ENGINEERING subcontractor MAY 2021

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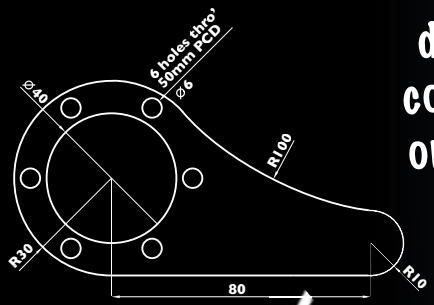

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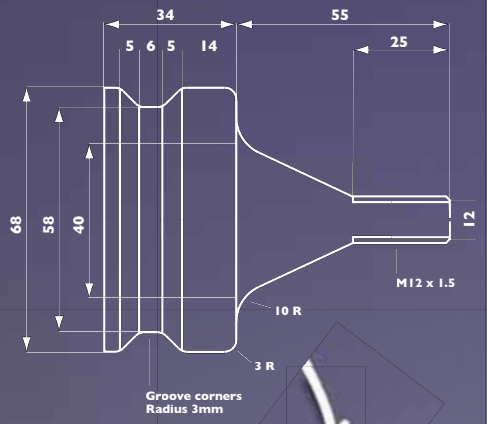

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VOLUME 18 | No.5 ISSN 1742 -5778

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

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

Accounts: Jackie Barber - 01403 563791

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

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

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

The Doosan DVF 5000 simultaneous 5-axis machine

It would still be a great machine with just half the features

Component manufacturers don't think twice when it comes to investing in 5-axis machines that deliver unrivalled speed, precision, flexibility and process reliability. That helps explain why demand for the Doosan DVF 5000 machines has remained so high.

It comes equipped with 17 kW/12,000 rpm direct-coupled spindles, 22 kW/18,000 rpm built-in option, 40 m/min rapids, linear guides, generous-sized tool changers, up to 120 tools, integrated thermal compensation systems, the latest advanced CNC controls and differently configured workpiece pallet change options. The DVF 5000 machines are helping component manufacturers improve their productivity, performance and profitability.

Plus, when you add in the machine's immediate availability and quick delivery together with Mills' best-in-class after-sales service and support it becomes even more obvious how and why DVF 5000 machines have taken the market by storm.

This is what Adrian Baker, director at Baker Engineering, said about his company's recent DVF 5000 investment: "Our decision to invest in the Doosan DVF 5000 has been vindicated. The machine has significantly strengthened our machining capacity and capabilities. It is fast, accurate and reliable and represents great value.

"On hearing that we had invested in advanced Doosan 5-axis machine tool technology, a new customer made contact with us asking us to quote on a job. We successfully turned the enquiry into an order."

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

UK subcontractors report positive outlook and look ahead to post-COVID boom

The UK's subcontract manufacturing sector appears to have weathered the COVID storm and is emerging from lockdown with exceptionally strong sales pipelines, according to a cross-section of the industry's leaders.

The positive outlook is leading many to accelerated investment plans and conversely, leading to increasing concerns about the robustness of supply chains and skills availability.

Chris Shield, director of Shield Group, a provider of machining and assembly solutions to the power generation, off-highway, construction and automotive industries, with facilities across the Midlands and North of England, says the business outlook is very positive: "The pipeline is very strong and we're feeling a lot more positive compared to six months ago now that the situation with regards to COVID and Brexit is clearer. It makes us more confident about investing further."

Chris Shield says Brexit uncertainty was a drag on the business, but since the turn of the year the outlook is much more positive: "Up until the 1st of January, the uncertainty was a real negative. However, European customers are now viewing the UK as a good source and we are seeing many more enquiries and interest. Our only concerns are finding people with the right skills and the capacity of the foundry supply chain to get us the raw materials."

His sentiments, echoed by Andrew Whitham of Brooks Ltd, a Manchester-based subcontract manufacturer of gears, sprockets, shafts and adapted transmission chains, are typical of the positive mood that is surrounding UK manufacturing.

"We've enjoyed a period of sustained growth and investment despite the challenges of COVID and lockdowns. Our key industry sectors are growing and our investment strategy has just about been able to keep up with the increased demand. The sales pipeline is very strong and our only concern is finding the right skills for our business and the robustness of the supply chain."

Andrew Whitham believes that the decision to continue with investment in new technology has been pivotal to the company's success: "We've spent more in the last 12 months than at any other point in the company's history, well over £1,000,000. We firmly believe one of the factors behind our increased turnover has been our willingness to invest in new machinery and technology."

John Hyde of John Hyde Engineering, a Stoke-on-Trent-based subcontract machining and production engineering services provider to some of the world's biggest names in plant, machinery, earth moving and engine building, is also increasingly optimistic: "We're more positive than six months ago and the pipeline is looking increasingly strong. We're benefiting from some reshoring of operations back to the UK, but finding CNC machinists with the necessary skills and sourcing raw materials a challenge."

Alan Mucklow, managing director UK and Ireland Sales and Service at Yamazaki Mazak, says the optimism of the subcontracting sector is a much needed boost for UK manufacturing: "The subcontracting sector, one of the backbones of UK manufacturing, has largely weathered the COVID storm. It is very striking when I talk to customers how positive the outlook is, particularly the strength of the new business pipeline.

"I've been particularly impressed by the continued willingness to invest in new technology, which has put many subcontractors in a very strong position to take advantage of any upturn. With the announcement of the capital allowance super deduction announced in the Budget, which effectively offers a 25p reduction in corporation tax for every pound invested in machines, I would expect this commitment to investment to accelerate further. Coupled with the increased certainty with regard to our trading relationship with Europe and with COVID in retreat, the future looks very positive."

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Are attitudes to automation changing within UK manufacturing?

For a nation which prides itself on leading the first industrial revolution by embracing what were the latest technologies at the time, today unfortunately much of the UK's manufacturing has fallen behind other developed economies through our reluctance to take full advantage of the latest robotic and automation technologies available to us.

This article by Lee Kerswell, head of business development at Altec Engineering discusses what appears to be a changing attitude towards automation within the UK, driven in part by the necessity that the UK must boost productivity to remain competitive on the world stage.

Automation has been the subject of a long running debate within the UK with a wide range of views, both positive and negative, expressed from manufacturers across multiple sectors. With the exception of automotive and it's supply chain, over the years the uptake of robotics and automation in other areas has by comparison been disappointing to say the least. The yearly statistics from the British Automation & Robotics Association (BARA) and international Federation of Robotics (IFR) have until now reflected the poor uptake of these technologies by UK manufacturers. However, latest statistics released by BARA recently show a positive change in 2020 and despite the disruption caused by the pandemic, industrial robot sales increased by 7.5 percent compared to 2019.

These statistics from BARA are very positive and they also reinforce the increased level of activity Altec has seen over recent months. There definitely seems to be a change in attitude towards the idea of automation and we are seeing this within businesses of all sizes, not just large manufacturers. The combination of effects from the pandemic on how working practices have changed for individuals, together with reduced availability of labour in some sectors and the changing business environment post Brexit, appear to have been the catalysts for increased enquiry levels."

Not only are more businesses investigating the potential for automation, the types of solutions and levels of automation have become more diverse. In the past, some manufacturers had what could be described as an "All or Nothing'' approach. If it was not possible to automate everything, or if the cost was deemed to be too high, the whole project would be shelved.

There is now a greater understanding that there are benefits to be had by introducing smaller systems or islands of automation, which could potentially be linked together at a future date. A further benefit of this approach, especially for those new to automation, is that a smaller project is likely to be implemented more quickly and with less technical risk therefore more easily achieving the objectives and payback anticipated at the outset.

Many automated solutions will encompass multiple technologies and to those new to automation the idea of dealing with these systems on a day-to-day basis can initially seem daunting. There is little doubt that "fear" of technology has been an inhibitor to the uptake of robotics and automation in the past, however this is where the role of the system integrator or automation specialist can make a real difference. Our experience is that once the concept has been fully explained to the customer, supported by 3D layout drawings, they quickly become very comfortable with the idea that what is being proposed is a combination of field proven technologies from world-class suppliers configured as a turnkey solution to meet their specific needs.

Collaborative robots are also being seen by an increasing number of manufacturers as either a first step into the world of automation or as a way of improving existing operations by removing some of the tedious and low skilled elements of an application from the operator. Furthermore, adopting automation to address current shortages of labour and skills not only allows businesses to improve output and productivity but also upskill existing personnel which in turn helps to boost employee retention levels.

If the trend we have seen over recent

months towards seeking increased levels of automation continues throughout 2021, the UK will definitely be on a path which will address the shortcomings of the past and set us on a course for sustainable manufacturing across a wide range of sectors.

Altec Engineering has established itself as a trusted partner to many different UK manufacturers, supplying a wide range of services and solutions including automation, special purpose equipment, system integration, engineering support and toolmaking. The company is also recognised as integration partners for a number of the major industrial robot suppliers and many of the systems designed and manufactured for customers incorporate robots alongside a wide range of other proprietary technologies.

Originally founded in 1978, Altec Engineering Ltd, based in Durham, North East England, has established a reputation for excellence in engineering and customer support. Over the last 40 years, it has become a trusted partner to a wide range of customers, who operate in diverse industry sectors both within the UK and internationally.

Altec Engineering Ltd
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www.alteceng.co.uk

Automate your existing machine tools

For too long, manufacturing automation has been associated with new machine tool purchases and, while Fastems has for decades integrated existing customer machines and systems to its expansive automation portfolio, Engineering Subcontractor endorses the renewed message to encourage customers to optimise their existing investments.

Realising customers' exact requirements

No two customer requirements are the same, but Fastems' expansive scope of supply satisfies one-machine-tool businesses or multi-nationals with 100's of machines. In the UK alone there are +70 installations, some from the 1980s that remain in full operation and supported by Fastems UK Life Cycle Services team. With currently 4,000 systems in operation globally, Fastems is recognised as a world leader with the ability to satisfy customers current and future needs.

As an Open Integrator, Fastems has unique advantages, not least experience automating +100 machine tool brands and 1,000s of brand iterations. Furthermore, the ability to integrate value added processes including cleaning, inspection, marking, assembly, in fact any manufacturing application. Fastems' biggest differentiator is surely its Manufacturing Management Software (MMS), that is the result of 35 years operation, with version 8 available later in 2021. MMS facilitates flexible manufacturing systems and agile production of batch-size-one, meaning users are in full control of their manufacturing and business.

Clearly performance is paramount in any buying decision and the combination of best in class components, proprietary software and a global service presence yields one valued customer to report "we are currently achieving +95 percent spindle OEE across 30 machines using Fastems automation and digital manufacturing solutions."

Accompanying 8,760 hours per annum performance is the professional UK LCS team that in 2019 maintained 85 percent of all service matters remotely, meaning downtime was minimised, costs were reduced and efficiency maximised.

Independent of any other, Return On Investment (ROI), including future-proofing and protecting obsolescence, remains at the core of all buying decision. As one UK customer recently reported: "At £98k Fastems FPC was cheaper than a pallet-pool and the advantages, not least the ability to automate three machines on one-cell, means we have unique advantages over our competition." Fastems is always cautious about bold OEE or ROI statements as they are at least subjective, but experience proposes stand-alone machines, where cycle times are <30 mins yield typically yield 40 percent spindle OEE and with basic FPC automation, this can be increased to 90 percent during manned hours and 70 percent during unmanned hours. These circumstances then propose an increase in productivity (with the same resource) of 2,750 hours per annum or, charged at £35 x an extra 2,750 hours, a ROI within 12 months is certainly not unreasonable. When you add 2nd and 3rd machines the ROI period plummets even further.

Fastems delivers intelligent factory automation solutions around cutting machine tools and related processes. It is a family-owned business with 40 years of automation experience, over 4,000 installations and main markets in Europe, North America and Asia. Its mission is to help metalworking manufacturers improve their productivity and profitability.

The main application fields are pallet and robotic automation, always equipped with industry-leading MMS production planning and execution software. It also has solutions for automating the production and resource planning of stand-alone machine tools. The systems are supported by a wide range of services.

Why Fastems?

MMS industry leading software is capable of planning, executing and visualising production in different manufacturing settings. Fastems has 40 years of automation expertise, over with 4,000 installed systems and 90 machine tool brands integrated. Its wide portfolio comprises modular systems to large tailored solutions. With open integration, it is able to integrate any machine tools and value adding processes into one system.

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New cell demonstrates automated, high-speed production of mill-turned components

Speedio 30-taper, 3- to 5-axis machining centres built by Brother are able to produce components in such short cycle times that it is difficult to load raw material and unload finished parts by hand quickly enough. In order to maximise production efficiency, the Japanese machine manufacturer introduced a robotic handling system, Feedio, at the EMO machine tool show in 2017.

Now an automated cell comprising both products is available for demonstration in the Kenilworth showroom of sales and service agent, Whitehouse Machine Tools. It is designed to show to British and Irish manufacturers the suitability of the configuration for unattended and overnight running in high volume production environments.

A Speedio M300X3 trunnion-type, 5-axis mill-turn centre has been chosen to demonstrate the benefits of the Feedio automatic load/unload system. The machine is able to perform prismatic and rotational metalcutting in one hit within a 300 mm x 440 mm x 305 mm working volume.

Notable features include a BIG-Plus face-and-taper contact spindle that accelerates from zero to 16,000 rpm in 0.2 second, a -30 to +120 degree tilting table axis, high output turning capability that generates a maximum torque of 102 Nm and rotational speeds up to 1,500 rpm from zero in less than 0.3 second and a Brother control with increased memory for holding multiple programs.

The working area of the Speedio M300X3 mill-turn centre showing the trunnion arrangement, torque table for turning operations and the robot positioned to the side

When milling, up to 30 m/min cutting feed rate maintains a high level of productivity and 400 Nm of C-axis clamping force ensures that accuracy is maintained. Non-productive time is minimised by repositioning the X, Y, Z, A and C axes simultaneously during tool change, which takes place in 1.5 seconds chip-to-chip.

To extract the most from the high productivity that this specification offers, the machine is linked to a Feedio component storage and robotic handling system developed jointly by Brother and ABB. The plug-and-play, retrofittable automation is able to serve either one machine, or alternatively two to enable op 10 and op 20 machining of prismatic parts on six sides.

The automation unit is designed specifically for Speedio machines rather than being a generic solution provided by a third party. It communicates with the machining centre control via a Profibus interface. A smart ABB teach pendant incorporating a customised Speedio page is provided for programming the 6-axis robot.

Having a handling capacity of 10 kg or 20 kg, it can be equipped with standard grippers or an adjustable double gripper. A camera and built-in PC allow the robot to detect where on the upper inlet conveyor a billet, casting or forging has been placed. After machining, components are returned to an output conveyor positioned below the first. Options include a static station for regripping a component, a turn-around station and equipment for deburring, washing, air cleaning and marking.

The Speedio / Feedio demonstration cell in Whitehouse Machine Tools' Kenilworth showroom. Accessibility to the machine from the front is maintained, as the automation unit is positioned to the side, a configuration that allows two machining centres to be served

The 6-axis ABB robot with a double gripper for handling raw material from the upper conveyor into the machining centre and finished parts onto the lower conveyor after machining. Both conveyors can be up to 5 m long

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Robot wins on aggregate

A leading special purpose machine builder has released a video showing a robot working as part of a flagship form-fill-seal bagging system in the aggregate industry.

Established more than 65 years ago and still family owned and run, Haith Group is one of the UK's premier designers and manufacturers of specialised machinery. In addition to a significant UK customer base, the business also exported machines to 13 countries in 2020. Haith's special build capabilities include bespoke palletising and bagging systems as well as tailored, fully mobile form-fill-seal machines for aggregate and root crop handling systems.

In its recently released video, Haith shows a Kawasaki CP180L robot deployed as part of a typical form-fill-seal system. The robot is seen picking up the filled and sealed bags of aggregate, each weighing up to 40 kg, lifting and rotating them through 90° and then stacking them in the approved and programmed pattern onto adjacent pallets ready for dispatch.

Commenting on a record year for sales of its latest systems featuring the robot palletising facility, Haith's Carl Taylor says: "We have used Kawasaki robots exclusively for more than 25 years on all our special purpose systems. They have performed faultlessly. Our business has established a hard-won reputation for designing and delivering systems with unrivalled durability and reliability coupled with a lengthy service life. That is exactly what our experience of Kawasaki robots has been too."

Kawasaki Robotics' Ian Hensman adds: "We are in our 26th year of partnership with Haith and are delighted to have secured this latest order from them. Their machines are precisely tailored to customer requirements and our robots offer the freedoms, flexibilities and durability that the Haith design team know they can rely on".

Kawasaki's CP180L is one of the manufacturers' most popular robots in the UK and is widely used across many industries. It is particularly suited to challenging applications in arduous environments where heavy payloads and high precision coupled with speed and accuracy are required. Carrying its maximum payload of 180 kg, the 5-axis robot offers a reach of 3,255 mm and a palletising capability of more than 2,000 cycles/hr. Despite the speed, positional accuracy when carrying the 180 kg payload at maximum reach is +/- 0.5 mm.

All Kawasaki robots, from the smallest to the largest, are now available on attractive and flexible leasing terms.

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Award winning Stäubli TS2 industrial robot series

Thanks to their smart and compact design, unmatched performance and connectivity, Stäubli's revolutionary 4-axis TS2 Series have received the prestigious Red Dot award in the Product Design category.

First introduced in Germany in 1955, the Red Dot Design Award is one of the most sought-after quality marks for good design. The award breaks down into three competitions which are each organised once a year: Product Design; Brands & Communication; Design and Design Concept. The Red Dot Award documents the most prominent trends worldwide with the award-winning designs being showcased in exhibitions around the globe, as well as within the Red Dot Design Museums, yearbooks and online.

Stäubli Group division manager Christophe Coulongeat comments: "We are very proud to receive this prestigious prize. It rewards the passion and commitment of the Stäubli teams designing products and solutions with unmatched performance, precision and reliability for various environments from harsh to sterile."

The complete overhaul of the 4-axis series incorporates a pioneering design for hygiene compatibility, which both expands the range and scope of potential applications within sensitive environments where ultra-short cycle times are required.

The TS2 SCARAs feature a modular design and now have embedded Stäubli's proprietary drive technology, which previously set new standards in its 6-axis systems. These components are a key factor in the unmatched performance of the 4-axis TS2 family. In addition, the hollow shaft principle allows for a unique cleanroom design that eliminates external cabling.

The TS2 robot family includes four models: the TS2-40 with a 460 mm range, the TS2-60 with a 620 mm range, the TS2-80 with an 800 mm range and the TS2-100 with its impressive working radius of 1,000 mm. The load capacity of all four machines is 8.4 kilos. TS2 robots are amongst the most compact and lightweight SCARA industrial robots. They are recognised as leaders in the SCARA market for their dynamic performance, fastest cycle times, best in class repeatability, highest encoder resolution for dynamic trajectory precision and an unbeatable IP rating.

Stäubli (UK) Ltd
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Pulling out all the stops

Leading precision subcontractor invests in its first collaborative robot (cobot) from Mills CNC Automation as a route to helping improve its productivity, efficiency and machine tool utilisation

Mills CNC Automation has recently supplied a new Doosan cobot to NPI Solutions Ltd, a leading precision subcontractor based in Irvine, Ayrshire. The M1013 cobot, with its 1.3 metre reach radius and 10 kg payload, was delivered to the company in September 2020 and was integrated with a Doosan DNM 350 5AX 5-axis machine previously acquired by the NPI, from Mills CNC in 2016.

Since being installed, the cobot has proved its worth by helping NPI optimise the DNM 350 5AX's spindle up time, minimising operator interventions and dramatically improving the machine's output.

NPI is a company committed to continuous improvement and best-practice. As such, it regularly monitors, collects and analyses machine tool performance data, calculating the effectiveness and efficiency of the equipment it uses. The objectives being to accurately identify production 'pinch points', to remove and/or reduce the issues that cause machine downtime and to make manufacturing processes as productive as possible.

NPI's managing director Kevin Priestley says: "We invested in a Doosan 5-axis machine tool in 2016 to help make us more productive, efficient and competitive. The ability to machine precision parts in one setup, via 3 + 2 and 4 + 1 machining was the appeal and the goal."

However, analysis of the machine's performance over a period of time revealed that it was failing to deliver the expected results.

"It wasn't the machine's fault," explains Kevin Priestley. "It was directly related to the type of production work we do which is characterised by low volumes and small batches and by short part cycle times."

As a consequence, the company began to explore automation as a route to improving the machine's utilisation and output.

The automation decision

NPI is no stranger to automation or to unmanned operations having previously invested in high-performance bar feeders to increase the productivity and performance of its CNC turning operations. To increase the productivity of its DNM 350 5AX machine, the company explored a number of automation options before deciding on the cobot investment.

Kevin Priestley continues: "When we found out that Mills CNC, through its newly-created automation division, could supply us not only with a Doosan cobot but also project manage and undertake its installation and provide comprehensive training and applications support, we decided to put our plans into action.

"We visited Mills CNC Automation's facility in Leamington to meet the application engineering team and discuss our specific requirements with them in more detail. Ultimately we gave the 'green light' to the investment."

To undertake what are essentially machine tending operations, NPI worked alongside Mills CNC Automation engineers to identify the right cobot for the job. The cobot selected, based on the dimensions and weight of parts machined on the DNM 350 5AX, was the M1013 model.

The M1013 has a 10 kg maximum payload and a 1.3 m reach. The cobot also features

six high-torque sensors that provide 'best-in-class' collision protection and was supplied to NPI with a controller, a teach pendant, a RG6 (OnRobot) gripper and a Schunk workholding package.

Situated adjacent to the DNM 350 5AX which, as part of the installation was fitted with an automatic door opening/closing facility, the cobot is programmed to pick up blanks positioned on a peg table and load them, in turn, into the machine where they are machined to completion.

Once machining operations have been completed, the cobot takes the finished component from the machine and places it back on the peg board in its predetermined position. This cycle is then repeated, with no operator intervention, until all the parts have been machined.

Parts machined on the DNM 350 5AX are typically made from aluminium. They vary in size i.e. 15 mm x 15 mm x 15 mm at one end of the spectrum through to 150 mm x 150 mm x 20 mm at the other. Cycle times can be as short as two minutes or up to 60 minutes depending on part size, complexity and features.

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FANUC launches its strongest SCARA robot yet

FANUC has expanded its SCARA robot line-up with the introduction of the newest model: the SR-20iA. Able to carry payloads of up to 20 kg, it is the company's strongest SCARA to date.

The increased payload capacity of SR-20iA, alongside its small, lightweight design, opens up new operational possibilities in assembly, handling, picking and packaging applications. Its footprint of 280 x 364mm, weight of 64 kg and 1,100 mm reach allows the SR-20iA to operate at maximum efficiency, even in compact spaces. Small but mighty, it fulfils the requirements of high-speed assembly, ensuring a high total part throughput.

Internally routed services give the robot a clean and clear look, minimising the interference area and making it simple to be installed into any assembly line. A waterproof, white epoxy paint IP65-rated variant is also available to meet cleanroom environment demands.

Oliver Selby, Robotics business development manager at FANUC UK, says: "We are excited to launch the SR-20iA, which has been specifically designed to simplify integration for our customers. It represents a highly efficient and cost-effective solution for a broad range of packaging and assembly applications."

Powered by the R-30iB Compact Plus Controller, it supports a range of software options including FANUC's image processing tool iRVision and logistics software iRPickTool. FANUC also offers the software iRProgrammer for easy robot setup and programming, which can be accessed through web browsers on both tablets and computers.

The SR-20iA's 20 kg payload and high-speed make it a suitable alternative for traditional packaging applications. It also supports larger grippers and therefore the assembly of bigger parts. The SR-20iA offers FANUC quality and functionality to businesses with varied packaging needs, representing a practical and economical solution.

Oliver Selby concludes: "We always strive to ensure the best performance from the smallest possible footprint and this is exactly

what we achieved with the SR-20iA. The compact design and functional capabilities allow the robot to be suitable for a variety of manufacturer requirements. Complete with FANUC's state-of-the-art software and support, it is the perfect addition to any production line."

To view the new SR-20iA and rest of FANUC UK's range of robots, please visit: **https://www.fanuc.eu/uk/en**

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LANG Technik delivers 'lights-out' machining to Ritchie Precision

LANG Technik products are the first choice workholding systems for many users involved in the global machining industry. Previously sold in the UK through a distributor, LANG Technik UK was established in 2019 to provide sales and application support for both existing and new customers.

In addition to achieving excellent levels of sales of the company's famous workholding products, over the past two years LANG Technik UK has also had great success in installing a number of the company's highly-efficient LANG RoboTrex automation systems.

The most recent LANG RoboTrex installation was at the premises of Ritchie Precision based in Livingston, Scotland. In addition to other machining capabilities, Ritchie Precision offers leading 5-axis CNC milling and turning services. The company serves a range of demanding global sectors including the oil & gas, power generation, ultrasonic, opto-electronic, scientific instruments and not least the laser and medical industries.

Ritchie Precision recently had the opportunity to quote for a high-volume, long-term contract related to the manufacture of intricate, multi-feature medical components with extremely challenging dimensional tolerances. Mindful of the length of the potential contract and the fact that the company could amortise some of the costs involved in purchasing the necessary equipment, the amost efficient methods of producing the complicated components and of achieving their demanding dimensional specifications were investigated.

Having decided that 3 x DMU eVo series universal machining centres from DMG MORI UK were the ideal machine tools for realising the required precision standards and production volumes, a cost plan was created, a successful quote was tendered and the contract was secured. Owing to the components' demanding accuracy specifications, the 3 x DMU eVo series machine tools were specified with a range of advanced features, such as coolant preheaters to help eliminate the manufacturing inaccuracies caused by coolant 'shock'. So challenging were the precision specification of the components, Ritchie Precisions' new machine tools were installed in a refurbished, temperature-controlled factory.

The final elements that are now enabling the contract to be undertaken in an effective and profitable way and that allow the new components to be produced in the required high volumes and within specification are the highly efficient LANG Robo-Trex automation systems that now serve each of the company's new universal machining centres.

Working unattended and fed by the Lang Robo-Trex systems, the company's three DMU eVo series machines run throughout the day. Before the end of each day shift, the Robo-Trex trollies are restocked with batches of workpieces, enabling each machining centre to run unmanned throughout each night.

Each of Ritchie Precision's three Lang Robo-Trex robot systems use two high capacity trollies that act as mobile storage mediums. The trollies are loaded with multiple vices that hold workpieces ready for machining. Unattended, the systems' robots pick workpieces from the trollies, load them into the machine tools and, when fully machined, return them to the trollies. Once filled with fully machined parts, each trolley is removed and a replacement loaded with ready to machine workpieces is added.

Two classes of Robo-Trex trollies are available, each with two size options. The smaller version, the Robo-Trex 52 trolly has a capacity of 30 vices with max part size of 120 x 120 x 100 mm, while the larger model has a capacity of 42 vices with max part size of 120 x 100 x 70 mm.

The smaller version of the Robo-Trex 96 trolly has a capacity of 15 vices with max.part size of 205 x 205 x 90 mm, while the larger model has a capacity of 16 vices with max part size of 205 x 150 x 150 mm.

Each Robo-Trex system is able to accommodate four trolleys. Therefore, depending on part size, the available storage capacity increases to 120/168 vices or 60/64 vices.

A simple to operate touch panel enables easy control of the automated system and, as external access to the trolley is possible, production remains seamless as machining cycles do not need to be interrupted. Control of the system's zero-point clamping system can be performed either pneumatically through the machine tool, or mechanically through the system's robot.

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Sherpa Mobile Robotics deploys a fleet of robots for line-side automation at FPT Industrial

The FPT Industrial plant in Bourbon-Lancy, in the Saône-et-Loire region of France, assembles 35,000 high-powered gas and diesel engines per year, destined for agricultural machinery, buses and trucks.

These parts are large and heavy and, with the specific tools needed for their assembly, the pallets were taking up too much space in the assembly line. Parts flow management and operator movements were not optimised.

To achieve its objectives, FPT called on Sherpa Mobile Robotics and its mobile and collaborative robots. Unlike Automated Guided Vehicles (AGVs), these AMRs do not rely on dedicated paths. They are programmable to be able to adapt to their environment with its constraints and constant evolution. SMR proposed a complete reorganisation of the assembly line with the support of a fleet of six robots managed by its Fleet Management System software.

The assembly was reorganised into two parallel lines separated by a central aisle. One line is dedicated to the preparation of the sub-assemblies and the other to the assembly of the 150 engines to be produced each day, working in two shifts. The six robots are deployed in twos, two each for the three assembly stations for motor supports, motor flywheels and basins. At the robot's departure point, one person prepares the parts. When the robot arrives at the assembly line, another person is there to receive the parts. The robots have three programmed missions for each of the assembly stations. Each robot brings a prepared and assembled sub-assembly from the preparation area to the assembly area and then returns.

Central to this organisation is line side management that is both automated and mobile, while the operators stay in their work area. The Sherpa robots come to them, carrying the parts and specific tools. The parts are prepared elsewhere, in the preparation line, where they are unpacked and laid out ready for assembly, along with the necessary tools. "The robot arrives at the right time with the right part," explains Damien Winling, technical director at SMR. Using this fleet makes assembly tasks less arduous and reduces the risks associated with transporting loads. Because the flow is managed more smoothly, this increases productivity. The robots are used 20 hours a day. In total, 450 robot missions are carried out daily. "

The advantage of Sherpa robots is that they can move about in the midst of operators, trucks and AGVs. The AMRs do not use laser guidance or ground markers but rely on their intelligence and ability to create maps of the space and predefined routes, unlike AGVs which do not deviate from their routes. They offer maximum safety with regard to people, obstacles, and transported material. Each robot is equipped with a Lidar, 360° laser navigation sensor, a robust and reliable localisation system and safety sensors to detect obstacles on the ground. The sensitive edges stop the robot if it touches an obstacle. Safety electronics provide the means of verifying that the various instructions given to the external elements, motors, sensors, etc, are correct.

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MAZAK CV5-500

Advanced technology manufacturing for everyone

This article shows how machine tools have experienced the same evolutionary process. We see how two very different aeronautical enthusiasts, one involved in model aeroplane engines, the other in vintage aeroplane restorations, used advanced machine tools to help them improve and expand the businesses created by their passions. As smaller enterprises, they were able to afford and access manufacturing technology previously only seen in large-scale organisations with the resources to purchase and operate it.

Model aircraft engine builder Ploberger Modelltechnik improves production profitability and flexibility

Based in Attnang-Puchheim, Upper Austria, Ploberger Modelltechnik sells its high-end model aircraft four-stroke engines all over the world. After deciding to further increase production flexibility and profitability, while reducing dependence on contract manufacturers, the company invested in the new CV5-500 5-axis machining centre from Mazak.

Above all, the machine brought simultaneous processing and modern control technology into the very limited space available within the Ploberger facility. It provided a larger working area from the smallest possible footprint, backed by an excellent price-performance ratio. Additionally, Ploberger's investigation into the CV5-500 soon revealed its control system as another plus point. It was an unfamiliar departure from the previous experience, yet proved to be intuitive, easily accessible and readily open to parameter editing.

Ploberger's Kolm Engines brand is a leader for powerful remote control (RC) engines. The entire portfolio ranges from small single-cylinder engines with 50 cc displacement, through two-, four- and six-cylinder boxer engines, to four-cylinder in-line engines of up to 460 cc.

While being worldwide and high end, the market is also somewhat niche. It comprises customers who are willing and able to spend up to 100,000 euros on their hobby and enjoy the sound and performance of a four-stroke engine. Accordingly, around 60 engines, with an upward trend, are built every year; prices range between 2,000 and 10,000 euros.

Depending on type, the engines contain up to 150 parts. However, the company can now manufacture 95 percent of these in house, including the ignition, thanks to their new Mazak CV5-500. The parts include crankshafts and camshafts made of tempered steel 42CrMo4 as well as various housing parts and other components made of aluminum, which are ideally produced in batches of 50 to 200 pieces. Weight limitations preclude the use of materials like titanium, while only the carburetor, screws and piston rings are bought in.

Mazak CV5-500

The Mazak CV5-500 is an entry-level 5-axis machining product, specially developed and built for the European market in Mazak's European Technology Centre located in Worcester, England. With a fourth and fifth axis on the cross table, the machine offers all the advantages of stability and accuracy together with very attractive pricing.

These advantages, together with its compact size and sophisticated yet intuitive control system, take the CV5-500 beyond

large manufacturing facilities and into enterprises like Ploberger Modelltechnik with more limited space, budget, and staff. For Ploberger, it also offers entirely new possibilities; not only for additional products, but also for contract work for high-end customers.

Improving capacity and capability for vintage aeroplane restorer Kennet Aviation

The popular Mazak QUICK TURN 250MSY CNC turning centre is also making an impact on a smaller enterprise. Kennet Aviation, a leading restorer of vintage aeroplanes, has increased its capacity and ability to produce challenging bespoke parts by investing in one of these machines. Following recent approval from the Civil Aviation Authority (CAA) to act as a manufacturing entity, it allows the company to quickly produce high-accuracy, bespoke aircraft components and significantly reduce the time taken to restore the aircraft.

Kennet's activities cover renovating and servicing historic aeroplanes including the Supermarine Seafire used in World War II, to the stringent standards of the CAA: the UK's specialist aviation regulator. Existing components for older aeroplanes are rare, while Kennet often found ordering the small batches they needed from general subcontractors to be expensive. This drove the company's decision to invest in a high-quality CNC machine tool to manufacture parts in-house.

In Kennet's view, the QUICK TURN's speed and accuracy in producing parts has been matched by the quality of Mazak's service. This experience has led to Kennet's second investment; a VCN530C vertical milling machine with an additional rotary axis. When this arrives, it will give the company 100 percent capability in producing any parts needed for both aeroplanes and classic cars, which is proving to be another successful market for Kennet.

Just as for Ploberger, Mazak's advanced yet affordable and accessible manufacturing technology is opening up new horizons for Kennet Aviation around the world; not only for vintage aeroplane collectors and restorers, but also for vintage cars and general subcontracting.

The benefits of evolving technology

The earliest commercial computers comprised hot roomfuls of temperamental equipment that needed specialists to program and operate. In 1944, the Electronic Numerical Integrator and Calculator, or ENIAC, considered the grandfather of digital computers, filled a 20 ft by 40 ft room and had 18,000 vacuum tubes.

Model aircraft engine builder Ploberger Modelltechnik

Since then, computers have steadily evolved, from mainframes through minicomputers like Digital Equipment Corporation's (DEC's) PDP-8 in the 60s, the IBM PC (1981), laptop PCs and ultimately to the tablets and smartphones that we take for granted today. As they shrank in size, energy demands, and cost and became easier and more powerful to use through programming languages, operating systems, applications packages, networking and the Internet, they expanded into smaller offices and eventually into people's homes and pockets.

Although smaller-scale and more focused evolutions in areas like manufacturing technology do not create the same publicity or impact on the world stage, they are still bringing significant benefits to those who use it. The Mazak CV5-500 is a good example of this. It has been designed, developed and manufactured specifically to focus on a market segment that had not been previously targeted. This segment, with enterprises like Ploberger Modelltechnik and Kennet Aviation, has access to extensive expertise as well as the Mazak equipment to achieve their productivity goals. Recognising that taking the first step into 5-axis can be a daunting prospect, Mazak has a century of CNC experience and applications engineers available to supply support as needed.

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Dugard offers blueprint for success

Despite only being founded in 2004, Machfab Engineering Ltd is managed by directors with more than 60 years of manufacturing expertise in all aspects of machining, sheet metal and fabrication. Regardless of experience we can all learn new tricks and for this Birkenhead company, the learning curve has taken a new twist with investment in 3D printing and CNC machine tools from Dugard.

With customers in industry sectors as diverse as automotive, aerospace and offshore through to the petrochemical, pharmaceutical and food industries, Machfab offers a complete range of services that ranges from conventional and CNC milling & turning, jigs & fixtures, breakdown and repair work to press tool manufacture, reverse engineering, prototyping, R&D as well as sheet metalworking. Some of these services were not previously available.

As Machfab Engineering Ltd director, Ian Hazlehurst explains: "Two years ago, we had the idea to diversify the company, we have always predominantly been a conventional machine shop and we wanted to get into CNC machining, but we wanted to do something different to everybody else. So, we went down the 3D printing route to get into additive manufacturing. We worked with the Liverpool Innovation Fund and we managed to get funding from them to purchase our first 3D printer."

The company bought a Stratasys Fortus 380mc. Explaining the reason for buying the machine, Ian Hazlehurst continues: "We bought this machine to get into additive manufacturing and primarily prototyping for R&D work. If we can get a project where we get a final part, we would never be able to offer the service to manufacture that part. This is why we invested in CNC machining to offer customers the full package."

Another reason the company opted to invest in CNC machine tools was that it was not always competitive on batch work or small production runs of components. Ian Hazlehurst continues: "We weren't competitive on volume work as everyone has CNC machines and we had conventional machines, which meant our production times were a lot longer. So, we decided as part of the project with the 3D printer to invest in two Dugard machining centres."

The subcontract manufacturer simultaneously purchased a 3-axis Dugard 1100 machining centre with a rotary table as well as a Dugard 1000E machining centre. Ian Hazlehurst continues: "The story behind the Dugard 1000E machine is that Dugard actually gave us the machine as a 'test machine' as we had initially decided to buy the larger Dugard 1100. The Dugard 1000E machine was installed for our guys to learn on and we liked the machine so much, we bought it as well as the larger Dugard 1100 machine."

For a company that had not yet stepped into the realms of CNC machining and had a history steeped in conventional machining, the initial loan of a CNC machining centre to prepare the North West Company for CNC production goes a long way to demonstrate the service provided by Brighton-based Dugard Machine Tools.

Referring to the larger of the two machines and why the company chose the Dugard 1100, Ian Hazlehurst recalls: "We wanted a machine that gave us the diversity of components that we could put on the machine. We have a 4th axis unit installed on the machine, so we can offer additional services and flexibility. We also have the Renishaw probing system. This means that we can take measurements of parts before we remove them from the machine as certain customers asked if we could do that. Equally important is the fact that the machine has a large bed and a powerful spindle where we can take large chunks of material off and we can machine hard steels as well."

The Dugard 1100 VMC provides a spacious work envelope of 1,100 by 610 by 560 mm in the X, Y and Z axes with a 1,000 kg maximum table load that can be accommodated on the 1,250 by 600 mm bed. The

machine also provides a 20 to 10,000 rpm speed range that guarantees exceptional levels of torque throughout the speed range. Complementing this is the 24-position automatic tool change carousel and the BT40 spindle taper that permits heavy-duty cutting on a complete range of materials, including the most challenging aerospace-grade materials. Furthermore, both machines supplied to Machfab include the powerful Siemens CNC control unit. However, the impressive workhorse is also available with FANUC and Mitsubishi CNC options to suit the requirements of the end-user. The Dugard 1000E that was initially installed as a 'test machine' is a cost-effective VMC with similar characteristics to the larger Dugard 1100 VMC, which is why the company opted to keep the trial machine alongside the larger 4th axis Dugard 1100 VMC.

"Now we have the Dugard machines, we know we can make the parts and we know we can make them right. The machines also make us competitive, so we pride ourselves on the fact that we know our pricing will be right, we will deliver on time and customers will always get exactly what they ask for," concludes Ian Hazlehurst.

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▲ CV5-500

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ETG provides flexibility for HPC

When HPC Services Ltd was founded in 1997, the company started with a single sliding head-turning centre. Since that point almost 25 years ago, the Ilkeston company has invested heavily in sliding head technology for small part turning but, for almost everything outside the dimensional realms of sliding head machines, the Derbyshire subcontractor has put its faith in turning centres from Nakamura-Tome. Supplied and supported by the Engineering Technology Group (ETG), the Nakamura-Tome machines at HPC have provided productivity and flexibility for everything from simple to complex turning as well as the machining of prismatic parts from bar.

"I think we bought our first Nakamura machine around 2003-4 and we've had them ever since," recalls Paul Cobb, managing director at HPC Services Ltd. Now with five Nakamura-Tome turning centres on the shop floor, the subcontract manufacturer invested more than £600k in three machines in less than 12 months from August 2018 to June 2019. The Nakamura WT100 and two WT150II machines followed the July 2017 arrival of a smaller Nakamura AS200 MY turning centre with live tooling and a Y-axis facility. At that time, Paul Cobb said: "As a subcontractor, you don't know what is going to come through the door on any day, so these machines are perfect for us. We mostly use them for making mill/turned parts, on medium-sized production runs from a few hundred parts to a few thousand, that is a real sweet spot for us."

As part of the Hemlock Group of companies, HPC has more than 17 turning centres and 25 staff that are producing components for the industrial equipment sector. This ranges from fire suppression equipment, printing machinery, scientific devices, packaging machinery and camera equipment, to braking systems for the rail industry. The company typifies the subcontracting sector with its diverse workload, the variety of sectors it supports and the expansive diversity of materials it machines and the services provided. To support the diverse requirements of industry, the company has added yet another Nakamura-Tome turning centre, a Nakamura WT150IIF, that arrived shortly before Christmas.

Confirming why the Nakamura-Tome turning centres are so popular, Paul Cobb says: "A few years ago, Nakamura dramatically upgraded the older machines with new controls and much more rigid and powerful driven tooling. These machines were really good before, but now they have changed the game and I think we had to invest in the new technology when it came out. As a business, we've had a programme of investment where we have built up our Nakamura machines over the last couple of years and the latest machine is testament to both the success we've had with the Nakamura machines and our investment programme."

Before the investment drive in new Nakamura machines, HPC Services Ltd previously had the older models of the Nakamura brand. Referring to this, Paul Cobb says: "The residual value of these machines is unbelievable. We recently sold one Nakamura machine 13 years after we first purchased it and we sold it for 50 percent of the price that we bought it for. The loss you make each year really isn't that much. It caused a problem when we sold the machine because we had written it down so low year-on-year and when it came to selling the machine, we actually made a profit."

Discussing the difference between the twin-spindle twin-turret Nakamura-Tome WT100 and Nakamura Tome WT150IIF that both have Y-axis capability, Paul Cobb continues: "The WT100 is a smaller machine, which makes the kinematics and movement a little bit quicker. However, it isn't quite as versatile as the WT150II machines or the new WT150IIF that has more power on the tooling stations. The other obvious difference is the bar diameter, we can get 46 mm diameter bar WT100 machine whereas the WT150II machines can accommodate bar up to 65 mm."

Referring to the support provided by the Engineering Technology Group (ETG), Paul Cobb concludes: "We get fantastic support from ETG, we wouldn't even think about buying a machine of this type if we didn't have that level of support. We've used Nakamura machines for years and we really wouldn't change."

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XYZ Machine Tools boosted by record start to 2021

A recent CBI report indicated an increase in output across many sectors of manufacturing, a report backed up by the recent surge in demand for machine tools experienced by XYZ Machine Tools. The Devon-based machine tool manufacturer reported its highest order intake for 18 months in February, only for that figure to be exceeded in March. With the bulk of its extensive range held in stock, machine deliveries saw a similar increase, with over 30 machines being delivered in the last week of March alone.

"The last two months have been extremely encouraging and are confirmation of the positive conversations we have been having with customers since the end of 2020," says Nigel Atherton, Managing Director, XYZ Machine Tools. "The increase in business has meant we have reinstated overtime in the factory and employed additional staff for machine assembly, with further recruitment in the pipeline."

The first quarter of 2021 has proved to be very encouraging and, with the benefit of the Government's Super Deduction incentive for capital equipment, along with additions to its machine range, XYZ Machine Tools is hopeful that this positive trend will continue to strengthen as 2021 progresses and COVID restrictions continue to recede. XYZ Machine Tools' already extensive range is being added to with the arrival of new vertical machining centres and increased capacity turning centres, along with the company's first sub-spindle turning centre the XYZ SS 65.

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Starrag Heckert machining centres drive savings for aluminium foundry

Two Starrag Heckert machining centres are enabling an aluminium foundry in Italy to finish-machine rough cast components for the automotive industry and thus avoiding all the potential time and quality problems of outsourcing as well as avoiding production bottlenecks.

The two machines, a 5-axis Heckert X40 and a 4-axis Heckert H40, are also helping Lombardy-based Industria Metalli to effectively become a system supplier of components that, because of the reliability and speed of the Heckerts, are now significantly more cost-competitive than those offered by companies which do not have in-house machining.

Industria Metalli specialises in vehicle components, from supports and brackets through to housings, generating 40 percent of turnover from the automotive sector, 30 percent from the commercial vehicle market and 30 percent from agricultural. Each year it produces over five million cast aluminium parts, using 8,000 tonnes of secondary aluminium, for 160 customers around the world.

Until the installation of the Heckert machines, the company outsourced all its machining, after diecasting, the near-net shape components were finished by a subcontractor. However, outsourcing was increasingly causing logistical concerns as well as cost and quality issues.

For example, small air pockets, blow holes, can occur in cast parts, but these are often not detected during X-rays and are only picked up during final machining. The late detection by subcontractors results in significant delays to the production process; the part has to be melted down and poured again.

Such bottlenecks were a thorn in the company's side. The turning point came with the arrival of a new project manager who had worked as a machining specialist in the automotive industry. He recommended purchasing a 5-axis Heckert X40 and a 4-axis Heckert H40 to assist the establishment of a machining facility.

The machines are delivering everything that Starrag said they would and, in fact, Industria Metalli says it is "particularly pleased with the high and consistent machine rigidity". It uses diamond tools to finish the parts and even at 20,000 revolutions per minute, the diamond doesn't break if it hits a blowhole.

An electronically-controlled coolant supply ensures temperature stabilisation of the workpiece and the tool, for example, since without effective wet machining it would be impossible to achieve optimum swarf removal. This is key to a clean and rapid process; aluminium swarf can easily stick to the diamond and scratch or impair the cast component.

In addition, while many components have hard-to-reach areas such as holes or pockets, processing time has been reduced by several seconds per clamping surface compared to that offered by subcontractors as the Heckerts are run at significantly higher cutting speeds. Importantly, too, the machines achieve a surface roughness (Ra) of 20 µm, so no further processing is required.

Industria Metalli began its in-house machining by processing simple housings for oil filters, and it soon advanced to machining one in ten of its components. "I am optimistic that we will soon be able to finish more products using the Heckert machining centres and that we will also receive orders for new components," states managing director Fausto Becchetti.

He adds: "By establishing a mechanical manufacturing facility, our opportunities to progress to Tier One, to become a system supplier, have increased significantly. Our products are now significantly more competitive in comparison to those from many of our competitors which do not have in-house machining. The two Heckert machining centres represent the first milestone in our journey."

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

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GM CNC packs a punch with heavy duty VMC

For manufacturers looking for a heavy-duty machining centre that offers a stable platform for high material removal rates and is capable of cutting particularly challenging materials, GM CNC has now introduced the Victor Vcenter G135 vertical machining centre.

Like all machine tools manufactured by Victor, build quality and rigidity is assured. Confirming its credentials beyond that of its competitors in the mid-sized VMC market segment is the meehanite casting with a wide base A-Frame design, a wide span column, four boxways and screw removers with a boxway width of 145 mm and an overall machine weight of 11,500 kg. An example of this foundation of stability is a 1,400 x 700 mm table that can accommodate parts up to 2,200 kg. With exceptional rigidity and performance, the compact design provides a machine that is built to perform and built to last.

The 3-axis workhorse offers axis travel of 1,350 x 700 x 700 mm in the X, Y and Z axes with a BT50 spindle taper for maximum material removal rates. The powerful gearhead spindle design generates a power output of 18.5 kW with an impressive torque level of 498 Nm. Developed, manufactured and built in-house by Victor, the 6,000 rpm spindle has a gearhead design that retains maximum torque levels throughout the speed range. This makes the Vcenter G135 the perfect choice for machining hard materials and exotic alloys with material removal rates that far exceed that of any other machine in its class. Furthermore, this power and stability enhance precision levels with a platform that also generates surface finishes and leading component quality.

The Victor Vcenter G135 vertical machining centre has an automatic tool change unit with 24 tool capacity that can accommodate tools with a maximum tool weight of up to 15 kg. The axis feed motor on the Vcenter G135 generates 3 kW of power on all axes with a rapid feed rate of 20 m/min and axis acceleration of 0.28 G, which is driven through extremely large 50 mm diameter ball screws to further enhance stability.

As standard, the Victor Vcenter G135 is supplied with the latest FANUC CNC control unit, fully enclosed splash guarding, spindle oil cooler, screw-type chip removal, bottom guarding for coolant flushing, rigid tapping, three step warning lights, auto power off and levelling pads.

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Walter expands indexable drilling line

With an indexable insert solid drilling line that has a well-established market position, Walter has now expanded the D4120 drilling line to introduce 2, 3, 4 and 5XD dimensions. The new additions will supersede the B4000 Series Xtra.tec insert drills to provide superior performance. Regarded as a flexible all-rounder from the Tübingen-based company, the expanded D4120 indexable insert solid drill line is available in a wide range of diameters that span from 13.5 to 59 mm. The product expansion now incorporates the D4120-02 2XD drill and the D4120-03 3XD drills for creating holes from 13.5 to 41.3 mm diameter as well as the D4120-04 and D4120-05 4XD and 5XD drills for holes from 17 to 59 mm diameter with exceptional productivity and performance.

The 2XD drill has an overall length from 97 mm to 228 mm with a cutting length of 27 mm to 118 mm depending on the diameter selected whereas the 3XD drill has an overall length from 110.5 mm to 287 mm with a cutting length from 40.5 mm to 177 mm. The 4XD provides a flute length from 68 to 236 mm with an overall length from 149 to 346 mm whereas the largest 5XD drills have a maximum cutting depth of 295 mm with an overall length from 166 to 405 mm. The 2XD & 3XD drills start at a diameter of 13.5 mm and go up to 30 mm diameter in 0.5 mm increments and from 30 mm to 59 mm, the diameters increase in 1 mm increments. The 4XD and 5XD drills commence at 17 mm diameter through to 59 mm in 1 mm increments. All ranges are available with imperial dimensional options.

The drills have been specially developed with outer and centre inserts that ensure precision balancing of the cutting forces to maximise productivity. To this end, the centre insert is slightly larger than the outer indexable inserts that are equipped with a corner protection chamfer. As well as providing greater process reliability, this plays a crucial part in increasing precision levels, stability and reducing drilling noise. Adding to the process reliability is a hardened and polished drill body design that now offers increased protection against friction in operation and an improved coolant channel design that allows the flow of 25 percent more coolant than previous drills.

Walter is now also offering inserts with a wiper edge for high-quality surface finishes. The drill body features two through coolant channels and a measuring collar (Dc) for easy drill identification, even when assembled. Polished flutes and a hardened surface further optimise chip evacuation and wear resistance.

The combination of the D4120 drill body and the four-edged indexable inserts offers users cost-efficiency advantages and the greatest possible flexibility thanks to a coordinated system. This is of interest to users, both in the case of difficult machining operations, such as cross holes, chain drilling and inclined inlets and exits.

The inserts are available in WXP40 & WKP35S grades for the centre insert and the peripheral insert while WKP25S, WKP35S, WSP45 are offered with the most recently added new Tiger.tec Gold grade WSP45G. The geometries A57, E57 & E67 complement the insert grades with eight insert sizes that cover the drill body diameters from 13.5 mm to 59 mm.

This comprehensive range of grades for highly productive and efficient drilling of a variety of materials are a perfect fit for the ISO material designations P, K, M, N and S. This makes the drills suitable for typical workpiece materials in the general mechanical engineering, mould & die making, energy and offshore and automotive industries.

The rigid and robust drill bodies, the through coolant facility and polished flutes as well as the flexible choice of insert grades and geometries make the D4120 the complete solution for manufacturers in sectors from general mechanical engineering, mould and die, aerospace and energy to the automotive industry. With the enhanced range of D4120 drills, manufacturers can benefit from outstanding hole diameter precision and surface quality as well as a high degree of process reliability and cost-efficiency.

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

The company demonstrates its engineering competence at every stage of the machining process. As an innovative partner capable of creating digital process solutions for optimal efficiency, Walter is pioneering Industry 4.0 throughout the machining industry. With over 3,500 employees worldwide, together with its numerous subsidiaries and sales partners, Walter AG serves customers in over 80 different countries.

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ITC introduces vend solution

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The new SmartDrawer vending solution emphasises the Tamworth company's position as a complete cutting tool supply integrator. For manufacturers unfamiliar with the benefits of installing vending technology on the shop floor, the new SmartDrawer system has revolutionised inventory management and cut costs on the shop floor. Using smart technology to dispense single or multiple items, the configurable drawer system is the perfect solution to ensure important tools which support production are always available.

The SmartDrawer from ITC makes secure storage and dispensing simple and whatever your industry demands, this versatile vending solution delivers reliable, accurate and monitored control of your cutting tool inventory. The SmartDrawer system comprises individually locked compartments that are controlled by an easy-to-use touchscreen interface and operation is fully customisable to provide staff with self-serve access to cutting tools and equipment on demand.

With a high storage capacity and a small footprint, the SmartDrawer makes the most of limited and valuable factory floor space to make storing, tracking and dispensing products quick and easy, without compromising reliability. Some of the key features of the SmartDrawer include a touchscreen interface for quick product selection, intuitive administration functions for simple stock control, enhanced rapid refill functionality for speedy and accurate restocking, customisable storage configuration for single or multiple items, a range of drawer sizes to fit your stock list and Wi-fi network connection capability. All of this provides manufacturers with complete control and transparency of the supply chain with full audit trails to see which colleague uses what specific cutting tools, providing a complete insight of when, where and why that product was taken from a storage solution that is secured for 24/7 access whenever you need it.

The SmartDrawer system communicates with the Cloud-based SupplyPro intelligent software solution that can be configured to meet your business demands. Working with ITC and its technical partners at Tooling Intelligence, end users can choose from a range of options to optimise their vending software by adding a Virtual Inventory Module (VIM). This allows inventory to be controlled away from the vending machine.

As a fully reconfigurable system, the SmartDrawer can be adapted over time as the inventory requirements of your business evolve with the facility for auxiliary units to be added to increase the storage capacity.

CERATIZIT Special Selections publication highlights new developments and offers

CERATIZIT UK & Ireland has published the latest of its Special Selections catalogues, with almost 100 pages featuring the latest in cutting tool, workholding and technical support information.

While the list of new innovations is long, the key products in the new catalogue are the brand-new exchangeable head boring system and the KUB Pentron CS drilling system both of which offer significant advantages over existing equipment.

In applications with extended overhangs, customers are able to increase cutting data rather than reduce it to overcome vibrations, achieving reduced cycle times while also generating improved surface finish and improved tool life. Standard versions of the base holders are available from CERATIZIT in 200, 218 and 283 mm lengths and diameters of 25, 32 and 40 mm, with the vibration-damped versions available in 150, 185 and 225 mm lengths. Strengths include process security, reduced costs per component, optimum chip clearance and improved surfaces and the full benefits can be seen irrespective of the materials to be machined.

The KOMET KUB Pentron CS indexable insert drill provides a single operation, process-secure and high-performance drilling solution for bores up to 96 mm diameter with a diameter to length ratio of 3xD. To meet a growing customer demand for this range of hole sizes, the KUB Pentron CS is now part of the Ceratizit standard range and available from stock for next day delivery.

The KUB Pentron CS system is modular in design making it suitable for universal use and for many special applications. The drills consist of a burnished, wear-resistant KUB Pentron CS base holder manufactured to the exacting standards customers are accustomed to from the Komet brand. This features the proven Komet ABS system for the coupling, as it offers significant advantages compared to other interfaces, such as the cylindrical shank, especially for large holes. These advantages include a higher clamping force and torsional stiffness, as well as better values with regard to force transmission, accuracy and machining performance. Two, high-precision cartridge seats are located in the base body, with the inner cartridge able to cover a specific diameter range and the outer cartridge determining the bore diameter.

Also highlighted in the Special Selections catalogue is CERATIZIT's new LiveTechPro App. While we continue to function in extraordinary times, with face-face contact limited the innovative LiveTechPro App provides immediate and competent visual support to deliver technical assistance in case of machining issues or, simply to help optimise processes. It features a live, bidirectional video and audio connection between the customer's machine operator/production engineer and the technical support team from CERATIZIT. While the company has built its success on direct technical support, this technology means its technical sales and applications engineers don't have to be there, to be there.

To receive a personal copy of the latest Special Selection publication, contact CERATIZIT UK & Ireland on 0800 073 2073. Alternatively, it can be downloaded from the company website.

For over 95 years, CERATIZIT has been a pioneer in developing

exceptional hard material solutions for machining and wear protection. The private company, with registered offices in Mamer, Luxembourg, develops and produces highly specialised cutting tools, indexable inserts, rods made from hard materials and wear parts. The CERATIZIT Group is a market leader in various application segments and successfully develops new carbide, cermet and ceramic grades, such as for wood and stone working.

With more than 8,000 employees at more than 30 production facilities and a sales network with over 50 branches, CERATIZIT is a global player in the carbide industry. The company's international network includes subsidiary Stadler Metalle and joint venture CB-CERATIZIT.

The technology leader is continually investing in research and development and holds more than 1,000 patents. Innovative hard material solutions from CERATIZIT are used in various sectors, including mechanical engineering and toolmaking, in the automotive and aerospace industries and in the oil, gas and medical industries.

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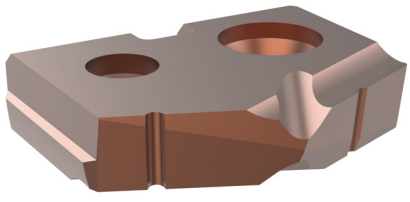
Allied Machine and Engineering launches the T-A Pro high-speed steel geometry

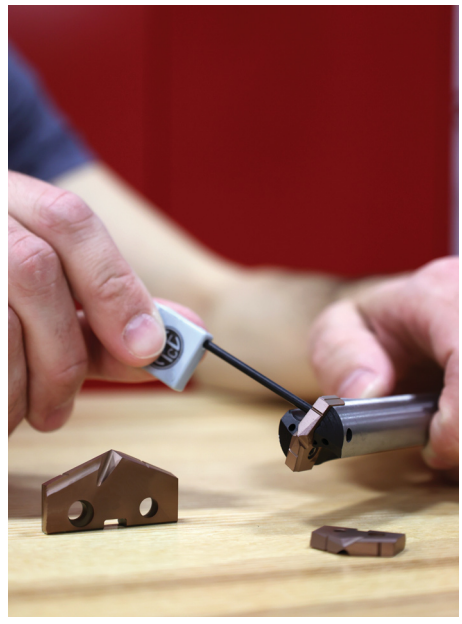
Allied Machine and Engineering, a leading manufacturer of holemaking and finishing cutting tools, has announced the newest expansion of the T-A Pro™ replaceable insert drilling system, the high-speed steel geometry insert. This Super Cobalt insert works as a drill-everything insert while significantly lowering the risk for high value components. When functioning in less than ideal conditions, the high-speed steel geometry provides superior performance and chip formation in addition to process security when needed most.

As the most recent addition to the T-A Pro replaceable insert drilling system, this insert demonstrates that the best just keeps getting better. Not only are the faster penetration rates maintained, but in using the redesigned body of the T-A Pro, maximum coolant flow and excellent rigidity are also present when utilising the high-speed steel geometry. This offers machine shops and manufacturers an insert that operates at incredible speeds and a cost per hole that averages a 25 percent saving compared to other existing drills.



With a tool life that rivals carbide, the high-speed steel geometry insert works well in almost every material class. Allied Machine's team of engineers developed this insert as the simplest solution when hole quality, tool life and process security are the primary needs of the application. Ultimately, even in the toughest cutting conditions, this insert provides excellent hole quality for use in job shops and large part manufacturers such as heavy equipment and aerospace.

The T-A Pro high-speed steel geometry is available from 11.10 mm to 47.80 mm diameter (Series Z-3).



Allied Machine & Engineering Co. (Europe) Ltd
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Heavy duty case range

If the security and safety of your valuable work equipment is a concern, leading packaging specialist rose plastic has now introduced its RoseCase ProSecure series. If you require a shockproof, dustproof and even waterproof storage solution that is extremely cost effective, the RoseCase ProSecure provides perfect protection in extreme conditions.

The security experts at rose plastic have introduced the ProSecure to meet the most demanding of environments. Whether you are a deep-sea diver or an engineer facing extreme elements on a daily basis, the ProSecure is the case of choice. With a robust and durable case, IP67 rated seals in the lid as well as an automatic pressure release valve and double throw latches for easy opening, the ProSecure prevents dust and water ingress while robustly protecting your valuable equipment.

For maximum security at a minimum cost, the ProSecure has padlock eyelets while foam inserts can be customised to suit the bespoke location and impact requirements of the user. The experts at rose plastic love a challenge and with the RoseCase ProSecure, they are once again setting the benchmark in rugged, robust, secure and safe containment of your valuable assets.

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MOSAIC fixtureless laser marking improves quality and productivity

The increasing use of lasers for marking applications is a testament to the value that manufacturers place on the technology as a marking solution capable of working with a wide range of materials across multiple market sectors.

However, the traditional method of ensuring complete consistency in marking requires the use of accurate fixtures to guarantee positional repeatability of the components. Where manufacturers have multiple product variants, this could mean separate expensive fixtures for each part type and a loss of production time when changing between variants.

FOBA has revolutionised the laser marking process through the introduction of its patented MOSAIC fixtureless laser marking technology. In this article, Andy Toms of TLM Laser, UK and Ireland distributor for FOBA laser marking & engraving, explains the benefits of the technology and how it can deliver significant improvements to quality and productivity.

This revolutionary concept eliminates the need for fixtures, allowing accurate marking of parts placed anywhere within the marking field. This innovative software feature is a powerful step forward in vision-based laser marking, speeding up both the component handling and laser marking processes, while reducing overhead costs.

The MOSAIC system uses a concept based on 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 linked to perspective.

Andy Toms explains: "Once the system has been trained for a particular component, using MOSAIC is extremely simple. Within a matter of seconds of the part being presented, which can be anywhere in the marking field, the images are acquired, the laser aligned and the laser mark generated with the highest levels of precision. For manufacturers across all sectors, the benefits are clear. Using the MOSAIC system means significant cost savings in the design, manufacture and maintenance of industrial fixtures."

Additional cost savings are generated through the ability to run mixed part variants at the same time. For example, a range of different part types could be presented to the marking system randomly on a conveyor, eliminating the need for any additional hardware to re-orientate or reposition the parts. As long as the parts are placed anywhere within the marking field, the system will determine the position and orientation prior to accurately producing the mark required.

Andy Toms continues: "There are alternative imaging solutions for laser marking which work well to a degree, but these still rely on some sort of low accuracy fixtures. Others use an external camera pointing at an angle toward the laser marking area. This approach however introduces the potential for optical distortion, which in turn can lead to significant mark inaccuracies in certain cases. FOBA's MOSAIC system overcomes all of these issues whilst delivering the highest levels of flexibility and productivity."

Further benefits result from the ability of the system to identify incorrect components or reject components. For example, if one or more rollers is missing from a bearing, that part will be rejected without being marked, thus improving quality and yield. In addition, the savings generated from the fact that no fixtures are required helps to accelerate the return on investment.

FOBA laser marking technology and MOSAIC are available from TLM Laser, recognised as a leading supplier of laser-based technologies for marking, engraving, welding, cutting, cladding, cleaning and 3D metal printing.

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Brunel invests in cutting edge technology to offer a rapid one stop engraving service

Brunel Engraving has made a major investment in state-of-the-art technology in order to significantly increase its efficiency and output, providing a rapid one stop service to the engineering industry.

The leading specialist engraver, reputedly one of the most progressive operators in the precision engraving and processing of metal and plastic components, has quadrupled its laser engraving capacity with the installation of two laser engraving machines at its production facility near Bristol.

In addition, a dedicated 1.5 kW fibre laser profiling machine, which is able to cut metals such as stainless steel up to 3 mm thick, will allow Brunel to cut profiles, shaped labels and control panels from pre-etched and engraved sheets.

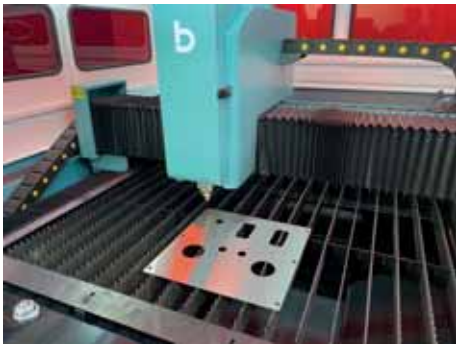
Brunel has further invested in another rotary engraving machine to expand its production in rotary engraving work. This brings the company's total rotary machines to seven, the largest of which has a maximum bed capacity of 610 mm x 1,220 mm.

The latest laser cutting and profiling equipment together with Brunel's laser and rotary engraving, chemical etching and digital print operations, will enable the company to offer the engineering industry a faster response time, improved quality control and more competitive pricing.

"We have invested in additional high-tech engraving equipment and extended our production capability to allow our industrial customers to take advantage of a complete one stop service", says Martyn Wright, managing director and founder of Brunel Engraving.

"We engrave and manufacture to high precision standards to a wide spectrum of industries, providing bespoke services at cost effective prices. We will continue to invest in the future to remain at the forefront of the engraving industry and, most importantly, to provide our customers with a perfect working partnership".

Established over 30 years ago, Brunel Engraving is a pioneering engraving



specialist which provides a complete service to a whole host of industries. The company leads the way in technical innovation. Brunel has ISO9001 accreditation and its highly skilled team of professional engravers is trained to the highest standards in the UK.

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Marking on aluminium

Aluminium is a material with many advantages. It combines lightness and mechanical strength and, in addition to its corrosion resistance, it is also an excellent thermal and electrical conductor. Capable of being 100 percent recycled, the use of aluminium is constantly increasing in industry.

A material used in many sectors of activity

Aluminium is used in a very large sector of activity, particularly in aeronautics and shipbuilding, electrical and electronics industry and rail transport. It is also particularly appreciated in the automotive industry. In fact, many car manufacturers and equipment suppliers opt for this versatile material for the manufacture of car chassis, steering columns and power steering components. It is also found in the manufacture of turbo bodies, engine crankcases, cooler or automatic air conditioning elements. Aluminium also plays an important role in the fast-developing field of New Energy Vehicles (NEV), particularly in the manufacture of electric battery casings and other electronic components.

Various marking requests

As the use of aluminium is so varied, so are the traceability requirements. Indeed, the marking requirements are of a very different nature and require barcode, Datamatrix, alphanumeric or logo marking. In addition, there are several constraints linked to the nature of the aluminium, anodised, alloy, etc, but also to the customer's requirements, particularly in terms of marking contrast or depth. It is not uncommon to be asked for a marking capable of being visible after the application of any coating or of resisting various surface treatments such as shot-peening for example.

Perfectly adapted products from SIC Marking

SIC Marking, a leader in industrial traceability, has been committed for over 30 years to providing the most appropriate marking solutions to meet the challenges associated with the identification of aluminium components. Its experience has enabled the French group to offer a technically superior range of scribing, dotpeen and laser marking machines, as well as a large number of automatic reading solutions for Datamatrix.

The SIC Marking laser product range is particularly suitable for marking aluminium components both in series and individually. It consists of lasers that can be integrated with various options including: 3D function for marking on complex shaped parts; vision function for fast and reliable barcodes and Datamatrix reading; rotary axis for cylindrical parts marking.

The range is completed by three stations, L-BOX, XL-BOX and XXL-BOX, allowing for a dedicated marking station. This can be integrated into a production line or used as a stand-alone marking station. Small, medium and even large production runs are possible. The resizing of the boxes, the creation of specific tooling and the addition of additional movements, Z-axis, rotary axis, are options available on request.

Many years of solid experience

The SIC Marking lasers, which are favoured by many customers, are a great success with ETIs and large companies that need to mark their aluminium components. For this reason, the international group with 300 employees has had the opportunity to prove all the qualities of its solutions by taking up the challenges offered by major automotive equipment manufacturers.

Among these challenges was a particularly complex request from a major Japanese player in the automotive sector who wanted a station dedicated to marking Datamatrix codes on power steering components. The solution had to withstand a constraining environment, humidity, dust, fit into a small space and adapt to different part numbers. Based on its many years of experience, SIC Marking was able to offer a compact customised station equipped with an HD laser automatically controlled on two axes, for fast and high-contrast marking. It is protected by a dust and moisture protection system, making it easy to integrate into a difficult industrial environment.

SIC Marking also includes markings on NEV battery components, turbo bodies, identification plates for electric motors, engine cylinders.

In addition to providing marking solutions that perfectly meet customer needs, the company offers personalised support and a reactive after-sales service.

SIC Marking is an expert in marking and traceability for the automotive, aerospace, mechanical and energy sectors. The company has more than 300 employees worldwide with a turnover of €55m. It operates in more than 50 countries and has nine subsidiaries. Its offering consists of standard and customised solutions in laser, dot-peen and scribing technologies as well as various associated services including customer support, spare parts, training, retrofit, maintenance contracts. SIC Marking has a customer-oriented culture and promotes operational excellence to enhance the customer experience.

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Smart scanning for laser marking projects

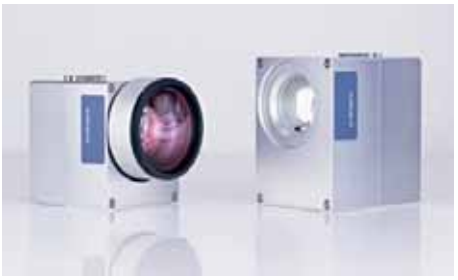
SCANLAB GmbH has introduced a new scan system, the SCANcube IV. As the primary representative of this product range, it features optional read-back functions, thereby providing an essential process monitoring component. Compared to the SCANcube III, the system linearity has been improved by 30 percent. The new housing design is both visually appealing and a functional element of the optimised heat management concept. With specific tunings, the new scan head can be optimally configured for various customer needs. One thing that remains unchanged in the new scan head generation is its outstanding price-performance ratio.

The requirements on a scan system can vary hugely depending on the laser machining process in which it is to be used. Laser marking or laser engraving processes, for instance, have very different requirements in terms of positioning speed or tracking errors compared to the requirements of processes in additive manufacturing (3D printing). To take these differences into account while still offering a flexible, cost-effective solution, SCANLAB presents the latest generation of its successful SCANcube product family.

The new SCANcube IV can be perfectly configured for the required application using different tuning and mirror variants. In combination with an RTC control board, optional read-back functions for system monitoring and diagnostics are now available. This means that the actual position, temperature and other status values can be queried reliably during operation.

The system linearity, which has been improved by 30 percent compared to its predecessor the SCANcube III, makes calibration easier and enables more precise processing results. What's more, the new elegant, dust-tight housing provides optimised heat management and ensures that the system always keeps a 'cool head', even during demanding applications.

At the time of its market launch, the SCANcube IV is available to order



immediately with a 10 mm or 14 mm aperture.

SCANLAB has been developing and manufacturing galvanometer scanners and scan solutions since its founding in 1990. Its products turn lasers into precise, highly dynamic and flexible tools that provide the basis for performing countless processing tasks.

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Local collaboration to provide fully integrated permanent laser marking

Colchester Machine Tool Solutions and locally based automation specialist, Olympus Technologies are collaborating to provide fully integrated permanent laser marking with automated robotic arm. Colchester's range of TYKMA Electrox industrial laser engraving machines offer permanent laser marking for identification, bespoke design and traceability. The machines' ability to mark almost any material, surface and composition makes them suited to a wide variety of industries and applications. They are available in a range of sizes, from compact desktop units to larger free-standing units, with expansive marking areas and custom builds which offer an almost limitless marking with 3-and 4-axis variations.

Olympus Technologies is an innovative robotic integrator, specialising in delivering high quality bespoke turnkey projects across multiple sectors, as well as creating 'off the shelf' robotic solutions for common business processes, including welding, palletising and laser marking.

The collaboration is a result of a world leading manufacturer of high spec engine components requiring a turnkey solution for its application. The application consists of permanent marking and verification of large volume manufactured components. This project was to replace manual acid etching system for marking 2D code and serial numbers, which was extremely labour intensive and often resulted in low quality code which was difficult to read with a barcode scanner, an essential part of the process.

Colchester provided a LaserGear BOQX, a low cost, high spec laser system to replace the acid etch code. Olympus Technologies then integrated the laser into its specialised production cell which processes trays of components from start to finish with the single press of a button.

The robot communicates with the laser for the entire marking process including opening the door, picking and placing the component and setting the correct focal height. The robot selects the correct

template, initiates the mark and, on completion, removes and verifies the component, all without the need for operator input.

The system is based on communication through the lasers Icon interface software and a bespoke programme written by Olympus. With an expected life span of 100,000 marking hours from the laser and the reliability of the fully automated system, this bespoke manufacturing cell should provide reliability and cost savings for the customer for many years to come.

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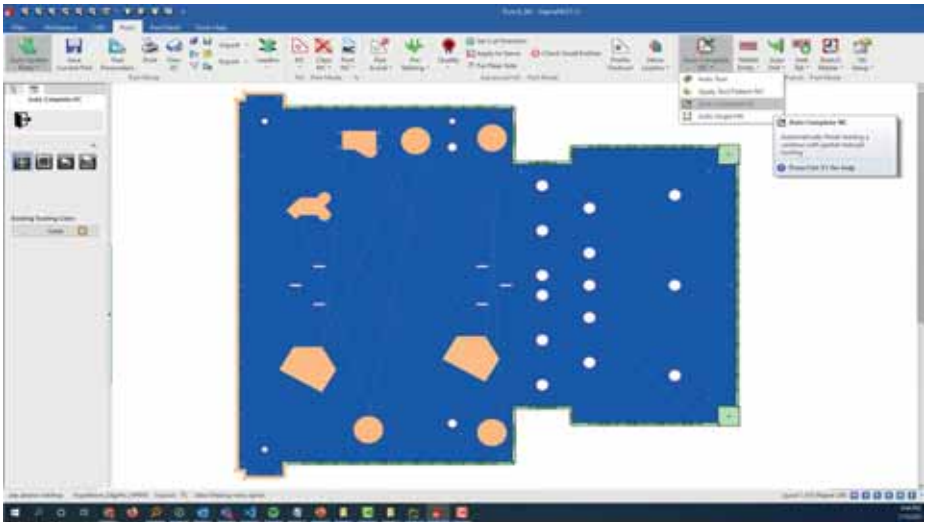
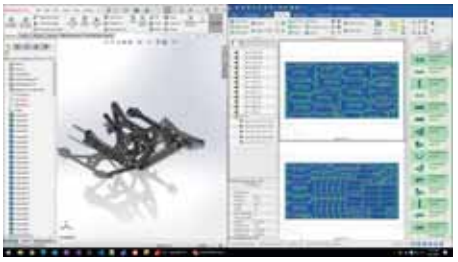
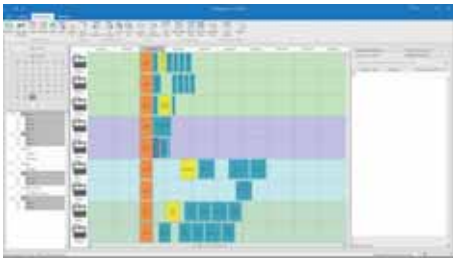
SigmaNEST Version 21 unveils the connected shop

Global CADCAM solution innovator CAMBRIO is proud to announce Version 21 of the SigmaNEST suite for fabricators. SigmaSUITE continues to close the loop on manufacturing connectivity targeting "The Connected Shop", scheduling, quoting and logistics informed by nesting intelligence. This focus, along with CADCAM enhancements centered on simplicity and best manufacturing strategies, continues to strengthen SigmaNEST capabilities.







The Connected Shop

The aim of the Connected Shop is to bridge CRM, ordering, inventory, production, delivery and accounting. New software products and enhancements to the Business Systems and Shop Floor products have expanded this integration for customers.

The debut of SigmaSCHEDULE brings true dynamic scheduling unique in the fabrication industry. Plan projects with nested programs, primary cutting operations and secondary operations such as bending. The software can be configured for your specific business needs, but also has the flexibility to instantly adjust the workflow plan to inevitable changes. Users can schedule forward for the quickest timeline, as soon as possible, or backward from a fixed due date, just in time. Estimators can use preschedule jobs to ensure delivery dates can be met before accepting the order.

"We want customers to be able to "set it and forget it" so the software works continuously in the background and requires little to no user input. SigmaSCHEDULE plus Load Manager offer a complete scheduling solution designed for the manufacturing industry," says product owner Wayne Cathers.

Load Manager software now has "real-time load balancing" to divide the work efficiently for machines and secondary operations, while identifying any sequence dependencies within the timeline. The software can also be used to automatically resolve the current day's schedule to compensate for disruptions, such as machine down time or "hot" jobs, to ensure job priorities are met.

Closing the loop

Also new to the SigmaSUITE portfolio are SigmaSHIPPING and SigmaRECEIVE. These two browser-based apps simplify logistics on the shop floor with any smartphone or tablet, giving the ability to create delivery and dispatch notes and receive deliveries. Both apps give on-the-spot access to relevant delivery data, without the need of full MRP and relay the status and location of the job without displaying confidential financial details.

SigmaQUOTE has matured with many flexible features to aid good business practices. Tiered markups that reward priority clients, nuanced markups for specific materials or operations and limited time promotions have been standardised and are easy to apply.

SigmaMRP offers better visibility and control with enhanced shop floor feedback throughout the workflow. Likewise, SimTrans boosts clarity through a new user command centre with dockable viewports and printable operational reports. The increasing integration between the Business Systems and Shop Floor products creates a closed loop of control in which each operation informs the next.

Clearer and easy CADCAM

Version 21 of the CADCAM software is all about simplifying the user experience. The vision: Make fabricators confident of the best nest with clear, easy-to-use and accurate nesting options for every manufacturing need.

The flagship SigmaNEST product has been significantly improved with intuitive nesting strategies, and simplified controls for sheet layout preference and other task parameters. A new process selection feature

for combi machines is particularly useful for defining specific technology settings such as toolpath lead-ins or NC parameters based on the cutting process.

Other major developments include enhanced common cut controls for edge quality and the ability to group patterns for fly cutting. With the development of the 3D environment, 3D beveling is much improved with simpler tabbing and countersink holes, rule-based transitions and leads and automatic ramping of the feed rate based on contour or hole size.

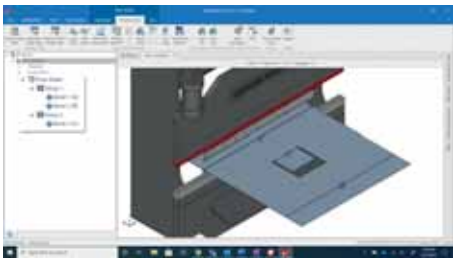
User experience for SigmaNEST Punch is improved with a clearer display of parts, shear hits, transformations and the ability to view only punch pattern actions on a program. A new automation "Auto Complete Tooling" allows the user to specify some punch details and allow the software to complete the task.

Significant development within the 3D software products includes TrueShape Nesting for SigmaCTL for angle cuts and added nesting strategies for BestStickMixed or BestStickFixed. SigmaTUBE packages for SolidWorks and standalone feature broad enhancements to importing, marking and geometry support. SigmaUNFOLD, SigmaDEVELOP and SigmaBEND have advanced functionality for handling sharp bends, tooling and setup reports and batch feedback tools.

CAD Import Plus now adds support for Parasolid and Rhino files to its growing collection of popular industry CAD formats. PDF and image import have been greatly improved with enhanced OCR results, better identification of rotated text and the ability to import multipage PDF files. SimTrans' compatibility with CAD Import Plus provides blazing fast speed in converting 3D CAD files into SigmaNEST parts.

Collaborative and diverse partnerships

SigmaSUITE Version 21 is supported by an ever-increasing diversity of posts for cutting machines and press brakes across a vast variety of brands. CAMBRIO CEO Robbie Payne comments: "With our commitment to a single platform that works across all machine types, the steady increase of OEM partner collaborations demonstrates that the SigmaNEST software solution is a clear choice for many job shops. With the recent addition of Cimatron and GibbsCAM expertise and technology to the CAMBRIO



team, our position as a CADCAM innovator has never been stronger. SigmaSUITE V21 serves as an exclamation point to that fact."

CAMBRIO is a leading CADCAM innovator in the fabrication, toolmaking, and production machining industries through three strong brands with Cimatron, GibbsCAM, and SigmaNEST. The expansive product portfolio offers a diverse set of SMART end-to-end design and machining software solutions which help customers expand their potential and drive the future of manufacturing.

More information is available at **www.CAMBRIO.com**

SigmaTEK Europe Ltd
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Unrivalled speed, consistency and ease-of-use from new Keyence measurement system

Measurement specialist Keyence has further enhanced its leading dimension measurement system range which delivers all the benefits of the acclaimed IM-7000 series but with even greater speed, accuracy and ease-of-use.

Boasting a rotary unit allowing 360° multi-surface measurement capability for both turned and machined parts, the IM-8000 is fitted with a 20-megapixel CMOS, more than three times that of conventional systems, as well as a new algorithm for stable edge detection. In addition to the new CMOS, the screen is now larger and features enhanced resolution.

As well as standard metrics, the IM-8000 can perform a whole range of new measurements including symmetry, plane measurements, flatness, cylindricity, coaxiality and run-out, delivering new data visualisations including roundness graphs. This makes it suitable for parts with even the most complex geometries.

Able to measure more than 300 dimensions per part, the system starts to measure automatically as soon as the object is placed on the stage, which now moves at up to 80 mm/s, twice as fast as the IM-7000 series, which is itself significantly faster than most alternative systems allowing even more rapid results. Highly precise dimensional measurements can be achieved in as little as 1 second.

The wide field camera now boasts single field of view accuracy of ±3.9 µm, compared with ±5 µm previously, with this camera and the high precision camera able to be used together in a single program.

No positioning or datum setup is needed, meaning even inexperienced operators can get the most out of the system. Measurements can be rapidly enabled with just a few clicks and it is equally simple to enable virtual lines and points. All of the specified dimensions can then be measured at the touch of a button, with focus automatically adjusted.

Measurement points are automatically identified, meaning the same measurement results are obtained each time, while automated focus adjustment prevents inconsistent values. Up to 100 parts can be measured simultaneously, drastically reducing measurement time when compared with alternative systems.

A highly intuitive programming procedure enables quick and easy selection of the required measurement. An automated diagnostic function assesses the stability of each measurement point during programming, displaying any variations in measured items clearly and simply, making it easier and faster to create program settings.

Meanwhile, the automated measurement function can automatically detect measurement points on parts up to 300 × 200 mm (11.81" × 7.87"), even if these parts have not previously been measured. An integrated light probe can also measure features at specific heights.

Program files can be rapidly located on the system by placing the QR code from the inspection report on the stage. This ensures correct file selection even in the presence of multiple file types.

Ailsa Morrison, applications engineer for the metrology division at Keyence explains: "Speed, accuracy and ease-of-use are the key attributes being sought from measurement systems by users irrespective of the sector they work in. We have harnessed our measurement expertise to create a system which delivers unrivalled precision but does not require extensive training to obtain the best results. We therefore anticipate strong demand for the IM-8000 from customers in multiple sectors and applications."

Available options include an IM-specific calibrated graticule to allow users to perform their own verifications. Keyence customers also benefit from regular software updates and extensive after-sales support wherever they are located.

Further information can be found at **www.keyence.co.uk/im8000launch**

As a leading supplier of sensors, measuring systems, laser markers, microscopes and machine vision systems worldwide, KEYENCE is at the forefront of factory automation. It strives to develop innovative and reliable products to meet the needs of its customers in every manufacturing industry.

In addition to its world-class products, KEYENCE offers a full range of services to further assist its customers. Its technically trained direct sales force is able to solve tough applications and answer technical questions about its products. The company also provides fast shipping in order for customers to improve their processes as quickly as possible.

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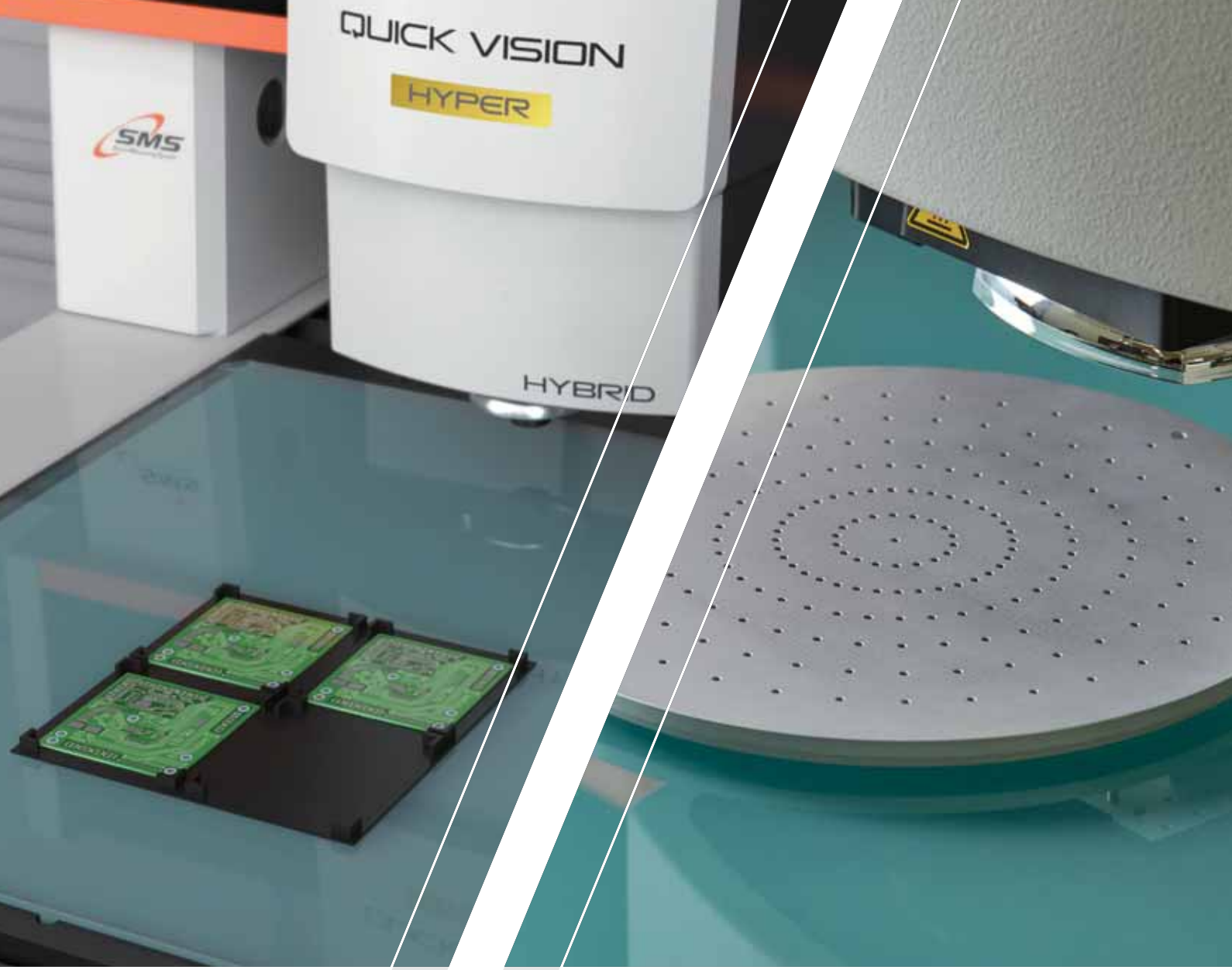
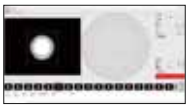


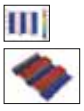
NEW Products

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:

Mitutoyo measurement service aids FeTu's developments

As a leading manufacturer of precision measuring equipment, Mitutoyo offers a comprehensive variety of metrology products, ranging from the humble caliper to advanced vision measuring systems and 3D coordinate measuring machines. Now in its 40th year of operation, Mitutoyo UK supports its customer base, not only with the supply of precision products, but also with the provision of a wide range of first-class complementary services. In addition to product training, IT support, calibration and repair resources, the company also offers highly efficient subcontract measuring services.

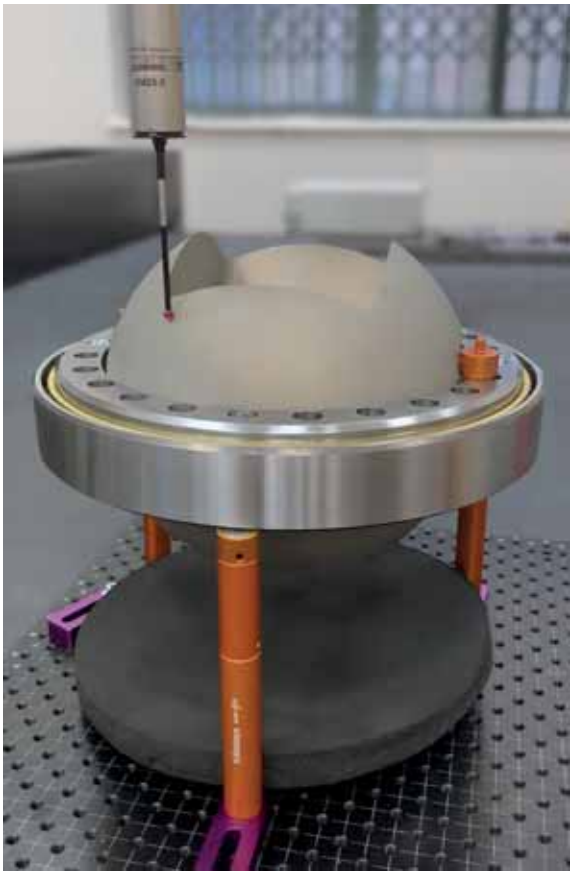
Although Mitutoyo's measurement services department serves the subcontract measurement needs of numerous large, blue-chip businesses, the assistance currently being afforded to FeTu Ltd helps to illustrate the inspection work performed by Mitutoyo for small and medium-sized companies.

Established in 2016, FeTu Ltd is an innovation driven enterprise that has developed a revolutionary 'green' energy device that targets carbon reductions across a broad range of systems and industries. FeTu's disruptive technology is a versatile 'continuous positive displacement' machine that is suitable for a wide range of applications.

The Elland, West Yorkshire-based company's lightweight and scalable technology uses just two moving parts to operate four anti-phased compression chambers and offers low-loss conversion from potential to kinetic energy.

As a relatively young dynamic business that is involved in the design, development and testing of its 'roticulating' technology, FeTu currently subcontracts all of its manufacturing activities. Given the extremely demanding dimensional tolerances and the critical geometries of the device's two moving parts, FeTu Founder and CEO, Jon Fenton recently searched for a source of independent, high-precision inspection. The answer to FeTu's precision inspection needs was found in Mitutoyo's measurement services.

Prior to the assembly and testing of each new iteration of FeTu's designs, having previously written the required CMM software programs, Mitutoyo's staff use one of the company's advanced CRYSTA-Apex S Series CNC Coordinate Measuring Machines (CMM) to perform a range of in-depth, high-precision inspection routines on FeTu's components. Following each CMM inspection routine, comprehensive inspection reports are generated and supplied to FeTu allowing further developments to take place.



FeTu's association with Mitutoyo's measurement services department has resulted in a range of tangible benefits. FeTu founder and CEO, Jon Fenton explains: "As tradition has it, in visualising an 'engine', 'pump', 'compressor', 'turbine' or 'expander'; we imagine five discreet machines which all appear and function in very different ways. The beauty of our unique technology is that it is able to accomplish each of these functions in a much more efficient way than they are performed by current, traditional technology.

"The two dynamic parts of the FeTu system do not make contact but run so close to each other as to make an effective a seal. The sealing effect is aided by the leakage path lengths being so long that they stagnate flow. To ensure that an efficient seal is achieved, the system's 2 high precision moving parts have extremely tight dimensional tolerances. Therefore, a major aspect of our design, development and testing activities has been achieving the required levels of accuracy that allows efficient and reliable sealing to be accomplished.

"The high-precision CMM inspection work undertaken by Mitutoyo and the comprehensive inspection reports supplied to us, related to the accuracy of the moving parts and other critical aspects of our designs, has been invaluable. In addition, the speed and in-depth nature of the feedback we have received from Mitutoyo has helped us to truncate our developments times."

Mitutoyo's measurement services department supports companies across the UK that are involved in a wide variety of industrial sectors. Typically, businesses are helped on occasions when their QA inspection demand surpasses their in-house capacity. Also, when the need for component measurements exceeds the ability or physical capacity of companies' metrology equipment.

As Mitutoyo is usually contacted when urgent situations occur, the department's skilled staff are able to react with speed to ensure the delivery of rapid, precise, and cost-effective outcomes.

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Improving efficiencies with a Trimos height gauge

With tolerances on components getting tighter and customer requirements getting stricter, Chelburn Precision was keen to improve its measurement abilities. Based in Rochdale, Greater Manchester, the company found the solution in a Trimos V7 height gauge, supplied by Bowers Group.

As one of the UK's leading suppliers of precision machined components to some of the world's most demanding markets, Chelburn Precision's philosophy has always been to satisfy the needs of its customers. Established in 1982, the business has prioritised investment in quality machine tools for production, as well as having quality verification equipment available for inspection purposes.

Chelburn Precision is a subcontract engineer making larger precision components, mostly for the canning, rubber and plastic, paper converting and mining industries. Already working with a smaller height gauge, the team found it was holding them back when measuring larger sized components.

The team at Chelburn found that they

were not able to reach the full height of components with the height gauge they had previously, resulting in the need to either turn jobs over to measure from a different plane, or make time and room on one of their precision machine tools to carry out checks. This not only required extra time, but also stopped the production of both the machine tools and their operators whilst the quality inspectors requested and verified checks to ensure parts conformed to specification.

The Trimos V7 is one of the tallest height gauges on the market and highly suitable for workshop environments. The V7 is capable of tackling complex functions such as 2D, programming, and statistics, resulting in an unequalled ease of use and a substantial increase in productivity.

The height gauge features a pair of lateral insert holders, a testament to the research and development of generations of instruments that have forged Trimos' reputation. The great robustness and flexibility allow the use of very diverse probes up to 400 mm long with impressive repeatability.

Chelburn Precision also invested in the squareness electrical probe which enables the business to reach the full height of components, both for measuring positions and measuring squareness. The additional probe creates the efficiency of combining two instruments to make the measurement process quicker and easier, offering the team the ability to perform the precise measurements they needed.

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Extolling the virtues of shop floor inspection

Recently launched by Aberlink, the Extol is a shop floor hardened CMM that not only performs rapid, accurate and repeatable inspections in the most challenging environmental conditions but boasts an incredibly compact footprint that allows the CMM to be positioned where it is most needed, on the shop floor.

To gauge performance and test reliability in real-world conditions, pre-production models of the Extol were installed at a selection of leading manufacturing companies throughout the UK. One such company was Somerset-based MetalTech Precision Ltd, the South West's largest and most versatile subcontract manufacturing facility.

Implementing lean manufacturing techniques and shop floor data collection, MetalTech Precision operate out of a high-tech 50,000 sq ft facility, powered by its own purpose-built solar farm and with an impressive plant list, including 60 CNC machining centres staffed by over 70 skilled staff.

Producers of precision components for the oil and gas, aerospace and rail industries, MetalTech prides itself on its adaptability and capability to manufacture and fabricate to meet almost any customer requirement, from valves and couplings to flight recorders and submarine dry dock carriers.

Continued investment in the latest technology has ensured a high level of repeatability in the manufacturing process and, as a long-term Aberlink customer already relying on three Aberlink CMMs including an Axiom too and Xtreme, to provide fast and accurate measurement results on critical components for aerospace, MetalTech was keen to trial Aberlink's all-new Extol.

Once installed, MetalTech was quick to benefit from the Extol CMMs impressive performance. Quality manager, Rob Taylor comments: "We started by carrying out a series of cross comparison measurements whereby we'd inspect a first-off on the Extol, generate a report and then rerun the same part through our tried and tested Axiom too CNC CMM, just to make sure that the results correlated - and they did, every time.

"We're now running 100 percent inspection on production parts and saving the completed inspection reports from the Extol to a networked server so that anyone in the office can access the data to send directly to our customers.

"The results we've seen from the Extol have been incredibly accurate, so much so that we've been running our complex, high-precision aerospace components through the CMM, illustrating just how confident we are with the machine already."

True to Aberlink's heritage for innovation, the Extol is the world's first CMM to utilise a delta mechanism. Designed for robustness and reliability, the Extol CMM will run around the clock making it ideal whether it is positioned next to a machine tool, in a manufacturing cell, or used in a dedicated inspection area.

The successor to the company's award-winning Xtreme CMM, the Extol benefits from a smaller footprint, yet increased measurement volume. Ergonomics have been a significant design factor and ample access means the CMM is ideal for batch inspection and automatic loading.

Rob Taylor says: "We need the CMMs to be as easy as possible to use so that anyone on the shop floor, not just skilled inspection staff, can walk up to the machine with a clean part and press a button to run an inspection program, making it almost an automated process that can't go wrong. The Extol is so easy to use, it really is unbelievable.

"Anyone who may be considering introducing a CMM to their shop floor for inspection of high-volume parts next to a machine tool, it's ideal. The Extol has not missed a beat and we have inspected a large volume of critical parts with it.

"With the way MetalTech is expanding and how rapidly our workload is increasing, I can see us getting to a point where we'll need an Extol in every cell."

Designed and manufactured by Aberlink, the largest UK owned Coordinate Measuring Machine (CMM) manufacturer, the Extol is the complete shop floor inspection system, which is provided as a turnkey solution to meet the most demanding measurement requirements.

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Renishaw launches the FORTiS range of next-generation enclosed linear absolute encoders

Renishaw, the global metrology specialist, has introduced the innovative FORTiS enclosed linear absolute encoder series for use in harsh environments such as machine tools. The FORTiS design is built upon industry-proven RESOLUTE™ encoder technology and provides high resistance to the ingress of liquids and solid debris contaminants. It features an extruded enclosure with longitudinally attached interlocking lip seals and sealed end caps. The readhead body is joined to a sealed optical unit by a blade, which travels through the lip seals along the length of the encoder. Linear axis movement causes the readhead and optics to traverse the encoder's absolute scale, which is fixed to the inside of the enclosure, without mechanical contact.

Customers can choose from two different extrusion profiles to suit their space requirements. The FORTiS-S™ linear encoder is the standard-sized encoder that is available with measuring lengths from 140 mm to 3,040 mm. It is installed directly to a machined surface via flexure holes in the extrusion's body. The FORTiS-N™ encoder, available with measuring lengths from 70 mm to 2,040 mm, features a narrower cross-section extrusion and a more compact readhead to enable installations in confined spaces. This model can be mounted directly to a machined surface via two end cap mounting holes or a mounting spar for greater rigidity.

Ian Eldred, FORTiS principal mechanical engineer at Renishaw, highlights a range of unique and ground-breaking design features: "The new FORTiS enclosed absolute encoder range is the culmination of years of R&D effort at Renishaw. It delivers superior repeatability, reduced hysteresis and improved measurement performance due to an innovative non-contact mechanical design that doesn't require a mechanical guidance carriage. Five years of accelerated life testing under the harshest conditions, has enabled Renishaw to develop and refine the new advanced DuraSeal™ lip seals. These offer excellent resistance to wear and machine tool lubricants, superior sealing and ingress protection up to IP64 when combined with air purge.

"FORTiS absolute encoders also feature integrated, specially-designed tuned mass dampers that deliver class-leading 30 g vibration resistance and push the limits of what enclosed encoders can endure. Installation of FORTiS encoders is quick and easy, which will help our customers save manufacturing and servicing time."

For more technical information about Renishaw's new FORTiS enclosed linear encoders, visit www.renishaw.com/fortis

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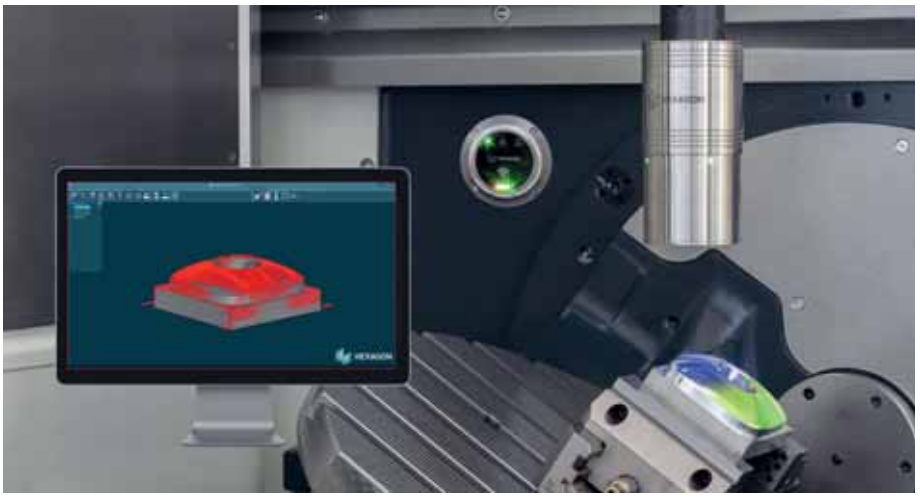
World's first wireless laser scanner for measuring parts within CNC machines

Hexagon's Manufacturing Intelligence division has launched a wireless multi-sensor laser scanner with metrology levels of precision, designed specifically to work inside CNC machine tools.

The m&h LS-R-4.8 can capture around 40,000 measurement points a second, compared to the status quo of taking individual points with traditional touch probes and securely transmits the data to the receiver, via radio, which enables operators to change the sensor automatically without manual intervention.



Measuring on the machine tool, whether for workpiece inspection, temperature, or tool control, is a valuable source of information in the machining process. With this data, workpieces can be controlled before, or even in between, machining. In this way the quality of products can be assured and measurement results used to flexibly improve production, for example through automatic part alignment. These small improvements accumulate to improve production efficiency.

The wireless scanner will remove bottlenecks by taking inline measurement for in-process enhancements away from CMM machines. In modern production, manufacturing often must stop until the results come in. This new wireless laser scanner provides quick measurement on the machine tool and the results are quickly sent to relevant areas of the production, such as quality engineers or production managers.

Capturing 40,000 measurement points a second provides information about the complete part, rather than just selected individual points. This enables users to evaluate production quality, enhance production processes by identifying problems early, better align the parts for steps later in the workflow, and an insight into the complete part quality. Product marketing manager Manuel Müller comments: "Wireless connectivity means these measurements are now all possible without moving the part away from the machine or installing external mobile measuring devices, both of which would be time consuming."

The improved time-saving and higher throughput gained from using the scanner is particularly important where multiple machines are used for sequential production steps. Parts must be precisely positioned in order to start milling accurately each time. Manuel Müller explains: "The laser increases the speed of throughput by capturing the complete surface of the whole part instantly, rather than slowly measuring many individual points. Measuring parts with manual devices between each step takes considerably longer than using an integrated laser scanner."

The wireless scanner deploys laser triangulation to deliver high levels of speed and accuracy. The laser beam is projected on to the component and its reflection passes through a lens where it is detected by an imager. The position measurement points are then determined by that information.

Dedicated modular software presents the data in an easy-to-understand format, making it simple for machine operators or quality teams to quickly identify quality issues and correctly align a part for reworking while it is still fixed to the machine tool. The wealth of data laser scanning brings to the machine tool also offers machine OEMs and their operators powerful new capabilities.

They are able to create colour maps that superimpose the clamped part onto the source CAD model to identify deviations while measuring freeform surfaces, with up to five axes, guarantees that almost every part of the component can be measured.

The new package includes the wireless scanner, modular software and Hexagon's RC-R-100 multi-sensor receiver. The scanner is stored directly in the tool magazine inside the CNC machine and is inserted to the spindle automatically without any manual intervention.

Working principally with machine tool companies, enabling them to deliver added value to their customers, Hexagon is providing a solution which can be used on multiple machines from different machine tool OEMs. The laser is just one of a series of Hexagon measuring devices which turn a machine tool from any supplier into a full multi-sensor device. For example, separate probes can capture temperature and wall thickness and now full surface data is captured with the laser.

Everything runs with just one receiver and the wireless technology switches between them seamlessly. Manuel Müller concludes: "We're working with OEMs who will fit several sensors to their machines, which can simply be switched automatically for particular applications, depending on the program the user is running."

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Metrology partnership brings Vision to CMM market

Vision Engineering has announced that it is partnering with metrology innovator Aberlink to add the first contact-only measurement system, Deltron, to its range of metrology systems.

Designed for robustness, reliability, affordability and ease-of-use, Deltron is a shop floor hardened non-cartesian CMM with an innovative delta robotic mechanism, known for repeatable motion, fast acceleration and a high level of measurement accuracy. The delta mechanism on Deltron operates with a maximum vector speed of 500 mm/sec and a maximum vector acceleration of 750 mm/sec^2.

Deltron is built with temperature sensors which ensure the measurement results are as though they were performed at 20°C. This means the system can be positioned anywhere it is needed, next to a machine tool, in a manufacturing cell, or used in a dedicated inspection area.

The cylindrical measuring volume of the system is 370 mm, 14.5", diameter x 270 mm, 10.6, in height. The measuring accuracy of 2.6 + 0.4L/100 µm incorporates 0.1 µm resolution scales and a granite base supports parts up to 200 kg, 440 lbs. It is delivered with ViTouch3D, a powerful and easy-to-use software, suitable for a range of abilities.

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Big Blue Saw for on-demand cutting

"Big Blue Saw has been selling waterjet cutting services since the company began in 2005," explains Simon Arthur, president and founder of Big Blue Saw. "I had first learned about the flexibility and utility of waterjet cutting as a competitor at BattleBots, where the most advanced teams used waterjet cut parts on their combat robots. While Big Blue Saw originally outsourced all waterjet cutting, we eventually brought that operation in-house for the best part quality and customer service."

BattleBots, an offshoot of Marc Thorpe's Robot Wars, is where inventors, fabricators and makers create deadly robots and battle them against each other in an arena. The level of robotic engineering involved varies from mundane RC-style vehicles to advanced units with articulating arms and variable speed motors controlling giant spinning saws. Like any other prototype robot, advanced manufacturing techniques and materials are employed.

Through the late 1990s and early 2000s, Simon Arthur started constructing his own battle-ready robots. However, constructing a bot takes a lot of one-off pieces. There are no standard blueprints for these robots. "Often, I found myself reaching out to fabrication and machine shops to create the designs I had envisioned. Dealing with these types of business was incredibly unsatisfactory," says Simon Arthur. "Their sales teams, such as they were, usually consisted of one surly fellow who seemed like he desperately wanted to be anywhere but his rusty office chair. I would find myself calling repeatedly to check on the status of an order or even just to get a quote. Email communication was non-existent. Most commonly, I found that they simply did not want to deal with a hobbyist ordering just a handful of parts."

Frustrated dealing with jobs shops who didn't take his work seriously, Simon Arthur opened Big Blue Saw in 2005. The company offers waterjet and laser cutting for all needs. He explains: "Based upon my experience building robots and my background developing software for the web, I decided I could make a website that made it easy for people to order high-quality parts online, custom-made to their specifications. There would be as little friction as possible in the ordering process, making it as easy to order one simple part as it is to order 1,000 complex ones. My eventual goal was and, still is, to allow engineers, artists, hobbyists, crafters, designers and makers of all kinds to turn a concept or idea into a real thing."

The website for Big Blue Saw offers a unique application rarely seen in the fabrication industry; a built-in online CAD program. Customers are encouraged to draw or upload their design right there. Simon Arthur has even made it possible for potential customers to instantly receive a quote for their project.

When it was founded, Big Blue Saw didn't own an OMAX-brand waterjet. However, in early 2020, Simon Arthur decided to add a MAXIEM 1530 to their shop floor. ''My eventual goal was, and still is, to allow engineers, designers and makers of all kinds to turn a concept or idea into a real thing. Adding the new MAXIEM machine allows us to service much larger orders and expand beyond our base of customers into clients in new fields like logistics and energy," Simon Arthur says.

Designed for a wide range of machining needs, the MAXIEM 1530 sets a higher standard for precision abrasive waterjet machining. The rigid tank design is scaled to handle common plate sizes with room to spare. The advanced linear motion system uses digital linear encoders to provide instant micron-level cutting head position feedback to the controller to ensure accurate part production.

Simon Arthur concludes: "Our most

popular materials are aluminum and stainless steel, plus polycarbonate plastic. Typical thicknesses range up to about half an inch, but we've been known to cut up to 1.5 inches. Our customers' requirements also include various other kinds of plastics, carbon steel, alloy steel, titanium and more.

What makes waterjet such a perfect tool for combat robots and an endless variety of other parts made from virtually any material, is the technology's versatility. In robot construction, a potential customer may want to get a cover or structural piece made out of steel, carbon fibre, carbide, or any number of other materials that suit their end goals. This isn't unlike typical prototyping, where materials being cut range the full gamut of what is possible in part production. Innovation changes how and what we machine. With the versatility of an OMAX abrasive waterjet, Big Blue Saw is ready for whatever material happens to come in through the door."

"While we've made parts for just about every industry you can think of, a big chunk of our business comes from robotics, electronics, R&D and healthcare and we are most excited to have recently signed agreements with Microsoft, Eaton and UPS approving us to serve these companies worldwide."

Waterjetting in Waikite Valley with Jemco Manufacturing

Jemco Manufacturing has been producing metal works in Waikite Valley, New Zealand, since 2009. "We started with a development of a product for our own use and, through popular demand, created a business from this initial product," says Mary Simons, managing director of Jemco Manufacturing. The rural, five-person, customer-focused shop specialises in farming, automotive and prototyping for customers across New Zealand.

As Jemco grew its customer base, the company streamlined its manufacturing operations to accommodate the new business. As Mary Simons explains: "We wanted a machine that had the ability to cut a range of materials accurately with a good finish. After investigating the other options on the market, we decided a waterjet cutter fit the best with our needs."

In June 2019, Jemco installed a GlobalMAX 1530 with a 30 hp pump. A value-focused abrasive waterjet, the GlobalMAX 1530 can cut almost any material and a wide variety of thicknesses without creating heat-affected zones. The economical machine does X/Y-axis cutting with three degrees of freedom and has several compatible accessories, including a terrain follower, a pneumatic drill and bulk garnet feed hopper.

"The OMAX training that we received from the New Zealand OMAX agent, Roadrunner Manufacturing, has been absolutely superb," says Mary Simons. "The training and backup is one of the reasons that we chose OMAX and it has exceeded expectations."

Roadrunner is a manufacturing entity in its own right, but it also serves as the exclusive distributor of OMAX brand products in New Zealand. In this capacity, Roadrunner's dedication to their end users is excellent and their attention to customer service remains unmatched.

For years, Jemco's signature item has been the "Smokey Goat" topper. The all-terrain pull-behind is an industrial-scale lawn mower used for keeping large grass areas tidy and the adjustable horticultural wheel allows users to maneuver close to fence lines and posts. Much of the Smokey Goat's fabrication has been transferred to the GlobalMAX since Jemco installed the machine. According to Mary Simons, the waterjet now handles all of the bodies, tow bar plates and anti-skid plates and, when the company prototyped its horticultural model, it used the waterjet to produce the back-wheel structure.

Like other fabricators, Jemco has found that the benefits of an in-house waterjet allows for quicker turnarounds and on-demand precision. "Bringing all our mainstream cutting in-house has given us the ability to quickly and easily produce products on our timeline," explains Mary Simons. "We mainly cut steel, stainless, aluminum and high-molecular-weight polymers ranging from two to 12 mm. Being able to have an idea, draw it up and make it, especially in the prototype stage, works both for our products and our clients."

Jemco is also the exclusive supplier of Plaztuff™ High Molecular Weight Polymer sheets for the South Wiakato and Bay of Plenty regions, which the company uses to produce custom orders.

Mary Simons concludes: "The extra components that we now cut with the waterjet instead of hand producing has increased our production ability tremendously. The options of what we can do and offer now have opened new markets."

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Precision parts cut reliably by waterjet

Many of the unique properties of waterjet cutting are widely known: flexibility, material diversity and environmental protection. In practical use however, the technology is only associated often with industrial applications for medium-sized to very large cutting parts.

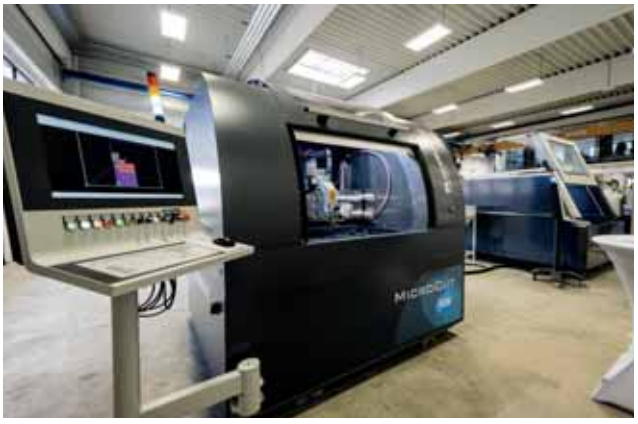
Less widespread is the field of waterjet technology for high-precision cutting applications, the so-called "micro waterjet cutting." Micro waterjet cutting, or micro cutting, is a still relatively new field in waterjet cutting technology and has developed rapidly internationally in just over a decade. The areas of application now extend across a wide range of industries, from medical technology and optics to the manufacture of the most delicate parts in watchmaking.

Compared to conventional waterjet cutting systems, even higher precision and even smaller web widths are possible. By now, a waterjet in the micro cutting insert measures only 0.2 mm in diameter and enables part accuracies of less than 0.01 mm in high-precision controlled cutting systems, depending on the material and workpiece thickness.

Micro waterjet cutting enables up to 10 times higher precision than conventional waterjet cutting, provided that all the necessary prerequisites are ideally coordinated. In particular, the high demands on part accuracy with cutting parts only a few mms in size require the perfect interaction of several factors. On the one hand, know-how in the setup of cutting parameters and workpiece clamping is crucial. At the same time, a robust design of the system with a high-precision positioning system and easy operability is required for daily use. This important know-how makes it possible to achieve high process reliability, which otherwise proves to be a difficult hurdle for many users in the high-quality production of micro-cut production parts.

Classic waterjet cutting combined with micro waterjet technology results in unique characteristics: the variety of workpieces that can be cut includes all non-water-soluble materials, even composites.

Waterjet cutting is a "cold cutting" process. The advantages are clearly apparent because, unlike other cutting processes such as Electrical Discharge Machining (EDM) or micro-fibre lasers, there are no structural changes in the material that could lead to impairment or distortion of the material. In addition, excellent cutting quality in finished part quality is possible simultaneously without reworking. The micro waterjet with its small die clearance shows its strengths especially with complex geometries.



The fast and uncomplicated setup of cutting programmes via StM SmartCut CADCAM software also makes the technology ideal for prototyping applications. Waterjet cutting does not produce any harmful emissions during the cutting process, which underlines the environmental concept in the industry.

Compared to other cutting processes, a waterjet cutting system is usually the cheaper purchase and makes waterjet cutting even more attractive. StM solutions for micro waterjet cutting simplify cutting tasks for a wide range of industries and applications. They cover filigree cuts for watch movements and electronic components as well as application for optical glass, precision mechanical components, springs or implants, titanium cuts and other uses in the medical technology.

Wherever components need to be more compact, lighter and more efficient, potential new areas of application for micro waterjet cutting are emerging, whether as a producer or contract cutting service provider.

This makes cutting with pure water under high pressure of up to 4,000 bar for plastics, foam, cork and the like possible. With the addition of abrasive sand, it is also possible to cut hard materials like metals, ceramics, carbon fibre or glass.

The MicroCut from StM meets all of the above requirements and more for high-precision cutting tasks. It has a convincing ultra-robust frame whose base consists of a massive, vibration-damping granite construction. A positioning drive with direct path measuring system ensures ultimate positioning accuracies of ±2.5 µm.

The closed design with motorised safety door ensures maximum safety with minimum operating noise. An efficiently regulated abrasive supply is integrated into the MicroCut, as is a high-precision clamping frame and the highly dynamic CNC machine control. StM also offers all complete packages with an economical high-pressure pump.

Across all products, one particularly big advantage of the StM concept is the proven StM cutting head, which is also used in the MicroCut. It ensures easy maintenance with maximum robustness and precision.

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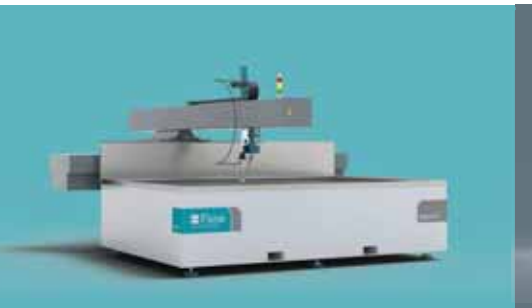

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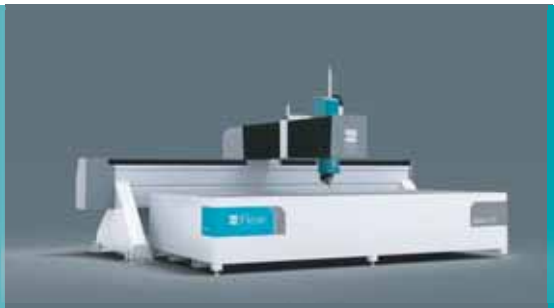
Sizes from: 1.3 m x 1.3 m to 4 m x 2 m



Mach 200
elevate expectations.

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Mach 500
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Blade (Chippenham) Ltd installs second Flow dynamic waterjet

Blade, based in Chippenham Wiltshire, is a family business with over 30 years' experience in design & manufacture of metalwork for a wide range of industries. It specialises in stainless steel enclosures, tanks and brackets for the water utilities sector.

Over the years, the company has invested in leading technology such as Flow Dynamic Waterjet for precision profiling as well as Bystronic CNC pressbrake for folding. Much of the work is in stainless steel, mild steel, aluminium and copper and it can process materials up to 100 mm thick.

Fabrication utilises Mig, Tig and synergic welding in ferrous & nonferrous metals, plus the use of Demmeler jigging tables for accurate welding of parts and assemblies. Solidworks and AutoCad are used for product design where material use, ease of assembly and appearance functions are considered in parallel to reduce product costs and lead times.

In 2008, Blade installed its first Flow WMC Machine and this was recently added to with a new Mach500 Series Dynamic System. The Dynamic Waterjet® Technology is on both machines and this provides automatic taper and jetlag compensation resulting in very precise geometry and at fast cutting speeds. Both machines are working in tandem to provide the additional capacity needed for their increasing order book.

Invented and patented by Flow to counteract stream lag and taper, Dynamic Waterjet allows you to cut at high speed and to a fine precision. Stream lag and taper are no longer an issue in the waterjet process and the most versatile cutting tool has been transformed into a system that is highly competitive with alternative cutting methods in accuracy, precision and speed.

Dynamic Waterjet Technology utilises advanced SmartStream™ mathematical models that automatically tilt the waterjet head to the side as needed in order to eliminate taper. Additionally, those same models tell the waterjet head when to tilt forward in order to control the stream.

The Mach500 Series is the flagship machine from Flow and combines the latest in machine design and drive technologies with well proven pump technology and Dynamic Waterjet.

Interview with Mark Beaven, CEO of Blade

What is your company's core business?

Blade is a family run business with over 50 years' experience in fabrication. We specialise in general fabrication of stainless steel, mild steel and aluminium. Waterjet cutting has become a big part of our business in cutting parts for making fabrications as well as waterjet cutting parts for customers in various materials.

What do your products bring to the market?

We waterjet piece parts for fabrications and we also offer waterjet profiling for the bespoke industry. We have two Flow warterjet machines, gaining experience over the years of cutting a wide range of materials which include stainless steel, aluminium, mild steel, brass bronzer copper, wear plate materials, mother of Pearl, porcelain, granite, marble, ceramic, bullet proof glass, foam, rubber and composite materials.

Are these final parts or part of a more complex production?

We specialise in both final parts and parts of a complex production.

What made you decide to choose Flow?

We chose Flow D-WMC for our first machine in 2006 because Flow's machines had a good reputation in the waterjet market. Flow's design of the tank being separate from the machine bridge makes perfect sense. Also, Flow's dynamic head stood out from other manufactures. In 2019 we purchased our second waterjet, a Flow Mach 500. We chose Flow again after great success and confidence with our first machine and we continue to run both machines daily.

How easy the machine is to use?

The machine is very easy-to-use and all maintenance is done in house. We have a number of operators that know how to use the machine with ease and confidence.

What is the degree of finishing quality above the others?

The quality of parts produced by the flow waterjet still impresses us today even after 15 years.

Did Flow meet your expectations?

Our expectations have been met and exceeded.

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Another new machine delivered into the UK

With quality components from world leading manufacturers, it's no wonder Water Jet Sweden can provide a five year warranty on the mechanical guiding system and machine dynamics of all its new machines.

From its UK technical centre based in Yorkshire, Water Jet Sweden UK provides sales, advice and unrivalled service and support for all Water Jet Sweden machine requirements in the UK. Water Jet Sweden develops, designs and builds waterjet cutters in almost all sizes for a variety of applications. From integrated compact machines to highly bespoke equipment with an operating size range of up to 18 m, the waterjet cutters are available with a wide range of optional functions optimised for specific customer requirements.

All Water Jet Sweden waterjet cutters feature: extra wide linear bearings to resist torsion and provide a stable platform; heavy duty steel frame that is stress relieved after fabrication and then precision machined; completely enclosed bellow protection for all dynamic motion systems and motion parts; simplifying maintenance and prolonging the lifetime of the machine.

Linear drives in the X-axis have twice the speed of a ballscrew, with greater positioning accuracy and zero backlash when changing direction for cutting performance.

Reliability and accuracy

Water Jet Sweden has consistently transformed groundbreaking research and development technology into a comprehensive product range with over 700 installed waterjet machines throughout the world.

Highest technical standards

By using components that have been tested over many years and manufactured using the latest techniques, in high pressure waterjet cutting and drive engineering fields, Water Jet Sweden offers CNC machines of the highest technical standard.

World class

The worldwide patent for the integrated guide system, high performance cutting heads and valves, as well as collaborative work with the world's leading control suppliers FANUC and Siemens, has made it possible to manufacture a full range of 2D and 3D CNC waterjet equipment with the maximum accuracy and performance.

Dedicated R&D

The research and development of new technology, components and software is carried out in an impressive facility in Southern Sweden, together with the latest developments in CADCAM software. When compared to conventional waterjet cutting machine running costs, Water Jet Sweden machines are not only state-of-the-art but extremely cost effective and efficient.

WJS UK Ltd Tel: 01937 845499
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AAG accelerates waterjet cutting market penetration

As a leading supplier of CNC machining solutions to a diverse range of industries, AAG continues to evolve in the specialised waterjet cutting sector. This has been made possible by the parent company's foresight in acquiring US-based WARDJet that has enabled greater market diversification and consequent business growth, in addition to augmenting AAG's acknowledged pre-eminence in the traditional CNC routing/cutting sector through its primary AXYZ power brand portfolio.

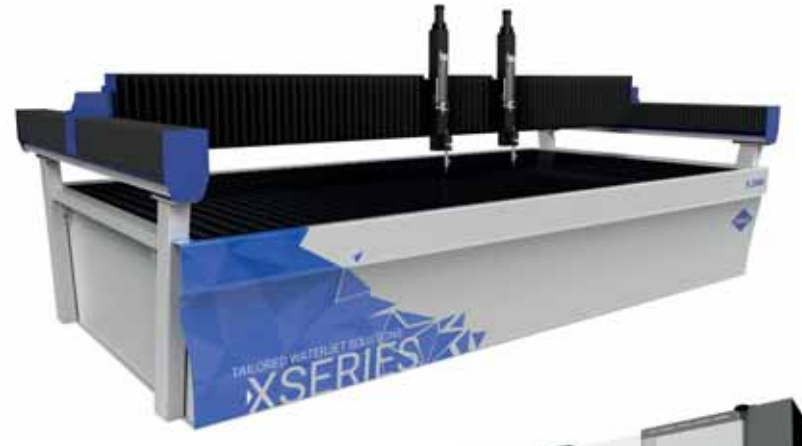
Significantly, AAG is now providing waterjet cutting solutions to customers processing materials that AXYZ CNC routers cannot effectively handle. Typically, these include stainless steel and other non-ferrous metals, cast and wrought iron, brass, bronze and similar alloys, stone, marble, solid and composite rubber formulations, ceramics, glass and foam.

A recent UK WARDJet machine installation was completed by AAG at Wolverhampton-based Genius Facades. For over 25 years, this company has been a leading designer and manufacturer of customised building envelope systems with an A1 non-combustible fire rating, the highest European fire resistance classification and full compliance with the stringent safety and performance standards set by the Centre for Window and Cladding Technology (CWCT).

To ensure these standards were maintained and to provide more flexibility on the processing of a wider range of materials, the company decided to install a WARDJet X-2040 large-format waterjet cutting machine. The addition of a pneumatic drill for pre-piercing laminated materials and the hybrid configuration of the abrasive and water-only cutting function have allowed Genius Facades to process a wide range of materials.

The company's production director, Richard Bland says: "The X-2040 has performed brilliantly and the service provided by AAG engineers was exceptional prior to, during and following installation of the machine. The X-2040 has become a valuable factory asset and enabled a significant increase in production capacity."

Part of the X-Series of three different sized waterjet cutting systems, the X-2040 incorporates multiple cutting heads and



provides a maximum cutting speed of 20 m/min. Optional machine features include an integrated water level control system and the latest Apex-60 5-axis cutting head for more complex cutting at angles of up to 60 degrees. The Apex-60 also provides a more cost-effective secondary finishing function on cut bevels, weld preparation, grinding, chamfering and countersinking which would otherwise have required additional machine staff and thus increased production costs.

For small engineering shops and machining centres where available workspace is invariably at a premium and investment in capital equipment more constrained, AAG supplies the smaller-format 213 x 124 cm A-0612 waterjet cutting machine. Part of the A-Series, a key attribute is that while similar machines operate at pressures of between 30,000 to 45,000 psi, the A-0612 will operate at 60,000 psi to equal the performance of much larger and commensurately more expensive machines.

Celebrating 30 years of innovation and expertise

In 1991, Alf Zeuner and Gary Harvey founded AXYZ CNC Routers in Ontario, Canada. They saw a gap in the market for modular machines that could be configured to the customers' needs. AXYZ found its niche in the signage and architectural cladding industries. Over the next 30 years, the company expanded its footprint across North America, Europe, Asia-Pacific and launched an e-commerce parts site called CNCRoutershop.com.

In 1995, Richard Ward founded WARDJet in Ohio, USA. He saw an opportunity to produce modular waterjets that could be tailored to the customers' needs. WARDJet made a name for itself by taking on some of the most challenging customised projects. This innovative DNA has attracted industry-leading clients in space exploration, automotive, aerospace, construction, and energy.

The Hansen-MacDonald family became the new majority owners of AXYZ in 2017 and WARDJet in 2018. Luke Hansen-MacDonald took the role of president and brought the two teams together to form AAG Tailored Cutting Solutions. The two incredible teams bonded through their common focus on modular CNC cutting solutions.

This new relationship augmented WARDJet's technical support network throughout the AXYZ global footprint while increasing AXYZ's technical depth through WARDJet's innovative capabilities. The rebuilding and rebranding of the group's e-commerce site to CNCShop.com has launched a new era of CNC aftermarket distribution encompassing both router and waterjet parts.

As AAG enters its 30th year, the future has never looked brighter.

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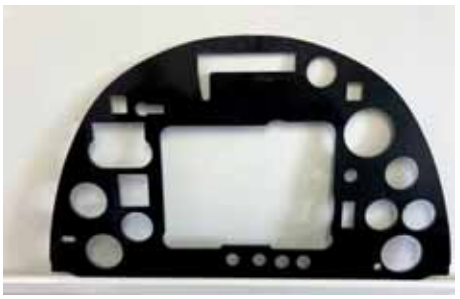
Hi-tech waterjet used to keep historic aeroplane flying

The 75th anniversary of D Day, in 2019, has reminded us of what was achieved in those difficult days, especially in the skies above the south coast and Europe and that icon of the skies, the Spitfire.

Hydromar has been profiling parts for the repair and restoration of vintage aeroplanes, including Spitfires, almost since it started trading. It comes with its own unique challenges. Many original drawings are still available such as the MK XIX Spitfire instrument panel, dated 1943. It is dimensioned in feet and inches and fractions down to 1/64 inch, fortunately modern CAD can deal with this at the click of a mouse. By contrast, the Luftwaffe were producing metric drawings to three decimal places at the same time.

The dimensions start from an origin at the bottom centre of the panel and each aperture is dimensioned from the previous one, progressing clockwise. This was fine until a missing dimension meant the next aperture couldn't be accurately located!

In the real world of wartime production of Spitfires, this wasn't a problem. After several attempts by the Luftwaffe to destroy the



Spitfire production factories in Southampton, they succeeded in Sept 1940. At that point Spitfire production was dispersed to many sites around the UK, to meet ever increasing demand. The paper drawings were used to make templates and the various parts for the aircraft were made to match the template. If the production factory hit a problem, like a missing dimension or a part not fitting exactly, the template would be made and adjusted to fit and production would carry on. Officially 24 different marks of Spitfires were made, with many sub variants. Considering the likely variation between each production factory, it would be a fair assumption that the surviving Spitfires of today are all probably unique.

Therefore, cutting a new instrument panel to match the drawing is unlikely to be a good fit in the cockpit. A process of cutting a plywood panel for test fit, modification of CAD drawings and a final cut in phenolic board ensures a good fit.

Hydromar Ltd
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Press brake flexibility pays dividends

Two LVD Dyna-Press electric press brakes complement two larger LVD PPEB hydraulic press brakes to give Barlow Sheet Metal the flexibility it needs on fine limit sheet metal forming.

The 24-tonne pressing force Dyna-Press machines can take a standard 800 mm length of tooling, have very fast rapid travel speeds and occupy a very small footprint. Together with the 80-tonne, 2.5m capacity PPEB press brakes and two LVD Strippit P Series punch presses and associated tooling they represent an investment of over £750,000 made by Barlow over the past four years.

Portsmouth-based Barlow Sheet Metal specialises in precision fine limit sheet metal for customers in the electronics industry, predominantly UK companies but with products that are exported all around the world. These include items such as broadcast equipment, lighting units and power supplies.

Overall, Barlow supplies over half a million parts a year with a reject rate on batches of just 0.0006 percent and on-time delivery fulfilment of 98 percent.

"Everything comes through the punch presses and press brakes, so you can see how critical those machines are to us," says managing director Steve Barlow.

As well as offering a sheet metal fabrication service, Barlow also helps customers to develop their own bespoke packaging and enclosures.

"Often customers won't have a drawing of what they want us to manufacture for them," explains Steve Barlow. "They will come to us with a sketch and we will draw it up in Solidworks. We find out what they need and then design to those needs. The CAD operators and designers are all from the shop floor and have sheet metal experience. So, we know that what we design we can make."

He says that there are big advantages to the customer in having a bespoke product.

"For example, we can use a forming tool on the punch press to produce card guides where before the customer would have screwed in extruded rails and use plastic guides. This cuts out hand assembly and makes the alignment more precise. We can put ventilation where it is needed and can make the dimensions suit their specific requirement and, because it is designed in CAD and made on precision CNC machines, all the electronic components simply slide into place."

The two new LVD Strippit P CNC punching machines drive production. These sit alongside an LVD Shape Delta punch press and replaced two older Shape machines dating from before Shape became part of LVD so the relationship goes back a long way.

"The new punch presses were installed four years ago and are around 20 percent to 30 percent faster than the old machines. They also use a lot less power," says Steve Barlow.

"When we are busy, those machines are going flat out every day and on a night shift too so that is where the need for reliability comes in.

"The continuity of tolerance is extremely important, which is why we rely on good machines that won't let you down on the tolerance and accuracy."

The two LVD PPEB press brakes followed in April and May 2019. Steve Barlow says that he could have chosen from a wealth of possible suppliers, but it was LVD that offered the best solution. He says the decisive factor was how easy the LVD machines are to program and use.

"I always involve the staff that are going to be using the machines and they saw how easy it was to program them. I asked them what they thought of the LVD machines and they said 'brilliant'. After that it was just a case of choosing the right model for us.

"All our programming for the punching always has been and always will be offline. I thought that, as the technology was there, I would give some of the folding work to the offline programmers too, but the programming on the machine is so easy that we don't need to.

"We do some really complicated folding, but there is not one job that we haven't been able to program on the machine."

"Beforehand we had an 80-tonne press and a 50-tonne press. So, there were some jobs that couldn't go on either machine. Now we have two 80-tonne machines we don't have that problem. We don't generally punch anything over 2 m wide, so I chose 2.5 m machines just to give us that bit extra capacity."

The two Dyna-Press electric press brakes were installed in 2020 and replaced a smaller hydraulic press brake and a folder. They have taken Barlow's bending capabilities to another level.

"When it came to ordering the two smaller Dyna-Press machines, we wanted to be able to do as much as we could on them, knowing that the maximum tonnage was lower. The presses take a full length of standard tooling and the control is more or less exactly the same as on the PPEB press brakes, which gave us continuity and they

were a very good price," explains Steve Barlow.

Space was at a premium too, so the small footprint of the machines was a really important benefit.

In practice, Steve Barlow found that around 95 percent of the work that goes through the shop can be formed on any of the four LVD press brakes.

This gives a very high degree of flexibility and because the control systems are almost identical, any operator can work on any machine.

Rather than train the four existing press brake operators to run the Dyna-Presses, Steve Barlow selected five people who only had a little bit of press brake experience for the job. The result is that he now has nine operators who can work on all four machines.

He concludes: "The beauty of it is that the staff who were trained on the Dyna-Presses can come straight over and use the big machines too. The flexibility now is fantastic. Because all the operators can work any of the press brakes, if I'm making a choice on furlough then I'm purely making a choice on what work I have got for this week. Having the flexibility of the press brakes makes it a lot easier to make those decisions."

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Salvagnini panel benders deliver best-case scenario for Penn Elcom

Penn Elcom, a leading manufacturer of hardware for flight cases, speaker cabinets and 19-inch racking solutions, has seen benefits such as significantly faster cycle times and vastly shorter lead times thanks to the phased replacement of press brakes with advanced LEAN-series panel benders from Salvagnini. Investment of this level reflects the company's global status as a $60 million turnover business with a catalogue that contains more than 3,000 products in the field of stage technology.

"We're the biggest manufacturer of flight case hardware in the world," states Roger Willems, founder and chairman of Penn Elcom. "There can't be many bands or orchestras that do not use our products. Everyone thinks we're American, but I started the company here in the UK."

It was 1974 when Roger Willems founded the business in the village of Penn, Buckinghamshire, where his first investment was a pre-owned power press costing £250. But from small acorns grow mighty oaks. In 2003, Penn merged with Elcom, a US flight case specialist and the company's primary competitor. Today, Penn Elcom has UK manufacturing sites in Hastings, where the Salvagnini panel benders are located and Tyne & Wear, as well as subsidiaries in 15 countries worldwide.

Among the specialisms at the Hastings facility are products for 19-inch racking systems. These units are essentially standardised frames or enclosures used extensively in stage technology for mounting multiple electronic equipment modules. The 19-inch racking products manufactured on site include cabinets, enclosures, shock-mount systems, rack strips/rails, shelves, drawers, panels and doors, all of which require folds. Until recently the company relied a selection of 10 press brakes to undertake bending operations, but since making the transition to its first of four Salvagnini panel benders in 2017, the site has achieved major advances. So what prompted the switch?

"The manufacture of 19-inch racking solutions at Hastings commenced about seven years ago as we were having quality issues with products imported from China," explains Roger Willems. "We had some high-end press brakes from reputed manufacturers on site, but as demand grew, particularly for large panels, it became more challenging. For example, if you take a steel panel that's 1.5 m tall, weighs 15 kg and contains 15 folds, it is physically difficult to manipulate it efficiently."

Roger Willems had long-known of Salvagnini panel benders, but always thought these advanced machines would be beyond his budget.

He continues: "However, one night I was on the internet looking at panel benders and curiosity got the better of me, so I made my first enquiry for a Salvagnini. It struck me as quite a big leap from a press brake to a Salvagnini, akin to replacing a two-seater propeller aircraft with a jet. And yet, when I learnt the price range, I was pleasantly surprised. I subsequently sent three products to Salvagnini that were proving difficult to fold using our press brakes. One of these products, a cabinet corner post, was about 2 m in length, 2.5 mm thick and had 8-10 folds. It necessitated three lifts on a press brake, so our existing cycle time was around 15 minutes and we had quite a high reject rate."

The trials showed that a Salvagnini panel bender could fold these products in just 50 seconds, prompting Penn Elcom to invest in its first machine.

"That was in 2017 and we now have four Salvagnini LEAN-series panel benders at Hastings, as well as one in China," says Roger Willems.

The Hastings site houses a Salvagnini P1, mini panel bender with a bend length of 1,250 mm, alongside three P4lean automatic panel benders. The latest P4lean arrived in February 2021. Of the 10 press brakes owned by the company prior to the panel bender era, only three remain on site.

"Finding the skills to run press brakes is

not easy, so the Salvagnini machines have also helped in that regard," says Roger Willems. "All of our panel benders run 24/7, with typically one operator looking after two machines. Their reliability and repeatability has been outstanding from the start, we have zero rejects and I can see us adding more in the future."

The Salvagnini P4lean panel bender natively combines productivity with its automatic bending and handling cycle. Process flexibility is inherent thanks to universal bending tools that automatically adapt to the panel geometry in-cycle, without machine downtime or manual re-tooling.

With its advanced cycles, a machine such as the P4lean completes an average of 17 bends per minute. At Penn Elcom, some of the Salvagnini machines feature a number of options that boost capability even further. The CUT option, for example, enables the automatic cutting of different profile lengths, materials, thicknesses and shapes from a single blank, making separation cuts after each sequence of bends.

The company has also taken a special V-score option, which can help deliver a tighter outside radius, as well as a special narrow blank-holder for the P-tool that can help process smaller parts deemed not possible on panel benders.

"Our operators absolutely love the Salvagnini machines," says Roger Willems. "I've been in the manufacturing sector for 50 years and I have to say Salvagnini panel benders are easily the cleverest machines that I have encountered. If I didn't know better I would swear there is a little man hidden inside turning the metal around. We have visitors come in who are completely mesmerised."

Roger Willems suggests that if he had remained with press-brake technology his current lead times for cabinets would be as high as 16-20 weeks, with little potential to produce samples.

Samples and prototypes are an important part of business at Penn Elcom as the company is constantly developing new products to help spur further growth. A good example is DoorJammer, a portable door security device. Ever laid awake at night in a hotel room worrying about security? DoorJammer is the solution. Roger Willems even presented the device on the hit BBC television programme Dragons' Den in 2017. DoorJammer is now a fully incorporated company within the Penn Elcom Group.

Another example is the PBX1 parcel box, offering a secure solution to unattended parcel delivery.

Roger Willems concludes: "The PBX1 is already selling in good numbers but if, as expected, it starts selling in really high volumes, we would sink without the Salvagnini panel benders. We've learnt to take advantage of opportunities when they present themselves, and the Salvagnini machines allow us to do that. You can't be a pioneer in industry if you don't take risks."

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Speed, precision and flexibility

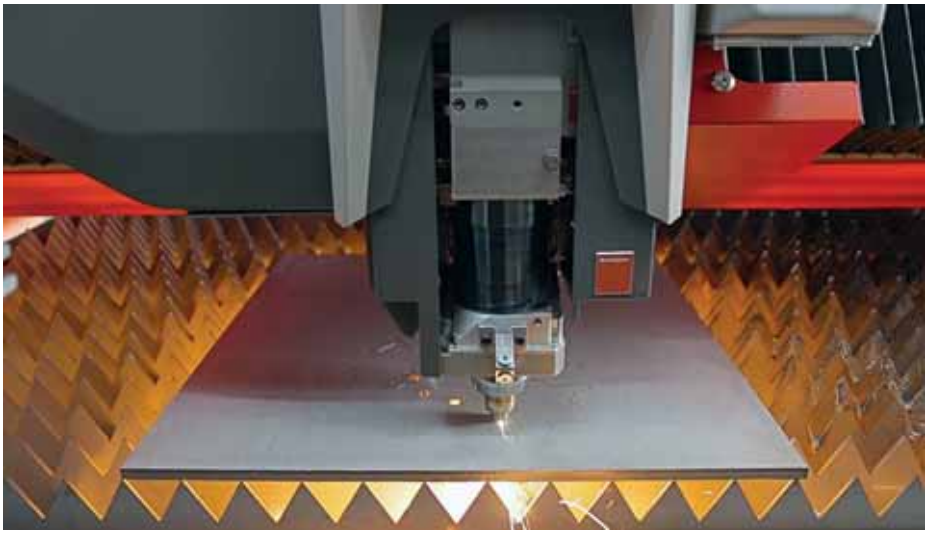
A new dimension with 15 kilowatts

Thanks to the new laser output of 15 kW, the ByStar Fiber cuts steel, aluminum and stainless steel with a thickness from 1 to 30 mm and brass and copper up to 20 mm with high precision. This increases the laser power by up to 50 percent, enabling sheet metal processing companies to further optimise their production processes

In order to offer sheet metal processing companies even better support in an increasingly competitive environment, Bystronic is now advancing into a new dimension of fibre laser cutting with the 15 kW ByStar Fiber. The high-end fibre laser stands for high-precision Bystronic technology, a reliable cutting process even with the highest laser outputs and a wide range of applications. The technological leap from conventional 3 to 12 kW systems to the new 15 kW level is tremendous.

On average, thanks to the 15 kW laser, the cutting speed of the ByStar Fiber increases by up to 50 percent, when cutting with nitrogen, compared to a 10 kW laser source.

This means that sheet metal processing companies can benefit from higher productivity at low unit costs as thanks to its 15 kWs, the new ByStar Fiber cuts steel, aluminum and stainless steel precisely and reliably in thicknesses between 1 and 30 mm and brass and copper in thicknesses up to 20 mm. The 15 kW laser output now also enables extended applications in steel and aluminum of up to 50 mms and thus offers maximum flexibility for large series and urgent customer orders. Regardless of whether cutting aluminum, non-ferrous metals, or steel, the high-performance Bystronic cutting head excels with maximum precision in both thin and thick sheets and profiles. The new power level is available for the ByStar Fiber 3015, the ByStar Fiber 4020, the ByStar Fiber 6225 and the ByStar Fiber 8025.



Perfect cuts thanks to the BeamShaper

The BeamShaper function ensures clean cutting edges and high operational reliability across the entire range of sheet metal qualities with thicknesses up to 30 mm. This function can be selected as an option when purchasing a new 15 kW ByStar Fiber or added later as an upgrade. The "BeamShaper" enables the shape of the laser beam to be optimally adapted to thicker sheets and fluctuating sheet metal qualities. In thicknesses between 20 and 30 mm, the new function thus enhances the quality of the cutting edges and increases the cutting speed by up to 50 percent compared to conventional 10 kW machines.

Bystronic's new high-performance flagship is controlled using the ByVision Cutting software via a 21.5 inch touch screen. Operating the machine is as simple as using a smartphone.

Automation optimises the material flow

In order to provide an optimal material flow to the high speeds of laser cutting, Bystronic has a broad selection of automation solutions available for the ByStar Fiber. In order to supply the high speeds in laser cutting with an optimum material flow, Bystronic provides a wide range of automation solutions for the ByStar Fiber 3015 and the ByStar Fiber 4020. The offer includes loading and unloading systems, sorting solutions and individually configurable storage systems. Based upon the existing manufacturing environment and available space, a seamlessly integrated automated laser cutting process is developed.

ByTrans Modular is the newest loading and unloading solution on offer from Bystronic. The automation can be flexibly

adapted to changing order situations and production rhythms in the laser cutting while various utilisation scenarios are possible.

As an automation bridge, ByTrans Modular can be integrated between a laser cutting system and material storage in order to direct the material flow. ByTrans Modular can also be used equally well as a stand-alone solution without a storage connection, to provide the laser cutting system with raw sheet metal of differing strengths and materials.

ByTrans Modular becomes even more versatile during cleanup with the BySort sorting solution, which Bystronic integrates as an add-on solution on request. Thus, users have the option to clear away sorted, completed parts into an attached storage area or to store them in an additional unloading position next to the laser cutting system.

The latter supports the processing of large series, for example, for which individual cut parts need to be sorted separately according to job. A big advantage of BySort is the repeated, precise storage of all parts in one location, a task that is difficult to complete manually, particularly with large cut parts. The parts, exactly positioned on a palette, can be processed more easily during manual and automated subsequent processes as their location is precisely defined.

For more information visit: **bystarfiber.bystronic.com**

Bystronic is a leading global provider of high-quality solutions for the sheet metal processing industry. The focus is on the automation of the complete material and data flow of the cutting and bending process chain. Bystronic's portfolio includes laser cutting systems, press brakes and associated automation and software solutions. Comprehensive customer services round off the portfolio.

The company headquarters is in Niederönz, Switzerland. Additional development and production locations are located in Switzerland, Germany, Italy and China. The company is actively represented by its own sales and service subsidiaries in more than 30 countries and has agents in numerous other countries.

As a reliable partner, Bystronic stands for high-performance innovations, local competence and service excellence. Since 1994, it has been a part of the Swiss industrial holding company Conzzeta.

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Devon manufacturer sources new Bruderer press line with £100,000 investment

A specialist in precision pressed parts and machined components has invested more than £100,000 into the installation of a new high-speed press line to boost capacity ahead of a raft of new opportunities. Source Engineering, which employs 32 people across its two divisions in Plympton, has tapped into the expertise of Bruderer UK to purchase a machine that can do the work of four conventional HME power presses.

The BSTA 200M 20 tonne stamping press was identified as the ideal solution and is now up and running at its Langage Business Park facility, achieving 300 strokes per minute which represents a 200 percent increase in production output across a range of products destined for the automotive, electrical wholesale and oil and gas markets.

Engineers at the firm have freed up an additional 500 sq ft of production space to use for the introduction of new projects and to help them cope with an increase in demand for its range of automation solutions.

Andy Dunkerley, chairman at Source Engineering, comments: "Buying a Bruderer is like buying the Swiss watch of machines, you get unrivalled precision, speed and repeatable quality, all wrapped up in a relatively small footprint.

"We already had one in another part of the factory and were fully aware of its capabilities, so when it came to looking at how we optimised the factory floor space by replacing four machines with one high-speed line we called in its technical experts to review the options.

"They really understood what we were looking to achieve in space utilisation without giving up the versatility and the volumes, which basically meant we needed one machine to do the work of four."

The Bruderer BSTA 200M high precision, high performance stamping press was identified as the preferred option and was fitted with a high-speed Servo Feeder and Pallet Decoiler to help achieve ultimate precision control of material de-coiling and pinpoint pitch control through the

progression press tool. Specified with a tool area of 510 x 400 mm, the machine can deliver up to 1,800 strokes per minute and is capable of handling a maximum material thickness of up to 2 mm and material width of 100 mm

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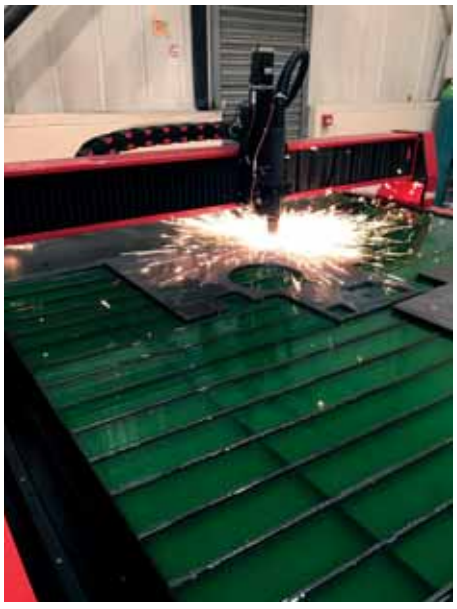
Kerf makes it easy with new Linc-Cut

For manufacturers looking for a cost-effective CNC plasma cutting table that is easy to install, easy to set up and even easier to operate, Kerf Developments has the solution with the new Linc-Cut S 1530W. If you are looking to boost your responsiveness and creativity, this new 'plug and play' plasma cutting system could be the perfect cutting machine for your business.

The machine has been designed and developed by Lincoln Electric, a leading Global supplier of cutting and welding equipment. Kerf Developments will be supplying and commissioning the machines and providing training for the operators, together with service, support and spares from its headquarters in Rochdale.

Perfect for cutting mild steel and stainless-steel plate up to 1.5 m by 3 m, the Linc-Cut 1530 makes high-speed plasma cutting affordable and attainable for small metal fabrication companies, sheet metal contractors, custom vehicle fabricators, and prototyping companies. While the cost-effective price point and flexibility of the machine make it appealing, the productivity, capability and flexibility guarantee a shrewd investment for any sheet metal processing business.

Parts that customers may want to manufacture on the machine can be input using a variety of methods. The CAD software supplied as part of the turnkey package enables users to draw components. The system also allows users to import parts



in standard file formats such as DXF or DWG. Pre-loaded into the software is also 36 standard parametric shapes that include everything from simple adjustable rectangles through to complex circular flanges to simplify and speed up part programming for the end-user. Once drawn, the system can nest components with the potential for manual or automated programming for maximum material utilisation and cost-savings.

The Linc-Cut 1530 is fitted with the latest Lincoln Electric Flexcut 125 amp plasma system which offers excellent cutting and marking performance with a very low bevel angle and an impressive cut quality. Adding to the quality and precision is impressive productivity levels with the machine capable of cutting 25 mm steel plate at up to 800 mm/min and thin sheets in the 6 mm range at speeds beyond 5,300 mm/min.

From an ease-of-use perspective, the Accumove CNC motion control technology provides increased processing power and synchronisation of each component on the table. The electronic torch height control, motors and computer-aided manufacturing software are all managed within this single operating system that keeps the entire communication loop enclosed and delivered through a single visual display. The new Visual Machine Designer (VMD) is the Human-Machine Interface (HMI) of all Accumove CNC controllers as its user-friendly design and appealing layout is extremely easy to learn and use. This is credit to a set of new functions that have been installed directly in the controller to simplify the cutting process.

These features include Process Management that allows all parameters to be controlled through the 20 inch touchscreen display with a host of functions that can increase productivity. This intelligent system can automatically determine cutting conditions based on a few simple parameters entered by the user such as material thickness and type. Additional innovations include plate alignment that simplifies material loading and calculates alignment to adjust and control trajectory accordingly and the laser positioning mode that simplifies the aligning of sheets. The package also includes an automatic nesting module that enables users to load DXF or DWG files, enter the quantity and the VMD software will automatically generate the production nests.

Suitable for installation in any environment, the water table makes it possible to capture any dust released during cutting and any residual gas escape will remain below the exposure limit values for workshop conditions. For further details on how this machine can improve your productivity, throughput and drive cost reductions for your business, please contact Kerf Developments.

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