back in the 1970s, the only wood-burning stoves on the market had to be fired up manually during the day. If you weren't home, there was no fire. Frustrated by this, he started tinkering around in his small workshop. He wanted to burn the wood from his own trees to create the same level of comfort as a fossil fuel system. That's why he decided to automate the charging of his stove. The result, after a huge amount of hard work, was a stunning world first: an automatic dispenser system for wood chips.

While the first wood chip heating systems boasting automatic feeding may have been developed in a garage, the German family business now manufactures them at two sites in Gunzenhausen and Heidenheim. With 330 employees and a real net output ratio of 85 percent, the company produces customised heating systems rated from 30 to 990 kW, with deliveries sent all over the world. Today, thousands of satisfied customers in over 40 countries use the reliable, low-maintenance systems of the inventive heating pioneer to heat their premises. Only the heat that is actually needed is generated, and from a climate-neutral, renewable source. It's not just customers in Europe, the USA, and Canada that trust in German quality: the company's products can also be found as far away as Malaysia and New Zealand. Heizomat is ASME-certified for worldwide export. The certificate of the American Society of Mechanical Engineers is internationally recognised in over 100 countries. It certifies that the products meet the stringent requirements of the ASME code, including its safety standards.

Increasing skills shortages and continued growth mean that many companies, including Heizomat, require automated solutions. Today, the company uses three Fronius robotic welding cells to weld boilers. The cells are equipped with the Pathfinder offline programming and simulation software.

For the construction of the wood chip heaters, standard components, boilers, made of 6 mm hot-rolled, unalloyed S235JR structural steel and each weighing 700-950 kg are joined in a gas- and water-tight manner. Depending on the requirements, the number of individual components varies between 300 and 700.

PMC is a modified pulsed arc process that is characterised by a powerful, stable arc and finely controlled low-spatter droplet detachment that delivers a high deposition rate. Even components with tight tolerances and significant variations in wall thickness can be flawlessly welded using PMC. Arc length and penetration stabilisers ensure precise control and high process stability with less energy per unit length.

The biggest plus when programming offline with Pathfinder is that all the welding sequences can be created away from the robot systems. Ongoing welding work no longer has to be stopped for programming. Simulators help

detect potential errors in advance and optimise the welding sequences. For example, collisions, violations of axis boundaries, or singularities are recorded and visualised. Significant time savings are achieved in the copying, linking, grouping and mirroring of welds. Welding simulations can be carried out in real time or at an infinitely variable speed with simultaneous cycle time determination, welding speed, gas pre-flow times, end-crater filling. If the welding robot were to be taught exclusively in the system, the amount of effort involved could be up to ten times greater.

Fronius UK Ltd
Tel: 01908 512300
Email: info-uk@fronius.com
www.fronius.com

Harnessing the power of subcontract friction welding

To efficiency, integrity and beyond

In the ever-evolving manufacturing landscape, innovations to revolutionise the way we create, assemble and produce are coming to the fore. One such technique, however, that has been reshaping the industry for over half a century, is friction welding.

For those unfamiliar with this process, let's dive into its many features and benefits and the profound impact it can have on manufacturing and product quality.

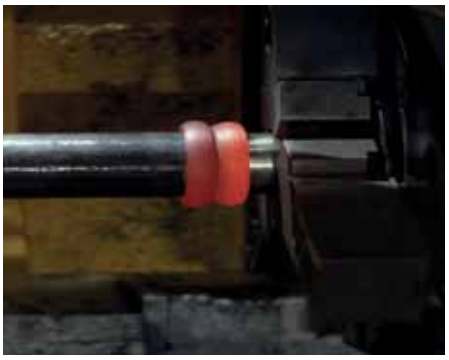
At its core, friction welding is a method of joining two materials through the application of heat generated by friction. What sets it apart is its ability to join dissimilar materials, opening doors to new possibilities in component functionality. KUKA's subcontract friction welding solution offers unparalleled versatility, allowing manufacturers to push the boundaries of what's achievable.

But the benefits extend far beyond versatility. Cost efficiency lies at the heart of friction welding. By minimising material waste and energy consumption, the friction welding process translates to tangible savings that resonate along the supply chain. Its rapid processing time accelerates production schedules, enabling manufacturers to meet stringent deadlines without compromising on quality.

Friction welding delivers where it matters most: product integrity. The resulting welds boast superior strength, durability and fatigue resistance, ensuring the longevity and reliability of the finished product when utilised in critical industrial applications. This not only enhances performance but also instils confidence in end-users, cementing brand reputation and loyalty.

What truly sets friction welding apart is its ability to elevate the profile of multiple manufacturing processes. The industrial joining technique shines a spotlight on the ingenuity and innovation driving certain industries forward, such as rail, power generation, oil and gas and even as a means to manufacture clamps and weightlifting bars. The possibilities are endless when friction welding technology is able to the push boundaries of traditional manufacturing techniques and challenge conventions.

Subcontract friction welding from KUKA



delivers more than just a manufacturing process, it's a catalyst for progress. With its unmatched versatility, cost efficiency and ability to elevate product integrity, it has rightly become a cornerstone of modern UK manufacturing. As KUKA continues to explore new frontiers and embrace innovation, its subcontract friction welding solution serves as a beacon of what's possible.

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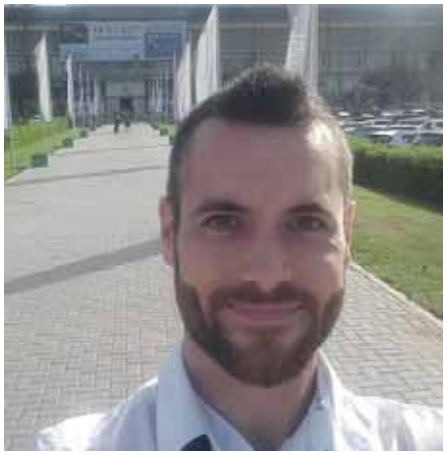

How technology is revolutionising the welding industry

By Guilliaume Roeckel, global machines sales director at Welding Alloys

With the constant evolution of technology and the development of construction and infrastructure, the global market for welding gear is expected to reach over £12 billion by 2026.

Technological advancements in the welding industry can bring a wide range of benefits, transforming the way welding operations are performed. Among many other things, they can increase efficiency, reduce downtime, enhance safety, offer better precision and improve the quality of welding processes overall.

So, what are the latest, most innovative tools that are driving the sector forward? Let's take a look at some of the tech introductions that are already starting to shape the future of the welding industry.

Robotics

Over the years, more and more sectors have been using robots to facilitate their day-to-day operations. In more recent times, the welding industry has followed suit, adopting robots to ensure consistent quality, maximise productivity, and facilitate cladding applications.

In this respect, Bastien Gerard, business development director of consumables from Welding Alloys says: "Yes, there is no hiding that these ingenious tools have a high initial cost, both in terms of equipment investment and personnel training.

"However, in the long run, they are likely to pay off the hefty expenses by largely increasing efficiency. What's more, another advantage of using robots in certain processes is that they can save staff from being exposed to hazardous fumes or radiation and can significantly reduce the risk of repetitive strain injuries.

"For those operations where the supervision of human welders is necessary, there are collaborative welding robots, welding cobots, that can make the job easier.

"Equipped with sensors that allow them to work safely with humans without the need for barriers, cobots are designed to assist employees with the more repetitive, physically demanding aspects of welding."

Virtual reality (VR) and augmented reality (AR)

Virtual reality (VR) and augmented reality (AR) welding simulators are being used in the sector for training purposes. These high-tech headsets offer an immersive environment in which workers can practice their skills in a safe and controlled manner.

In the case of VR welding training, the equipment simulates a real-world, 360-degree scenario where the welder can have a go at carrying out specific tasks. With AR, instead, the welder uses a wearable device to access digital overlays that provide guidance and instructions as they perform an operation in real life.

The beauty of both VR and AR is that they can offer instant feedback, helping welders nail their skills and identify which areas need further training. In turn, this can help both workers and companies improve the quality of production and minimise potential errors or defects.

Welding drones

Fitted with sensors, cameras, and robotic arms, welding drones are innovative tools that are perfect for the inspection of hard-to-reach or hazardous locations.

Regardless of a welder's experience, performing welding processes on bridges, high-rise buildings, or offshore oil platforms can be dangerous. So, using drones can eliminate any unnecessary risks or safety issues, as they

can be operated remotely to check sites from a safe distance and make adjustments as required.

Since drones are able to access both remote and hard-to-reach locations without much hassle, companies can save precious time and money. In fact, there will be no need for scaffolding, which can both delay operations and have an impact on a business's finances.

Friction stir welding and laser welding

One of the trickiest challenges for workers is to weld dissimilar metals. In some cases, it is borderline impossible.

In recent years, however, a new technique called Friction Stir Welding' (FSW) has been introduced. This process utilises mechanical friction by applying pressure and rotating the metals at high speed, which in turn causes them to fuse and form a strong bond.

FSW is a particularly handy technique as it offers a clean, precise weld without any defects or porosity.

Similarly, another powerful and innovative tech advancement is laser beam welding (LBW). This process adopts a focused beam of light to melt and join different metals while keeping control overheat input and weld penetration.

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