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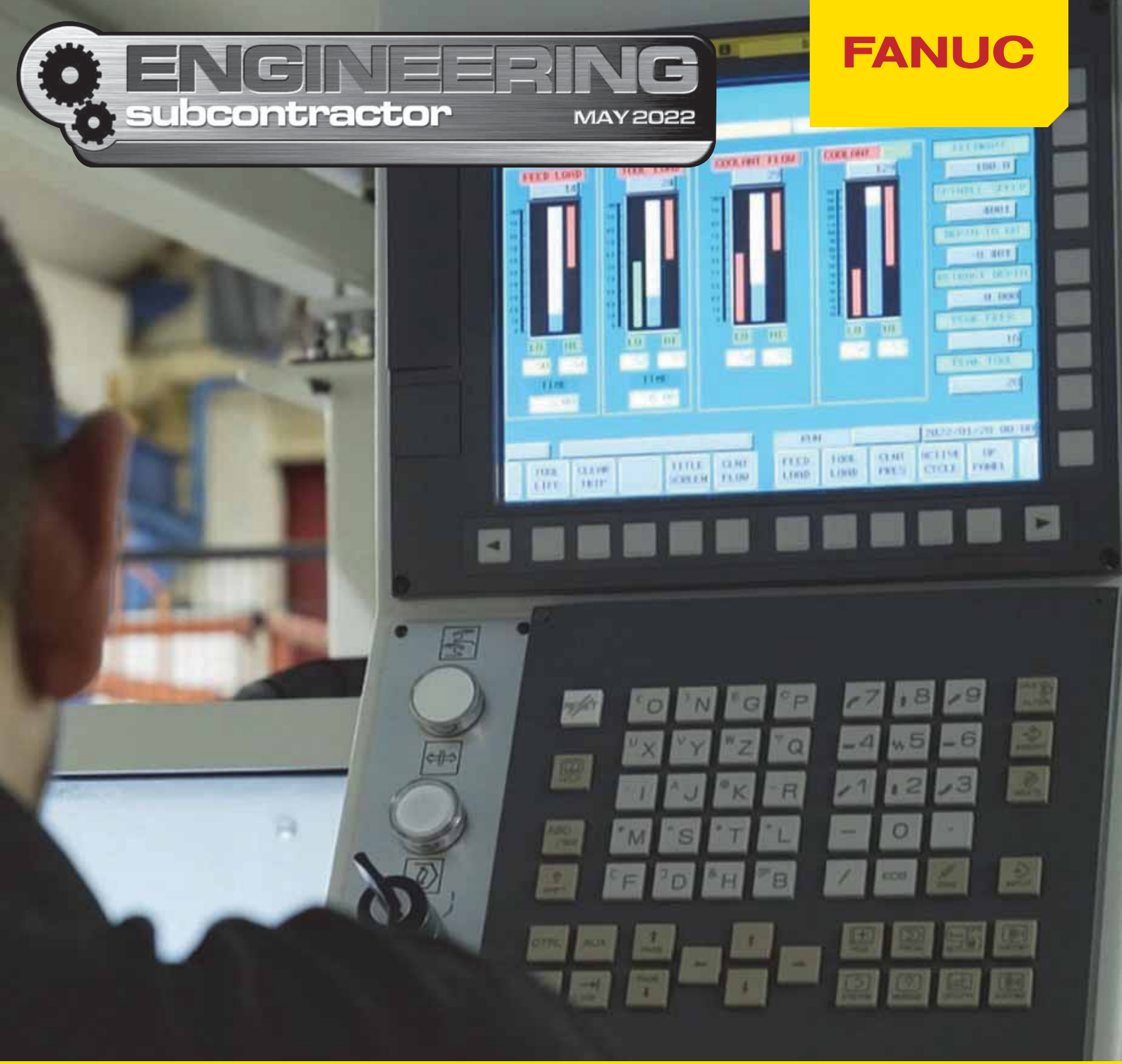

Mollart drills deep into machine exports with FANUC

"FANUC are the natural choice for us. They've helped us to deliver a cell that offers fast, precision handling with high performance in a very small footprint. They provide solutions, not problems."

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FANUC UK supports deep hole drilling technology specialist

FANUC UK has unveiled the results of its latest project in conjunction with deep drilling specialists Mollart Engineering. The solution for an automotive client based in China incorporates an M-20iD/25 handling robot and a CNC Series 35i-Model B control system.

FANUC's M-20iD/25 handling robot features a lightweight, curved J2 arm to mitigate interference against workpieces and fixtures, allowing more productivity in the workplace area. Compact and fully articulated to reach narrow spaces in machine tools or jigs, its smooth surface minimises dust and dirt collection to extend its lifetime, while fully integrated cable management eliminates interference from peripherals and work cell equipment.

Offering a maximum payload of up to 25 kg on a small footprint, the M-20iD/25 also incorporates FANUC's Zero Down Time (ZDT) programme which smartly predicts any mechanical or process issues that could potentially halt production, allowing for scheduled replacements before uptime is impacted.

The solution provided by FANUC and Mollart also includes a CNC Series 35i-Model B control system. Primarily designed for transfer lines, gantries or multiple milling and drilling stations, its ready-to-use, integrated software options enable high-precision, multi-path processing with short processing times.

Featuring a simple axis setup, the Series 35i-Model B is customisable and features up to five high-speed PMCs (Programmable Machine Controls). Promoting easy operation with the integration of three screens, it also features built-in troubleshooting for one-stop problem solving, with intuitive icons and high-visibility design with animated features.

The automated three-machine production cell has been developed in the UK by Mollart Engineering and FANUC UK and will be seamlessly transferred to the customer in China, making international support a must. "We would be foolish not to use FANUC, not just because of our relationship with them on the CNC controls for our machine tools but because they are world-renowned for what they do," states Mollart's Ian Pettit. "They are the natural choice for us and have helped us to deliver a cell that is compact yet so much more efficient than if it was driven by people."

Read the full story on pages 10 and 11.

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CERATIZIT UK & Ireland reports best MACH ever

Any doubts over the resilience of the UK manufacturing sector were laid to rest at MACH 2022. The excellent attendance at the show translated into an extremely positive response to the cutting tool, workholding and logistics products on show on the CERATIZIT UK & Ireland stand. The outcome was the best MACH in the company's history with enquiries, orders and positivity all at very high levels.

The CERATIZIT stand at MACH was a major draw for many visitors with numerous cutting tool innovations on show and the opportunity to discuss specific requirements with any of the 40 plus technical engineers that the company had in attendance throughout the week. "Before the doors opened for MACH there was an air of uncertainty, but that was quickly dispelled as visitor numbers increased daily throughout the week," says Tony Pennington, managing director of CERATIZIT UK & Ireland. "Of course, there were concerns from customers with many faced with common challenges of energy prices and raw material supply and costs, but the vast majority were reporting strong order books and a commitment to invest in the latest technology. Many accepted that there will be some peaks and troughs, but in general the consensus was that the next few years look extremely promising."

For CERATIZIT UK & Ireland this translated into a record number of enquiries with over 1,500 requests for information or visits logged over the week. One key area of interest was that of logistics and security of supply of cutting tools. Here the company provided the answer with its vending system TOM 840. With capacity to store up to 840 individual tools, the system is supplied free of charge to customers with a minimum monthly spend of £3,000, with the TOM 840 unit communicating directly with CERATIZIT to maintain stocking levels of key cutters and inserts. The other major benefit to the customer is that, while they have extensive stock at their fingertips, they only pay for what is used. "Tool vending is becoming ever more popular and at MACH we saw the interest in what our system can bring to customers increase dramatically. As a result of enquiries at the show we have ordered an additional 20 TOM 840 units, doubling what we already had on order. These will join the 500 plus units already out with customers," says Tony Pennington.

It wasn't all about tools on the CERATIZIT UK & Ireland stand, as the British Heart Foundation and Cancer Research UK also benefited from the raffle of a Hope HB 130 mountain bike, with the winning entry being drawn by World and Olympic cycling champion Katie Archibald MBE. The lucky recipient, who will take delivery of the £6,000 bike once it has been custom fitted to his dimensions by Hope Technology, is Dave Buchan from Havant-based Monolution, a specialist subcontract machining business focussing on top level motorsports and aerospace work. This state-of-the art bike has benefited from CERATIZIT's input on the machining of many of the components, from moulds for the carbon fibre frame, to cranks, brakes and yokes.

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Expert turn to Mazak for multi-tasking solution

Expert Technologies Group shook hands on a deal to acquire a Mazak QUICK TURN 350MSY at MACH 2022.

The machine is the first Mazak to be acquired by the Group and will go straight from MACH to Expert's facility in the North West of England.

Expert Technologies Group is a global provider of automation solutions for a wide variety of industry sectors, ranging from medical and pharmaceutical through to food and beverage, automotive and aerospace. The group has seven global locations including three manufacturing facilities in the UK.

Chris Clifton, head of manufacturing at Expert Technologies said: "Our philosophy is to provide the most advanced manufacturing technologies and it is important that our own machining capabilities therefore remain at the cutting-edge of technology.

"Mazak share many of our own manufacturing philosophies, including a commitment to excellence in all of their operations. The machine we selected fits our requirements perfectly and the combination of machine capability, build quality and on-going support made the decision easier."

The QUICK TURN 350MSY is a high productivity turning centre equipped with milling, second spindle and Y-axis function to offer a multi-tasking solution for machine users. The machine specified by Expert Technologies Group is also equipped with SmoothG CNC.

Jason Butler, sales director at Yamazaki Mazak commented: "Expert visited us at our November Open House and were impressed by our own manufacturing operations and the potential of the QUICK TURN to upgrade their machining capabilities. It's a great machine and we look forward to supporting its commissioning and the training of Expert's machine operators on the SmoothG control."

Yamazaki Mazak's European Headquarters, based in Worcester UK, is recognised for its factory automation, technology and overall management practices. As with all Mazak factories, this facility comprises a variety of flexible manufacturing systems, consisting of machining centres, multi-tasking CNC lathes and a sheet metal FMS; all designed for unmanned operation.

Representatives of Expert Technologies shake hands on the deal to acquire a new Mazak QUICK TURN 350MSY at MACH 2022

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New lines grab visitor attention at MACH

The return of the MACH exhibition provided a welcome boost to the industry and as a leading UK manufacturer of cutting tools, Industrial Tooling Corporation (ITC) revelled in the opportunity to demonstrate all its latest innovations to an audience that was 'chomping at the bit' to get their hands on all the new technology.

MACH was the first opportunity for manufacturers to investigate all the new product lines and have face-to-face discussions with experts in a large-scale exhibition environment. For ITC, its cutting tool experts certainly noticed a renewed vigour from engineers visiting the show and their appetite to learn more and invest in the very latest cutting tool technologies. Commenting at the event, ITC director Georgia Graves said: "Opportunities to have face-to-face meetings with the industry have been limited by COVID for too long.

The timing of MACH has been perfect and our team of cutting tool experts has certainly witnessed their busiest MACH exhibition to date. The combination of limited contact with customers, potential customers and technology partners and the build-up of countless new product lines that had yet to be seen by much of the industry were factors that created a huge wave of interest in all of the new technologies developed by ITC as well as our partners WIDIA, BIG KAISER, Kemmler and Bass. We are delighted with the lead generation and enquiry level from the show."

With an outstanding reputation for the quality, consistency and performance of its solid carbide end mills, drills and thread milling ranges; ITC engineers had a particularly busy event. One of the new ITC products that gathered immense interest was the 6054 Series of end mill developed specifically for the machining of steel and exotic material types. The geometry of the 6054 Series has a centre cutting geometry with harmonic fluting to maximise material removal rates and swarf evacuation whilst minimising vibration to enhance surface finishes and tool life. This chip evacuation is further enhanced by extremely efficient chip breakers. The 6-flute series 6054 Series is available with diameter options of 6, 8, 10, 12, 16 and 20 mm with a length of cut from 18 mm on the 6 mm diameter tool through to 60 mm on the 20 mm diameter end mills.

With a team of WIDIA experts at MACH, the indexable insert line from this globally renowned brand was also extremely popular at the show. Of particular interest was the new WIDIA™ M1600 face mill series that received its MACH debut. Also proving to be a crowd-pleaser alongside the M1600 was the impressive M8065HD milling system for machining steel and cast-iron materials. Designed with eight cutting edges and extra-wide chip gashes, the new M8065HD can achieve unfathomable depths of cut while producing high metal removal rates during face and shoulder milling applications. ITC has an unparalleled line of solid carbide and indexable drills in its armoury and at MACH, this was evident with the expanded range of indexable inserts added to the Widia TOP DRILL™ TDMX modular drilling line. This expanded series was the perfect complement to the Tamworth manufacturers' ITC solid carbide drilling lines.

From the BIG KAISER stable, ITC introduced the expanded line-up of Smart Damper-equipped, arbour-style face mill holders that support face mills with diameters of 80 mm or 100 mm with an

arbour pilot diameter of 27 mm. The Model SDF57 assembly has an outside diameter of 71.8 mm and allows users of 75 mm face mills to access up to 500 mm of reach, the longest tool assembly in the industry using standard components. Also from BIG KAISER was the Mega Synchro Tapping Chuck. The innovative new tapping chuck has a special function built-in to compensate for synchronisation errors that may occur during rigid tapping.

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Dugard takes orders at MACH

MACH 2022 proved a resounding success for Dugard Machine Tools, with the South Coast company winning several orders and taking an unprecedented number of enquiries at the show. With four new machine tools on its stand, the crowds were certainly impressed by the breadth and diversity of the technology on show.

It was a MACH debut and the first opportunity for Dugard to introduce the Kitamura range since being announced as the UK agent. To highlight the quality, speed and productivity of the renowned brand, Dugard demonstrated the MedCenter5AX 5-axis vertical machining centre for fast precise machining. Complementing the MedCenter5AX from the milling stable was the larger Kitamura Mytrunnion 4G machining centre. The two machines highlighted just how expansive the Dugard milling range is.

The Kitamura MedCenter5AX 5-axis vertical machining centre took centre stage. With a 30 to 30,000 rpm spindle, an HSK-E40 spindle taper with a tool ATC that can change tools in just 1.5 seconds, rapid traverse rates of 60m/min and table rotation of 200 rpm on the A and C-axis and a pallet change system, the machine demonstrated its credentials at the show. Also impressing visitors was the 67 million pulse encoder technology, the positional accuracy of ±2 microns across the full stroke and the repeatability of ±1micron. All these factors combine to make it one of the most accurate machines on the market. The Mytrunnion 4G, with equally impressive characteristics and a larger work envelope, was also a feature on the stand. As well as these two highly productive and flexible workhorses, Dugard gave a MACH show debut to the Hanwha brand of sliding head lathe that has taken the market by storm since entering the UK just over two years ago.

Dugard's sales director, Colin Thomson says: "We had representatives from Hanwha, Kitamura, Ibarmia and SMEC on the stand to support the Dugard team and throughout the week both our UK sales and technical teams and our technical partners from overseas had some very constructive conversations that resulted in several machine sales. Equally encouraging is the level of interest and direction that some of these meetings took at MACH. We fully expect to generate several additional sales in the months following the show."

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There's no business like 'show' business

New machine tool orders taken; Hundreds of leads and enquiries generated; Thousands of visitors welcomed onto the stand. Mills CNC's attendance at MACH 2022 is reported as being an absolute triumph and an outstanding success.

Mills CNC has reported that its attendance at MACH was an absolute triumph and an outstanding success with the company taking orders for 22 machines, its best ever tally for a MACH show, as well as taking hundreds of leads and enquiries for its Doosan machine tools, SYNERGi automated manufacturing cells and Doosan cobots over the five-day event.

Mills CNC's CEO, Tony Dale says: "We've had a great MACH Show. The best in the company's history. It seemed as though we were busy as soon as the doors opened on the Monday and things didn't quiet down until late Friday afternoon. You know you've got the balance of technologies being showcased spot on and that you have created an innovative and welcoming stand, when the aisles are packed to the rafters and the volume of leads and enquiries generated are breaking all of our previous MACH show records.

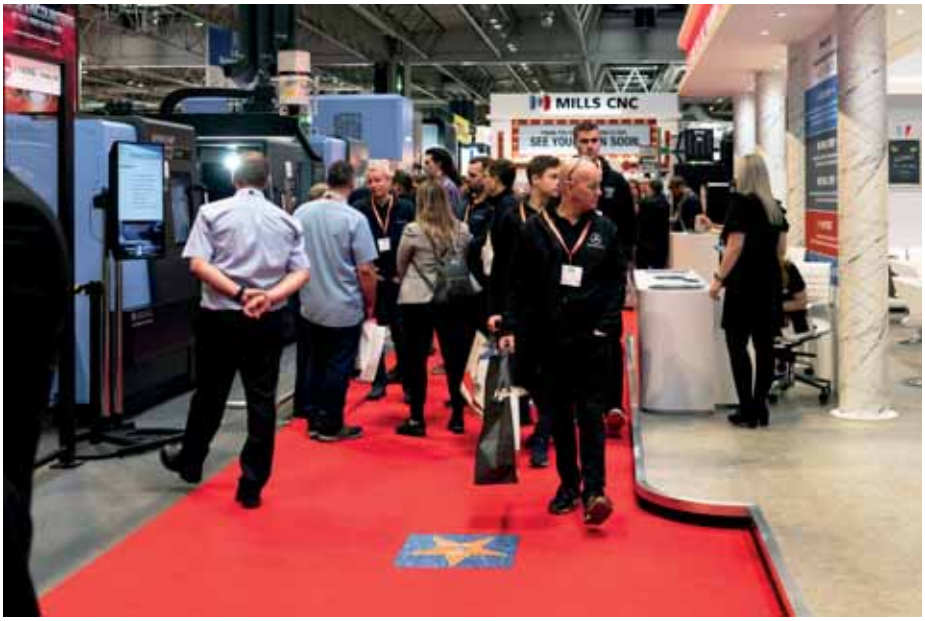
"It's clearly great news that we took orders for 22 machines during the event and I would like to thank the customers involved for their business. It is very much appreciated."

Mills CNC showcased 16 Doosan machine tools on its stand which, incidentally, was the largest at the event. Seven of the machines on show were new models making their UK debuts at MACH 2022.

These comprised two large capacity SMX mill-turn machines, a SMX 2100ST and a SMX 5100LMB, a high-speed machining centre, a T-4000 HS, two vertical machining centres, a SVM 4100 and a BVM 5700, as well as two new turning centres, a TT 1300SYYB and a Lynx 2600SY.

Also being showcased on the stand were two innovative and high-productivity SYNERGi automated manufacturing cells, a SYNERGi Premier and a SYNERGi Sprint, with five state-of-the-art Doosan cobots promoted from a specially constructed COBOT ZONE.

The company's Training and Servicing operations also had a presence on the stand. The stand design had a Broadway feel and theatrical concept replete with red carpets, a 'walk of fame', four aisle entrances reminiscent of art deco theatre and cinema fascias and large movie-style billboard posters. Tony Dale says: "Everyone was very complimentary about our stand and its design. It really did look the business."



Anyone visiting Mills' stand at MACH could not fail to notice the 'Sold' decals being affixed, with regularity, onto the machines on display. A total of 22 machines were sold during the five days. These included orders for nine machining centres, eleven lathes and turning centres and two mill-turn machines.

Worthy of special mention are: Coventry-based, MNB Precision Ltd, that placed an order for the large-capacity SMX 5100LMB on the Monday morning: Takumi Precision Ltd, that visited Mills' stand to get up close and personal to the SMX 2100ST mill-turn machine it had ordered some weeks earlier: Cosworth Engines that confirmed a three-machine tool order on the stand on the Wednesday.

Machine tool orders were not just confined to machines being showcased on the stand. Tony Dale explains: "We took a number of orders for large, non-stock machines i.e., a Mynx 6500 II, a SMX 2600S and a VCF 850LSR 800."

Being the first MACH Show for four years ensured that anticipation and interest in the event was high.

Any concerns or anxieties about visitor numbers were quickly dispelled and aisles on Mills' stand, within the first few minutes of the doors opening on the first day, were packed to the rafters. Things continued in the same vein until close of play on the Friday.

Tony Dale concludes: "We spent a significant amount of time and resource making sure that MACH 2022 was an event to remember. "We are delighted that our attendance at the show was such a resounding success and that our stand proved to be so popular. I would like to thank all members of staff for making it happen."

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Curtain comes down on successful MACH for Kerf

The return to the MACH exhibition proved to be a resounding success for Kerf Developments. The technological leap and the steps forward that Kerf has taken since the last MACH show were evident for visitors, customers and even competitors to see at the showpiece manufacturing event.

Recognised as a leader in waterjet, plasma and oxy-fuel cutting technology, Kerf presented a dynamic mix of cost-efficient high technology cutting solutions that grabbed the attention and imagination of show visitors but, more importantly for Kerf, it witnessed record enquiry levels and even two machine orders at MACH.

Commenting upon the success of the show, sales director Craig Walsh says: "Visitor numbers were consistently high throughout the week and of a good standard. There were certainly manufacturers looking to invest in the latest productivity tools and this resulted in two machine sales at the show with many more manufacturers planning to place orders in the coming weeks."

At MACH, the leading RUR2500P high definition plasma cutting machine created a spark of attraction for show visitors with its UltraSharp cutting technology that has been enhanced with new advanced technologies. Additionally, Kerf introduced the new Fineline 300 Plasma unit from Lincoln Electric that incorporates Advanced Piercing Technology and a new Watermist system.

Craig Walsh continues: "Laser users showed considerable interest in the latest stainless steel and aluminium water mist process. They were also very impressed with the cut quality that UltraSharp could achieve on mild steel and demonstrating this created a huge level of enquiries. This was particularly so on thicker applications from 10 mm through to 50 mm where some laser processes appear to start to lose edge quality."

From a technology standpoint, the FineLine 300HD has the smallest diameter 300A torch in the industry at 38 mm and it works in synergy with the UltraSharp 2.0 plasma current controls that are all synchronised to precisely control motion, gas flow, cut speeds and height control.

The show debut for the new Optima waterjet cutting machine also allowed Kerf to use MACH to really set its stall out in the waterjet segment.

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Mollart drills deep into machine exports with FANUC

Robotics and automation expert FANUC UK has supported deep hole drilling technology specialist Mollart Engineering to develop an automated three-machine production cell for an automotive customer in China. Designed to manufacture parts for pre-machined transmission shafts for hydraulic gearboxes, the solution by FANUC and Mollart drills deep holes into the hydraulic shafts to a depth of 384 mm. Operating to a precision level of 0.2 mm at the start of the hole and within 0.3 mm of the deviation at the end of the holes, the production scale has an uptime efficiency of 90+ percent.

Mollart's Ian Petitt explains the importance of the company's partnership with FANUC in delivering this project: "The customer came to us specifically for deep hole drilling, as they cannot receive this same service from other companies. We are fully reliant on FANUC to deliver support for us worldwide. They are the natural choice for us and have helped us to deliver a cell that is compact yet so much more efficient than if it was driven by people."

A space-saving gantry rail with a FANUC M-20iD/25 6-axis robot transfers parts between the three-machine cell

Precision automation

Based in Chessington, Mollart Engineering is renowned for creating engineered solutions for challenging machining applications for the development and production of niche machine tools for end-users in the aerospace and automotive sectors, among others. For this project, it turned to FANUC for automation support having worked with the international robotics specialist for more than 30 years.

Providing that the input and output trays at either end of the cell are loaded and unloaded by operators accordingly, the FANUC robotic automation system will feed the three machines constantly

A space-saving gantry rail with a FANUC M-20iD/25 6-axis robot transfers parts between the three-machine cell, while a FANUC Series 35i-Model B control system drives the cell.

"Providing that the input and output trays at either end of the cell are loaded and unloaded by operators accordingly, the FANUC robotic automation system will feed the three machines constantly," explains Ian Petitt. "The parts are manually loaded into loading drawers at the front of the cell. Once the position is established, the FANUC robot takes them to the first machine, where we drill the components at 200 mm/min. Once that is completed, the FANUC robot is called to unload the machine and transfer the parts to an automatic rotate station, to orientate them for the next operation. The same process is then followed with further drilling. This is repeated again in the third machine where parts are then placed into the exit magazine by the robot that autonomously transfers parts through the cell."

The FANUC M-20iD/25 6-axis robot was the natural choice for this cell as it offers

fast, precision handling with high performance in a very small footprint. Ideal for loading and unloading the three machines in the cell, its compact arm and wrist design offer rapid axis speeds and motion performance with repeatability of +/-0.02 mm, a maximum reach of 1,831 mm and load capacity of 25 kg.

Intelligent control

In addition, a FANUC control system has been incorporated into the cell. Primarily designed for transfer lines, gantries, multiple milling and drilling stations, the Series 35i-Model B system enables high-precision, multi-path processing with short processing times. With the facility to control up to 20 axes, four spindle axes and four pathways, it is simple to set up with ready-to-use integrated software packages and provides a multitude of additional functions for simple customisation. It also facilitates up to five integrated high-speed Programmable Machine Controls (PMCs) to provide an exceptional interface between the FANUC CNC and the control of the machine tools in the cell.

"The FANUC Series 35i-Model B system controls the entire cell, providing up to four pathways," says Ian Petitt. "Two of these are used to control the machine tools and all the communications in the whole cell. In this instance, there is also a master control on the master machine which speaks to the outside controller. Effectively, the external controller can see every screen on every machine. This means it can control each machine from the outside and monitor the performance of the machines inside the cell."

As with all FANUC solutions, this digital-first system is networked for Industry 4.0 connectivity. "Everything is connected, right down to the light stack on the machines and the networking with the ERP system that drives it all," adds Ian Petitt. "This provides the customer with an exceptional level of detail, enabling them to see how much it costs to run each machine by the amount of electricity it uses, promoting efficient energy use."

Global support

The cell has been developed in the UK and will be seamlessly transferred to the customer in China, making international support a must. "We would be foolish not to use FANUC, not just because of our relationship with them on the CNC controls for our machine tools but because they are world-renowned for what they do," confirms Ian Petitt. "They can support this cell wherever it goes in the world and it also has the Chinese language incorporated into the FANUC control system."

He concludes: "Another advantage is that everything is connected through FANUC, meaning there is only one warranty. We would be crazy to think about using a different type of system and then try and make things compatible. It would just add more problems and we don't need problems; we need solutions. This is what FANUC provides."

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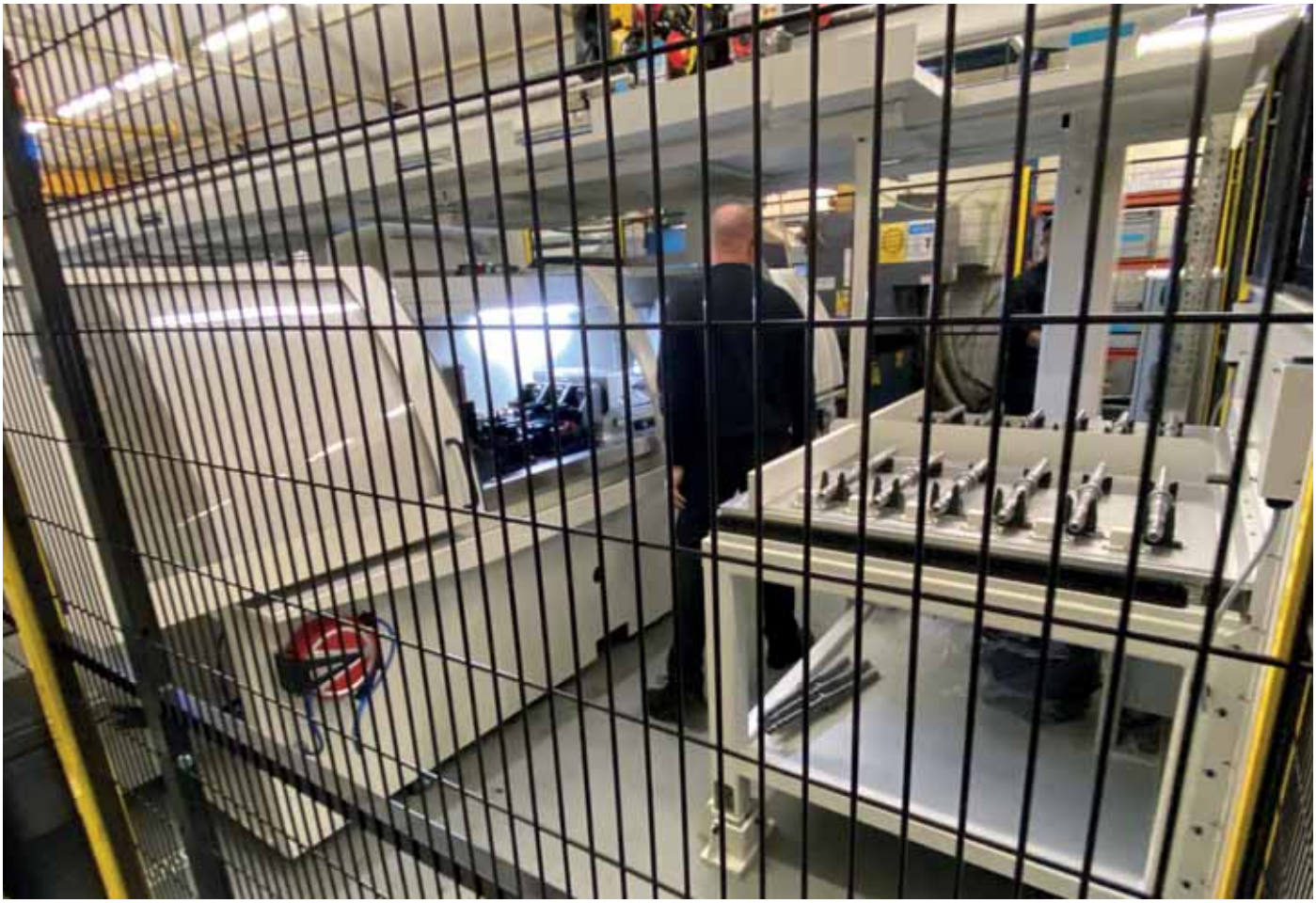

The digital-first system is networked for Industry 4.0 connectivity, promoting efficient energy use by enabling the client to see how much it costs to run each machine

ETG provides flexible automation for Mollart Cox

As a leading precision component manufacturer to the oil & gas, nuclear, defence, hydraulic, off-highway, automotive and aerospace industries, Mollart Cox has just invested in its first robotic machining cell to enhance its flexibility and productivity.

Turning to the Engineering Technology Group (ETG) and its Nakamura-Tome range of turning centres, the flexibility of the Derbyshire manufacturer has flourished since installing the automated cell.

Christopher Cox from Mollart Cox says: "We needed an automated cell like this because we have a lot of various setups and our parts are very different. Many of the parts are similar in shape but different to produce. So, the setup was key to us, as was the ability to use a machine with or without the robot. Another factor was the speed of setup.

"We selected the Nakamura-Tome WT-150II because of the build quality. We know about the quality of the machine, even though we haven't previously purchased one. Additionally, ETG has a very good backup and support service. The speed and the quietness are impressive and our tooling packages work very well with the machine too."

Steve Brown from ETG says: "We have a fully operational automated cell that incorporates the Nakamura WT-150II turning centre and the Robojob turn assist. So, what we're doing here is loading billets and unloading finished parts. The Robojob stores the raw material and it has a pallet system where the finished parts are collected. The beauty of the cell is that it is a completely flexible unit. The Robojob gives you the flexibility to produce anything from a very small component up to a larger billet and the Nakamura machine is a full production lights-out machining cell. This enables anybody with a nucleus or a range of parts to move into full production. The

Nakamura WT-150II is a twin-spindle twin turret machine with a Y-axis on the upper turret and a 65 mm through bore capacity. This makes it suitable for everything from simple to particularly complex parts."

The company already has gantry loaded turning centres, as Chris Cox says: "We went for this setup because gantry system machines take a long time to reset in between jobs. The more customers we get with a variance of jobs, we need to be able to set the robot quickly with regards to different size diameters and different types of tools. The Robojob with the Nakamura fulfilled our need for ease-of-use with setups and flexibility."

"The Nakamura is producing very high-quality parts in high numbers. It is repeating the precision really well and repeatability has been one of the key reasons for the installation. We can machine various materials from aluminium through to steel and it produces the parts very quickly and very consistently as well.

"The software on the machine is intuitive and easy-to-use. The machine has a similar backend to other machines, but it has the front end of a Nakamura. So, they have their own control system on there and it helps with its ease of programming. From the start, ETG has helped us to create the programmes and sort the robot out. Everything has been linked in one actual setup. One of the main reasons we wanted to work with ETG was because the robot came supplied with the machine as a full package. In fact, the first parts we produced were passed off at ETGs headquarters."

Steve Brown adds: "The issue that Mollart Cox had before ETG got involved was swarf. The Nakamura WT-150II has software on it that enables us to chip break, to break up the swarf, so it is not stringy material. This stops the swarf from getting caught up around the chuck and the component. This helps with lights out running, as we cannot have swarf impacting the work area as we have to have the robot entering the work area and handling the components."

Chris Cox concludes: "I would recommend ETG to anyone that really needs help in obtaining a new machine to produce their current parts with much faster processes."

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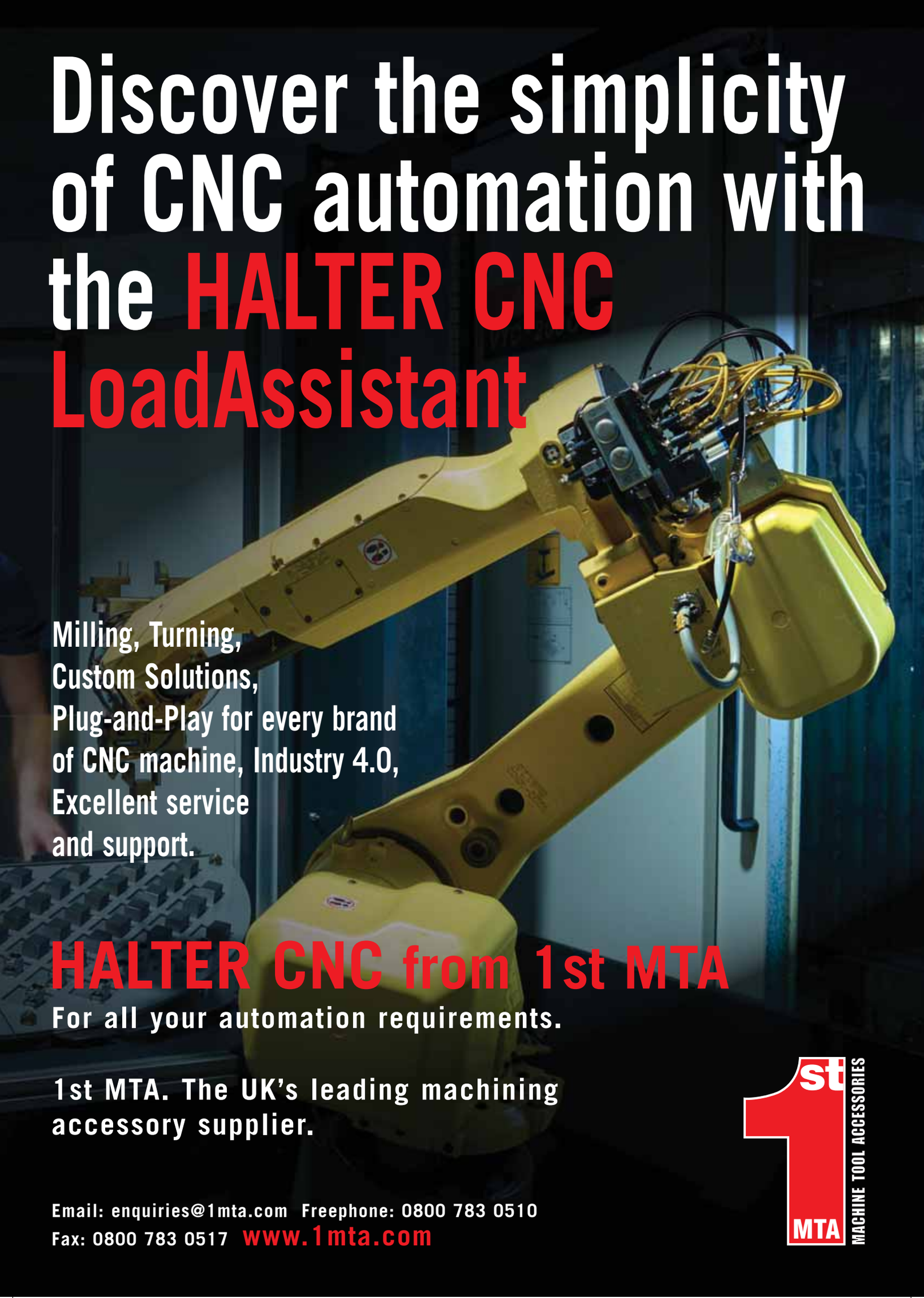
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MACHINE TOOL ACCESSORIES

Automation doubles subcontractor's turnover

Located in the Bavarian town of Schwabmünden, family-run subcontractor Heinz Knöpfle GmbH is taking maximum advantage of the productivity potential of automation. It has recently installed five robot load/unload systems from Halter in the Netherlands, whose range of LoadAssistant robotic machine tending equipment is sold in the UK by Salisbury-based 1st Machine Tool Accessories Ltd.

Heinz Knöpfle specialises in turning, turn-milling and milling components in a range of batch sizes down to one-offs for customers in a wide variety of industries, including medical, drives, printing, plastics, aerospace, packaging, food and construction.

About 16 years ago, the company acquired its first machine from Mazak, which was automated a year later with a bar feeder. Despite Heinz Knöpfle employing just five people, there are currently 22 Mazak machining centres and lathes on the 1,500 sq m shop floor, all of which are automated with pallet change systems or bar magazines.

The subcontractor's entry into robotic automation began in 2018 when second-generation managing director Christian Knöpfle, who took over the company in 2009 with siblings Suzanne and Andreas, became aware of Halter during a discussion with a Mazak sales manager. A short time later, the first turn-mill centre, a Mazak Integrex i-200ST, was coupled with a Halter Universal Premium.

All Halter automation solutions are compact, versatile robot cells in a variety of designs for CNC lathes, machining centres or both, as in the case of the Universal

Premium. They have been developed for automated loading and unloading of rotationally symmetrical and prismatic workpieces. A wide variety of grippers is available, as well as grid plates that act as buffer storage for components.

While the robot loads and unloads a machine, an operator at the rear of the automation cell can replenish the system with raw material and remove machined components, without having to interrupt the ongoing production. A cell can be repositioned from one machine to another, if desired and reinstalled quickly.

The benefits of the first robotic cell were so convincing that Heinz Knöpfle has since invested in four further automation solutions from Halter: Two additional Universal Premiums for a CNC turn-mill centre and a 3-axis machining centre, a Halter Big for a Mazak i-200S turn-mill centre and a Halter Turnstacker Compact 12 for a Mazak Quickturn Nexus 250-II MSY lathe.

The Halter Big is a loading system specially designed for heavy workpieces and shafts up to 800 mm long. The compact, robust solution has an integrated robot with a load capacity of 70 kg. The Turnstacker Compact, on the other hand, has a total of 12 stacking stations for a large number of billets and buffer storage for holding up to 385 finished parts.

According to Christian Knöpfle, automation has forced him to think even more carefully about processes. Among other things, attention must be paid to temperature to ensure high precision during machining, as well as to tool wear and availability, adequacy of coolant supply and efficiency of chip removal.

Provided that these and other critical requirements are managed, processes are stable and workpiece quality is consistently high. At the same time, productivity is noticeably increased due to a significant rise in periods of unattended production.

Heinz Knöpfle GmbH has succeeded in ensuring that production continues around the clock over three shifts, with operator attendance throughout day shifts but none during the other two. The machines also run at weekends with minimal attendance, increasing production capacity even further. Spindle running time on some machines that are coupled with LoadAssistant cells has been increased threefold. Overall, company turnover has doubled in the last two years.

Heinz Knöpfle has been able to increase its effectiveness as a subcontractor due to its strategy of automation. Production is better planned, quality and reliability of deliveries are high and prices charged to customers are competitive. As a result, the company has not only been able to fulfil more orders from existing customers but has also won new business from numerous additional firms.

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New YASKAWA MOTOMAN-PL palletising robots improve handling and control by using less energy

Increased automation, adapting to new labour-saving manufacturing practices and the consequences of COVID-19 is accelerating the demand for effective robotic solutions. This is especially the case in industries where logistics are key such as food, pharmaceuticals and cosmetics where there is increased urgency to improve efficiencies by automating the packing and stacking of individual products.

Motion Control and Robotics specialist YASKAWA continues to develop its MOTOMAN range of robots to meet these demands as illustrated by their newly developed MOTOMAN-PL series. The new MOTOMAN-PL series represents four additional options of palletising robots. Complementing the existing models, they cover lightweight palletising applications and those which can handle larger, heavier items such as building materials.

The new PL Series are compatible with the established and successful YRC1000 robot controller ensuring easier setup and ease-of-use, along with improved energy-saving performance thanks to a power generation function. In addition, the two new PL models, the 190 & 320, are designed to be more user-friendly, slimmer than the previous MPL series and have an improved payload capacity.

Where manufacturing applications involve the loading/unloading of bulkier items, the weight of the final item can be compounded with heavy packaging, such as cardboard, which can be easily damaged or will deform if not handled correctly.

These situations require the combination of a soft grip as well as strong power. Typically air-drive or suction is the solution although this requires larger, more intrusive piping. With the new PL models, Yaskawa adopted a large diameter hollow structure for the wrist shaft at the tip of the arm which eliminates the risk of interference with peripheral equipment and the robot arm itself. This design also provides a wider operating range in the height direction so it's more flexible as it can be loaded up to the optimum pallet size.

The improved energy saving performance is thanks to the YRC1000 robot controller, used on the medium and larger robots, which features the power regeneration function enabling energy to be generated when the motor is decelerated. This has proven to reduce power consumption by up to 30 percent, depending on the operating conditions at each installation. Also, as the connection between the controller and the robot is via a single cable, users benefit from reduced wiring and therefore less setup time.

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EROWA robots, pyramids and titanium

Part of the Müller Group, that was established in 1991 and now consists of four autonomous companies with just over 100 highly qualified employees based in Germany, K&M Präzisionstechnik specialises in the production of high precision machined components. This competent and innovative family-owned contract manufacturing business selected EROWA for a complete automation solution.

Complex and challenging one-off parts, as well as low and high-volume components are produced to match customers' exact requirements. Typical materials are engineering plastics and metal, including aluminium, brass, high-grade steel and titanium. Its customers operate in medical technology, aerospace, machine-building, as well as in the electrical and sensor industries. Specific examples for medical technology include vertebral implants, as well as bone screws, nails and implants made of titanium.

"The production of tight tolerance parts made of materials that are difficult to cut, such as titanium and high-grade steel, are regarded as our speciality," states Ludwig Jehle, who runs a production department at K&M.

When it comes to machining, titanium presents a challenge that requires a precise, experience-based selection of tools. Also, a special cooling lubricant has to be used because of the high process temperatures. "Particularly when it comes to a high degree of precision with complex geometries, titanium becomes really demanding. But it's worthwhile. The main applications for these components include aero engines, chassis for the automotive industry and medical implants. The main motivation for the use of titanium is its low weight," explains Ludwig Jehle. "It is around 60 percent of the specific weight of steel and is often used wherever a reduction in weight combined with a high degree of strength is required."

K&M Präzisionstechnik took the first steps in the direction of automation back in 2005 with EROWA. "However, we have intensified efforts in this direction in the past few years," continues Ludwig Jehle. "In 2014 and 2017, we acquired an EROWA Robot Leonardo and since 2017, we have been working with EROWA's JMS 4.0 ProductionLine process control system."

The primary objective of automation is to increase machine running times and to reduce throughput times through a reduction of resetting processes: "To remain competitive, we look to constantly optimise our production processes and this means equipping the company with progressive technologies and machines," says Ludwig Jehle.

Automation should enable K&M to keep the production process going around-the-clock. Ludwig Jehle says: "In particular, we want to produce prototypes and small series during normal working hours while running the larger volumes at night and over the weekends."

At K&M, there are two Grob G350 5-axis universal machining centres, each equipped with an EROWA Robot Leonardo pallet loader with a magazine capacity of 32 EROWA UPC 320 × 320 mm workpiece carrier pallets.

Key account manager at EROWA, Thomas Lüscher, comments: "For the Grob machines to be loaded, the Leonardo pallet loader in combination with the EROWA UPC workpiece palletising system is an extremely productive and optimally attuned automation solution."

The robot is equipped with multilevel magazines and manages transfer weights of up to 120 kg, thereby covering a very broad range of parts. There is also the possibility of working with two different pallet types thanks to an automatic gripper change. The robot is linked up with the Heidenhain NC system of the machine through an integrated interface making it very easy to program.

This combination was provided with an additional dimension by means of an innovative fixture, the 'clamping pyramids' used at K&M, a customer-specific product made by EROWA. David Estermann, who is in charge of custom clamping solutions at EROWA, adds: "The pyramids are made of aluminium and attached to EROWA UPC pallets. Four self-centring vices are fitted to the pyramids. The fixture is equipped with the vices set at 45 degrees to allow excellent accessibility in 5-axis machining.

"The advantages are remarkable," explains Ludwig Jehle. "In contrast to before, two or three more workpieces are set up for machining. The use of the 4-fold clamping pyramids requires fewer robot exchange processes, the machine operates longer unmanned and throughput times are substantially reduced. Also, additional machine capacity is available to us for further orders. We're very satisfied with this complete solution."

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Fast and flexible

The new drylin SCARA robot is perfect for low-cost pick-and-place automation. Pick and place and simple assembly operations in medical labs and electronics production lines can now be engineered at low cost, with the latest robot from igus, the drylin SCARA.

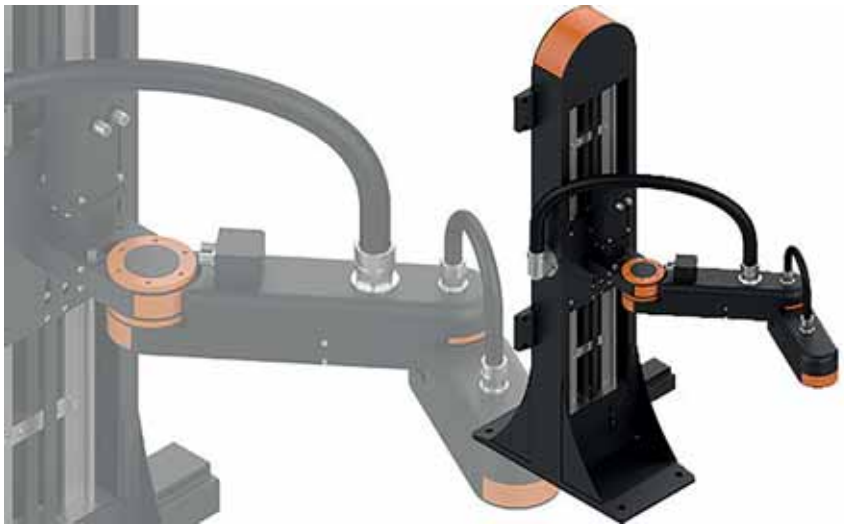
One common barrier to automating a manufacturing process, certainly in the UK, has been cost. Motion plastic and cable technology pioneers igus devised the Low Cost Automation (LCA) range of robots and devices to increase the productivity of tasks like electronic assembly and laboratory work while keeping the costs down. Selective Compliance Articulated Robot Arm (SCARA) is the latest drylin robot in the LCA range, joining the igus robolink, drylin Delta multi-axis and gantry linear robots. It is designed to complete basic, high speed and low payload automated tasks.

Originally designed for fruit picking and handling, the simple design, four degrees of freedom and small footprint but relatively large working area, make drylin SCARA ideal for applications that include small parts assembly and joining in the electronics industry. Measuring and dispensing pharmaceutical doses in medical labs and other functions where repetitive, accurate, short travel pick-and-place type operations are needed, are also ideal for the drylin SCARA robot. Hundreds of pharmaceutical labs need to employ small, precise "take and deliver" movements for dispensing and sorting fluid and powder medication. Where a human does this currently, an LCA robot like drylin SCARA could take over. This would then enable the employee to focus on higher value tasks. In most cases, the robot is used for loads up to 2 kg.

The LCA engineers at igus are excited by this launch. "The drylin SCARA robot's main advantages are having a compact structure with a relatively large working area, for its vertical size, while being able to operate in a fast and flexible way," says Adam Sanjurgo, LCA product manager. "Adding another robot kinematic into the range not only expands the range of applications possible but now new companies are coming to igus for their automation needs, for example from the electronics and medical industries."

The robot is lightweight at just 20.6 kg, RL-SCR-0100 model. It features four degrees of freedom, uses stepper motor technology with an encoder to achieve the required accuracy and speed and can complete a cycle in just three seconds. For customers with other igus robots, drylin SCARA robots are fully integrated into the igus Robot Control (iRC) software, which controls all igus automated systems. This integrated control system can be supplied in a control cabinet or in a DIN rail mounted version.

A splashproof IP-44 version drylin SCARA is available for applications using fluids or where water ingress may be a risk. The drylin SCARA robot is available in three models, with increasing functionality and weight: RL-SCR-0100, 0101 and 0102. The drylin SCARA robots can also be configured by igus for customised solutions.



Great engineering brings down the cost of automation

Automating an assembly process accurately with near human-levels of control at an affordable price has eluded sections of manufacturing. The car industry is fully automated, but it has deep pockets and high throughput to repay the capital. Small plant, laboratory and tabletop industrial operations, like electronics and medical assembly, can benefit from the accuracy of robots but in the past these were either too big, too expensive or both. Small and simple LCA-type robots and collaborative robots (cobots) have brought new automation powers to such operations and the response has been huge.

"Both the videos and live demonstrations of the drylin Delta and now SCARA LCA robots have had a big effect on enquiries as people instantly see the potential to increase productivity," says Adam Sanjurgo. "We are talking to electronics manufacturers, food packers and medical companies who want to know how drylin SCARA can deliver their small scale but high-volume assembly work as they can see these are low cost. I think drylin SCARA and our robot range will be a game-changer in these industries."

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Two modes of turning plus prismatic machining in one hit replaces four ops in valve production

Burnley-based Fort Vale Engineering, is a leader in the manufacture of stainless-steel valves and ancillaries used in the tank container industry for transportation of bulk liquids and gases by road, rail and sea. The company had been making one particular type of valve for several years in four sequential operations on lathes and machining centres in a lead-time of 24 hours.

To speed throughput and raise profitability, the manufacturer was keen to find a production solution that would see a billet enter a machining platform and a finished component emerge after a much shorter time. Considerable research and trials led to the discovery of the ideal process, which takes just eight hours.

It required the purchase of a Japanese-built Okuma Multus U4000 multi-tasking turn-mill centre with a B-axis milling spindle and twin-opposed work spindles from sole UK agent NCMT. The supplier turnkey-engineered the cell with Turn-Cut interpolation turning software in the control and a chip reader to keep track of tools on the shop floor. NCMT also wrote the program and ran off sample components to prove out the process.

Stephen Maher, process improvement engineer at the Burnley factory says: "To manufacture this product in one hit, we needed a turn-mill centre with a long Y-axis movement. This prerequisite was satisfied by the 300 mm Y-axis on the relatively compact U4000, saving us having to buy an unnecessarily large and expensive machine.

"However, the most notable attribute of the production centre is Okuma's Turn-Cut software in the proprietary OSP control. It allows one port in the valve to be machined to an accuracy of plus 25 microns, minus nothing by exploiting a second mode of turning, interpolation turning, using the milling spindle and a boring bar with a Sandvik CoroTurn carbide insert.

"It was essential in getting the part off complete after one clamping without the expense of sourcing special ground form tools, which can take a long time to arrive, would elongate the cutting cycle and produce an inferior finish."

Turn-Cut functionality was originally introduced by Okuma on its horizontal machining centres and was then integrated into its multi-tasking lathes a few years ago. The operation involves rotating a turning tool in the milling spindle through 360 degrees in a given time period and simultaneously advancing the tool to machine the intended feature.

This is achieved by circular-interpolating, in the identical timeframe, the linear axes controlling the movement of the motor spindle, enabling the programmed profile to be generated. It is a curved bore in the case of the Fort Vale valve. Had the decision been taken to replace the turning tool with a rotating milling cutter and machine the bore in that way, the surface finish would have been unacceptably degraded.

Stephen Maher explained that other multi-tasking lathe manufacturers also offer interpolation turning in addition to conventional turning, but the equivalent features take longer to program as well as to execute within a cutting cycle.

He advised that the big difference with Okuma is that it manufactures in-house

virtually every component part of its machines, notably the control, drives, encoders and scales, which means that they inter-communicate seamlessly and quickly. Interpolation turning is invariably slower and more cumbersome on other makes of machine tool, as most are built using third-party products for the control, actuation and feedback of axis positions.

Advantages of producing Fort Vale's stainless-steel valve in one visit to the U4000, apart from a three-fold lowering of lead-time, are reductions in manual handling and work-in-progress on the shop floor. Additionally, while there was never previously any question of machined valves having features outside drawing tolerance, accuracy is much easier to achieve now that the part is not repeatedly reclamped. Absence of tolerance build-up also allows more flexibility in selection of cutting parameters, reducing cycle time further.

Fort Vale was no stranger to Okuma Multus machines from NCMT, having bought a previous iteration of the B-axis production centre a decade ago. The valve manufacturer currently operates 10 machining centres and lathes from the same source, accounting for about one-sixth of the machine tools on the shop floor. However, production staff at the Burnley factory always review the wider market every time they make a major investment and visit all the major exhibitions to reassure themselves they are buying the best quality and technology for each intended application.

With the original Multus, Fort Vale purchased a Zoller tool presetter and tool identification equipment from Balluff. When a tool arrives in the lathe's magazine, its data is already written onto a chip on the cutter body. As the tool is exchanged into the motor spindle, the data is extracted by a Balluff reader in the work area so the control knows immediately the presets and remaining cutter life. Risk of operator error through manual intervention is thus eliminated.

Similar Balluff read/write equipment was ordered with the new Multus. The setter-operators are able to interrogate Zoller's warehousing software to find out where any given tool is located; in the tool magazine of one or other of the multi-tasking machines, or in external storage. NCMT added the request for an interface to the build order sent to Japan and was instrumental in fitting the equipment on the shop floor in Burnley. In the process, the supplier adapted the software so that the chip includes data as to which of the two 40-position tool magazines in the latest Multus any given tool resides.

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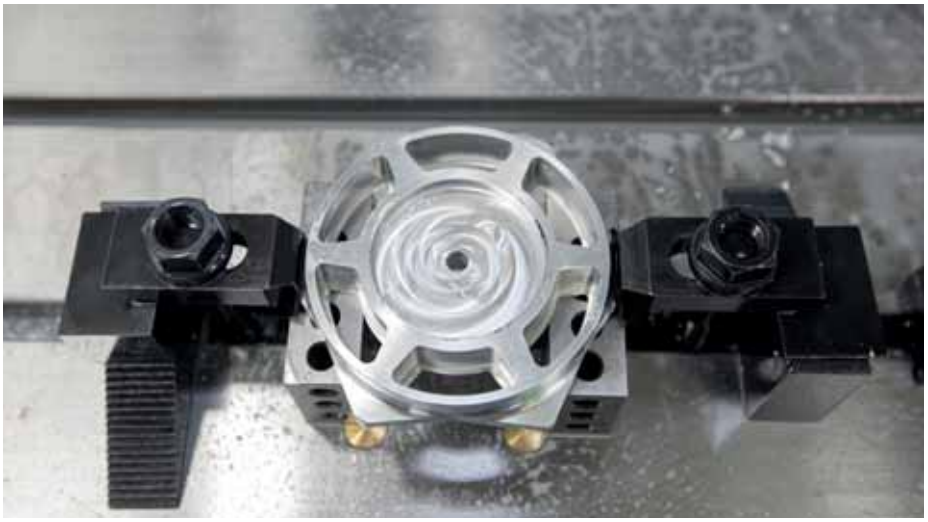
It's all about the music

Rega Research invests in XYZ machining centre

For almost 50 years Southend-based Rega Research has, to the point of 'obsession', used engineering as the basis for the design and manufacture of its extensive range of home audio systems. Employing engineering to produce the best music for its customers, while maintaining a high level of reliability and affordability and, wherever possible, a strong UK-supplier base, has led to innovative designs that are both aesthetically pleasing and produce the highest sound quality. This combination has created a loyal customer base, with the past two years seeing significant sales growth, resulting in its investment in an XYZ 750 LR vertical machining centre.



Rega Research was founded and is owned by Roy Gandy, who struggled to find an audio system that met his expectations. He was advised, possibly by a frustrated audio dealer, to 'build his own' if he couldn't find what he wanted. The rest as they say is history. Using his engineering skills gained in the automotive sector, Roy Gandy reviewed what was available and even the best turntables at the time were said to 'offend his sensibilities' so the quest to re-engineer and create new concepts in audio began. The company now designs and assembles a full range of home audio equipment including turntables, amplifiers, phono stages, CD players, tonearms, cartridges and speakers. Production stands at over 5,000 turntables every month made up of 3,000 units per month of its entry-level P1 turntable, over 1,000 per month of its mid-range P3 turntable and even 70 units per month of its range topping P10 turntable, which retails at around £5,000. Add these to its other products and production tops 10,000 units/month. Every product is assembled in-house with components sourced mainly in the UK.

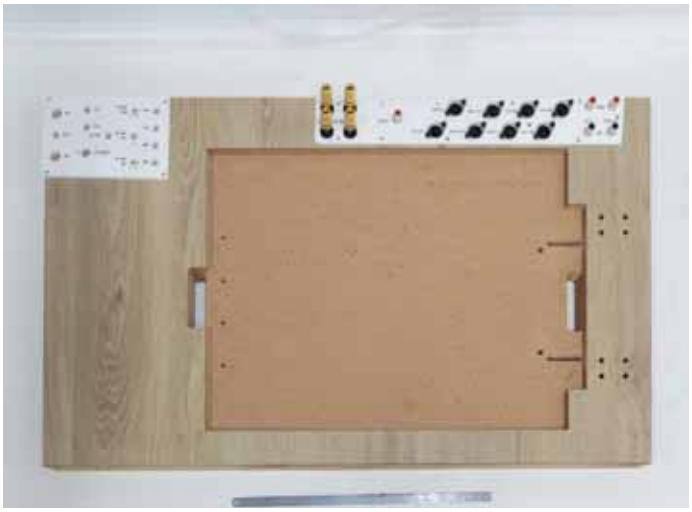
There is a subtle difference between music lovers and Hi-Fi enthusiasts and Rega's products appeal to the former: "Our customers love music. Many would go to concerts daily if possible, so we strive to deliver a level of quality that can replicate that experience for them," says Ky Gandy, supplier coordinator for Rega Research. The blend of high quality, design and value for money has seen Rega grow from 130 employees at the start of 2020, with a turnover of £13 million to a £20 million turnover and 180 employees at the end of 2021. "The lockdown arrived and while the first few weeks impacted on operations, it also had a positive effect. Sales boomed due in part to people being stuck at home, many with more disposable income. I also think in the previous decade that the world had a shift in attitude and came to terms with value for money, which is what we aim to provide."

This significant growth added pressure to Rega's Toolroom, which was populated with manual machines, to produce assembly jigs and test rigs as well as some prototype machining. A move to CNC had been on the cards for many years but had been put off for several reasons particularly due to a lack of space. A re-organisation, combined by the increase workload, finally allowed the purchase of an XYZ 750 LR vertical machining centre to go ahead. The machine will be used on a variety of materials from aluminium and High-Pressure Laminate (HPL) through to MDF, so Rega opted for the 12,000 revs/min model and, for added versatility, the 4th axis and 24 position arm-type toolchanger options. The XYZ 750 LR is fitted with linear rail technology which, like Rega's products, combines performance with value for money.

Ky Gandy explains: "We had been looking at introducing CNC to our toolroom for several years. We did our research, as we do with all our suppliers and while the machine was important, ongoing support and service was a priority. This resulted in a short list of one: XYZ Machine Tools. During our search we kept coming back to XYZ and in the end it became a straightforward choice due to the confidence we had in their ability to support us with technical help and after-sales. We also received glowing reviews from our existing component suppliers. Another factor that made the decision easier was that during the quotation process they didn't try to upsell to us. We indicated an interest in their HD machines, but they did the right thing and sold us the machine we needed, not what we thought we wanted."

The after sales service was immediately put to the test for the delivery of the machine which, due to limited access, had to be stripped back to its carcass then re-assembled in-situ. The process took just four days from unloading to powering up and running.

Throughout the pandemic, focus was on delivering products to meet demand and so product releases were put on hold. Now, with a degree of normality returning, new products are on the horizon with new turntables and amplifiers due to be launched in 2022. This



will see an increased workload for the XYZ 750 LR in terms of machining development parts and the testing fixtures that will also be needed. Having the machine will enable Rega to respond quickly to change and to meet the increased demand from its assembly department, where demand for fixturing continues to grow.

There are no plans for the XYZ 750 LR at Rega to be used for production work, but it is filling a need for re-working existing stock component that may need rectifying or adjusting. A recent example was a batch of plinths that were found to be out of concentricity tolerance on two bores. "The obvious solution was to return the entire batch to our supplier, but that isn't the Rega way of doing things," says Ky Gandy. "We respect our suppliers and accept that occasionally errors arise, so we took the decision to rectify the parts ourselves."

He concludes: We used the XYZ 750 LR to manufacture a fixture, which it was then able to use to rework the parts to within microns. Something that saved time and money thanks to the efficiency of the machine and the input from Dan Ware, who joined us specifically to run the XYZ machine."

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Mill-turn centre from Starrag Bumotec provides big business boost for innovative small parts

Amorphology, a NASA spinoff company, is a leader in the application of advanced materials and manufacturing technologies for the improvement of non-lubricated micro-gears for robotics and other industrial applications using innovative 'amorphous' metals such as bulk metallic glasses. These materials have advanced features over steel, titanium and aluminium and the company's patents, for several metal alloys, are based on developing gears for space and other extreme cold temperature applications.

Amorphous metals are a non-crystalline class of alloys that cut and chip differently than other materials and, in the company's quest to source a machine that could produce the micro-gears, it conducted machining tests with several machine suppliers, including Starrag, to assess the precision, cycle times and overall capabilities of the machines as they cut a relatively unknown alloy.

"We were focused on finding the best machine to meet our rapid prototyping, mould insert cutting and post-processing needs," says Amorphology's chief operating officer Jason Riley. He says that the Starrag Bumotec s191H mill-turn machining centre outperformed all contenders

After receiving CAD files of the prototype micro-gears and undertaking tests using a Starrag-developed cutting tool at the machine tool builder's sites in Switzerland and the USA, several batches of samples were produced. Amorphology was impressed with the results and in discussions with Starrag about how both companies could co-operate to grow their respective businesses, it was agreed that Amorphology would showcase the Bumotec in its Pasadena, California site for both companies' customers to view.

Amorphology is set to make a wide variety of parts on the machine, from mould inserts to prototype gears, as well as other production bulk metallic glasses and traditional metal parts.

"We are targeting high-precision parts with tolerances of often around five microns

on certain dimensions," continues Jason Riley. "Most of our work is focused on rapid prototyping and relatively low batch production quantities in the region of 100s of parts per month.

"The Bumotec provides the mill-turn capabilities that we currently don't have, as well as a higher production capacity. The machine supplements our current abilities and it provides capabilities that we don't have."

Amorphology points out that the Bumotec s191H can "offer a unique value proposition," by either machining single pieces or by producing hundreds of components in a lights-out scenario". In addition to making gears for aerospace uses, Amorphology's gears are also used in cobots, robots and medical devices. For example, most cobots use strainwave gears with the main component being a flexspline which is a complex, thin-walled part.

The s191H is one of a family of Bumotec mill-turn machining centres targeted at the high-precision machining of often complex parts in a single setup. With 65 mm bar capacity, bar feed system and high-pressure, 3 HP, coolant, the s191H can achieve highly accurate, to +/- 2.5 microns, machining solutions within its X, Y and Z axes range of 410 mm, 200 mm and 400 mm, respectively, courtesy of linear drives and high-level thermal stability.

In addition, its main spindle is complemented by a sub-spindle that can turn in both horizontal and vertical planes, for multi-process/tasking routines. Tool magazine options extend to up to 90 pockets on a machine that has rapid traverse rates of 50 m/min and a 30,000, or 40,000, revs/min spindle speed that also contribute to its ultra-fast cycle times.

Many of Amorphology's cobot, robot and medical device parts can be cast or injection

moulded, but at times these micro-parts need to be post-processed to extremely high tolerances. Starrag Bumotec 'cut its teeth' in designing machines for the Swiss watch industry and, as a result, the machines are exceptionally adept at producing micro-sized, high-value gears. "We project that the Bumotec s191H will machine micro gearboxes without lubrication," comments Amorphology.

The company adds: "While we will be machining our patented alloys to very small sizes in instances where production quantities don't require injection moulding, we will also use the machine to help develop the parameters for amorphous metals. As we advance, we will be the only company on earth with such knowledge."

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

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

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

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Automation ready production turning centres from Ward CNC

Now available from stock from TW Ward CNC Machinery Ltd (Ward CNC) is the Takisawa TT1100GC twin-spindle turning centre and the single-spindle TCC1100GA. Unlike many twin-spindle machines in the marketplace, the impressive Takisawa TT1100GC is a gantry loaded machine that has been designed to take productivity, precision and performance to a new level for manufacturers in the automotive, electronic, medical and general engineering sectors.

The gantry loading and unloading turning cell with an in-built component stocking system is the perfect partner for lights-out machining of precision small parts. With both spindles mounted on a single-piece rigid bed casting, this machine incorporates precision hardened and ground box slideways and a high-speed servo turret.

Emphasising the speed of this machine is the ultrafast loading and unloading of parts. Capable of loading components in 1.7 seconds, the loader is positioned at the front of the machining chamber to significantly reduce the loading distance and the spindle moves forward to the loading position, reducing component transition times further. The load/unload system works in tandem with a supply and discharge station that is integrated into the machine envelope to minimise the machine footprint. The station can be configured as a three-guide bar type or as a centre pole type station with the part gripper available as a parallel or swivel type hand.

The machine has a compact footprint of 2.8 by 3.3 m including stocker and swarf conveyor. Within the machine's envelope is a 6-inch chucking machine that has a maximum turning diameter of 140 mm and a turning length up to 121 mm with X and Z-axis travel of 160 and 260 mm respectively. So, if you are looking for a machine that can produce parts up to 80 mm diameter with incredible speed, the Takisawa TT1100GC is the machine of choice. It is driven by a 5.5/3.7 kW spindle motor capable of reaching 4,500 rpm and it demonstrates impressive power and torque levels for high material removal rates on the most challenging of materials.

Alongside the Takisawa TT1100GC and also available from stock is the TCC1100GA. With a footprint of just 1.8 m by 2 m and a high-speed loader, the TCC1100GA is a 6-inch chucking machine with a maximum turning diameter of 220 mm, a turning length up to 171 mm with a bar capacity of 42 mm diameter.

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Tungaloy's Tung-Tri squares up to miniature shoulder milling

Tungaloy has now launched its latest series of product lines. The global launch of ADDFORCE introduces the very latest cutting tool innovations for improving customer productivity by accelerating machining operations. As part of this exciting new brand launch, Tungaloy has extended its indexable square shoulder milling system Tung-Tri with the new size 04 insert.

The 04 size has a 3.5 mm cutting edge length that makes this new arrival compatible with tool body diameters as small as 8 mm. With the 04 inserts available for tool bodies from 8 to 25 mm diameter, the extremely small new Tung-Tri 04 insert has a 4 mm inscribed circle, yet it delivers the same benefits of light cutting and long tool life that existing Tung-Tri inserts have been providing for manufacturers.

This enables the Tung-Tri 04 to generate up to double the tooth density when compared to alternate tools and subsequently increase feed rates. This compact configuration enables a 16 mm diameter Tung-Tri 04 cutter to offer four inserts per cutter whereas the 25 mm diameter cutter can facilitate six teeth. This insert density is common throughout the Tung-Tri series, ensuring that all tool body diameters and insert designations can offer maximum productivity levels and feed rates for end users.

Complementing the new compact size 04 inserts are tool bodies for size 06, 10 and 15 inserts. The 06 inserts are suitable for 12 to 50 mm diameter tool bodies with 25 to 100 mm diameter for the size 10 inserts and 40 to 160 mm diameter bodies for the size 15 inserts. This expansive range now ensures maximum productivity levels for components that demand high-speed cutting.

The impressive new Tung-Tri series uses three-edged inserts that are developed specifically to deliver precision, productivity and cost efficiency for shoulder milling applications. This allows users to choose an optimal tool setup according to the given part sizes and the required material removal volume.

For the high-speed machining of components that are near-net-shape that require minimal machining such as additive manufactured parts and forged or cast components, the Tung-Tri is the ideal solution. The cutter also offers an impressive alternative to face mill cutters when face milling long reach areas. This is credit to its wiper edge geometries that create excellent surface finish, eliminating the need for secondary processes for high-quality surface finishes.

As an economical shoulder milling series with an extensive line-up, Tung-Tri offers cost-efficient three-edged inserts that have helical cutting edges with large axial and radial rake angles. This design generates extremely low cutting forces making it suitable for lower powered machines and it also enhances precision when machining work to tight tolerances. The inserts are now available in three different chip former styles. This includes the general-purpose MJ geometry, the AJ geometry for non-ferrous applications and the NMJ with a serrated-edge chip splitter for efficient large volume material removal. The tool bodies are available in small-diameter cylindrical shanks, shell styles toolholders or as large-diameter porcupine cutters for roughing processes. This ensures the new Tung-Tri can be applied to a diverse range of machining applications.

The insert cutting edge is designed with an innovative flank profile with multiple relief angles providing sharpness that generates low cutting forces and robustness that minimises the potential for insert fracture. In addition, the variable-pitch cutter body reduces chatter generation and creates a smooth cutting action.

Tungaloy is one of the world's leading manufacturers of carbide cutting tools, friction materials, wear resistant items, and civil engineering products.

Headquartered in Japan, it provides products to customers all over the world in automobile, construction, aerospace, medical, power generation, infrastructure and heavy industries.

Continuous improvement of production technologies, combined with large investments in research and development, allows it to offer high-quality products that help manufacturing companies in a wide variety of industries increase their productivity.

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Seco milling cutters reduce tooling inventory costs with versatility

Manufacturers who look for versatility and precision in machining can pair up Seco Turbo 16 square shoulder milling cutters and Helical Turbo 16 milling cutters to reduce tooling inventories and costs. Both series offer high material removal rates in steel, stainless steel, cast iron, non-ferrous metals, superalloys and titanium. Scannable Data Matrix tags on cutter inserts store product and batch information that the new Seco Assistant app can read.

Versatile Turbo 16 square shoulder milling cutters deliver outstanding results and process security with exceptional ramping capability. Optimised insert pocket angles enhance the cut and deliver outstanding surface finishes. With a high helix angle for smoother workpiece entry and exit, these cutters also feature efficient chip evacuation. Lower cutting forces reduce power consumption, tool wear and noise levels.

"Manufacturers can achieve production efficiencies and enhance machining performance with these tools in virtually any material," says Michael Davies, product manager for square shoulder milling. Eco-friendly design uses corrosion-resistant steel with no nickel coating.

Next-generation Helical Turbo 16 milling cutters combine top performance with ease-of-use, benefiting from a comprehensive range of Seco insert grades and geometries for exceptional Material Removal Rates (MRR) and extended tool life. Larger cuts and higher feeds reduce cycle times and speed up production, with optimised coolant channels, flutes and cutting rakes for stable machining and optimal chip formation. Helical Turbo 16 ensure that lead and helix inserts are not mixed up when using large radii. The replacement of nickel cutter coatings with PVD increases sustainability.

"These features produce smoother cuts, increased tool life and process reliability for faster production. Helical Turbo 16 uses fewer inserts than equivalent tools that provide the same MRR" says Benoît Patriarca, product manager for helical milling.

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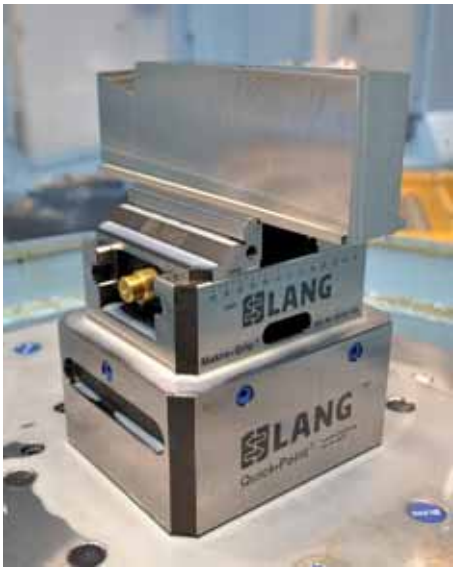
SPE holds firm with LANG Technik

Nottinghamshire-based Swiftool Precision Engineering Ltd (SPE) is an award winning, family-owned business that produces safety critical parts for a global customer base. Having manufactured and supplied high-integrity, precision machined components, kits and machined assemblies for over 40 years, the company has gained in-depth experience in serving demanding sectors, including the nuclear, defence and petrochemical industries. More recently, SPE began supplying the global aerospace market.

To ensure that it remains at the forefront of manufacturing technology developments, SPE regularly invests in the latest, cutting-edge machine tools. In addition to other advanced production, the company employs a variety of highly-efficient multi pallet 5-axis machining centres, multi axis mill/turn centres and high-speed twin pallet horizontal machining centres.

In accordance with the business's quest for ever higher standards of efficiency and quality and to enable its advanced machine-tools to achieve its full productive potential, SPE recently invested in a range of innovative workholding devices from Lang Technik UK. Amongst other workholding, SPE ordered LANG Technik's advanced stamping technology Makro Grip Vices and the company's Quick-Point workholding system.

Project applications engineer at Swiftool Precision Engineering, Alex Nelson explains



the purchase and use of the company's efficient new workholding systems: "Amongst other reasons, our continuing growth is driven by strategic investments and by our policy of constantly seeking ever more efficient ways of working. Having invested in expensive, high-yield machine tools, we constantly explore ways of maximising their full productive potential.

"As our machine tools are usually engaged in high-value, relatively short machining runs, we recently investigated the availability of efficient workholding systems that would help to speed-up our non-productive change-over times and that would increase our productivity levels. Having considered other systems, the ideal answer to our search was found in LANG Technik's advanced Pre-stamping technology, Makro Grip Vices and LANG's Quick-Point system.

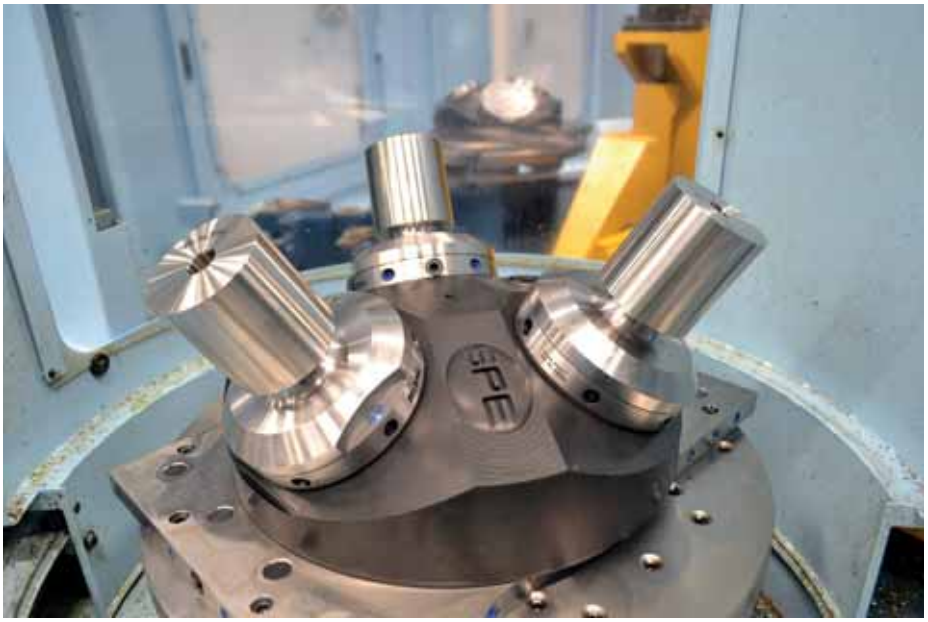
"With the use of LANG Technik workholding systems on our machine tools we have slashed our job change-over times and achieved the production increases we were looking for. It helps that now, much of the work associated with setting up the next job due on our machine tools can be carried out whilst a current job is being machined.

"For instance, within the cycle time of a currently running job, we use our new LANG Technik stamping unit to make very accurate, minute indentations into our next to be machined workpiece blank before putting it into one of our LANG Makro-grip vices. As the features on the vice's jaw precisely engage with the workpiece's pre-stamped indentations, we can achieve excellent holding power whilst only needing to apply minimal clamping forces. The quick loading/unloading nature of the LANG Technik system means much quicker job change over times.

Alex Nelson continues: "The need for reduced holding pressure ensures that we are able to hold, from the softest to the hardest of materials, under all machining conditions without fear of component deformation or other damage. Also, as the LANG Technik stamping unit makes its indentations into just the last 3 mm of workpieces, we are now also making savings on material."

The multiple advantages gained from the use of the innovative LANG Technik Pre-stamping technology and Makro Grip Vices has ensured that it has become the benchmark clamping method for ultra-secure 5-axis machining.

The toothed jaws of conventional vices must perform two distinct roles, as well as indenting workpiece's material, they must also securely hold the workpiece under machining loads. Commonly used vices are only able to exert a maximum pressure of approximately 4 - 6 tonnes, as a result, the effective penetration of their jaws into workpiece material can be problematic, especially when clamping harder metals. Also, to ensure that the workpiece is penetrated, a vice's teeth must remain sharp to stay effective. As teeth are exposed to high levels of torque and wear, when in use



their clamping ability inevitably declines. Therefore, when using conventional vices during the machining of soft, distortion prone materials, jaws' teeth also tend to lose their holding power and work free from workpieces when under machining forces.

The use of LANG's advanced stamping technology overcomes these issues by applying up to 20 tons of pressure during the pre-stamping of workpieces. This guarantees the creation of precise indentations, even when applied to the hardest of materials .Following pre-stamping, as the teeth of Makro Grip Vices engage precisely with the pre-stamped indents, only low clamping pressure is required to hold a workpiece securely. In addition to holding the workpiece in the vice under the most severe machining conditions, the truncated pyramidal shapes of the pre-stamped indents prevent the teeth from impacting deeper into the workpiece by providing a final penetration limit.

Despite the application of relatively low clamping pressure, the holding forces exerted on workpieces held in Makro Grip vices actually become greater, the harder and more resistant the material being machined is. Furthermore, as workpieces are prepared before being loaded into the machine tool, machine downtime is significantly reduced.

In addition to enjoying the efficiency gains delivered by LANG Technik's advanced stamping technology and Makro Grip Vices, SPE is also benefiting from the use of LANG Technik's Quick-Point system. The adaptable Quick-Point system acts as a robust, precise interface plate between the machine tool's table and workholding devices. Designed to reduce setup times and to allow work to be quickly and accurately transferred from one machine to another with first-class levels of location repeatability, Quick-Point is available in a wide range of variants to suit all machine tools and applications. When located on a Quick-Point system plate, the high-precision exchange of clamping devices, fixtures and workpieces between machines using the system can be carried-out within seconds with repeatability within 0.005 mm.

Alex Nelson concludes: "In addition to LANG Technik's workholding products

proving ideal for our use, we have received excellent levels of technical help from the staff of LANG Technik UK. We are confident that the additional daily machining time created by the use of our new highly efficient workholding systems will result in a rapid return on our investment and we will soon be returning to the company for additional products."

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Floyd plays it Cool with new CrazyMill

Now available from Floyd Automatic Tooling is the latest cutting tool innovation from Mikron Tool. The new CrazyMill Cool P&S square and corner radius series of end mill is an exciting new 3-flute tool with patented coolant supply ducts integrated into the shank, a feature that Mikron Tool has developed specifically for rough and finish milling of stainless steels, titanium and aluminium based superalloys and also nickel-chromium based superalloys.

The versatility and geometry of the new CrazyMill Cool P&S also make it very well adapted for application on materials such as steels to 40HRc, cast iron, non-ferrous metals and plastics. Based on its ability to plunge vertically to 1XD and ramp at 45-degree angles, the new CrazyMill Cool P&S becomes a 'plunge-mill' capable of milling and drilling applications, making it especially suitable for milling grooves, pockets, face and side milling in the smallest of spaces as well as linear ramp milling.

The new solid carbide end mills are available in diameters from 1 to 3 mm, in 0.1 mm increments and up to 8 mm with imperial dimensions also available. The impressive new series is available as a Type A and Type C variant. The Type A end mills are manufactured with an optimised 2.5XD geometry for robust machining of challenging materials and high material removal rates. The Type C end mills provide a 5XD geometry for reaching into cavities and machining complex profiles.

The 2.5XD end mills are supplied with a corner radius from 0.1 to 1.5 mm depending upon the diameter selected and the range has a shank diameter from 4 to 12 mm. It has an overall length from 40 to 70 mm with an effective flute length from 2.5 to 20 mm. In comparison, the longer 5XD variant is also offered with 0.1 to 1.5 mm corner rads with shank diameters from 4 to 12 mm. However, the 5XD CrazyMill Cool P&S has an overall length from 40 to 90 mm with a shank neck from 5 to 40 mm with an effective flute length of 2 to 16 mm. This provides exceptional rigidity and performance, even when reaching into the deepest of cavities.

The CrazyMill Cool P&S is manufactured from a micro-grain carbide that demonstrates the perfect hardness to toughness ratio. This robust platform is coated with Mikron Tool's eXedur SNP coating technology which is a high-performance heat and wear-resistant coating that also assists the chip removal process. This is complemented by a customised flute and relief angle design that combine to demonstrate an extremely stable cutting-edge angle that prevents the lateral hooking-up and edge chipping that is often caused by excess vibration.

The enlarged flute channels create sufficient chip space clearance whilst maintaining tool strength and integrity to allow impressive chip evacuation. The chip evacuation is further enhanced by the patented coolant channel ducts whereby three to five ducts (depending on shank diameter) provide a constant and massive coolant stream that flushes chips from the cutting area to prevent swarf re-cutting and over-heating of the cutting edges.

This cooling concept is especially well adapted for pockets and slots, as chips can be flushed, even from tight spaces. The coolant ducts guarantee longer tool life and facilitate higher chip removal rates when compared to conventional types of carbide milling cutters with external coolant supply.

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Workholding solutions from Brown and Holmes

MDC Precision, located in Milton Keynes, approached Brown and Holmes with a requirement for workholding for a family of parts for its project. The company required fixtures to hold three components on its newly acquired DNM 9500 supplied by Mills CNC.

The drawings and 3D models were evaluated, with a scheme and quotation generated to cost-effectively hold all three components, on common fixtures, split over Op10 and turned over for Op20.

The scheme captured the customers' requirements and machine specification, while providing simple manual fixtures with set clamp locations for ease of setup between variants and simplify location and loading. A fabricated fixture raises the Z level to suit the machining envelope, with the footprint designed to have fixtures top and bottom on the expansive bed of the DNM 9500.

The pre-turned parts needed to be located on Op10 in a fixed Vee and an adjustable Vee pusher to suit two diameters. Swan neck clamps facilitate cutter clearance, with nylon clamp pads to exclude the possibility of damaging the perfect surface finish.

Op20 locates on the same three buttons but uses a full diamond pin in holes generated in Op10. The diamond pin is indexed to match different part hole patterns in the variants.The fixtures were supplied ready to fit onto the customers machine tool, including all fittings, tenons and t-nuts.

This process of developing the customers' requirements in a simple and easy to use solution comes from years of experience and a process that captures all the information needed to provide the ideal solution.

Brown and Holmes specialises in workholding solutions, subcontract machining and related products. Conveniently based in Tamworth in central England, it supplies customers across the world including UK, Europe, the Middle East, Asia and the USA.

It has built an international reputation for quality workholding solutions, mechanical handling, precision machining and subcontract machining services as well as for the products it supplies.

Often working with customers to turn initial ideas and concepts into solutions, it offers a full turn-key service customised to meet their requirements and budgets. In order to achieve this, it has its own design team and specialist manufacturing sites. It also works with customers' shop floor teams on their implementation across the globe as well as providing full technical backup, support and maintenance programmes.

A great deal of the company's success can be attributed to its commitment to training. Many employees have been with the company since starting work and it trains new apprentices every year in its own apprenticeship school.

Brown & Holmes is also proud to be a partner for the Manufacturing Technology Centre (MTC) and is working with them to bridge the gap between university-based research and the development of innovative manufacturing solutions.

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Made in Sheffield

The evolution of Pryor Technology

Pryor Technology has become a world class manufacturing leader, operating from sites based in the UK, USA and France and is supported by a comprehensive distributor network across the globe; a far cry from its origins.

Founded in 1849, William Pryor bought the Sheffield based business where his son, Edward, was undertaking his apprenticeship. Edward Pryor became an accomplished engraver of freemen's marks; the unique trademark of each craftsman registered with the Company of Cutlers.

The Company of Cutlers acted as a trade guild for the metalworkers of Sheffield and association to the guild was highly sort after as it demonstrated a commitment to manufacturing excellence and a firm belief in maintaining high-quality production standards.

Its registered trademark, 'Made in Sheffield', has since become famous as a world brand with Pryor being one of the few businesses privileged to hold the license to use the mark.

People are becoming increasingly aware of the benefits of buying British as pressure on the supply chain mounts and Pryor has always been extremely proud of its strong, British industrial heritage.

This pride in quality marking was apparent as early as 1892 when Edward Pryor's master engraving skills were publicised. He produced an intricately engraved design of the Lord's Prayer on a marking die the size of a fingertip, with incredible precision.

By 1920, Pryor was already differentiating itself from the market, by introducing precision marking machines. These devices allowed multiple components to be accurately marked at speed; adding automation to its range.

Alongside this advance, its range of traditional manual steel hand stamps, type sets, stencils and embossing dies remained popular being used extensively for industrial part identification purposes.

The stamps have always been popular with the personal users too, a fact recently demonstrated when Pryor was contacted by Hazel Hedley.

Hazel Hedley owns an original steel type set that belonged to her father John Crook, who purchased the set in 1940 while serving as an officer in the Royal Navy, Flee Air Arm.

Old steel type set

He flew the famous Fairey Swordfish Biplane Bombers, the first plane to carry anti-ship torpedoes as well as depth charges, pioneering the naval use of Air to Surface Vessel (ASV) radar. He had been part of the crew who helped to set up the communication systems in France, in preparation for the D-Day troop landings.

She remembers him imprinting his name, 'CROOK J' on various items around their home. A clear indication of the durability of these classic steel type sets and Pryor was thrilled to learn that they were still being put to good use, leaving their mark for generations to come.

As the business progressed, brothers, Edward Staniforth Pryor and George Albert Pryor, Edward's oldest and youngest sons, took over the running of the company before eventually handing over to William's grandson, Ronnie Pryor in 1938.

Ronnie Pryor learned the family business from the ground up, mastering the principles of marking and the art of management, enabling him to continue to lead the business into fields of innovation and technology.

Pryor had entered its greatest period of expansion and it began working with aircraft manufacturers, enabling them to mark and identify critical components within their production processes.

By 1970, it had introduced the first computer controlled marking machines, which used an oscillating pin to mark dots onto metal, but it didn't stop there.

The company continued to innovate with portable marking machines which allowed for greater flexibility and a broader range of marking applications then, in 1994, it launched its own range of laser marking products.

This development eventually led the company to be awarded the Queen's Award for Innovation in 2020, for its robotic laser VIN (Vehicle Identification Number) marking system, which has been installed on Jaguar Land Rover's production lines since 2014.

In the second decade of the new Millennium, Pryor focussed its efforts on perfecting ground-breaking technology in the field of traceability software. Software that has become widely used by organisations in the aerospace, automotive, manufacturing and engineering industries today.

The tracking and identification of individual component parts had become increasingly important. Pryor's software could be integrated as part of the marking process, allowing marks to be made that were globally unique and could be scanned, logged, recorded and traced.

This provided a huge advantage in terms of quality control and maintenance, making faulty parts easier to identify and replace and reducing downtime. A major benefit for processing and manufacturing businesses.

In 2017, it introduced a new range of embedded controllers with touchscreen HMI (Human Machine Interface) and, more recently, the first all-in-one battery powered dot marking machine with integrated 4000 controller interface, giving the machine operators greater control over applications.

Today, Pryor Technology is still leading the way in marking solutions and identification with its range of dot peen, laser marking, scribe and chemical etching products and machinery. In addition to this, to reflect the diversity of its client base, Pryor offers bespoke automated solutions to assist with part handling and reduce production times.

It recently exhibited its bench laser,

workstation laser and PortaDot 60-30 Touch at the 2022 MACH Show in Birmingham, along with Universal Robots' UR5e Robotic Arm and was delighted with the response that the demonstrations generated.

Pryor exhibition stand

As well as receiving interest from long standing customers, like Chromalloy UK Holdings Ltd and Rolls-Royce plc, the demonstrations proved popular with the industry experts of the future in the form of students and graduates from Leicester College.

Each year, the MACH Exhibition hosts a variety of industry experts specialising in topics ranging from Additive Manufacturing (AM) to Artificial Intelligence (AI) and features a dedicated Education and Development Zone designed to target these potential engineers.

Pryor shares its passion for supporting young people, providing training and apprenticeship opportunities to help them achieve their full potential in the areas of engineering, manufacturing and technology. They were thrilled to be able to show these students the different applications and encourage their continued interest and involvement in the industry.

Attracting over 25,000 visitors, the MACH Exhibition showcases manufacturing technologies from across the UK and displays around 6,000 tonnes of working machinery. It provided Pryor with a great opportunity to display its latest innovations and, more importantly, to meet with its client base and hear their feedback first hand.

With the increasing move towards the operation of 'smart factories' and Industry 4.0, the latest phase in the industrial revolution, focussing on interconnectivity, automation, machine learning and real time data; keeping up to date and continuing to evolve is a vital part of Pryor's ethos.

Its marking standards remain current and compliant with the IAQG (international Aerospace Quality Group), automotive and military requirements. Its machinery and software can apply and store information in 1D and 2D codes and the quality of the marking is constantly monitored to ensure that all relevant part marking standards are fully met.

Pryor has operated as a Charitable Trust since 1978 and is committed to making a difference towards wider social improvement, working with other charitable organisations like MAG (Mines Advisory Group), the UN and The Halo Trust to provide enhanced traceability for the weapons industry. This has contributed to the prevention of weapons being diverted for criminal or violent use.

It has also taken steps to reduce the environmental impact of its activities by working to improve its environmental performance and adopting greener alternatives wherever possible.

Tree of Life and Heart of Steel

Pryor continues to maintain its tradition of local community involvement by working with Rotherham Hospice and marking the leaves for their Tree of Life. It is an imposing stainless-steel sculpture created by Yorkshire Man of Steel designer, Steve Mehdi.

The tree is over 3 metres tall and situated in the hospice garden. It consists of over 290 individual leaves. Each leaf is dedicated to the memory of a lost loved one.

Pryor is also involved in the engraved dedications which appear on The Heart of Steel and help to raise funds for the British Heart Foundation. Steve Mehdi also created this design as he wanted to provide a lasting memory for the workers of the steel industry, which would benefit the community and become an icon for the region.

Pryor recently became members of Made In Yorkshire, part of the Made In Group, enabling it to work with and champion Yorkshire and UK Manufacturing. The Made In Group is now the largest private manufacturing network in the region, representing over £120 billion of UK manufacturing.

Made in Sheffield

It is therefore fitting that Pryor Technology has joined their ranks, as a great British company who will continue to strive for new technological advancements and will always remain fiercely proud to be, Made In Sheffield.

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Different dimensions in laser marking

As a technology which plays a key role within many manufacturing facilities today, lasers can be found in a variety of configurations with its flexibility making them suitable for the widest range of tasks. Laser marking has become the process of choice for many applications due to the quality, consistency and clarity of the mark and the ability of lasers to process a diverse range of materials, including many different metals.

The configuration of the laser for any particular application will be influenced by the component to be marked. For applications which are predominately 2D and on flat steel components, systems such as the flat-bed technology from Universal Laser offer a production level, yet competitively priced solution. Available with a range of laser power levels and sources, fibre and CO_2, these systems are equally at home within a production environment, prototyping or research and development lab.

Universal Laser Systems patented Rapid Reconfiguration™ technology allows users to switch laser sources to match their changing requirements, without the need for tools or any specialist training. Depending upon platform model there are options on laser wavelength, CO_2 10.6 µm, CO_2 9.3 µm, or fibre 1.06 µm, in addition to a choice of laser power from 10W to 500W when combining dual 250W laser sources.

There is also the capability in certain platforms for dual or multiple laser sources. At its core, Rapid Reconfiguration allows users to very easily install and reinstall any ULS laser source onto any ULS laser system. Because certain wavelengths and peak power levels are ideal for certain materials and applications, this feature allows for unprecedented flexibility in laser processing. There is also a comprehensive array of options, including MultiWave Hybrid Technology™, which allow users to configure the system to their specific requirements.

For more demanding applications, including those within high compliance sectors, laser marking machines, such as FOBA's M2000 offer stand-alone laser class 1 operation. The ability to configure these machines with a choice of laser powers, rotary tables, axis systems and machine vision options means that the system can be tailored to the exact needs of specific and sophisticated applications."

The M2000 laser marking system is also available with MOSAIC™. This fixtureless marking concept uses through-the-lens vision, combined with a process of "tiling" the images of the part. The camera is used to capture multiple small images and then arranges them into a single large image, just like a mosaic.

This image is then used for system training, job setup, part validation, pre-mark verification and mark alignment. The natural straight-down view from inside the laser provides an imaging field as large as that of the laser marking area. The benefit of this configuration is that it eliminates the need for external cameras, which can sometimes cause inaccuracies due to perspective and optical distortion.

Where space is at a premium, for example on installations within automated production systems, FOBA Laser's Titus™ range, which offers 20 W and 30 W fibre laser markers, are not only incredibly small, but offer easy and simple integration, opening up new areas of application for fast direct part marking on a range of metals and other materials. The Titus Vector Scan laser marking head is just over 20 cms in length and weighs in at just 630 grams.

With its small format and tubular shape, the marking head is easily mounted with a simple clamping bracket and is available with an optional supply line of up to ten metres in length. Its flexibility is further enhanced through the option of either a straight or 90 degrees exit angle for the laser beam, together with the ability to adjust the marking field size to the specific application requirements. The different laser marking technologies highlighted within this article are available from Bromsgrove-based TLM Laser and just part of the comprehensive range of laser-based technologies and systems offered by the company.

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Industry 4.0 wireless part marking systems

The new wireless Connect Series features the Easy handheld and the Easy Combo benchtop dot peen marking systems. They are redefining the boundaries of permanent marking to give you complete marking freedom and access to data. The brand new design from Technomark, provides a completely wireless system that includes an ergonomic marking head design that makes the lightweight handheld system easy-to-use and orientate in any position. The new design focuses on mobility and convenience with a large, intuitive, 10" colour touch screen tablet controller, making data setup quick and simple so anyone can use the marking system in a matter of minutes.

The Connect Easy handheld system is reshaping marking capabilities and eliminating boundaries by utilising built-in secure WIFI protocol allowing operators to work at a 10 m range from the controller to give total marking freedom. The small OLED screen on the side of the marking head has a WIFI and battery indicator so you can keep track whilst you're marking. The OLED screen demonstrates the smart linking of the head to controller and provides real-time information about the machine and the marking in progress.

The Connect Easy system is ready to pick up and use, with embedded intelligence designed for Industry 4.0. The future of marking is more connectivity and a growing number of customers will need a marking system to communicate with their information systems. This has been an important consideration with the development of the Connect series range of equipment. CSV files can be imported directly to the controller and be configured for marking. A barcode reader can be used to read and populate the data from a datamatrix or QR code into the controller and can also be used to open a file offering versatile and powerful data management. Ethernet connectivity comes as standard as well as USB.

A fast charging lithium battery lasts nearly twice as long as standard rechargeable batteries to manage high volumes of marking. The built-in battery monitoring system will indicate when battery power is down to 10 percent at which point a power cable can be plugged in to allow hybrid use so there is no interruption to marking and the battery will also start recharging.

The design for the marking head has been created with the operator in mind, making a durable and robust unit with new rubber bumpers providing protection in case of a drop, yet lightweight and offering 360° use. The system supports new features such as the ability to switch between left and right handed use and now comes with four removable magnets on the marking foot to support for secure locating of the head when marking. The multifunctional non-slip support foot also features a V shaped foot to allow marking on curved surfaces as well as an optional support guide ideal for marking on bar end and the edge of sheet metal.

The marking capabilities of the new Connect Easy series are more advanced than ever before and promises high-quality, fast and easy to read marks. The software is intuitive and designed to enable you to start marking within three clicks. Visualisation of the marking area is shown on the screen making positioning of data easy.

With Technomark's patented IDI technology, the software automatically detects any difference in height on the surface of the component to allow for a consistent quality mark when facing a height

difference of 3 mm - 8 mm during the marking cycle.

Deep marking is easily achieved utilising the multidot function which creates deep marks without the need for additional power, ideal for applications which are painted after marking.

The connect series is available as a handheld unit or a smart 2 in 1 combo system, where it can switch from handheld mode to bench top in seconds so the operator can easily switch from marking large to small components easily. The need for flexible marking positions has been realised and accounted for by not only a durable but lightweight marking head, but also through the controller, which has multiple mounting options, consisting of the 'light support stand', 'advanced support stand' and 'premium support stand', each with different heights to fit in with the operator's working environment. The controller also has a VESA 100 mounting.

The handheld and combo options of the Easy come in two standard sizes, as defined by the marking window size, 60 x 120 mm or 60 x 30 mm. Universal Marking systems offers full support to help you find the best solution for your marking application.

To find out more about the new Connect Series and full range of Technomark dot peen and laser marking solutions, contact the Universal Marking Systems tech team.

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OPEN MIND enjoys its best ever MACH

Recognised as a leading CAM/CAD system for everything from 3-axis to complex 5-axis machining, OPEN MIND Technologies demonstrated exactly why at MACH 2022 with its latest hyperMILL® Version 2022.1. As expected, the crowds on the OPEN MIND stand throughout MACH week were impressive and it was no wonder with the level of innovations in the latest version of hyperMILL.

Commenting upon the MACH show, OPEN MIND UK's sales director Ken Baldwin enthused: "We almost received too many leads to deal with. The show was the best MACH we have ever done and out of the hundreds of leads we received, there are upward of 70 companies that want to purchase hyperMILL straight away. We had six demonstration pods on our stand and the team was extremely busy all week with queues for demonstrations every day."

"MACH 2022 really was a tipping point for the OPEN MIND brand in the UK. We have been building the brand and the technology has been edging further beyond the realms of our competitors for some years, but at MACH, the visitors were purposely seeking us out. Our visitors were a combination of businesses that had recommendations to buy hyperMILL from customers, suppliers, colleagues and the machine tool companies that were fellow exhibitors at MACH.

With MACH being the first major UK show since the pandemic, visitors came with an intent to buy and for those companies investing in new machinery, they were subsequently directed to our stand by the machine tool suppliers. This exemplifies not just our relationship with the machine tool vendors, but also the ability of hyperMILL to help engineers get the most out of their machine tools. Over the next couple of weeks, our team will be collecting orders from stand visitors that were immediately sold on hyperMILL while other manufacturers are keen to step away from existing CADCAM suppliers and move to OPEN MIND. MACH 2022 was a resounding success and our team will be busy for months after such a successful show."

The latest edition of hyperMILL, Version 2022.1 is packed with an abundance of innovations for enhancing productivity, performance and programming times for components produced on machining centres, but this latest version also incorporates a wealth of new features for its turning cycles. It is for this reason, so many show visitors made a beeline for the OPEN MIND stand at MACH.

In hyperMILL Version 2022.1, the company presented two new feature types that make turning processes much easier and faster, enhancing its reputation in the field of turned parts. OPEN MIND also showcased its automated program generation potential with the hyperMILL AUTOMATION Center. The hyperMILL AUTOMATION Center allows users to automate the job list creation process as well as the selection and positioning of clamping devices.

With something for everyone, OPEN MIND also presented product enhancements for manufacturers utilising EDM technology. This is a credit to the simple creation and subsequent modification of traverse paths during the EDM process with hyperCAD®-S Electrode. For the additive manufacturing sector, OPEN MIND has further enhanced its hyperMILL Additive Manufacturing (AM) solution and the latest version opens up an array of flexible options for Directed Energy Deposition processes (DED) and Wire Arc Additive Manufacturing (WAAM) in terms of highly complex 5-axis simultaneous processing. hyperMILL also allows the potential of AM to be truly exploited using Powder Bed Fusion (PBF). With such a remarkable diversity of solutions, it was no wonder that MACH 2022 was such a success.

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Optimise your manufacturing processes with Tebis Version 4.1 Release 3

The third release of Tebis' 4.1 comes with even more new developments: shorter programming times with improved NCJob technology, complete collision control accounting for material removal and automatic detection of planar areas. These are just a few of the most important highlights that benefits users in their daily work and that allows them to quickly and easily reach their goals.

As a robust hybrid CAD system with logical and intuitive user guidance, Tebis 4.1 lays the foundation for manufacturing processes that can be automated and that prepare you for the future.

CAM – automation
Shorter programming time thanks to improved NCJob technology with CAM programs completed more quickly with these new features. The new release automatically applies interactively defined milling areas from previous NCJobs.

CAM – milling
Optimal cutting conditions for roughing rotationally symmetrical parts. In addition to

cylindrical parts, tapered parts such as screw conveyors can now also be machined with high efficiency. The tool first roughs the part to the maximum possible depth with a low stepover and large downfeed in a single pass. Then it machines the residual stock from bottom to top with a smaller cutting depth precisely to the stock allowance. This procedure reduces tool wear and ensures a high material removal rate on the machine.

CAM – lathe
Turning with convenient cutting off of the part. Parts can be cut off from bar stock with a special function for automated machining on lathes or turning-milling centres. It can quickly and easily define the optimal cutting conditions for feed rate and speed on material exit.

CAD – active surface design
Precise results when trimming deep-drawing and bending parts. The "Create development curves" function can be used to quickly and easily determine theoretically designed trim edges for flanges on deep-drawing and bending parts.

CAD – Parametric design
Conveniently control changes with user parameters. Every imported data set needs to be prepared for CAM programming in design. This usually takes many individual work steps. Bores for clamping systems must be placed, tilt axis systems defined, fill surfaces designed, blanks created, connection points for setups generated, clamping devices positioned and retract planes defined. These many individual steps can be highly automated in Tebis using parametric CAD templates.

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Bowers Group helps Boneham & Turner improve its inspection capability

Nottinghamshire-based Boneham & Turner has increased its ability to offer more complex parts within its tooling and precision-engineered component operations with the help of a Sylvac Scan F60L optical measurement machine, supplied by Bowers Group.

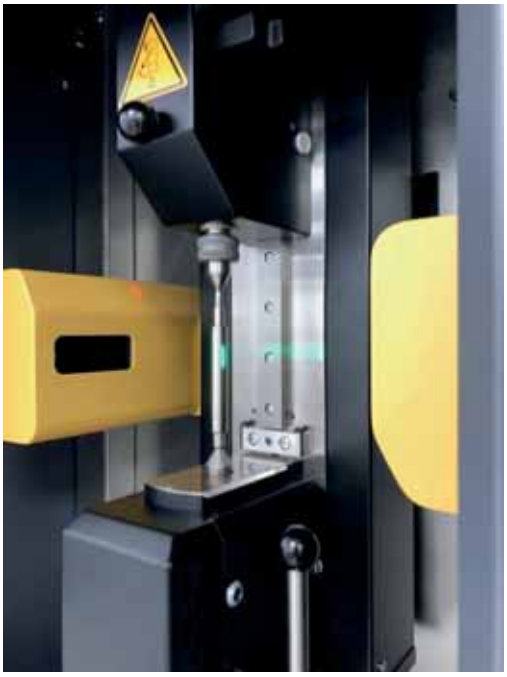
A fourth-generation, family-owned precision engineering solutions provider established in 1918, Boneham & Turner serves the aerospace, defence, motorsport, composite and yellow goods industries by manufacturing and supplying drill bushes, dowel pins, both simple and complex shims for the manufacture and assembly of jigs and fixtures, workholding, hydraulic systems and machine-building.

With previous processes in place, the company needed to decline work. This was not due to the complexity of manufacturing the parts, but to the limitations on inspection. The inspection of micro-pins had always proven to be a time-consuming challenge for the production and quality teams.

To improve its inspection capabilities, Boneham & Turner applied for funding through the Aerospace Unlocking Potential project, provided through the European Regional Development Fund Revenue Agreement, to help fund the purchase of the Sylvac Scan equipment.

Used by quality personnel, machine operatives completing first-off checks, as well as the engineering team for samples and R&D, the Sylvac Scan F60L is designed to measure even the most demanding of cylindrical parts.

With a brand-new camera and optics offering superior image processing and fast inspection times, the optical measurement machine uses Reflex One-Click technology with part recognition and auto measure which allows measurement with one click of a button. Quick-release tooling for making rapid part changeovers, combined with sophisticated software delivers immediate visual results, assisting in providing essential efficiencies in a busy working environment.



Boasting a small footprint that fits perfectly within the new inspection lab, the Sylvac scanner is used daily as part of the standard inspection procedure at Boneham & Turner. Primarily measuring a range of micro-pins that start at approximately 1 mm diameter and 3 mm long, the F60L has been praised for its ease-of-use and simple learning process amongst the team while proving to be an extremely precise piece of inspection kit for the company.

Stacy Denton-Beaumont, operations manager at Boneham & Turner says: "Quality is absolutely paramount to our customers. Supporting industries such as aerospace, defence, military and F1, there is zero room for defects in both time and cost. We have an outstanding record for perfect quality and investing in equipment such as the Sylvac demonstrates our commitment to continuous improvement in our metrology capabilities."

"The Sylvac-SCAN F60L has vastly improved our scope of metrology. As an AS9100 Rev D certified manufacturer, we pride ourselves on offering outstanding quality to our valued customers and core markets. With its Swiss precision engineering, the Sylvac SCAN F60L offers an efficient, exact and effective inspection method complementing the current catalogue of equipment here at Boneham & Turner Ltd."

Boneham & Turner has worked with the University of Nottingham for many years in research and design, as well as graduate placements. Also, as a member of Midlands Aerospace Alliance, it has attended various courses and networking events which have proved highly beneficial in terms of new business but also improved knowledge.

Stacy Denton-Beaumont explains: "Having a technology manager designated to us from MAA made the project run a great deal smoother and it was on their recommendation that we began looking at a Mark Forged Mark II 3D Printer. This was supplied by Additive X, who also did the training and over the past 6 months have been incredibly supportive with many of our projects."

The project has enabled Boneham & Turner to innovate in both metrology and new products and services. It has established a new measurement process and has enabled new products to be made and inspected.

The team are currently looking to re-shore some parts as they are now able to offer the full level of inspection required for mission-critical parts.

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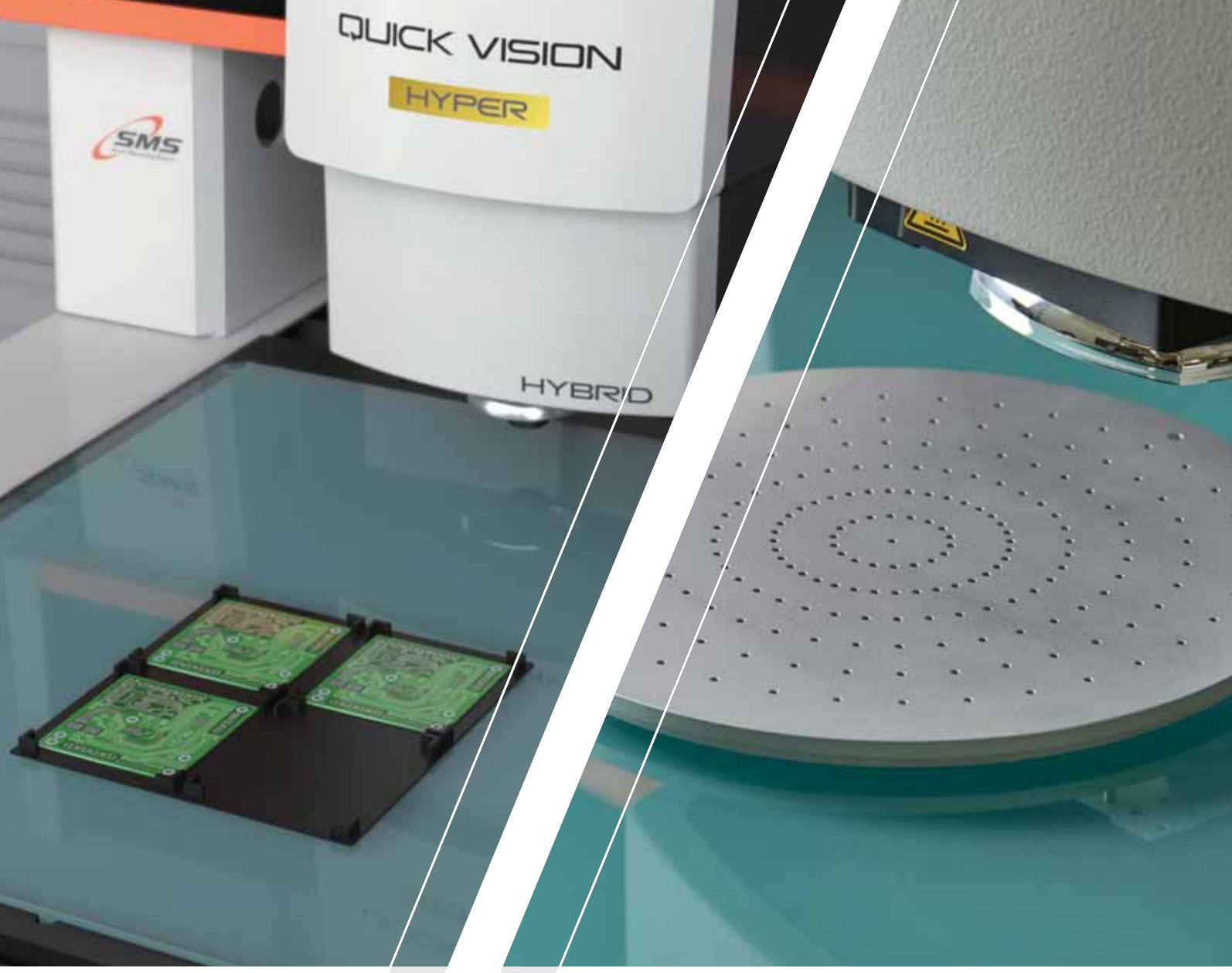
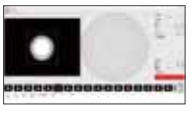


NEW Products

Mitutoyo

Semiconductor measurement solutions

Production quality is of fundamental importance in the manufacturing of semiconductors. Mitutoyo understand these challenges and are trusted to provide the best solutions by many leading brands. With extensive knowledge and experience of semiconductor inspection, and by utilising the latest vision measuring machines and dedicated software, Mitutoyo are an ideal partner to meet your exacting quality standards.




To discover more about the products and inspection solutions for the production of semiconductors visit **www.mitutoyo.co.uk/semiconductors** or scan the code below:

Extra protection with world's first IP54-rated measuring arm from Hexagon

Absolute Arm range update makes it the most robust measurement arm ever produced, along with delivering real-time asset management capabilities

Hexagon's Manufacturing Intelligence division has announced the introduction of full IP54 protection for its latest range of Absolute Arm models, together with other usability improvements and compatibility with the HxGN SFx | Asset Management service. From ultra-high-accuracy probing with the Absolute Arm Compact to high-productivity 3D laser scanning with the Absolute Arm 7-Axis and Absolute Scanner AS1, every new Absolute Arm model will be fully equipped for the demands of measuring and monitoring in the most challenging measurement environments.

An IP54 protection rating is a market first for portable measuring arms and comes alongside a further environment-related improvement that sees the system's maximum operating temperature increased to 45°C. Together with the Absolute Arm's already excellent portability and versatility, these updates complete a package that is perfect for the demands of the hot and dusty environments into which metrology-grade inspection is increasingly being taken in locations all over the world.

"In the last few years, we've seen a migration in where our arms are being used," explains Anthony Vianna, product director for portable measuring arms at Hexagon. "Whereas once most arms would sit in a nice clean metrology room, today we see them used on shop floors, in foundries and close to machining centres. That's why this update to the Absolute Arm is so important, we want our customers to go into those environments and more with total confidence that they can measure anywhere. This pairs with another trend we've seen in the last few years; the popularity of the Absolute Arm with smaller customers who maybe don't have the infrastructure of larger companies, including things like adequate air conditioning in measurement areas. Of course, the world is changing and new markets are appearing all the time so it's important to us that we listen to those customers and deliver improvements that are meaningful for them."

Also arriving with this update are improvements to the functionality of the Absolute Arm wrist display, now upgraded to a touchscreen and the RDS software that drives it. These are changes intended to further enhance the ease of on-the-ground measurement processes by bringing more functionality to the point of measurement and reducing trips back and forth between the arm and its control computer, whether that be for checking collected data or adjusting measurement profiles. The RDS platform also now offers one-click diagnostics and updates, for completely hassle-free maintenance and support within Hexagon's renowned global service structure.

Integration with Hexagon's HxGN SFx | Asset Management solution takes another perspective on the need for reliability and portability in measurement technology, while also enhancing the 'measure anywhere' spirit of the new Absolute Arm range. Through this service, a one-year subscription is included free with every Absolute Arm, portable arms can be tracked and monitored remotely through a dedicated dashboard. Users can easily keep an overview of the location of every measuring arm in their fleet, ensure every single one is up to date and properly calibrated and certified and even receive alerts in the case of shock events or status changes.

"We have seen in the last couple of years that some metrology hardware manufacturers have been launching very 'linear' updates to their products. For example, devices with accuracy improved by a couple of microns," says Duncan Redgewell, president of metrology devices at Hexagon. "With the new Absolute Arm, what we have tried to do instead is bring real features to the arm that will actually help our customers to measure better, faster and easier."

On-site measurement with the Absolute Arm is further facilitated in these new models by the significant connectivity improvements Hexagon has delivered since the current generation was first launched. With the CP-W Wireless Pack, also IP54 rated, every Absolute Arm boasts full-speed performance all of the time, even when high-speed scanning over a wireless connection. This is yet another feature that makes the Absolute Arm the perfect portable measuring arm for non-traditional measurement applications that require taking metrology beyond the quality room.

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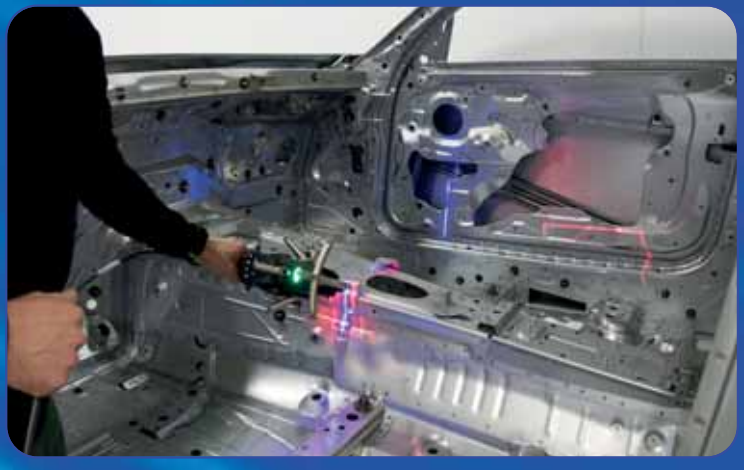
SUBCONTRACT INSPECTION SERVICES

Manchester Metrology



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

Hiring, purchasing and training on all portable metrology equipment

www.manchester-metrology.co.uk

Winbro Precision enjoys outstanding service from Mitutoyo

Winbro Group Technologies (WGT) is a leader in the design and manufacture of advanced machines and technologies based on non-conventional processes. The Group's high-technology machine systems produce holes and forms in components used in the most demanding parts of aero and industrial gas turbines, as well as in high-precision applications in the semiconductor, fuel cell and medical industries. Winbro's non-conventional machining processes include high-speed EDM drilling, laser drilling, cutting, ablation and welding, in addition to creep-feed grinding and ECM (Electro-Chemical Machining).

Based in Shepshed, UK, WGT also has a manufacturing centre in Rock Hill, SC, USA. Following seven years of close collaboration, in November 2019, WGT became part of Quaser Machine Tools, Taiwan.

Complementing the Group's sales of advanced machines and technologies, Winbro Advanced Machining (WAM) was launched in 2007. WAM provides a wide range of first-class machining facilities that can be used to manufacture customers' components. WAM certifications include ISO9001 2015, AS9100 Rev D, Accreditation with NADCAP for non-conventional processes, in addition to independent accreditation with many blue-chip OEMs.

Given the nature of the demanding industries served by Winbro, the quality of its products and services are of paramount importance. In addition to frequently updating its staff's skills in this vital area, the business invests in advanced inspection equipment, including advanced Mitutoyo Coordinate Measuring Machines (CMMs). The most recent addition to Winbro's Mitutoyo CMM collection is a state-of-the-art Mitutoyo CRYSTA-Apex V CNC CMM.

Dr Alan Duffield, Winbro Group business development manager, explains the purchase and use of the group's CMMs: "We pride ourselves in being at the forefront of machine and process development, offering a comprehensive range of systems and technologies which deliver the performance and precision demanded by global industry. In addition to enjoying a first-class reputation for their high-precision, speed of operation and efficiency, our machining systems are renowned for their outstanding reliability and long-lasting characteristics.

"To ensure the continued premium quality of our technologies we use a range of advanced inspection equipment. Although, the high-precision workhorses of our quality function are our collection of Mitutoyo CMMs including three Crysta-Apex S574 models and our recently installed advanced CRYSTA-Apex V CNC CMM.

"Since we first started using Mitutoyo CMMs in 2014, we have enjoyed outstanding service from each of the machines and have received excellent back-up from the staff of Mitutoyo UK. Therefore, when the need arose to further increase our inspection capacity to keep-pace with ever rising production levels, we again contacted Mitutoyo.

"Consequently, we were pleasantly surprised to see the impressive technical developments in areas such as accuracy, performance, speed, and versatility made in the company's recently launched CRYSTA-Apex V models. As it suited the size range of the parts we manufacture, we placed an order for a CRYSTA-Apex V CMM with an xyz capacity of 500 x 700 x 400 mm.

"Following a trouble-free installation and operator training, our new, highly-efficient Mitutoyo CMM is now making a major contribution to our important quality control work. In addition to accurately measuring one-off parts, our operators are able to load multiple parts onto the new CMM, recall pre-written programs and instigate fast, fully-automatic, CNC inspection routines. In addition, to providing the levels of precision that we need, the speed of inspection and flexibility of our CRYSTA-Apex V CMM has increased our inspection efficiency levels."

The latest generation Mitutoyo CRYSTA-Apex V series CNC CMMs are designed to deliver outstanding accuracy, speed and versatility. Thanks to multi-sensor flexibility, including vision, laser, surface finish and scanning probe technologies, the advanced new CMMs are able to undertake an extensive range of measurements across a wide variety of workpieces. In addition, speedy V series CMMs improve users' overall inspection productivity.
CRYSTA-Apex V Series CMMs leverage IoT (Internet of Things) for the advanced management of production and quality information. In addition to being ideal for today's quality control needs, the advanced CMMs are future-proof as they are designed with the 'smart factory' in-mind.

As Winbro's new CNC CMM is situated within a production environment, it helps that all CRYSTA-Apex V models use a real-time temperature compensation system. In the past, the accuracy of CMMs could not be guaranteed unless they were installed within temperature-controlled environments. CRYSTA-Apex V CMMs' temperature compensation feature guarantees accuracy under temperature conditions of 16-26°C. The advanced system measures the temperature of the workpiece and that of the measuring machine, then calculates what the measurement value would be at 20°C, before outputting the value as the precise measurement result.

The high drive speed and rapid acceleration of CRYSTA-Apex V CNC CMMs dramatically reduces total measuring times. The innovative CMMs allow users to freely set measurement paths along three-dimensional forms, enabling intricate workpieces to be measured along their curved surfaces and contours. High-speed

measurements are unaffected by processing accuracy or misregistration by the real-time correction of path errors caused by differences between workpieces and design values.

Complementing the V series impressive hardware, Mitutoyo offers an extensive range of application software for generating measurement programs automatically and for performing evaluations using CAD.

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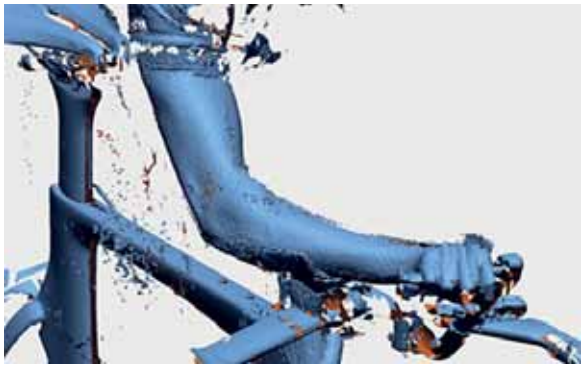
Manchester Metrology help Greenwich Para-cyclist

Matthew Robertson is a GB Para-cyclist who is yet to, but will soon, compete at the Paralympic games. He suffers from Hemiplegia in the right side of his body. This means he is partially paralysed on that side. After initially struggling with cycling in his younger years, he mastered the art as a 13-year-old. After progressing through the Great British Cycling Team's development programme, he made his world-level debut at the 2019 Track World Championships in Apeldoorn. Performing admirably, he finished fifth in the 1,000 m and 12th in the individual pursuit. During this event, he also broke the C2 flying 200 m world record at the time.

He has continued his progress on the track since and has set new personal best times in both the 1,000 m and individual pursuit at the 2019 UCI Manchester Para-cycling International. Matt Robertson's hard work and hunger for success is truly inspiring.

Effectively, he has found a good riding position where his right side is most stable and comfortable for his Hemiplegia when cycling. Matt and his coaches were looking to capture data of that ideal position to build a custom support to fix his arm in place



Right now, it's effectively a support pad at the top of his forearm, one by his wrist and a grip for his hand. Matt and his team wanted to design something more advanced and potentially get it manufactured from carbon fibre. All in, this should maximise the comfort and aerodynamics of the position whilst maintaining safety and stability.

Manchester Metrology first started by taking a quick scan of his bike in position. This gave the company a basic reference frame to align data back to when combining scan data down the road. Matt Robertson then got in his riding position and two scans of his arm were taken from the shoulder down, with some of the bike included again.

In terms of equipment, a Hexagon AS1 scanner with a Hexagon Absolute Arm 85 was used to scan the bike and a Peel2 to scan his body. The AS1 was well suited to the bike's high-gloss finish, while the Peel's non-rigid mode reduced the amount of post-processing.

Once scanned, the data required processing. Scanning non-rigid objects is particularly tricky, as it can result in overlapping surfaces and scan data.

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Bruker Alicona launches the 6th generation InfiniteFocus optical metrology system

With its "InfiniteFocusG6", Bruker Alicona continues to lead the way in the field of optical metrology. The supplier of optical measuring technology continues its successful concept in combining roughness measurements with coordinate measuring technology, presenting a new measuring instrument that scores with its unique measuring performance, future-proof technology mix, ground-breaking user experience and maximum flexibility.

Bruker Alicona describes the latest development of its InfiniteFocus product series by stating: "Measurements are faster, measurement planning is more intuitive and the spectrum of measurable components is wider." With this, the provider of optical metrology once again demonstrates its innovative strength. General manager Christian Janko states: "In recent years, our development focused on areas such as usability, 5-axis metrology and performance in production metrology. This know-how is the basis for the latest generation of our InfiniteFocus measuring systems."

Shape and roughness with only one optical sensor

InfiniteFocusG6 is an accurate, fast and universal optical 3D measuring instrument for tolerances in the µm and sub-µm range. Components are measured using area-based surface measurement with high resolution and independent of size, material, geometry, weight and surface finish. Proven features, combined with new features, provide the functionality of a roughness measuring machine, Ra, Rq, Rz/Sa, Sq, Sz, with the features of a Coordinate Measuring Machine (CMM).

The MetMaX user software allows users to plan their measurements in advance on the CAD model of a part and the selected positions are then automatically measured in 3D. In addition, a digital twin combined with a virtual measurement simulation enables the safe operation of the system. Another core element is the optional expansion from three to five axes where high-precision tilting and rotating axes enable the measurement of form and roughness on the entire component in just one measuring step. Also included is the integration of Bruker Alicona's latest technology, Vertical Focus Probing, which allows users to probe components laterally with a non-contact sensor. This allows the measurement of challenging geometries like holes and vertical flanks, >90°, to be optically measurable and allows completely new applications. Also included is SmartFlash, which enables measurements of smooth, highly polished surfaces and Real3D which turns individual measurements into a complete 360° data set.

Like all Bruker Alicona measuring instruments, the new InfiniteFocus system is based on the Focus-Variation method. The instrument's robust technology together with its vibration-isolated design are the basis for use in production. Users achieve high-resolution, repeatable and traceable results with InfiniteFocus even directly next to a machine tool.

Bruker Alicona is a global provider of optical, industrial measurement technology for quality assurance of complex components of different shapes, sizes and materials. Its non-contact measuring systems are used in all areas of precision manufacturing. Its core competence is the measurement of dimension, position, shape and roughness in the fields of production measurement technology and automation, prototype development as well as traditional quality assurance. Based on the technology of Focus-Variation, its measuring systems close the gap between classical dimensional metrology and surface roughness measurement. Users can measure both GD&T features and roughness parameters robustly, accurately, traceably and in high repeatability by using only one optical sensor.

The company stands for agile development, high technological competence and is motivated to constantly drive innovation. Since its foundation as Alicona in 2001, it has been known for continuously improving both user-friendliness and production-suitability of optical measurement technology. This makes it one of the driving forces in the integration of measurement technology into production, thus constantly opening-up new opportunities for automation and increased productivity.

Alicona has been part of Bruker since 2019 and now operates globally under the Bruker Alicona brand. Headquartered in Austria, Graz, measuring systems are developed, produced and distributed worldwide. An international sales, service and support team as well as selected distributors ensure regional customer proximity.

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Quantum Max FaroArm with multiple Laser Line Probes

The Quantum Max ScanArm from FARO is the most advanced portable measurement tool that features three purpose-built hot-swappable Laser Line Probes (LLPs).

Designed to meet a variety of small and medium-sized measurement needs, the LLPs, xR, xP and xS, ensure that users are no longer forced to choose between speed, accuracy, or resolution. You can maximise value and productivity by over 30 percent with the enhanced performance and scanning capabilities of the Quantum Max. Each LLP is enhanced with FARO Continuous Light Rectification (CLR) technology, which provides users the highest quality scan data on dark, translucent, and reflective surfaces, eliminating the need for sprays, time consuming surface preparation and cleanup while avoiding finished product contamination.

"With the next-generation Quantum Max ScanArm, getting the inspection job done as fast and precisely as possible has never been easier," says Ozan Ugurlu, FARO senior director of product marketing. "Changing probes is quick and easy in just seconds, with no need for recalibration so inspection can continue, virtually uninterrupted."

The new FARO LLP family features:
xR: suited for high-precision tasks or areas on a part with tight tolerances to capture data with up to 30 percent better accuracy and resolution.

xP: offers a balance of the xR for resolution and the xS for speed so coverage and accuracy blend together for overall productivity.

xS: best for large parts or expansive surface areas when data collection speed is top priority. Extra-wide laser stripe delivers double the coverage in a single pass, allowing users to collect data over 65 percent faster.

Quantum Max further enhances speed and accessibility with its kinematic mount that allows each LLP to be interchanged with seamless ease. The portable measurement

arm is fitted with a small, light end effector, allowing users to better access hard-to-reach confined spaces while reducing operator fatigue.

Smart Factory ready, Quantum Max is fully compatible with FARO CAM2® Software and its Repeat Part Management feature, which allows guided inspection routines to be pre-programmed. Operators can now perform the exact same inspection routine, minimising variability and maximising repeatability.

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MotoJet X designed to outlast and outperform the rest

Flow International Corporation, a leading developer and manufacturer of ultrahigh-pressure waterjet cutting systems, announced today the next generation of intensifier pump technology, the MotoJet™. The MotoJet X features state-of-the-art technology advancements focused on maximising customer uptime, improving usability and nearly eliminating hands-on customer maintenance.

"The MotoJet X truly is a game-changer in the world of waterjet. Our engineering team has invested significant effort designing, testing, and refining intensifier pump technology to achieve a 95 percent uptime guarantee with a pump that outlasts and outperforms the rest," says Tim Fabian, vice president of marketing and product management at Flow.

The revolutionary pump is a full-service solution. Flow's trained technical service team will conduct all maintenance at needed intervals, keeping customers up and running with minimal effort on their part and allowing them to focus their attention and resources on other areas of their business.

Tim Fabian continues: "This white glove, comprehensive service is somewhat new to the waterjet industry, but it's not new in the world of convenience we live in. Having an expert team available to service your equipment is a benefit that makes a huge difference in customer operations and, once you have access to it, you realise just what a difference it truly makes to your business."

The MotoJet X features ultra-quiet operation with a sound deadening design. The thoughtful design includes easy access points with quick-remove side panels, an air-assisted lid and an automatic interior light. The MotoJet X has a status light built directly into the lid handle, providing quick visibility to the operating status of the pump and comes IoT enabled and smart connection ready.

The MotoJet X operates at 60,000 psi with both 30 hp and 50 hp options and is compatible across the entire Flow Mach Series of waterjet solutions. The pump is available for test cuts, on-site visits and virtual showings at Flow's Customer Technology Centre in the USA.

Pump technology

The pump is the heart of the waterjet system, continuously delivering pressurised water to the cutting head.

Service & support

The MotoJet X is backed by Flow's global service network. Technical documentation, phone support and on-site maintenance plans are a few of the ways it offers support to its customers.

Maintenance

Never worry about maintenance again. The MotoJet X is the first full-service pump to hit the industry. With the MotoJet X, Flow maintains and services the intensifier based on usage intervals so you can focus on running your operations. Reduce your maintenance staff, reduce the need for internal waterjet knowledge and increase run-time.

Safety by design

This pump is designed for safe, reliable, continuous operation at 60,000 psi, 4,150 bar, in tough industrial cutting applications. Flow's pumps are manufactured in a facility which follows the strictest rules of manufacture and safety, including extensive metallurgical testing and full source tracing of the highest performing metal alloys available.

Flow

Flow's roots date back to the early 1970s, when former research and development scientists from Boeing founded Flow Research. The first technology commercialised by Flow Research was the use of an UHP waterjet as an industrial cutting tool. Soon after, it invented, patented and perfected the world's first abrasive waterjet system.

Since 1974, Flow has delivered over 13,000 waterjet and abrasive waterjet systems to customers in more than 100 countries.

Flow is global. With a large market share, it is a leader in the development and manufacture of UHP waterjet technology. Headquartered in Kent, Washington in the USA, Flow employs approximately 700 employees with offices in North and South America, Asia and Europe. Globally it focusses on technology leadership, a full continuum of products that provide complete manufacturing solutions, application expertise and unmatched service with a commitment to customer success across the world.

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TECHNI Waterjet
A GMM Group Company

THE WATERJET PUMP REVOLUTION

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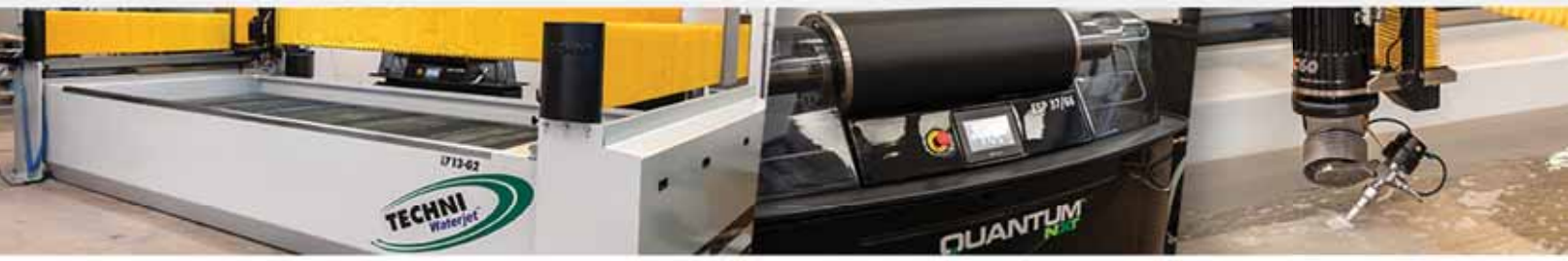

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TECHNI Waterjet
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OMAX unveils OptiMAX, its most advanced waterjet ever

Hypertherm's OMAX Corporation has introduced its most advanced waterjet ever. The OptiMAX is a new generation of waterjet designed for quickly turning prints into parts with reduced dependency on highly experienced operators.

The culmination of three decades of OMAX engineering expertise and user experience, the OptiMAX is designed for manufacturers in need of a versatile, easy-to-use cutting system to increase the capability and efficiency of their operation. It offers OMAX's groundbreaking, intuitive software for optimised cutting capability and power, along with enhanced automation to maximise uptime so users can deliver finished products faster. New and improved features include:

• IntelliMAX premium software, designed for incredible ease-of-use and operation quickly following installation. Incorporating decades of proprietary waterjet cutting models, no other system can consistently produce parts as rapidly or capably.

• IntelliVISOR console with key metrics to optimise operations and complete system monitoring that helps avoid unplanned downtime.

• EnduroMAX pump that automatically sets the correct pressure and minimises fluctuations to improve component life, while offering the most efficient waterjet pump technology in the market.

• IntelliTRAX drive system with advanced motion control for further increased system robustness and reliability. Virtually no maintenance is required compared to more conventional ball screw, rack and pinon drive systems.

• New garnet delivery system to further minimise downtime.

Combined with an optional TiltaJET taper compensation head, the new OptiMAX waterjet line is the most accurate system on the market.

"The OptiMAX represents the pinnacle in abrasive waterjet cutting," says Arion Vandergon, waterjet product marketing manager. "It builds upon everything OMAX has learned during the past three decades to deliver the most capable and efficient waterjet cutting system available today enabling optimal cutting outcomes for our customers."

Like every OMAX system, all OptiMAX products include comprehensive after-sales service, unlimited free training and software upgrades as well as a host of efficiency centred resources to maximise uptime and keep customers cutting. To learn more or schedule a free consultation visit **www.omax.com/OptiMAX-waterjet**

See Hypertherm plasma and OMAX waterjet products at FABTECH Canada

Hypertherm is heading to Toronto for FABTECH Canadian June. The company will exhibit its newest Hypertherm plasma and OMAX waterjet products and its Robotmaster software.

Hypertherm will showcase the industry's only X-Definition class plasma and it's all new Powermax SYNC, featuring built-in intelligence and a revolutionary single-piece cartridge consumable. In addition, OMAX will present live waterjet cutting demonstrations and show how waterjet cutting can serve a range of applications from prototype development to full-scale production.

On the software side, Hypertherm will present PlateSaver, a new SureCut technology that reduces material waste to save companies money. Show attendees can also visit Hypertherm's Robotmaster team to learn more about offline robotic programming. The team will provide live demonstrations giving attendees a firsthand look at an easier, faster, and error-free programming experience.

Hypertherm plasma and OMAX waterjet cutting products are engineered and manufactured for use by companies around the world to build ships, airplanes and railcars, construct steel buildings, fabricate heavy equipment and more. Its products include industrial cutting systems, CNCs, and software trusted for performance and reliability that result in increased productivity and profitability for hundreds of thousands of businesses.

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MTC installs state-of-the-art waterjet guided laser

The Coventry-based Manufacturing Technology Centre has made a significant investment in its laser processing capability, with the installation of a SYNOVA LCS305 waterjet guided laser.

The 5-axis system, the only one currently in operation in the UK, allows engineers to cut, drill or machine complex shapes without the drawbacks associated with traditional laser machining such as heat build up or tapers. It can machine a range of materials including ceramics, hard to machine alloys and composites among others.

Bethan Smith, technology manager at the MTC, says the waterjet guided laser would allow the MTC to develop and use the latest technology to support industries across the UK with their manufacturing challenges: "For example, we will be helping to develop production solutions for the machining of lightweight, high performance, hard to machine materials that will be crucial in helping manufacturing businesses hit the UK's upcoming net zero targets. As SYNOVA is a Tier 2 member of the MTC, we also look forward to working with the company to bring the latest machine developments and innovations for this technology to our customers."

Bernold Richerzhagen, chief executive at SYNOVA says: "We are excited about the partnership with the MTC which is known to be THE innovation and technology hub for the manufacturing industry in the UK. We look forward to participating in joint research projects, learning about new industrial applications and benefiting from the organisation's vast know-how and network."

"Together with our expertise in wet laser machining we believe we can be a competent partner for the MTC to advance manufacturing solutions."

SYNOVA is a pioneer of unique water jet guided laser technology, providing high-precision cutting solutions for the metal, semiconductor and diamond industries.

It currently has 100 employees, including 35 engineers, focussed primarily on researching new material cutting solutions, further applications and laser cutting equipment. Aside from research, both the final assembly and testing of up to 100 machines a year are performed in SYNOVA's modern, 2,300 sq m facility in Duillier.

SYNOVA S.A. Tel: 0041 215522600 www.synova.ch

How to maximise abrasive cutting productivity

Adding a CNC waterjet cutting machine tool to your operations is a smart move. The waterjet can cut a wider variety of materials in greater thicknesses with less post-cut clean-up than other alternatives such as laser and plasma cutters. There are several factors to consider that will maximise your abrasive cutting productivity and your investment.

Shown: Jet Start 510A5 5-Axis Cutting System with HERO 50

Maximising your investment
When determining the capabilities and capacities of your CNC waterjet cutting machine tool, pay particular attention to the following four areas. Optimising these four will set you up to maximise your abrasive cutting tool productivity: Expand or increase the range of materials you can cut; specify the largest cutting table size available space allows; add nesting and common line cutting capability; set up for lights-out/unattended cutting.

Broaden the range of the materials you cut
When you invest in a CNC waterjet cutting machine tool, you have taken the first step towards significantly expanding the types and thicknesses of materials you can cut and machine. Think of the different markets and customers you can serve when you remove the material type and thickness limitations of your non-water cutting tools.

Cut nearly any material
So, what materials can waterjet tools cut? The list of materials includes steel and specialty alloys, granite, glass, composites, foam, wood and, unbelievably, food. Since waterjets are a "cold-cutting" technology, they can cut materials that "hot cutting" technologies cannot because the heat from the cutting process damages the material. Also, cold cutting doesn't leave cutting residue on the face of the cut parts that require post-cut processing to remove.

Cut thicker materials
Hot-cutting and shearing cutting technologies are unable to match the thickness capabilities of waterjet tools. With the proper combination of cutting nozzle, abrasive and water pressure, a waterjet can cut a 6" stainless steel plate and a 20" aluminum block, well outside the capabilities of the other options.

Utilise nesting and common line cutting
There are two techniques that allow you to maximise sheet utilisation: nesting and common line cutting. Nesting is a software-driven process where a CADCAM package lays out parts in a manner that optimises material utilisation. Rather than cutting one part on a sheet, the software "nests" like and unlike part sizes together. Jet Edge uses IGEMS CADCAM software to accomplish this material optimisation process. IGEMS has the reputation of offering the best nesting solution for CNC waterjet cutting machine tools.

Common line cutting is a technique of creating a cutting plan where parts share a common edge. It is the precision, quality of the finished cut and absence of cutting residue deposition that enables your CNC waterjet cutting machine tool to accomplish these material-saving cuts. As with nesting, common line cutting contributes to maximum sheet utilisation and the abrasive cutting productivity of your waterjet investment.

Lights-out, unattended cutting
Using your waterjet cutting tool in a lights-out application is an outstanding way to maximise your abrasive cutting productivity by letting the tool run outside normal shift hours. It is also an excellent way to manage long and complex cuts that take hours to execute. And, in today's tight labour market, lights-out cutting automation extends your operating hours without adding people.

Jet start your abrasive waterjet cutting now
The Jet Start 510A and 510A5 abrasive cutting systems get you into the game right out of the box. Paired with a 50HP Hero Series Intensifier pump, these 5 x 10 tables give you 3-axis and 5-axis cutting that won't back down.

Jet Edge has been a part of the CNC waterjet cutting machine tool revolution since 1984. With its wealth of experience and history of innovation, it can help you to maximise your abrasive cutting productivity, whether you are acquiring your first water jet tool or are an old hand.

Jet Edge
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WARDJet X-2040 waterjet increases production efficiency

When UK company Lionweld Group needed a more efficient cutting solution to address production inefficiencies, WARDJet's X-2040 waterjet came to the rescue. The company, based in Middlesbrough, North Yorkshire, manufactures forged steel and GRP products and is the sole UK producer of safe grid flooring. It is also a supplier to the offshore wind turbine, nuclear energy, rail and hydropower sectors. When an order came in for wind turbine internal platforms requiring mesh panels, it turned to WARDJet to select an industrial cutting machine to successfully complete the request.

Richard Hookway, engineering manager at Lionweld Group explains: "Previously these platforms were constructed manually by two engineers and required approximately two weeks to construct each platform, thus proving labour intensive, leading to longer turnaround times and increasing the risk of errors in production. Following installation of the X-2040 machine, it now takes less than a day for one employee to achieve the same result. Furthermore, by comparison with the waterjet machine already in use, the X-2040 has also proved much simpler to operate and easier to maintain."

X-2040: engineered for speed, accuracy and strength
Boasting the largest cutting envelope in its class, the X-2040 can handle industrial-sized jobs with the same speed and accuracy as a smaller format waterjet. In addition to the maximum cutting speed of 20 m/min, the machine incorporates a special height sensor, a 400 lb, 181.437 kg, capacity continuous abrasive feed hopper and a 60,000 psi intensifier pump.

Other features include:
Water-level control
An internal water level control system that does not alter or change the cutting envelope or footprint. This enables underwater cutting which can significantly reduce noise and splash back.

Lightning speed
A cutting head mounted on the lightweight crossbeam can accelerate faster between cuts which will increase overall productivity.

5-axis cutting
The Apex 60 allows for 3D cuts up to 60°, without a reduction in the 2D work area.

In addition to the easy-to-use WARDCAM software, Lionweld Group uses a specially designed program to nest the several parts of its standard 3.6 x 1.2 m GRP mesh panels.

Future expansion and service
Richard Hookway adds: "The X-2040 has been a great addition to our machine portfolio, with the consequent increase in cutting speed and accuracy a real boost to our production capacity and manufacturing capabilities. We are now looking to cut stainless steel with an accuracy of 0.7 mm which will be a real game changer for our steel fabrication plant."

On the service, including operator training, provided by AAG prior to, during and after installation, Richard Hookway concludes: "This was excellent in every respect and augurs well for our future business partnering with AAG and the WARDJet brand."

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New P Robot panel bender from Salvagnini

Rapid industrial developments in recent years continue to set tough challenges. As industry has changed, large batches typical of series production have changed to small-medium sized batches, or have been completely replaced by just-in-time production. A high item turnover rate, shortened lead times and a constant lack of highly qualified personnel have moved the focus to automation and robotisation. This allows production to be extended beyond traditional manned work shifts and ensures operatives are engaged only in activities with high added value.

Robotisation is not simple, but it remains a very current trend. New installations of robots in the manufacturing industry grew by 13 percent in 2021, while robots in use number over three million . This is why Salvagnini is introducing P-Robot, a new application which combines a panel bender with a robot to produce kits, batches and single parts autonomously.

"We have been involved with robotics applied to sheet metal processing for some time," explains Nicola Artuso, Salvagnini product manager for bending technologies. "We wanted a smart solution which was much simpler than those already on the market: simpler to program, simpler to use and able, if possible, to exponentially improve the flexibility and productivity of our panel benders. We also wanted a solution suited to our compact panel benders, not just the automatic ones. With P-Robot, we are sure we have achieved our goal."

The rationale for the design of P-Robot aimed to solve some of the issues typical of traditional robotised solutions, as well as meeting market requirements. It offers a compact and modular layout, is perfectly integrated on both the hardware and the software side, makes robot programming as simple as possible too and allows for a certain level of customisation so as to respond to specific production requirements.

"This P-Robot incorporates a P1, but we can also apply it to the P2 and P4," Nicola Artuso continues. "The P1 is our electric panel bender, with energy consumption of less than 3 kW and a footprint of just 8 m^2. It is a standard panel bender, just like the robot, a choice which has great advantages in terms of certifications. For the robot, we have chosen a partner which allows us to move around in proximity to the working area in complete safety. This translates into an extremely compact layout. The robot is equipped with a flippable gripping device, fitted with suction cups on two sides, for picking up the bent part and immediately positioning the new part to be bent, in-cycle. This gripping device therefore allows optimisation of the sheet loading/unloading cycles, improvement of production rates and a reduction in waiting times. We have not overlooked modularity and adaptivity either. According to the specific needs of each customer, their products and an in-depth feasibility study, we can offer solutions with loading/unloading assistance only, or else more complex systems providing for automatic movement of the pallets or third-party integrations. For example with work centres for labeling, laser marking, riveting, welding and corner forming."

Complex industrial automation systems generally require significant integration between the individual technologies they are composed of. From this point of view, P-Robot ensures optimum management of the process because Salvagnini has perfect knowledge of all the movements of the panel bender, having designed it and has a high-level view of those of the robot as well. The robot essentially becomes an option of the panel bender, with positive effects on programming too, which is perhaps the main advantage of P-Robot.

"As we said, the panel bender is a standard model. Like any other Salvagnini panel bender, it is generally programmed in the office," Nicola Artuso adds. "The program, made with STREAMBEND, can be used without the need for modifications on either P-Robot or on panel benders without robots, obviously as long as these are Salvagnini panel benders. On board the machine, the MOVE software acquires the panel bending program from which it generates the dimensions of the flat part and the finished panel that it uses to automatically generate the robot trajectories. The operator will simply need to confirm or, if necessary, modify a small number of checking positions to complete the programming of the robot. MOVE

manages the intermediate movements of the robot autonomously too and the operator is only required to make a reduced set of movements. This is, in short, a fully-fledged smart teaching system, which makes offline robot programming redundant."

A further strength of P-Robot is its eclectic nature. It is not an isolated or closed system. P-Robot extends the flexibility and productivity of Salvagnini panel benders because it allows the best strategy to be chosen, based on the current production needs. On unmanned shifts, or in production contexts where a single operator monitors numerous systems, P-Robot naturally works in Robot to Robot (R2R) mode, loading, unloading and, if necessary, stacking the parts. But this is not an exclusive strategy. The same P-Robot can work in different modes, seamlessly and without re-tooling. In Robot to Human (R2H) mode, it is responsible solely for loading the flat part, whereas the operator is responsible for unloading the panel. This is an advantageous strategy if the operator must complete the processing of the panel on a different workstation, for example with a press brake or a welding machine. In Human to Robot (H2R) mode, it is the operator who will load the flat part onto the working area and the robot will unload the panel at the end of the cycle. This strategy is useful for managing extremely diversified batch-one production. Without forgetting that the panel bender nevertheless remains available for any work managed completely by the operator.

"In order to summarise the concept, P-Robot defines a new paradigm of the panel bender with robot configuration, maximising its flexibility and productivity. P-Robot is also an automation because it automates some steps of the panel bending process and, like all automations, can contribute to improving efficiency and reducing labour costs. However, P-Robot is not limited to this. Its great benefit is that it is not necessary to choose a specific production strategy in the design phase. It can solve different requirements: large batches, small batches, kits, batch-one, but also downstream integrations, total automation, partial automation, or no automation, as required.

We are sure that the market will immediately grasp the potential of P-Robot and confirm that we have made all the right choices," Nicola Artuso concludes.

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Prima Power folding solutions for lightweight, high-strength materials

The sheet metal forming industry is seeing an increasing demand for the processing of lighter materials, especially high-strength steels and aluminium.

This trend particularly affects the automotive, industrial vehicle and agricultural machinery sectors, where it is important to reduce the weight of the vehicle, while increasing its range and durability. Even in the construction industry, the focus is towards steels which, with the same weight, allow the construction of more resistant structures. In all these examples, the most widely used materials are high-strength steels.

Additionally, the white goods sector is also increasing the use of lighter materials, primarily aluminium, for lighter product requirements, combined with the compliance of high hygiene and aesthetical standards.

Prima Power, a world-class, high-tech manufacturer of laser and sheet metal processing machinery, offers a range of different bending solutions for these two material applications.

Prima Power hydraulic press brake of the HP series

For high-strength steels, characterised by high hardness specifications, Prima Power has a dedicated range of 'hP' series hydraulic press brakes. In collaboration with Gasparini Industries, this includes a range of machines up to 650 tonnes, singularly or in tandem, for bending applications in materials that have a strong elastic modulus.

The hP machines are highly customisable and can be adapted to the customer's needs both in terms of part geometries and also tooling. Among the options designed for such applications are an adaptive hydraulic crowning system and also a "Reflex" system for the active management of movement within the structure.

For bending aluminium, the ideal solution is Prima Power's range of 'eP' press brakes which are fast, accurate and offer highly attractive "green" credentials through a fully servo-electric design, with capacity options up to 200 tons.

The servo-electric drives allow for high dynamics and much more precise control of force and speed during bending, making the eP machines perfect for light and "difficult" material such as aluminium. A range of optional features are available and amongst some of the most useful for this application are a real-time angle control system and bending-flattening table.

Prima Power is able to supply both machine types in either standalone formats, or with robotics for fully automated production in high volume applications. Tool-changer models are also available, further boosting productivity and ease-of-use.

Prima Power is a leading specialist in laser and sheet metal working technology. It is a leader in laser and sheet metal fabrication machines with a strong know-how in mechatronics, optoelectronics, automation and software. Its product range is one of the widest in the industry, covering all stages of the sheet metal working process: 2D and 3D laser machines, punching and combined punch/laser and punch/shear machines, press brakes, panel benders, flexible manufacturing systems and automation.

Its manufacturing facilities are in Italy, Finland, the USA and China, from which it delivers machines and systems all over the world. Its sales and service network is active in over 80 countries, with a direct presence or through specialised dealers.

Its family of highly advanced servo-electric solutions for punching, bending and integrated processes is the widest in the world, marketed under the slogan "Energy in Efficient Use".

A leader in 3D laser machines, it is among the main world players in the 2D laser segment with a wide range of top performance and highly efficient machines used in a multitude of fields all around the globe.

Services are an important part of Prima Power's activities and are meant to give you professional, dedicated and effective support all over the world.

All its products are developed according to its "Green Means" concept, combining sustainability and productivity.

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How does a CNC press brake help my business?

Press & Shear explains

While there are many advantages to choosing a CNC press brake, one of the biggest is the flexible programming the CNC component offers the user. A CNC press brake machine offers the user modular programming relevant to the task they are completing. This minimises the setup time of the press brake while helping to increase precision. As a result, efficiencies go up and wastage in terms of time and resource goes down.

Your CNC press brake can help with degrees of bending, metal stress tolerances and other metrics that require a high level of accuracy to be completed safely and to a high standard. These can often take time to work out manually. CNC takes a lot of the heavy lifting out of bending sheet metal and is a great investment.

No matter how your CNC press brake is constructed, it's going to offer you extreme versatility. The number of shapes you can bend are practically endless, meaning it is suitable for a wide variety of applications. When you factor in the different types of sheet metal a good CNC press brake can work with, you have a truly versatile machine.

Ready to invest in a CNC press brake? Where to start?

It is clear that a CNC press brake machine can offer many business benefits, making everyone's life easier and opening up a world of possibilities around sheet metal fabrication. The next step is understanding which CNC press brake is the right fit for your business.

Luckily, there is a formula to investing in the right press brake machine for your business. Once you've checked that out, we'd recommend taking a look at our range of new press brake machines. You may also wish to check out our used sheet metal machines. These can be a great way to save some money on a good-as-new piece of sheet metal fabrication equipment.

Finally, speak to our team. They are experts in all things sheet metal including CNC press brake machines. They willl be happy to advise you, supply brochures and can even arrange a showroom visit if you'd like to get more hands-on.

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LVD introduces robotic bending system featuring automated changing press brake

LVD has introduced Ulti-Form, a new robotic bending system featuring an automated tool changing press brake. Ulti-Form follows the success of LVD's Dyna-Cell robotic bending cell and takes automated bending technology a step further by incorporating an automated tool changing press brake to keep bending productivity at its peak, handling both small batches and long production runs efficiently with minimal changeover time. Ulti-Form delivers high productivity bending with unattended operation.

ToolCell-inspired designed

Ulti-Form features a 135-ton press brake designed using the ToolCell platform, LVD's top-rated automated tool changing press brake, integrated with an industrial robot. The press brake houses a built-in tooling warehouse and uses a gripper mechanism in the machine's backgauge fingers to quickly and efficiently change tools. The press brake and robot work together in synergy to keep changeover time to a minimum. As the robot picks the first workpiece from the input stack and centres it, the press brake completes the tool change. Ulti-Form handles parts from 50 x 100 mm up to 1,200 x 800 mm weighing up to 25 kgs.

No robot teaching

Ulti-Form is automation that's easy to use with a fast "art to part" process thanks to LVD's powerful programming wizard. Programming of both the press brake and robot is handled offline and no robot teaching is required. CADMAN®-B software automatically calculates the optimal bend program. The robot software imports all bending data and automatically calculates all gripper positions taking into account the gripper force, collision detection and robot reachability. It generates the fastest collision-free path for the robot across the complete bending operation. The system's database contains all the setup information needed for the press brake and robot so that Ulti-Form is quickly readied for production.

Auto-adapting gripper

The Ulti-Form robot gripper is an auto-adapting design engineered by LVD, patent pending. It has the flexibility to accommodate a number of part geometries, automatically adjusting to the workpiece size. This allows a series of different part geometries to be processed without the need for a gripper change, keeping production continuous and uninterrupted.

Quality assurance

Equipped with LVD's Easy-Form® Laser adaptive bending system, Ulti-Form offers automation with a quality guarantee. Real-time in-process adaptive bending technology adds advanced process stability to robotic press brake bending. The Easy-Form Laser system adapts to material variations, including sheet thickness, strain hardening and grain direction, automatically compensating for any changes to ensure consistently accurate bending results.

Automation for today

Ulti-Form is a modern automated bending system. Its efficiently organised layout has a small footprint of 8 x 10 metres. The system includes three input pallets, a large output zone and drop zone for small parts, an automated pallet dispenser and conveyor belt to transfer full pallets out of the system. Designed for flexibility, Ulti-Form can operate automatically or in manual mode. Manual operation can be used for very complex parts and small series; automated production for long series.

Flexible, productive and easy to program and operate, Ulti-Form offers a quick return on investment.

LVD is a leading manufacturer of sheet metalworking equipment, including laser cutting systems, punch presses, press brakes, guillotine shears and automation systems, integrated to and supported by its CADMAN software suite. LVD Industry 4.0-ready products and technology make smart manufacturing possible.

LVD is named after its founding fathers, Jacques Lefebvre, Marc Vanneste and Robert Dewulf. Established in the 1950s, LVD gained recognition as a precision press brake manufacturer. Significant growth in the 1990s, which included the acquisition of Strippit, Inc. in 1998, a US-based manufacturer of turret punch press equipment and the addition of laser cutting products to its portfolio, helped position the company as a leader in laser, punching and bending technology.

Today, LVD offers a full range of integrated products for the global sheet metalworking market. The company has five manufacturing facilities and is active in more than 45 countries following the principle of localised sales and service for each region.

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Worcester Presses investment helps Cotmor move forward with ambitious expansion plans

A £250,000 investment drive with Worcester Presses is helping a leading Black Country metal pressing specialist take advantage of new domestic and reshoring opportunities.

Cotmor Tool & Presswork, which employs 16 people at its Brierley Hill factory, has seen sales soar to £2m following the easing of lockdown and is now setting its sights on an additional £1m of orders over the next twelve months.

The company has formed a strategic partnership with the nearby press supplier to capitalise on this growth and this has resulted in the installation of two 110 tonne and one 160 tonne Chin Fong machines.

Two state-of-the-art Tomac decoilers have also been introduced, in addition to Titan monitoring technology designed to improve tool and press life and a die cushion to help accommodate multi-functional tools.

"Volumes have bounced back stronger than any of us expected and this has given us the impetus to look at new equipment that will make us faster and give us capacity to take on up to £1m of new work," explains David Cotterill, who runs Cotmor with his wife Wendy and daughters Louise and Natalie.

"80 percent of our work is overseas and we ship deep drawn, precision and progression presswork to clients in Brazil, China, Germany, Japan, Turkey and South Korea. A lot of these components are technically difficult to produce and, since lockdown, we are seeing an increasing number of enquiries from firms looking to reshore to achieve security of supply.

"We knew we needed more capacity so started talking to Worcester Presses about our future requirements and the flexibility of the machines to be able to produce components destined for agriculture, commercial vehicle, foundry and the food and drink sector.

"After much discussion, we agreed on the robustness and durability of the Chin Fongs and the installation process and training were superb. Now the challenge is to win the work to fill them."

Worcester Presses has experienced a similar upturn in fortunes, seeing demand for its range of hydraulic and mechanical presses and ancillary equipment rise by 30 percent over the last six months.

The Dudley-based company, which has taken on an additional two people, has been working with Cotmor to deliver a tailored 'production' solution for about nine months, culminating in the installation of the three presses.

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Display of force by DURMA laser

Impulse Point of Purchase, a designer and manufacturer of award-winning POP displays across a number of industries, has invested in a new DURMA HD-FL 3015 fibre laser cutter with automated loader from Axe & Status. The machine is delivering a 30 percent increase in speed on thinner-gauge materials and around 10 percent on average across all thicknesses, providing a notable impact on bottom-line profitability.

Based in Sandy, Bedfordshire, Impulse POP draws upon many decades of experience in the provision of end-to-end engineering, manufacturing and installation services to retail segments that include sport, music, fashion and jewellery, food and drink, health and beauty and DIY and gardening. Each solution provides brands with highly effective merchandising opportunities.

Mark McKeown, with over 30 years of experience in the POP sector, established the business in 2005. After just three years, the company moved into its current 10,000 ft^2 facility and has since grown into a £1.5 million turnover business.

"We're still smaller than some of our competitors but we offer a first-class tailored service," he says. "We provide an intimacy with our customers that is often missing with many of the larger market players. Our customers use us because they know we can solve their problems."

The in-house production capabilities of Impulse POP are a major advantage when it comes to winning new contracts, which is why the company insists on regular investment to keep pace with the latest manufacturing technologies.

"We had a CO_2 laser cutter from another supplier and, although there was nothing wrong with the machine, we knew that investing in a fibre-based solution would bring a number of important advantages," says Mark McKeown. "I see a laser cutter as a workhorse and, although we scrutinised many machines, we couldn't see sense in spending top dollar unless we could really monetise that value. We have DURMA press brakes, as well as a corner notcher and a guillotine, so it was a proven brand for us. The DURMA HD-FL 3015 fibre laser cutter soon became the clear favourite. We also wanted a loader/unloader so we could work unmanned during the day and lights-out overnight."

Installed in October 2021, such is the confidence in the new automated DURMA fibre laser cutter that Impulse POP dispensed with its previous CO_2 machine.

The majority of the material that Impulse POP processes is mild steel, for its display customers, but the company also runs aluminium and stainless steel. In addition, the introduction of the DURMA fibre laser means Impulse can run copper and brass if needed. Typically, the company works with material thicknesses from 1 to 12 mm.

Impulse selected the 4kW DURMA HD-FL 3015, which can process mild steel up to 20 mm thick, stainless steel up to 10 mm, and aluminium up to 12 mm. However, versions up to 20 kW are available if companies want to cut even thicker materials. The HD-FL 3015 offers 3,060 x 1,530 x 160 mm in the X-, Y- and Z-axis respectively, although models up to the HD-F 16030 are available from Axe & Status with travels that extend to 16200 x 3100 x 185 mm. Control is via Sinumerik 840D SL with 19" touchscreen.

"We design everything in SolidWorks and use Lantek as our programming software, from where the DURMA laser pulls jobs as required over the network we simply press the start button," explains Mark McKeown. "Once cut, we bend, weld and finish the parts accordingly."

A good example of the work that Impulse POP handles is a display completed recently for Candy King, Europe's leading supplier of pick & mix sweets, which wanted 950 units for the UK's entire portfolio of One Stop convenience stores. This attractive POP solution featured a 1.2 mm mild steel body produced on the DURMA laser, with the full assembly undergoing welding, powder coating and the application of branded transfers.

"It was amazing to watch this job on the laser," states Mark McKeown. "It took just 90 seconds to cut a full sheet of three display bodies, which was very fast. Within 10 hours we had completed the entire 950. Running the job on our new fibre laser with automated loader/unloader was quicker than using our previous CO_2 machine, so it gave economies of scale. The DURMA is at least 10 percent faster on average. However, for thinner work, such as the 1.2 mm mild steel display for Candy King, it's more like 30 percent quicker."

The DURMA HD-FL 3015 fibre laser cutter features a linear motor motion system that delivers very high acceleration, synchronised 35 m/s^2, speed, synchronised 226 m/min and positioning/repeatability, ±0.03 mm. The savings that Impulse POP accrues from the additional speed are supplemented by its use of compressed air as the assist gas.

Being a full-service provider with fast manufacturing technologies is key to success at Impulse, which is capable of supplying quickly and efficiently across a wide range of materials, including metal, wood and acrylic. Temporary and permanent retail displays, as well as in-store, popup, event and exhibition display stands, are all within the team's in-house capabilities. Notably, the DURMA laser not only delivers short cycle times, but outstanding quality and flexibility in manufacturing, all of which bodes well for a bright future.

"Of course, certain challenges remain, not least the fact that metal prices have doubled since the onset of the pandemic," concludes Mark McKeown. "What's more, energy prices are rising almost constantly and transport companies are hitting us with surcharges to cover their growing fuel bills. All of this make costing tricky. However, we are renowned for our problem solving and we'll find a way, particularly with the help of our new DURMA laser cutter. Investment remains key to our ongoing success."

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