ENGINEERING subcontractor JANUARY 2018

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ENGINEERING subcontractor JANUARY 2018

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Another record year for Hurco ends with a successful Open House

Sales growth of more than 22 percent in 2017 compared with the previous 12 months has propelled Hurco Europe to another record year and a turnover of £23 million. It sold close to 300 Hurco machining centres and lathes into the UK and Ireland, 38 percent of which went to first-time users of the company's machine tools. In addition, under a long-standing agency agreement, the company delivered six German-built Roeders machining centres into the same markets, all but one in 5-axis configuration and two with advanced automation.

The company has seen a 40 percent increase in the number of 5-axis machining centres sold, from the smallest VM10U trunnion table machine through the increasingly popular SRTi B-axis spindle machines to a large, gantry-type, 3-axis DCX fitted with a two-axis spindle head. Through-tool coolant machines were also 25 percent up on last year.

Compared with 10 years ago, the increase is more than four-fold. Similarly, on-machine probing for tools and components has increased by 30 percent over last year to reach more than half of installations. The increase over the last decade is even greater at 10-fold. Around 40 single-axis rotary tables were supplied by Hurco in 2017, plus a number of compound tables for converting 3-axis machining centres into 5-axis.

Looking forward to MACH 2018 next April, David Waghorn, managing director of Hurco Europe, comments: "We are excited that the show comes at a time when UK and Irish subcontractors seem to be busier than ever, especially in the automotive supply chain but also more widely from aerospace and medical to tool and mould making.

"We will be launching a new range of bridge-type machining centres in Birmingham, with the BX50i in evidence on our stand, whilst the smaller BX40i machine was previewed at our open house in December. The design is ideal for producing tools, moulds and higher accuracy components.

"Turning remains an important part of our business and we will be showing for the first time an upgraded XP version of our TM8i 3-axis lathe.

"At our December Open House, we welcomed in excess of 80 visitors from more than 50 companies into our showroom in High Wycombe. Sales of £1.5 million have already been secured in December.

Hurco Europe Tel: 01494 442222
Email: sales@hurco.com www.hurco.com

SOUTHERN 18 Manufacturing & Electronics
FIVE | Farnborough | Hants | GU14 6XL
6th to 8th February 2018

A new era for the UK's favourite engineering show

Southern Manufacturing & Electronics returns to Farnborough from February 6th to 8th 2018 for its 20th anniversary event. Two decades is certainly an event worthy of celebration. But 2018 marks an even more important milestone for the show, and one which heralds a new era of development for one of the UK's most popular engineering shows.

From 2018 the show will move into its new permanent home, currently taking shape on the familiar Farnborough site. The £35 m Farnborough International Exhibition and Conference Centre development is the largest exhibition venue to be built in the UK for 20 years. The 20,000m² Hall 1 complex, designed by award-winning architects Terence O'Rourke, offers world-class facilities, comfortable modern surroundings, easy access and free car parking for 3000 cars. Both exhibitors and visitors alike have warmly welcomed the long-awaited move to a permanent venue, adding a further element of anticipation to a show that is already shaping up to be one of the biggest to date.

Show director Phil Valentine enthuses: "Southern Manufacturing & Electronics' new home in Hall 1 will completely transform the exhibition experience for visitors and exhibitors alike. The new building is a superb modern facility offering high-speed WiFi throughout, drive-in access for exhibitors and 3,500 free onsite car parking spaces. We are absolutely delighted to be the first tenants of this landmark development, and excited at the possibilities it offers us for further development as we enter our third decade."

Among the expected 800 or so participating firms, the live machinery demonstrations stand out as one of the key attractions for many visitors, and 2018 will be no exception with an excellent choice of machines on show. Matsuura Machinery will be exhibiting the Muratec Murata MT200 turning centre and the single table entry level Matsuura MX-520 five-axis machine. The MX-520 has proved popular with firms making the transition from three to five-axis machining. The MT200 is for machine shops running complex parts and various part types through one machine. An optional three-axis CNC gantry loader provides multiple options for automation.

Toolholding specialist, Gewefa UK will debut four new products. Featured on the stand will be the Gewefa-Plus face and taper toolholder, the Hydropin hydraulic chuck with a fixed stop pin and the EasyFix boring bar toolholder. They will be joined by a new shrink collet system, the Induterm M96, based on the popular heat shrink clamping technique for securely clamping milling cutters into tool holders.

Wilson Tool will introduce several new products at Southern 2018: its new Smart-X Storage 4.0 addition to its Industry 4.0 manufacturing environment integrates tool storage with management software; a new QuickTap Tapping Tool for thick turret punching machines, capable of accurately tapping up to 200 holes per minute; its new Express Rail 2000 and Express Air press brake clamping systems designed to reduce setup times and increase productivity.

Southern Manufacturing is an important marketplace for subcontractors and service providers, and again the choice is extremely broad. Some of the better-known firms present include Jenks & Cattell, Fife Fabrications, Smith & Jewell, Barlow Sheet Metal and MJ Allen. The show's Technology Trails aim to link together firms with particular expertise in areas such as automotive engineering and race preparation, to make it easier to locate suppliers with particular skill sets. Categorised details of all exhibitors and a searchable database of products and services is available online at **http://exhibitors.industrysouth.co.uk**. Visitors registering online for free tickets will also receive a free 12-page preview magazine to help plan their visit.

Free seminar programme

Running in two lecture theatres on all three days of the show, from February 6th to 8th, the 2018 seminar programme features an impressive line-up of presenters and topics, and is guaranteed to be of interest to anyone involved in any form of industrial or manufacturing enterprise.

The free seminar programme at Southern Manufacturing & Electronics is one of the key features of the show, drawing hundreds of delegates each year. The programme is a complementary blend of technical and business topics covering a wide range of issues facing manufacturing businesses today. From understanding lithium ion batteries and Industry 4.0, to the forthcoming GDPR regulations and life after Brexit, the sessions genuinely deliver something for everyone.

Two of the most perennially popular speakers return for 2018. With examples from manufacturing, service and warehousing, Tim Scurlock, Director of ALC, will guide delegates through the benefits of lean, include eliminating waste from existing processes, together the problems and pitfalls in bringing lean into their organisations. Ailsa Carson of Onsite Insights shares the best practice methodologies and key activities that have made some of the world's greatest

manufacturers so successful. Using real world examples, the sessions look at how top firms remain innovative and produce the best quality product in terms of design, cost, performance, quality and delivery.

Some of the more technical topics addressed include Nick Aitken and Dr. Alex Martin's session on lithium-ion batteries, explaining their benefits and application while raising awareness of potential failings and regulatory matters.

Using case study examples of the limitless applications of 3D Print, Colin Cater of Tri-Tech 3D looks at the benefits that this new technology brings across all sectors and the many opportunities it could open.

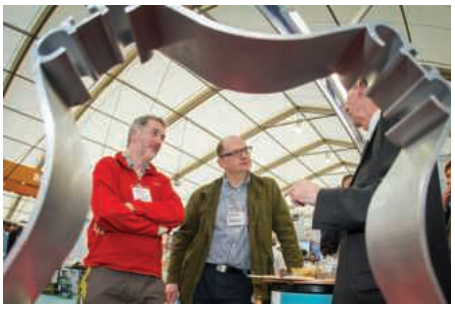
Dr. John Loftus of HMK Automation & Drives takes a look at the future role of Cobots, collaborative robots intended to physically interact with humans in a shared workplace. This session looks at latest developments in the field with examples of industrial applications in the manufacturing process.

Business management and strategy also comes under the spotlight for 2018. The General Data Protection Regulations come into force on 25th May 2018 affecting all personal data, and introducing new requirements and huge fines for transgressions. Dave Smith of Corpdata shares the essential knowledge to help keep your organisation compliant and safe. In two separate sessions by Andrew Mackenzie of Cleveland Scott York, and Kelda Style of Page,White & Farrer, delegates can gain a comprehensive overview of the various aspects of IP law, what can be protected and what tangible value IP protection adds to businesses.

In total, the seminar programme for Southern Manufacturing & Electronics 2018 includes an impressive 34 sessions, all of which are completely free to both visitors and exhibitors. A complete listing and the all-important pre-registration form can be found at **http://seminars.industrysouth.co.uk**

Admission to the show is free. More information and tickets are available from **www.industrysouth.co.uk**. Farnborough Exhibition and Conference Centre offers free on-site car parking and is easily reached by road, air or public transport.

For more information, contact:
European Trade & Exhibition Services
Tel: 01784 880890
Email: philv@etes.co.uk
www.industrysouth.co.uk



ITC launches new micro machining line

The Southern Manufacturing show at the new FIVE Farnborough venue will be the first opportunity for Industrial Tooling Corporation (ITC) Ltd to demonstrate both its expertise and ever-expanding product lines for the micro manufacturing sector.

On its stand, the cutting tools manufacturer of cutting tools will be giving new product lines a UK exhibition debut, introducing extended product lines and also discussing the potential opportunities created by the enhanced production capabilities at the company's Tamworth headquarters.

ITC will debut its new diamond coated 2301 and 2302 Cyber Series of square and ball nosed end mills and the new 2018 product catalogue will also be available for visitors to peruse. For micro and small part machining, ITC has now extended many of its existing product lines with the extremely popular 3081, 2161, 3091 series being among the extended lines with diameters now available from 1 mm in 0.5 mm increments.

In 2017, ITC invested over £1 m on new Rollomatic grinding centres, ASA wheel dressing equipment, a Haimer balancing machine and new oil filtration and chilling equipment. All this, now provides the cutting tool manufacturer with the facility to manufacture precision tools from diameters as small as 0.2 mm. This facility for manufacturing micro-tools will be of particular interest to show visitors in both the electronics and aviation sectors.

As well as the introduction of a complete raft of new product lines and product extensions at Southern Manufacturing, visitors will also have the opportunity to view the BIG KAISER range of MEGA Micro Chucks. Continuing the theme of supporting small and micro part manufacturers at the exhibition, the new line of MEGA Micro Chucks from ITC incorporates a slim nut and taper design that prevents interference in applications that require micro drills and end mills. The MEGA Micro Chuck design has a notch-free nut that prevents vibration and noise.

Alongside the BIG KAISER range of MEGA Micro Chucks will be the impressive line of BIG KAISER EWN precision finish boring heads. The new EWN 04-7 Series is the smallest precision boring head on the market and its precision levels make it suitable for manufacturers operating micro-milling machines with high-speed spindle configurations such as HSK-E25, E32 or E40.

The head features a high precision adjustment accuracy of 0.0125 mm and 0.0025 mm Ø through the use of a Vernier scale. The astounding precision is available for machining holes in the diameter range of Ø0.04 mm to 7 mm and the boring tools are available with the Kaiser KA1 modular connection or with a Ø10 mm straight shank. The head features a maximum through-tool coolant pressure of 300 PSI.

As well as demonstrating the very latest micro manufacturing product lines, ITC will also be showing the extensive WIDIA indexable insert tooling and micro machining range, the comprehensive range of BIG KAISER high-end machining solutions and of course, the impressive range of ITC's UK manufactured cutting tools.

ITC is a specialist tooling supplier. Its objective is to supply customers with the best possible products, at the same time making them more efficient by introducing productivity and method improvements. To achieve this, it continues to invest in a team of capable and enthusiastic engineers and technical sales people, backed up by an in-house team. From solid carbide and PCD tooling, through to indexable milling, turning and boring, plus top-quality tool holders, ITC has an unbeatable product range.

ITC's state-of-the-art production facility includes CNC grinding machines from world leading manufacturers including Walter, Deckel, Rollomatic and ANCA. It has invested in a centralised oil filtration system to ensure that grinding takes place under optimum conditions with clean oil, and its inspection department includes computerised laser measuring equipment, to maintain the high standards for which ITC is renowned.

ITC manufactures and sources the best available products from around the world, and holds well over 100,000 solid carbide tools, tool bodies, inserts and tool holders on the shelf ready for same day despatch. ITC also offers modification and regrind services, meaning it can adapt existing tools to your requirements, and return used tools to an 'as new' condition.

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

Stand H250

Mazak

Your Partner for Innovation

VARIAXIS j-600/5X AM

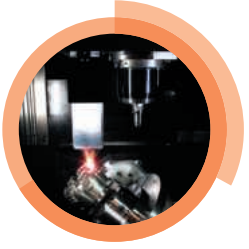
Technologies to best meet your application requirements

The VARIAXIS j-600/5X AM machining centre integrates Wire Arc AM (Additive Manufacturing) and Multi-Tasking technology to enable high-speed additive manufacturing. The Wire-Arc AM torch is mounted on the machine's headstock to deposit material layer-by-layer and grow near-net-shape 3D forms.

The VARIAXIS j-600/5X AM is capable of high accuracy and productivity from the 12,000rpm main spindle and the wide B-axis spectrum of rotation (+90° to -120°). The machine is equipped with a highly rigid and accurate structure, utilising roller linear guides on all linear axes and roller gear cams on both rotary axes.

We're looking forward to showing you the VARIAXIS j-600/5X AM in a live cutting action at the Southern Manufacturing Show, **6th - 8th February** at **FIVE Farnborough, stand J220**

12,000rpm main spindle and a wide B-axis with a rotation spectrum of +90° to -120°



Fronius welding system for added flexibility

Wire arc AM torch mounted on 5-axis machining centre

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6TH -8TH FEBRUARY 2018

FIVE FARNBOROUGH, STAND J220

SOUTHERN Manufacturing & Electronics

FIVE | Farnborough | Hants | GU14 6XL

Blum helps subcontractor achieve precision within 2 µm

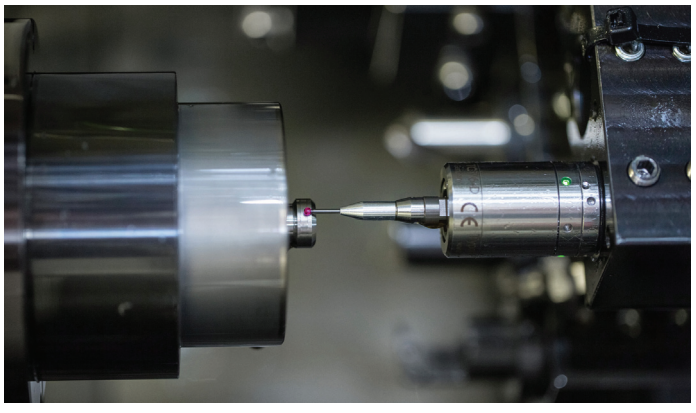
A complex component incorporating four long slots among other features was posing problems for Timo Lehmann, the CEO of Karlheinz Lehmann GmbH in Oberwolfach, Germany. The solution for the subcontract manufacturer was ultimately provided by a Citizen Cincom M32 turning centre and a TC76-DIGILOG touch probe from Blum-Novotest.

"Highly complex components are part and parcel of our business, but manufacturing a quick-coupler for a compressed air input was a tough nut to crack," says Timo Lehmann of the challenges posed by a project for Parker Hannifin GmbH, a world leader in drive and control technology and pneumatics. "The key components are hardened and coated free cutting steel with threads, bores and four lightly tapered slots. The slots were the crucial point of the whole design."

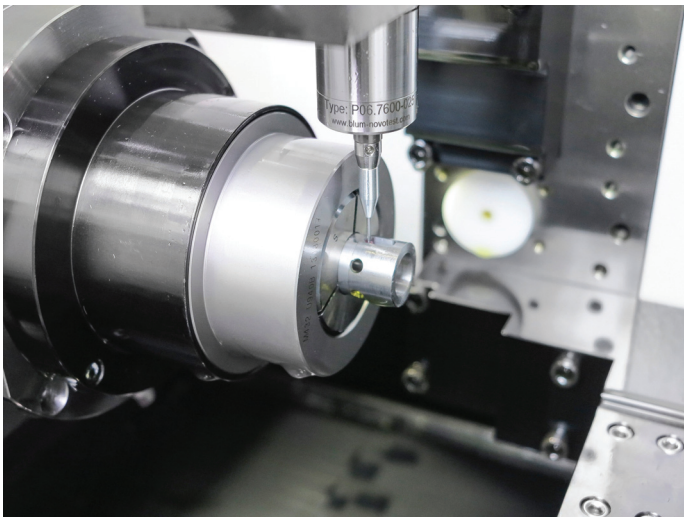
The parallelism of the slots was only allowed to vary by 2 µm from the reference values, otherwise the fully automated machine that assembles the component unit at Parker-Hannifin would abruptly stop. Moreover, the quick-coupling would not work if the tolerance was exceeded. When assembled, the lightly tapered slots contain balls which must not protrude too far, yet must also never be allowed to fall through the slot. Through this design, the Parker quick-couplers prevent the otherwise common snapping noise when detaching. It also allows single-hand operation. However, the task of measuring the slots is just as challenging as the production process.

The BLUM TC76-DIGILOG touch probe proved the only cost-effective means of verifying the design's dimensional accuracy. Analogue measurement is always advantageous for assessing areas or lines. If a switching digital probe was to be used in the Lehmann application, a very large number of points on the slots would have to be measured in order to attain an adequate resolution. By contrast, the TC76-DIGILOG scans across the surface at a measuring speed of 2 m/min. As this is happening, the system generates an extremely large number of values (50,000 per second) in a fraction of the time based on analogue data acquisition.

The TC76-DIGILOG has been running smoothly and efficiently in Lehmann's production operations since February 2015. The sequence at the start of a production run has a reference part clamped onto the machine and the complete contour of the corresponding slot is scanned and recorded. The master profile is recorded and saved in the evaluation software. The subsequent production workpieces are measured and compared against the recorded profile and any that exceed the tolerance are discarded. As a result, the tight tolerances of the slot are reliably checked immediately after the cutting process in the lathe. In-machine measurement delivers enormous benefits. If it is run without a problem in the idle times, as in Parker Hannifin's quick-coupler production, it is hard to beat. It allows 17 employee Lehmann to implement 100 percent checking, with error trends being detected at an early stage by its evaluation software.



The TC76-DIGILOG touch probe can be positioned horizontally or vertically in the lathe depending on the measurement task



The TC76-DIGILOG touch probe from Blum-Novotest GmbH scans the complete contour of the slot – a real innovation in production measurement technology

It doesn't matter whether the TC76-DIGILOG is fitted in a grinding machine or a milling machine. Thanks to its increased scanning forces, it is even well suited to the unforgiving conditions in a lathe. The TC76-DIGILOG scans the part accurately and non-directionally, measuring with supreme precision thanks to the patented shark360 measuring mechanism.

"Neither coolant nor viscous oils impair the reliability of the measurement data. With its higher scanning force, the touch probe simply pushes through the coolant," adds Blum-Novotest's David Cousins.

The Blum-Novotest/Citizen combination is also used for other large production lots from 10,000 to 30,000 pieces. The processed materials are wide-ranging from stainless steels, heat-treated steels and free cutting steel through to aluminium.

"Given that we were close to having to refuse the quick-coupler order from Parker Hannifin, we are delighted to have found such a powerful solution in the combination of Blum touch probe and Citizen machine," Timo Lehmann concludes with satisfaction.

Blum-Novotest Ltd will be exhibiting at Southern Manufacturing from 6th to 8th February. Take time to visit the stand to discover the latest innovations from this leading provider of measurement solutions.

Blum Novotest Ltd Tel: 01283 569691
Email: david@blum-novotest.co.uk www.blum-novotest.com

Stand E230

Kiwa horizontal machining centres exclusively at Dugard

Dugard has announced that it is has been appointed as an exclusive agent for Kiwa Machinery Co Ltd throughout the UK and Ireland. Based in Nabari in Japan, Kiwa is widely recognised as one of Japan's premier machine tool manufacturers. Offering affordable state-of-the-art Japanese technology, with a strong R&D background, Kiwa makes horizontal machining achievable for any machine shop.

Kiwa's expandable tool and pallet technology sets it apart from the competition, allowing for tailor made designs to meet every requirement. The tool changer and multi pallet systems are upgradable at the customer's site, from a two pallet, 120 tool machine to a six or eight pallet machine with 220 tools. This gives customers flexibility to meet any future expansion needs without having to buy a completely new machine.

Featuring ultra-high-speed rapids up to 80,000 mm/min on the KH-400 model, as well as direct drive up to 15,000 rpm and built-in, up to 20,000 rpm spindle options, the Kiwa machines can definitely be described as fast. The patented, unique hybrid slideway design, combining roller and boxways, give Kiwa horizontal machining centres both speed and rigidity. A compact footprint is yet another distinctive attribute, at just 1.6m wide for a 400 mm cube HMC with 500 x 500 x 500 mm X/Y/Z travels (Kiwa KH-4100). With cost-effective multi-pallet options on most models, as well as horizontal 5 or 4+1 axis for optimal chip clearance, Kiwa provides machining solutions with high quality machines specifically designed to meet the highest demands.

Dugard's range of CNC lathes and vertical machining centres is very well established and sales of its products are set to increase thanks to the reliability and value-added features. With a group sales turnover of US $40 m the company still give the personal touch but with the corporate strength of a large company. It has a wide range of machinery on display at its Head Office in Hove and welcomes the opportunity to offer demonstrations as per customers requests.

C Dugard Ltd
Tel: 01273 732286
Email: sales@dugard.com
www.dugard.com

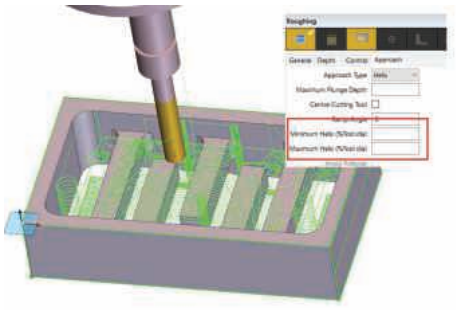
Stand J230

Vero to demonstrate three of the best at Southern Manufacturing

Vero Software will be demonstrating the 2018 R1 releases of Edgecam, Radan and VISI, at the forthcoming Southern Manufacturing exhibition.

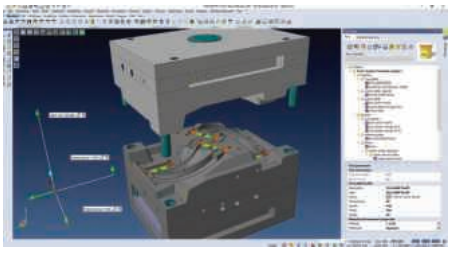
Edgecam includes updates to roughing cycles for milling, turning and MTM and the prevention of unnecessary CAM regeneration is seen as being particularly important. When editing a tool command, the remaining instructions will no longer be automatically regenerated if the alteration does not affect the corresponding cycles with aspects such as coolant or high-speed.

Sheet metal software Radan takes the increasing popularity in automatic bending into consideration, making fingerstops safer by allowing for improved part alignment in the press brake, and reducing the number of fingerstop movements required between bends. A new batch nesting system could improve material usage by around nine percent over a year with a revolutionary approach to optimising a range of nests, by looking at the entire nest run and reducing the number of overall sheets instead of focusing on how full each individual sheet is.



For the mould and die market, VISI provides greater flexibility when constructing supplier and non-standard tool configurations. Customisable templates, including the management of blank and predrilled plates, allow for easy tool layout creation and enhanced editing throughout the design process.

Headquartered in England, Vero Software designs, develops, and supplies CADCAM and CAE software that radically enhances the efficiency of design and manufacturing processes, providing its customers with exceptional value through high productivity gains and significantly reducing time to market. The company's world-renowned brands include Alphacam, Cabinet Vision, Edgecam, Machining STRATEGIST, PEPS, Radan, SMIRT, SURFCAM, WorkNC and VISI, along with the production control MRP system Javelin. Despite the diversity of application, these solutions have one thing in common: they all address the rising challenges of achieving manufacturing efficiencies and bring huge value to the operations in which they are deployed.



Vero has direct offices in the UK, Germany, Italy, France, Japan, USA, Brazil, Netherlands, China, South Korea, Spain and India supplying products to more than 45 countries through its wholly owned subsidiaries and reseller network.

Vero UK Ltd
Tel: 01189 756084
Email: stewart.bint@verosoftware.com
www.verosoftware.com

Stand G190

Henkel's word is its bond

Henkel adhesives continue to influence how products are designed and manufactured and none more so than the company's newly introduced range of LOCTITE® Universal Structural Bonders. What makes these products stand out from the crowd is their unique formulation. Their many attributes are achieved through Henkel's patented hybrid technology to achieve bond strength, speedy cure and durability, performance qualities that historically have not been available from a single product.

From a manufacturer's perspective, the LOCTITE Universal Structural Bonders are proving able to solve a broad variety of design and assembly challenges and naturally the four products that complete this range will be featured at Southern Manufacturing 2018.

Structural bonding allows materials to be selected for their respective performance qualities rather than their compatibility with the joining method; plastics, metals and composites can be freely combined. The adhesive also creates uniform stress distribution across the entire bond face and as the join is relatively invisible, the aesthetics of the product are considerably enhanced. Henkel's hybrid technology adds value by combining these benefits with high bond strength and super-fast fixturing and cure speed.

Since their introduction earlier this year, LOCTITE Universal Structural Bonders have proved their ability to improve assembly applications, streamline process steps and bond materials in applications with difficult requirements. And playing a considerable part in their success has been Henkel's ability to provide the optimal dispensing equipment for the task.

Unlike other adhesive manufacturers that subcontract the manufacture of dispensing equipment or refer the customer to a dispensing 'partner', Henkel builds its own systems. This ensures the dispensing system is designed with the benefit of an in-depth knowledge of the adhesive's characteristics and performance. The result is the supply of a turnkey solution that is truly fit for purpose and for which the customer has a single point of contact.

Underpinning these latest developments is Henkel's wider LOCTITE®, BONDERITE®, TEROSON® and TECHNOMELT® product ranges that continue to benefit the entire value chain. Whether the task is in system building, assembly or repair, these engineering adhesives, sealants and functional coatings improve performance and cut costs.

Henkel Ltd
Tel: 01442 278100
www.loctite.co.uk
www.loctite.com

Stand H165

Xtreme Metrology from Aberlink

Aberlink staff will be demonstrating its most recently launched Coordinate Measuring Machine (CMM) at the Southern manufacturing and electronics exhibition. The advanced new Xtreme CNC CMM boasts a non-Cartesian structure and uses linear motors and mechanical bearings, the cost-effective Xtreme's advantageous configuration ensures that it maintains its accuracy at very fast measurement rates and does not suffer from the accumulative inaccuracies that occur in conventional 3-axis Cartesian arrangements. As its name implies the new, easy to operate Xtreme CNC CMM offers customers a robust solution for undertaking precise inspection routines on the shop-floor.

To help illustrate its impressive high-speed, high-accuracy capabilities when used for both contact and non-contact applications, Aberlink's best-selling Axiom Too CNC CMM will be performing inspection routines using both Renishaw's RTP20 touch probe and also Aberlink's own innovative camera system. Despite the Axiom Too's generous measuring volume, the machine's compact design occupies a relatively small footprint, with the machine's controller and all peripherals housed within the Axiom Too's workbench.

Also put through its paces at the exhibition will be the latest iteration of Aberlink's popular inspection software. In addition to touch-trigger probing and vision measurement, Aberlink 3D CNC Inspection software now enables the extremely accurate, rapid scanning of features and profiles. The Mk IV software version delivers enhanced functionality and boasts an improved CAD Comparison module and the easiest to use 'off-line programming from CAD' software module currently available.

Now the largest UK-owned CMM manufacturer, Aberlink's comprehensive range includes 23 standard sizes of both CNC and manual CMM variants. Aberlink CMMs enable the precise measurement of the smallest of components, to parts of over 3 metres long and up to 6 tonnes in weight. Customers are also able to select from a wide range of probing and non-contact measurement options and on-machine fixturing. The company's wide range of available solutions allows Aberlink to offer high quality CMMs and vision measuring systems to suit all applications and budgets.

Based in Eastcombe, Gloucestershire, Aberlink Innovative Metrology has established a global reputation for its metrology products which are innovative, easy-to-use and competitively priced.

Aberlink Innovative Metrology LLP
Tel: 01453 884461
Email: sales@aberlink.com
www.aberlink.com

Stand L230

Industry 4.0 compatibility of HEIDENHAIN controls and first touchscreen CNC to be featured

To underline its expertise in the area of Industry 4.0, HEIDENHAIN will present at Southern Manufacturing its connected machining system of production, in which all work steps from the design to the deliverable component are interlinked via one of the company's TNC controls.

The manufacturer's premise is that a workpiece is produced on a machine tool, so information should be consolidated there and data on the status and quality of the workpiece must flow back into the production IT system. The machinist, who is responsible for the quality of components and for staying on schedule, needs to have access to all this data.

Two-way communication with a CAM system is facilitated by Remote Desktop Manager software, while using Batch Process Manager, the operator is able to monitor the NC program and tools and schedule the execution of several production orders simultaneously. StateMonitor software captures data from

machines, presenting a real-time view of its status and sending messages to computers and mobile devices throughout the company. Automatic workpiece measurement on the machine delivers data for quality assurance, which can be archived or evaluated.

In other news, HEIDENHAIN is offering an optional variant of its TNC 620 control, whereby instead of having soft keys at the side of the screen plus function keys and a numeric keypad below, operation is via graphics on a large touchscreen. It gives users the choice of a smartphone/tablet style interface when operating this mid-range, 4/5-axis CNC system for prismatic machining and probing.

Its familiar look and functionality has been combined with modern operation using tapping, swiping and dragging motions on the screen. The interface speeds entry, location and manipulation of data, resulting in easy operation and tangible increases in productivity. An operator can zoom in or out and move or rotate graphics directly on screen dynamically and smoothly.

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Stand H190

hyperMILL now with virtual machine

OPEN MIND Technologies is set to exhibit its NC code-based hyperMILL® VIRTUAL Machining Center machine simulation for the first time in 2018 at Southern Manufacturing. The developer of CADCAM software and post-processors will also offer show visitors a demonstration of hyperMILL version 2018.1 and the hyperMILL MAXX Machining performance package.

Milling tasks that use powerful 5-axis machining centres are becoming more diverse, making a reliable machine simulation more important than ever before. With its hyperMILL VIRTUAL Machining Center, OPEN MIND has developed a solution that uses the NC code after the postprocessor run, as the basis for the simulation. This ensures that the virtual machine movements correspond exactly to the real machine movements.

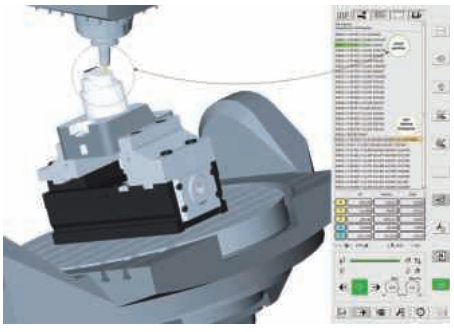
Maximum efficiency with hyperMILL MAXX Machining

The hyperMILL MAXX Machining performance package with its three highly efficient modules for roughing, finishing and drilling promises a major boost in efficiency. Manufacturers that use these innovative CAM strategies will be able to achieve time savings of up to 90 percent during finishing and time savings of up to 75 percent during roughing. Visitors to the show will experience first-hand, the enormous potential for savings that can be achieved, especially with the 5-axis tangent plane machining strategy.

What to look forward to with hyperMILL 2018.1

2D contour milling on the 3D model strategy will make it much easier to program vertical surfaces. The milling contour is generated automatically by selecting the perpendicular surfaces. hyperMILL 2018.1 will also offer Autodesk Inventor users new functions for 5-axis swarf cutting with one curve. Users can create perfect surfaces and curves for swarf cutting quickly and easily using a simple surface selection that is based on the selected geometries.

OPEN MIND is one of the world's most sought-after developers of powerful CAM



solutions for machine and controller-independent programming.

OPEN MIND develops optimised CAM solutions that include a high number of innovative features not available elsewhere to deliver significantly higher performance in both programming and machining. Strategies such as 2.5D, 3D as well as 5-axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the hyperMILL CAM system.

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Stand D225

XYZ makes 5-axis the centre of attention

XYZ Machine Tools attendance at Southern Manufacturing will focus attention on its UMC-5X simultaneous 5-axis, gantry-style, machining centre. The level of technology included as standard with the XYZ UMC-5X is making existing users of 5-axis machining centres review their position and is introducing a whole new group of potential customers to the benefits of simultaneous 5-axis machining.

As with all machines from XYZ Machine Tools, the UMC-5X is available at a very competitive price point, yet comes with leading-edge technology such as Traori/Kinematic functions for 5-axis simultaneous machining, as well as integrated Smart Machining Technology (SMT) and thermal growth compensation.

The standard control system is the popular Siemens 840DSL ShopMill Control, with the option of specifying the iTNC 640 HSCI Heidenhain system. Both controls ensure a machine capable of high precision, high speed, simultaneous 5-axis machining.

Other key features are the front loading 600 mm diameter trunnion rotary table, with a high accuracy, direct drive, high torque motor providing 90 revs/min rotation of the table. The tilting axes are servo worm driven, torque motor option, that provides +/- 120° of movement and just 2.5 seconds for full rotation with a maximum table load of 600 kg. Of interest, is that due to the table configuration and machine design, when the table is tilted 90 degrees towards the rear, component facing forward, there remains 500 mm of Y-axis travel forward of the table surface. This is much greater than many competitor machines, including those that quote the same axis travels as the UMC-5X, allowing larger workpieces to be machined.

Additional specifications include in-line spindles with 12,000/15,000 revs/min or, a high speed 18,000/24,000 rpm motorised built-in spindle, high pressure through spindle coolant, side-mounted 24, 32, 48 or 60 tools ATC for quick tool changing, linear scales on the X, Y and Z axes with high precision encoders on A and C axis pivot centres.

The XYZ UMC-5X is setting new standards for 5-axis machining

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Stand E190

F1 subcontractor expands 5-axis machining

Ray Harris started a five year mould and tool making apprenticeship at a High Wycombe engineering company when he was 16 years old but left after two years, as much of this type of work was being offshored and he could see little future in it.

He moved to a nearby subcontractor that specialised in supplying components for Formula 1 and has worked in the industry ever since, both in the supply chain and in-house for two leading F1 teams. Ray Harris has always been interested in motorsport, having participated in various racing formulas since the age of 13, most recently intermarque.

In 2015 he set up his own subcontracting company, Driven Precision Engineering, to specialise in F1 manufacturing. He rents space on the shop floor of LW&T Engineering, another contract machining firm in the Farlington district of Portsmouth.

A second hand, 3-axis machining centre was his first purchase, followed by a 5-axis model from the same supplier a year later. The latter machine extended the complexity of work that could be taken on by exploiting simultaneous 5-axis machining and allowing more efficient manufacture of standard parts by positioning and clamping the two rotary axes.

To add another spindle and to increase the size of work that can be undertaken to 850 x 700 x 500 mm, his latest purchase is another 5-axis machining centre, this time a Hermle C 400 supplied by Geo Kingsbury, sole UK agent for the German machine builder.

Ray Harris says: "It was our tooling supplier, Betta-Cut in Southampton, that suggested we look at Hermle, as the sales engineer is an ex-employee of Geo Kingsbury and knew the machines well.

"I searched on the internet and found only positive comments about the machines.

Normally you can unearth some negatives about machine tools on discussion forums, but I couldn't find any about Hermle.

"Then I went to a subcontractor in Gosport, Norjon, whose owner Kevin Fox has operated 5-axis Hermles for many years and now has five. He didn't have a bad word to say about them either, so the C 400 more or less sold itself.

"Geo Kingsbury helped by introducing us to Deutsche Leasing UK for finance and deferred the start of payments for six months from the May 2017 installation date.

"It will push our first instalment on to the busy F1 build period, from December through to February. At that time of year, our income is higher, as work is practically non-stop making race car components in a range of materials, jigs and fixtures, and aluminium moulds for manufacturing carbon fibre car parts."

Working virtually seven days a week during those three months will generate sufficient income to pay for the machine over five years. It means that additional jobs carried out during the other nine months of the year will be profit and go towards the purchase of the next machine.

During the close season, there are ongoing F1 race car prototypes and components to be made, work which is frequently won by Driven Precision Engineering, due to the good reputation that it has established for reliability and service. However, the subcontractor has cast its net wider to serve the high-end road car, oil and gas, aerospace and yachting sectors as well, producing batch sizes from one-off up to typically 50-off.

Ray Harris adds: "I try to make sure I buy only the best equipment, such as SCHUNK workholding and hyperMILL CAM software, as our customers expect top accuracy parts and prompt deliveries, sometimes same-day turnarounds.

"The Hermle impressed me even when I was looking through the catalogue and saw the Y-axis on top of the main casting and the size of the swivelling rotary table's A-axis bearings in the mineral cast bed. The machine performs as well as I thought it would. Every job comes out really well and blends are perfect.

Such has been the success of Driven Precision Engineering since its inception two years ago that Ray Harris already has his first employee lined up to start in November this year, just in time to help him cope with the busy race car build season.

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Gearbox specialist Xtrac reaches new heights with Trimos height gauge

British gearbox specialist Xtrac has invested in multiple Trimos VL300 Height Gauges to ensure the accuracy of components used in high performance transmission systems and driveline components for the motorsport industry. Based in Thatcham, Berkshire, Xtrac provides complete package services involving the design, manufacture and build of gearboxes or individual components, supporting a wide client base covering top level professional motorsport and high performance automotive.

Due to the diverse range of high quality, precision components designed and manufactured by Xtrac, accurate and repeatable measurement is imperative to delivering high specification parts. Xtrac's structured capital expenditure plan ensures that the customer's expectation is matched by Xtrac's measurement capability and in doing so enables the company to continually face the challenge of producing the highest precision parts possible. To satisfy the highest levels of accuracy and repeatability, Xtrac was in need of an easy-to-use, multi-functional, accurate height gauge for use on both the shop floor and in the quality inspection department.

Bowers Group was able to supply Xtrac with multiple Trimos VL300 Height Gauges; robust, highly accurate height gauges ideal for achieving high precision results. XTRAC inspection manager Neil Warwick says: "We particularly like the Trimos height gauges because they are very accurate and really easy to use. There's no learning curve with them. They're self-explanatory and minimal training is needed to get operatives up to speed."

In order to satisfy the ever-increasing expectations of its customers, Xtrac meets the highest levels of quality in line with ISO 9001:2008 certification across the whole business. Gear cutting and manufacturing is extremely specialist, requiring accuracy to within a few microns; therefore, Xtrac must utilise a full range of testing equipment and electronic instrumentation to consistently meet tight tolerances. From receiving raw materials to supplying finished assemblies and components, every step of the process is recorded, offering Xtrac's customers the confidence of knowing that they are receiving consistent and repeatable quality.

Trimos VL300 Height Gauges are robust, highly accurate height gauges ideal for achieving high precision results. Perfect for use in even the most difficult workshop environments, the Trimos height gauges include simple display units that provide directly accessible functions, depicted with symbols that are easy to understand. This allows for easy and quick handling even by unqualified personnel. The height gauges are used for everything that requires an accurate height/length measurement. This includes a variety of high precision components including small parts such as washers, right up to full casting gearbox main cases, and everything in between.

Xtrac's inspection equipment also includes a selection of bore micrometres from Bowers Group which are used at length in both the grinding and milling departments for the accurate measurement of shafts.

Neil Warwick says: "The service we receive from Bowers Group is brilliant. They are very reliable height gauges, but when they do need a full service, the technicians really know their stuff. We always get them back within a week to 10 days when they're sent off for repairs or maintenance. The support and back up we receive from Bowers is exceptional.

We've had some of the older models of

the Trimos height gauges for a long time now and they're still performing well. They've not worn out or failed; with some periodic maintenance they're going strong even after 20 years. We've very nearly got one per person in our inspection department now, which just show how useful and valuable they are to us, we simply wouldn't consider an alternative."

Xtrac is a 100 percent employee owned company, meaning everyone employed is a shareholder. Its dedication to continuous improvement, supported by personal development plans for staff, result in excellent staff retention and a highly incentivised working environment.

Xtrac has been in business for 33 years, now working from the 8,200 m^2 purpose-built factory in Thatcham, Berkshire. Machinists work around the clock with Xtrac's own unique materials, machining complex components directly from CAD data. Solutions are delivered customers throughout the world; not only to the motorsport industry, but also to the company's growing automotive and engineering customers.

Bowers Group
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Mazak supplies six machines to Renault Sport Formula OneTM Team

For the 2017 season, Yamazaki Mazak has supplied six state-of-the-art machines tools to Renault Sport Formula One Team. The machine tools are located at Renault Sport Formula One Team's base in Enstone, Oxfordshire and include a number of models from Mazak's Multi-Tasking and turning machine ranges.

Specifically, the team has taken delivery of two INTEGREX i-300 models, which feature a 30 kW, 4,000 rpm main spindle. The i-300 combines versatility with reliable performance in a compact footprint, capable of processing workpieces up to 1,519 mm in length and 658 mm in diameter.

Alongside the two i-300 Multi-Tasking machines are two INTEGREX i-100. Benefitting from a compact ergonomic design, the INTEGREX i-100 is capable of machining both round and prismatic workpieces from raw material with just one setup, one machine and one operator. Combined with Mazak's latest CNC, SmoothX, and both an 11 kW 6,000 rpm main spindle and 12,000 rpm milling spindle, the INTEGREX i-100 is one of the most accurate machine tools in its class.

Completing the line-up are two QUICK TURN NEXUS 250-II MY high-performance turning centres. Featuring a 4,000 rpm main spindle with 10" chuck, the machine offers a compact and cost-effective solution for turning and milling, with Y-axis capability.

Renault Sport Formula One Team is using its new Mazak machine tools to manufacture a variety of components for its 2017 cars. Example parts include the front axle housing and master cylinder body for the car's brake system, which are both made from aluminium on an INTEGREX i-300; stainless steel thermocouple brackets, manufactured using an INTEGREX i-100; and aluminium centric rings for the cars' wheels, which are manufactured in one process on a QUICK TURN NEXUS 250-II MY.

Yamazaki Mazak is constructing four new technology centres at strategic locations across Europe, giving customers even more opportunity to see the latest technologies and innovations from the company. Its European manufacturing plant in the UK also provides the European group headquarters for more than 900 employees and 15 technology centres and technical centres.

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DSM signs technology partnership agreement

Royal DSM, a global science-based company active in health, nutrition and materials, has signed a "One DSM" framework technology partnership agreement with Toyota Motorsport GmbH (TMG), a 100 percent subsidiary of the Toyota Motor Corporation. The agreement involves all DSM businesses active in supplying materials and technology to the automotive sector including engineering plastics, Dyneema®, ultrahigh molecular weight polyethylene fibre, and 3D Printing.

TMG is a high-performance development, testing and manufacturing company, offering a wide range of technical services as well as its involvement in various motorsport disciplines. One of its specialty areas is in the manufacture of products by additive manufacturing, often referred to as 3D printing, both for motorsport use and for external customers.

Under the non-exclusive agreement, DSM will have the opportunity to act as TMG's preferred material and product provider. TMG will develop and pilot new engineering solutions using DSM high performance materials and products for potential application in the automotive industry. TMG will also test and evaluate DSM products and act as a test user for defined projects.

Golnar Motahari Pour, president of DSM Dyneema, says: "We are very excited about this new agreement. DSM offers an array of materials that are ideally suited to high performance applications in the automotive arena, and we believe that working together with TMG we will be able to expand our horizons even further. Everybody at DSM is looking forward to being able to work with such a front-runner in automotive engineering from the initial design phase onwards."

Hugo da Silva, VP of DSM's Additive manufacturing business and 3D Printing, is equally enthusiastic: "Our materials already have a strong reputation in the 3D Printing community, and as we grow our portfolio to support the 3D Printing revolution, we are convinced we can do much more. We have already worked with Toyota Motorsport on optimising our new Somos Taurus for real-world motorsport applications, and this

agreement will enable us to collaborate even more closely."

Gerard Winstanley, manager future production technologies & processes, fabrication and additive manufacturing at TMG, says: "We are looking forward to extending our cooperation with DSM as a dedicated technology partner. Our relationship has developed strongly over the last few years and significantly enhanced our capabilities as well as contributing to DSM's product development."

Koninklijke DSM N.V.
Tel: 0031 45578 2951
www.dsm.com

Excellent performance in a smaller footprint

Okuma introduces new entry-level vertical machining centre for 5-axis operations

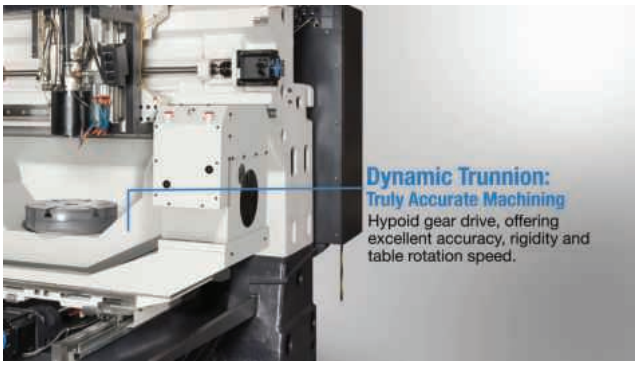
Made in Japan and based on Okuma's best-selling MU-400VII machining centre, the new next-generation vertical GENOS M460V-5AX machining centre enables full 5-face machining for increased geometrical accuracy, fewer setups and reduced lead-times. If no 5-axis simultaneous machining is required, the machine can be operated like a 3-axis machining centre. Its high-speed spindle offers maximum productivity at 15,000 min-1. With rapid traverse speeds of 40 m/min (ipm) for the X and Y axes and 32 m/min (ipm) for the Z axis, the machining centre effectively reduces cycle times. This performance is further enhanced by feedrates of 14,400 and 18,000°/min in the A and C axes, respectively.

Constructed for uncompromised performance

With its innovative double-column structure, the sturdy machining centre offers an exceptionally small footprint of 2,160 × 2,810 mm. With a full 5-axis simultaneous control system and a thermally stable design, operators are granted the ability to process even the most challenging materials and geometries.

High-precision ball screws generate roller guide movement to all three axes. They are directly coupled to Okuma servomotors, which match the electrical and mechanical prerequisites to meet performance requirements with uncompromising precision. Utilising a hypoid gear drive, the first-rate trunnion construction offers excellent positioning accuracy, rigidity and table rotation speed.

The machine's thermo-friendly structure allows it to maintain high dimensional accuracy when the room temperature changes. It stabilises thermal deformation and automatically shortens warm-up time. The need for dimensional correction during machine restart is reduced significantly.



Versatile use in a wide range of applications

The GENOS M460V-5AX meets a variety of application requirements, as it is able to process a wide range of materials including titanium, aluminium and light alloys. Workpieces range from die/moulds to small precision parts. The spindle motor design produces less vibration and power loss at the tool tip, which yields excellent surface finishes and impressive metal removal rates. Okuma's OSP suite allows for easy programming of five-face machining operations and grants access to the manufacturer's performance-enhancing Intelligent Technology applications, such as the chatter-reducing Machining Navi and 5-Axis Auto Tuning System for compensating geometrical errors.

Okuma Europe GmbH is the Germany-based sales and service affiliate of Okuma Corporation, a leader in CNC machine tools, founded in 1898 in Nagoya, Japan. The company is the industry's only single-source provider, with the CNC machine, drive, motors, encoders, spindle and CNC control all manufactured by Okuma. Okuma's innovative and reliable technology, paired with comprehensive, localised service protection, allows users to run continuously with confidence and thus maximising profitability. Along with its leading distribution network, Okuma facilitates quality, productivity and efficiency, empowering the customer and enabling competitive advantage in today's demanding manufacturing environment. For more information, visit **www.okuma.eu**.

Formed in 1964, NCMT operates from three strategically located sites in the North, Midlands and South of England. It delivers high technology engineering solutions for metalcutting and grinding applications in the UK and across Europe, from stand-alone machines to complete production lines involving a high degree of automation. NCMT tends to specialise in the more demanding fields of engineering that are avoided by companies that just deliver a machine tool and little else.

It prides itself on technical competence, innovative production solutions and reliable technology, based on some of the best machine tool platforms available anywhere the world. Its own agency ranges of toolsetting, tooling, workholding and shop floor diagnostic products often form part of the turnkey systems it supplies.

The company's business is all about satisfying customer demand, so responsive engineering support, training and back-up forms a core part of the NCMT service, from pre-sales through installation and commissioning and for the lifetime of the installation.

In 2006, Makino-NCMT Grinding Division was established to market Makino machines configured for VIPER grinding of nickel alloys throughout the whole of Europe, principally within the aerospace and power generation industries, but also in the motorsport and medical sectors.

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Harrison Alpha CNC lathe is 'Best machine in the factory'

Medley Precision Engineering has recently bought a Harrison Alpha lathe for machining a complete variety of turned parts for the oil & gas, defence, rail and power generation sectors. The Mansfield-based manufacturer is no stranger to machining difficult to cut materials and this is why it opted for the robust platform of the Harrison Alpha 1550XS from 600 UK.

The Harrison Alpha XS is a 2-axis manual/CNC lathe designed for fast, high-quality repeatability, accuracy and surface finish to exacting toolroom accuracy standards, which significantly reduces component production costs.

Commenting upon the machine acquisition, Medley Precision Engineering's production manager Stuart Solomon says: "It's the best machine we have in the factory. This is because it is remarkably easy to program, as it has its own Alphalink system that can be programmed on the laptop and I can draw parts and send them straight into the machine."

The Alpha XS lathe benefits from the ultra-high-speed Fanuc CNC control along with Harrison's own developed Alphalink software. This software makes the Alpha ideal for new and experienced operators alike.

The flat-bed CNC lathe retains a conventional element. Stuart Solomon says: "We often do low quantities of work and this machine can be up and cutting in a matter of minutes and this is a big bonus for our business."

Highlighting other features that make the Harrison Alpha lathe the best machine on the shop-floor at Medley, he continues: "The machine has never caused us any issues or problems, so support isn't a factor we've needed to be concerned about. It's a very solid machine that is well built and extremely reliable. We are often cutting difficult materials like super duplex and the Alpha XS generates an excellent surface finish, something that is credit to the build quality of the machine. It's an extremely flexible and versatile machine and there isn't anything I wouldn't feel comfortable putting on the Alpha."

You can view the video on 600 UK's YouTube channel: **https://www.youtube.comwatch?v=jB0oQMMr2-4**

The newest addition to the Alpha range is the fully interpolating 3-axis Alpha XC which now performs off-centre drilling, boring, tapping, hexagonal milling and much more, reducing the need for second operation production for one-offs and small batch components on the simplest CNC lathe to operate in the world.

These extra capabilities give customers even more added value that would be commonly reserved for a full production, slant bed CNC turning centre.

The control unit on the machine is also the FANUC system with Harrison's very own unique Alpha programming system and favoured by users worldwide. This is in addition to the FANUC Manual Guide i system that is fully conversational for the end-user, using pictorial guides as well as the full G-Code CNC system, giving the Alpha operator unrivalled programming options.

The XC turret has eight stations and all positions can be driven at up to 5,000 rpm. The VDI tooling setup is based upon the size of the machine and has either a 20 or 30 VDI configuration.

The Alpha XC is available in two sizes; the 1400XC has a 1,250 mm centre distance, swing over bed of 400 mm and a 55 mm through bore spindle, with the larger capacity Alpha 1550XC available with a swing over bed of 550 mm and centre distances up to 3,000 mm.

The Alpha ranges are backed up by some very attractive low-cost finance and lease options on the XS and the 3-axis XC ranges, which can all be built in a wide variety of sizes, with XS bed lengths up to a maximum of 6 metres. Alpha XS and XC lathes are not only fitted with a wealth of standard features, but also have a list of options available to suit every turning application.

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Combination of material adding a splinter machining

A sound investment

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has recently supplied a new high-performance Doosan VC 630 5AX 5-axis machining centre, equipped with a Heidenhain control, to leading hi-fi design and manufacturing specialist, Linn Products Ltd.

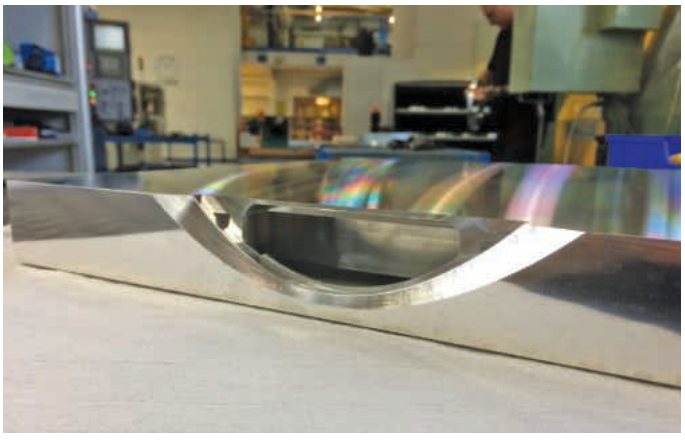
The machine was installed at the company's factory in Glasgow in April 2017 and is being used to machine a range of high-precision parts for Linn's state-of-the-art music systems. These parts include machined-from-solid aluminium enclosures, comprising a lid and base for Linn's range-topping Klimax systems.

Prior to investing in the VC 630 5AX, the machining of these enclosures was subcontracted and while this situation was satisfactory, it had its drawbacks and was always considered to be temporary. The arrangement was superseded by Linn's desire to become more self-sufficient and vertically integrated with the decision to commence machining the Klimax metalwork in its factory. Bringing this process in-house has secured Linn's commitment to continuous improvement and will help realise its ambition to remain at the forefront of audio innovation for the future.

Fraser Crown, Linn Products' operations architect says: "The more of our manufacturing processes we can bring in-house, the better able we are to, manage, control, optimise and ultimately improve them.

"Linn do not mass produce products, every product we manufacture is built to order. This can potentially cause scheduling and delivery fulfilment issues when relying on subcontractors who, quite naturally, prefer and are geared up to handle larger and more predictable 'batch-type' production work.

"As part of our commitment to continuous improvement, it was a natural progression for us to look at bringing machining processes in-house, such as those employed to manufacture our enclosures."



To enable Linn to manufacture all its Klimax metalwork in-house, it needed to acquire additional machining capability. Linn is certainly no stranger to CNC machining and, some years earlier invested in a 3-axis Doosan DNM 650 vertical machining centre from Mills to manufacture a range of parts. Since being installed, the machine, according to Fraser Crown, ''hasn't missed a beat" and is working near peak production.

Linn's 'milled from solid' enclosures feature in both the Klimax DS & Klimax DSM streamers, the Klimax amplifier, Klimax Exakt and the Radikal power supply for the Klimax LP12 turntable. The enclosures are precision-machined, internally and externally, from individual solid aluminium billets.

Internally-machined features include a number of separate and isolated chambers, divided by walls, where audio/electronic circuitry and power supply units etc., are housed separately. The back of the enclosures contain a variation of machined holes for output and input connectors and ports.

All exterior faces of the enclosure are machined to a mirror-like finish, with the top and bottom being finished using a large diameter fly-cutter (cutting) tool that is able to face-mill the entire surface in one pass to produce a completely uniform finish.

Fraser Crown says: "Surface finish imperfections, however small, are not acceptable as they would show up after the enclosures have been anodised."

Machine selection

To meet Linn's manufacturing imperatives and exacting quality standards, the company extensively researched the market to identify the types of machining centres available.

Fraser Crown explains: "We wanted the machine to meet our immediate and future requirements, which is why we looked at large-capacity 5-axis vertical and horizontal machining centres. Although we do not machine parts in high volumes, flexibility, reduced setup and cycle times, which are key advantages of 5-axis machine tool technology, are important to us.

"We ultimately decided on a 5-axis vertical machine with full 5-axis simultaneous machining capability because it enables each side of the billet to be machined continuously without the need to remount the job therefore negating any incremental dimensional inaccuracies and

poor finish quality. We believe it will provide us with far more flexibility going forward'.''

"Furthermore, for certain machined features, most notably where the front panel display is located on the enclosure lid, we knew that using the 5-axis simultaneous machining capabilities would enable the feature to be machined reliably and accurately. In reality, the seamless 5-axis movement which creates the 'Klimax smile' is dimensionally perfect, it has a faultless finish and it is a joy to watch being machined.''

Machine tool supplier

Linn already had good relationships with Mills CNC having invested in a Doosan DNM 650 vertical machining centre some five years ago. Having discussed its latest requirements with Mills' sales and technical staff, Linn decided to invest in a large-capacity VC 630 5AX machine with a Heidenhain Control.

Having a large-capacity machine means that Linn can produce a wide range of components - big and small. The decision to opt for the Heidenhain Control, a control favoured by mould tool and die makers, was made for its ease of use and onboard functionality and especially its ability to help machine complex three-dimensional surfaces and curved contours.

Fraser Crown says: "The VC 630 5AX has a large working envelope, X-axis: 650 mm; Y-axis:765 mm; Z-axis:520 mm, and a high-performance 32kW/12,000 rpm direct-drive spindle. These plus the machine's price, immediate availability and that it was backed by Mills' after sales service and support were all key determinants."

Machine tool process

Bringing any machining process in-house means there is an inevitable learning curve. Add to that the need to get to grips with the Heidenhain Control, Linn's Doosan DNM 650 machine is equipped with a Fanuc control, and the curve becomes naturally steeper.

However, the skill and experience of Linn's operators and programmers combined with technical and applications support, including training, provided by Mills CNC has helped the company develop a secure and reliable machining process for its enclosures. Further refinement to fully optimise the process is on-going and is part

and parcel of a Linn's continuous improvement ethos.

Fraser Crown concludes: "The new machine is working well, and we have found that having 5-axis machining capability in-house makes us more productive and flexible.''

"We are also able to respond, from a machining perspective, much more efficiently and effectively with regard to product design upgrades and modifications."

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Camloc invests in new CNC Lathe

Leicester-based gas spring and damper manufacturer Camloc Motion Control has recently invested in a new state-of-the-art CNC lathe machine in order to increase production capability and flexibility.

The new Sprint 32|8 machine is manufactured by DMG MORI, an industry leader in metal cutting and milling machines. This new addition to Camloc's arsenal is "ideally suited for the machining of more complex workpieces" according to DMG MORI.

Major benefits of the new machine include faster development of new products and increased flexibility when it comes to the levels of product customisation available for applications in order to meet customer requirements.

Matt Warne, engineering director at Camloc Motion Control, says: "We wanted to invest in the right machinery that will enable us to expand our operating capabilities and this new lathe has allowed us to take our customers' products to the next level, with improved bespoke functionality. The investment in the new CNC Lathe was a crucial stepping stone as part of the company's future growth plans and demonstrated a significant investment from the management team into the business".

A management buyout alongside a £1.5 m investment from leading independent private equity investment company Foresight Group, saw Camloc successfully change hands in mid 2016.

The new lathe was successfully installed in September and is now fully operational, marking a significant step forward for the company in order to keep Camloc Motion Control at the forefront of innovation and design in the gas spring and damper industry.

Camloc Motion Control Ltd has been designing and manufacturing gas springs and dampers since 1989, from its facilities in Leicester, and producing over half a million products per year.

Previously owned by American investors, In 2016 the company announced the completion of a management buyout, as

sales and marketing director Andy Hubbard, finance director Julie Barker, and engineering director Matt Warne invested in the business. The team secured additional funding from Foresight Group, a leading private equity investment manager with UK offices in Nottingham, Manchester and London. RBS also provided a term loan and working capital facilities.

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A subcontractor's guide to automation

by Paul Richards, area sales manager robots, FANUC UK

Production forecasts for the UK look gloomy and were recently downgraded in Philip Hammond's Budget in November. This is a critical issue, not only for the UK, but also its large community of subcontractors. But what if automation held the key to unlocking the UK's productivity potential? And how can subcontractors be a part of it?

When it comes to the UK's productivity and economic output, describing the situation as "dire" would hardly be an overstatement. In fact, productivity is no higher now than it was before the 2008 financial crisis, with the Chancellor, Philip Hammond, downgrading the UK's production forecasts in the latest Budget.

Why exactly is this happening when new technologies and innovations are emerging all the time which should enhance productivity? The answer lies in investment. Put simply, UK companies just aren't spending enough money on new machines and automation which could enhance their productivity. This is particularly true of the UK's subcontractor community which arguably stands to lose the most if current trends continue.

If you're a UK-based subcontractor, it's tough out there right now. Not only are you battling low-cost, mass-production economies, such as those in the Far East, but you're also having to prove that you can meet their price, at a higher quality and in a more efficient manner.

Automation is starting to penetrate the UK manufacturing community. Its arrival heralded as the key to unlocking the UK's competitivity and engineering excellence within the global marketplace. The reasons for this are many: it's one of the best ways of reducing overheads, increasing efficiency, and maintaining constant, high-quality output for the long term.

We call it "lights-out" unmanned machining and it's a capability that only automation can provide. It means that your machines keep working, even after the last employee has gone home. If you wanted to, you could develop into a facility that operates 24/7, 365 days a year.

Automation also removes human workers from manual, repetitive tasks that can be performed more quickly and accurately by a machine. While there are some concerns that this essentially equates to job losses, what it actually does is move those employees into more complex and rewarding jobs that offer more value to the company.

Yet despite the advantages automation may bring, the UK remains worryingly behind its European counterparts in the adoption of automation. The subcontractor community in particular, is slow to exploit the potential long-term benefits of automated processes.

There are a number of reasons why this may be, but a good portion of these will be down to concerns over job losses, space and high up-front costs. It also doesn't help that when the media talks about automation, it's either in the context of a terminator-style threat to man-kind, or a glamorous, high-end car manufacturer with miles of automated production line. Try then telling a subcontractor operating out of a small, rented facility in Solihull that this is also an option for them, and you can see why eyes might start to roll.

In their reticence to adopt automation, are subcontractors missing a trick? Definitely. My first piece of advice whenever I talk to subcontractors about automation is: Stop seeing the bigger picture. It's risky to assume that automation is only for the 'big guys', or that you need to go all-in with a fully automated facility right away.

This kind of thinking detracts from your ability to analyse where exactly automation could fit for you and this is concerning, particularly when you consider that it may just be the missing link between you and your next big contract.

What about the costs associated with purchasing the latest in automated and robotic technology?

Start seeing it as an investment, rather than a purchase. There are plenty of examples of customers who have realised a

return on investment in less than two years, and this is mainly due to the impressive gains they've made in productivity and efficiency.

With so much choice out there right now and new technologies being developed every day, many subcontractors are understandably concerned over where to start.

There is definitely a lack of practical advice out there for subcontractors right now. We're seeing a lot of focus on the negatives or the challenges of automation, when we really need to be grabbing the bull by the horns.

Here are a few words of wisdom for subcontractors looking to take their first steps into automation:

Focus on the three d's. These are areas of opportunity that will offer you the most value for money, those processes that are dirty, dangerous or demanding. By focusing on these three, you're removing a human from a situation that could potentially be strenuous or hazardous.

This could be anything from tending a machine that is handling material at high temperatures to moving heavy objects back and forth. Repetitive tasks such as these were made for robots; a robot won't get tired, pull a muscle, strain their back or get injured by debris. In short, it's a great way to start integrating automation into your business, while also investing in the safety and wellbeing of your employees.

Don't be tempted to consider the most difficult or complex task either. Start small and go for the 'low-hanging fruit'. This will give you a few quick and easy wins and will also provide a few valuable lessons for future automation projects. Robots for machine tending is a great example of this and it doesn't require much training to implement either.

The question to ask is: 'Do I really want that highly-paid CNC programmer loading and unloading workpieces onto a machine, when that same person could be programming multiple machines?'.

I would also advise subcontractors to consider a long, as well as short-term, strategy. Look at areas in which automation can use and exploit high-value machines to help build a return-on-investment.

Don't just aim for cost reductions though. In order to compete with low-cost economies such as Asia, the UK subcontracting market will need to build a reputation for quality, reliability and traceability. Automation can help with all of this. Enhanced data collection and no-fault-forward programming are all ways of separating your business from an increasingly crowded marketplace."

FANUC urges subcontractors to start seeing automation as a legitimate, if not necessary next-step for their businesses. UK manufacturing can only benefit from automation if it embraces it and the subcontracting market is a huge part of our manufacturing and engineering community.

If you still have concerns, talk to a specialist. Any automation solutions provider worth its salt will be able to provide a survey at your facility to identify areas of opportunity and prepare budget costs for return-on-investment analysis.

Automation is a big change, but you don't need to undertake it on your own. Partner with a specialist and start identifying areas of opportunity. You might just be surprised how many possibilities are available to you.

FANUC UK offers on-site surveys for subcontractors interested in automation solutions. For further information, contact your local sales representative on sales@fanuc.co.uk, or visit **fanuc.eu/uk/en**

How investing in automation helped one UK subcontractor improve productivity by over 85 percent

The task: Cycling parts manufacturer Superstar Components Ltd is an excellent example of a manufacturer that can directly attribute business growth to automation investment. Having started out as an assembly business importing parts from Taiwan, the company decided to 're-shore' production with a view to cutting lead times and expanding its product portfolio.

The solution: Tasked with sourcing a cost-effective, turnkey solution to overcome the logistical challenges stemming from a global supply chain, Neil Wilkinson, owner and director at Superstar Components, chose to invest in a FANUC ROBODRILL D21MiA5 machining centre and FANUC M-10iA/10M robot loading system. This would initially be used to replace an existing 4-axis machine for pedal prototype work, but would soon become a flexible manufacturing solution that would drive further product expansion and new business.

The result: The cell had an immediate effect, cutting production time for a run of 600 pedals from just over three weeks, to three days, a productivity improvement beyond 85 percent.

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Full Industry 4.0 solution from Mazak

Industry 4.0 was a focus of Yamazaki Mazak's EMO 2017 stand with the unveiling of the company's iSmart factory concept along with 25 new machines, including 15 making their world debuts.

The iSmart factory concept utilises Mazak's Industry 4.0 infrastructure, which enables machine users to make the vital step-up from automated cell manufacturing to a completely connected Industry 4.0 factory of the future.

Mazak's iSmart Factory is centred on three key pillars, namely SMOOTH Technology, the new SmartBox, which provides faster data analysis with increased security; and the MT Connect standard communication protocol. All elements combine to facilitate the real-time sharing of manufacturing data between the production floor and offices, ultimately resulting in shorter lead times, reduced in-process inventory and lower indirect labour expenses for manufacturers.

SMOOTH Technology, incorporating the world's fastest CNC and Smooth Process Support factory management software, sits at the heart of Mazak's Industry 4.0 infrastructure, due to its ability to reduce machining by 30 percent, connect entire machine shops and provide real-time monitoring and analysis capability.

In addition to the SMOOTH Process Support modules, such as SMOOTH Scheduler and SMOOTH PMC, the CNC has also been equipped with a number of new programmes launched at EMO. The first is Mazak API (Application Programming Interface) which enables non-Mazak software, such as automation equipment, to be integrated into the full suite of SMOOTH CNC's. Alongside this is the new Smooth Spindle Analytics software, which provides instant spindle vibration reporting and analysis.

Efficient and secure data processing is made possible by Mazak's new SmartBox. Utilising Cisco's FOG computing concept, the SmartBox effectively extends cloud computing closer to where the data is produced. This enables sensitive data to be analysed and acted upon securely with optimal speed, with only selected data sent to the cloud for historical analysis and long-term storage. Cybersecurity is maximised by a state-of-the-art Cisco networking platform and Layer3 Managed Switch, industrialised for the factory environment. The SmartBox can interface with any machine fitted with an MT Connect adaptor regardless of manufacturer, age or CNC type. Older legacy machines can also be connected to the SmartBox with the addition of Mazak's new SensorBox.

The final pillar of Mazak's iSmart Factory concept is the use of the MT Connect standard communication protocol, which allows the cross-communication of multiple different machines in the factory or workshop, and enables machine information to be extracted in a standardised format.

During the exhibition, each of Mazak's 25 machines, configured into six different machining zones, were connected using the company's Industry 4.0 infrastructure to display real-time production information.

Richard Smith, European group managing director at Yamazaki Mazak comments: "At EMO 2017, Mazak demonstrated its clear leadership in developing a robust infrastructure for the application of Industry 4.0. The iSmart Factory concept, which combines SMOOTH Technology, SmartBox and MT Connect, provided visitors with a vision of the totally connected factory.

"With 15 state-of-the-art machines making their world debuts, our aim was to show that the connected factory of the 'future' is here today. Ultimately, Industry 4.0 is only going to become an ever more critical element of modern manufacturing and Mazak is determined to ensure our customers embrace the opportunity and realise the full potential of their manufacturing capabilities."

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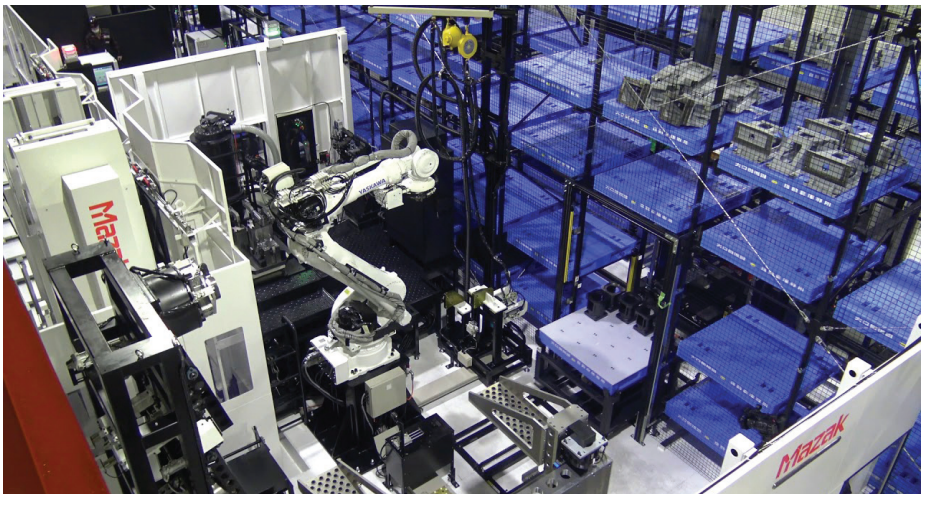


Robot is the 'employee' that helps small subcontractor to grow

Having worked in industry for 10 years, Jesper Larsen decided to go it alone. In April 2016, he set up Vivo Production, invested in two CNC machines and single-handedly established a very successful subcontracting business. Output ranged from batch production through to prototypes, typically for the wind power and offshore industries.

As his reputation grew, so did his order intake. Jesper Larsen began to struggle keeping pace with demand. The purchase of another CNC machine was already planned, so he wanted to avoid the cost of bringing more people into the business, at least in the short term. The helping-hand he chose instead was a Universal Robot UR10.

"I toyed with the idea of getting a robot to load parts into the machine rather than hiring someone," he explains. "So I opted for a cheaper CNC machine and a UR10 for machine tending. It's like an extra operator feeding blanks into the machine."

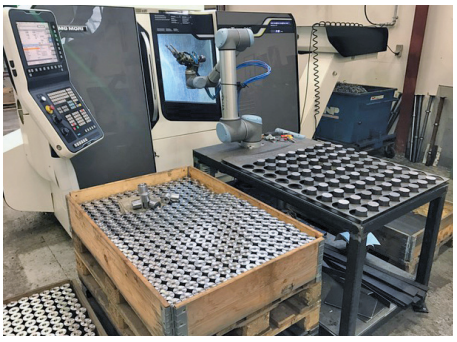
When working on larger batches, the UR10 robot runs non-stop from 7:00 to 23:00 hours and, during times of very high demand, even operates over the weekend. The robot arm automatically shuts down when it is out of blanks, awaiting Jesper Larsen's arrival to re-fill the loading station.

"It never gets tired, works around the clock and offers many other advantages too," continues Jasper Larsen. "There is no need for safety guarding and the robot is so flexible, I can re-set it for different components and even completely different tasks."

Within a year, the UR10 robot installed at Vivo Production had paid for itself. It provided a highly cost-effective stepping stone for Jesper Larsen to grow his business without the need to immediately recruit staff.

Thanks to that prudent decision the company has continued to grow and now has four employees, more CNC machines, a wider customer base and a constant stream of new orders.

Universal Robots is the result of many years of intensive research at Denmark's successful robot cluster, located in Odense, Denmark. The company was co-founded in 2005 by the company's CTO, Esben Østergaard, who wanted to make robot technology accessible to all by developing



small, user-friendly, reasonably priced, flexible industrial robots that are safe to work with and on their own can be used to streamline processes in the industry. The product portfolio includes the collaborative UR3, UR5 and UR10 robotic arms named after their payload in kilos. Since the first UR robot launched in December 2008, the company has experienced considerable growth with the user-friendly robots now sold in more than 50 countries worldwide.

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The solution that sells itself

Robotic machine tending cells help metal castings manufacturer to transform productivity

ABB's Feedline machine tending robot cells have helped a manufacturer of cast metal products to dramatically improve its productivity. Working 24 hours a day assisting in the loading and unloading of grinding machines, the cells have enabled Castings PLC to increase its output by 50 percent with a 50 percent reduction in cycle times.

As a Tier 1 supplier to the heavy truck sector, Castings PLC specialises in the production of ductile iron alloy components for vehicle chassis and engines. The company typically produces medium sized batches, ranging from 2,000 up to 50,000 parts per batch, as well as machining of parts from 1 kg up to 30 kg in weight.

Previously, the company's CNC grinding machines were loaded and unloaded manually, with one operator assigned to handle two machines. To insert and remove components manually was incurring long periods of dead time, limiting the productivity of both the operator and the machines. The company also wanted to find ways to increase the output of the machines themselves, with the aim of being able to use them to produce a target of 2,500 different components.

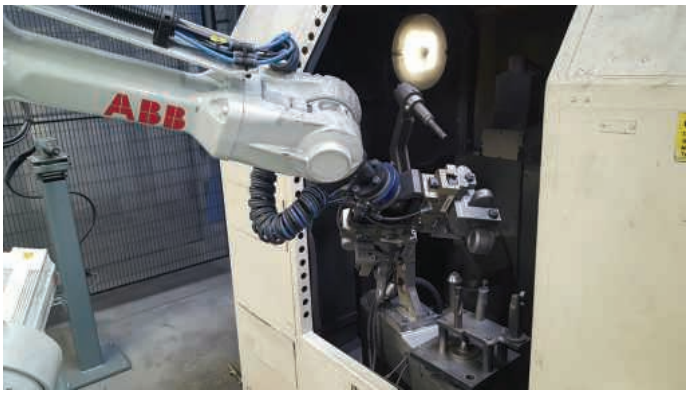
To help evaluate whether robots could achieve these aims, Castings PLC first installed a pilot cell in 2015. Utilising an ABB robot, imaging system and conveyor belt, the cell proved it could deliver the flexibility that Castings PLC was looking for.

"Having used robotic automation in previous roles for other companies, I was already well aware of their ability to help improve production output and quality," says managing director Adam Vicary. "On seeing the Feedline system, I knew it could provide the answer to Castings PLC's search for a production solution able to deliver greater productivity and flexibility."

Key to the Feedline's flexibility is the imaging system, which allows the cell to be programmed to recognise a variety of different components in both standard and non-standard positions.

"The integration between the robot and the imaging system is the really clever bit," says Adam Vicary. "The components can be moved in approximate positions rather than them having to be fixed into certain positions and orientations. By programming these into the cell's control system, the robot is able to immediately recognise how to handle the component, enabling it to pick it up from the belt and load it into the machines."

The success of the trial cell led to a further 12 machine tending cells being installed. The cells are used to handle a range of



components up to 5 kg, with each currently programmed to handle 90 different part types, which can be processed on any machine.

"We were in a position to have enough parts programmed to allow full-scale production to be achieved from the outset, which meant we could hit the ground running," explains Adam Vicary. "We're now at the stage where we're ramping up the capabilities of the robots in order to work towards our target of producing 2,500 different components, including infrequent parts such as truck spares."

A key benefit of the cells is their ease of operation. Programming can be mastered within a few days, enabling operators to quickly change over the cells to handle different component types. For Castings PLC changeover can typically be performed within 10 minutes, minimising disruptions to production.

The cells can be programmed to handle jobs ranging from one hour up to five hours, reducing the need for operator supervision. One operator can now handle up to four machines, effectively halving the amount of labour required. Production can now also be run around the clock, which has seen the company significantly increase its production output.

"Although our grinding machines are now running for longer, we're using them more efficiently," says Adam Vicary. "The improved output that the cells have given us also means we now effectively have the benefit of a one-hour buffer.

"Given what we've achieved so far, we believe that there is plenty more scope for using robotic automation to further improve our manufacturing capabilities and performance. Our experience shows that robots are not just for high volume processes. Provided you give the right thought and consideration to how robots can be used, there is very little that they can't be used for."

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Steel company installs high density storage system

At its distribution centre in Perth, Western Australia, steel producer and wholesaler OneSteel Metalcentre, part of Arrium Mining & Materials Group, stocks approximately 8,000 tonnes of different types of material for supply to its branches and customers, including construction companies, shipyards and plant manufacturers. To streamline the handling and management of its extensive range of bar and tube, the company has invested in a Unicompact honeycomb storage system from German manufacturer KASTO.

Andrew Cosgrove, national operations manager at OneSteel explains: "We deliver a wide range of types and quantities of material, often just-in-time. The automated warehouse provides rapid access and continuous traceability of our stock, giving us the transparent, efficient storage that is crucial to our operation."

The Unicompact at OneSteel has 2,272 cassette locations, each of which can accommodate five tonnes of material up to nine metres long. In total, almost half of the steel on-site, subdivided into some 700 different line items, is currently stored in the system.

Andrew Cosgrove adds: "Compared to conventional storage methods, the small footprint of the Unicompact provides very high storage density, which for us means shorter distances to move the material and more space for additional stock or process steps.

"The goods-to-man storage system has greatly reduced our access times. At the press of a button, material is loaded and unloaded from the store and sent automatically to the picking area. It guarantees productivity and efficiency in our business."

He went on to explain that working in the warehouse has become considerably easier and the process more reliable. While the store carries out the laborious loading and unloading of material virtually by itself, employees have more time for other tasks.

KASTOlvr warehouse management software controls the processes and gives OneSteel a detailed overview of orders and stock levels. Every delivery and individual cassette can be identified and tracked, helping to avoid delivery errors and provide customers with a consistently high-quality service. The software has also simplified the task of consolidating items required for each order.

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Automata launches Eva

Introduction of new elegant, simple, affordable robot arm makes automation accessible

Automata is launching Eva, an elegant, simple, affordable robot arm built for use in a lab, in the classroom, or on a production line. Eva costs just £4,990 while robotic arms of similar size can cost over £20,000.
Eva has been in development for over two years and has been through over 18 versions, rigorous lifetime testing and it is now undergoing final testing. The first customers for these trials include a multinational automotive supplier, a leading producer of laboratory instruments and a British manufacturer of machined components.

Suryansh Chandra, co-founder of Automata says: "Current industrial robots are designed for heavy industry tasks that require extreme power and precision. But people don't work like that, and 90 percent of automatable tasks in manufacturing such as machine tending are still done by people on a daily basis. We designed Eva to make automation simple, quick and affordable, so people can leave the menial work to Eva and focus on more intelligent tasks."

Apart from machine tending, Eva covers a variety of use cases for automating tasks, including product testing, spray painting and simple pick and place, with more to follow soon.

Examples of these use cases can be viewed on the Automata website. Feedback from customers has been very positive. They have been particularly impressed by the ease-of-use and low weight, easily allowing the configuration of Eva for different tasks.

Mostafa Elsayed, co-founder of Automata, agrees: "This is truly a game-changer for both robotics and the small manufacturer. Eva is a high quality, high spec robot that doesn't require a technical expert to programme it and doesn't cost the earth. Best of all, it will help growing businesses save money in the long run."

Eva is Automata's first step in achieving the mission of bringing the next revolution in manufacturing by making robotic automation affordable and simple.
A video can be viewed at:
https://www.youtube.com/playlist?list=PLh9vTEbLR6qXHw5DmW8G9eVnjl8ctyZud

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Upskilling to maximise investment potential

The fundamentals behind the success of Derbyshire-based subcontractor All British Precision is its belief that it has to maximise what it has to make things better and be aspirational in all aspects of its business. Investment in the best available machinery combined with the experience and skills of its people are making this a reality.

The company was formed in 2012 through the 50/50 merger of Medicione and the engineering arm of Howardson Ltd. In the run up to this merger the two stakeholders in the business, Richard Allen and Ian Howard asked themselves the question 'how far do you want to go with this?' The response was to immediately begin an investment program in machine tools and people that would change the face of the business.

Richard Allen says: "I had some customers that stayed loyal and followed me from Medicione, but the bulk of our first year of trading came from Dennis Mowers, which is part of the Howardson Group. They accounted for a high percentage of our first year's turnover of £400,000, but we recognised that with investment and automation we could develop quickly and improve efficiency all-round."

The first evidence of this strategy was the arrival of a Star ST38 12-axis sliding head lathe. The versatility of this machine overcame many of the production issues with the Dennis Mower components. This machine was quickly followed by two further Star sliding heads, an SR32J and SR20J, which while focussed on mower production also provided free capacity to expand other subcontract work. Working around Richard Allen and Ian Howard's passion to continuously improve not only All British Precision's performance, but aid customers in doing the same, further investment quickly followed with a move into larger capacity turn-milling.

The decision to invest in what All British Precision saw as the best machinery and 'go the extra mile' for customers continued to pay dividends and opened up further opportunities for 5-axis machining, so a further investment was made to include a DMG Mori DMU MonoBloc 75 5-axis machining centre, along with a DMG Mori EcoMill 1100 V vertical machining centre and an additional two NLX 2500 turning centres.

The arrival of all of this modern machine tool technology highlighted another issue for All British Precision, that being its gap in knowledge of modern cutting tool techniques. The jump from a maximum spindle speed of 7,000 revs/min to now having 20,000 revs/min available meant that changes to machining strategies had to be made, otherwise the investment would be wasted.

WNT (UK), through its business development manager Adrian Fitts, pulled together a day's programme that would be pitched at all levels of knowledge and Richard Allen committed to shutting down production for a day during its busiest period and taking every machine setter/operator to WNT's Technical Centre in Sheffield.

Richard Allen says: "To basically switch off production for a day we had to see some real benefit from this, I recognised that if each team member brought one thing away from the day that might lead to a 1 percent improvement, collectively it would be worth it. As it happened, everybody did learn something even the old hands admitted that it was a worthwhile experience. The result is we're seeing significant improvements in metal removal rates through use of the new processes that were discussed on the day.''

The day at WNT consisted of a morning in a classroom environment going through cutting tools from the basics to the latest machining strategies, providing information that was pitched at a level that everyone could engage in, with questions being asked by novice and experienced machinists alike. After lunch the theory was put in to practice in the WNT technical centre, with cutters being run at their optimum to prove what can be achieved.

As a result of the combined investment in machine tools and upskilling, Richard Allen is confident that All British Precision can compete with anybody. "The work is available, but we need commitment from customers to continue our investment. The machines we have mean that we can maximise available labour to reduce manpower costs."

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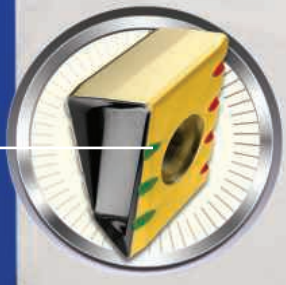

Serrated Cutting Edges

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Mitsubishi's new insert grades for difficult-to-cut materials

To combat the common issue of edge fracturing and insert breakage when turning difficult to cut materials, Mitsubishi Materials has now introduced its latest series of insert grades.

Incorporating the innovative Miracle Sigma Technology, the new MP9005, MP9015, MT9005 and MT9015 insert grades have been introduced with the option of a minus corner radius tolerance. Additionally, the negative rake inserts can be supplied with LS (light cutting), MS (medium cutting) and RS (rough machining) chipbreakers. The positive inserts are equipped with the new FS or FS-P polished chipbreaker, plus LS or LS-P and MS breakers for the multitude of challenges faced in the modern machining world. The new MP9005 and MP9015 grades have a hard wearing cemented carbide substrate with a PVD coating that is layered with an Al rich (Al,Ti)N single layer coating that provides stabilisation of the high hardness phase. This dramatically enhances wear, crater and welding resistance to provide unsurpassed tool life and confidence when confronting prolonged machining periods on extremely testing materials.

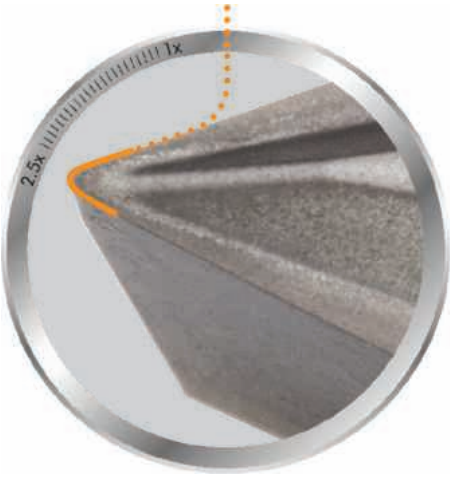
The MP9005 Series is an ISO grade (S05) that has been developed for finish machining and is also capable of medium cutting applications. Designated as the first choice for turning operations that demand a high level of wear resistance when machining heat resistant alloys, MP9005 inserts incorporate a positive geometry with the option of Mitsubishi's LS and MS chipbreakers. Suitable for cutting titanium alloys and Ni based heat resistant alloys such as Inconel, Hastelloy and Waspaloy, MP9005 outperforms competitor grades with outstanding tool life and performance levels that can significantly reduce cycle times. As a consequence it also reduces production costs for end users.

For more robust medium to heavy duty machining operations, the MP9015 series has been designated as the general purpose ISO grade (S15). Like MP9005, MP9015 delivers exceptional performance levels on titanium alloys, Inconel, Hastelloy and Waspaloy as well as cobalt based alloys. The tough MP9015 grade can accommodate continuous machining due to its resilient and hard wearing composition, this also significantly reduces the potential for edge breakages and chipping during intermittent machining. Completing the new line-up are the non-coated MT9005 and MT9015 carbide grades, which perfectly complement the two coated grades. The new cemented carbide grades have a sharp cutting edge with excellent wear and fracture resistance for general cutting of titanium alloys.

New Mitsubishi end mills for intricate aluminium impeller machining

Machining components with difficult to reach areas and curved surfaces has always proven a challenge, especially when cutting materials such as the aluminium alloys used in the aerospace and automotive industries. Such challenges have now been simplified with the arrival of the new C4LATB solid carbide taper-ball end mill from Mitsubishi Materials.

Already recognised as the benchmark in aluminium alloy milling, Mitsubishi Materials has developed the new C4LATB end mills to match the evolution of new tool paths and machining strategies that are being developed by the leading CAM vendors. To support these new developments, the R&D engineers at Mitsubishi Materials have introduced a new 4-flute end mill, the C4LATB with a 4° taper flute geometry to alleviate interference and provide extended reach. In addition, the four peripheral flutes are reduced to a 2-flute full ball geometry at the point for improved chip removal. This geometry has also been found to produce much better surface finishes than conventional products when profile milling and mostly negates the need for an extra finishing operation, therefore bringing cost savings.



This radical new geometry makes the C4LATB end mill the complete all-rounder that is suitable for slotting, side milling and profile machining. At present, the C4LATB is available with the choice of a 70 mm overall length and a 6 mm shank diameter or as a 75 mm long tool with an 8 mm shank diameter. Both variants have a 20° helix and an effective flute length of 20 or 30 mm. For intricate machining applications, the new C4LATB is available with a ball nose radius of 0.5 mm, 1 mm, 1.5 mm and 2 mm.

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Making the grade in milling

Dormer Pramet's new milling grade for steels

Dormer Pramet has launched a new milling grade for general machining applications in a variety of engineering materials, particularly steels.

Suitable for finishing to roughing applications, even in unfavorable conditions, the new M8330 provides a highly reliable and versatile option when machining either with or without coolant in steels and cast iron. It is also suitable for stainless steel, super alloys and hardened steels.

The M8330 replaces the existing 8230 grade and features a nano-layered PVD coating. This offers both improved productivity and tool life through increased resistance to thermal cracks, improved toughness and greater impact strength.

Added to more than 90 different types of existing Pramet milling inserts, the M8330 grade is also available in a completely new range of inserts for copy milling.

The RCMT10 inserts offer high metal removal rates, with up to 5 mm depth of cut and strong durability.

Designed to allow a high feed per tooth, RCMT10 is available in three geometries to support operations in a wide range of materials. Geometry F is for stainless steels, super alloys and low carbon steels, geometry M for steels and stainless steels, while geometry R is for cast iron and hardened materials.

To support this addition, Dormer Pramet has expanded its current line of versatile SRC copy milling cutters.

The SRC10 is a range of small diameter cutters available in sizes from 25-66 mm and in a variety of types, including end mills, modular and shell mills. Its double negative design provides a stable cutting action even during roughing and is suitable for a wide variety of operations including face milling, helical interpolation, ramping, progressive plunging and high feed cutting.

All SRC10 cutters incorporate through coolant, a high number of teeth and feature a pocket design which gives maximum support to inserts with eight surface facets.

To find out more about all new products launched in November 2017 contact your local Dormer Pramet sales office.

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S64T precision-sintered insert

Chipbreaker geometry and coating open up new areas of application

The S64T insert with chipbreaker geometry is an evolution of the S64T insert that was unveiled at AMB 2016. In addition to the more extensive working range it offers, this precision tool with six cutting edges features a range of chipbreaker geometries and the new EG5 coating. Thanks to this coating, as well as the carbide substrate, the new insert is able to machine any kind of steel.

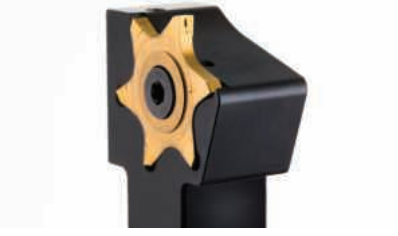
The new series of precision-sintered six-edged tools with ground inserts comprises a number of variants with different cutting widths. The S64T type enables groove depths of up to 5.5 mm (0.2165").

Four tools with the .1A geometry are designed for grooving and parting off, while four with the. DL geometry are designed for grooving, parting off and simple longitudinal turning operations. The excellent chip control demonstrated by the chipbreaker geometries ensures outstanding surface quality on the groove flanks and the straight main cutting edge creates a clean groove base. Designed as neutral inserts, they can be clamped on either a left or a right hand square holder with internal cooling. Holder dimensions of 16 mm (0.6299") x 16 mm (0.6299"), 20 mm (0.7874") x 20 mm (0.7874") and 25 mm (0.9843") x 25 mm (0.9843") are available. A single clamping screw fastens the insert precisely and securely in place in the central pocket.

Extension to range of face milling cutters and shoulder mills

Horn's milling tools sales portfolio, based on Boehlerit tools, has been expanded to include the ETAtec 45P face milling cutter and the ZETAtec 90N rough milling cutter.

The ETAtec 45P arbour milling cutters, featuring diameters of 50 mm (1.9685") to 160 mm (6.2992"), come equipped with between five and ten 7-edged inserts. The tools not only offer a 45° angle of attack and positive geometry, but also generate low cutting forces, all of which ensures a smooth machining process accompanied by high levels of productivity, an important user benefit, particularly in cases where less powerful machines and unstable clamping setups are being used. Thanks to the multifunctional concept, involving one tool holder for two different insert versions, the inserts designed for face milling can easily be swapped with round cutting inserts if profile milling needs to be carried out, for example.



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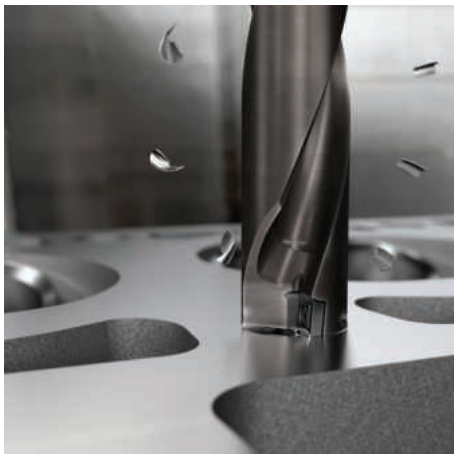
An ace in the hole

Diamond-coated insert grades offer superior aluminium drilling

In order to overcome the challenges of chip formation and evacuation when drilling non-ferrous metals, cutting tool and tooling system specialist Sandvik Coromant has unveiled its CoroDrill® 880 CVD diamond-coated insert grades, GCN124 and GCN134. The super-hard properties of the diamond coating provide long tool life and combine with innovative chip breaker and geometry designs to guarantee superior performance when drilling materials such as aluminium.



"Making holes in aluminium can be a challenging task," explains Patrik Pichler, global product manager, Indexable Drilling Tools at Sandvik Coromant. "Ductility and softness cause the material to make constant and prolonged contact with the insert's cutting edges. As a consequence, the aluminium adheres to the cutting edge and creates a built-up edge (BUE) that makes chip formation and evacuation difficult."

GCN124 and GCN134 diamond-coated insert grades are designed to offer the lowest cost per hole in most ISO-N materials thanks to long lasting insert tool life and/or greater productivity. The increased productivity could be gained from elevated cutting data as well as a result of less machine downtime thanks to fewer insert changes. Further advantages available to customers include easier handling in production due to the reliability and longer life of the inserts, and enhanced surface finish inside the hole, which results from the ability to resist BUE and smearing effects. Reduced insert consumption will also help lower stock levels and environmental impact.

Among those set to benefit are automotive manufacturers drilling and boring aluminium components such as cylinder blocks, cylinder heads, knuckles, housings, brake calipers, control arms, transmission cases, steering-column covers and yokes. However, the diamond-coated inserts will also offer competitive gains to any company producing ISO-N parts, as well as those performing niche composite applications such as drilling GFRP rotors/blades for the wind turbine industry.

To highlight the potential of the new grades, when drilling a 22 mm diameter blind hole to a depth of 84.1 mm in a cylinder head made from 6061-T6 aluminium (90-100 HB), CoroDrill 880 mounted with the new N124 (peripheral) and N134 (central) inserts extended tool life from 700 to 3024 pieces; an impressive 332 percent increase. The new insert permitted increased cutting speed, allowing productivity to increase by 33 percent. In total, some 300 hours of production time were saved, while overall cost per hole was reduced by 23 percent.

Similar success was achieved when performing through-hole drilling (22.5 mm diameter) in 20 mm thick automotive front control arms made from AlSi1Mg-T6 aluminium (150 HB). Here, the new CoroDrill 880 diamond-coated inserts helped elevated tool life from 3,000 to 30,000 pieces. Productivity also improved by 10 percent as a result of less machine downtime for insert indexing, while cost per hole was reduced by 17 percent.

GCN124 and GCN134 are now the first choice insert grades for ISO-N materials. They complement the existing H13A, uncoated insert from Sandvik Coromant, which remains recommended in applications involving shorter production runs and/or difficult interrupted cuts.

The standard CoroDrill 880 range features indexable insert drills from 12 to 84 mm (0.472–3.307 inch) in diameter, with drill lengths of 2, 3, 4 and 5 x D. With Sandvik Coromant's Tailor Made offering it is possible to order intermediate diameter and length combinations as well as different connection types and sizes such as HSK, Coromant Capto® or cylindrical shank. One of the Tailor Made options includes the ability to design customised step and chamfer drills for specific components.

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ITC offers a strong shoulder for high speed milling

If you are looking to boost productivity when milling challenging materials, Industrial Tooling Corporation (ITC) has the answer with the new VSM17 line of shoulder milling tools from Widia.

The high-productivity 90 degree shoulder milling platform from Widia offers an aggressive ramping angle up to 8.8 degrees with a well-guided internal coolant supply; both features combine to generate impressive material removal rates and chip clearance. The steel VSM17 tool bodies are available with screw-on, Weldon and cylindrical end mills from 25 to 40 mm diameter with regular and long shanks, shell mills from 40 to 160 mm and the M4000 cartridge milling system with diameters from 125 to 315 mm. The various tool bodies incorporate an optimised chip gash that optimises stability, chip removal and cutting efficiency.

This latest addition to the Widia 90° Victory Shoulder Mill (VSM) Series generates low horsepower consumption, versatility and a soft cutting action that makes the VSM17 the choice tool for everything from light, precise machining to medium roughing. The two-edged 16 mm inserts that coincide with the VSM17 incorporate an embedded wiper facet for impressive surface finishes, an additional margin on the clearance face that strengthens the cutting edge and a super-positive rake design that generates a soft cutting action. This feature delivers performance on low powered machine tools. Furthermore, the VSM17 inserts extend tool life with a multiple corner nose radii from R0.4 to R0.6 with additional radii options available for specific aerospace applications.

The inserts are offered in a complete range of grades that deliver longevity and consistent performance when machining cast iron, steel, stainless steel, aluminium, aluminium alloys and a comprehensive variety of additional materials. For the advanced machining of aerospace grade materials, Widia has just added its newest WS40PM grade to the VSM17 line. This multi-layered PVD AlTiN-TiN coated grade for wet and dry machining improves chemical and abrasive wear resistance,

minimises thermal cracking and opposes fatigue to a level far beyond that of alternate indexable cutting tools.

Each of the insert grades are offered with the option of the ALP, ML, MM and MH insert geometries. The ALP is a peripheral ground geometry for the rough to finish machining of aluminium alloys whereas the ML is designated for light to finish cutting on stainless and titanium.

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Tool wear optimisation app now available online from Walter

Tooling expert Walter GB has announced a new App that helps users make the most effective use of tooling by identifying wear on both solid carbide and indexable insert tools across the company's extensive ranges of milling, drilling, turning and threading products, including its ISO turning, grooving and parting off tools.

The reliability of the user-friendly wear-optimisation app, which works on all mobile devices in addition to Windows PCs and is also available via the Walter website for online use, is based on the use of zoom functionality for each form of wear, highlighting problem areas both graphically and with high-quality photos.

For each wear template, the user is provided with a description of the conditions under which the relevant wear type occurs and how it can be prevented or reduced.

The app provides recommendations such as 'Use a more wear-resistant cutting tool material', 'Reduce the feed', 'Reduce the cutting speed', 'Increase the coolant pressure' and 'Check the orientation'. By implementing these recommendations, users will be able to reduce wear and therefore increase tool service life and costs.

Integrated e-mail functionality can be used to provide direct feedback to Walter's App developers.

Walter AG is one of the world's leading metalworking companies. As a provider of specialised machining solutions, Walter offers a wide range of precision tools for milling, turning, drilling and threading applications. 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 expertise 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.

Walter GB's new tool wear optimisation app helps users make the most effective use of tooling by identifying wear on both solid carbide and indexable insert tools

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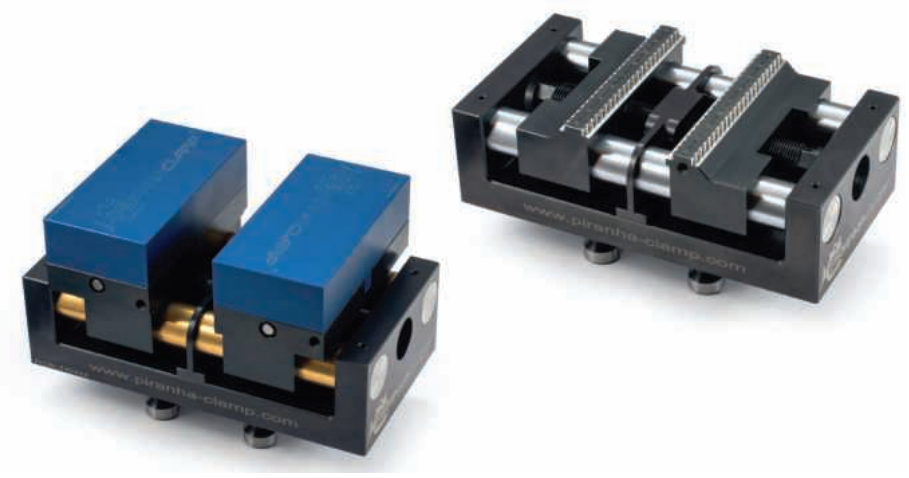
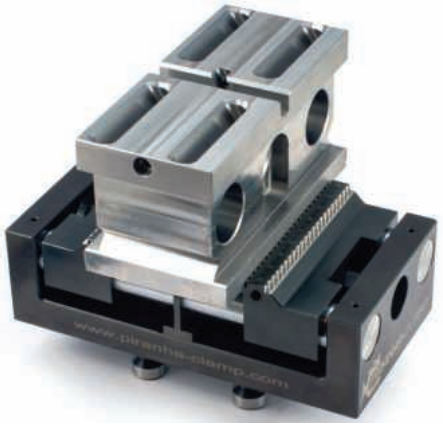
New Piranha range from Leader takes a bite out of production inefficiency

Workholding and manufacturing ancillary specialist, Leader Chuck Systems, recently added the Piranha Clamp range of high precision centring vices to its extensive product portfolio. The 100 percent Swiss manufactured range offers a number of performance advantages for machine shops using prismatic machining techniques.

It is no coincidence that the vice range is called Piranha, named after a fish that has a reputation for a strong bite and, relative to body mass, achieves one of the most forceful bites measured in all vertebrates. In place of the usual dovetail guides found on many vices the Piranha features parallel, twin cylindrical jaw guides that ensure high precision and an unbeatable clamping force. Designed to act much like a hydraulic press, the hardened and specially coated spindle guides provide an increased surface area for load distribution, while the drive spindle has been tested to withstand pressures above 1,300 Nm².

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





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

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

Managing director, Mark Jones says: "Designed for the efficient processing of prismatic components or billet raw material, especially using simultaneous 5-axis machining techniques or aggressive raw material removal toolpaths, the Piranha Clamp range of centring vices with Snapper or changeable jaws can improve the precision and productivity of almost any machine shop. The clamping forces achieved are phenomenal and, as you would expect from a Swiss manufacturer, the quality and precision is class leading. Tested against established vices that use pre-stamped raw material, at the same clamping pressure the deflection measured in the Piranha range is just one-tenth of that measured in the competitor's vices. This makes the vice more accurate for both first operations and more repeatable for second operation work."

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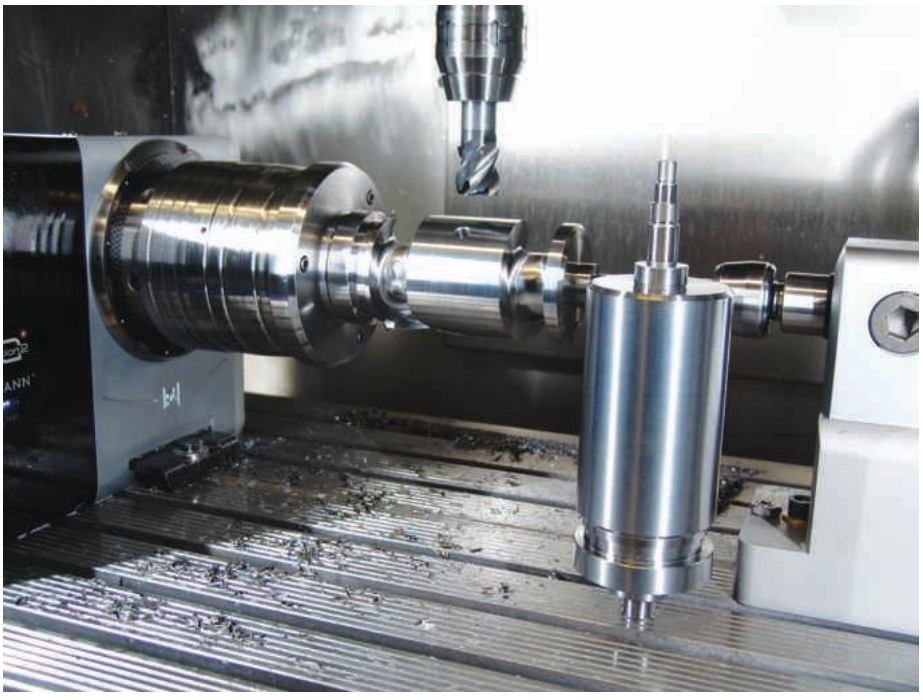
Small investment with a big effect

In keeping with its company slogan of 'small investment big effect', automation specialist Weiss GmbH brought eight machine tools 'up to speed' with the help of innovative clamping devices from Hainbuch. Headquartered in Buchen, Germany, Weiss GmbH is a specialist in the development and manufacture of high-precision rotary indexing tables and automation technology components.

To bring its machine tools up to speed, the company employed Hainbuch workholding technology and this drastically reduced setup and machine idle times whilst simultaneously increasing precision and process reliability. As the director of tool management at Weiss, Thomas Schuster explains: "The product development in recent years has forced us to completely rethink our manufacturing processes with the aim of reducing setups and machine downtime."

With massive worldwide growth, the company is working on comprehensive capacity extensions. Reviewing a milling operation on drive or transport cams where rotary index tables are the centre of the process, the company demanded soft, jerk-free and impact-free movement with a long product life. Thomas Schuster continues: "We had to reduce setup and idle times through optimised precision and shorter machining time. We felt that Hainbuch could support us in this endeavour."



Retrofitting project

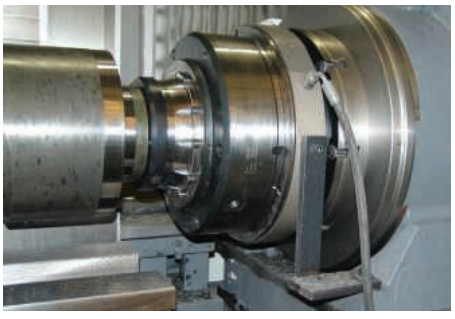
Looking for new clamping device solutions, Thomas Shuster visited Hainbuch at the EMO exhibition and this initial contact proved promising. The large retrofitting project required the upgrading of eight older machine tools with high-precision clamping devices that demonstrate a high repeatability, high holding forces and short setup times as a necessity.

Analysis of the clamping situation

Together with Hainbuch regional sales manager, Joerg Tittel, the existing clamping program of conventional 3-jaw chucks was promptly analysed and appropriate alternatives were found. The result was the introduction of customised clamping devices for the eight machines.

For the smaller machines the main benefit was not just the shorter clamping setup time, but also having the ability to use new tools from Mitsubishi Materials (MMC) due to the high holding forces of the Hainbuch chucks. For larger machine tools, the most significant factor was the massively reduced setup times. Thus, the complete package of innovative clamping devices and a more effective quick change-over fixture paid for itself within a very short period of time.

The Toplus clamping system was implemented to ensure optimal precision with high clamping forces. The Centrotex quick change-over system was also integrated into the manufacturing process to ensure quick change-over of the numerous component types. The use of Mitsubishi cutting tools and the consequent change to cutting parameters was not a requirement imposed on Hainbuch. However, with Mitsubishi Materials cutting tools given a more rigid, robust and sturdy machining platform through the Hainbuch products; Weiss GmbH could optimise the potential of its cutting tools and yield better results. Credit to the stable and precise platform provided by Hainbuch, the cutting tools operated at higher speeds and feeds, tool life was enhanced and surface finishes were also improved.



Optimal metal removal rates

The large transport cams manufactured by Weiss GmbH are soft machined with indexable insert tools. The high clamping forces, the stability and the precision of the Hainbuch chucks enable optimal metal removal rates. Viktor Gruslak, acting

department manager responsible for cam milling, recalls: "With the old fixtures we had setup times of between two and three hours for a complete conversion. Now, the overall time is between 10 to 20 minutes. We still have to align the tailstock the changeover time of the Hainbuch chucks takes only five to ten minutes, this is a huge saving."

Asked whether clamping device providers other than Hainbuch were contacted, Thomas Schuster responds: "At that time, we were extremely thorough in looking over the offerings from all possible vendors at EMO, but the Hainbuch solution was the best suited for our parts."

On his first walk-through of the manufacturing facility, Hainbuch regional sales manager Joerg Tittel says: "We immediately recognised the potential impact that our products could make and to reinforce this we conducted practical trials. When a 3-jaw chuck was replaced with the Hainbuch system, the machine operator said: "Often you do not trust yourself to increase feeds and other metal removal rates to the levels that the new clamping device allows. An operator is often limited by the pressure of the clamping hydraulics, but even when testing the machine and tools to the limits, the clamping device still had more to offer."

Better workpiece quality

Mitsubishi application technician Ullrich Jüngert adds: "With this application two lucky breaks came together. We have a higher clamping force and rigidity. This allows us to apply an IMX-series end mill cutter, a milling system with inter-changeable cutting head and a carbide shaft that ensures high accuracy. With this combination it was also possible to reduce machining times by half in some cases."

Thomas Schuster summarises more than a year of operating experience: "A project such as this can only be executed with reliable partners. Partners who like ourselves also focus on involving the employees. By implementing the new Hainbuch systems, we are saving 15 minutes of setup time for every single part. This is one hour per shift saving that wouldn't have been possible without Hainbuch." The only effort involved for Weiss was adapting and integrating the clamping hydraulics in the controllers, in order to clamp and unclamp hydraulically.

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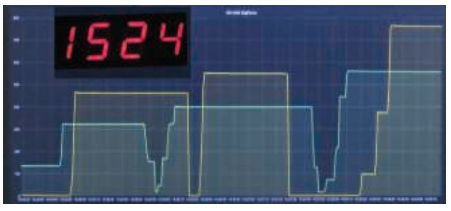
Clamping force verification systems

Workholding equipment manufacturer OK-VISE has announced two new systems for checking how tightly a component has been clamped, mindful that during automated machining in particular, verifying holding force has always been a challenge. The Finnish-made products are available in the UK through 1st Machine Tool Accessories.

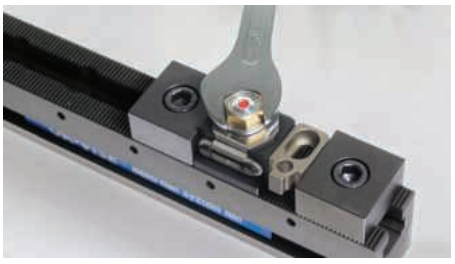
The accuracy of workpieces, especially those that are delicate or of thin-wall construction, can be adversely affected if clamping pressure is too high. If the grip is too weak, however, there is a possibility of the part becoming dislodged during machining, risking operator injury, machine damage, tool breakage and scrap. During automated hydraulic clamping, oil pressure is easy to measure but other variables can also influence the clamping force. In manual clamping systems, straightforward torque measurement is often used but the relationship between torque and actual clamping force can be inaccurate. The approach that OK-VISE has taken is to integrate clamping force measurement directly into the company's modular Multi-Rail RM fixturing system.

A Digiforce device for measuring how securely a component is clamped in an OK-VISE Multi-Rail RM workholding system



On-screen digital readout of clamping force from two Digiforce devices

An on-screen digital readout of clamping pressure from a Digiforce device enables the operator to verify that a hydraulically secured component is held correctly. An optional SCADA, supervisory control and data acquisition, system can collect information from several Digiforce displays over a standard Modbus connection so that historical data can be viewed and adjustments made as necessary.



The OK-VISE Dotforce allows the holding pressure to be verified of workpieces that have been manually secured in a Multi-Rail RM workholding system

A second device, Dotforce, allows the holding force of manually secured workpieces to be checked. It also forms part of the Multi-Rail RM workholding system and utilises a visual red dot in a clamp module. The dot gradually fades to grey as a spanner is turned, showing when the holding force is correct. Various modules are available for different clamping pressures.

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Control and filtration of welding fumes, airborne dusts and oil mists

FILTOWER plug & play filtration systems from German extraction technology company ESTA are generating interest and attention from a wide range of manufacturing sectors in both Europe and here in the UK. These innovative filter systems ensure clean air in manufacturing environments, especially where at source extraction is difficult to achieve or where additional filtration of the working area is required.

With the FILTOWER series, ESTA presents a new, powerful filter tower that covers three application areas: welding fumes, airborne dusts and oil mists. FILTOWER systems also significantly contribute to the improvement of the overall air quality in production environments and therefore make an important contribution to employee health protection.

The filter towers are available in four sizes with volumes ranging from 4,500 m³/h to 20,000 m³/h and now, thanks to further technical development, the new FILTOWER series offer a significant increase in efficiency when compared to the previous series.

In addition to this, the FILTOWERS also save up to 70 percent heating costs per year, because the filtered air is fed back into the work areas. An important new function available as an option on all FILTOWERS is the new cooling and heating element, which operates on the evaporative principle. All that is required is a cold or hot water supply, thus adding further efficiency to the energy saving features of this system. Additional options available include W3 rating for stainless steel/high alloy welding F series, ecolight control or fully automatic power-saving eco+ and 4.0 (wifi remote control) systems. The FILTOWERS function without the need for a duct system and can be commissioned quickly and simply due the plug & play principle.

The FILTOWER series is distributed in the UK by McCarthy Environmental Ltd, an ESTA partner of many years based in Northampton.

"Anyone who is interested can make an appointment to test the filter tower themselves at our demonstration facility. This is an excellent opportunity for our customers to see up close and learn more about the diversity of applications and operating principles of the FILTOWERS before committing to purchase," explains Mick McCarthy, managing director of McCarthy Environmental Ltd.

How the FILTOWER series work

The FILTOWER functions according to the layering and displacement ventilation principle. Within a radius of up to 15 metres, the systems draw contaminated air through the vent located on the top of the housing. Once captured, the contaminated airstream is drawn through the newly developed pre-separation system, which removes coarse particles from the air flow. This greatly improves the operational life of the filter cartridges, while simultaneously reducing the risk of a filter fire in environments with flying sparks. ESTA has registered a patent for this technology. Next, the remaining fine particulate is drawn through the high efficiency cartridge filters with dust class "M" rating (99.9 percent separation rate). The discharge air outlets of the FILTOWER, arranged on two sides at low level, ensure the clean air is fed back into the workplace again quietly, at low speed and without excessive draft, so the operational personnel in the surrounding area are supplied with clean air continuously while the systems are in use.

The FILTOWER features fully automatic reverse jet pulse cleaning of the filter cartridges with compressed air. On cleaning, accumulated dust particulate falls into a collection drawer beneath the filter chamber, with a drawer volume of 150 litres. The collection drawer can be fitted with two 38l collection boxes to ensure dust free disposal of the collected material.

Fast installation, easy handling

In contrast to push pull ventilation systems, these systems do not require a duct system. They are delivered fully-assembled and ready for operation, and can be operational within minutes; connection to power and compressed air supplies are all that is required. The FILTOWERS can be repositioned easily and quickly using a crane or forklift truck where production changes demand. Even in large halls with numerous workplaces, FILTOWER systems are the right choice: the use of multiple systems comprehensively improves the room air quality.

FILTOWERS feature a large control panel with display, which shows the most important device functions (differential pressure, cleaning, etc.). The filter towers are below current noise exposure threshold values, typically 71–77 dB(A), and are therefore suitable for the majority of working environments, enabling work to be carried out in close proximity to the units without need for hearing protection.

With a constantly growing staff, ESTA Apparatebau GmbH & Co. KG is one of the leading companies in extraction technology. From its headquarters in Senden and Ulm,

Germany, for more than 45 years, it has offered a broad spectrum of innovative products and custom solutions for a wide range of sectors, industries and applications. The product range includes mobile and stationary dust extractors, industrial vacuum cleaners, welding fume filters, oil mist separators, extraction fans, extraction arms, and central extraction systems. A comprehensive array of extraction technology accessories rounds out the product portfolio. Because clean air at work is not just an official requirement, but protects the health of employees, demonstrably increasing their productivity.

ESTA sells its comprehensive range of devices through its own subsidiaries and sales partners worldwide. For more than 20 years, the company has been using a quality management system and is ISO 9001:2008 certified. ESTA also offers a full range of services, which makes the company a reliable partner for clean air in workplaces the world over.

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Are you ready for EDI?

Extractability announces the launch of the ProtectoScan EDI

Exposure to environmental hazards has always been difficult to monitor in the workplace, but the ProtectoScan EDI is about to change all that.

The latest environmental control solution from Hertfordshire-based Extractability, the ProtectoScan EDI, is an Environment Detection Instrument (EDI) that provides intelligent, data-driven protection in the industrial workplace. An indoor air monitoring instrument that measures and records real-time data for dust particulate, noise, temperature and humidity, EDI catches the eye with an LED traffic light display, alerting users to any notable issues, giving users instant feedback and a visual representation of what is going on in their workshop.

Users will also benefit from EDI email alerts when exposure limits are surpassed. All live data sits at the users' fingertips via WiFi on the dedicated WebApp, turning the EDI into the perfect cloud-based solution, monitoring and recording exposure levels for every second of the day, 365 days a year. The continuous monitoring of the environment in the workplace can contribute significantly to protecting the health of employees by enabling employers to take appropriate measures and set up automatic integration of fans or similar devices, which, with optional additional accessories, EDI can control. Just as essential for the employer's duty of care is the Extractability service of a full report and calibration certificate for formal risk assessment. Extractability will process the data gathered and provide an optimised table and graph, along with a report following an annual service.

With the recent Industry 4.0 trend seeing a greater integration of automation and data exchange in the manufacturing sector, the ProtectoScan EDI is Extractability's boldest step yet to help employers remove hazards from the workplace, stay within the regulations, and improve industry and health among the workforce, creating a safe

and clean workplace environment for everyone.

The ProtectoScan EDI will be released mid-January 2018, with leasing options available for those looking to hire the equipment on a more flexible basis.

Extractability, a division of Weldability-Sif, is a UK-based "one stop source" for all welding fume, particle and dust extraction solutions, whether within the workshop, laboratory or education facility. All its products combine care for the environment and for employee health by improving work efficiency and production economy.

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Extracting maximum productivity at Nasmyth Arden

Describing itself as a one-stop-shop providing logistics, design, machining and part finishing for a high-profile list of customers in the aerospace sector, Nasmyth Arden is focussed on attention to detail and driven to reducing process times through improved machine efficiency. This has seen the company invest in new machining capacity as well as seeing benefits from environmental improvements.

Specialising in the machining of billet material on its 30, 3-, 4-, and 5-axis machining centres where up to 90 per cent of the original material may be removed poses its own problems, in terms of airborne oil mist and other particulates. As a result, Nasmyth Arden is currently retrofitting every machine in its factory with oil mist extractor units from Matchmaker CNC.

"Any new machine we buy will be equipped with the Matchmaker extractor system and we have started to add them to our existing machines, beginning with the 5-axis machining centres. The high-speed nature of these machines generates heat and as a result oil mist. When a cycle has finished the operator used to have to wait until this settled within the machine before opening the doors, but this wait is eliminated with the addition of the extractor units," says Nasmyth Arden's production manager Alan Lucas.

"Matchmaker CNC has been working with us for many years, providing service and breakdown cover on a wide range of machines. When they introduced their range of extractors we could see the benefits they would bring and also that they provided a very cost-effective solution, allowing to quickly adapt them to all of our machines."

Key to the success of the Matchmaker oil mist extractor is its patented conical filter. This requires much less maintenance than existing systems with the added benefit of a filter life of up to five years, depending on application. The system is also highly efficient at particulate capture removing up to 99.97 percent of particulates measuring 0. 3 µm. This is particularly beneficial in applications where dry smoke is created, such as when using neat oil metalworking fluids. Designed to meet all European standards and surpassing the Euro F8 and F9 limits, the oil mist filters make use of a pre-filtering system using the principle of wind shear to separate oil, smoke, haze and toxic aerosols; the oil is then separated for recycling. Filter performance is monitored by a pressure gauge and Carbon filtration module (active carbon module available as an option) which can be replaced quickly and easily when required.

The oil mist filtration systems supplied by Matchmaker CNC are improving the environment and productivity at Nasmyth Arden

Machine utilisation is also important to Nasmyth Arden, and here it was recognised that expensive machine time, particularly on its 5-axis machines, was being used simply for roughing operations. In order to address this, Alan Lucas turned again to Matchmaker CNC for a solution:

"We needed a machine with power and capacity to rough out these billets of material. It needed to be capable and cost-effective and Matchmaker's solution of a TongTai TMV1500A vertical machining centre fits the bill. With its 15,000 revs/min, HSK-63 spindle and 1,525 mm x-axis, we could machine everything we needed to on it, using it for all of our pre-op work prior to transferring it for finishing on the 5-axis machines."

The time savings that Nasmyth Arden is achieving are significant with a typical aluminium chassis taking 23 hours to fully machine on the 5-axis machine. This is now broken down to three hours roughing on the TongTai 3-axis vertical machining centre, then finish machining taking 13 hours on the 5-axis machining centre, a saving of seven hours per component, or roughly a day of production.

"The addition of the TongTai TMV1500A has given us a metal removal capability, improved process times across the factory and also increased our overall flexibility as we can manage throughput much better by not tying up the high value 5-axis spindles we have," adds Alan Lucas.

In addition to its 15,000 revs/min, 15 kW direct drive spindle, the Tongtai TMV1500A also features rapid traverse of 18 m/min, and feed rates of 10 m/min in all axes, Fanuc high-speed machining option, 30-position cam-type toolchanger and door openings that allow ease of access for craning larger components onto the 1,600 mm by 762 mm table. The machine is also equipped with a media free swarf system, as well as an air cleaner after filter AF-20P. While the benefits of health and safety in regard to oil mist extraction have been recognised for some time, the time savings that Nasmyth Arden are experiencing as a consequence of fitting these units to their high-performance machines is also a major consideration in their application.

The added capacity and capability of the TongTai TMV1500A from Matchmaker CNC has increased flexibility across Nasmyth Arden's manufacturing as well as improving productivity

Matchmaker CNC envisages a time when all machines will be fitted with a system such as this and, with the technology involved with the Matchmaker system, along with its price/performance ratio, the cost of retrofitting is no longer a real barrier to gaining these benefits.

Matchmaker CNC offers advanced, yet affordable CNC machine tools and flexible manufacturing systems from some of the world's leading manufacturers. It also supports customers across the UK and Europe from its head office in Leatherhead. Formed in 1970, Matchmaker has grown to become one of the largest suppliers of CNC machine tools and solutions in the UK market.

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Nederman keeps welding fume under control 24/7

The world's leading manufacturer of industrial air filtration technology recently used the Schweissen und Schneiden (Welding & Cutting) exhibition in Düsseldorf to introduce its new 'at-source' extraction technology for the welding industry. The new Fume Eliminator 24/7 from Nederman is a high vacuum mobile extraction unit specifically designed for extracting welding fume twenty-four hours a day, seven days a week.

Nederman acted on feedback from customers which indicated that whilst the existing Fume Eliminator is a popular product it is only suitable for occasional welding and not continuous use, and that there was a need in the market for a continuously rated mobile unit. Hence the need for the Fume Eliminator 24/7.

Capture of welding fume at source before it enters the welder's breathing zone is often achieved using self-supporting moveable hoods, but these hoods can require frequent repositioning. An alternative method for continuous wire welding processes is the use of on-torch fume extraction. Nederman now takes on-torch fume extraction innovation to a new level with the Fume Eliminator 24/7. Available in two variants, the FE24/7 1.5 has a 1.5 kW side channel fan and is suitable for a single welding torch or nozzle, whereas the FE24/7 2.5 houses a larger 2.5 kW fan and can provide on-torch extraction from two welders simultaneously.

The air flow can easily be adjusted to a maximum rate of 190 m³/hour for the 1.5 kW unit and up to 270 m³/hour for the more powerful 2.5 kW version. This ensures the FE24/7 can meet the demands of most welding applications, improving productivity and enhancing energy efficiency in the process. The primary objective of Nederman is to create a safe working environment with high production efficiency and the new automatic filter cleaning facility on the FE24/7 corresponds with this philosophy. The new automatic filter cleaning technology in the FE24/7 ensures remarkably long filter life with low operating costs whilst an integrated spark trap protects the FE24/7 from sparks and minimises the risk of damage to the filter cartridge.

Filtered air can be re-circulated from the FE24/7 even when particulate is from high alloy steel (EN 15012) and other challenging materials. The smaller FE24/7 1.5 operates with a 230V 50Hz single phase power supply that generates a vacuum of up to 35 kPa. The slightly larger FE24/7 2.5 requires a 400 V 50 Hz 3-phase power supply to generate a vacuum of up to 37.5 kPa.

The Class W3 (certification pending) FE24/7 is a fully mobile unit, with the FE24/7 1.5 and the FE24/7 2.5 weighing in at a reassuringly robust yet manoeuvrable 42 kg and 59 kg respectively. To further enhance ease-of-use, the manual start/stop FE24/7 is also offered with an optional automatic stop facility that fits with Nederman's energy efficiency philosophy. With a mission to protect people, the production environment and ultimately the planet from the harmful effects of industrial processes, the Fume Eliminator 24/7 is yet another product which can site proudly within the Nederman product portfolio.

The Nederman Group is a world-leading supplier and developer of products and solutions within the environmental technology sector. It enables filtering, cleaning and recycling in demanding industrial environments. Clean air is a cornerstone for sustainable production and Nederman's products and solutions improve production efficiency, reduce environmental impact and protect employees from harmful dust, smoke and fumes. The Nederman Group is listed on Nasdaq Stockholm. The Group has 1,800 employees and presence in more than 50 countries.

To find out more contact:

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Intelligent manufacturing solutions halve production time of gas turbine components

Doncasters Precision Castings – Deritend is a leading manufacturer of investment cast and machined industrial gas turbine airfoils. These airfoils are manufactured in nickel and cobalt based superalloys. The company is committed to growth and it backs this commitment with a willingness to invest in continuous improvement through lean manufacturing and rapid prototyping. As a result, it has seen considerable growth in demand for its machining services, which support its investment casting business. This demand has led to a significant investment of over £2 million in Mazak machine tools, infrastructure and manufacturing software to efficiently machine over 14 new products.

Background

Prior to making the investment in Mazak 5-axis machining centres, similar work had been undertaken using conventional 3-axis machining centres with hard location fixturing.

The processes were not only time consuming but also demanded a high level of skill from the machine operators. For a typical nozzle component, the cycle time, including setting and machining would be four hours, which exceeded the capacity available to meet the increased demand. In addition, the use of hard fixturing was viewed as obsolete technology and an expensive solution by the engineering team. Therefore, the decision was taken to make a major investment in machining technology and three Mazak VORTEX i-630V/6 vertical machining centres were ordered. These machines would allow Doncasters to keep the machining work in house and provide a single-source solution for its customers.

As part of the investment, the machines were equipped with Renishaw RMP600 high-accuracy probes, featuring patented RENGAGE™ strain gauge technology. The probes' ability to deliver unrivalled submicron performance when applied to complex 3D shapes and contours, made them ideal for the work being undertaken.

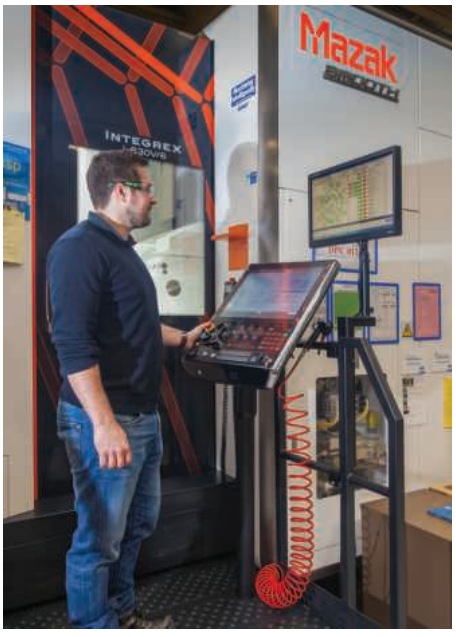
However, during initial application discussions, it was recognised that additional support would be required and Renishaw called in its associate company, metrology software products ltd (MSP).

Challenge

The challenge was to improve right-first-time machining rates and in doing so eliminate any potential for errors to arise, as well as increasing overall productivity. Doncasters' engineering manager Ollie Macrow explains: "When you are dealing with £10,000 Inconel castings it's nice to have the assurance before you cut metal that the machined part will be correct. Costs are also a concern: in addition to the cost of the casting there is the time that is lost and, given the material, the relatively high cost of tooling. Additionally, there are certain components that are not reworkable, so if it's wrong after machining, it's scrap. We knew we had to probe the part, but our challenge was to figure out a way of doing it successfully without hard fixturing."

Compounding the issue was the company's relatively limited experience with probing, which it had previously used only for basic adjustments and simple flat plane alignment, so Renishaw's input would be vital.

Doncasters also wanted to eliminate the need for costly and time consuming hard fixturing. Ollie Macrow says: "Hard fixturing posed numerous issues: it's expensive; requires high skill levels to present the parts correctly; if a fixture becomes damaged, you can't machine as the part can't be aligned, so fixtures have to be maintained to a high



level, which adds time and cost. Our challenge was to replace these fixtures with simplified, modular-type systems and reduce human interaction in the setting process."

Production targets also had to be met, so reducing setup times was a key consideration in the introduction of the Mazak machines. While carrying out the bulk of the machining in-house using these new machines, there was still a requirement to subcontract out some secondary operations. However, by improving productivity, the aim is to bring these operations in-house later.

Solution

Having reviewed the project, the applications engineer from Renishaw, recognised that MSP's NC-PerfectPart and NC-Checker software in combination with the RMP600 probe would provide the best overall solution for Doncasters' requirements. This combination of hardware and innovative software allows users to identify errors in part positioning and a machine's geometric performance prior to a part being cut. The initial step is to 'map' the machine tool to create a benchmark. NC-Checker checks the performance of the probe prior to carrying out 5-axis checks of the machine tool. This ensures that every

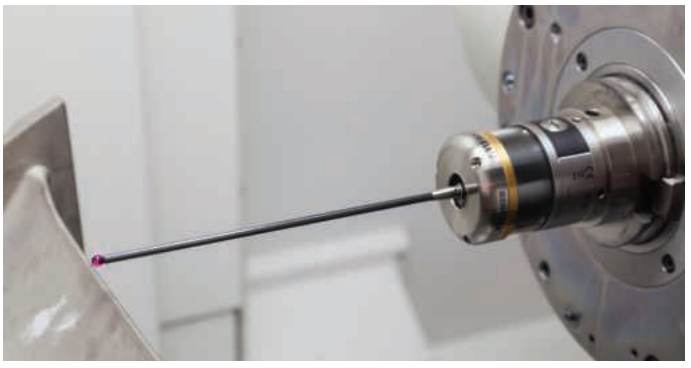
aspect of probing and machining performance is within set tolerances prior to part setup and metal cutting. The machine check can run on a regular basis, as it takes just a few minutes to complete. Over time, it will ensure the machine continues to operate within set parameters and produce accurate parts.

NC-PerfectPart solves the problems created by poor part alignment on the machine tool. This is of particular importance on components with free-form, complex shapes and those subject to 5-axis machining. Setting up these parts can be time consuming and very difficult to achieve accurately and consistently. These challenges are overcome by probing the part with the RMP600 using a program created from the component's CAD file. From this initial measurement, an alignment is created to eliminate any errors in the positioning of the part in the machine. The alignment is then uploaded to the machine control and compensations are automatically calculated to produce a part program perfectly aligned to the part. Setup is automated, meaning that fixturing is no longer as critical in the process, any manual setup error is eliminated and the time required to set even the most complex of components is reduced to minutes.

After metal cutting, NC-PerfectPart can confirm the accuracy of the finished component prior to it being removed from the machine tool and inspected on a CMM.

Results

Before the addition of the RMP600 and MSP software, it would take four hours to set and machine a typical industrial gas turbine nozzle. Now that same part can be probed, machined and checked in under two hours, so Doncasters has increased productivity by 50 percent.



On more complex components, the machining time could be up to eight hours and require the presence of a highly skilled operator to oversee the machining process. These parts are now produced in the same two-hour cycle as simple parts, generating even greater savings. In working with Renishaw and MSP, Doncasters has improved alignment systems to achieve overall better results; the correlation between on-machine measurements, CMM results and Bluelight scanning system data is also improved.

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Mitutoyo aids Cox Powertrain's quality function

Co-founded in 2007/8 by David Cox, a Formula 1 engineer, Shoreham-on-sea, based Cox Powertrain Ltd, has developed the world's first 300 HP marine diesel outboard engine, the CXO300. The inspiration behind the ingenious engine was the global military's drive to adopt diesel as a preferred fuel and to reduce or indeed end its use of gasoline.

The exciting engine concept sparked interest from the UK Ministry of Defence (MOD) and the US Government for diesel outboards and prompted the Defence Science and Technology Laboratory (DSTL) to provide £2.5 m in funding, in addition to invaluable technical assistance for developing the CXO300 for marine use. The company now has close links with the US Coast Guard and the US, Dutch, Swedish and Australian Navies.

The CXO300 delivers increased responsiveness, enhanced fuel efficiency and improved safety in an engine that outperforms conventional diesels. Reduced size and weight belies the impressive power from a four-cylinder, eight piston supercharged, 2-stroke diesel engine that generates an impressive 300 HP.

Due to launch in 2018, the CXO300 will have to undergo a series of demanding trials, in addition to satisfying the IMO, Tier 3 EPA and EU emissions compliance process. Whilst meeting military marine needs, the innovative new diesel outboard is expected to be a great success with commercial professionals around the world, as well as the marine leisure sector.

Having been designed to meet the extremely challenging requirements of the demanding global military sector and to provide reliable service in the harshest of marine environments, the highest standards of quality are applied to the CXO300's manufacture. The use of advanced production techniques, the application of extremely tight tolerances to its components and a rigorous inspection regime enables the CXO300 to achieve an extended working life when compared to current market offerings.

In addition to dimensional checks, given the potential for the generation of friction and wear in moving parts, particular attention is paid to components critical surface roughness parameters.

Duncan Green, Cox Powertrain Ltd head of procurement explains: "In addition to petrol now not being permitted on-board military ships, it is also not allowed on many commercial vessels and superyachts. This has created a problem as currently no diesel outboard is currently available in the 250-350 HP target market.

"In addition to being the same size and weight as gasoline equivalents, the CXO300 is designed to deliver better fuel consumption. A 3.7 litre capacity and reduced mass means there is no compromise on power compared to conventional diesels of similar power output, as well as being safer than comparative output gasoline engines.

"Given our targeted customers, the engine's reliability and working life is particularly important. When compared to the current market offering, the CXO300 has an extended design life of 6,000 hours.

"As the surface finish characteristics of the CXO300's components have a massive influence on their performance, we recently searched for an advanced surface roughness tester that was able to deliver very precise results in the many surface roughness parameters that we use. After considering several alternatives, we found the answer to our needs in the Surftest SJ-500 from Mitutoyo."

"The advanced Mitutoyo instrument is able to inspect our parts in all of our surface roughness parameters. It is also able to work in many other parameters that we may possibly need in the future. The instrument has proven invaluable in upholding the quality of our manufactured components throughout our engine development period and will also be kept busy coping with anticipated production volumes."

The Mitutoyo Surftest SJ-500 is a high precision, high-performance surface roughness tester with a dedicated control unit. The instrument's 7.5-inch, colour TFT LCD, large coloured icons and touch-panel controls make the display extremely easy to read and the instrument simple to operate. A built-in joystick on the control unit enables quick and easy positioning. In addition, a manual adjustment knob allows fine positioning of a small stylus, particularly useful when testing features such as the inside surfaces of small holes. Setup is simple by means of a ISO roughness-standard input function, enabling complex setups to be entered easily by selecting the appropriate symbol from a menu.

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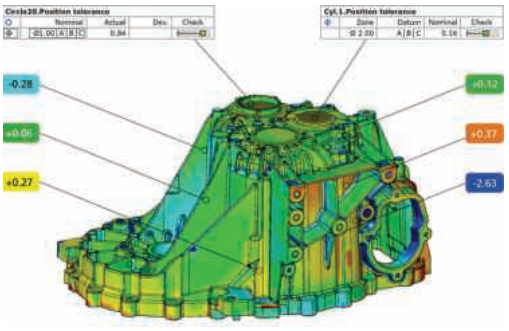
3D metrology for casting and foundry processes workshop

On 8th March 2018, GOM UK will host a "3D metrology for casting and foundry processes" workshop in Coventry. The event is part of an international workshop series, taking place over 42 locations from Asia to America from January to April 2018. The global GOM network established this event series to transfer process-related insights and knowledge to design engineers, pattern, die and mould makers as well as specialists from quality assurance and production.

The free workshop is an industrial meeting platform for exchanging knowledge and sharing experiences. In twenty-nine different countries, GOM and selected speakers show how full-field surface measurements guarantee faster first article inspection and targeted tool correction, thereby reducing production lead times. For production-related quality control, both the measurements and the entire evaluation process can be automated. In addition, the GOM network introduces the latest developments in 3D metrology systems and inspection software.

More information about the event and registration can be found at: **www.gom-workshop.com**

In casting and forging industries, 3D metrology supports and speeds up all phases in sand, pressure die and investment casting processes: from pattern and die construction to mould and core making, through to first article inspection reports and optimisation of CNC machining.



Optical 3D coordinate measuring systems from GOM allow non-contact measurements of complete surfaces regardless of object size, such as patterns, tools, gravity dies, sand cores, sand moulds, and cast and forged parts.

GOM develops and produces software and systems for 3D coordinate measuring technology and 3D testing. With more than 60 sites and 1,000 metrology specialists worldwide, GOM guarantees professional support and service. Optical 3D metrology is today providing an alternative approach to traditional dimensional inspection tools, improving the product quality and manufacturing processes in automotive, aerospace and consumer goods industries. With no limits on component size, fast complete measurements enable parts to be thoroughly checked and fast, accurate, GOM scans are now an established way of reducing product development times and ensuring highest quality components.

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Vision Engineering displays new non-contact visual measuring systems

Vision Engineering Ltd., an award-winning manufacturer of ergonomic microscopes and global supplier of precision measurement systems, exhibited a range of new visual inspection and non-contact measuring systems at last year's EMO Show in Germany.

Vision Engineering showcased its new Swift PRO range of non-contact visual measuring systems. Combining the latest optical and video measurement technologies, the Swift PRO is a powerful, yet simply operated tool that is designed for ensuring precision and quality control in metalworking and plastic manufacturing processes across a range of industries, from electronics and aerospace to medical parts manufacturing, where quality control and reporting are critical.

Previously difficult to view samples can be measured more accurately with Swift PRO's new HD video camera with Video Edge Detection (VED) and fully dimmable stage illumination. The Swift PRO feature-rich software is easy to operate and its one click measurement setup allows for instant profile and surface measurement.

Swift PRO provides fast and accurate 3-axis measurement. Its user-friendly interface can be simply set up and operated by shop floor workers as well as advanced users, making measuring components and reporting very easy, with fewer operator errors. With simplicity at its core, Swift PRO requires minimal training, significantly reducing staff costs.

Vision Engineering also demonstrated its award-winning Mantis and Lynx EVO visual inspection systems and new comprehensive range of bench magnifiers.

The Mantis range of low magnification stereo microscopes (up to 20 times) offers superior comfort to the user owing to its patented 'eyepiece-less' design. This innovation provides freedom of head movement, peripheral vision and allows operators to wear glasses, contact lenses or safety goggles while viewing metal samples.

The award-winning Lynx EVO stereo microscope provides magnification up to 240 times. The patented optical viewer replaces conventional eyepieces and is designed to help operators to overcome ergonomic challenges such as eye strain, neck fatigue and back pain associated with prolonged use of traditional binocular microscopes.

Vision Engineering also displayed its new high-quality bench magnifiers, with large glass lens, ultra-bright illumination and magnification up to five times, allowing users to perform simple magnification tasks quickly and without distortion of objects under inspection.

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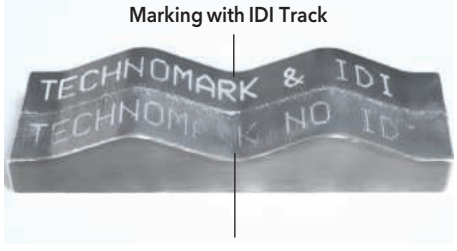
New metal marking solutions for subcontractors

Universal Marking Systems introduces a new range of laser and dot peen marking equipment with unique patented features

Leading metal marking solutions provider Universal Marking Systems (UMS) has announced that it has joined forces with Technomark, bringing together 75 years of industry knowledge and an unrivalled range of marking equipment to the UK.

UMS has an unrivalled, industry leading range of electrochemical marking systems and is justifiably proud to announce that as from January 1st 2018, it will also be the sole distributor of all Technomark products in the UK. UMS will also have its very own OEM Dot Peen product range by Technomark, demonstrating the close relationship that has been forged between the two companies giving the best support for the UK market.

Technomark has brought some exciting new patented advancements to dot peen marking technology to improve performance which include Intelligent Driving Impact (IDI), which detects any differences in height in the surface of the material making it ideal for marking undulating or uneven surfaces whilst maintaining the same high-quality marks. The machine automatically compensates for the differences and therefore doesn't require any operator intervention.



Another advancement is Intelligent Impact Control (IIC). This function saves the operator from having to set the stylus distance from the marking face relative to the marking power used. The machine automatically calculates the correct force to be applied to achieve the desired depth of mark. The dot peen range offers portable, bench top or integrated solutions as well as a versatile Combo 2 in 1 concept offering great value for money and ideal for subcontractors.

The Combo system is a unique offering in the market that combines both a benchtop and portable hand-held system all in one. UMS believes that the pricing makes it the best price/value/quality machine currently on the market. It is ideal for subcontractors that have small components that need to be marked using a column based system or with the addition of an optional rotary drive for marking cylindrical parts. For larger parts, the machine can be changed to a handheld in under 10 seconds without using any tools. The system has been designed to be best of breed both as a hand held and a column system, with no compromise for usability, robustness or functionality.

The combo is available with two variations of controller which differ only in functionality, not build quality. The Flexmark is ideal for standard alphanumeric text marking which can be used with an optional rotary drive. It has a 120 x 60 mm marking window, making it ideal for large marking areas such as nameplates in the column mode, but also versatile enough for marking on bar stock and larger components requiring traceability. It can handle incremental numbering such as serial numbers, date/timestamp, text on an arc etc.

The Multi4 controller is built to the same high standards as the Flexmark, but has increased functionality and flexibility including 2D barcodes. The software is extremely easy to use and an operator can be up and running in minutes. The Multi4 system is also available as a dedicated benchtop system and with Autosense meets the strict criteria of aerospace/nuclear applications. Heads are also available for integration as the Multi4 has I/O capability.

The Multi4 range offers four different sized marking heads to give a wider variety of marking window sizes from 50 x 60 mm up to 200 x 200 mm. An integral battery and charger is available to enable true portability

Flexmark Combo 2-in1 System

if using the hand-held version. The bench system also has a convenient quick release height adjustment on the Z-axis as well as an optional powered Z-axis.

The robustness of the machines can be demonstrated with the use of Linear X- and Y-axes which is standard on all marking heads. This maintains quality of mark at the extremity of the marking path, meaning that the whole mark has the same quality. As the stylus pin is always perpendicular to the marking surface, the side loads are reduced. This minimises the risk of stylus pin breakage or sticking. All the marking heads are manufactured from a cast aluminium frame which gives rigidity and high strength.

"As the leading manufacturer of electrochemical marking equipment since 1963 and a long history in dot peen and laser marking, our priority is to provide reliable, robust equipment that is fully featured coupled with ease-of-use. These were the key factors that lead us to the partnership we have now established with Technomark", says Jeff Sawdy, managing director of Universal Marking Systems.

Now widely adopted in automotive applications due to its versatility and robust construction, the M4 Inline controller has been specifically designed for production line integration and machine building purposes. The extremely compact controller can have optional mountings for a 19" rack, has an extremely user-friendly interface and is built with 16 way I/O's which are configurable between an input or an output and can be set up as a volt free PNP or NPN connection.

New Multi4 Mini

window is 60 x 30 mm and it can be completely portable with the battery and cart option (Multi4).

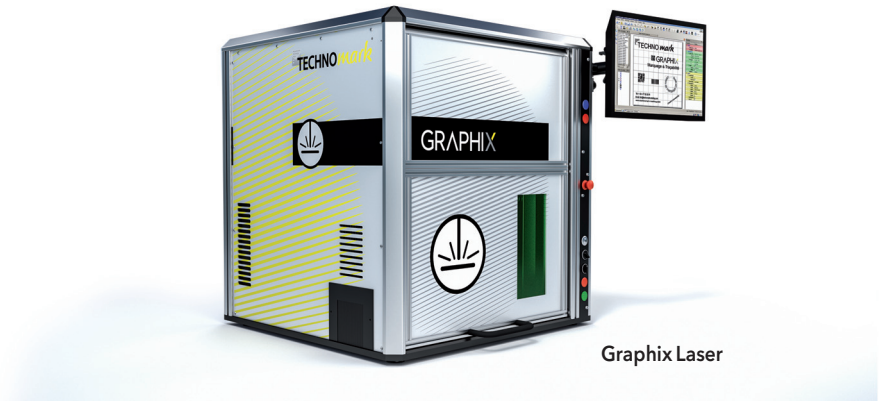
Also new to the UK is the Graphix fibre laser. It comes as an innovative compact laser marking workstation or an integrated laser solution for automated production line marking.

This Graphix Workstation model features a door that opens in two positions, allowing fast access for loading and unloading components. It can accommodate a maximum part size of 500 x 500 x 300 mm and has a standard marking window of 100 mm x 100 mm, although larger window sizes are available. The electronics are built in and the powerful software is extremely easy to use. It boasts a motorised Z-axis as standard, with programmable positions to allow marking at different heights within the same program. The column and head can be repositioned if required to give a more flexible working area of four marking zones, with two positions in X and Y. Optional extras include rotary axis, reading capability, fume extractor and adapted lens for different marking window sizes.

The Graphix Inline laser offers high speed marking for medium to large production runs. It is very simple to implement with its two positioning long life diodes. It has a compact light source, galvo head and lens that easily integrates in any position and can have up to four axes. It also features an auto-diagnostic system which gives real time management of the laser operating state.

With over 55 years' experience designing, manufacturing and supplying industrial marking systems around the globe, UMS has extensive knowledge of traceability requirements across a huge range of applications and industries. It has the experience to ensure you get the right system to meet your exact requirements and with the new range of marking equipment from Technomark as well as its consistent, quality electrochemical marking systems, UMS is confident that it can offer a solution for all of your marking applications.

M4 Inline



Graphix Laser

The latest addition to the dot peen range is the brand new innovative and ultra-compact "Mini" portable marking machine available both with the Multi4 or Flexmark controller. Its unique design allows the marking head to be positioned in any orientation. Its light weight of 2.3 kg and even weight distribution make for easy handling and positioning. The marking

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Verifying the quality of component marking

Machine readable identification marking is essential for part traceability in modern manufacturing; but if a mark is poorly applied and unreadable, then the whole process of traceability fails and this may have serious consequences as the part progresses along the supply chain.

Pryor's Alastair Morris asks: are you doing enough to verify the quality of your marks?

The aerospace sector led the way in the adoption of Direct Part Marking and Identification (DPMI) to ensure the full traceability and authenticity of safety-critical components, from the manufacturing process, through maintenance operations to their final disposal and recycling. Other industry sectors, such as automotive, medical device and electronics manufacturing, have followed, recognising DPMI to have an essential role in modern manufacturing, inventory control and asset tracking.

Many more industries are now also joining these sectors, recognising the value of part identification using machine readable codes, which aid quality and traceability in production and ensure that the right parts are used in the right places. Machine readable codes also contribute to the maintenance of part quality, allowing accurate, timely identification of parts that need to be diverted from the line. Once a part is with the end-user, these codes also simplify maintenance and parts management, helping operations and maintenance staff to track failures and match genuine replacement parts, or to resolve warranty issues and liability claims.

Most modern component marking standards use two-dimensional (2D) data matrix codes comprising an arrangement of small dots or squares, marked as either a square or rectangle. 2D data matrix codes allow a lot of data to be included within a small area and can be applied using a variety of marking techniques, including: dot

peening; laser, mechanical or chemical etching; ink jet printing. As these marks incorporate redundancy and check features, the marked code is effectively error correctable, so it remains useable even when damaged or partially obscured by dirt.

Of course, for a mark to be useful, it has to be readable, which is why commonly used marking standards, such as AIM-DPM, AS9132, JES131 and RRES90003, include quality criteria covering dot size, shape, position and contrast (in appropriate lighting conditions). Under the terms of these standards, organisations are obliged to incorporate some form of verification process into their production and quality assurance operations. This usually entails verification of the mark, either immediately following the marking operation or further downstream of the production or assembly process. Unfortunately, however, some of the most commonly used verification methods have significant drawbacks and could potentially result in a 'verification pass' that does not meet the required standard.

Verification: the problems

The simplest approach to verification involves machine reading with a hand-held or fixed code reader. The assumption being that if that mark reads then it has been marked correctly. This is fast, fully automatic and easy to integrate into even high-speed, short-cycle production operations. The disadvantage of this technique is that a positive result is simply a read of the mark, as configured, under the specified lighting conditions. A change in the reading equipment, environmental conditions or lighting could easily give a different result in terms of the mark identification.

It is all too easy to put trust in the power of modern automated reading equipment, which uses sophisticated image processing technology that compensates for damaged, poorly lit or poor quality marks. Of course, this is a real benefit to operations staff, as it speeds the read cycle and enables line speeds to be maintained. However, problems can occur further along the supply chain, if a mark is subsequently read using an inferior quality reader, or if the mark suffers any damage over the lifecycle of the part.

While 'speed' reading by machine is desirable from the point of view of the manufacturer, some companies prefer to inspect marks in the controlled environment of a quality assurance laboratory, using microscopes and specialist metrology equipment. This approach certainly ensures that a mark meets the full requirements of its specification, but it is time consuming and expensive and, for the majority of applications, only a small sample of parts is able to be checked, risking missed individual deviations. Moreover, if the mark on a particular sample part fails a laboratory check, the entire batch of parts may need to be recalled for checking.

Failure to ensure that product markings are fully compliant with established standards creates two kinds of problems for manufacturers. First, there is a real risk that a non-compliant mark will be rejected by the customer, if their equipment can't provide a satisfactory read upon receipt of the parts, or if their own quality checks identify deviations from the standard. That can be extremely costly and disruptive, especially if the parts in question have already been shipped across the world by the time the deviation is identified.

Secondly, a mark that doesn't fully comply with the appropriate standard initially will be less able to accommodate further degradation before becoming unreadable. This stores up problems for in-service use, and can create difficulty in 'smart' manufacturing environments, particularly

those that have adopted the Industry 4.0 digital manufacturing model where marks are used to track components, not just along the production line but through the entire supply chain.

Verification: a solution

To overcome these verification challenges, a dedicated verification system is required. Pryor's VeriSmart 2.0, for example, can be integrated with the marking equipment, or located at some suitable point on the production line. Solutions like VeriSmart operate on a similar principle to conventional code reading systems, but instead of a simple reader they use a high resolution imaging camera in combination with a controllable lighting arrangement.

In addition to checking that the correct data has been marked on the part, these systems also ensure that the size, shape and position of the dots are compliant with the standards. They can do all this within the cycle time of a machine operating at speeds of up to two parts per second. Today's systems can also verify the quality of human-readable codes, such as serial numbers or automotive VIN codes, and be fully integrated with a manufacturer's enterprise resource planning or manufacturing execution system. Where the colour or contrast of a mark varies significantly from part to part, modern verification systems can adjust their lighting and calibration settings automatically to provide a robust reading for every part.

As well as enabling manufacturers to check and prove the quality of product markings, these systems also help to improve and maintain that quality. The VeriSmart 2.0 software, for example, contains built in intelligence that can identify common marking issues such as shot peened dots becoming too large or too small relative to the cell size of the mark, sending a request to an operator or controller to adjust the punch pressure accordingly. This is essentially condition monitoring for the marking equipment that is capable of identifying subtle changes in mark geometry that might indicate the need for adjustment or recalibration.

The modern verification system, therefore, is not just an essential tool that manufacturers need in order to comply with marking standards, it also provides an excellent way to gain real time quality control over the marking equipment itself, ensuring manufacturers are confident in the knowledge that their essential part marking operations continue to meet the expectations of their customers.

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Laser marking systems in the digital industrial era

Innovative laser marking systems are able to communicate and provide even better inscription quality and greater flexibility Laser systems are also not immune to the exciting era of Industry 4.0. That's because they now form an important integral part of networked production processes. In future machines will actually organise themselves.

This means that laser systems must be able to communicate, must be intelligent and must be able to be integrated in fully automated production. Exhibitors at LASYS 2018, for example, are working towards achieving this objective. Laser production solutions within the meaning of Industry 4.0 will be a key topic in this respect. LASYS, international trade fair for laser material processing, will be held at the Stuttgart Trade Fair Centre from 5th to 7th June 2018. The trade fair is unique, covers different industries and materials, and focuses on innovative laser systems and processes together with services for laser material processing.

Industry 4.0 needs smart laser marking systems

As a universal tool, the laser now plays an important role in manufacturing industry. Its range of applications is increasing continuously while innovative laser systems are becoming increasingly more efficient and more economical. Modern laser marking systems have now become widespread. The LASYS exhibitor Trotec is a pioneer here in the area of Industry 4.0. The objective of the fourth industrial revolution is to increase productivity through intelligent, networked production systems. For example predictive maintenance 4.0 will reduce downtimes and, thus, increase machine availability.

Laser marking of medical stainless-steel instruments

Laser marking systems are vital, especially in fully automated production. That's because individualised mass production is very much in vogue.

This means that the modern production environment is characterised by many different product variants. It is therefore all the more important to mark components so that they can be traced. Depending on the utilised material, laser marking methods such as engraving, material removal,

tempering, staining or foaming enable the components to be permanently marked. Clear traceability, place and time of manufacture, is therefore ensured, for example, in the event of damage. This is essential in some industries, e.g. the automobile industry or medical technology.

Thorsten Ferbach, business development manager at Coherent-Rofin, says: "Implementation of unique device identification for medical products, which is subject to FDA Guidelines, poses new challenges for laser marking methods."

With effect from the middle of 2018, instruments, implants and medical consumables must be directly marked with a clear industrial code.

Thorsten Ferbach continues: "This will ensure the traceability of the medical product, create potential for optimising production processes and significantly increase patient safety."

The laser marking solutions of the LASYS exhibitor Coherent-Rofin pay particular attention to biocompatibility and corrosion resistance of direct marking of medical stainless steels.

According to the Coherent-Rofin expert, the medical technology sector harbours great potential for the use of laser marking instead of pad printing:

Thorsten Ferbach says: "In spite of the higher investment costs, a laser is generally more economical. The much better production quality with far fewer rejects and massively reduced personnel and consumption costs offset the initial investment after a short while. The much higher degree of flexibility is not yet included here."

As far as medical technology is concerned, LASYS 2018 will feature an additional highlight: Spectaris, German Industry Association for Optical, Medical and Mechatronical Technologies, will stage the workshop entitled "Laser material processing in medical technology" on 5th June 2018.

Laser marking systems can cope with nearly every material

The high flexibility of laser marking systems is demonstrated by various characteristic. Laser marking can have any shape and any content. Identification texts, numbers, codes, symbols or images and their size can be quickly adapted and individualised with the aid of a computer. Laser light replaces ink or printing ink. With fast moving workpieces the writing process takes place "on the fly". There is practically no material which a laser cannot inscribe. Metals, plastics, ceramics, glass, organic substances such as textiles, wood, paper, leather or even fruit. Depending on the type of material, different marking methods and beam sources such as solid-state lasers and

CO_2 lasers are used. For example, the UV laser marking system from the LASYS exhibitor Buth Graviersysteme with a wavelength of 355 nm is highly suitable for marking plastics on account of the high repeat rate.

Andreas Buth, CEO of Buth Graviersysteme, says: "The wavelength permits very small spot diameters and, thus, character heights smaller than 100 µm. Extraordinarily high processing speeds, which are required by closely synchronised,

industrial production processes, are also possible." According to the CEO, very fine inscriptions and structures could be created on glass or ceramics with high peak power and without thermal destruction. The BG FiberMark Mini is a new addition to the product portfolio of Buth. This product is a MOPA (Master Oscillator Power Amplifier) laser system.

Andreas Buth says: "MOPA combines the advantages of the conventional Nd:YVO4 laser with those of a fibre laser: high peak performance and high beam quality with high output power and a long service life.''

The CEO sees the future of laser processing in the use of 3-axis scan systems:

Andreas Buth explains: "In this case focus compensation is attained by adjusting the distance between the moving expander lens and the focusing lens while the scanners guide the laser beam over the processing field. With an area of up to 900 x 900 mm the processing field may be much larger than with a 2-axis scan system. We only supply laser marking systems with 3-axis scanners."

LASYS 2018 will feature different laser applications for all industries

The application areas of laser material processing systems will not only revolve around laser marking at LASYS 2018 in Stuttgart, but will also represent the wide range of tasks such as laser-based cutting, welding, structuring, drilling, cleaning, hardening and assembling across all industries. Representatives of the mechanical engineering industry, motor vehicle construction, the electrical and electronics industry, the optical industry, plant and apparatus construction, the metal working and processing industry, medical technology, the plastics industry, tool and mould making, and the semiconductor industry will be in exactly the right place at LASYS 2018.

Not only will they have the opportunity to find solutions for their production problems or new ideas for the use of lasers, they will also be able to refresh their knowledge in the wide-ranging accompanying programme.

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Lasers – the flexible and durable solution for metal marking

The ongoing evolution of lasers has seen the technology become the process of choice for many metal marking applications, continuing to replace more traditional methods such as dot-peen marking, ink marking and electro-chemical etching.

The power, precision and flexibility of today's fibre lasers make them the ideal choice for direct part marking on a wide range of metals ranging from the softer precious metals such as gold and silver through to the high-grade alloys commonly used within the medical and aerospace sectors.

In this article, TLM laser director Andy Toms highlights not only the flexibility of lasers for marking metals, but also the durability of the process, which was demonstrated following extensive trials on surgical instruments:

The latest legal requirements from the American FDA (Federal Drug Association) and the European Medical Device Regulatory bodies require that all medical products must bear identifying marks, at least on the packaging if not on the product itself. Direct part marking is mandatory if the product is reused and / or reprocessed before each use. This applies especially to surgical instruments, usually manufactured from stainless steel, which are cleaned, sterilised and re-used many times. It is essential therefore that all identifying marks remain legible even after multiple reprocessing procedures.

Metal marking automotive component

Metal marking automotive component close-up

Laser mark durability on stainless steel surgical instruments

The excellent durability of the laser marking process has been clearly demonstrated following a long-term study on re-useable surgical instruments. This study was conducted by FOBA Laser Marking + Engraving, in close cooperation with "add'n solutions GmbH & Co. KG" of Tuttlingen / Germany, a service provider for UDI laser marking on medical devices.

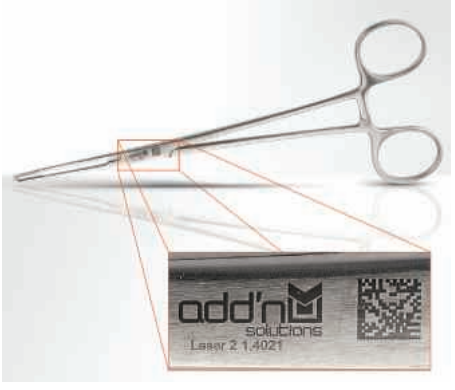
The study set out to prove that laser marks remain clearly readable following multiple reprocessing procedures. The UDI must resist deterioration throughout the whole of the products life cycle to ensure safe and accurate traceability, which is also an official requirement. The result of this comprehensively documented study, has for the first time, demonstrated that laser marked high contrast codes are able to resist at least 500 sterilisation and cleaning cycles.

FOBA's short pulse fibre marking lasers have been optimised to suit the surface characteristics of different types of stainless steel. The use of appropriate laser parameters prevents the inscription from fading out or corroding. An additional passivation process ensures that the complete device, including the marked area, is protected against corrosion. The American standard for the passivation of stainless steel, ASTM 967, was used for the passivation of the instruments in this study. A fully detailed description of this durability test on reusable surgical instruments is available for download on the FOBA website.

Lasers in the fast lane

As the use of lasers continues to grow, so too does the awareness within industry of the wide range of possibilities offered by lasers for metal marking applications. The capability to produce high contrast, permanent readable codes on virtually all metals, without compromising the structural integrity of the component, has seen lasers find their way into many applications within the medical, aerospace, automotive and motorsport sectors.

Quality, safety and traceability are pre-requisites within these sectors and lasers make a valuable contribution through high quality marking on components manufactured from a variety of materials such as carbon steels, stainless steel, aluminium and exotic materials and alloys such as titanium and magnesium.



The non-contact nature of laser marking and engraving means that there are no tools to wear out or break and the consistency of the process means that the last laser mark produced will be of the same quality as the first, an essential attribute in these high compliance industries. FOBA's fibre laser marking systems require low maintenance and create high-quality marks in a stable and safe marking process, which implies a vision-based verification before, during and after laser marking. This aids lean and economic production, as scrap due to marking errors can be reduced by up to 80 percent.

* Images supplied by FOBA Laser

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Four reasons to choose fibre lasers

We're seeing a surge in demand for fibre lasers. Laser Lines' Chris Ogden explores what's driving the boom

More companies than ever before are investing in fibre lasers. While the automotive industry was undoubtedly the early adopter, this relatively new solution is being snapped up across the board and when you consider the advantages, it's easy to see why:

Extra speed

The sheer speed of fibre laser markers makes them the first choice for customers looking to increase efficiency. They're the fastest laser marking technology at their wavelength, delivering marking times of less than a second for some applications. While older, more established laser technology is available, including diode pumped lasers, lamp pumped lasers and CO_2 lasers, none can beat a fibre laser for combined mark speed and quality.

This means fibre lasers can break new ground. For example, one of Laser Lines' customers is an automotive component manufacturer that needs to mark serial codes exceptionally fast in under half a second, which wouldn't be possible with any other type of laser.

How do they achieve their speed? They're better configured for speed and aggression and are also, quite simply, more powerful. Diode pumped laser systems, for example, rarely have a power rating of over 20 watts, whereas fibre laser marking systems typically deliver up to 50 watts. These high-power levels are crucial for both speed and depth of marking.

Energy efficiency

Despite being faster, fibre lasers are exceptionally energy efficient compared to the alternatives. Not only does this result in reduced power consumption, but it also helps make the system simpler, smaller and more reliable.

Fibre laser technology uses basic air-cooling rather than an additional chiller unit, which would be costly and cumbersome. With many businesses finding both cash and floor space in short supply, compact and efficient fibre laser marking solutions are proving to be just the right fit.

The automation industry, for example, is adopting fibre lasers to help build manufacturing lines, and a system called the UniQ is invaluable here. It's an IP65 approved single unit laser system, with the laser head controller and PC all in one box. As an all-in-one solution, it's compact and easy to integrate with no messy cables.

Long-lasting

The life expectancy of a fibre laser far exceeds that of other laser solutions. In fact, the diode module in a fibre laser typically last three times longer than other technologies. Most lasers have a life of around 30,000 hours, which typically equates to about 15 years' use. Fibre lasers have an expected life of around 100,000 hours, which means about 45 years' use. Saying that, will companies still be using the same fibre laser in 45 years? I doubt it. Regardless, this option does deliver an impressive return on investment.

Laser power

Due to the duration of power delivery by the technology, fibre laser marking solutions are ideal for deep marking. Rather than delivering a continuous stream of energy, fibre lasers deliver extended pulses. But, while still pulsing at up to 200,000 times per second, fibre lasers extend their pulse just enough to avoid those damagingly high peaks of energy. This means they deliver energy over a longer period of time, which is ideal for marking deep, durable marks. A good practical example is in the manufacture of automotive brake systems.

So, what's the future for fibre lasers? I predict we'll see even higher power levels, which will mean even faster performance. Also, with fibre lasers already being so outstandingly energy efficient, and at a time when companies need to find energy savings, we'll continue to see them soar in popularity, despite not always being the best solution.

With fibre lasers, the benefits can be blinding. But what users think they want and what they actually need can be two different things. While there are compelling reasons to choose fibre lasers and the trend is ever more bucking in their direction, it's worth remembering that sometimes the older alternatives offer a better solution. Lamp pump lasers are still great for laser welding; the wavelength of light from CO_2 lasers is still great for laser cutting certain materials; and, even when it comes to marking, other laser technologies can perform better with plastics. It's all about the task in hand.

For help and advice on fibre laser marking, contact:

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Edgecam 2018 R1 reduces regeneration time

Major enhancements to the 2018 R1 release of Edgecam, from Vero Software, include time saving updates to roughing cycles for milling, turning and MTM and the prevention of unnecessary CAM regeneration.

It is this latter update which is seen as being the most important for manufacturers. When a user makes an edit to an existing command, Edgecam 2018 R1 will not automatically regenerate the remaining instructions. Edgecam brand manager John Buehler says that, when editing a tool command, there will now be no regeneration if the alteration does not affect the corresponding cycles with aspects such as coolant or high-speed.

Two new items of functionality in the Roughing Cycle provide time savings in the milling, turning and MTM environments.

John Buehler says: "Detect Undercut Stock enhances the already powerful stock detection command, by analysing previously undetected areas of stock. This option helps to avoid 'fresh-air' cutting, reducing machining time, in some cases by up to half."

The game-changing Waveform Roughing Strategy now gives users the ability to determine the radius size when using the helical approach option, by simply entering maximum and minimum values, which will aid the tool's entry into the component.

Automatic collision detection has been added to the Rough Turning Cycle. In previous versions of the software, it was necessary to manually apply profile extensions to avoid collisions. John Buehler says as users no longer have to do it themselves, time will be saved in initially creating the CAM instructions.

Edgecam 2018 R1 provides support for deep hole drilling, also known as gun drilling. The new strategy empowers the user to control entry, exit and intermediate drilling conditions.

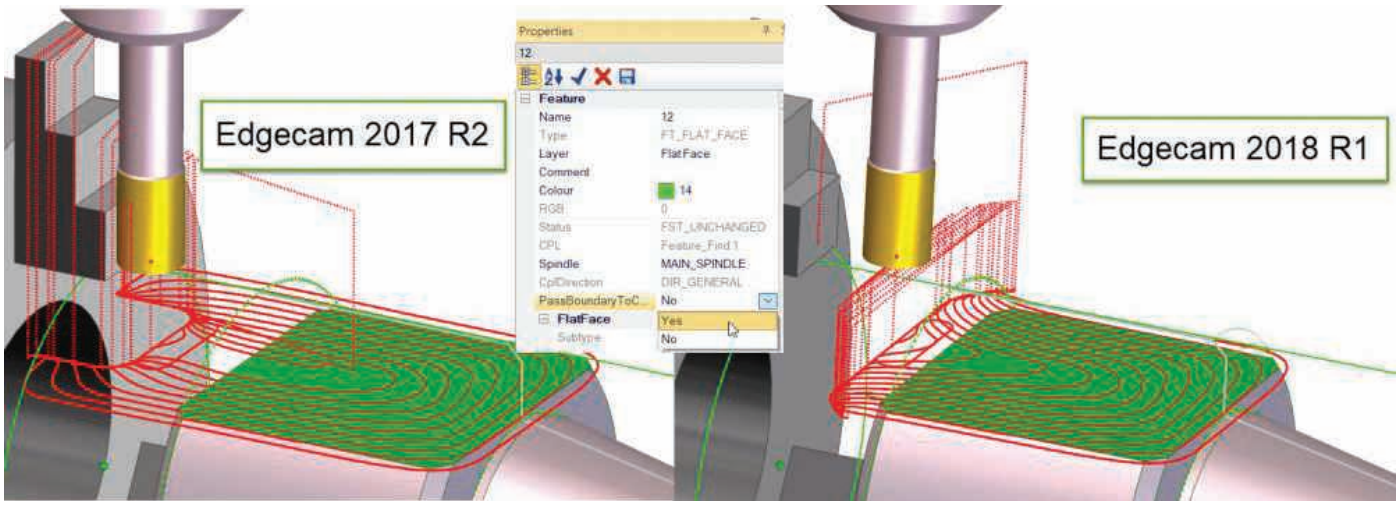
The profiling cycle used in both milling and turning now has two new items of functionality. A Spring Cuts field has been added to the Multi Passes tab, which means tool deflection can be removed where necessary, by adding extra neutral passes, known as Spring Passes.

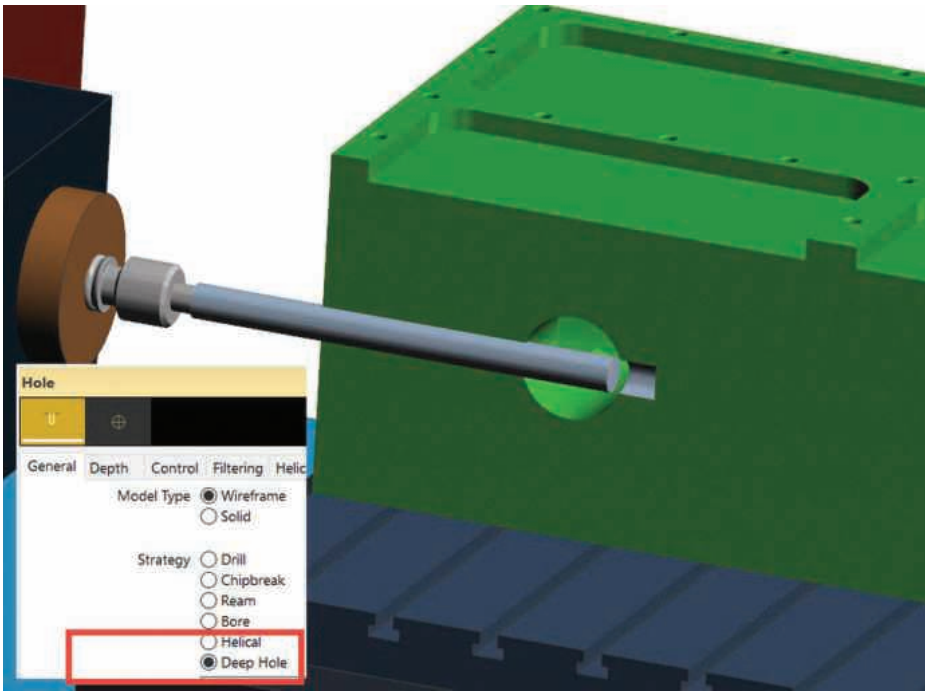
Secondly, the new Adjust Feedrate on Arc command improves cycle time calculation.

In previous editions of Edgecam, the postprocessor adjusted circular interpolation feedrates, which gave correct NC output, but not the best cycle time calculation.

Support for JT Open files is incorporated for the first time. This is a lightweight 3D model format developed by Siemens PLM Software.

An Editing Manual Milling function provides for editing a manually created milling feature, instead of having to recreate an entire feature when extra edges are required. This is expected to give considerable time savings to Solid Machinist users.



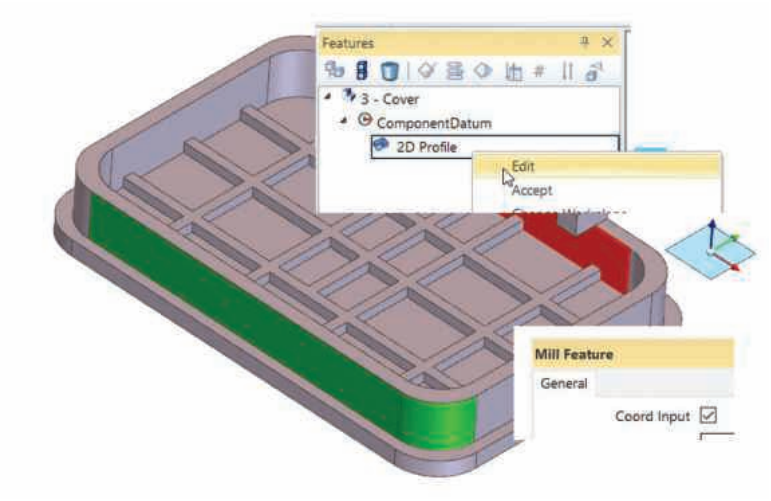


First released in Edgecam 2017 R2, the Edgecam Inspection module has been significantly enhanced.

In addition, the Move Point function within the Inspection module has two further options: 'Fixed Axis,' and 'Fixed On Surface,' giving the ability to align a measurement point along a fixed axis, or a solid face. The Plane Feature command has been enhanced enabling users to choose to evaluate 'flatness' on more than four probe touches.

Edgecam 2018 R1 continues the evolution of updating cycle dialogs with pictures and context-sensitive help, by updating the B-Axis Contouring Cycle, and 3- and 5- axis cycles. This not only assists experienced users to easily interpret an infrequently used command, but also helps less familiar users to rapidly understand fundamental functionality.

Another new feature that delivers significant time savings is the Pass Boundary To Cycles function, in the Feature Properties window. An improved toolpath is generated when the user engages Current Stock, and picks a solid feature. Rather than use the stock limits, which can sometimes lead to unwanted passes, the toolpath is now clipped back to the feature's natural boundary, particularly useful when creating automatic toolpaths in Strategy Manager.



John Buehler says the new release includes several 'user experience' enhancements, one of which is the improved visibility and consistency of the Datum Workplane marker. "The new datum is more prominent. And will change appearance to signify its usage; default, mating location, or machine datum. This is particularly useful when working with multiple component parts, on tombstones and multi-face machining."

Finally, additional functionality has been added to the B-Axis Contouring Cycle, which was introduced in the 2017 R2 edition.

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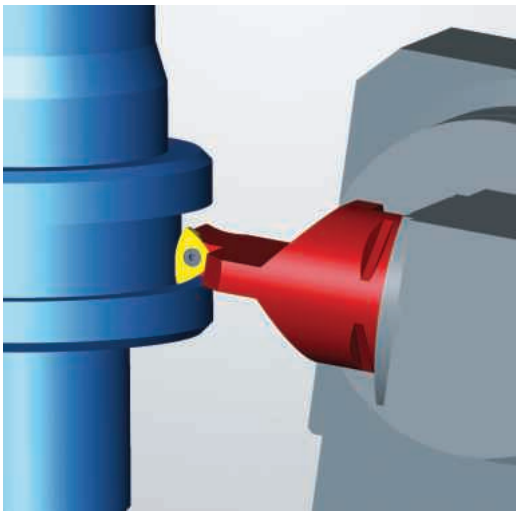
hyperMILL CAM software to drive the automotive Industry

OPEN MIND Technologies AG, one of the leading CADCAM software developers, will present a host of new technology advancements at the Tire Technology EXPO 2018. From 20th to 22nd February at the Deutsche Messe in Hannover, OPEN MIND will introduce its latest edition of hyperMILL®, Version 2018.1, the tire module and the hyperMILL MAXX Machining performance package.

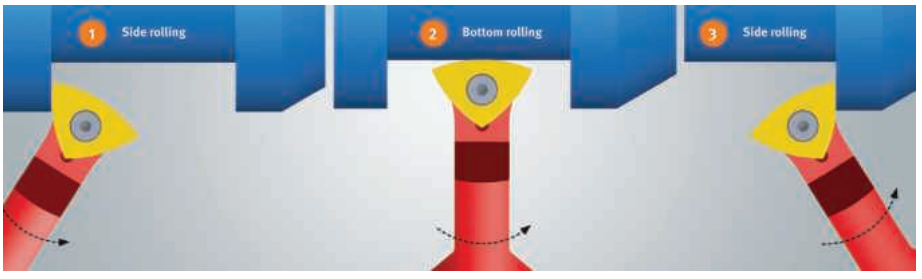
The tire module of the hyperMILL CAM suite offers a range of special functions for the NC programming of tire molds. At its heart is the Tire Clock, where the tire design is defined with all segments, tracks, pitch sequences and pitches. Automated functions support the creation and management of the elements and geometries required for programming. The user can display the suitable geometry for each operation in order to avoid errors and this means that each pitch only has to be programmed once. The new Multiple Track Support function allows a separate pitch sequence to be defined for each track.

For Tire Manufacturers striving for optimal production performance, OPEN MIND will demonstrate the benefits of its hyperMILL MAXX Machining performance package. With three highly efficient modules for roughing, finishing and drilling, hyperMILL MAXX Machining promises a major boost in efficiency. Manufacturers that use these innovative CAM strategies will be able to achieve time savings of up to 90 percent during finishing and time savings of up to 75 percent during roughing.

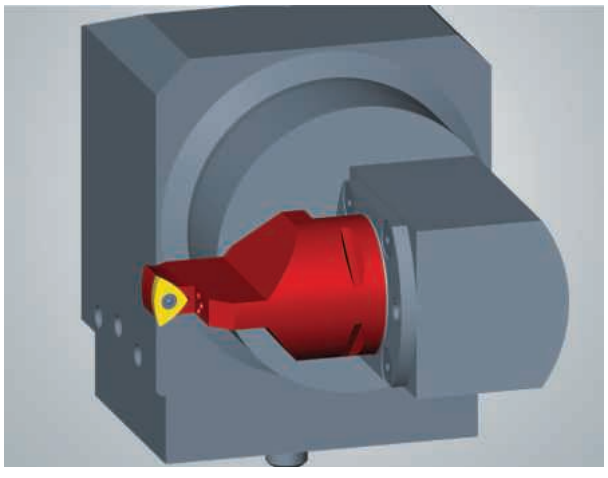
Certain to draw the interest of visitors to the event will be the new hyperMILL VIRTUAL Machining. This new simulation solution creates a perfect virtual rendering of reality in the machine based on NC data. Built with Industry 4.0 in mind, hyperMILL VIRTUAL Machining represents a major step forward toward digitised production.



The exhibition will also be the first opportunity for the Tire Industry to witness the benefits of OPEN MIND's latest hyperMILL release, Version 2018.1. Innovative additions to Version 2018.1 include 3-axis simultaneous turning. Two new strategies for simultaneous machining enable even more efficient mill/turning. Complex workpiece geometries can be machined in a single job step by simultaneously adapting the approach angle during the turning operation. In hyperCAD®-S, the new global fitting functions have been implemented. This new function allows multiple faces to be joined into one face with a defined ISO orientation.



OPEN MIND is one of the world's most sought-after developers of powerful CAM solutions for machine and controller-independent programming.



OPEN MIND develops optimised CAM solutions that include a high number of innovative features not available elsewhere to deliver significantly higher performance in both programming and machining. Strategies such as 2.5D, 3D as well as 5-axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the hyperMILL CAM system. hyperMILL provides the maximum possible benefits to customers thanks to its full compatibility with all current CAD solutions and extensive programming automation.

OPEN MIND strives to be the best and most innovative CADCAM manufacturer in the world, helping it become one of the top five in the CAM industry according to the NC Market Analysis Report 2017 compiled by CIMdata. The CADCAM solutions of OPEN MIND fulfil the highest demands in the automotive, tool and mold manufacturing, production machining, medical, job shops, energy and aerospace industries. OPEN MIND is represented in all key markets in Asia, Europe and America, and is a Mensch und Maschine company.

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Driving productivity and efficiency for the manufacturing software industry

At EMO Hannover 2017, 3D Systems (NYSE: DDD) announced Geomagic® Control X™ 2018, a leading inspection software, as well as GibbsCAM® 12, a CAM software for production parts.

Geomagic Control X 2018

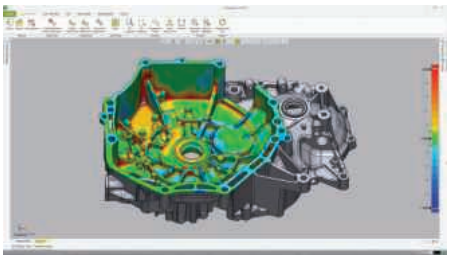
Designed and created by the people who invented 3D printing and modern 3D scan data processing and inspection, Geomagic Control X 2018 builds upon its foundation to meet the demands of aerospace and automotive manufacturers.

Offering the same easy-to-use tools as the previous version of the platform, Geomagic Control X 2018's scanner-agnostic platform also provides integrated capabilities including simplified and automated airfoil analysis, surface-analysis tools to instantly identify corrosion and denting, and comparative analysis tools.

Customers are now able to import legacy files from Geomagic Control 2015, allowing for improved support for existing customers and their projects.

Up to 50 percent increase in efficiency path to inspection results

Reducing calculation time by up to 50 percent, customers see faster analysis during their common inspection workflows. Geomagic Control X 2018 enables users to import, align, and compare faster than any other inspection software on the market. In addition, model-based Geometric Dimensioning and Tolerancing (GD&T) assignment workflows, coupled with fast



scan-pair searching, cut model setup and evaluation times by more than 50 percent versus leading competitors.

Greater performance in scan processing and evaluation

Taking advantage of an updated platform architecture, Geomagic Control X 2018 enables customers to more efficiently create inspection models as well as scan, evaluate, and communicate inspection results with newly customisable and intuitive reports.

Automation and traceability

Geomagic Control X 2018's automatic scan-pair searching operates in the background during inspection. This pairing map maintains the pair associations, allowing users to view, edit, and report and providing maximum understanding of the connection between measurement and reference models. In addition, process automation reduces setup time significantly over industry competitors.

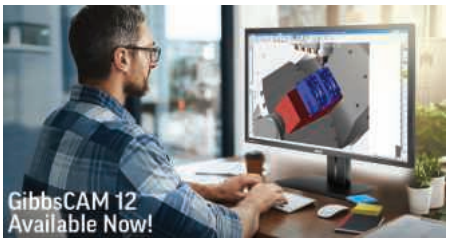
Unique measurement UX for portable probing devices

The engineers behind Geomagic Control X believe Live Inspect is the only measurement experience designed with natural interaction efficiency and operator comfort in mind. New features make it easier for the operator to follow guidance and instructions to complete a preplanned inspection job. Current Geomagic Control X customers, under software maintenance, will receive an in-app notification to automatically update the platform. For more information, visit the Geomagic Control X 2018 homepage.

GibbsCAM 12

GibbsCAM 12, the latest version of 3D Systems' CAM software for production manufacturing in high-end, Multi-Task Machining (MTM), mill/turn and production manufacturing.

The new version offers an innovative user interface and increases productivity by 30 percent over previous versions. Post-processing capabilities continue to give users "world-class" quality code for their CNC machines.



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High functionality in a compact space

Bystronic's new Xpert 80 press brake offers anything but uniformity: increased power for versatile bent parts; increased bending length for complex individual parts and large series; increased dynamics for fast bending sequences.

With the new Xpert 80, Bystronic is continuing the concept of the mobile press brake, which the smaller version, the Xpert 40, has already successfully established on the market. Bystronic product manager Karsten Trautvetter explains: "The great success of the Xpert 40 shows that there is a demand amongst users for fast but also mobile bending systems."

With the Xpert 80, Bystronic now offers a fast press brake with a compact format that fits into virtually any manufacturing environment. The Xpert 80's mobility is a significant benefit over large-scale press brakes. Large bending stations need to be installed in a fixed place and, due to their design, usually require a lot of space. This can be a limiting factor for users, whose production can change at any time due to varying order situations.

Mobile press brake with a high degree of precision

The Xpert 80, in contrast, offers the highest level of flexibility. The machine's compact design means that it can be moved around. It provides users with support for flexible job shop production with fluctuating batch sizes and varying bent parts as well as for series production with recurring parts. Today, for example, the Xpert 80 can be set up next to a laser cutting system and tomorrow, maybe, in a row with other press brakes in order to process a large series. Compared to the smaller Xpert 40, the Xpert 80 offers a decisive increase of bending length and press capacity. This opens up the machine's wide spectrum of applications. Over a bending length of approximately 1.5 metres, the Xpert 80 generates a press capacity of 80 tonnes and this with a footprint of less than three square metres. Moreover, the machine achieves fast bending speeds up to 25 mm per second.

The ideal solution for limited space and fluctuating capacities

When bending complex parts, users can set up several bending stations over the bending length of approximately 1.5 m. Amongst other things, this facilitates series production and reduces the retooling time for certain types of bending sequences. "Many users apply what is known as the kit bending technique," explains Karsten Trautvetter. With this method, all the parts that are required for the end product are bent in series, in a single bending job. The possibility to set up several bending stations across the bending length of the press brake is particularly useful for this.

The ergonomic contours of the Xpert 80 facilitate the operator's interaction with the machine. The built-in drawers on the side of the machine offer ample storage space for bending tools and equipment. Hence, all the tools are within easy reach. An automatic clamp system simplifies the tooling of the machine: just snap in the tools and ready. A height-adjustable folding table on the front of the machine can be used as a working surface or storage area.

Bystronic is a leading global provider of high-quality solutions for the sheet metal processing business. The focus lies 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 services round off the portfolio.

Flexible bending automation comes in first

At Blechexpo 2017, Bystronic won an innovation prize for the Mobile Bending Cell. The specialist jury awarded the prize for Bystronic's bending automation solution in the "Warm/cold forming technology" category.

German industry magazines "MM MaschinenMarkt" and "blechnet" presented their awards for innovative solutions in the field of sheet metal processing on the first day of the Blechexpo

2017 exhibition. Numerous exhibitors had entered their developments for the "Award for the Blechexpo 2017" innovation prize, which was awarded in a total of six categories.

The innovations had to be based on a completely new solution or on a further development that differs substantially from the previous state of technology. Subsequently, a jury consisting of editorial staff from the "MM MaschinenMarkt" and "blechnet" trade magazines assessed the submitted solutions in terms of their level of innovation and their value for users, the environment and society.

With the Mobile Bending Cell bending automation solution, Bystronic won in the category "Warm/cold forming technology". The jury was particularly impressed by the flexible but still compact solution that enables users to bend both fully automatically and manually.

The technology behind the Mobile Bending Cell is comprised of the Xpert 40 in conjunction with bending robotics. A combination of a fast press brake and mobile automation. For example, with the Mobile Bending Cell, users process large series in the automated bending mode.

However, they can also manually bend small series and individual parts whenever necessary.

The company headquarters are located in Niederönz, Switzerland. Three additional development and production locations situated in Gotha, Germany, in Tianjin, China and in Shenzhen, China. Bystronic is actively represented by its 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 expertise, and service excellence. Since 1994, Bystronic has been a part of the Swiss industrial holding company Conzzeta. In 2016, with more than 2,240 employees, Bystronic achieved a revenue of 598 million euro.

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Prima is Power

Many new technologies and solutions by Prima Power premiered at Blechexpo. These were presented under the slogan "Prima is Power". Always more productive, flexible and connected, Prima Power laser and sheet metal machines are a boost of power to companies' business and competitiveness.

Visitors to the Prima Power booth gained a first-hand preview of the group's latest innovations.

The top-of-the-range 2D laser cutting machine Laser Genius 1530 with the Combo Tower Laser automation system was showcased for the first time with a 10 kW fibre laser source by IPG Photonics, which further boosts its performance, especially on high thicknesses.

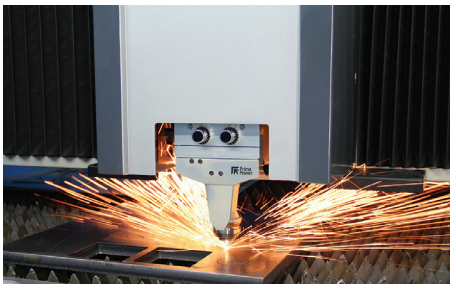
For the first time at an exhibition, Prima Power also demonstrated its Laser Cutting, Punching, Buffering and Bending (LPBB) manufacturing line. It features fibre laser cutting, punching and automatic bending enhanced with LSR loading and stacking robot.

The eP-1030, the most versatile servo electric press brake of the eP family is now available with the new version of the bending follower option, allowing the simpler and faster positioning of big and heavy parts.

Laser Genius

The top-of-the-range 2D laser cutting machine Laser Genius 1530 was presented for the first time with a 10 kW fibre laser source by IPG Photonics, which further boosts its performance, especially on high thicknesses. This product configuration is particularly dedicated to market sectors where thicker sheet metal is commonly used, like agricultural and construction.

Thanks to its laser head with adaptive optics for the automatic management of the focal position, Laser Genius provides best quality and maximum speed without

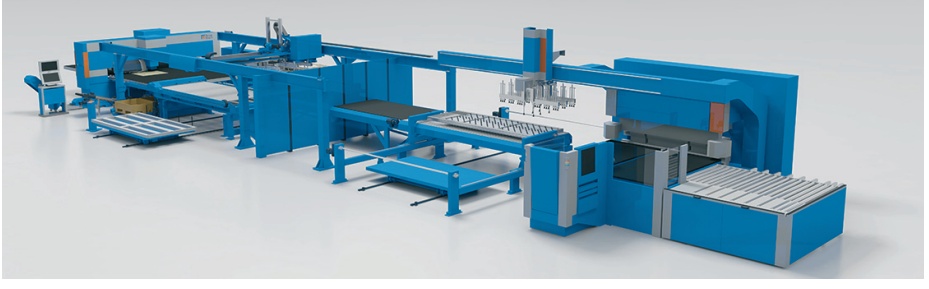


compromises on the whole thickness range for a wide variety of processable materials including mild steel, stainless steel, aluminum, copper and brass. Unique machine architecture based on a synthetic granite frame and carbon fibre cantilever structure and linear drives are some of its other key technical features. Laser Genius is managed by the smart and user-friendly Prima Power Open CNC and the HMI framework is the new Prima Power Tulus Laser 2D, a highly logical, modern and user-friendly interface, applying existing Tulus platform and its ecosystem to 2D laser cutting machines.

LPBB line

The LPBB line features fibre laser cutting, punching and automatic bending enhanced with LSR loading and stacking robot. As a world premiere, a new generation laser marker is introduced, integrated into the production line.

The LPBB line consists of the new combined punching/laser system Combi



Genius 1530, the Express Bender EBe 5-3 panel bender and the LSR loading and stacking robot, creating a high-end automation solution from a blank sheet to a ready produced sheet metal part.

Combi Genius is a very flexible tool for handling a wide product selection. With new automation solutions high productivity is reached by minimising waiting times and utilising hidden time operation.

Prima Power EBe5-3 included in the LPBB system is a flexible, automatic and fully-equipped servo-electric bending machine with a maximum bending length of 2,750 mm. It is equipped with PCD Picking & Centring Device, BTD Bend Turning Device, a single wagon for standard pallet with new part stacking function and a new lifting door designed to reduce the machine footprint. Among the main innovations, Tulus HMI software presents an optimised tool change, a monitoring view function to follow the process flow step by step, as well as a new interpolation function that generates new angle correction parameters to bend parts with thicknesses and bending lengths that do not correspond to the values saved in the database.

eP-1030 press brake

Another product on show on the stand was the eP-1030, the most versatile servo electric press brake of the eP family. Well known for its excellent combination of tonnage and working capability, visitors to Blechexpo could further appreciate this

machine thanks to the new version of the bending follower option, allowing the simpler and faster positioning of big and heavy parts that cannot be handled by a single operator.

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Salvagnini introduces impressive new products

At Blechexpo Salvagnini debuted its new, compact P2L-2120 panel bender that is capable of bending up to 2,180 mm in length and 203 mm in height. P2lean is one of the most successful panel bender models, and the one that was presented in Stuttgart is, for its versatility and potentiality, yet another step forwards for this intelligent production tool.

The new P2lean-2120 naturally incorporates all the most evolved bending technology that, integrated with new technical devices, aligns this machine to sustainable development milestones identified by Salvagnini to make its solutions essential tools for the 4.0 factory.

P2lean-2120 is equipped with ABA automatic blankholder and CLAN negative auxiliary blades that increase its already significant versatility and allow production in kit and in sequence with masked time tool setup, that means no change-over time.

P2lean-2120, like all panel benders in the Salvagnini range, implements the MAC2.0 adaptive technology, that makes it independent from the quality of material being processed. The panel bender detects in masked time any variations in the material being processed and if relevant they are automatically compensated by the adjustment of the blade movements, guaranteeing constant quality of the bend even with a variation in the material inside the batch, and eliminating waste even in the presence of limited quantity production batches.

The laser cut is finally 4.0

The L5 fibre high dynamic laser cutting system stands apart for its reliability in standard solutions like the evolved kinematic compass structure and the Dry CoolingTM cutting head with optical refrigeration and no contribution from gas or water.

The compass allows for dynamics of up to 5 g to be achieved, increasing productivity and simultaneously keeping consumption and operating costs extremely low. This is also contributed to by Dry CoolingTM that allows for the elimination of cooling gas or water, thus reducing consumption.

With a view to keep this cutting system ever more 4.0, the system made its world debut at Blechexpo with a series of innovations that improve cutting efficiency, performance and eliminate waste.

The new PowerCut and DynamicCut cutting functions increase system productivity and simultaneously manage greater reliability and the APC2 is the evolved adaptive process control. Thanks to new algorithms developed by Salvagnini, APC2 further reduces the piercing times and increases the accuracy of the cut thanks to its monitoring. The machine is now capable of realising if it is no longer cutting properly, of rapidly stopping the cutting in order to modulate the parameters and of starting to work again from where it left off.

At the exhibition the company also presented its HMI multitouch for the first time. It offers a more intuitive user experience as well as a set of new functionalities that make the laser system even more simpler and more accessible.

B3.ATA: the 4.0 native press brake for kit processing

At BlechExpo the B3: ATA press brake also made its world debut. Upper and lower automatic tool adjustment devices and MAC technology make it unique, adaptive and completely autonomous from the viewpoint of excellent process efficiency and aligned to the Salvagnini Industry 4.0 concept.

B3: ATA is a native 4.0 hybrid press brake, fully connectible with the production system in which it works whilst also offering the possibility to be monitored remotely. B3 is equipped with the new iCON user interface, which was presented for the first time at the exhibition. It is the result of in-depth customer experience analysis for an intuitive, easy and immediate management of the machine and production, and comes with ATA, the patented device for the

automatic setup of upper and lower tools. Borrowed by the ABA principle of Salvagnini panel benders, ATA eliminates the re-tooling of the press, changes and automatically adjusts the length of the tool in approximately 5 seconds, allowing for kit production even in press brake.

Batch one is guaranteed by the MAC2.0 adaptive technology, either borrowed by the technology of the panel bender, which allows the B3 to work on any material of any thickness without the intervention of the operator.

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State-of-the-art machine technologies presented live

At Blechexpo, AMADA presented its latest achievements in sheet metal processing. On a stand with a total surface area of 700 square metres, visitors were invited to discover no fewer than six systems and machines. A comprehensive overview of production solutions in the fields of laser cutting and welding, stamping and bending demonstrate in live operations how complex manufacturing jobs can be completed successfully, highly efficiently, flexibly and in outstanding quality.

New dimensions in laser cutting and welding

The best example of the completely new potential that is being made available in real-life applications is the AMADA ENSIS-3015AJ RI laser cutting system, based on the proven ENSIS laser beam source. Because of the new rotary index (RI) unit, the system now also permits the flawless machining of pipes and profiles. With the same laser beam source, the new FLW ENSIS laser welding cell opens up as well as new perspectives. It not only bridges large gap sizes, but also permits high-speed welding without discoloration or deformation. As the most recent model in the proven series of laser cutting systems, the AMADA ALPHA V sets new standards in processing materials with sensitive surfaces to near perfection.

Optimised practical processes

The new, integrated material measurement unit for the fast, precise measurement of pipe reference surfaces enables the processing of pipes and profiles at the AMADA ENSIS-3015AJ RI in an easy and efficient way. In addition, there is no longer any need to change lenses and nozzles changes are performed fully automatically. That's why the AMADA ENSIS-3015AJ RI permits a nearly interruption-free production that combines high speeds with optimised cutting quality. The system's other highlights include a carbon collecting tray for the cut pipes and profiles as well as the practical sliding doors. These features ensure optimum access to the machine, while also proving reliable protection against reflections and slag projections.

Furthermore, visitors were be able to see a real power pack in the form of the 9-kW version of the AMADA LCG-3015AJ laser cutting system. On this power level, it is possible to cut even thick materials, and this in a quality previously unheard of in the world of fibre lasers. For this it only needs three of the new, outstandingly powerful AMADA fibre laser modules, thus further reducing the risk of malfunction.

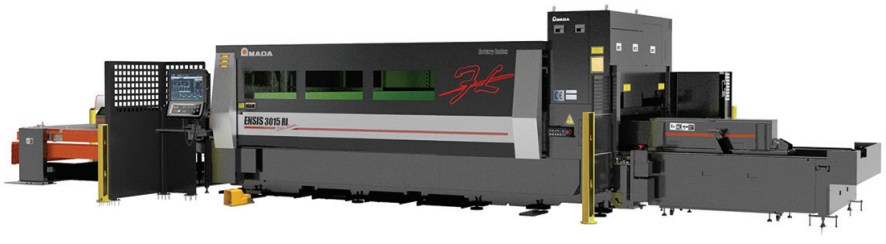
Optimised cutting of sensitive surfaces

The new AMADA ALPHA V laser machine cuts materials with sensitive surfaces even faster, more reliably and more efficiently than before. Its burr-free and almost scratchless cutting quality sets new standards in laser cutting technology.

One of the greatest advantages of the new ALPHA V is its high cutting speed with has been considerably increased compared to the predecessor model. The machine now features an AF3500i-C resonator. It provides the performance required for an efficient cutting process, while the new ''HyperFine Mode'' ensures even greater productivity and maximum cutting quality. The new AMADA ALPHA V not only permits the high-speed and high-quality cutting of conventional materials, it also delivers outstanding results when cutting material with sensitive surfaces. It processes stainless steel or aluminium components with highly polished or brushed surfaces to absolute perfection, with no back spattering and minimised scratching.

Efficient punching and bending

In the field of punching AMADA presents an even more efficient system: the new AE-2610NT punching machine. This recent model of the AE series now also provides an E-station and thereby enables the processing of even large format. Last but not least, visitors of the AE series now also provides an E-station and thereby enables the processing of even large format. Last but not least, visitors at Blechexpo had the opportunity to see an AMADA HG-ATC press brake with an Automatic Tool Changer (ATC). This feature minimises setup times significantly, giving all its users a crucial competitive advantage, especially during manufacturing short runs. Countless further solutions from the field of automation, software and digitalisation rounded off AMADA's trade fair offerings which showcased state-of-the-art production solutions for modern sheet metal working.



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Mazak unveils new laser automation cell at Blechexpo

Yamazaki Mazak unveiled its latest laser automation cell at Blechexpo, Stuttgart, which was exhibited along with two machines from its high-performance sheet metal cutting portfolio.

Taking centre stage on the Mazak stand at Blechexpo, was the OPTIPLEX 3015 DDL 4.0 kW laser processing machine, which features revolutionary Direct Diode Laser technology unique to Mazak, complete with a new state-of-the-art robotic automation system.

The machine, which complements Mazak's existing CO_2 and Fiber OPTIPLEX machines, has been positioned to offer premium cutting performance, specifically for those requiring ultra-fast cutting and high-quality cutting edge.

The OPTIPLEX DDL series can cut thin material 20 percent faster than fibre lasers and thick materials with unsurpassed surface quality. The machine has an axis acceleration of 1.8 G and benefits from rapid traverse rates of 120 m/min.

Positioning accuracy is maintained to within ±0.05 mm/500 mm in the X- and Y-axes and to within ±0.01mm/100mm in the Z-axis. The machine also offers exceptional repeatability accuracy of ±0.03 in the X-, Y- and Z-axes.

Crucially, the OPTIPLEX DDL is a highly efficient machine capable of a wall plug efficiency of 40-50 percent compared to 10 percent for a CO_2 resonator; 15-20 percent for a disc resonator and 30-40 percent with a fibre resonator.

The OPTIPLEX DDL also benefits from an exceptionally user-friendly ergonomic design, including the new NC control PreviewG.

The machine on display at Blechexpo was exhibited as part of a new robotic automation cell offering, that was shown for the first time. The cell incorporates a robotic arm mounted onto rails adjacent to the cutting table, to load and unload work pieces. The arm can quickly change between sorting tools, which are mounted directly onto the robot's base, depending on application, and the size and weight of the workpiece. To deliver fast and accurate machining, the cell's laser table is equipped with an automatic clamp to secure the workpiece's position on the table. This is especially useful for cutting thin vinyl-protected material.

The entire cell inclusive of sheet metal cutting and robotic automation offering can be programmed through Mazak's MAZATROL PreviewG control, which also allows operators to access detailed reports of cell production status and operation.

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JETCAM showcases JET-Cut fully automatic fly cutting

JETCAM presented JET-Cut, its new fully automatic fly-cutting feature for lasers, at BlechExpo. JET-Cut is part of the v20 release of JETCAM's Expert nesting and automation software. It includes new, highly efficient path optimisation algorithms and a number of new anti-crash options. In addition, it includes automatic generation of rounded tangential positioning movements which speeds up processing and extend machine service life by not forcing the axis to decelerate to a stop when changing direction.

JET-Cut allows complex grids of holes to be laser cut far quicker than traditional methods, without the user having to specify which areas should have the logic applied. Through its artificial intelligence algorithms, JETCAM Expert applies the logic on any suitable geometry, allowing users to import a CAD file, apply profiling information and nest components in seconds, fully automatically. In full remote-control processing mode, the system can be set to listen for instructions from external systems, such as MRP, process them and report back once done, completely de-skilling and automating the process of CNC programming.

Also, launched with Expert v20 was the latest version of JETCAM's High Performance Nesting module, delivering even greater material efficiency faster than ever before for both single and multi-sheet nesting operations. In addition, JETCAM will be demonstrating the latest releases of other products across its range. Line Commander provides complete CNC laser line automation, controlling material loading, cutting and unloading directly through the PLC. Optionally, it also delivers Industry 4.0 functionality, with real-time statistics and line status notification locally and through email and/or SMS messaging.

JETCAM Orders Controller benefits from a new optimised layout in the Nests screen, only showing navigation content when required and providing more space for user information, and a new 'batch nest' reporting facility, allowing the user to select multiple nests to get a single report that combines and totals relevant information

such as parts, costs, etc. Other new features include tight integration to Line Commander with the option for scheduling nests for production, in-built report display and the ability to select and print multiple nest reports

General manager Martin Bailey says: "The range of releases that we are showcasing represent thousands of man-hours of development, all aimed at simplifying and automating manufacturing processes while providing valuable and instant feedback."

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Still going strong after 40 years

Genpart (UK) Ltd is celebrating a milestone birthday with the addition of a Water Jet Sweden machine. Growing over the past 40 years, Genpart has become one of the UK's leading specialists in the design and manufacture of generator control systems and switchgear.

The privately-owned business has grown on its ability to engage with its customers and provide bespoke designs to closely match their requirements. WJS identified several items that Genpart were already manufacturing using more manual methods, that could be made automatically on an abrasive waterjet system. A visit to WJS UK's technical facility for cutting trials allowed full time, cost and quality analysis on several part types which proved the original business case.

Genpart's Robert Wilson says: "All of our products are designed, manufactured and tested at our factory using the highest quality components from world class companies including ABB, Deep Sea Electronics, Comap, Terasaki and Schneider. From our market research we found that Water Jet Sweden has that same quality ethos and were able to adapt a standard machine and tailor that for our specific applications."

Genpart had some specialist applications that were identified for manufacture on the abrasive waterjet system. Almost every switch panel has a bespoke layout of indicator lamps, gauges and switch controls, traditionally carried out with manual hole punches, saws and various other hand tools. With the assistance of Water Jet Sweden's engineers, Robert Wilson was able to quickly make a location fixture and suitable cutting-base that allowed every panel to be accurately and repeatably positioned for cutting. Once the existing CAD was processed using the supplied IGEMS CAD/CAM software, each panel could be positioned and processed. Robert Wilson adds: "Typically a panel that could once take a ½ day to manufacture can now be completed to design within 10 minutes. As well as saving time and cost, we achieve complete accuracy against the original CAD design.

"Water Jet Sweden was able to customise the machine to suit both the bespoke OEM parts to be manufactured and also for general contract cutting. The cutting tests carried out were able to identify that there would be an initial capacity surplus on the system against current capacity requirements and Genpart was keen to utilise any spare capacity on the system for subcontract cutting, serving many local industries with countless materials types. A larger capacity intensifier pump was specified with additional cutting heads to allow for high volume production as and when required. With the full 'lights out package', the system can run with minimum supervision and unattended at night, giving Genpart a competitive edge in the contract cutting market.

"Having examined the market, we felt comfortable with the reputation for quality and longevity of product from Water Jet Sweden and the support from WJS UK," continues Robert Wilson. "We also spoke to a range of existing users from OEM's such as Rolls-Royce Aerospace and many small contract cutters more akin to our own business before making any decisions. One area that was daunting for a newcomer to waterjet cutting was the choice of pump technology, cutting pressures and cutting heads available on the market. WJS UK was able to offer the full range, but we quickly agreed on 4000 Bar technology, giving consideration to capital expenditure, production throughput requirements and processing costs. We still needed a system with the highest possible uptime, knowing how important it is to provide customers with parts on a short lead time and without letting them down."

An intensifier pump from Europe's leading manufacturer BFT was chosen, with the capacity to run the WJS Superstream cutting heads. This was demonstrated to cut 25 percent faster than conventional industry standard setups, so reducing processing costs proportionally and giving more capacity, which is critical in busy periods.

Water Jet Sweden launched the NCT model in 2015 as its universal flexible machine aimed at small job shops and contract cutters. It's compact footprint, low cost and ease of operation make the NCT a very attractive proposition and since then the NCT has found its way into may previously unidentified applications, ranging from bespoke one-off manufacture to serial high-volume production. The NCT model is available in 3 m and 6 m variants, with up to 6000 Bar cutting pressure.

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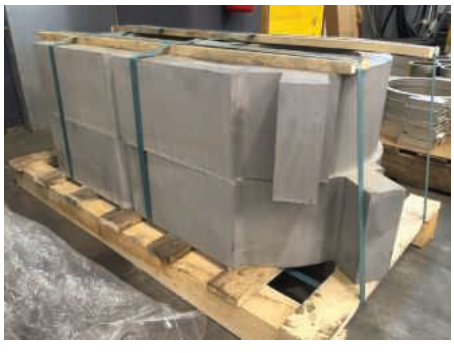
OMAX®
ADVANCED WATERJET SYSTEMS

Waterjet increases precision and profits for metal cutting service

For JACQUET Italtaglio, saying "yes" to a request for custom cut thick stainless-steel parts with tight tolerances and a fast turnaround time is part of everyday operations. This is because the metal cutting service centre in Carré, Italy incorporated an OMAX 80X abrasive waterjet with a Tilt-A-Jet cutting head into its machine inventory.

JACQUET Italtaglio is part of the JACQUET Metal Service Group, with more than 100 distribution facilities all over the world. JACQUET specialises in carrying a large inventory of stainless steel and nickel alloy plates in a wide range of thicknesses. The industries JACQUET serves is just as wide-ranging, including oil and gas, hydroelectric, pollution control systems, water treatment, construction, and agriculture.

The Carré facility opened in 2007 and initially offered custom cutting of material with laser and plasma cutters. While the laser cutters could produce tight tolerances in thin sheets, this was not possible in the thicker materials. The plasma cutters could cut material up to 120 mm (4.7 inches) thick, but the heat-affected zone (HAZ) on the plasma cut parts was large and required a finishing process to remove a layer of the heat-affected edge to attain tight tolerances. The cleanup on plasma cut jobs added labour costs to proposals, which prevented them from offering competitive prices. To remain competitive and offer cutting services in the full spectrum of material thicknesses it carried, JACQUET Italtaglio needed a solution. Managing director Giorgio Ventura knew that solution was waterjet cutting capability. Waterjets can cut tight tolerance parts from thick or thin material without using heat, so there's no HAZ and often no need for secondary finishing operations.



Outsourcing work to a waterjet shop would add lead time and expense to cutting jobs and they wouldn't have immediate control over quality, so Giorgio Ventura started doing his homework to find the machine that would best meet his company's needs, as he explains: "I chose an OMAX waterjet after comparing the results from actual tests done on different brand machines. OMAX proved to be much faster and more efficient than the competition. We got the same part quality from each machine, but the OMAX cut it in much less time."

JACQUET needed a large table machine because of the large plate sizes it carries and therefore purchased an OMAX 80X abrasive waterjet with a cutting envelope of 13' 4" x 6' 8". To ensure the highest precision cut without slowing down cutting speed, the machine was fitted with a Tilt-A-Jet cutting head. The Tilt-A-Jet eliminates taper by tilting to the side and tilts forward to compensate for the jet stream lag, so there's no need to slow down. All this is done automatically by the machine's software. The operator simply imports the part file, enters material type, thickness, and edge quality and the software does the rest.

The in-house waterjet capabilities are paying off for the company. "The waterjet has helped increase the profit margin for the business," says Giorgio Ventura. "Now I can offer my customers tighter tolerances, even for very thick parts. Parts cut on the waterjet machine have clean edges that don't require secondary finishing work. That saves a lot of machining time compared to plasma cutting. The narrow kerf means I can use more of the material. I can pass that savings along to customers, offering competitive rates and still make a good profit."

He says that the introduction of the waterjet cutting service from his well-established company has increased customers' awareness of the benefits of the process and, as a result, the demand for waterjet cut parts has increased. The overall volume of orders has increased, so there is still plenty of work for to keep all the machines busy. At JACQUET Italtaglio, the OMAX waterjet works as the perfect complement to the more traditional cutting methods.

UK Distributor:
Aquajet Machining Systems Ltd
Tel: 01257 248484
Email: sales@aquajet.co.uk
www.omax.com

Flex-zone means more efficiency in a safe environment

While the table previously was unreachable during cutting, with the Flex-zone it can now be freely and safely loaded and unloaded during the cutting process. Downtime is kept to a minimum while production and operator work time is optimised.

Light curtains are normally placed around water cutting tables, guarantying operator safety. With the Resato ACM Flex-zone, the safety feature is mounted on the bridge itself and moves along with the working area of the cutting head. The Flex-zone creates flexible, accessible work areas on the cutting table during cutting, making the table accessible for operators during the cutting process.

The ACM Flex zone implements a front and back light curtain around the gantry at a specific distance to the cutting head and gantry. Crossing this light curtain while the machine is operating reacts into a direct stop of the cutting head and servo motors and offers a safe approach to the elements of the gantry. The console offers within a few clicks a release of the protected zone and the cutting job can be resumed. While the cutting job is active the operator can load/unload outside the safety zone.

The cutting table comprises a precision-built steel construction embodying linear direct-drive motors on each of the two main axes. To achieve the required precision, the bridge and self-propelled carriage plate are powered by two direct-drive linear motors on each side. This results in a speed range from one to 30,000 mm/min.

Use of these components and construction enables the installation to achieve positioning accuracy and repetition accuracy of ± 50 µm (at 20 °C) across the machine's full range. The guideways and drives are suitably protected from water and abrasive through bellows and protective stainless-steel plating.

Direct-drive linear motors guarantee: better cutting behaviour and absolute repetition accuracy of the cutting head compared to traditional mechanical transitions using spindle, pinion, rack and gears; low maintenance as a result of the non-contact principle, combined with greatly reduced wear parts consumption, wide range of cutting speed and jogging speed, adjustable from very low to very high.

Due to automatic control of the PJ high pressure pump and the process parameters, permanent supervision during the cutting process is not required. Resato waterjets are equipped with an automated stop function that trips once a cutting task is completed. This means that all units will be acting in standby mode or will shut down and almost no energy is required.

Resato International B.V.
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Waterjet cutting without angle errors

Higher feed rates and perfect 90° cuts - angle error compensating cutting head STM TAC/12 convinces in every department

The angle error, i.e. the deviation between upper and lower surfaces of the material being cut, is created in waterjet cutting by the waterjet losing power when cutting the material and thereby removing more material from the upper surface. The result: the typical V-shaped taper. For many cutting jobs, the angle error is irrelevant and sometimes even helpful. But for high-precision jobs or when cutting material which has to match other jobs along the cut edge, the prevention of cutting angle errors is essential. However, particularly where thin materials are concerned, for example 2 mm stainless steel, the otherwise insignificant angle error produces an effect of up to seven degrees.

Increased precision and speed

In such cases, lowering the cutting speed to reduce the cutting angle error is only good to a limited extent. Because every user's objective is to produce the greatest possible precision in the shortest possible time, this aspiration drove the development engineers at STM to develop a new cutting head as an addition to the modular system. The new STM TAC/12 cutting head (Taper Angle Control) was created based on the innovative STM3D6868° cutting head. With a swivel range of up to 12°, the head compensates the cutting angle error by means of a swivelling movement, making it possible to work with even greater precision at higher rates of feed. The STM TAC/12 cutting head automatically compensates the angle error to below +/- 0.05 mm.

With the STM TAC/12 cutting head, perfect 90° cuts, 100 percent round holes and parts which have to fit together can all be cut easily and rapidly. These advantages can be achieved with extremely low capital expenditure and without having to use an additional software module. As a result of its extremely compact design, the cutting head can easily be installed on existing STM systems and convinces with user-friendly maintenance. To ensure unproblematic operation the cutting head has integrated height scanning and collision protection. The encapsulated mechanics requiring no air purge as well as the motors, provide the greatest possible wear protection and long service life.

Upgradable in the STM modular system, STM waterjet cutting systems are adapted technically to exactly match requirements. Customers do not have to purchase any additional applications but nonetheless retain flexibility. This is because even entry-level models can be upgraded as required, thus allowing changing requirements to be adapted to quickly and reliably. Moreover, the user-friendly, low-maintenance design of the systems offers resource-efficient manufacturing and an all-round convincing price-performance ratio. Dependent upon individual requirements, various tuning options are available. These include vacuum monitoring in the abrasive dosing unit as well as the possibility of operating several cutting heads simultaneously.

Unlike other manufacturers, STM concentrates on waterjet cutting systems without bellows. The standard water-protected linear guide is consequently easy to clean, exhibits a superior protective effect, is capable of many years of use and considerably improves the appearance of the equipment. Due to the robust rack and pinion drive, the durability of the machines is extended even further. The low consumption of compressed air for operating the plant is also a factor which keeps operating costs for a waterjet cutting system from STM extremely low. In addition to a completely rust-proof lightweight design in a combination of aluminium and stainless steel, the STM system provides a combination of first-class components plus maximum production-related efficiency, environmental friendliness and wear resistance.

Cutting without angle errors

STM is a leading supplier of waterjet cutting systems with its Head Office in Eben, Austria. For more than 25 years, the traditional company has developed future-proof production solutions, mainly for the steel, aluminium, metal, plastic, stone and glass industries, which are most notable for their efficiency, ease-of-use and resistance to wear. Alongside future-proof technology and quality as standard, STM places great emphasis on innovative full service. In so doing, the brand manufacturer ensures that its individual manufacturing processes are continually matched to the latest requirements of its customers.

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www.stm.at

The angle error compensating cutting head STM TAC/12

Pedigree waterjet cutting

The pedigree of the Wightman Stewart brand is reflected by the fact that the company has been selected to represent exclusively world leaders in waterjet cutting technology. The sales and technical expertise of Wightman Stewart ensures the on-going sales success in the UK of waterjet cutting tables, intensifiers and associated waterjet technology.

Wightman Stewart Waterjet Ltd, a UK market leader in plate and fabrication technology, is based in Ripponden, near Halifax, West Yorkshire and is the exclusive distributor of abrasive waterjet machines manufactured by Waterjet Corporation S.R.L based in Monza Italy. The machines come in four different styles and in a variety of sizes to suit clients need exactly.

Abrasive waterjet cutting allows any material to be cut cleanly, accurately and efficiently, although some softer materials can be easily cut using pure water only. The Waterjet Corporation software allows the client to select what surface finish he needs on any surface of the parts being cut.

By altering the cutting speed, the rate of abrasive flow and other parameters the surface finish of the parts can be easily controlled. The abrasive cutting machines supplied by Wightman Stewart Waterjet are designed to allow different finishes to be cut on different parts of the same component. Close tolerances and good finishes where needed and rough finishes in places that are not important or where secondary machining will take place. The abrasive cutting database uses the colours to select the finish required to automatically set the cut speed etc.

As a supplier and exclusive distributor for some of the most innovative engineering machinery from all over the world, Wightman Stewart Waterjet has all the resources to provide customers with total support from initial enquiry throughout the lifetime of their investment.

The company's premises include stores and warehousing, demonstration facilities, together with Head Office administration functions. Visitors are welcomed at all times to discuss their requirements with the company's highly experienced management, sales, technical and customer services teams.

The WATERLINE and SUPREMA are just part of the range of waterjet machines available from Wightman Stewart

To arrange a waterjet demonstration, contact:

Wightman Stewart Waterjet Ltd
Tel: 01422 823801
Email: simon@wightmanstewart.co.uk
www.wightmanstewart.co.uk

Waterjet cutting for fabricators

by Brian Sherick, Flow International

Manufacturing industry is being transformed as companies are consistently pushing boundaries on what it can make and how. The flexibility fabricators gain from waterjet cutting has grown the process to become a fundamental part of fabrication shops. Today's waterjets are much faster, more accurate and less expensive to operate than the machines that were available a few years ago. Systems are improving, like the new Mach Series from Flow, to have much faster acceleration rates, cutting parts with shorter cycle times than other waterjet systems currently available in the industry.

Regarded as a highly versatile process, waterjet offers fabricators capabilities that no other technology can provide. Waterjet cutting is a cold cutting process that generates little heat, which results in no stress, alterations, or warping of materials. This provides capabilities which range from cutting details in aluminum and steel to cutting composites and thick materials like titanium, allowing fabricators to take on any manner of work.

Features like a 94 ksi intensifier pump can increase productivity up to 50 percent and solutions for taper compensation have become more mainstream, allowing the ability to cut near-net shapes saving countless hours of machine time. With the demand to improve predictable uptime, Flow has launched an industry first comprehensive preventative maintenance and exchange program. As these type of service plans become an industry standard, waterjets are becoming more reliable and easier to maintain.

With Flow expertise inside and out, the Mach 2b features the same genuine Flow core components available on its elite waterjets. Specifically engineered to deliver value and reliability, the Mach 200 features tried and true genuine Flow technology.

The Mach 300 is purpose-built to deliver reliable performance that you can depend on. The system is a no-nonsense waterjet solution that is efficient and practical.

The Mach 500 is the industry's most robust waterjet solution, unmatched in technology and design.

The ideal combination of size, speed, and accuracy, the Mach 700 is a heavy-duty waterjet designed for demanding environments. NanoJet is a highly accurate, fully enclosed, small-format waterjet machining centre that excels in precise, clean, and silent cutting.

Software capabilities are also progressing to take advantage of the latest control capabilities to support equipment productivity and reliability. Technology has expanded the ability to import a wide variety of modeling formats that can work with both 2D and 3D cutting models. Software programs, such as FlowXpert, contribute to the waterjet's efficiency by automatically cleaning up geometric issues, creating the most efficient path and creating previews to check for any cutting issues.

As waterjets quickly become an integral part in most fabrication shops, cutting technology offers a versatile solution that allows businesses to work with virtually any material on one system. Waterjet leaves no heat affected zones, resulting in a part that has a satin smooth edge. Frequently, a waterjet cut part eliminates the need for secondary finishing operations, allowing more manpower to be utilised for other projects.

The future of waterjet cutting will be quieter, cleaner and more productive. As the industry evolves, waterjet cutting will be a critical process in fabrication and machine shops, allowing the ability to streamline workflow. Manufacturing organisations looking to reduce cost and increase efficiency will continue to rely on waterjet systems, benefiting from how the technology complements other processes resulting in an overall improvement of shop productivity and a smoother running operation for fabrication shops.

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

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

Flow UK Ltd
Tel: 01455 895300
Email: info-uk@flowcorp.com
www.flowwaterjet.com

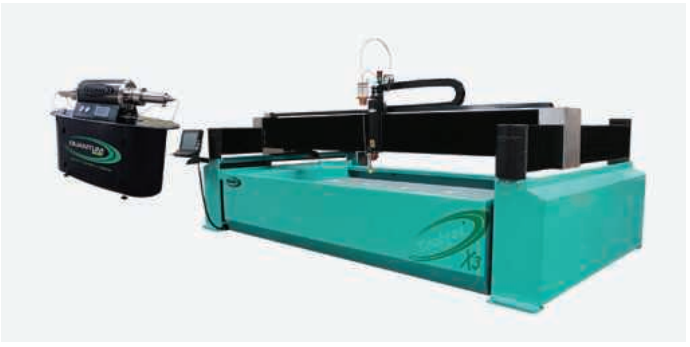
Latest waterjet cutting machines from Techni Waterjet & AMC Jets

AMC Jets is presenting to the UK market the very latest in complete waterjet systems and pumps from Techni Waterjet. As an approved Techni Waterjet distributor, it strongly believes that systems represent a big step forward for the waterjet cutting industry.

AMC Jets is able to offer customers the full complete waterjet package, from the very latest energy efficient, easy to maintain pumps, to complete custom waterjet systems, in fact it has something to suit every application and budget.

Techni Waterjet focuses on developing waterjet machines and cutting technologies to give its customers a competitive advantage. By finding innovative solutions to overcome the challenges of waterjet cutting, Techni provides waterjet cutters that generate the highest return on investment within the industry. Techni is one of the world's leading manufacturers of profile waterjet cutting systems and believes that it is the only company in the world that can offer complete waterjet cutting solutions utilising its own patented in-house technologies for everything from the revolutionary Electric Servo Waterjet Pump to the 5-axis Cutting Head.

Techni has been operating for more than 27 years and has an installation base of almost 1,000 waterjet machines or water cut systems spread across six continents and some 25 countries. It has dedicated sales and service offices in the USA, Australia, Asia and Europe, with spare parts, sales and service support throughout the world. Techni is committed to offering waterjet cutting systems of the highest quality. All its waterjet machines are designed



specifically for the very challenging water cutting environment and offer the lowest running costs in the industry. Techni Waterjet is committed to manufacturing waterjet machines that are easy to operate, reliable, accurate and will last beyond customer's expectations.

If you have any questions or if you wish to discuss any requirements you may have, contact:

AMC Jets Ltd
Tel: 01827 60700
Email: sales@amcjets.com
www.amcjets.com

Machine investment proves mint for the new pound coin

A UK-based supplier of high quality punching technology is playing a crucial role in the production of the new £1 coin. Bruderer UK, which has nearly 50 years' experience creating world renown precision high speed presses, has installed a state-of-the-art machine into the Royal Mint's Llantrisant facility, giving the world-famous institution additional speed, capacity and flexibility.

Capable of up to 825 strokes per minute, the BSTA 1600-117B2 is responsible for creating the hard cut blanks that form one of the first processes in the manufacture of the new 'Pound' coin.

The machine has been specified with an 1,170 mm press bed length and is capable of feeding material up to 500 mm wide by 12 mm thick, ideal for tooling relative to different types of currency production now and in the future.

It also comes equipped with the latest B2 control system, meaning that everything can be controlled from the Human Machine Interface (HMI), including full operation setting of the feed and speed, together with monitoring control of the whole stamping operation.

Adrian Haller, managing director, explains: "At an investment of over £1m, this is the largest single order ever placed with Bruderer UK and certainly one of the most prestigious in recent years.

"Our relationship with the Royal Mint stretches back nearly 40 years, and as part of its latest round of capital investment, we were asked to tender for a new press. After spending time with the production/engineering team, we identified the Bruderer BSTA 1600-117B2 as the ideal machine to meet their requirements for greater speed and power, taking them from 125 tonnes up to a special execution of 180 tonnes press capacity."

"With the tender won, we then had to complete a three-day factory compliance test with the customer production team, ensuring the machine met stringent health and safety and engineering guidelines and delivered the promised performance.

"To give an idea of the machine production speed, it can do 14 coins per stoke and 750 strokes per minute, meaning 10,500 coins every 60 seconds. Extrapolating this shows that over five million coins are produced every day, based on a standard eight-hour shift."

Working alongside the Royal Mint, Bruderer took six months to build the machine and just three days to install the new BSTA 1600-117B2, a process that would usually take over a week.

This was achieved thanks to careful planning, full cooperation of both parties and the expertise of specialist machinery handling firm Flegg Transport. It also took in initial training for more than 30 different staff, including a number of apprentices.

Mervyn Evans, engineering manager at The Royal Mint, explains: "We are pleased to continue our long-standing relationship with Bruderer and I am delighted with the performance of the machine so far.

"It is delivering the speed and accuracy we need and is a fundamental part of a production process that will eventually produce over 1.5 billion pound coins.

"The larger than normal tool bed also means that a range of materials for different denomination blanks can be processed on the new machine. This is an ideal solution for our growing international client base."

The Bruderer BSTA 1600-117B2 contains decades of experience and technological advancement to deliver a high-speed, high-performance precision stamping press.

Important innovations have delivered a number of enhanced capabilities that allow the customer to adjust shut height and press speed, together with precision adjustment of the feed pitch accuracy.

These can all be achieved whilst the machine is in operation, allowing the operator to maintain high levels of quality product.

Adrian Haller concludes: "You don't always get to see what our machines produce, so it's quite pleasing to know that every time you go to the shops, whatever the coinage used, a Bruderer press will have started the process off."

Bruderer UK, which employs 13 people at its headquarters in Luton and at a satellite facility in the Black Country, has enjoyed a record 12 months, with turnover set to pass £5m for the first time in its history in this country.

Formed in 1968, Bruderer UK has established a reputation of unrivalled excellence in the sphere of high speed precision stamping. From its Luton location Bruderer UK supplies its many customers with authentic "Bruderer made" spare parts plus service support from a UK-based team of factory trained service personnel.

Over the years, Bruderer UK has developed a policy of providing not only high-speed presses but a comprehensive range of other products and service to its customers, including tooling, coil handling and feeding equipment to complete "turnkey" packages.

Today, its slogan is "one name, a multitude of possibilities"; choose Bruderer UK as your one stop show for all press shop machinery and ancillary equipment.

Bruderer is renowned the world over as a pacesetter in high-quality punching technology. The company, which was founded in 1943 by Egon Bruderer, took just a few years to develop from humble beginnings into a global player.

Bruderer employs some 500 people all over the world, 390 of whom work at the Frasnacht site in Switzerland, where all Bruderer's high-performance stamping presses are produced. 95 percent of the company's products are manufactured for the export market. Sales and service organisations located all over the world combine with the company's own skills centres, for example in Asia, to ensure direct contact with customers. Bruderer is facing the challenges of the 21st century with the

very same attributes that have made it great since its foundation.

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TRUMPF opens smart factory in Chicago

TRUMPF has opened a new technology centre in Chicago. It is the first smart factory for Industry 4.0 solutions designed for digitally connected production processes throughout. Investments for the facility, which covers more than 50,000 square feet, totaled 13 million euros in construction investment and 13 million euros in equipment investment. This smart factory will focus on consulting and training its customers as they introduce digitally connected production solutions. To this end, the company designed a factory that intelligently connects the entire sheet metal process chain, from the initial order for a sheet metal component to its design, manufacture and delivery.

Chicago is at the centre of the North American market for sheet metal processing. Some 40 percent of the entire sheet metal processing industry is based in directly neighboring states.

Speaking at the opening of the smart factory, Nicola Leibinger-Kammüller, chief executive officer of the TRUMPF Group, says: "For us, America is one of the most important markets there is and in Chicago we can present our vision for connected production to our customers in the Midwest, practically at their doorstep, and work with them to drive forward connected production in the Industry 4.0 era."

The TRUMPF smart factory boasts custom-designed architecture. The control room and its large screens provide visitors with real-time process performance data for the current production process. A production hall 55 metres in length houses a connected sheet metal manufacturing line, the centerpiece of which is a high storage bay that supplies materials to the machine tools connected to it. A skywalk spans the production hall, offering a bird's-eye view of the factory and enabling those who stand on it to comprehend the production systems as well as their material and information flows

as a whole. Part of the self-supporting steel ceiling structure, it was manufactured by one of TRUMPF's customers in Atlanta. The showroom was designed by Berlin-based architecture firm Barkow Leibinger.

TRUMPF increased its sales in the American market by 14 percent in the past fiscal year, to 421 million euros, making the U.S. the company's second-largest market after Germany. The company plans to continue expanding in this market over the long term. Opening the smart factory in Chicago was a key milestone in this endeavor.

Nicola Leibinger-Kammüller continues: "Our industry needs free markets like people need air to breathe. Free and fair trade as well as the exchange of specialists and talented individuals are the only way to improve the standard of living for all people, whether in the U.S., in Germany or elsewhere in the world."

TRUMPF showcases connected manufacturing

''Get connected" was the motto of the TRUMPF booth at Blechexpo. Under the moniker of TruConnect, the high-technology company demonstrated solutions for smart factories.

Reinhold Gross, managing director of sales and services at TRUMPF Werkzeugmaschinen GmbH + Co. KG says: "Smaller batch sizes and tighter delivery windows pose the same challenges whatever company you run. Yet every sheet metal processing line is different. That's why our TruConnect portfolio is designed to cater to each customer's specific needs. TruConnect stands for all-in-one

manufacturing solutions that encompass hardware, software and services."

TRUMPF machines advance into the Internet of Things

TruConnect aims to optimise the flow of information and materials. The solutions TRUMPF offers range from individual production processes to a fully connected manufacturing environment, true to the company's conviction that different sheet metal manufacturers have different needs. Even though each TruConnect solution is unique, its successful implementation is always based on the same fundamental requirement: a meaningful supply of data that provides clear information on each machine's production status at all times. Analysing data from a machine requires interfaces, which is why TRUMPF equips its machines with the right interfaces to ensure a smooth connection to the Internet of Things (IoT).

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Tube bending and cutting in one step

Fully automatic solution from transfluid for efficient exhaust manifold production

Streamline operations are particularly required in such cases, in which a product cannot be installed until several components are available. This was the reason why in a recent project, transfluid developed a system solution for the efficient production of a complete exhaust manifold made of four or six different stainless steel tubes.

For this purpose, a 6 m long tube is first loaded onto the tube-bending machine. Each individual tube is fitted with up to four bends. After the bending process, the tube is cut, chip-free, on the bending machine directly using a blade cutting process and is then inserted by robot into the corresponding forming machine. It forms an asymmetric geometry, which fits each individual bend progression. After processing, the components are then fed directly into a welding cell. It welds the tubes to flanges. In this way, one complete module is always available as a unit.

Chaotic production for improved operations

As in this case, complete tube sets are in part used during tube processing. It gets more complicated and demanding when dealing with a wider range of tube sizes and geometries. The experts at transfluid have developed special automation systems, that allow a chaotic production to be implemented as an especially efficient solution.

Stefanie Flaeper, CEO at transfluid, says: "This kind of production comes very close to a "one piece flow", thus significantly reducing the time period from tube production to installation. It is in any event the most effective solution. And it is also the solution that can significantly streamline operations despite an increase in complexity. We have already implemented this successfully for several customers."

More flexible to better results

Often, a higher degree of complexity is needed for hydraulic systems during production. Stefanie Flaeper says: "Here, our customers frequently want to produce a complete piping kit, which consists of up to eight nominal widths as a unit, for example.''

In these cases, the machine setup is somewhat more complex. However, it offers several distinct benefits as compared to conventional tube production, during which in part a significant number of tubes have to be produced one after another, which are then combined to a single tube set. Here, machine setup is not required, production is time optimised and there is almost no need for warehousing and commissioning areas.

For production of this kind, transfluid integrates chipless cutting systems, forming machines or cutting ring pre-assembly systems and bending machines into the thus optimised process. These systems can be linked with one another, thus allowing monitoring from the outside, creating processes as early as during machine setup and can thus be utilised in Industry 4.0-capable processes. In this way, the transfluid automation systems allow an exceptionally efficient chaotic production, after which a completely produced component is available after each work cycle.

TRANSFLUID S.p.A Tel: 0039 33128421
Email: info@transfluid.it www.transfluid.eu

High-performance solutions for the serial production of complex tube and pipe geometries

High-performance tube and pipe bending solutions "Made in Germany"
In keeping with this slogan, Schwarze-Robitec presented its extensive product range of tube and pipe bending machines and fully automatic bending cells at Fabtech 2017. At the booth visitors were able to experience a state-of-the-art CNC 100 E TB MR tube bending machine live and in action. Together with experts from the American branch office, the long-established Cologne-based company answered all questions interested trade visitors had concerning tube and pipe bending processes.

Faster, more flexible and more efficient, the serial production of complex tube geometries presents numerous challenges for companies. This is why the tube and pipe bending specialist Schwarze-Robitec placed its comprehensive solution competence at the centre of its booth at Fabtech.

The company presented the operation of a CNC 100 E TB MR tube and pipe bending machine from the high-performance series live. Whether for the production of different radii or bend-in-bend systems, such as manifolds and exhaust pipes, with the full-electric and multi-stack CNC tube bending machines, a particularly wide range of different tube and profile dimensions can be bent. Users benefit from the shortest cycle times, the highest speed, and maximum accuracy. In combination with individually adjustable tools, the multi-level technology used ensures the problem-free and accurate shaping of tubes with very short lengths between the individual bends. This can be used to bend exhaust pipes with a bending radius of 1 × D, using the smallest straight intermediate lengths between two bends. The "Quick Tool Unlock" integrated rapid clamping system allows fast changing of the bending tools and in fact requires almost no tools at all. Setup times are therefore significantly optimised, and machine downtimes are substantially minimised. The NxG control system also contributes to the fast cycle speeds of the high-performance series and users can reduce production time by up to 35 percent, depending on the tube system to be bent.

Fabtech is the meeting place for the metal-processing industry in North America.

Schwarze-Robitec took the opportunity to get in touch with numerous customers and interested parties and to inform them about the latest company news. This also includes the fact that the US branch office moved to new offices warehouse facilities in Grand Rapids (Michigan) in April. On 2,000 sq ft, Schwarze-Robitec stores, amongst other things, the most important spare parts for the custom-made tube and pipe bending machines. This means, the company with a long tradition, headquartered in Cologne, Germany and first-class support, can respond to service requests in North America even more quickly. The goal is to further expand the market in North America.

The company was established in 1903 and is now one of the leading international experts in the pipe bending machine sector. The headquarters of the specialist for cold bending machines is located in Cologne, Germany and currently employs a staff of 130. The company is represented by partners worldwide and these partnerships have existed for many years. Since 2015 Schwarze-Robitec has its own North American subsidiary that represents the company in the USA. As early as 1977, the company manufactured the world's first CNC pipe bending machine. To date, more than 2,700 machines have been sold, many of which have been in continuous production use for more than 35 years.

Highlights of the Schwarze-Robitec product range include not only pipe bending machines and bending tools but also tube perforating machines, measuring systems and solutions for the construction of special purpose machinery. The reference list of the pipe bending expert includes invariably all major manufacturers from the automotive and energy industry, and shipbuilding. Furthermore, the company's solutions are used in the aerospace industry and many other sectors.

Schwarze-Robitec GmbH
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Phoenix brings control and cutting productivity

New LVD Phoenix fibre laser is transforming a small UK family business

For brothers Darren and Ashley Churchill, going to work each day is more than just a job. JC Engineering, based in Reading, was started 51 years ago by their father John Churchill, who is still very active within the business.

Darren Churchill says: "We are still a traditional small family business. It is very rewarding when we get awarded with more orders from our customers. We have a good team of people here at JC Engineering who take great pride to ensure customer satisfaction.''

Two years ago, the company acquired a local competitor, Just Precision Sheet Metal, and it has recently invested in a new LVD Phoenix 3015 4 kW fibre laser machine.

Along with the new laser, JC also invested in a complete refurbishment of its 10-year-old Easy-Form® press brake, bringing it up to the specification of a new machine with the latest CADMAN® TOUCH-B, intuitive touch-screen control.

Darren Churchill explains that the decision to buy Just Precision was partly driven by the difficulty of finding skilled staff. He adds that the upgraded press brake also helps here as it allows a less skilled operator to be deployed on the machine.

"We are now investing to bring the business up to a new level."

JC Engineering became a customer of Shape Machines in the early 1980s and remained a customer when Shape became part of LVD in the 1990s. It bought its first CNC machine from LVD, a Delta 1000 turret punch, and a LVD press brake, with both in use every day. In 2005 the company added a second CNC punch press, an LVD 1250 machine and the Easy-Form press brake with CADMAN B software.

So why did they wait until now to invest in a laser?

Darren Churchill continues: "We hadn't bought a laser before because we felt that the technology wasn't right for us. We were carrying out a lot of second and third operations on the punch, countersinking, forming, and putting on part identification, and so on. This meant we could keep the parts on the punching machine for all these operations and keep our labour costs down."

He adds that the company undertakes a lot of work in aluminium, which again suited the punching technology.

Ashley Churchill says that all has changed with the advent of LVD's fibre lasers. We spent a long time researching fibre technology and in the end there was only one choice, LVD.

When it came to buying a laser, Darren was initially attracted to

LVD's Electra, a high-speed machine for fast cutting of thin material, but because LVD knew the type of products JC Engineering manufactures, it was able to suggest that the Phoenix might be more suitable and cost-effective.

JC's LVD Phoenix laser can cut up to 12 mm-thick aluminium, 15 mm stainless steel and 20 mm steel, as well as copper and brass, which the company couldn't previously offer.

LVD-Pullmax Ltd Tel: 01295 676800
Email: sales@lvduk.com www.lvdgroup.com

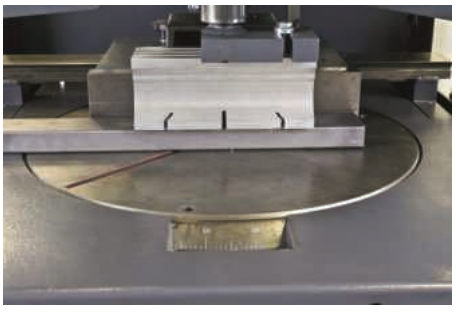
KALTENBACH offers intelligent solutions

The KKS 450 H semi-automatic universal mitre saw is one of the most popular machines in the KALTENBACH KKS range. All semi-automatic circular saws in the KKS range are genuinely universal, as is the fully automatic KALTENBACH KKS NA range. All materials, whether solid, pipes or profiles are cut with the same level of performance.

What are the advantages to the customer of choosing a KALTENBACH universal mitre saw?
These extremely versatile semi-automatics can machine virtually all types of profile and solid material and a very wide range of steels. Safe and reliable, they are suitable for single cuts and batch processing. Equipped with a stable contact surface and a workpiece stop on both sides of the saw blade, they are perfect for high-precision cutting.

KALTENBACH focuses on easy operation and programming and space-saving installation when redesigning our machines. The company believes that good accessibility for saw-blade changes and maintenance work is essential. Thanks to a user-friendly electronic control system, operators will enjoy using the machine and benefit from the automatic cycle control. Clamp material, cut, return and release at the press of a button.

Intelligent solutions: CNC-controlled cutting angle adjustment
Intelligent solutions for KALTENBACH and the universal mitre saw range also means a suitable length measuring device with outfeed roller conveyor. KALTENBACH's well-engineered modular system allows the machine to be adapted to suit customer requirements. The table can be rotated to any angle within a 180° radius for mitre cuts.



What are the special advantages of the KKS 450 H mitre saw?
The long-stroke clamping cylinder dispenses with the need for manually presetting the vertical clamp and provides clear advantages for machine operators when the dimensions of the material being cut frequently change. The high output capacity of the hydraulic unit speeds up the saw blade return, leading to shorter cycle times. The KKS 450 H mitre saw is fitted with CNC-controlled cutting angle adjustment, a feature which is particularly popular with our customers. Here too, push-button control and programming via an input and diagnostics panel have been included, which greatly enhances operator comfort and productivity.

Advantages include: clamping, sawing, reverse motion, releasing all at the touch of a button; suitable for single cuts and batch processing; workpiece stop on both sides of the saw blade; CNC-controlled cutting angle adjustment; user-friendly electronic control unit mounted directly on the machine; good accessibility for saw blades changes and maintenance work and space-saving installation. It can machine virtually all types of profile and solid material and a very wide range of steels

KKS 450 H + L 41 P automatic material pusher and length stop combination on the KKS 450 H circular sawing machine
With this combination of automatic material pusher and length stop, there is minimal waste at the end of the material. After programming the section length, the material is automatically moved forward and cut to size. Both straight and angle (mitre) cuts are possible, with the saw rotary table being positioned automatically via the touch screen controlled user interface. The system can also be used manually as a length stop.

The versatile KBS 400 DG bandsaw with mitre unit
The KBS 400-1010 series is ideally suited to light and medium-duty steel fabrication and steel service centres.

Its advantages include: simultaneous cutting of multiple profiles in layers or bundles; low investment volume for best cutting results for small to medium profiles; high cutting performance through powerful motors; precise incline setting thanks to NC-controlled motor; easy operation and ideal accessibility, sawing at the touch of a button; machine operation possible using touch screen control software.

The machine's powerful drive concept and robust saw band reduces cutting times by up to 20 percent. Its higher saw band results in longer band lifetime and better cutting performance. Automatic lowering of the saw bench during material transport enables longer lifetimes

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Sights on the future with networked sawing plants

There is a lot to be said for the use of fully automated plant systems for tasks such as order picking girders in the steel trade. The parts being handled here are extremely bulky, the risk of potential accidents is high, and the frequency of errors should not be underestimated. Networked plants and intralogistics can be an invaluable aid to handling operators and customers alike.

Automated operations in the steel trade require only a handful of employees to control and monitor a machining process which involves only minimal direct contact between personnel and material or machines, from the goods-in department through to loading the finished parts onto trucks for shipping. Different tasks from materials management through machining and order picking to shipment are all performed according to a programmed sequence and logical material flow process.

A driveway along the hall wall permits part delivery and storage. Without encountering any crossroads, the girders and profiles are delivered straight to the warehouse, and travel from there to the sawing machines on infeed roller conveyors. High-performance sawing plants in the centre of the hall, such as mitre bandsaw HBP510-923G-NAP, cut the material. Some parts then pass through a conservation line for surface treatment, others are loaded immediately following sawing.

Processing takes place on a program-controlled, bar-optimised basis. A transport management system ensures the material-saving assignment of starting lengths by matching them up to orders, and takes care of trouble-free material flow along the plant. The material and data arrive at the right time in the right place, enabling maximum output. Marking and labelling devices are used to identify material on an order-by-order basis. A separate transport

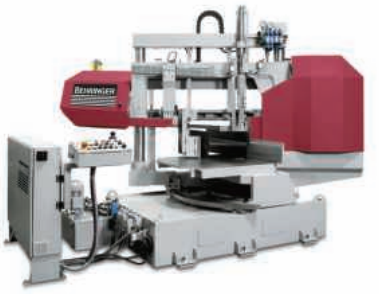
system is provided for return transport of offcuts without disrupting or interrupting the processing sequence. Alongside the sawing machines, Behringer GmbH supplies all the peripherals from its own in-house steel works.

CEO Christian Behringer, with a positive take on the trend towards networked plants in the steel trade, says: "The benefits of automated intralogistics systems make absolute sense for a number of reasons. Alongside process reliability, employee safety, throughput speed and of course the prevention of errors all have a role to play."

Features which guarantee optimum process reliability and a low frequency of errors are to be found not only in the machines themselves but also in the plant's ideally coordinated control system. The robust, torsionally rigid design of the mitre bandsaw features saw blade guiding components made of vibration-damping grey cast iron, which extends the service life of tools and is the optimum choice for fully automated multiple shift operation.

From the warehouse, the raw parts are transferred using a hall crane onto the cross conveyor of the sawing line, where they are separated and fed towards the machine using an infeed roller conveyor with positioning device. Following on from the sawing process, the cut sections are sorted into cross conveyors in two directions. A cut section gripper selects the offcuts and short waste pieces. Short lengths are also sorted onto table surfaces and possibly also into containers. Depending on the material size and weight, different versions of the transport systems are used. In many cases, one particular variant might be the preferred option, for instance taking into account past user experience. Depending on the job in hand, good parts are deposited in the order picking zone for delivery, or are sent automatically for surface treatment to the blasting or painting

booth. Markings and labels on the parts simplify the process of assigning parts for commissioning, or enable information to be scanned in.



All material movements are controlled from the central control desk. However, each sawing line has its own PC-based control system, from which the data is sent collectively to the higher-level control desk. The machines themselves have only a control system with functions for servicing, repair and maintenance. Here, mobile operator panels are used which can be docked onto different locations along the complete plant.

As safety takes top priority, all fully automated plants are surrounded by a protective fence, although connecting steps and raised control centre stations ensure an optimum overview of the entire process.

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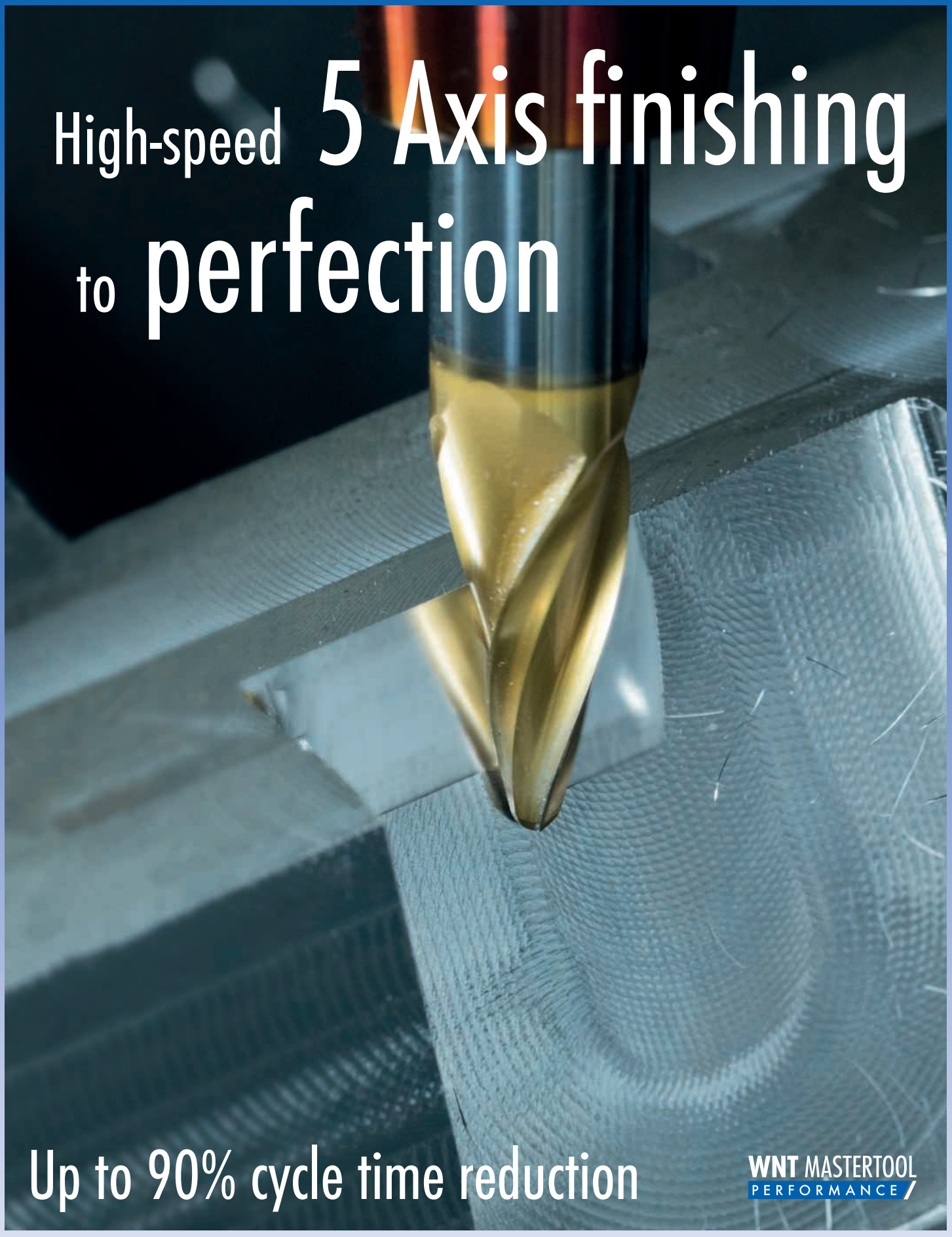

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