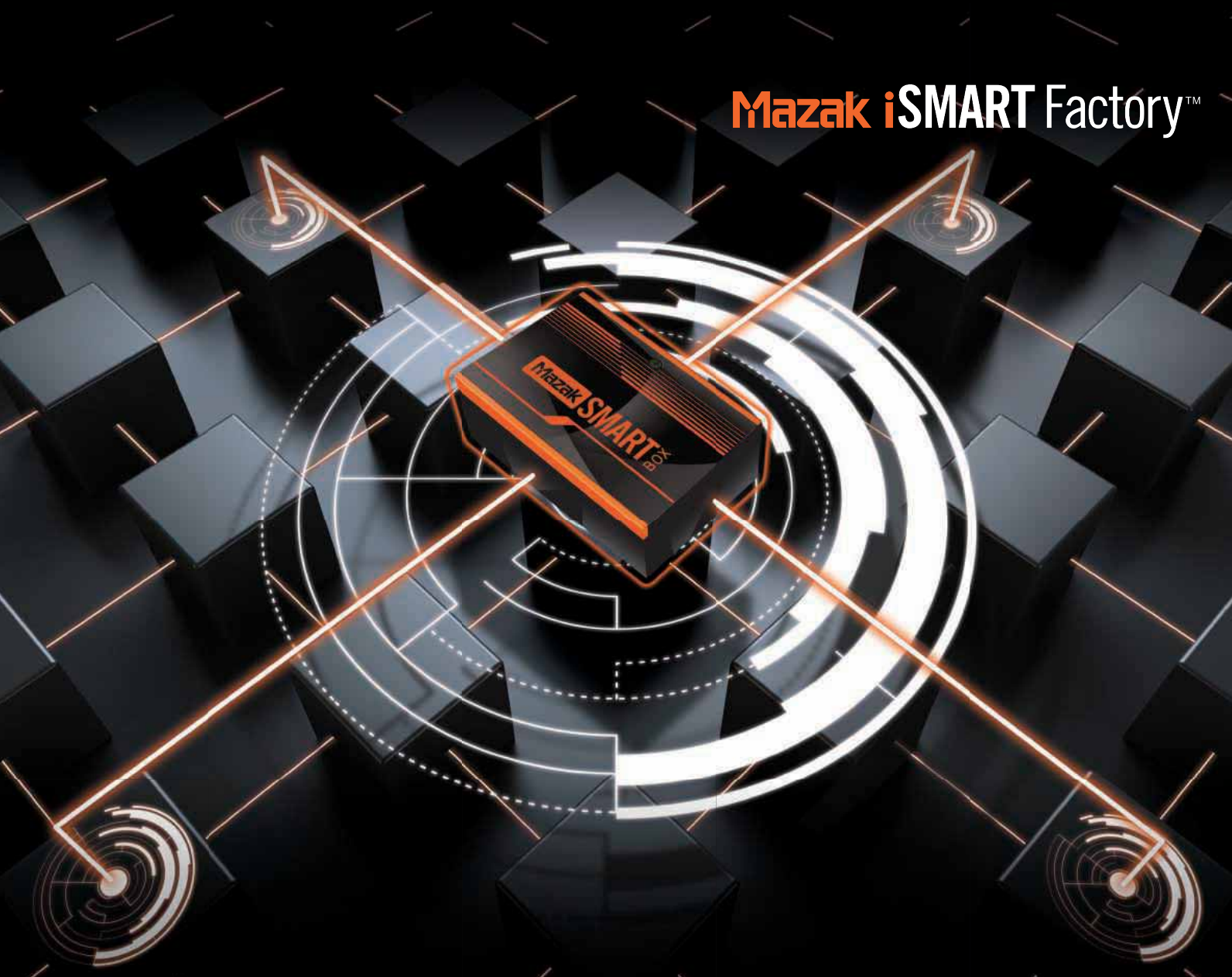


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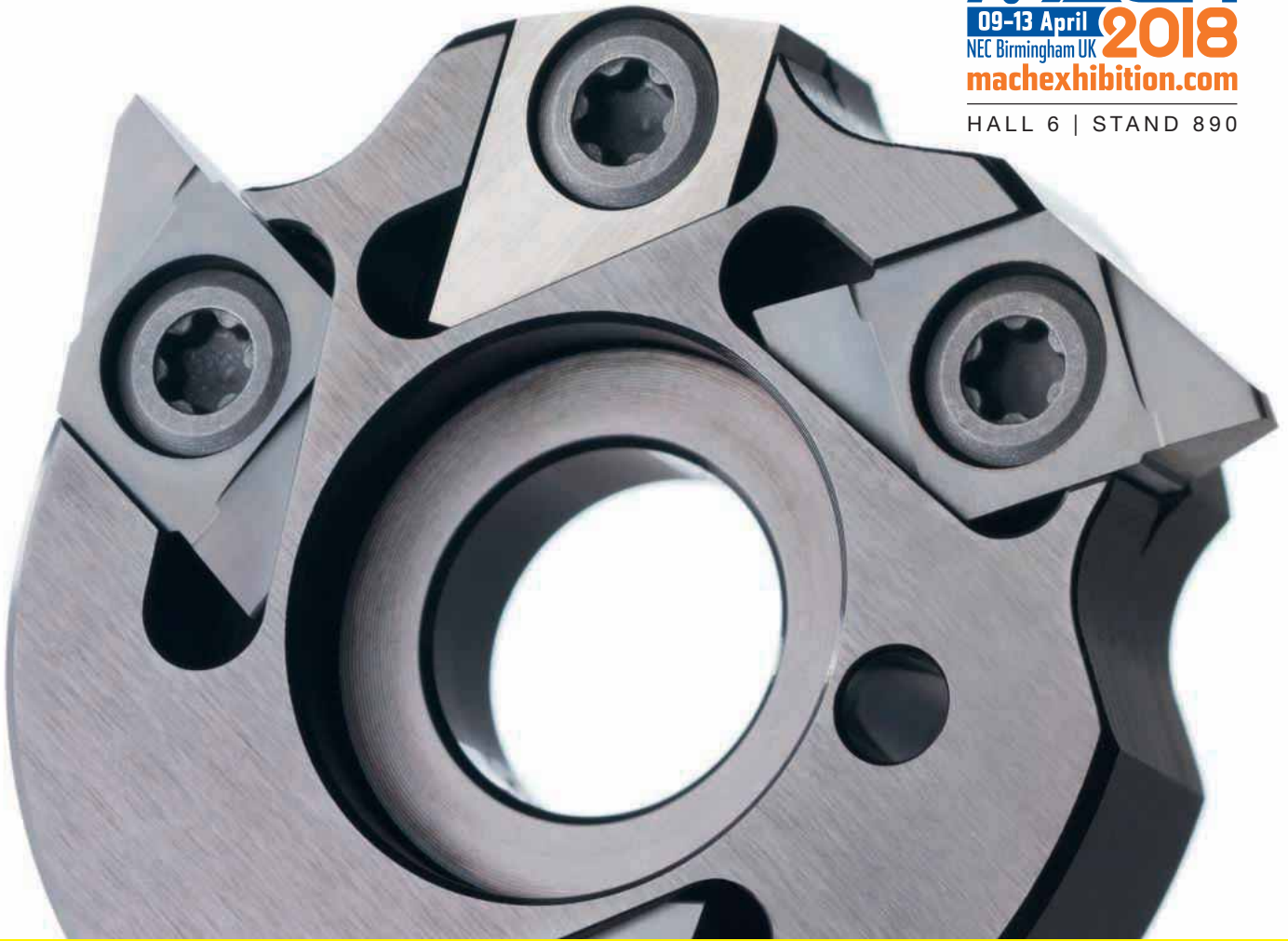
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Mazak puts productivity to the fore with sector-led MACH stand

Yamazaki Mazak is set to showcase 13 productivity-enhancing solutions from its world-class portfolio of machine tool and laser-cutting machines, as part of a MACH stand dedicated to maximising efficiency for machine users across all areas of the UK's manufacturing landscape.



With key sectors such as oil and gas making a resurgence in 2017, coupled with the ongoing buoyancy of automotive manufacturing and the fast-paced nature of the UK's thriving medical devices and aerospace market, Mazak will bring a stand fully-focused on showcasing its broad range of sector-specific metal cutting solutions that can enable manufacturers of all sizes and stages of the supply chain to drive productivity and cut downtime.

Productivity will be at the heart of its MACH 2018 stand and Mazak will also use the platform to showcase its suite of Industry 4.0 solutions. The Mazak iSMART Factory™ works in partnership with SMOOTH Technology, the world's fastest CNC, to improve overall equipment effectiveness and facilitate data driven manufacturing via the seamless connection of the factory and office networks, the essence of Industry 4.0 in its purest and most accessible form.

Alan Mucklow, managing director UK & Ireland Sales Division for Yamazaki Mazak, comments: "The UK is the 8th largest manufacturing country in the world and, with manufacturing responsible for 10 percent of total output (£177bn) and 44 percent of all UK exports, its success is intrinsically linked with the nation's economic performance. Technology that can facilitate a step-change in productivity is integral to maintaining strong performance and driving growth.

"Mazak prides itself on the in-depth market-specific knowledge it has for each key manufacturing sector and this knowledge is the cornerstone of the R&D process for each new machining technology brought to market. Ultimately, whether you work in the aerospace, automotive, energy or general subcontract markets, Mazak can provide a metal cutting solution designed for that sector.

"With SMOOTH Technology and the Mazak iSMART Factory concept, we have also created an operating infrastructure that can allow Mazak technology and third-party systems to work in unison, to facilitate the greater use of automation and generate better data transparency. Maximising productivity boils down to harmonising all elements of the production process, from the shop floor through to the management office and the machines live-cutting at MACH will demonstrate how it can be achieved across a variety of the UK's key industrial sectors."

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Engineering the future of manufacturing



MACH was established more than 100 years ago by the Manufacturing Technologies Association (MTA). It is the largest manufacturing technologies event in the UK, attracting in the region of 600 exhibitors and more than 25,000 visitors. The exhibition takes place again from 9th-13th April at the NEC in Birmingham and this biennial show brings together the latest developments and best innovations. MACH provides manufacturers of all sizes and sectors the chance to network with key clients and prospects as well as gain insight into their needs and future vision for supply chain manufacturing.

MACH 2018 will be bringing a fantastic array of new technologies, engineering services and machinery demonstrated under power in Halls 17, 18, 19, 20, 6 & 7 of the NEC.

Entry is free of charge and, once inside the exhibition halls, visitors will find the UK's latest and best metal forming, metalworking and manufacturing technologies. The event features a hugely extended IT for Manufacturing zone and 3D Printing zones as well as zones covering metrology through rapid manufacturing to welding and beyond. No other UK exhibition offers such a comprehensive overview of the manufacturing technologies industry and of course 6,000 tonnes of live working machinery demonstrating the best technologies in metal cutting and metal forming. 69 percent of visitors come to MACH to find out about current and new technology.

Visiting MACH 2018 is also a unique opportunity to be part of the UK's largest showcase for advanced engineering and manufacturing, meeting and networking with like-minded individuals and new prospects.

MACH 2018 seminar programme

MACH 2018 is much more than the technology on show; it is the place where the leading minds in UK advanced engineering come to share ideas that will help shape the future. The seminar programme for MACH 2018 is live at www.machexhibition.com/seminars. You can find full listings and timings as well as book your space.

Industry and academia use MACH to introduce new ideas and this is reflected in the strength of the seminar programme at the 2018 show. Throughout the week, hot topics such as Industry 4.0, additive



manufacturing, workforce development and modern production processes will be discussed, as well as looking at key sectors of importance to advanced engineering in the UK like aerospace and motorsport.

James Selka, CEO of the MTA, says: "Emerging technology is at the heart of what MACH 2018 is about. Of course, the machinery and equipment on show are a great way of presenting what's new, but so are the seminars running throughout the week. They can help put the kit into context, give new ideas to help adapt your business and give SMEs a chance to engage with OEMs.

"MACH plays a vital role in the development and spread of new ideas, we have a compelling array of speakers, from some leading companies and institutions who are ready to engage and enlighten visitors to the show."

Giving just a flavour of what's in store over the course of the show, the week kicks off with Sir Ben Ainslie officially opening the exhibition and giving the first seminar. That will be followed up by Andy Green, OBE, pilot of Bloodhound SSC talking about the progress on the high-technology project to design and build a car that will break the 1,000 mph barrier and set a new world land speed record. Designed and constructed in the UK, BLOODHOUND SSC includes components and sponsorship from many companies exhibiting at the show.

Other speakers over the week will come from Added Scientific, Valuechain, Anisa Group, Consultant Designer 3M Buckley Innovation, Stratasys, MTC, Safran Landing Systems, The Machining Group, AMRC, BEA Systems and Cranfield University.

The seminar aspect of MACH has always been popular and in 2016 many of the talks were oversubscribed, particularly the additive manufacturing and Industry 4.0 sessions. Registration for all seminars is now open on the MACH 2018 website, where full listings and timings can be found. It is advised to register early to avoid disappointment.

MACH 2018 takes place between 9th-13th April and visitors can register for their entrance pass and fast track entry pack now, via the MACH exhibition website at www.machexhibition.com.

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Mazak puts productivity to the fore

Yamazaki Mazak is set to showcase 13 productivity-enhancing solutions from its world-class portfolio of machine tool and laser-cutting machines, as part of a MACH stand dedicated to maximising efficiency for machine users across all areas of the UK's manufacturing landscape.

With key sectors such as oil & gas making a resurgence in 2017, coupled with the ongoing buoyancy of automotive manufacturing and the fast-paced nature of the UK's thriving medical devices market, Mazak will bring a stand fully-focused on showcasing its broad range of sector-specific metal cutting solutions that can enable manufacturers of all sizes and stages of the supply chain to drive productivity and cut downtime.

Productivity will be at the heart of its stand and Mazak will also use the platform to showcase its suite of Industry 4.0 solutions, which were first unveiled at EMO. The Mazak iSMART Factory™ works in partnership with SMOOTH Technology, the world's fastest CNC, to improve overall equipment effectiveness and facilitate data driven manufacturing via the seamless connection of the factory and office networks, the essence of Industry 4.0 in its purest and most accessible form.

Aerospace has been one of the long-term successes for UK industry and for Mazak. The UK-made VTC-800/30SR is a vertical travelling column machining centre capable of full 5-axis contouring, perfectly suited for both aerospace applications as well as for general subcontract manufacturing. The machine has been designed specifically for the machining of extremely long workpieces or can be converted into two separate work areas, enabling pendulum loading and batch manufacturing. It is equipped with an 18,000 rpm 35 kW, 50 percent ED milling spindle, while a swivelling B-axis spindle



head, in conjunction with the NC rotary table, offers full 5-axis simultaneous machining.

Alongside this will be another aerospace specific machine, namely the HCR-5000S, a 5-axis horizontal machining centre specifically developed for high-speed 5-axis aluminium cutting.

One of the defining trends for 2017 was the welcome return to productivity of the oil & gas industry and the revitalisation looks set to positively impact all stages of the supply chain throughout 2018. The INTEGREX i-400S machining centre is ideally suited to multiple applications but has been particularly successful in the oil & gas industry due to its large machining capacity, which is bigger than any other machining centre in its category. The INTEGREX can handle workpieces up to 1,519 mm in length with a swing capacity of Ø658 mm.

Following the considerable growth Mazak has experienced in the laser market in recent years, MACH will also host the much-anticipated OPTIPLEX 3015 DDL 4 kW which utilises a world-first Direct Diode Laser technology. The OPTIPLEX 3015 DDL 4 kW is the next generation of Solid State Laser for the industrial laser applications and offers outstanding efficiency for UK laser users. The machine can cut thin material 20 percent faster than fibre lasers, and process thick materials with unsurpassed surface quality.

Alan Mucklow, managing director UK & Ireland sales division, says:

"The UK is the 8th largest manufacturing country in the world and, with manufacturing responsible for 10 percent of total output, £177 bn, and 44 percent of all UK exports, its success is intrinsically



linked with the nation's economic performance. Technology that can facilitate a step-change in productivity is integral to maintaining strong performance and driving growth.

"Mazak prides itself on the in-depth market-specific knowledge it has for each key manufacturing sector, and this knowledge is the cornerstone of the R&D process for each new machining technology brought to market. Ultimately, whether you work in the aerospace, automotive, energy or general subcontract markets, Mazak can provide a metal cutting solution designed for that sector.

"However, the machining technology is only half of the productivity battle faced by manufacturers. With SMOOTH Technology and the iSMART Factory concept, we have created an operating infrastructure that can allow Mazak technology and third-party systems to work in unison, to facilitate the greater use of automation and generate better data transparency. It is set to be a fantastic week and we are very much looking forward to championing productivity for UK manufacturers throughout the exhibition."

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Super-fast, 5-axis machining centre

MACH 2018 will mark the UK launch of the new DA300 5-axis, trunnion-type, vertical-spindle machining centre from Japanese machine tool builder, Makino, which is represented exclusively in the UK and Ireland by NCMT Ltd. The configuration at the show will include a Cellro robotic system from Holland for automatically loading and unloading components.

The compact machine is ideal for 5-sided and fully interpolative 5-axis production of complex components in one clamping. A rigid structure combines with high dynamic motion control to reduce cycle times significantly while maintaining accurate performance.

Equipped with integral, direct-drive motors for the swivelling +30 to -120 degree A-axis trunnion and also for C-axis rotation of the 340 mm by 300 mm table, the machine deploys a 20,000 rpm, 22 kW, HSK-A63 spindle capable of rigorous milling, drilling and tapping. A 60-tool magazine ensures availability of an extensive selection of cutters to tackle the most complex of parts or component families.

The table is prepared with pneumatic ports for easy integration of an automated pallet change system to provide quick, efficient component exchange, maximising machine utilisation. Makino offers two standard workpiece pallet systems that can be factory fitted or retrofitted: a seven-pallet arrangement, expandable in the field, or a 19-pallet configuration. An EROWA chuck-type pallet system for automated component handling may alternatively be attached in a similar fashion to the Cellro equipment on display.

The FANUC-based Professional 6 CNC system with optional Super Geometric Intelligence 5 (SGI.5) provides streamlined screen layouts, operator assistance and new macros to accelerate productivity. For



example, a G-code drilling cycle enables the tool to arc from hole to hole instead of following a square path, reducing non-cutting time by as much as 15 percent when drilling a typical hole pattern. A vision sensor outside the machine's work zone detects broken tools to ensure cutter integrity without impacting cycle times.

Workpieces up to 450 mm in diameter and 400 mm high with a maximum weight of 250 kg can be machined within a 450 mm x 620 mm x 500 mm working volume at feed rates up to 60 m/min. Even the rotary A and C axes are fast at 100 and 150 rpm respectively. Acceleration and deceleration to and from full speed takes just 1.5 seconds, minimising chip-to-chip times. Accuracy is ensured by scale feedback in all axes.

Makino EDAF2 high-precision sinker EDM machine

Also on show will be the EDAF2 sinker EDM machine, which features a rigid, precise structure and integral thermal cooling of the Y- and Z-axis cast components to ensure long-term accuracy. Table size is 550 mm by 350 mm and the dielectric reservoir is built in to the base casting to improve thermal stability further and to minimise the machine's footprint.

Free access to the working area is due to a programmable, three-sided drop-tank system. Unattended machining is extended by automatic electrode exchange and automated workpiece delivery and removal options. Fluid cooling maintains the

dielectric at a constant temperature for stable burning conditions. A high precision C-axis head is an additional feature and electrodes weighing up to 50 kg may be used.

The machine uses Makino's latest Hyper-i control system with an interface similar to that found on tablets and smartphones. It delivers efficient and productive results while bringing new levels of user-friendly operation to the shop floor. The control contains intelligent, intuitive and interactive functions streamlined to assist the operator



at every step of the machining process. It also enables easy access and selection of power settings to produce accurate results in the fastest possible cycle times.

The new on-board programming system, Makino Program Generator, has been designed to simplify use of the control, while generating aggressive machining programs to meet the demand for shortened lead-times on today's shop floor. By providing answers to prompts and inputting basic data, even novice operators are able to generate efficient and safe burn routines. The new program generator also allows for programming of multiple electrodes and multiple burn locations.

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The future of machine tool manufacturing

Holistic digitisation and productive complete machining with innovative CNC technology will be presented by DMG MORI on its 700 sq m stand during MACH 2018.

Twelve of the company's latest machine tools including the DMC 80 FD duoBLOCK, the CTX 2500|700, the NHX 5000 2nd Generation and the DMU 50 3rd Generation with PH 150 pallet handling system will be on display. The latter is an example of one of the focus topics at the show, namely automation solutions. The joint venture DMG MORI HEITEC supplies standard and customised automation solutions for all machine tools from DMG MORI.

The aerospace industry is a second focus. The DMG MORI Aerospace Excellence Centre supports OEMs and suppliers with productive manufacturing processes by being involved in the future projects of customers at an ever-earlier stage. As a third focus, the company will promote digital workflows as a fundamental step towards the digital factory.



End-to-end solutions for the digital factory

First presented at EMO 2017, digital workflows for data-supported production planning and automated tool management have since undergone fine-tuning. They will be available for customers as CELOS apps as early as the first half of this year. Other digital themes include continuous expansion of monitoring possibilities for optimising processes and production as well as digital products and services. Embedded in the new manufacturer-neutral IIoT (industrial internet of things) platform, ADAMOS, DMG MORI offers its customers and suppliers integrated and open end-to-end digitisation solutions.

Maximum productivity and top surface quality

5-axis simultaneous machining is increasingly being developed as a key technology. Furthermore, automation and



combined milling and turning are becoming more important. With about 4,500 duoBLOCK machines successfully sold, DMG MORI has been at the forefront of this development. One of these models is the DMC 80 FD duoBLOCK universal machining centre equipped with a pallet changer, demonstrating enhanced flexibility and productivity with improvements of 30 percent in the core characteristics of precision, performance and efficiency. The extremely rigid machine is capable of heavy-duty cutting of rotational parts, for instance in aerospace applications, with its HSK 100 B-axis interface and powerMASTER 1000 spindle. It has a power of 77 kW, maximum speed is 9,000 rpm and the torque achieved is 1,000 Nm. Additionally, DMG MORI offers the integration of grinding technology for the DMC 80 FD duoBLOCK, guaranteeing surface qualities to $Ra < 0.3 \mu m$.

Universal high-performance turning

The CTX 2500|700 from DMG MORI, combining the precision, performance and stability of two successful CNC lathes, represents the new standard in universal turning. The rigid machine bed and stable guideway arrangement is based on that of the NLX 2500|700, of which 10,000 have been sold, while the VDI turret and the SIEMENS 840D solutionline control were adapted from the CTX beta 800.

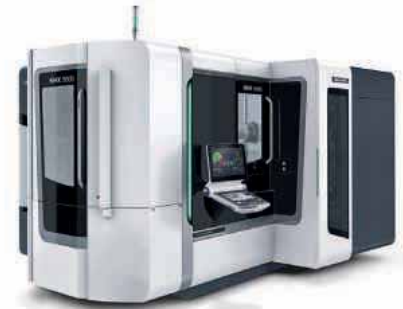
When it comes to performance, the CTX 2500|700 excels with its turnMASTER



spindles. A 10" chuck model with 4,000 rpm, 26 kW and 525 Nm or optionally a 12" chuck version with 3,500 rpm, 30 kW and 1194 Nm are available. The counter spindle has a 6" chuck as standard and achieves 7,000 rpm, up to 11 kW as well as 70 Nm. An 8" chuck with 5,000 rpm, 32 kW and 360 Nm is offered as an alternative.

With a maximum turning diameter of 366 mm and 705 mm turning length in the case of the CTX 2500|700, the new lathe offers enough capacity for a broad range of jobs.

Horizontal machining with high speed and high precision



The NHX 5000 2nd Generation is a general-purpose, horizontal-spindle machining centre enabling high-efficiency, continuous machining and efficient production in areas such as the automotive sector. The machine's robust bed provides stable, high-quality machining. The X- and Z-axis guideways are positioned to maximise the rigidity of the bed, column and spindle. The entire structure is optimised for increased static and dynamic rigidity.

As a result, the machine achieves the highest levels of speed and accuracy. The NHX 5000 2nd Generation is equipped with the latest spindle technology, speedMASTER, ensuring high-speed, stable, high-precision machining in combination with the rigid bed.

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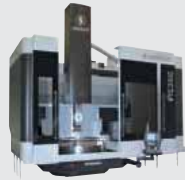
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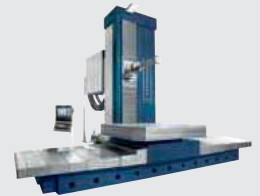
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Citizen launches LfV cutting technology to MIYANO range with Hybrid BNA-42GTyLFV

Moving into Phase 2 of its programme for Low Frequency Vibration (LfV) cutting technology, Citizen Machinery UK is launching its Miyano BNA-42GTyLFV, a 42 mm bar diameter hybrid development, moving headstock turn-milling centre.

The new machine extends the advantages of the Citizen patented LfV process from the existing 20 mm and 12 mm bar sizes of its Cincom sliding head turn-mill centre range that first featured the breakthrough in cutting technology, to extend applications and provide a greater machining capacity.

LfV has enabled a massive impact to be made to Citizen's sliding head machine build operations with some 500 machines being installed worldwide during 2017. In the Miyano BNA-42GTyLFV moving headstock configuration it enables users to benefit, by machining larger size components with the true influence of total programmable control over the size of swarf generated. It also has the benefit of creating a significant improvement in tool life and overcoming surface finish problems experienced when machining difficult materials such as super alloys, copper and plastics.

The operation of LfV is based on initiating a sequence through the servo axes of the drive system to oscillate the tool in the direction of feed in phases involving tens of microns which are precisely synchronised to the rotation of the spindle. The resulting programmable 'air cutting' breaks the swarf into a designated chip size which prevents 'bird nesting' and can be applied to turning, drilling and even threading cycles. LfV can be switched in or out of the machining cycle as required.

To ensure the cutting performance, the Miyano BNA machining platform has been significantly developed around its compact frame which is similar in area to a Cincom M32 sliding head turn-mill centre requiring just 2.3 m by 1.5 m of space. This also enhances the level of rigidity and damping while helping to maintain control over thermal influences.

For instance, plain hand-scraped slideways are used on each axis rather than the use of linear rails, special ballscrew designs and roller bearings are employed on



Miyano BNA-42GTyLFV Hybrid moving headstock turn-milling centre



Tooling zone of Miyano BNA-42GTyLFV showing three tool simultaneous cutting



CAD representation of Miyano BNA-42GTyLFV launched At MACH 2018

the X1 cross-feed axis to the headstock, while a special lubrication system is included with hydraulic clamping without the use of a guide bush.

For machine control, the well-proven and advanced Cincom operating system is interfaced to the Mitsubishi based control platform incorporating Citizen's 'Superimposition' which allows simultaneous cutting with up to three tools to maximise cutting efficiency and shorten cycle times. As a result, part programming is also straightforward using the same data format as Citizen's sliding head range.

The machine is configured with two spindles with a 3-axis X1, Y1 and Z1. It has 42 mm diameter, 11 kW 6,000 revs/min headstock and 34 mm diameter, 5.5 kW 5,000 revs/min 2-axis X3 and Z3 sub-spindle. The maximum machining length is 110 mm and up to 45 tools can be carried on the machine.

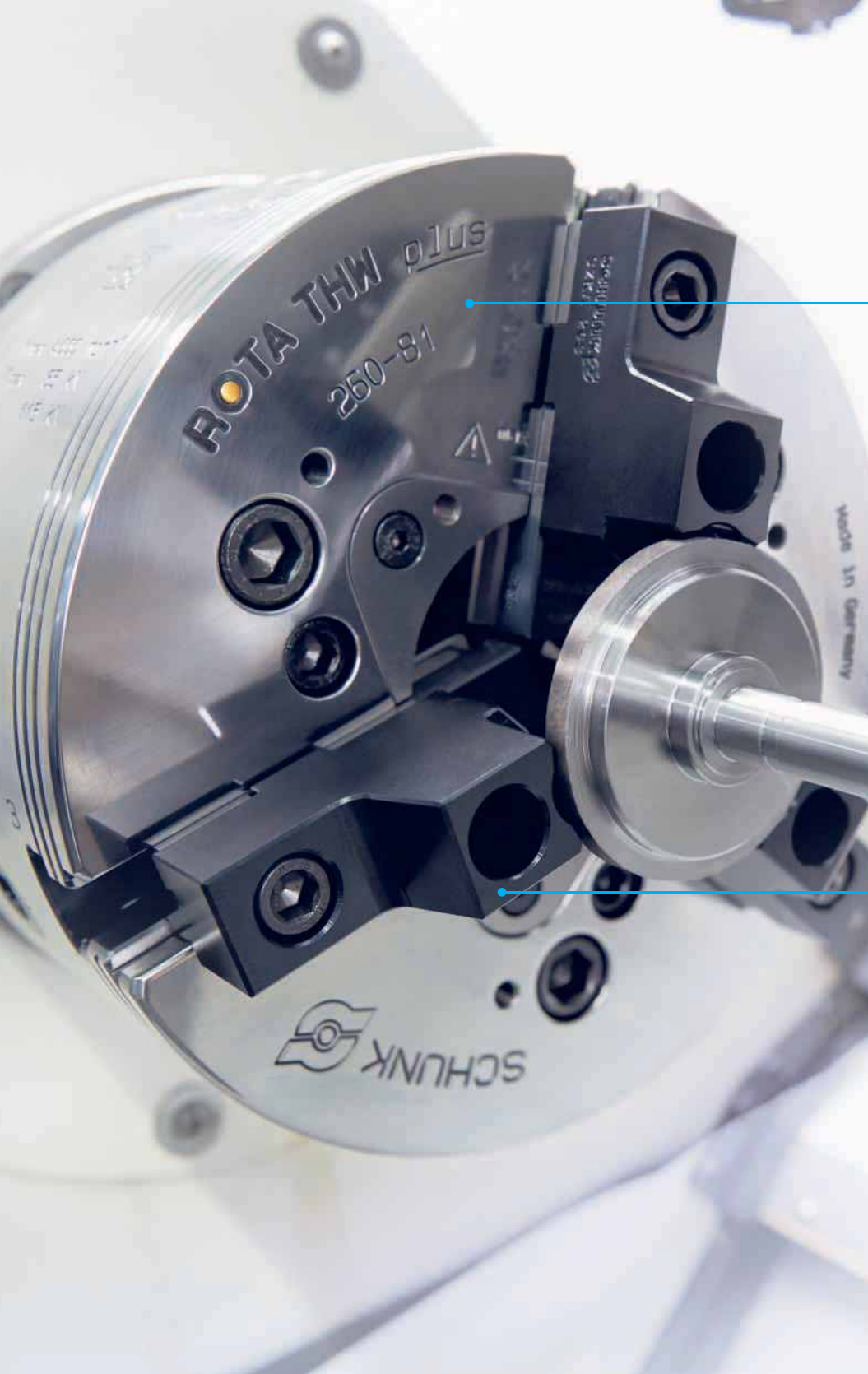
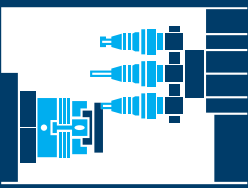
It has a single eight-station 3-axis X2, Y2 and Z2 turret with 1 kW power, 6,000 revs/min driven tools. The turret has a half-indexing capability enabling up to 16 tools to be employed. Using the range of optional multi-holders for tools, the number of tool positions can even be further increased. There is also a gang tool slide with 13 tool positions of which three can be driven, powered by 1.5 kW, 6,000 revs/min motor.

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With eight machines on display, extending from twin-spindle, twin-turret turning centres through to high-speed 5-axis vertical machining centres, T W Ward CNC Machinery (Ward CNC) will be demonstrating how it represents the ultimate single-source supply of cost-effective machine tools in every size and for customers in all industry sectors.

With extensive machine stocks held at the company's Sheffield headquarters and at its Redditch Midlands and South base, Ward CNC's continual success is also based on superlative levels of applications engineering expertise and unrivalled service levels.

These attributes will be made clear to MACH visitors, who will be able to view a small sample of machines from the extensive ranges that Ward CNC represents exclusively in the UK and Ireland for AXILE, Hankook, Hartford, Hyundai-Wia, Pinacho, Soraluca, Takisawa Japan and Takisawa Taiwan.

On show at MACH

The AXILE G8 5-axis overhead gantry-type vertical machining centre provides Ward CNC customers with a machine that has a proven track record in industry sectors including aerospace where it is efficiently and effectively machining turbine blades, for example, but at a price for specification few will be able to match.



With 800 mm diameter table for workpieces weighing 1,300 kgs and X, Y and Z axes capacities of 670 mm by 820 mm by 600 mm, the machine has a positioning capability of 0.008 mm and a repeatability of 0.004 mm. Feed rate in X, Y and Z is 60 m/min.

Two HSK A63 motor spindles options are available, 39 kW, 15,000 revs/min, 187 Nm



and 35 kW, 20,000 revs/min 130 Nm. The spindle has 20-bar through-spindle coolant as standard, with options of 70-bar and higher. Twin automatic tool exchange carousels with 32/64, 48/96 or 60/120 tools are available.

The two Hartford open-fronted vertical machining centres on show both demonstrate the solid construction build principles and power of the Hartford range. Both machines feature the new and innovative Hartrol Plus control system, which offers user-friendly features to enhance productivity.

With a pallet working surface of 1,150 mm by 600 mm, travels in X, Y and Z of 1,000 mm by 600 mm by 630 mm with rapid traverse rates of 20 m/min plus a cutting feed rate of 12 m/min, the Hartford Pro-1000 has a 8,000 revs/min, 10 kW spindle, 15 kW as an option, and feed rates of 12,000 mm/min.

Its stablemate, the heavy cutting HCMC-1682, also an open-fronted vertical machining centre, has a pallet working surface of 1,750 mm by 820 mm, travels in X, Y and Z of 1,600 mm by 820 mm by 660 mm with rapid traverse rates of 18 m/min plus a cutting feed rate of 10 m/min. The machine features a 15 kW spindle and a feed rate of 10,000 mm/min.

Ward CNC's stand will also showcase five Hyundai-Wia machines, a small sample of its range available.

The LM1800TTSY turning centre with Y-axis and twin spindles/turrets, 12 tools on each, machine has eight-inch chucks, main and sub-spindle, both of 22 kW and accommodates bar of 65 mm. Swing over the carriage is 290 mm, while maximum turning diameters and lengths are 230 mm and 673 mm, respectively.

Continuing the Hyundai-Wia multi-tasking turning centre theme, the L2000LSY slant bed CNC lathe has an eight-inch main chuck and six-inch sub-spindle chuck, and has



travels of 265 mm in X, and 830 mm in both Y and Z.

The award-winning Hyundai-Wia XF-2000 5-axis vertical machining centre is a 40,000 revs/min machine with 300 mm by 300 mm by 200 mm in X, Y and Z axes, rapid traverse rate of 50 m/min and 200 mm diameter table able to accommodate 15 kg loads.



The Hyundai-Wia LV-450 compact VTL with C axis and driven tools (12) has a swing of 620 mm and a maximum turning diameter and length both of 465 mm. The machine has a 12 inch chuck and 22 kW/3,000 revs/min spindle.

Completing display is the iCut 400TD open-fronted, twin-pallet/dual table, both 650 mm by 400 mm, vertical machining/tapping centre. It has 14 kW, 12,000 revs/min spindle and travels in X, Y and Z of 520 mm, 400 mm and 330 mm, respectively.

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CERATIZIT WNT combine to host group's largest ever MACH display

The combined CERATIZIT WNT stand at MACH 2018 is the largest in the group's history at over 350 m² and this space will be used to its maximum to demonstrate products from both brands and the application areas that they serve.

On display will be an example of every new product introduced to its range since the launch of the last catalogue, with a specific focus on key product launches and application areas. Included in this will be the specific Sliding Head Tooling range which was revealed towards the end of 2017. This range consists of over 11,000 items dedicated to users of sliding head lathe technology, with 5,000 of these being brand new to the range and designed to offer significant advantages to those using sliding head machine technology. A selection of these tools can be seen in action on the Star GB stand at the show.

Another new arrival to the range is its series of 3D Finish circular segment solid carbide milling cutters. Since the launch in September 2017 they have generated significant interest among users of 5-axis machining centres, where cycle time savings can be as great as 90 percent without the workpiece, tool and machine being subjected to a higher load. These gains are attributable to the large effective radius on the cutters, as large as 1,500 mm, meaning much greater widths of cut (ap) are possible. A secondary benefit of these large widths of cut is that surface finish can also be improved along with cycle time reduction. A selection of turning and milling products can be seen in action on the XYZ Machine Tools stand.

There will also be a strong focus on key application areas such as aerospace, automotive, energy and hard machining



using PCD and CBN. The stand will feature specific areas where products will be matched with components to highlight the areas that will provide a distinct advantage when machining.

Managing director, Tony Pennington says: "MACH 2018 will be a milestone for us with the two brands coming together for the first time. Having such a large stand also indicates our position in the market which is one of continuing growth of market share across the cutting tool sector. This is something that we are achieving due to the combination of high quality products, market leading logistical support and an expanding team of technical and applications sales engineers who are available to work with customers. Any customers that have specific questions during the show are welcome to make use of our VIP area to discuss specific applications in detail with our team."

In addition to cutting tools there will be lots more to see on the stand including the brand-new Hope HB160 mountain bike, which again will be used as a showcase for tooling which was used not only to manufacture components but also the complex mould tool to create the carbon frame. Continuing the cycling theme, a WNT Rotor Pro Cycling road bike will also be on display, again featuring many parts produced by customer and team sponsor Rotor. Tool storage and vending will be

highlighted by the TOM 840 vending system that has capacity to hold up to 840 different products or configured to meet specific customer requirements to maximise efficiency and utilisation. It is equipped with a touch-screen control and the software enables identification of individual users and other useful tracking data.

Visitors to the stand will also be able to take advantage of the 'MACH deal' where for every £100 of tooling ordered on the stand customers will receive an additional £100 of free tools, along with a branded Zeus handbook, while stocks last. These orders will also demonstrate the power of the logistics system, as they will be taken and processed on the stand and delivered to the customer the following morning. Finally, there will be a prize draw with donations going to the company's selected charities, these being the British Heart Foundation and Cancer Research. The prize will be VIP tickets to the Brands Hatch round of the British Superbike Championship.



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FANUC UK to demonstrate open network capabilities at MACH

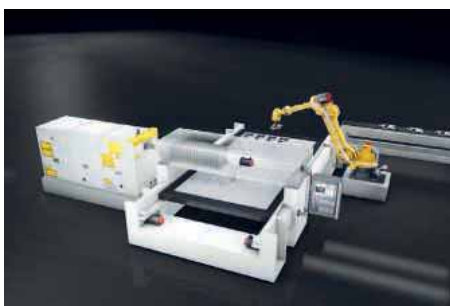
FANUC UK will demonstrate its next-generation automated capabilities, alongside its latest advances in robotics, RoboMachines, drives, and controls, at its fully-connected stand during this year's MACH exhibition.

Andrew Armstrong, FANUC UK's sales and marketing manager, says: "Our theme this year is connectivity. Alongside a selection of our most recent product launches, many of which will be making their UK debut at MACH, we will also be demonstrating FANUC's capabilities within the emerging markets of artificial intelligence, Industry 4.0 and the IoT."

The stand, which will include a range of robot models across FANUC's collaborative, SCARA and machine-tending portfolios, will be connected via a single software platform: the MT-Linki. This scalable operation management tool, which was first unveiled at EMO last year, will collect, monitor and display the data of every machine on the stand in an easy-to-digest format for all visitors to see.

Andrew Armstrong says: "The MT-Linki represents an easy and cost-effective way to connect and monitor machines on the factory floor. The technology is scalable, with a connection capability of up to 100 machines per server. The data, which can be collected via a dedicated Collector PC software, can then be used to optimise production processes, maximise machine usage, or diagnose potential problems, all without having to visit the factory floor.

"This software will be joined by FANUC's Zero Downtime technology, which was also unveiled at EMO. The ZDT will demonstrate FANUC's abilities within condition monitoring: an arguably quick and easy win for manufacturers looking to adopt Industry 4.0."



Three of the cells connected by MT-Linki will showcase FANUC's RoboMachine capabilities within electronic discharge machining and vertical milling.

The ROBOCUT C800iB, which is the largest of FANUC's wire EDMs, will be making its UK debut as part of a gear-cutting and hole-drilling cell, and will be equipped with both a FANUC CCR rotary table and a bonding alloy Pentron attachment.

The C800iB is suited to high-capacity, complex cutting requirements, and is capable of working, without human interference, for extended periods of time. This is due to its automatic wire feeding functions and Core Stitch technology, a software that allows operators to plan cutting jobs, and increase unmanned machining hours.

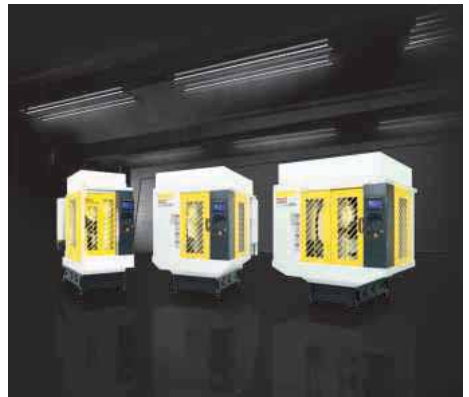
The two ROBODRILL cells will demonstrate FANUC's industry partnerships for enhanced capability. The D21LiB model will be integrated with a NIKKEN 5AX-DD200BF2 direct drive 5-axis unit to cut a special-edition World Cup trophy out of brass.

The α -DiB5 ADV, which represents the latest advanced series of the ROBODRILL machining centre, will be paired with a FANUC robot and equipped with a Renishaw Equator. The Equator will demonstrate a no-fault-forward functionality, by analysing machined parts and correcting any perceived decline in part quality, without disrupting production.

Andrew Armstrong says: "We're particularly excited about our ROBOCUT and ROBODRILL cells, which will provide a full demonstration of FANUC's automated, connected capabilities. We're also pleased to be partnering with Renishaw and Nikken,

amongst others, for MACH 2018. This will show how FANUC can offer bespoke services and enhanced capabilities, depending on the customer's requirements."

Also making its UK debut will be a laser cutting cell featuring the latest integrated CO₂ and fibre laser systems from FANUC. As well as offering high performance and reliability, FANUC CO₂ and fibre lasers are compact, easy-to-use and cost-effective. They also use the same hardware systems, which means the laser source can be swapped out when required for maximum flexibility.



Andrew Armstrong concludes: "The FANUC brand often gets aligned to one of our product portfolios, whether that's CNC or robots. We hope that visitors to MACH will realise the true extent of what we can offer, from our robots and RoboMachines, right the way through to our enhanced machine-to-machine capabilities."

FANUC sales representatives will be available for one-to-one meetings and consultations at the exhibition.

To book an appointment, visit www.fanuc.eu/uk/en/mach2018-book-your-meeting.

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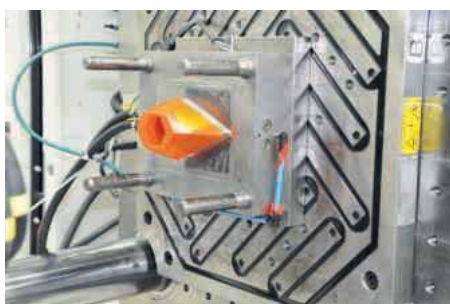
MMMA Metalworking Village

The MMMA Metalworking Village, located within the MACH halls, will certainly attract a lot of attention. There will be 25 members exhibiting machines, products and services in over 500 square metres. Here is a snapshot of some of the exciting companies exhibiting in the village:

PJ Hare will have its C frame and four column presses on display. There is an invitation for exhibitors to join them on the stand for a coffee to discuss finding a solution to any issues relating to pressing.

AP&T are focussing on light weight and strength at MACH. They remain at the forefront of production technology solutions that allow the metal forming industry to manufacture increasingly lighter, safer and more energy-efficient products. The company, which recently delivered its hundredth press hardening line for manufacturing car parts, will provide insight into the latest development in the field. One example of this development is sensor-based process control, which enables entirely new ways to customise part features. AP&T will also present its globally unique solution for manufacturing complexly shaped car parts out of high-strength aluminum. The innovation, which can promote significant weight savings, has received both the Altair Enlighten Award and the SIQ Quality Innovation Award. It will also have on display various other complete production solutions for roof drainage systems, heat exchangers, and air duct parts.

Oerlikon Balzers will be demonstrating a 'tool life increase by more than six times.' The Oerlikon Balzers BALINIT FORMERA PVD coating applied to a forming steel has proven to extend the press life of a tool by over 600 percent. A pressing facility in the UK with numerous processes for the automotive industry trialled Oerlikon's new coating on steels used in the production of laser-welded 960 Mpa Ultra High Strength



Steel, finding that tool life had improved from 120,000 strokes before tool damage to over 850,000 strokes and still in use. Tool maintenance was also reduced to 20 mins every 70,000 strokes as opposed to 120 mins every 20,000 strokes with a competitors coating.

The use of BALINIT FORMERA has given the end user a more than 200 percent improvement in maintenance free production and a significant increase in overall productivity.

TMA will be exhibiting one of its new range of World Group Presses with the latest PILZ safety control and light guards, Helm load monitor fitted with the TMA servo feed. On display will be the New Mini TMA servo feed for material up to 101 x 3 mm capacity.

On the Worlifts stand will be a range of hydraulic, pneumatic and manual maintenance tools, as well as market leading maintenance tools helping to reduce maintenance times and improve safety. Lifting and handling and safety equipment systems will also feature on its stand.



Bruderer will be celebrating its 50th Anniversary at MACH 2018. Formed in 1968, Bruderer UK has established a reputation of unrivalled excellence in the sphere of high speed precision stamping. Bruderer UK can offer one stop shop for all press machinery and ancillary equipment.

Schuler Presses UK offers comprehensive service for mechanical and hydraulic presses, as well as for forming equipment by



any manufacturer. Schuler is a leader in forming technology. The company offer presses, automation solutions, tools, process expertise and service for the entire metalworking industry.



Taking centre stage on the Voith stand will be the Hybrid Servo Punch Drive HPD. Voith combines proven hydraulics with an efficient servo drive. The HPD system is a versatile drive for punching and nibbling machines. It adapts the transmitted force individually to the specific operation profile. It is easy and compact to integrate.

The 'safe clamping of heavy dies' will be the theme of the Roemheld UK stand where it will showcase, a new range of wedge clamping elements with patented safety bolts, designed to attach a die set to the table and ram of a power press securely. A video showing the new wedge clamping system in operation can be viewed on the Roemheld UK Youtube page.

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Heller to promote Industry 4.0 at MACH

The focus on the Heller stand will be the company's worldwide drive towards integration of its machine tools and controls into the Industry 4.0 environment, so that its customers can gain maximum advantage from increased productivity and accuracy. The company has adopted the name Heller4Industry for the suite of modules it offers.

Within the HELLER4Industry portfolio, HELLER4Operation is an easy-to-use, operator-oriented user interface. Touchscreen controls at the tool and workpiece loading stations promotes rapid and easy operation, facilitates the manufacture of individualised products and helps to integrate production into the value chain.



The HELLER4Operation interface on a control screen

The HELLER4Services interface focuses on transparency of digital manufacturing and maintenance. The module forms the basis for evaluating machine data and statistics to reduce downtimes. Additionally, visualisation of specific information such as status displays of axes and spindles enables users to predict wear and implement preventative maintenance to avoid unscheduled downtimes.

HELLER4Performance includes workpiece-specific analysis for optimisation of a process and extraction of real-time data over the internet, plus evaluation and graphical display in the Cloud.

Other innovations within this module include optimisation of cutter positions

inside a rack tool magazine to facilitate the next workpiece to be machined, reducing cycle times by up to 20 percent and adaptation of workpiece traverse speed according to its weight, allowing higher dynamic performance when machining lighter parts.

New HF 3500 5-axis horizontal machining centre built in the UK

MACH 2018 will mark the UK launch of the HF 3500 5-axis, horizontal-spindle machining centre from Heller and is importantly one of the models being built in the new manufacturing flow line at its Redditch factory, along with the larger HF 5500 and numerous sizes of 4-axis machine for global markets.

The HF 3500 is intended for the five sided or simultaneous 5-axis dynamic machining of medium to large batches of complex prismatic parts, from small workpieces to heavier components up to the 550 kg maximum table load. An optional Speed Package enables 10 m/s² acceleration and rapids of 90 m/min to be achieved, reducing chip-to-chip time by approximately 10 percent compared with the standard machine.

Working volume is defined by X/Y/Z travels of 710/750/710 mm, with generous interference contours. Feedback of axis position to the control is via linear scales for maximum precision. The machine can be equipped with a lift-and-rotate pallet changer for series 5-sided production, while pallet automation solutions are available.

The fourth and fifth axes are provided by a rotary table on a +30 to -120 degree swivelling trunnion, both with direct drive, which moves towards the spindle rather than vice versa. According to Heller UK managing director Matthias Meyer, the configuration minimises vibration of the spindle and hence of the cutter for better component accuracy and increased tool life.

Four motor spindle options are available with speeds up to 18,000 rpm and torques up to 354 Nm. The lift-and-swivel toolchanger has two NC axes for short idle times and consistent operation. Chain-type tool magazine capacities are HSK-A 63: 54, 80 and 160 pockets or HSK-A 100: 50, 100 and 150 pockets. A central, open chip



The work area of the new Heller HF 3500 horizontal-spindle, 5-axis machining centre that will make its UK debut at MACH 2018

conveyor ensures efficient swarf collection and removal, already promoted by the free chip fall characteristics of the horizontal-spindle design.

The machining centres are characterised by inherently rigid construction of the bed and column, while the trunnion is supported by a counter bearing for dynamic rigidity even at high loads. Recently, Heller demonstrated impressive cutting capabilities: using a 100 mm diameter face mill, a chip removal rate of 470 cm³/min was achieved when machining 1.2312 steel with an axial 3.5 mm axial depth of cut and a 75 mm radial depth of cut.

HF series machines are equipped with a Siemens Sinumerik 840D sl control and a double pivoting main operator panel with a 24-inch touch screen. A new operator interface compatible with Heller4Industry, quick access technology in the control and XTENDS optional expansion applications support the user. A work area camera is available to aid setting and monitoring functions.

Watch the following videos:

www.youtube.com/watch?v=1g_L2BVQdP8

www.youtube.com/watch?v=vy_Nsjsj4Zw

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Thame to introduce flexible automation at MACH

From its biggest ever stand at MACH; Thame Workholding will introduce a number of new products that will receive a UK exhibition debut. The company will introduce its new Lang RoboTrex automation system, new Inoflex chucks, a new multi-faced fixturing system and the renowned Lang Makro-Grip. These ground-breaking products will be supported by a host of industry leading established solutions at the show.

Certain to attract crowds at MACH will be the new RoboTrex Automation System. The first Lang automation system based on the small QuickPoint 52 system, the RoboTrex makes the automation of any CNC machine tool possible. Extremely flexible and suitable for retrofitting to the front or side of a machine tool, the RoboTrex makes automation a possibility for all machine shops. Suitable for working with individual components up to 12 kg, the RoboTrex is offered with a choice of up to four specially designed workpiece trolleys that serve as a vice storage system. With two new vices developed for the RoboTrex that offer a jaw width of 46 and 77 mm, the vices can be mounted vertically for optimal use of space when being picked up by the robot.

Another MACH debutant on the Thame stand will be the new Inoflex VL Range. This new weight reduced range of self-centring 4-jaw chucks is ideal for vertical turning centres that have the capacity for clamping of parts from 420 mm to 1200 mm. Incorporating some striking design features, the new Inoflex VL chucks offer unbeatable clamping flexibility through its compensating features that permit the secure clamping of round, cubic and geometrically irregular workpieces when milling or turning. Conventional chucks operate with all jaws moving in the same direction either towards or away from the centre of the chuck whilst the Inoflex® chuck operates with the jaws moving together or



apart on two parallel axes. In addition, the weight reduction characteristics improve clamping forces at higher machining speeds while simultaneously reducing the stress and forces placed on the machine spindle when machining large workpieces.

Thame will also be introducing its latest series of multi-face fixture systems for 5-axis machining applications. The next generation in 5-axis machine tool workholding; this 3-faced fixture facilitates the clamping of three individual components on a single fixturing device. The benefit of this exciting new innovation is that a 3-faced configuration provides greater clearance and access to 5-axis parts, especially when compared to standard 4-face tombstone systems. For the end-user, this means that up to three complex 5-axis components can now be clamped and machined in a single setup.

Alongside the exciting new innovations

will be the market leading Makro-Grip clamping and stamping technology. Found in machine shops all around the UK, this best-selling system is a raw part clamping vice that features high repeat accuracy for inserting workpieces without any end-stops. Clamping on a minimal amount of material, the Makro-Grip 5-Axis Vice with quick-point zero-point clamping provides industry leading accessibility for 5-face machining with exceptional holding power and the lowest clamping forces.

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Guhring to give UK show premiere to new products

At the EMO exhibition in 2017, Guhring gave a world premiere to a multitude of new cutting tool lines and at MACH 2018 these new innovations will receive a UK exhibition debut. On its stand, the cutting tool manufacturer will introduce a complete line of extended and new tooling lines aimed at optimising productivity and performance.

Guhring will use the exhibition to present three new turning systems: the new 104 and 106 Series for grooving, boring, broaching and threading and the 305 system, a three-fold interchangeable indexable insert for external and internal machining. In the case of the 104 and 106 systems, customers will see new insert additions with a range of new diameters, radii and lengths. With regard to the 305 Series, the exhibition will see the arrival of an entirely new indexable insert with sintered rake geometry, an increased range of inserts and new clamping holders for sliding heads as well as modular systems.



In the area of milling, Guhring will be keen to demonstrate its new Ratio® line of roughing end mills. With flat crested geometry and an optimised roughing profile that demonstrates 60 percent longer service life, the new Ratio high-performance roughing cutter has several geometry adjustments aimed at providing performance far beyond competitor products. The Ratio drastically increases material removal rates with its asymmetrical cutting flutes that reduce cutting pressure compared to smooth cutters. This soft cutting action allows the Ratio to perform exceptionally well on low powered machine tools or machines with unstable fixturing. Large flutes ensure optimum chip removal and high process reliability.

Alongside the Ratio will be the popular RF100 Diver series of end mills that has also been enhanced. The enhanced version at MACH will introduce optimised internal cooling channels and a program expansion for ramp drilling, grooving, rough finishing and finish milling. The RF 100 Diver has been designed for customers with constantly changing requirements. This means it is suitable for five operations with just one tool. One of the several updates is the new optimised bore cooling for drilling operations on axial cooling channels and in the case of milling applications, radial cooling channels.

The front and peripheral geometry has been updated through FEM optimisation that will enhance lubrication and chip removal efficiency. This delivers 40 percent longer tool life on sticky materials and stainless and heat resistant materials. Furthermore, the enhanced RF100 Diver series is ideal for process-safe drilling,



ramping and HPC milling. The show will also see the arrival of the new PIONEX, the next generation of taps. This high performance tapping line incorporates a new polygon shape that generates 30 percent less torque, coinciding with a geometric change of the taps. The PIONEX thread-formers are based on a newly developed powder-metallurgical cutting tool material that demonstrates a higher wear resistance than previously reached. Complementing the design, PIONEX has a special surface treatment with a TiCN coating for longer tool life. Additionally, this new line has significantly improved lubrication grooves that further contribute to extending tool life and surface quality.

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New touchscreen controls

The first HEIDENHAIN milling control to be made available with a touchscreen was the TNC 620 mid-range CNC system, launched in the UK in the middle of 2017. It will be on show for the first time at MACH along with a similar, next-generation version of the top-end TNC 640 control, hitherto unannounced.



On the latter control, multi touch-screen operation is made possible through use of its main computer and the colour flat-panel display. Using touch gestures on the screen, similar to those used on smart phones and tablets, the operator navigates quickly and intuitively through long lists, programs and tables by kinetic scrolling.

A short, slow swipe scrolls the screen over a few lines, while a long, fast swipe scrolls it over many lines. The user can stop dynamic scrolling at any time with a short tap, making it easy to find, for example, an NC block or a tool in a long program or tool table.

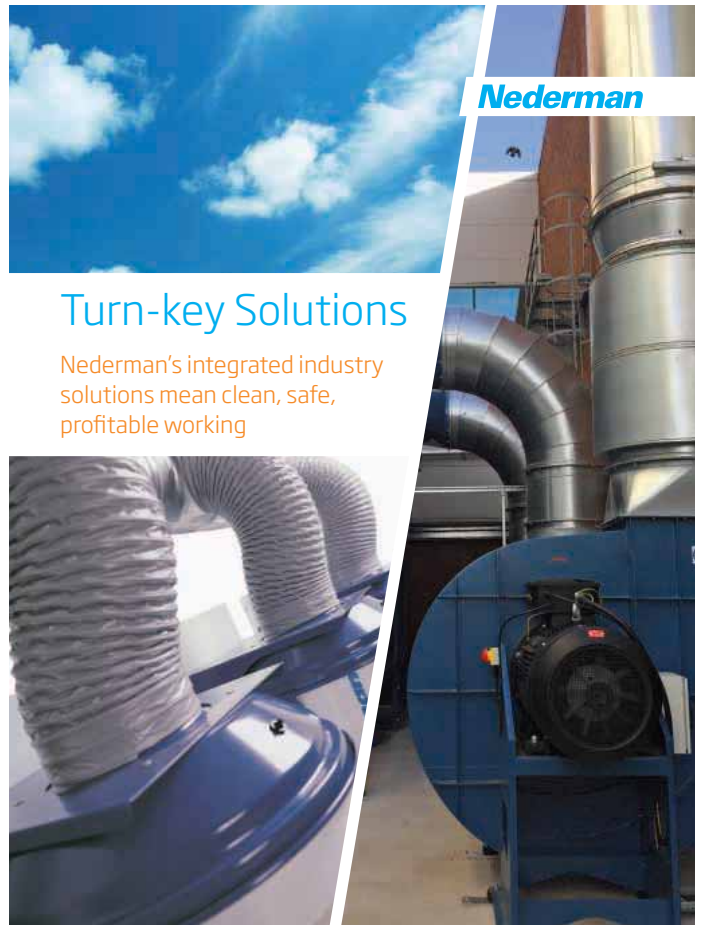
The user conveniently moves and rotates 3D graphics and zooms in or out by touch gestures, dynamically and smoothly. Soft keys are now operated directly on the screen, without the need for hardware keys. They are not needed either for soft key row switchover and operating mode selection, the respective soft keys remaining stationary while the others are scrolled.

The TNC 640 is HEIDENHAIN's latest, high-performance milling control and in addition offers optional control of turning functions on a machining centre. It uses plain language programming and has an optimised interface that gives users unrivalled insight into system operation.

Functionality for mill-turn centres includes simple program-controlled switchover between milling and turning, comprehensive canned turning cycles for frequently repeated operations such as roughing, finishing, recessing and thread cutting, constant surface speed, and tool-tip radius compensation. Universal and high-speed milling cycles are included, such as fast block processing, short control loop cycles and rapid data transfer.

The system's selectable, split screen mode shows part-program blocks in one half and graphics or status display in the other. A smartSelect function presents users with dialogue guidance for selecting functions quickly and easily, rather than using soft key format. Program creation with graphical support while another program is running is provided and management of a tool changer and a pallet changer is available.

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Four European launches at MACH in Hurco's 50th anniversary year

Two new machining centres and two CNC lathes will make their European debuts on the Hurco Europe stand this year, which marks the 50th anniversary of the company's formation.

New BX50i double-column machining centre

A pair of bridge-type, 3-axis Hurco machining centres has been introduced, the smaller BX40i having been previewed at the company's Open House in High Wycombe at the end of last year. MACH 2018 will herald the first appearance of the larger BX50i, whose 1,350 x 950 x 600 mm axis travels endow it with a working volume over twice as large as that of its smaller counterpart. Feedback of axis position is via linear scales.

An installed weight of 13 tonnes provides exceptional rigidity for the high accuracy machining of fine surface finishes and tight-tolerance components, including moulds and dies for which the generous Y-axis movement is ideal. The 1,500 x 960 mm table accepts workpieces weighing up to 2.5 tonnes, compared with one tonne for the smaller machine.

Both models have 18,000 rpm, HSK-63A spindles with through coolant and 30-tool (optionally 50-tool) magazines. Contributing further to high speed machining are 30 m/min programmable feed rate and



The new Hurco BX50i bridge-type, 3-axis machining centre, which is capable of very high precision machining and has a larger Y-axis than a standard C-frame machine, will make its debut at MACH 2018

39 m/min rapids. Control is by the proprietary WinMAX CNC system, featuring easy-to-use conversational programming and an advanced graphical user interface.

Additional 3-axis machining centres on show will be the VM5i, notable for its compact footprint of slightly over 1.6 x 2.2 m, despite it having a 457 x 356 x 356 mm machining volume, and a VM30i with 1,270 x 508 x 508 mm traverses.

New VC500i 5-axis machining centre

Also new will be the Hurco VC500i, an addition to the manufacturer's portfolio of 5-axis machining centres. With a cantilever design and constructed using a solid, one-piece, cast iron frame, the machine boasts a 360-degree rotary table mounted on a trunnion that swivels through 220 degrees around the Y-axis, allowing



The new Hurco VC500i is an entry-level, 5-axis machining centre with a trunnion that swivels through ± 110 degrees in the Y-axis

unrivalled undercutting capability.

This competitively priced, early entry machine sits alongside the established, slightly larger Hurco VCX600i. Complex components weighing up to 250 kg can be produced in one hit within a 520 x 450 x 400 mm machining envelope. A CAT 40 spindle, rated at 11 kW / 73.6 Nm, is provided with cutters from a 30-pocket magazine. Rapids of 24 m/min, while only two-thirds the speed of the VCX600i, are nevertheless fast enough to ensure minimal non-cutting times.

Hurco will preview new software being developed for its machining centre controls, whereby a 3D DXF or solid model can be



Hurco's TM8i and TM10i turning centres now have the suffix -XP, denoting that they are of upgraded specification and are equipped with a new, more capable control system

imported to allow 5-sided parts to be programmed conversationally, directly from a STEP or IGES file, by automatically inserting transform plane commands.

Other Hurco 5-axis machining centres on show will be a VMX42SRTi, the company's best-selling model, which has a B-axis spindle and flush rotary table to provide the extra CNC axes, plus a VMX30Ui trunnion-type 5-axis machine fitted with an Erowa Robot Compact automated parts handling system.

There will also be a Roeders RXP600DSH 5-axis machining centre of trunnion configuration on the stand, Hurco being the sole sales and service agent in the UK and Ireland for the German machine builder.

Two new Hurco turning centres

Two Hurco CNC lathes will make their first appearance at this year's MACH exhibition, the TM8i XP and TM10i XP. These upgraded versions of the previous models, including larger spindle bore, roller guideways, a more compact footprint and a new control system that mirrors the advanced Max5 programming of the manufacturer's vertical machining centres. Additional features include concurrent programming, estimated runtime, error check and recovery restart, plus improved rigid tapping performance.

Hurco Europe

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MACH • Stand: H6-180

600 UK to launch unique new products

Among the new products from 600 UK at MACH will be a new range of multi-axis CNC turning centres, that represent the next generation of turning centres from Colchester, replacing the previous Tornado turning centre range.

The new Clausing MillPWR CNC milling machine will be fully demonstrated at the show, fully utilising the easy-to-use and fully conversational Acu-Rite MillPWR G2 control to program prototypes and small batches of components within minutes.

600 UK's unique Industry 4.0 package, initially targeted at its range of Colchester and Harrison centre lathes & MultiTurn and Alpha CNC lathes, will also be demonstrated at MACH on a Colchester Triumph centre lathe. These new product launches will be shown alongside the latest version of the world-famous Harrison Alpha XS manual / CNC lathe.

The 600 Group PLC is a diversified engineering group with three principal areas of activity:

Machine tools

The company has a strong reputation in the market for metal turning machines. Products range from small conventional machines for education markets, CNC workshop machines and CNC production machines. The manufacturing footprint is supported by selected outsourcing partners and machines are marketed through the Group's wholly owned international sales organisation.

Precision engineered components

Machine spares are distributed to customers globally to help maintain the installed base of group machines which number in excess of 100,000. Additionally, workholding products and taper roller bearings are sold via specialist distributors to OEMs including other machine builders.

Laser marking

Laser marking is a technologically superior alternative to inkjet marking. It requires no consumables and can operate on a



continuous high-speed basis when integrated into customers' production lines.

The business has its own technology and proprietary software. Customer applications are diverse and range from telecommunications to pharmaceuticals. The requirement for increased product and component traceability is one of the market drivers.

600 UK

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MACH • Stand: H6-565

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H20-520

New 5-axis machining centre cuts new gearbox insert components down to size

Renault Sport Formula One Team makes significant investment in 5-axis machine tools from GF Machining Solutions

In 2017, GF Machining Solutions supplied the Renault Sport Formula One Team with four new Mikron high-performance 5-axis machining centres.

The machines, two Mikron HPM 800U's and two Mikron HPM 1350U's, have been installed at Renault Sport Formula One Team's manufacturing facility in Enstone, Oxfordshire, where they are being put through their paces machining a range of high-precision, complex race car components made from difficult-to-machine and challenging materials that include high-grade titanium alloys.

The investment in advanced machine tool technologies from GF Machining Solutions by Renault Sport Formula One Team is nothing new and reflects the close, longstanding 'Technical Partner' relationship that exists between the two companies.

This relationship, the longest in the Team's history has, over recent years, seen GF Machining Solutions supply not only a number of 5-axis machines to the Enstone facility but also a range of the latest, high-performance AgieCharmilles EDM wire and die-sink machines.

Raphael Willie, machine shop manager at Renault Sport Formula One Team says: "We regularly invest in machine tools from GF Machining Solutions. A few years ago we made a strategic decision to increase our 5-axis milling capabilities and selected GF Machining Solutions as the Technical Partner to help us achieve our objectives.

"The partnership means that we are able to acquire the latest Mikron 5-axis machines at highly-competitive rates and have direct access to GF Machining Solutions' technical and applications expertise.

"As a consequence, we are able to fully embrace the concept of 'one-hit' and simultaneous 5-axis machining and to experience dramatic productivity gains, improve machine tool utilisation, increase component accuracies and repeatability, as well as reduce setup and part cycle times."

With its latest investment, Renault Sport



The Mikron MILL P 800U machining centre at Renault Sport Formula One Team's manufacturing facility in Enstone, Oxfordshire

Formula One Team now has ten Mikron 5-axis machines at its disposal.

To improve its machining capacity and capabilities, it was decided in early 2017 to trade-in a Mikron HPM 600U machine, acquired a few years earlier, against the purchase of two new HPM 800U models.

Raphael Willie continues: "The HPM 600U was a good machine. It didn't miss a beat and was universally liked by both operators and programmers alike.

"However, because we needed to increase our machining capacity and flexibility, we decided to invest in two larger Mikron HPM 800U machines."

Although the new HPM 800U machines were larger and were more sophisticated than the HPM 600U machine they replaced, both models have a number of similarities, for example machine layout and architecture, control technology etc.

This was an important consideration in

determining which Mikron machines to acquire, in order to reduce the learning curve required for machine operators to become confident and competent with the new machines and enable part programs created for and on the HPM 600U to be used on the new machines.

Since their installation in 2017, The HPM 800U machines have proved their worth and are being used to machine a diverse range of parts that include front and rear suspension uprights and roll hoops. They have also been heavily involved in machining a number of gearbox inserts made from titanium.

These inserts are 'new' components and reflect Renault Sport Formula One Team's decision, for the 2018 season, to use a carbon-fibre main case for its gearboxes as opposed to investment cast titanium used previously.

Raphael Willie explains: "Gearboxes,

which are electronically controlled with hydraulic activation, attach to the back of the internal combustion engine. However, they do more than simply transfer the torque from the power unit (PU) to the wheels as they also form part of the structure of the rear of the car, with the rear suspension bolting directly onto what is now a high-strength and rigid carbon main case.”

Inside the gearbox are a number of performance-critical inserts. Among these is a front, top mounting part made from high-grade titanium. This part is machined from solid on one of the HPM 800U machining centres.

The titanium billets used for this gearbox inserts are heavy and are 450 mm x 230 mm x 123 mm in size. Apart from some wire EDM profiling operations, which take up to 12 hours to complete, the parts are 5-axis machined entirely on the HPM 800U machine.

There are essentially five different or separate milling operations performed on the machine. These include initial workholding/fixturing operations that take two hours, followed by two roughing operations which combined take over 20 hours to complete. Each insert then

undergoes two lengthy finishing operations for over 40 hours.

Raphael Willie continues: “The gearbox inserts are demanding applications. Material removal rates are high, with over 85 percent of the titanium removed during roughing and finishing operations, while the inserts are machined to a high accuracy and require an excellent surface finish.

“Furthermore, because we work to extremely tight and non-negotiable deadlines, it was critical that we were able to do everything in our power to reduce part cycle times to assemble ‘finished’ gearboxes for Dyno Testing.”

Testing, which incidentally is still ongoing, is an evolutionary process and invariably results in ‘tweaks’ being made to the original design specification. This has been the case with the gearbox inserts and the HPM 800U machine has been used to machine a number of (insert) iterations.

Raphael Willie concludes: “Despite such demands, our HPM 800U machines have not been found wanting and are amongst the most accurate, dynamic and reliable machining centres we have in our facility.”

Mikron HPM 800U machining centres are rigid and stable. They are equipped with

powerful spindle technology up to 36,000 rpm, with water-cooled direct drives on the rotary and tilting axes. The machines are characterised by their fast acceleration/deceleration rates of 1.7 g in X-, Y- and Z-axes and by their ability to deliver excellent surface finishes (Ra 0.2 µm) and high positional accuracies to 0.002 mm.

The machines also feature generous sized toolchangers and can be supplied with the latest Heidenhain or Siemens controls.

Since 2018, the HPM 800U machines have undergone a re-branding exercise and are now referred to as Mikron MILL P 800U machining centres.

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XYZ ProTURN investment helps to future-proof JAW Engineering

For over 30 years, JAW Engineering has provided local industry with low volume subcontract capacity and emergency breakdown support from its location in Magdale on the outskirts of Huddersfield. Until now, all its machining had been carried out on manual machines, reliant on highly skilled operators, including company founder John White. Now, with John's son Stuart taking on management of the family business, the time was right to look to the future and move to CNC.

"The work that we take on is often short notice breakdown support or the production of small batches, say 50-off, for a range of customers involved in anything from servicing agricultural equipment to manufacturing electric motors and pharmaceutical products. Because of the nature of the work, we thought that our range of manual machines, combined with the experience and skills we have available, was ideal. However, I became aware that we were losing some business to competitors with CNC machines and, while it had been 20 years since I last operated a CNC machine, I knew we had to invest," says Stuart White.

With his lack of recent experience in CNC, he turned to a longstanding customer for advice and was invited in to see first-hand and talk with operators about their XYZ ProtoTRAK controlled machines:

"The opportunity to chat with guys on the

shopfloor, who had no axes to grind, was fascinating as not one of them had a bad word to say about XYZ. Seeing the ProtoTRAK control in action convinced me that it was the best solution to take us from manual to CNC machinery."

Encouraged by what he saw and heard, he paid a visit to the XYZ Machine Tools showroom in Sheffield for a demonstration and made the decision to purchase an SLX 425 ProTURN lathe. With its 480 mm swing over the bed (700 in the gap), between centre distance of 1,250 mm (2,000 mm option), 80 mm spindle bore and a 7.5 kW spindle motor with speeds up to 2,500 revs/min in three ranges, the SLX is capable of taking on a lot of the work currently undertaken by JAW Engineering.

By introducing CNC in the form of the ProtoTRAK control, Stuart White is looking to future-proof the business, as finding skilled manual machine operators is not easy. However, the ProtoTRAK's conversational interface makes the job of programming complex parts straightforward.

"After just one day's training, I was happy to come back and start producing parts," says Stuart White. "The addition of CNC is allowing us to do more complex work than we could previously. We are more efficient as the control speeds up operations that



Stuart White with the XYZ SLX 425 ProTURN lathe that is helping to future-proof JAW Engineering

manually would take much longer, such as screwcutting. Repeatability is taken for granted and, by storing the programs, we can quickly repeat parts as and when they are required."

Stuart has also seen a change in the type of work that he is being offered by customers now that he has CNC capability. While there will always be a place for manual machines in JAW Engineering's role in providing a repair service for some customers, the business is finding that new doors are opening in terms of production-type work. "I don't think we will ever completely move away from manual machines, but the experience with the XYZ ProTURN lathe has opened our eyes to the possibilities of CNC for a business like ours, which will future-proof JAW Engineering, as I am confident that anyone can operate these machines with minimal training. There is now the scope to expand our customer base and develop our subcontract production capability further. We now have the confidence to expand further and bring in additional XYZ machines, whether with the ProtoTRAK control or with the Siemens control."

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MACH • Stand: H18-640

One-hit machining of small workpieces

Bumotec impresses with 'perfection through precision' turn-mill centre

Dozens of engineers recently saw for themselves the Starrag Bumotec s191 linear CNC multi-function turn-mill centre's capabilities for profitable one-hit machining of small workpieces when the machine was put through its paces at the AMRC with Boeing Centre in Sheffield.

In addition to witnessing the s191's cost-effective grinding, gearcutting and broaching, as well as turning and milling routines in a single setup, as part of a live, complex component machining demonstration, the visitors, representing primarily aerospace and a variety of industrial industries, also enjoyed a series of presentations. These outlined the machine's capabilities across a range of components, including medical and dental as well as aerospace workpieces.

According to Jonathan Knill, business development director at Victoria Production Engineering, part of the Hyde Group: "Not only were the presentations extremely interesting, especially the insight into using

the Bumotec for machining aero-engine fuel injectors and other small precision aerospace parts requiring multi-discipline machining operations, but the live demonstration clearly showed the machine's flexibility and efficiency in multi-task machining in a single setup. The whole event certainly provided much food for thought."

Available from Starrag UK, the Starrag Bumotec s191 can achieve highly accurate (to +/- 2.5 microns) machining solutions within an X, Y and Z axes range of 410 mm, 200 mm and 400 mm, respectively.

The Swiss-built machine's linear drives and high-level thermal stabilisation contribute to such extreme machining accuracies. In addition, its main spindle is complemented by a sub-spindle that can turn in both horizontal and vertical planes, for multi-process/tasking routines.

Tool magazine options extend to up to 90 pockets, to enhance single setup operations on a machine with a bar capacity of 32, 50 or 65 mm. Rapid traverse rates of 50 m/min



The working area of the seven-axis Bumotec s191H linear CNC turn-mill centre that was demonstrated at the AMRC with Boeing Centre

and a 30,000 or 40,000 revs/min spindle speed also contribute to the machine's fast cycle times.

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MACH • Stand: H17-530

New 5-axis milling centre for the complete machining of complex workpieces

The development of the Umill is a result of many years of MECOF experience. Since 1947, Mecof has been developing and manufacturing vertical portal milling machines and horizontal moving column machining centres in Italy. EMCO MECOF presented the new model in the Umill Range, the new Umill 1500, EMO Hannover, a 5-axis milling centre for the complete machining of complex workpieces in a single setup, demonstrating impressive performance figures enabling it to be used in the mould & die, aerospace, precision general engineering and energy engineering sectors. With the expansion of the Umill series, EMCO MECOF has responded to the demand for compact 5-axis machining centres with automation, which have high performance and accuracy.

With a travel of 1,500 x 1,500 x 1,100 mm and a newly developed MECOF milling head, the Umill has impressive performance. With a milling capacity of 45 kW (S1), a torque of 300 Nm (S1) and 12,000 rpm, convincing results for stability and stiffness with high dynamics and precision can be achieved with the compact design of the

machine, a cast iron construction with ball screws and linear roller guides, optimised with FEM analysis.

With its compact dimensions and milling and turning operations in a single setup, the Umill guarantees perfect time management and high precision in workpiece machining. The fully NC controlled rotary table supports in coping with complex machining tasks and can handle workpieces up to 4,5 tonnes.

The automatic tool change system has a maximum of 203 places. With the Heidenhain iTNC 640 HSCI and Siemens 840D sl, customers can choose between two state-of-the-art control environments that also cover the "Energy saving" and "Safety Integrated" integrated safety management functions.

The compact size of the machine does not affect good accessibility to the work area and a laterally wide opening sliding door offers optimum insight and access to this. A micro camera on the milling head housing provides additional insight into what is happening in the work area.

The modular design with a variety of



options and configurations such as a selection of cooling systems, an optional mechanical spindle high-speed spindle or various measuring devices, a process control system and automation (pallet changer) provides the solution to individual customer requirements.

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MACH • Stand: H17-525

Collaborative robots automate EDM machining

Trends in the automation of the EDM process require that all the components and steps of the machining process are seamlessly automated, including the measurement phases and multi-process machining.

Swiss machine tool manufacturer SARIX SA, a trendsetter in micro EDM for over 20 years, presented the SX-COBOT at the recent EMO exhibition in Hannover. This automation module for SARIX machines is based on the latest collaborative robot technology. All the steps of micro EDM are automated under the heading "All in One."

The WSX-COBOT combines the basic workpiece and electrode changer with a guide changer function, allowing fast drilling with the optimal electrode diameter in every situation. Mould makers will appreciate the automatic change between EDM drilling for holes and EDM micro milling for 3D cavities. The changeover from working spindle and measurement spindle (either touch probe or laser profile scanner) integrates seamlessly the machining with on-board measurement.

SARIX machines are also available in hybrid configuration, combining EDM with laser ablation. Here, the collaborative robot swaps the laser head with the EDM head to combine the technologies for multi-material machining. Both technologies are seamlessly integrated in the same machining program by the SARIX CAM software. Additional customer-specific automation tasks can also be easily included in the process.

The SARIX-COBOT automation cell is available for the SARIX SX-200 PULSAR and MACH lines, both for EDM alone and EDM-laser processes.

SARIX Micro EDM machines are renowned worldwide for precision and innovative production processes. They are used in the production of micro moulds for

plastic and metal injection, for fast drilling in the aerospace and turbine industries and for the manufacture of automotive injection components.

SARIX - an experienced partner for Aurora

Aurora Micro Machine Inc. has been exclusively using SARIX Micro EDM machines for over seven years. Based in Buffalo, Minnesota, Aurora's customers operate in the aerospace, automotive, computer, medical and textile sectors. When it was approached by a medical company to ask if a difficult micro-mould cavity could be produced using the micro-EDM process, it was clear that the SARIX Micro EDM milling machine was the answer.

The challenge was to 3D micro EDM mill the continuous radius profile, blending it with the half-sphere and with the angled, flat plane on the top. The part also required five slots with perfect, sharp corners. The dimensions were: cavity diameter 5.2 mm with a depth of 1.7 mm; half-sphere 1.5 mm radius; slot widths 0.18 mm with a depth of 0.4 mm.

The SARIX machine could not only 3D mill all these features in one setup but also needed no extra polishing or secondary machining. The key factor in the success of the process was the flexibility of the SARIX 3D Micro EDM machine. This enabled the machine to erode the entire 3D cavity in a single setup, achieving the required accuracy and surface finish in an unattended operation. Using the SX-uEDM Milling CAM software, all the electrodes needed for the job were produced on the SX-200 machine with the same setup as on the part being machined.



As is well-known, with every additional pick-up and electrode change, you run the risk of adding to tolerance accumulation and possible mismatch of a continuous cavity profile. In the world of micro EDM machining you sometimes just don't have the tolerance to work with, but the Rest Material function in the SARIX SX-uEDM Milling CAM software deals with this and shows the correct procedure for the part.

The reason for only having to have one setup per cavity or on various cavities is the SARIX machine's capability to utilise any of its several attachments to produce the required micro hole or cavity. From the initial reference point setup, you can switch between using the spindle of your choice to dressing the electrode on the WDress unit to measuring the size of the dressed electrode; you even have the choice of using an A-B indexing unit for complex parts – all capable of being incorporated into one single machining. By being able to dress virtually any shape on an electrode, the need for outside sourcing shaped electrodes is a thing of the past.

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Sodick shows new wire EDM plus automation at MACH

Confirming Sodick's position as the developer of the world's most advanced EDM systems, exclusive UK distributor Sodi-Tech EDM will once again be showing the very latest technology at MACH.

Sodick ALC400G wire machine

The best just got better, with the ALC400G, Sodick's newest premium wire eroder, which incorporates Sodick's latest digital innovations, including its Smart Linear and Smart Pulse technologies, all in a small footprint machine.



The Sodick ALC400G wire machine

Based on the latest digital innovations in generator technologies and the use of advanced electrode materials, the new ALC range demonstrates significant advances in cutting speed, accuracy and surface finish, made possible through Sodick's 15 years of linear motor technology expertise.

In order to capitalise on the benefits of the digital Smart Pulse generator and linear motor system, a new mechanical design has been developed, resulting in a compact, fully-enclosed machine tool with an ergonomically advanced human interface, incorporating a 19-inch TFT touch screen. This operates like a tablet, with screen layouts that can be customised by the operator to suit their working preferences.

AG60L precision die-sink manufacturing cell with Erowa Robot Compact 80

The AG60L, one of Sodick's most popular die sink machines for the precision machining of large components, combines

high speed with high cutting accuracy; featuring Sodick's linear drive technology and simplified control mechanisms to ensure the fastest possible servo response and optimal spark gaps at all times.

The three-sided automatic rise and fall work-tank makes the machine ideally suited for automation, hence its appearance at MACH with the user-friendly, small footprint Erowa Robot Compact 80, which can transfer loads of up to 80 kg, can be used for electrodes and workpieces, has an integrated loading station and can supply either one or two machines.



The Sodick AG60L precision die-sink

Sodick wire EDM offers staying power at Foremost Specialist Product

Foremost Specialist Products, a Derby-based subcontract manufacturer of precision engineered components, has invested in a new Sodick ALC600G CNC wire-erosion machine from Sodi-Tech EDM. Acquired to help the company take on the "complex and awkward parts that no else wants to tackle", among the jobs being successfully accommodated by the machine are stainless steel tubular stem guides for power generator turbines.

To help the company in its role as a complex parts specialist, Foremost calls on a range CNC machine tools, including multi-axis machining centres, turning centres, horizontal borers (up to 2.5 tonne capacity) and EDM machines. As a matter of course, any machines approaching the end of their natural working life are replaced with the latest technology, which was the case recently with one of the company's two wire EDM machines



Joe Walker with Sodick technology installed at Foremost Specialist Products Ltd

"We won a contract for an awkward, tricky part and our existing EDM couldn't offer four-axis cutting and didn't have enough memory to take on the job anyway," explains the company's engineering director Joe Walker. "We were tasked with producing a number of cross-holes in stainless steel stem guides for turbines used in power generators. The holes are angled in two planes and must be held to extremely tight tolerances."

Installed in March 2017, the ALC600G wire EDM machine is a recent addition to the Sodick line-up. As well as linear motor drives and absolute linear scales, the machine includes features such as next-generation SPW (Smart Pulse Wire) control with Smart Pulse Generator, digital Pika-W Plus super finishing circuit, advanced step machining, high-speed AWT (automatic wire threading), advanced corner control, on-board Heart NC CAD/CAM system and intelligent Q³vic EDW automatic programming system.

"We are finding the machine offers so many benefits and it is making particularly easy work of the stem guides," says Joe Walker. "Some of the guides have six or eight holes, typically measuring from 1.3 to 3.0mm in diameter, but one of the latest has 28. The Sodick ALC600G gives us peace of mind that the work will be completed efficiently and accurately, every time."

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MV R Connect wire-cutting machines with new-generation control

At the recent EMO 2017 exhibition, Mitsubishi Electric unveiled two wire-cutting machines with a new control and simplified operation.

A new option that displays the output of numeric values as easy-to-read graphics, much like in an aircraft cockpit, is now available. Hans-Jürgen Pelzers, sales manager Europe, explains: "Operation has to be simple, quick and flexible so that the user is able to achieve precise results with little effort, even when working to the highest standards."

The new manual control box of the MV R Connect features a bright, user-configurable display and is equipped with all the important functions. With a freely rotating and pivoting 48 cm multi-touch display, the operator can comfortably make settings according to his needs.

Thanks to the built-in cost and performance monitor, the operator can



Thanks to the built-in cost and performance monitor, the operator can analyse machine profitability and uncover reserves to optimise processes and boost efficiency at all times

analyse machine profitability and uncover reserves to optimise processes and boost efficiency at all times. Diagrams depict operating costs and output. All operating material statuses and maintenance cycles can be called up at a touch and, if desired, read out. The machine comes with a network connection, USB, FTP, DNC and open data interfaces and can be linked up to existing production planning and analysis systems.

In tune with the anticipated future requirements of Industry 4.0, the abundance of processable data available with these machines ensures transparency throughout the production stages. Intel Security is pre-integrated to provide security. Product manager Stephan Barg says: "Transparent production is now possible and is proving to be appreciably more profitable and cheaper with the MV R Connect series."

The newly designed Job Planner makes it possible to simply bring forward urgent jobs, with automatic saving of the parameters of the interrupted job, meaning work can be resumed later on, immediately from the point of interruption. Countering the shortage of skilled labour, the control guides less experienced users through the cutting process step-by-step and thereby teaches them the points to bear in mind



The new manual control box of the MV-R Connect features a bright, user-configurable display and is equipped with all the important functions

while they are working. Expert mode takes a more direct approach and the flexible configurability of the control interface makes it possible to attune the machine entirely to typical applications and the operator's personal focus. The MV1200R Connect and MV2400R Connect were premiered at EMO in September and were expected to be available from November.

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Product manager Stephan Barg says: "Transparent production is now possible and is proving to be appreciably more profitable and cheaper with the MV-R Connect series"



Form follows function for Rolla-V

Most engineering companies forming thin sheet metal material will rely on the capabilities of a CNC press brake, which in turn relies on the quality of the tooling. One of the leading UK manufacturers and suppliers of press brake tooling, Rolla-V, has been producing world class press brake tools for more than three decades. Its production capability has recently been enhanced with the installation of an Excetek V400G CNC wire EDM machine supplied by Warwick Machine Tools.

Shortly after Kevin Marklew originally established his Halesowen, West Midlands-based precision engineering company to focus on producing high quality press brake tooling, he had the opportunity to purchase the patent for the company's now world-renowned Rolla-V tools. As he recalls: "A British inventor had designed the basis of the press brake tools operation, but we had to develop it so that it functioned correctly. Initially this was a slow process because the machine shop was busy making tools for customers around the world using Amada, TRUMPF, Bystronic, Safan, LVD Adira, Durma and Bakal press brakes. We made a sample tool at the start of 1994, back then there was a bit of a development going on where the channel tunnel was being built.

"People were being injured or killed jumping out of trains and landing on the



Easy programming HMI



Kevin Marklew (R) discusses the next job for the Excetek V400G

sharp edges of the side rail fabrications. The rail project director needed a round cap on the box section, which there was miles of. The company originally contracted to supply it had failed to deliver.

"The sample tool I had at the time was only small, but I knew if I made it bigger I could produce it in one hit. They didn't believe it could be done, but I made a tool that produced the semi-circular cap required and the business grew even further."

As the reputation for the ability of the Rolla-V press brake tooling spread through the various industry sectors, the demand for it grew. The company developed it as part of its standard tooling range, so it is available in 500, 1,000 and 2,000 mm length runs which can be ganged together to form longer parts.

"The workload on the shopfloor to deliver the quantity of orders we were receiving was taking its toll," explains Kevin Marklew. "We invested in a Mazak CNC machine, a grinder and most recently the Excetek wire cutting EDM machine to refine the product and make it better."

With 17 highly skilled and experienced staff working flat-out to meet production demands, the new wire eroder had to fit straight in and it did, as Kevin Marklew says: "To efficiently create the different length Rolla-V tooling sections we produce full length components, assemble them as a finished tool and then cut across the tool at required length. We had been doing this on

a bandsaw. However, the finish was nowhere near the level we would want to present to customers, so various manually intensive finishing operations had to be applied."

Today, the long press brake tools are simply cut into the correct sectional length by the Excetek V400G CNC wire EDM machine. Providing comparative performance levels to Swiss and Japanese wire EDM machines, the Excetek V400G offers a major cost saving against any equivalent size machine tool. It has X and Y travels of 400 mm and 350 mm respectively and can accommodate large workpieces up to 750 x 550 x 215 mm weighing up to 500 kg within a very compact footprint.

Like all the standard range of Excetek wire EDM machines, the V400G features a C-frame structure designed using FEA software to provide exceptional accuracy in the linear axes movements and to minimise any thermal influence with a honeycomb frame structure for rigidity and thermal stability. Also developed by Excetek, the automatic wire feed and threading system is produced in-house. Designed to provide continuous unmanned operation around-the-clock, the AWT offers the ability to thread the wire at the point of the breakage. An automated annealing system straightens the wire so that it can be threaded at the break point during machining with almost 100 percent reliability and without the need to return to the start position. Submerged wire

threading is possible, which removes the need to drain and refill the tank. A waterjet assist system is available for automatic wire feeds on tall workpiece. It also features Excetek's latest corrosion-free electro discharge generator technology that improves cutting performance.

While the cutting speed of every wire EDM machine is limited by the laws of physics and set by the thickness of the raw material being cut, it is a manufacturer's corner control that defines its machine accuracy. Excetek's software ensures the motion control and spark generator work together for the optimum power ramping and compensation dwell on corners, avoiding wire twist and reducing corner 'washout'.

Rolla-V press brake tooling's patented technology allows the receiving part of the tool to rotate about a predetermined axis so the tool moves with the sheet material. There are numerous advantages from using Rolla-V tooling. These include a much tighter formed bend radius, typically half the radius achieved with conventional tooling; minimal material deformation which improves fatigue strength and allows bends to be formed much closer to any holes or



other features without distortion. Also, as the rotation of the tool does not 'drag' the sheet material across its surface like a conventional forming process, it means uncoated materials can be used without risk of marking.

"That final point is also important for material cross contamination," states Kevin Marklew. "Customers don't like using the same conventional tools on stainless steel as

they do on ferrous steel or aluminium, because the tool can 'pick up' from one material and particles can be deposited in the next sheet."

With the Excetek V400G running almost around-the-clock, the company is ensuring that Rolla-V customers get their press brake tools on time and that they can quickly take full advantage of the benefits of the technology and functionality they contain.

Warwick Machine Tools (WMT) is a full-service machine tool supplier. From its 5,000 sq ft showroom near Kenilworth, the company provides pre- and post-sales support for its principals ONA EDM and Excetek Technologies. As part of the company's post-sales activities it offers extensive training programmes and front-line spares.

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TEK4 to show new aero engine production at MACH

Leicester-based TEK4 will be introducing a world first at MACH dedicated to aerospace production of blades and vanes. As a world leader in cooling holes drilling technology for jet engines and gas turbines, TEK4 will be introducing its TEK4 6G FHD SA Small Aerospace, the newest FHD EDM fast hole drilling machine specifically for industrial turbine production.

TEK4 specialises in EDM machining for fast hole drilling, combined EDM and Laser machines for hole drilling and ceramic coating ablation, as well as laser for drilling

and cutting operations, plus ECM for STEM drilling deep cooling holes in gas turbine components. TEK4 supplies all major jet engine OEMs as well as all major OEMs Industrial Gas Turbine IGT manufacturers.

The new TEK4 6G FHD SA (Small Aerospace) machine on the stand at MACH incorporates full 6-axis simultaneous machining, intelligent probing, pre-breakthrough and breakthrough tool detection. These innovative features are essential for machine shops in this sector as it enables companies to avoid the risk of back wall impingement. The machine is fitted as standard with an automatic electrode guide changer and automatic electrode changer which can accommodate electrodes 600 mm long for extended autonomy.

The EDM generator works in combination with the TEK4 developed software. This allows for excellent metallurgical results, which is another critical parameter for this high-tech industry. In addition, the TEK4 6G FHD machine can be integrated in an autonomous robot cell with automatic part

loading for unmanned operation. A laser ablation head can be integrated in the TEK4 FHD machines for the removal of the ceramic protective barrier enabling EDM drilling. Having the EDM head and the laser head on the same machine avoids positioning issue and a reduced capital investment.

The new TEK4 5G FHD machine has an X-, Y- and Z-axis of 300 by 300 by 400 mm, with 360° rotation in the A (+/-180°) and C-axes (360° continuous), a 600 mm drill stroke and a maximum work part weight of 20 kg. This exemplary flexibility enables the new machine to process holes from 0.25 mm to 10 mm diameter up to 200 mm deep on the most difficult to access surfaces.

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Protecting your production with Kraft & Bauer

Many engineering companies may not have heard of Kraft & Bauer and yet most are end-users as their fire prevention equipment may be found protecting machines of all types. Major machine tool companies such as Index, Traub, Tornos, Walter, Ewag, Rollomatic and Reishauer fit these systems as standard and every year Kraft & Bauer UK retrofits their fire prevention units to machines of all kinds such as those made by Mazak and DMG MORI.

All UK engineering companies are urged to ensure that their machines are protected against fire risks as demanded to comply with the law and to make sure that the fire systems are then serviced annually, as again required, by Kraft & Bauer UK's specialists. These fire systems are not serviced as part of annual service checks carried out by the OEM machine tool companies' engineers and in the event of a fire incident or insurance check a validated certificate for each machine needs to be provided.

The consensus on risks of fire on machine tools is that any machine that uses oil, machines a self-combustible material such as titanium or magnesium alloys, or produces a spark; proposes a direct risk of fire and this must be protected against. End users of machines can access the "you and the law" pages on Kraft & Bauer's website to learn more

Besides injuries to persons, the consequences to engineering companies in the event of a machine tool fire may be high due to production stoppages leading to insolvency. Many engineering companies think that insurance is sufficient, but don't take into account that unless annual service certificates for the fire systems can be provided any insurance policy is likely to be invalid and even if it is, and a claim is settled without delay, it would take many months before factories and machines may be replaced. Their customers will probably not be prepared to wait and would instead go and find alternative suppliers whilst they were still trying to recover from a fire incident.

Starting from a legal basis, the aim is to protect workers as comprehensively as possible against fire and explosion hazards during the use of machine tools and



manufacturers of machinery and also users of machine tools have key legal obligations. When using flammable metalworking fluids, the employer has the duty to determine within the framework of a risk assessment if a hazard caused by fire or explosions on machines is possible. For this purpose, when purchasing any machine tool, he should firstly ensure that the machine is compatible with the metalworking fluids intended to be used.

So what are the causes of machine tool fires? Most incidents are connected with the generation of incandescent chips, high-energy sparks or hot surfaces, which act as ignition sources. Root causes included broken or worn milling cutters, drills, turning inserts and grinding wheels. As a consequence of technical developments concerning machine tool feeds and speeds together with the trend towards low-viscosity metalworking fluids used at



very high pressures, then the fire risk has increased dramatically in recent years.

In the immediate vicinity of the machining zone a reactive mixture of metalworking fluids and air is formed, which may be ignited by the above mentioned ignition sources. The resulting fire propagates very quickly through the whole interior of the machine tool. The pressure increase accompanying ignition is less important than in the case of an explosion inside a totally enclosed machine. However, due to the pressure increase inside the machine, flame ejections may occur through gaps, pressed-open enclosure doors, feeding and chip removal openings and pressure relief openings, if no relevant provisions are taken.

For the protection of machine tools, automatic fire extinguishing systems with gaseous extinguishing agents, commonly either carbon dioxide or in case of machining titanium or magnesium Argon Gas are used. The legal requirements for fire protection is that if a machine is ran automatically then a fully automatic fire system must be used and if a machine can only ever be ran manually then the fitment of a manually activated system is otherwise sometimes acceptable. However, in both cases the system must be fully integrated

within the machine tool itself and having hand-held or externally used systems is not acceptable.

It also has to be ensured that a fire is detected as early as possible (automatic fire detection) and that the fire extinguishing system is activated without delay and the fire detection elements are a key criterion for fire protection. They must guarantee the safe detection of fires in a fast and reliable way and activate the extinguishing process via the control system. For automatic activation of the extinguishing system thermal heat detection elements are used in conjunction with optical fire detection elements (Infra-Red or Ultra Violet light systems). These are placed within the machine and at other places, where fire hazards exist, e.g. mist extraction systems, chip conveyors, tool changers etc. The sensors are linked to both optical and acoustic alarms that must be at least 5 dB louder than the background noise to alert operators to the fire incident and to warn them to vacate the area.

Mandatory annual maintenance tests have the purpose of the timely detection and repair of damage as well as ensuring safe operation and these are also required by insurance companies.

Machine tools must be tested for fire safety prior to initial commissioning, recurrently thereafter in accordance with the supplier's maintenance specifications (at least annually) and after any maintenance work which may affect safety. For the testing of working equipment, the qualification of the person to be appointed to carry out the test must be validated, with certification



from the fire system manufacture available, and the service company must record the test results. The person carrying out the routine checks must be a "competent person". The records shall be kept for an appropriate period of time with both the end user and the service provider holding copies.

Under the latest legislation the nominated person must carry out the fire risk assessment and then take whatever action is required and to carry out works and install any fire precautions that the assessment recommends. If the assessment fails to take into account any machine tools that may be on-site, and/or then fails to recommend that suitable fire protection equipment is fitted, then it is doubtful that the necessary fire safety recommendations will have been

met. In this case anyone not complying with the new regulations faces anything from a fine of £5,000 in a magistrate's court up to an unlimited fine and or two years in prison if the case is held in the high court.

Enforcement of these new regulations is carried out by the local fire authority, that appoints inspectors to enter premises to inspect records and ensure that compliance with the new regulations is being made. Anyone thinking that it's OK as "the company" will foot the bill in the case of an issue is sadly mistaken as in practice the health and safety officer, factory manager, head of maintenance or the owner/directors will more than likely be held personally responsible.



The checks on the correct functioning of the extinguishing system should be carried out at least once a year or as needed (e.g. after fire damage). In practice, the test is generally carried out within the framework of servicing and maintenance work by the installing company. The results of the tests must be recorded in a test book or a test report. The records of the tests should ideally be stored over the whole operational lifetime of the extinguishing system but for at least four years.

Additional information on fire detection and extinguishing systems for machine tools is available from:

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SICK adds safe network integration to its microScan3 safety laser scanners

SICK has expanded its next-generation microScan3 family with the addition of EtherNet/IP™ and PROFINET compatible variants to enable easy integration of safety laser scanners into a safe network. This also facilitates simultaneous field evaluation of up to four fields, instead of the single field offered by standard I/O scanners.

The SICK microScan3 Core – EtherNet/IP™ is the first safety laser scanner to support CIP Safety™ over EtherNet/IP and the microScan3 Core, while PROFINET enables safe and reliable bus communication using the PROFIsafe protocol over PROFINET.

When it was launched in 2016, the compact and robust SICK microScan3 safety laser scanner set a new benchmark for performance reliability with its market-leading safeHDDM™ (High Definition Distance Measurement) scanning technology. Its patented algorithms use multi-signal evaluation to achieve outstanding performance even in challenging environments with robust resistance to dust, dirt, and high-ambient light conditions even when detecting objects with low remissions, for example black clothing.

"These new variants open up multi-field safety scanning to Ethernet/IP and PROFINET safety networks," explains Dr Martin Kidman, SICK's UK safety specialist. "The combination of four simultaneous protective fields with up to 5.5 metres range and a 275° angle of view gives market-leading performance and a square coverage of 73 m². The result is a highly versatile safety laser scanner capable of addressing complex applications even in



extreme conditions. With access to simultaneous protective field signals, multiple safety functions can be implemented with a single scanner at the same time in logic-enabling Industry 4.0 applications. In short, one scanner can perform the function of four.

"Both network-compatible microScan3 options provide excellent protection especially where single field scanning is difficult, for example at corners, in two or three-sided access to hazard areas, or where light curtains are obtrusive or prone to impact damage. With the additional versatility offered by network compatibility, users can save on purchasing costs and further improve their productivity.

"The network-compatible scanners are a particularly valuable solution where having multiple single field scanners requires costly, complex wiring and control. They are ideal for access protection where material is transferred across sections of the production line and for presence detection to prevent an accidental restart of a machine if personnel move out of one field and into another."

Integrating the new microScan3 scanners into existing safe controllers and control cabinets is straightforward and the scanners can be configured over the network quickly for ease of setup and rapid device replacement.

The SICK microScan3 Ethernet/IP™ and PROFINET both feature a bright, multi-coloured LED display for on-site teach-in and status monitoring and SICK's

configuration software, SafetyDesigner™, enables rapid and intuitive setup of fields via a guided choice menu and a simple interface. Using the microScan3 over a safe network also provides the means to access a wide range of additional information such as multiple warning fields, contamination signals and enables simple field switching without additional wiring. The bright multicolour LED can provide sensor status and diagnostics information and can be viewed and read even from wide angles or at a distance, with clear text and instructions about required actions helping with maintenance and fault finding.

The safety laser scanners are protected against unauthorised manipulation in service by transmitting a checksum of the safety configuration, which allows users to detect and trace any unauthorised changes made to the device. This gives peace of mind that applications continue to be safe in the field.

SICK microScan3 has a lightweight, rugged metal housing with vibration resistant brackets, enabling easy installation and adjustment. M12, 8-pin connectors, mini USB interface and system plug with integrated configuration memory ensure simple, low-cost, smart connectivity.

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New generation metalworking fluid meets sky-high standards

Q8Oils Brunel XF 343 is a new generation metalworking fluid designed to excel across a wide variety of aerospace machining applications.

In 2015, it was approved by Snecma Safran to the specification 455-201-0-00-B, while in 2016, with continued sales success, it also was accredited PCS 4001ed2 approval from Safran Landing Systems to be included on the PCS 4002 list.

As a leading supplier to the aerospace industry, Safran Landing Systems (previously Messier-Bugatti-Dowty) insists upon the highest standards of engineering and quality control during the manufacturing of its products.

Q8 Oils is naturally delighted to have gained PCS 4001 Ed. 2 accreditation and be placed on the approval list PCS 4002 for metal machining applications in the manufacture of aircraft landing and braking systems. This milestone is further progression on the 455-201-0-00-B approval by Snecma Safran.

With two significant aerospace approvals, Q8 Brunel XF 343 has been confirmed as a metalworking fluid that meets the sky-high standards of the aerospace industry.

Discussing the Q8 Brunel XF 343, Q8Oils Metal Manufacturing business development & product line manager Stuart Duff says: "Following extensive research and both laboratory and field-trial testing, we have innovative soluble metalworking fluid chemistry focusing on three key customer requirements: product performance, environmental protection and operator health. These approvals are a significant achievement for Q8 Brunel XF 343 and



complement the success we are delivering with the whole range of Q8 Brunel soluble metalworking products."

The Q8 Brunel family of metalworking fluids meet the latest worldwide chemical and environmental legislation and are free from formaldehyde, boron, secondary amine and chlorine. Q8 Brunel products are designed to provide outstanding machining performance across a wide range of industries including aerospace, automotive, medical, nuclear and niche engineering applications.

Q8Oils is a major developer, manufacturer and supplier of metalworking fluids to European and Export markets. Quality, performance and legislation are at the forefront of the technology used throughout all product ranges, providing benefits to end-users.

Stuart Duff continues:

"By taking a unique, innovative and progressive approach to developing new metalworking technology, the team of chemists and product engineers at Q8Oils has been able to develop smart products that extend tool life and significantly reduce operating costs, while



Q8 Brunel XF 343
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sky high standards
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Q8 Brunel XF 343 is a new generation metalworking fluid designed to excel across a wide variety of aerospace machining applications. Q8Oils is a major developer, manufacturer and supplier of metalworking fluids to European and Export markets. Quality, performance and legislation are at the forefront of the technology used throughout all product ranges, providing benefits to end-users.

Always check the product label for the correct application and safety instructions. Q8Oils is not responsible for any damage or injury caused by the use of its products. The Q8 Brunel family of metalworking fluids meet the latest worldwide chemical and environmental legislation and are free from formaldehyde, boron, secondary amine and chlorine.

Q8Oils
smart engineering solutions

Aircraft Health and Safety Performance

meeting the new demands arising from higher fluid pressures, faster cutting speeds, new materials and tool technologies."

For further information on the range of Q8Oils metalworking lubricants, and technical services, contact:

Q8Oils
Tel: 0113 236 5223
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Email: metal@Q8Oils.com
www.q8oils.co.uk

Precision coolant helps fasten thread-turning operations

Over- and under-coolant provides unique thread-turning solution

The CoroThread® 266 thread-turning tool from Sandvik Coromant is available from 1st March 2018 with precision over- and under-coolant to improve process security and maximise efficiency. The addition of over-coolant improves chip formation for more secure machining, while under-coolant controls temperature for long and predictable tool life. Precision coolant also has positive effects on surface finish, further



supporting the generation of high-quality threads.

"Process security and stability is paramount in thread-turning operations to ensure the machining of right-first-time threads, every time," explains Hampus Olsson, product manager Thread Turning at Sandvik Coromant. "Along with precision coolant, CoroThread 266 features the proprietary iLock interface between the holder and insert, which prevents cutting forces from causing micro-movements of the insert in the tip seat. In addition, for applications where long overhangs are unavoidable, the use of dedicated damped Silent Tools™ adaptors provide a proven way to reduce vibration and maintain precision."

Ideal for external and internal thread turning, a wide standard assortment of insert thread profiles with dedicated grades and geometries is available for all materials. A tailor-made offer can be provided for an extended thread profile assortment.

Quick-change toolholders with precision

coolant include Coromant Capto® C3, C4, C5 and C6 for use with 16 mm inserts, as well as QS™ shanks in 20 x 20 and 25 x 25 mm sizes for 16 and 22 mm inserts. For internal thread turning, a minimum hole diameter of 20 mm (0.790 inch) is required.

For more information, visit www.sandvik.coromant.com/en/gb/products/corothread_266/pages/default.aspx

Part of global industrial engineering group Sandvik, Sandvik Coromant is at the forefront of manufacturing tools, machining solutions and knowledge that drive industry standards and innovations demanded by the metalworking industry now and into the next industrial era.

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MACH • Stand: H17-365

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Wogaard has it covered with new product range

Wogaard has recently extended its product range with the launch of its 'Keep it Covered' products. Continuing the company's ethos of improving the efficiency, health and safety, as well as the housekeeping for machine shops across the UK, the new flexible swarf skip covering system joins Wogaard's award-winning Coolant and Neat Oil Savers.

The new covers would remove from view the contents of the swarf skips, immediately improving the visual aspect of any machine shop. However, as director Jason Hutt says, the thinking behind the new range goes far beyond the aesthetic appeal: "The Health and Safety Executive (HSE) has a number of documents aimed at improving safety when working with metalworking fluids. From guides for employees to COSHH essentials and mist control: inhalation risks.

"There is a major focus from large OEM manufacturing companies and business in their supply chain, along with the HSE and other Government bodies, to improve working conditions. Our new swarf skip covers provide a positive step towards addressing this as most of any vapours created by neat oil or water-based coolant contacting hot swarf and chips are contained within the sealed area."

Tailor-made to exact customer measurements for any size or shape of skip or bin, the new covers are produced from a high-performance polyurethane (PU) that is polyester coated on the reverse side to



make it blackout and waterproof. The heavyweight high strength fabric is very hard wearing, while the double-locked nylon stitching and bespoke attachments ensure the cover locates correctly and remains in place.

"Having extensively reviewed the machine shops at many different manufacturing sites, we concluded that the only way to offer a high-quality solution was to make the covers to fit each application," says Jason Hutt. "We then selected the best cover material, which has a proven track record in harsh environments and arduous situations in the marine and agricultural sectors."



Overall measurements of the swarf skip, along with details of the swarf conveyor and its entry location are required. Additionally, the location of the access point for the Wogaard Coolant Saver and the clear viewing window can be specified, along with an optional company logo.

Jason Hutt concludes: "For all the benefits offered by these new covers, they are remarkably cost-effective. Any machine shop looking to improve the working environment and address any health and safety concerns can simply fill out our cover specification sheet to get a detailed quote and delivery date, or alternatively can contact us directly as we also provide a measuring service."

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MACH • Stand: H20-32

Multi-use coolant approval awarded by Boeing

Master Fluid Solutions, the global manufacturer of TRIM® cutting and grinding fluids, has ushered in 2018 with confirmation that its TRIM® MicroSol® 590XT has now been approved by Boeing for use in multiple application areas.

The company is world renowned for providing the aerospace industry with solutions for its demanding high-tech alloy cutting and grinding needs. Master Fluid Solutions already has more than 70 approvals from leading North American and European aerospace manufacturers to its name. However, the scope of this latest approval makes it a significant and prized achievement.

This latest TRIM semi-synthetic, micro-emulsion was specifically developed



to meet the needs of aerospace manufacturers and subcontractors serving this sector. It improves on the performance of previous fluid generations with unmatched lubricity and sump life for substantial time and material savings.

This Boeing-approved product is also formulated with the most environmentally safe ingredients. As well as being free from secondary amines, it contains no chlorinated or sulphurised extreme pressure additives, formaldehyde releasers, phenols or boron.

Excellent foam control and low carry-off makes TRIM MicroSol 590XT ideal for high pressure, volume applications. Also, as it provides the optimum combination of cooling and lubricity this fluid is ideally suited to machining titanium, 6000 and 7000 series aluminium aerostructure parts as well as typical aero engine materials such as stainless steel and Inconel.

For more than 60 years, TRIM metalworking fluids have lead the industry with solutions for all types of cutting and grinding operations. Known worldwide for superior performance, TRIM meets the demands of specialised industries such as



manufacturers of automotive, aerospace and medical parts.

For the full range of cutting and grinding applications for synthetics, semisynthetics, and soluble oils, TRIM delivers longer tool and sump life, better finished parts, and a better bottom line.

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Hydro lubricants – the lubricants of the future

Energy-efficient, sustainable, harmless

How would it be if maintenance of industrial gear units or automobile transmissions were to consist simply of topping up with mains water? If contaminations by lubricants could be eliminated without any problems using clear water? Not only would that render work in industrial plants safer and cleaner, but at a stroke all worries regarding the sustainability of the lubricant being used would be dispelled. This was the thinking behind Klüber Lubrication's development of a concept that has the potential to revolutionise the future of specialty lubricants. The tribology experts have succeeded in developing homogeneous lubricants with functional water contents: Hydro Lubricants.

"Compared with the present-day oil-based lubricants, water offers numerous important functional advantages: it is sustainable, globally available, non-toxic, and non-flammable", explains Dr. Stefan Seemeyer, head of Research and Product Development at Klüber Lubrication. "As a lubricant, it had up to now been of limited utility, since water is subject to certain physical and biological limitations, like evaporation and freezing points, oxidation or microbiological growth. By means of additives in the lubricant or technical solutions at the component concerned, however, these limits can be shifted, and the water-specific effects rendered beneficially usable. With a water-based product concept, we've even been able to reduce the friction involved far enough to bring the range of 'superlubricity' within reach."

Water as a deliberately selected lubricant component offers entirely new possibilities, not least with the newly acquired sheer diversity of raw materials. Since water-soluble substances are not usually soluble in oil, they were well-nigh irrelevant in classical lubricant development. With innovative lubricant components of this kind, it is now possible to achieve performance parameters hitherto unattainable, like very good cooling properties or energy-savings thanks to significantly reduced friction.

The water-specific effects can likewise be rendered beneficially usable by technical solutions at the component itself. For example, evaporated water can be retained



in the circuit inside an enclosed component, and even be used for cooling purposes. Another line of approach is to render usable the obvious properties of water, like electrical conductivity or cooling effects. This opens up entirely new options for many application categories, not least in the field of e-mobility.

"The speciality lubricant of the future will have to solve hitherto unknown challenges," explains Michaela Wiesböck, group leader at Klüber Lubrication in the Research and Product Development Department. "In view of progressively more stringent

expectations of lubricants in terms of performative capabilities, energy-efficiency and eco-compatibility on the one hand and the finitude of fossil raw materials on the other, the demand for innovative lubrication concepts based entirely on renewable raw materials is already becoming apparent."

The Hydro Lubrication technology is meanwhile being used in the Klüberplus C 2 series. In this lubricant, conceived for conveyor belts, water and water-soluble oils form a homogeneous solution, which leads to improved metering of the lubricant, and thus to reducing the incidence of



malfunctions in the production operation. This means, however, that Hydro Lubrication technology is only just beginning to explore its potentials. Together with cooperation partners from different sectors, Klüber Lubrication is currently working on Hydro Lubricants for applications in gear units, bearings, chains, and other components.

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Roemheld to launch new workpiece clamping and manipulation equipment

The Roemheld stand at MACH will be split into sectors to show market-driven examples of how workholding can increase competitiveness and maximise investment in machine tools. There will be areas focusing on automotive, aerospace, medical and general manufacturing plus a dedicated material handling section.

The emphasis will be on increasing production efficiency through proven technology and innovation, ensuring that any investment is spent wisely. Roemheld will also be offering to supply demonstration products, so that the user can benefit from the established 'Try before you Buy' offer, which guarantees that any investment in workholding will meet a manufacturer's needs, both now and in the future.

New 5-axis vice

Roemheld will show for the first time in the UK a new workholding product intended for securing parts during 5-axis machining. The MC-P vice from group member Hilma is able to grip on just 3 mm, reducing raw material costs. It offers high stability and precision, combined with excellent accessibility and comprehensive chip protection. The compact design enables collision-free tool paths and the use of short, standard tools for 5-axis machining.

The vice has the precision and stability to enable first and second operations to be completed with a single clamping. Offering centring, clamping or balancing functionality, it is suitable for a wide range of

applications, including securing long components and housings made from cast materials. Mechanical and hydraulic versions are available and jaw widths range from 40 to 125 mm, with maximum clamping forces of 8 kN to 35 kN.

Manipulation of heavy workpieces

Likewise making its UK debut will be Roemheld's new Centrick manipulator, whose articulated arms allow workpieces of any shape weighing up to 2 tonnes to be continuously rotated and tilted by up to 90 degrees.

This latest addition to the Modulog range of assembly and handling products is ergonomic, space saving and efficient. Unlike conventional tilting and turning fixtures, it moves components close to their centre of gravity, so the working height remains more constant. A small swivel radius and holding brakes ensure stable positioning.

The Centrick from Roemheld is quiet in operation, with low power consumption. It can dramatically reduce times for assembly and handling as well as increase safety and reduce expensive downtime. Integration into assembly lines is straightforward and the manipulator is compatible with Industry 4.0 assembly processes.

Also on display at the exhibition will be Roemheld's new Vice Tower workholding equipment, as well as the manufacturer's Zero Point clamping systems, offering rapid and repeatable changeovers while making the most of existing workholding investment. Visitors will additionally be able to see examples of the latest hydraulic power units and elements.

Terry O'Neill, managing director of Roemheld, says: "Manufacturing in the UK needs to take a fresh look at how to compete in world markets and win new contracts. We would invite existing and prospective users to come to the stand to see for themselves how our effective workholding solutions hold



Roemheld's new, high technology Centrick manipulator

the key to many of the questions being posed to production engineers."

Roemheld (UK) Ltd was founded in 1975 to supply innovative workholding solutions to the UK and Ireland. From its base in Hertfordshire, it provides workholding and materials handling solutions to a wide range of companies from large OEMs down to the smallest of machine shops.

The company provides sales, service and ongoing technical support to customers across varied industry sectors and it is involved in training programmes designed to support the next generation of engineers.

Roemheld is committed to researching and developing products designed to meet not only the demands and expectations of today's discerning buyer, but also emerging markets and applications. Through continued improvement of products and services, the Roemheld Group intends to remain an innovator at the forefront of technology providing 'All your workholding needs from a single source'.

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The new MC-P 5-axis vice from Roemheld

MACH • Stand: H6-175/H20-444

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Processes shortened and flexibility increased

Steinel Normalien AG, a specialist manufacturer of cylinders, guides, springs, plates and die sets for the tool making, stamping and forming industries imposes the most rigorous precision requirements upon its manufacturing department. When the company introduced a new Mill/Turn centre, the pneumatic spring and composite system manufacturer was intent on streamlining its workholding processes and the 150-employee company sought its solution from Hainbuch.

Steinel was aiming to significantly reduce its setup and throughput times but the company, with 25,000 different stock items and catalogue products, recognised that it was not as flexible as desired. The company exerted significant time and effort with changeovers from jaw chucks to other clamping devices and thanks to Hainbuch these times are now gone for good.

The combination of a new mill/turn centre, new clamping devices from Hainbuch and new machining strategies have increased manufacturing flexibility significantly. Now, a wider variety of parts can be machined and many processes eliminated, while replacing three previous machine tools with just the one new machine. The two men responsible for the project, Michael Tresselt, head of process development and James Hepfer, shift supervisor, recognised that the machining concept needed a rethink. "With the new turning concept, we wanted to achieve higher flexibility and optimise the setup procedure. In order to quickly change the clamping devices on the new mill/turn centre, quick change-over systems were



required. We carefully examined several system suppliers and their clamping solutions."

Hainbuch sales representative, Thomas Helfer made a routine visit to Steinel and both contacts were very satisfied with the clamping devices and clamping heads from Hainbuch, which were already in use at Steinel. This larger project required a significant investment and both Michael Tresselt and James Hepfer were not 100 percent convinced by the solutions they had previously seen. Competition was narrowed down to two suppliers, as Michael Tresselt explains: "We then prepared an evaluation matrix of the available quick change-over

systems. After a more precise test, Hainbuch's flexible and highly accurate clamping devices convinced us. Hainbuch scored high with its insensitivity to contamination and repeatability."

James Hepfer explains the difference between the two-leading change-over systems: "With Hainbuch's competitor, the system works with a pull action. In comparison, the Hainbuch system does not require screw turning, but the clamping device is more accurate and rigid. There are only six screws and they only need to be loosened slightly, that's why the procedure takes almost no time. The competing product has problems with its contamination-sensitivity. Even if tiny dust particles get in the system, the accuracy and rigidity suffer. The Centrotex interface from Hainbuch completely convinced us."

Michael Tresselt adds: "For change-over accuracy, Hainbuch provides 2 µm precision and the competition specifies one hundredth. This difference is of absolute importance, as our workpieces have strict parameters that we must keep. Moreover, with Hainbuch we get everything from a single source. With the Centrotex quick change-over system on the main and sub spindle, we use an hexagonal Toplus chuck size 100 and a size 260 jaw chuck, this makes us extremely flexible and everything is interchangeable."



With Hainbuch, Villingen-Schwenningen based Steinel has certainly adopted the right clamping devices and impeccable level of precision for the high-precision manufacture of its durable guides and pneumatic springs. In addition, cube cast parts that require interrupted machining can also be machined on the new turn/mill centre. These parts were previously complexly manufactured on two other machines using a time-consuming jaw chuck process. James Hepfer says: "The parts were turned and then milled. This required two setups. Hainbuch recommended a mandrel for this clamping situation and we gave it a sample part for a turning trial."

Michael Tresselt states: "We were not sure whether the Mando mandrel would deliver on what Hainbuch promised, but we were surprised at how tightly, rigidly and accurately the mandrel performed. We now save one operation, as well as the change-over time. This significantly shortens through-put times and parts can also be machined very easily thanks to the minimal interference contour of the mandrel. We like the Mando system a lot and now we are even considering what other workpieces we can clamp with the mandrel."

Steinel places a high priority on flexibility

because batch sizes for the standard cast parts and for the pneumatic springs are small. However, with the new concept, Steinel wants to further reduce batch sizes in order to respond more effectively and with greater flexibility to customer requests.

Michael Tresselt says: "When the new programs run at their optimal level on the machine, we will further reduce the batch sizes. Today, with the new clamping devices, we are saving over 60 minutes every day. There is still space to improve. For our employees, the handling with the new clamping devices works perfectly. We have also purchased the compatible Monteq changing fixture and two storage containers. This ensures everything is cleaned up and on hand for the employees."

Service is the highest priority for Michael Tresselt and regarding the outstanding support from Thomas Helfer, Michael Tresselt concludes: "If we have a problem, we can count on Hainbuch. Moreover, Hainbuch provides us with free parts to run our trials. This cannot be taken for granted. Before we make a decision and place an



order, we like to check and test everything. Now, we are re-ordering the same Hainbuch clamping devices for two other machines with bar loaders and Hainbuch is certainly our first port of call in the future."

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MACH • Stand: H19-120

SCHUNK vice proves its leading position

At the recent Southern Manufacturing exhibition SCHUNK, a leader in gripping systems and clamping technology, gave a successful UK exhibition debut to its new KONTEC KSC-F single-acting vice and the KSC 6-jaw gripper vice. Well received by show visitors, the KONTEC KSC-F single-acting vices and the KSC 6-jaw gripper vice are the next generation in efficient workholding systems.

The impressive modular configuration of the KSC-F is credit to the VERO-S interface and the 160° quick clamping system that can be adapted to new clamping tasks in no time at all. This highly efficient all-rounder for raw and finished part machining is suitable for manual and automated machine loading. The new KSC-F impressed at Southern Manufacturing show with a quick-adjustment of the clamping range, flat design and a lightweight and robust design. These attributes ensure the perfect conditions for use in pallet storage units. The sizes KSC-F 80, KSC-F 125, and KSC-F 160 are particularly designed for the

common machine tool pallet sizes of 320 x 320 mm, 400 x 400 mm, and 500 x 500 mm. The new KSC-F achieves high clamping forces even at a comparably low torque level.

Alongside the KSC-F, and something that certainly drew the attention of stand visitors, was the new KSC 6-jaw gripper vice. The six-fold grip jaw system performs exceptionally well when processing high-strength materials and the safe clamping configuration can resist extreme lateral forces when machining difficult to process materials. With clamping forces up to 90 kN, the new KSC delivers optimal stability for operations that require a low clamping depth, providing the end-user with exceptional access to the workpiece with vastly improved clearance between the workpiece and the clamping system. This impressive new KSC range of 6-jaw gripper vices is suitable for clamping workpieces up to 125 mm wide and is undoubtedly the ideal addition to machine shops undertaking 5-axis machining.



SCHUNK is a competence leader for gripping systems and clamping technology. About 3,000 employees in nine plants and 33 directly owned subsidiaries ensure an intensive market presence. With more than 11,000 standard components SCHUNK offers the world's largest assortment of gripping systems and clamping technology from one source.

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MACH • Stand: H20-180

Tooling updates from WNT at MACH 2018

WNT focuses on new developments

The display of cutting tool technology at MACH from WNT, part of the Ceratizit Group, will focus on recently introduced products and the productivity benefits that these innovations can bring. Among these products are WNT's Direct Cooling system for parting and grooving, the new WTX-Change Feed drilling system, WTX-Ti high-performance drills and CircularLine CCR-UNI solid carbide end mills.

Direct cooling

The latest generation of parting and grooving blades from WNT features its Direct Cooling capability to ensure cutting fluid is delivered directly to the cutting area. By directing the coolant in this way, on its grooving and parting-off system, it improves machining performance in terms of reduced tool wear and thermal load, which in turn leads to improved process security. This allows users to maximise cutting data and improve productivity.

Available on WNT's blade-type toolholders, the direct cooling system has two exit points for cutting fluid, one positioned above the cutting edge and the other directly below, with the system being effective when used with a variety of coolant pressures and even at <20 bar the benefits of reduced flank and crater wear are evident. With higher coolant pressures, additional gains such as greater swarf



control also come into effect. The result is that cutting speed can be increased by between 20 and 40 percent, dependant on the available coolant pressure.

The direct cooling system was developed alongside WNT's DC-SX clamping blocks into which the blades sit. The design of the DC-SX blocks allows them to be used with any coolant connection which reduces the requirement for additional pipe connections. Coolant is delivered through the block directly into the clamped side of the blade. This ensures a good seal and also allows a variety of overhang lengths to be used without any negative impact on coolant delivery performance.

The Direct Cooling system is available for use with inserts ranging from 2 mm to 6 mm in width and with a choice of carbide grades, either uncoated or with WNT's legendary Dragonskin coatings, which covers the majority of everyday grooving and parting-off scenarios. This is backed by a variety of blades for both specific and generic applications.

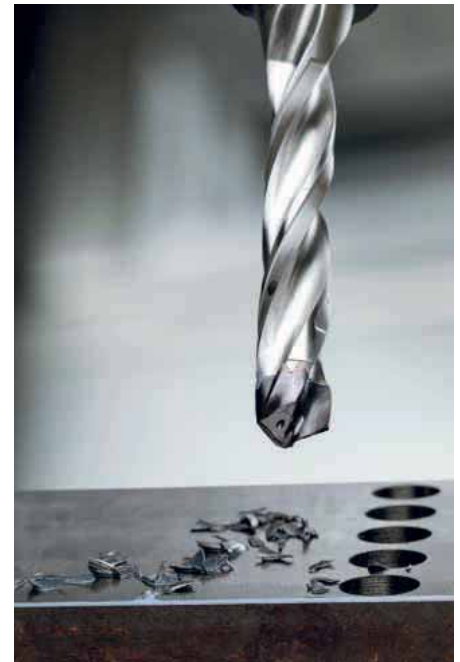
WTX-Change Feed

The new WTX-Change Feed drills are an amalgamation of the best of WNT's WTX-Feed and WTX-Change drilling systems to create a three-fluted drilling system with interchangeable carbide drill heads. The result is increased cutting data in the most challenging of applications, with feed rates between 50-100 percent higher than conventional drilling. The additional benefit is improved process security due to the new cutting geometry design, drill body material and the use of the proven Ti 750 tool coating.

WTX-Change Feed drills are available between 14 and 32 mm diameter in 0.1 mm increments as well as two standard flute lengths of 3-times and 5-times diameter, all with through tool coolant as standard. The interchangeable carbide drill heads are manufactured from a carbide grade suitable for universal applications in steel and cast iron. The new geometry features innovative point thinning and self-centring chisel edge to ensure accurate positioning, even on angled surfaces up to six degrees and in intermittent cutting applications.

CircularLine CCR-UNI

Solid carbide cutters in the WNT range fall



into two main categories, Mastertool and Standard, with the Mastertool series representing premium quality tools for high performance applications. Mastertool cutters are designed for specific applications and generate exceptional performance as a result. Included within these is the new Circularline CCI-UNI range of cutters. CircularLine cutters deliver shorter machining times and longer tool life and are the 'go-to' choice for trochoidal milling where extended tool engagement and consistent average chip thickness are key. The design of WNT's CircularLine cutters ensures optimum and effective machining processes.

The latest addition to the range, the CircularLine CCR-UNI is available for universal trochoidal milling as a 4 x D end mill and a 3 x D end mill with a shorter chip breaker, to provide maximum chip evacuation dependent on application. Diameter range is between 6 mm and 20 mm dependent on the application and article selected. Customers that operate under challenging conditions that place high demands on production and quality should consider the Mastertool series as a starting point.

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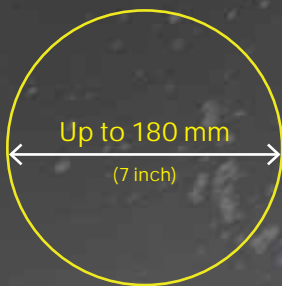
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TaeguTec to unveil new product lines at MACH

As one of the world's leading cutting tool manufacturers, TaeguTec will be introducing a host of new product innovations alongside proven and established technology at MACH 2018. At the show, the Korean manufacturer will showcase a host of new product lines whilst the proven product lines will include the ChaseMold and ChaseFeed milling families, the RhinoRush turning line and the NHD and DrillRush lines.

With one of the most extensive milling lines in the cutting tool industry, TaeguTec will be demonstrating the extensive benefits of its ChaseMold range. Continually developing new geometries and insert grades, two recent additions have been the RTMX and RTHX five-edged insert line. Developed for high speed machining of stainless steel and difficult-to-cut materials, the two grades are ideal for applications in the aerospace, oil & gas and power generation industries. The latest grades are available in 10 and 12 mm sizes and incorporate a high positive rake angle for low cutting resistance. The latest lines are available in standard and special grades. The special grade is ideal for any machining environment, even harsh conditions, due to the high wear resistance and toughness capabilities.

The ChaseMold series is available in end mills up to $\varnothing 32$ mm, modular type tool bodies from $\varnothing 25$ -40 mm and also face mill cutters in diameters from $\varnothing 40$ -80 mm. All tool body types incorporate a through coolant facility for easy chip evacuation.

At MACH, the ChaseMold line will be complemented by the exceptional ChaseFeed line. The resounding success of the ChaseFeed line has seen the manufacturer continually extend the popular milling range. One of the more recent additions to the ChaseFeed family at MACH will be the small high positive SBMT09 insert line. The ChaseFeed family of highly efficient SBMT09 inserts and relevant tool holders has been introduced to permit the same high feed performance characteristics to smaller depth of cut applications.

The existing ChaseFeed SBMT13 tools are available from 32 mm diameter and upwards, while the SBMT09 Series extends the benefits of the ChaseFeed to tool diameters from 25 to 42 mm diameter,



modular type end mills from 25 to 42 mm and face mill cutters in diameters from 32 to 80 mm. As a smaller insert, the SBMT09 is designed for reduced cutting depths at higher feed rates. The ability of the SBMT09 to run at feed rates up to 25 percent faster than the larger 13 mm inserts is credit to the additional insert seats that can be accommodated on the SBMT09 tool bodies.

From its drilling portfolio, TaeguTec will introduce the extensive DrillRush line. As TaeguTec's marquee indexable head drilling line, the DrillRush is available in diameters from 6 to 25.9 mm with most variants available in 0.1 mm increments.

Continually being developed and extended, one of the more recent lines is the 12 x D drills. Available in diameters from 12 to 22.9 mm, the exciting twist drill with through coolant is also available with 1.5, 3, 5 and 8 x D for precision hole-making. Incorporating polished flutes, through coolant and a wide chip gullet with an optimised geometry, the DrillRush line rapidly evacuates swarf from the drill point for rigid, high performance and accurate drilling of holes.

The characteristics of the DrillRush eliminate the need for pecking cycles, therefore further reducing cycle times. To enhance rigidity when conducting high speed drilling on everything from aluminium



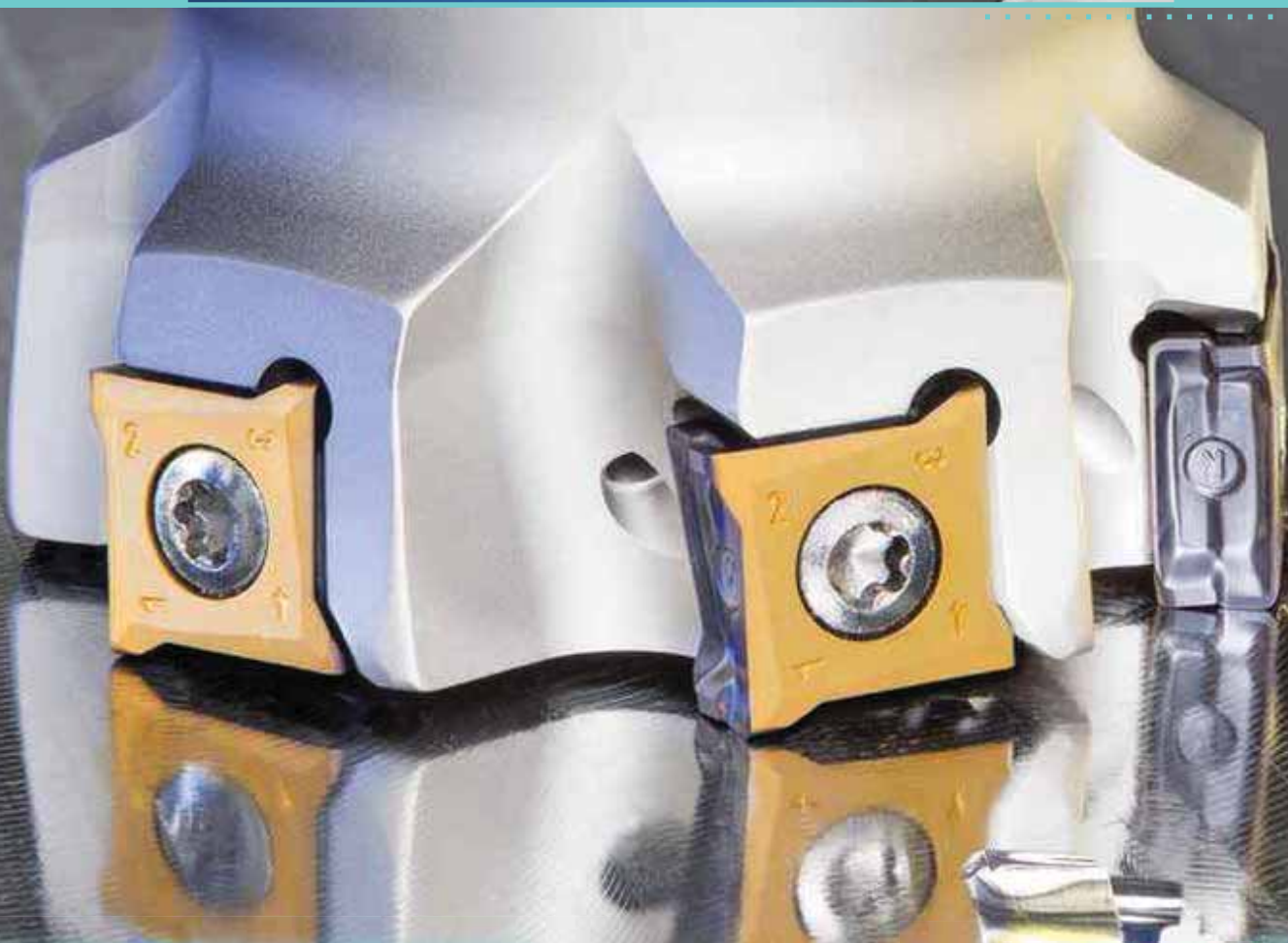
and non-metallic materials through to steel, iron hardened steel and high temperature alloys, the Drill Rush is offered in shank diameters of 12, 16, 20, 25 and 32 mm.

Supporting the DrillRush at MACH will be the solid carbide NHD drill line. The NHD has optimised cutting edges designed for improved drilling stability while its sharp straight cutting edges with precise web thinning enable the NHD to generate low cutting forces and excellent self-centring capability for higher hole accuracy. TaeguTec's NHD drills are offered in 3 to 12 mm diameter with 3, 4 and 5 x D depth of cut range.

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Quickgrind to show new tooling innovations

Quickgrind is making a much-anticipated return to MACH. The Tewkesbury cutting tool manufacturer will be giving a MACH debut to a complete range of new milling innovations that will include the ground-breaking new Mirage, QPlus, Delta and the Spectre.

Quickgrind will also be demonstrating its QuickEdge re-grinding service, the QuickLab process analysis and improvement service, the QuickVend tool management solutions and QuickCAM, the CAM assessment service that optimises the complete machining process.

With cutting tools being the core element of the globally recognised business, the exhibition in April will be the platform for a host of new innovations. With rapid material removal being a core concept for Quickgrind, the new Spectre solid-carbide end mills will attract attention at the show.

By reducing the depth of cut and increasing feed rates by up to six times that of conventional end mills, manufacturers can slash machining times with greatly improved productivity and material removal rates.

Quickgrind's high-feed Spectre range is ideal for rough-machining operations such as slotting, pocket milling and contour machining.

Appearing alongside the Spectre will be the new Mirage Series of solid carbide end mills. Capable of outperforming competitor products on stainless steel, super alloys and a selection of non-ferrous, high temperature alloys and cast iron, the new Quickgrind Mirage Series has an ingenious geometry that allows end users to apply the Mirage to roughing, finishing, slotting and profiling as well as trochoidal milling and strategic HSM processes. This extensive capability reduces tool inventory and costs.

The four flute end mills are available with a 3, 4, 5 and 6 mm diameter, each consisting of a 6 mm diameter H6 ground shank for enhanced strength, rigidity and performance. The 8, 10, 12, 16 and 20 mm diameter variants are available with flute lengths from 18 to 38 mm with an overall length from 64 to 104 mm, depending upon chosen diameter.

Specifically aimed at the small machine



shop and subcontract environment will be the ingenious Qplus range of end mills. The new Qplus has been developed with the aim of creating the industry's most universal tooling series yet. The four-flute end mill generates remarkable performance levels on steel and cast iron, while the hard-wearing MX coating makes the Qplus ideal for high temperature alloys, hardened steels and non-ferrous materials.

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Pure LOGIQ from ISCAR

ISCAR will be introducing what is the company's largest ever range of advanced cutting tools at MACH, the LOGIQ range. An acknowledged innovator in the field of metalworking, ISCAR has taken the company's popular IQ concept of machining intelligently even further by applying a wide range of advanced logical developments. The result is what the company is describing as a new standard in cutting tool excellence.

The application of 'LOGIQ' has allowed the development and launch of multiple advanced new cutting-tool families and has also enabled existing tooling ranges to be further upgraded. New LOGIQ introductions being exhibited at the show include progressive new cutting geometries and robust locking mechanisms that guarantee stable, vibration free machining with superior repeatability. These innovations assist users in maximising equipment utilisation and optimising performance.

ISCAR's new LOGIQ indexable inserts are equipped with sophisticated chip formers and also feature innovative geometries that

enable soft cuts to be achieved at high feed rates. New LOGIQ solid carbide tools have been developed with inventive designs that feature substantially increased anti-vibration characteristics, whilst the latest cemented carbide grades reflect ISCAR's forward looking philosophy and know-how in powder metallurgy and coating technologies. The LOGIQ toolholding line includes heat-shrink-fit and vibration-dampening devices which significantly improve performance in areas where tool rigidity is a critical parameter.

LOGIQ turning applications offer a range of new ISCAR solutions that enable a decrease in machining loads and the production of thinner and wider chips. ISCAR's LOGIQ developments also help to resolve vibration issues and improve coolant flow capabilities. Last but not least, advanced drilling tool concepts delivered by LOGIQ enables significant productivity gains, high-accuracy capabilities and excellent repeatability.



Now in its 40th year in the UK, ISCAR has successfully developed a major presence in the metalworking industry by helping customers to improve productivity through the application of our innovative leading-edge technologies and unique cutting tools.

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An established force at MACH

Dormer Pramet will underline its growth ambitions for the coming years with more than 750 products on display at MACH 2018.

The global cutting tool manufacturer has built a comprehensive product program of both rotary and indexable drilling, milling, threading and turning tools for use in a wide variety of production environments.

John O'Donoghue, managing director of Dormer Pramet UK, says: "Dormer has been a leading brand of HSS and solid carbide drills for over a century in the UK. During the last few years our range has expanded significantly. As the country's premier event for our industry, MACH 2018 gives us an opportunity to highlight just how extensive our cutting tool offer now is.

"The Pramet indexable brand was absorbed into our programme in 2014 and is now an established part of our portfolio. When you factor in supplementary ranges introduced since then, including a full range of carbide burrs and toolholders, our portfolio is one of the widest, if not the widest in the market. This is why our offer is especially attractive to engineering distributors as we can genuinely claim to be a one-stop-shop for metal cutting tools."

Products from across the Dormer Pramet range will be showcased at MACH, each presented on ISO themed displays, making it quick and easy for visitors to identify relevant tools. Particular highlights include the Force X drilling and Force AD milling ranges.

The Force X family of solid carbide drills cover drilling depths from 3-8 x D in almost all engineering materials. All feature the unique Continuously Thinned Web (CTW) technology which provides a very strong web design, reducing thrust requirements during drilling. This has the dual benefit of improving both performance and tool life.



In addition, the 'flagship' product of its indexable range, the Force AD universal 90° milling cutter, will also feature alongside a broad program of inserts offering improved stability in a wide range of applications.

Combining solid performance with the ability to support ramping, helical interpolation and plunging operations in multiple materials, the Force AD assortment is, like the Force X drills, ideally suited to general engineering and subcontract environments.

Dormer Pramet is the result of a merger in 2014 between rotary tooling manufacturer Dormer and indexable specialist Pramet. The strengths of each company were combined to create a single platform, providing customers with access to a wide range of high quality, fit-for-purpose products, including hole-making, milling, turning and threading tools. The company is a global manufacturer and supplier of tools for the metal cutting industry. Its comprehensive product program encompasses both rotary and indexable drilling, milling, threading and turning tools for use in a wide variety of production environments. An extensive sales and technical support service operates from 30 offices, serving more than 100 markets worldwide.

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 **WALTER**
Engineering Kompetenz

New thread mill promises lower costs on larger workpieces

Production engineers are no longer faced with the dilemma of choosing between tapping and thread milling for machining large threads of 24 mm and above to 48 mm with the T2711/T2712 indexable insert thread mill from tooling expert Walter.

While tapping such threads can achieve shorter cycle times than thread milling, high tool costs and 'birds nest' swarf are the traditional penalties. However, Walter's new T2711/T2712 competes with the productivity of taps on large threads, in one case cutting the cost of thread production by 45 percent, reducing machining time by a fifth and extending tool life from 300 parts to 540.

Designed for use on all materials in the ISO material groups P, M, K, S and H up to 55 HRC, the tools can be used for thread depths of up to $2.5 \times$ diameter and a pitch range of 1.5 mm to 6 mm or 18-4 TPI.

In addition to ease of handling and excellent thread quality, users of the new tools will also benefit from high levels of productivity at a lower cost per thread. In one test involving the production of a 70 mm deep M36 thread on a wind turbine component, the cutters reduced costs by 45 percent and cut machining time by a fifth. In addition, tool life was 540 parts per cutting edge with Walter's T2711 compared to 300 parts with a competitor tool.

Having multiple cutting rows and adjustable coolant supply with selectable radial or axial coolant outlets, the cutters' specially-developed inserts each have three cutting edges with a soft-cutting geometry and special chip breaker design.

With duplicated cutting rows, multiple thread sections can be machined



simultaneously with high cutting parameters, achieving machining times comparable with those associated with thread tapping and forming.

In addition to quick machining, users can also benefit from the high process reliability of the thread milling process and the cost benefits of an indexable insert tool, according to Walter GB "reducing costs by up to 90 percent."

Walter's T2711/T2712 indexable insert thread mills are the first thread milling system that can compete with tapping.

Walter AG is one of the world's leading metalworking companies. As 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 Kompetenz at every stage of the machining process. As an innovative partner capable of creating digital process solutions for optimal efficiency, Walter is pioneering Industry 4.0 throughout the machining industry. With over 3,500 employees worldwide, together with its numerous subsidiaries and sales partners, Walter AG serves customers in over 80 different countries.

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New VPX 200 & 300 indexable tangential inserts cutter series

Mitsubishi Materials' extensive high performance, indexable insert milling cutter range has been expanded to include a brand-new type, the VPX. This innovative new tool will be on display for the first time in the UK on Mitsubishi's stand at MACH.



VPX has the ability to be used over an extremely wide range of milling functions, ranging from standard shoulder milling through to ramping and pocketing. This multi-functionality was a key factor in the original design parameters, together with the knowledge that today's customers require both high performance and optimum usability to reduce cutting tool inventories.

The insert geometry provides the required toughness together with the ability of multi-functionality. Importantly, the inserts are double sided and therefore provide the essential element of economy. 12 different types, including the latest MP6100, MP7100 and MP9100 series of grades are offered to cover machining of materials from carbon, stainless and hardened steels through to cast iron and difficult-to-cut materials. VPX 200 and 300 series cutters are available in two different sizes

MMC Hardmetal U.K Ltd Tel: 01827 312312
Email: sales@mitsubishicarbide.co.uk www.mmc-hardmetal.com

MACH • Stand: H6-320

Milling cutters with diamond tipped inserts

MACH 2018 will mark the UK launch of Horn's DA32 milling system with new, high performance, diamond-tipped inserts. The tools achieve outstanding results when shoulder, face, plunge and circular milling.



Highly positive insert geometry ensures a particularly smooth cut, minimising the stress exerted on the workpiece and the tool. As a result, long cutter life and virtually burr-free machining are ensured, particularly when processing long-chipping materials.

The wide finishing radius creates a high standard of surface quality, even at elevated feed rates. The coolant supply reliably ensures targeted cooling of the cutting edges as well as safe removal of chips from the working zone.

Using a special insert geometry for machining fibre-reinforced plastics, combined with the hardness and wear resistance of the CVD thick-film diamond coating, outstanding levels of cutting performance are achieved. Horn's tried and tested diamond substrates guarantee that the cutting edges, produced using state-of-the-art laser technology, work efficiently.

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

MACH • Stand: H6-890

A hole new ball game

New Feedmax-P drills deliver increased productivity and longer tool life

Seco's new range of Feedmax-P solid carbide drills provides component manufacturers with increased productivity, up to 35 percent higher, and improved tool life when machining ISO P, steel and cast iron.

Featuring a new geometry and an advanced TiAlN coating, the new range delivers improved chip management and control and helps manufacturers increase process reliability. The end result is that manufacturers can drill holes faster and use fewer drills.

Feedmax-P drills have strong straight cutting edges with coolant holes located close to the cutting edges, enabling the tool and workpiece to be cooled more efficiently and effectively. Narrow land margins on Feedmax-P drills help minimise the effect of heat generated on the drills, while an improved flute design protects the drill point and delivers improved chip evacuation.

With new TiAlN coating, which delivers

improved tool life when machining high heat-generating applications, combined with strong point geometry, cutting speeds up to 190m/min when machining SMG P5 structural steels can be achieved without causing excessive tool wear.

Feedmax-P drills are available in diameters ranging from 2 mm to 20 mm and in length-to-diameter ratios of 3 x D, 5 x D and 7 x D.

Internal coolant supply is available as standard to ensure maximum performance and customised options, with intermediate sizes, chamfer and step drill versions available on request.

Seco is one of the world's largest providers of comprehensive metal cutting solutions for milling, stationary tools, holemaking and tooling systems. For over 80 years, it has been more than just a cutting tool provider. It develops and supplies the technologies, processes and supports that manufacturers depend on to maximise productivity and profitability.



Headquartered in Fagersta, Sweden, Seco is present in more than 70 countries via nearly 4,200 team members. All Seco employees across the globe share a family spirit, along with a passion for customers and personal commitment to ensuring success. Seco is part of Sandvik Machining Solutions, the tooling business area of the Sandvik Group

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XYZ enters the world of 3D printing at MACH

With the launch of the UMC-5X simultaneous 5-axis machining centre in early 2017, XYZ Machine Tools took a significant step to expand its product offering to customers. At MACH 2018, visitors will see further expansion of the product range as XYZ enters the world of 3D printing with global printing technology leader HP Inc.

XYZ Machine Tools has been selected as an official reseller of the revolutionary HP Jet Fusion 3D printing solution, which uses HP's Multi Jet Fusion 3D printing technology to print production-quality parts at speeds up to 10-times faster and at half the cost of comparable 3D printing systems. "We see this as a fantastic opportunity as 3D printing is a perfect addition to the machine tools that we currently offer. HP's Multi Jet Fusion technology is taking this process to new levels of performance and productivity, making the process truly production orientated," says Nigel Atherton, managing director, XYZ Machine Tools.

The key to the speed of this system is its Multi Jet technology, which delivers 30 million drops per second across each inch of working area. This is then combined with HP's fusing and detail agents that allow extreme fine detail and dimensional accuracy to be produced with layer thicknesses of 0.07/0.08 mm. The quality is controlled by precise temperature monitoring during the printing process, with

heat being applied or reduced automatically to ensure correct fusion of materials. Build speeds are up to 4,500 cm³ per hour, which compares extremely favourably when compared to conventional material extrusion or laser sintering processes. For example, in an 82 hour cycle the HP Multi Jet Fusion process created 27,300 gear components, compared to 1,000 and 2,160 using the other techniques, making it a truly production orientated process.

In line with XYZ's philosophy of easy-to-use control systems, HP Jet Fusion 3D printing solutions are user-friendly and streamline workflow from developing component build and automatic packing of the print chamber, which measures 380 mm by 284 mm by 380 mm, to maximise production prior to printing. Pre-packed printing materials are easily installed and mixing ratios automatically selected, all of which is fully enclosed to maintain a clean working environment. At the end of the printing process, excess material is removed and collected to be recycled while still fully enclosed in the unit.

HP has also developed an Open Platform approach to materials development, in a drive to encourage new materials to be introduced at a lower cost and made available for printing, combining this with the ability to control the properties of individual voxels (a pixel with volume). HP Multi Jet Fusion technology opens the

possibilities of producing parts that simply cannot be manufactured using conventional processes.

"We have looked at 3D printing as a technology solution for a while, but we wanted to be convinced about its ability to deliver production level quantities in a time-efficient and cost-effective way," says Nigel Atherton. "HP's Multi Jet Fusion technology gives us the confidence that these criteria have now been met and that 3D printing is now a truly complementary process to sit alongside our existing machine tool systems."

Visitors to the XYZ Machine Tools stand at MACH 2018 will be able to see and discuss the benefits of this HP's Jet Fusion 3D printing solutions first-hand and witness how it can work alongside conventional metal cutting technology to produce a seamless design to manufacturing process.

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MACH • Stand: H18-640



HP's Jet Fusion 3D printing solution is now available through XYZ Machine Tools



Metal Digital Transformation?

Metal Digital Transformation is the Lantek customizable portfolio that controls and tracks all the plant within a company that processes sheet metal, tubes, and beams. With Lantek solutions, customers fully manage their activities to achieve greater levels of competitiveness and productivity, and get an absolute real-time control of everything that is going on in the business.

Because **Industry 4.0** is not just a concept, it is the new manufacturing ecosystem, where the most adaptable will have the advantage in a fast-changing world. **Will you be one of those?**



lantek
Metal Digital Trasformation

Lantek set to show the benefits of the digital factory at MACH 2018

Lantek will be showing sheet metal and fabrication companies how moving towards a smart factory concept can have a big impact on business performance at MACH 2018.

The Spanish innovator is committed to helping the industry become more competitive and to promoting the technological advances that will help improve productivity and simplify industrial processes. Visitors to its stand at the NEC will be able to see for themselves the advanced manufacturing solutions the company can offer for interconnecting machines, processes and plants to get the most from the manufacturing process.

Lantek is a leader in the field of sheet metal manufacture and now has over 20,000 users of its software around the world and it is seeing significant growth in demand for its digital factory solutions, which indicates that the industry is ready to take the leap towards Industry 4.0.

For engineers, the company has a complete range of solutions including CAD/CAM capable of driving virtually any type of sheet metal machinery, advanced nesting software, quotation and costing software, planning software, analytics and systems to report on factory performance across international boundaries. The extensive options available allow companies to implement Smart Factory concepts at their own pace while having a clear upgrade path to a fully digital factory.

Being able to pick Smart Factory elements that suit their current manufacturing status will help companies to understand the relevance of the software to their own



businesses and help them to develop a plan which will be easier to implement, while clearly showing the benefits of the technology at each step.

Rob Powell, commercial director at Lantek UK, says: "With our solutions, we seek to add intelligence to industrial plants and enable them to respond effectively and in real time to the constant changes that occur in sheet metal manufacture. This is an essential part of the digital transformation of enterprises, enabling everything to be interconnected and analysed. It is already clear that this new way of working is playing a vital part in the success of companies in the sector."

"MACH 2018 is an excellent opportunity to show the capabilities of our new portfolio of solutions for advanced manufacturing, as well as how we respond to the challenges posed by the digital transformation. This show will help us to get closer to our customers and partners in the UK and overseas and is the perfect place for visitors to see how Lantek can become their perfect

ally in tackling digital transformation en route to Industry 4.0."

Lantek is a multinational company which is leading the digital transformation of companies in the industrial sector of sheet metal and fabrication. It offers its own software solutions in business manufacturing intelligence, which enable connecting the plants thereby converting them into smart factories. It rounds off its range with the development of CAD/CAM/MES/ERP solutions for companies that manufacture metal parts from sheet metal, tubes and profiles, with any cutting technology: laser, plasma, oxycut, waterjet, shearing and punching.

Founded in 1986 in the Basque Country and with its headquarters in Vitoria-Gasteiz (Álava), Lantek enables the integration of cutting and punching technologies in the plant using the most demanding advanced manufacturing management software. The company is currently an outstanding leader in its sector, thanks to its capacity for innovation and commitment to internationalisation. With more than 20,000 clients in over 100 countries and its own offices in 15 countries, it has an extensive network of distributors with a worldwide presence. In 2017, international business contributed to 86 percent of its revenue.

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MACH • Stand: H17-670





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Pioneering productivity in additive manufacturing

To improve additive manufacturing productivity and lower cost-per-part, Renishaw has launched its latest system, the RenAM 500Q. Featuring four 500 W lasers, the compact machine will greatly improve productivity in the most commonly used platform size, to bring the benefits of additive manufacturing to a wider range of industries.

By speeding up the process by up to four times, the RenAM 500Q broadens the market appeal of metal additive manufacturing into applications that were previously uneconomic, driving the technology into new industries. By positioning the machine competitively, Renishaw has ensured the productivity benefits will reduce cost-per-part, without compromising on the precision or quality of a standard single-laser system.

A critical technology at the heart of the RenAM 500Q is the optical system and control software. Laser beams enter the system via four channels, where they are dynamically focussed and directed into a single, thermally controlled galvanometer mounting. The galvo mounting houses four pairs of digitally controlled guided mirrors, which can guide lasers to cover the entire working area of the powder bed.

"Renishaw's additive manufacturing machines and optical systems are designed, engineered and manufactured in-house, giving us exceptional control over system performance," explains Robin Weston, marketing manager at Renishaw's Additive Manufacturing Products Division. "Using innovative design of the optical system and by incorporating digital controls and dynamic focusing, all four lasers can address the powder bed simultaneously, improving the speed, productivity and capability of the machine.

"Additive manufacturing is a key enabler of the optical system. It allows tighter packaging of mirrors and the incorporation of internal conformal cooling channels to maintain precise thermal stability."

Renishaw is an innovator and leader in creating stable process environments, well placed to manage the additional process emissions caused by multiple lasers. An inert gas recirculation system including a cyclone pre-filter and gas intercooler preserve filter life and provide consistent clean processing conditions throughout the duration of the build.

The new system develops the safety and usability features of the single-laser RenAM 500M, incorporating dual SafeChange filters with automated change over to minimise manual intervention. Studies have shown an additional benefit, that powder condition is maintained for maximum reuse, further reducing part costs.

For more information on how the RenAM 500Q can help you realise additive manufacturing in your industry, visit www.renishaw.com/en/renam-500q-42781.

UK-based Renishaw is a world-leading engineering technologies company, supplying products used for applications as diverse as jet engine and wind turbine manufacture through to dentistry and brain surgery. It has over 4,000 employees located in the 35 countries, where it has wholly owned subsidiary operations.

For the year ended June 2017, Renishaw recorded sales of £536.8 million of which 95 were from exports. The company's largest markets are China, the USA, Japan and Germany.



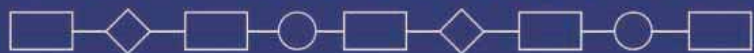
Throughout its history, Renishaw has made a significant commitment to research and development, with historically between 14 and 18 percent of annual sales invested in R&D and engineering, with the majority of this R&D and manufacturing of the company's products is carried out in the UK.

The company's success has been recognised with numerous international awards, including eighteen Queen's Awards recognising achievements in technology, export and innovation.

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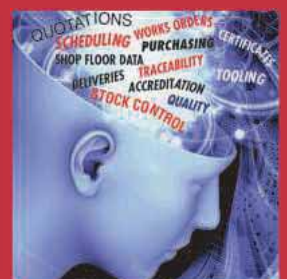
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30 years at the forefront of production control software

PSL Datatrack is celebrating 30 years at the forefront of production control software development for precision engineering subcontractors.

It all started in February 1988 when Prospec Systems, the company behind the software, introduced a software solution for precision engineering companies that offered a practical, simple and logical solution to managing production and improving overall business efficiency.

But what exactly is PSL Datatrack trying to achieve and why has it become so popular with the precision subcontract engineering sector? For all such organisations a system that manages quotations, sales and purchase order processing with manufacturing controls is vital. For some Datatrack users, it has traditionally meant replacing a manual system that is simply a combination of excel spreadsheets and word documents. In this setup, there is often no cross referencing, data is duplicated, managing it is very time consuming and reporting is difficult.

PSL Datatrack recognised these problems very early on and this led to the development of its purpose designed production control software for subcontract precision engineering companies. As such, the focus is on the specific controls and reporting that are required to manage the production of turned parts, machined components and any product requiring a manufacturing process. Among these specific controls are scheduling, shop floor data collection, gauge calibration, non-conformance and tooling.

The software has been continuously developed since its conception 30 years ago, so that today it is arguably the leading system of its type available in the UK and, in the eyes of some, is the industry standard system.

Feedback from early adopters led to the formal development of the 'wish list' database that enables the company to register and manage all customer ideas for product development. This has become a major element in the development of the software and continues to be important, allowing the company to focus on the development of features that all users can



benefit from. This has been achieved over the years with major upgrades such as the 2002 introduction of a new Scheduling module, the 2008 Purchase Invoicing module, the 2009 Dynamic Bill of Materials module and the 2013 CRM/Task module.

Datatrack customers are typically subcontract precision engineers, ranging from a one-man band through to companies with 100+ employees. Some specialise in turning, milling or both, whilst others also offer a range of other processes including grinding, EDM, wire erosion, 3D printing, finishing, electronics, fabrication and other services.

A number of early customers were members of the BTMA (British Turned Parts and Machined Components Association) which Prospec Systems were invited to join in 2003 and remain members today. During this time, five presidents have been associated with companies actually using PSL Datatrack software, demonstrating the company's commitment to the subcontract precision engineering industry. The company has also been a member of the GTMA (Gauge and Tool Makers Association) for the last 11 years.

Today PSL Datatrack has a team of people

providing software development, support and sales from its offices in Bracknell, Berkshire. The longevity of the company is based on the philosophy of knowing its customers well and fully understanding their changing production needs. This is borne out by the number of very long-standing customers that PSL Datatrack is proud to have acquired over the years and continues to support.

For the future, Geoff Gartland, managing director of PSL Datatrack, sees many challenges for the engineering subcontract industry as we move into the era of post-Brexit:

"We are ready to meet those challenges by supplying software to assist all our customers in a changing environment for UK manufacturing and international trade. Our continuous R&D programme, together with feedback via the 'wish list,' will help us to provide the upgrades and additions to the functionality of PSL Datatrack that our customers will benefit from."

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GB Precision transforms laser sintered parts into precision components

Specialist subcontract engineering company, GB Precision has been transforming additive manufactured laser sintered parts into high precision tooling components at its Birmingham facility.

This is a development of work already being undertaken for a customer in the high-volume, high-precision packaging sector, that has been investigating the potential benefits of laser sintering as a way of reducing the number of tool components, improving cooling performance and therefore the price/performance of tooling overall.

The design improvement program is being carried out in a multi-stage approach to ensure that each set of changes is completely tested before moving on to the next. The first development has been to amalgamate three conventionally machined components into a single sintered one. This, on its own, has resulted in a 10 percent cost saving. These are the items that GB Precision has been transforming into finished, high-accuracy, fine-tolerance

components using its advanced machining equipment and skills.

When they arrive, the sintered parts are very rough and granular, so one of the very first challenges is to decide where the machining datum should be. Also, where conventionally the components would have been machined out of solid bar, the workholding would have been straightforward. With the sintered parts, this is not possible, so both machining processes and workholding need to be changed. In addition, the material itself poses significant machining challenges.

GB Precision has had to experiment with speeds and feeds, depths of cut and differing finishing tools and grinding wheels, as the parameters previously used for conventionally machined parts did not apply when machining the sintered metal.

Director Paul Turner explains: "This has really been a "learning by doing" experience. The first batch proved to be very much of an education, as the sintered material was incompatible with the tools and roughing process that was used for the conventionally machined parts. However, we have overcome these problems and have developed a process that solves all these issues.

"There is no doubt in my mind that a combination of laser sintering, conventional machining and surface treatments will provide significant cost, time and material savings and this really is the future. We are determined to be part of that future."

GB Precision was established in Birmingham in 1968. The current factory of 8,000 sq ft has recently been significantly extended to



accommodate new equipment and to cope with increased demand.

The company invests in the latest, high quality machining technology in order to offer customers a comprehensive range of precision engineering services, engineering complex geometries to tight tolerances through multiple machining steps – all in-house.

GB Precision offers a truly customer-focused service, from initial friendly and unbiased advice, through to more detailed outline discussions to understand the precise requirements of each job. It works with its customers to solve technical problems and propose the optimum machining strategy.

From rapid-response quotations through the ability to handle a variety of drawing formats, to an efficient delivery system, each and every one of its customers receives individual and special attention, whether the job is a "one-off" R&D prototype, a small batch or a large production run.

GB Precision specialises in tackling difficult engineering challenges, in a variety of materials in short runs at short notice.

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Phoenix Contact automates toolmaking preparation with hyperMILL

Global competition in the tool and mould making industry, shrinking batch sizes and the progress made in manufacturing technologies can quickly shift the bottleneck of a process chain from manufacturing to NC programming. This was evident at the toolmaking department of Phoenix Contact in the Westphalian town of Blomberg in Germany. Supported by the automation technology provided by OPEN MIND's hyperMILL CAM software, the company's CAM-based NC programming now runs fully automatically for long periods of time.

Phoenix Contact is a manufacturer of systems and components for electrical engineering and automation. For several years now, it has been upgrading its internal toolmaking department to the latest technological standards to automate and comply with Industry 4.0. A new control concept and revised manufacturing logistics enabled the company to lay the necessary foundations, as Dr Sven Holsten, director of 'tool shop plastics' at Phoenix Contact explains: "Today, we control our toolmaking department via a shop floor management system, along with a daily Gemba walk and a FIFO (first-in, first-out) method. As a result, we've been able to reduce waiting times and shorten the processing time of tools by an average of 50 percent."

The introduction of automated production processes was equally important. The toolmakers use flexible, mixed-process manufacturing cells that cater to milling, die-sinking EDM, measuring and washing operations.

Dr Sven Holsten says: "Automation was also essential in the area of job preparation. Carrying out process analyses in CAM programming, it was possible to identify a series of processes where staff was tied to



time-consuming routine tasks. This offered some starting points for a process of automation that considerably shortened the time required for programming and made it possible to partly relocate to an unmanned night shift.

Automation tools in the CADCAM system

It is fitting that OPEN MIND Technologies, was significantly upgrading the automation options offered in its hyperCAD-S and hyperMILL software solutions. It is now very easy to store complete and flexible CAM programming scenarios, so they can be reused and run on an event-driven basis. The long-standing CADCAM partner of the Phoenix Contact toolmaking department therefore played a substantial part in the decision to tackle the issue of automation in the area of job preparation.

At the beginning of 2017, these measures started yielding measurable successes. About half of all orders in electrode manufacturing are fully programmed in an automated batch run. For the rest, the programmer must still intervene manually to varying degrees. However, the programmer is still relieved of many extensive routine tasks. Those responsible for toolmaking are expecting to see similar benefits in the programming of moulds/dies and cavities, areas in which the second and third steps of automation are being driven forward.

When the automation service provider itself automates

Toolmaking at Phoenix Contact has advanced in an impressive way due to the fact that the company is recognised as a global leader for components, systems and solutions. Around 14,000 employees at different locations develop and produce a variety of electronic interfaces and power

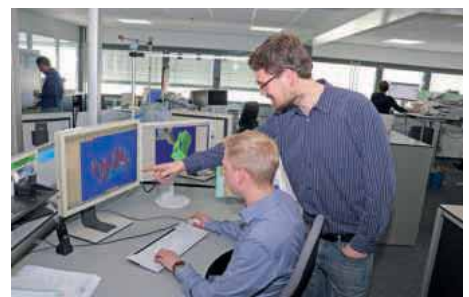
supplies, automation systems based on Ethernet and wireless technology, security solutions for humans, machines and data, surge protections systems as well as software programs and tools.

Here, Phoenix Contact benefits from its vast in-house production capacity. Not only does it produce plastic and metal parts, it also manufactures the punching and bending tools and injection-moulded tools required for these parts. Sven Holsten says: "We do this across different locations. Our toolmaking sites in Germany, India, China and Poland make up a global network for project planning and distributed working."

Innovative CADCAM partner

The Blomberg toolmaker has used OPEN MIND since the 1990s and has relied on hyperMILL since 2003. The software, with its powerful 2.5D, 3D and 5-axis cycles, plus the then revolutionary feature and macro technology, was in a better position to meet the company's growing requirements. However, as Sven Holsten makes clear: "Just because we've enjoyed a long-standing collaboration with a supplier, this doesn't mean we have to stick with this supplier forever. We carry out regular benchmarking, where our suppliers must prove themselves."

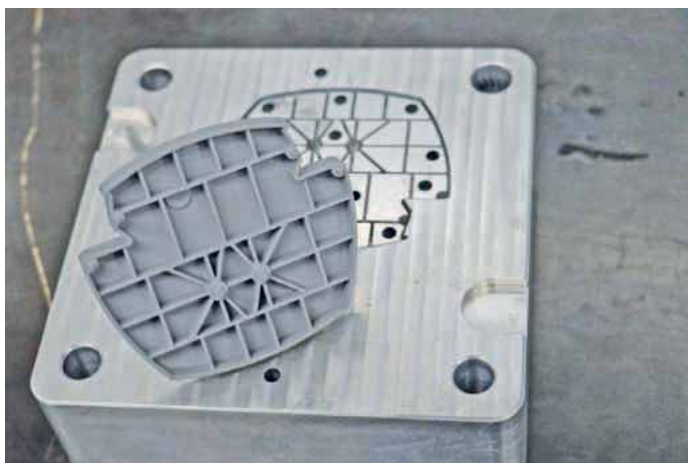
hyperMILL emerged as the winner when various CAM systems were compared in 2003 and it still holds this position today. Sven Holsten adds: "It's interesting that other suppliers have caught up over the past few years in terms of the range of cycles they offer. However, hyperMILL has taken an immense step forward during this time to the next level, the level of automated programming. This has helped us lay the foundations for automation in job preparation."





Openness for external programming

Flexibility and a reduced training were important development goals for OPEN MIND's automation technology. Andreas Leser, OPEN MIND's sales director for Germany, explains: "With our approach, the user can develop various programs and additional functions that allow automated CAM programming procedures. This technology allows the user to access a library with which functions and objects from hyperMILL and hyperCAD-S can be integrated into comprehensive and easy-to-change programming scenarios."



As a first step, graduate engineer Johannes Nittinger from the laboratory for machine tools and production engineering at WZL University, worked out the important basics as part of his doctorate: "Before starting to consider the automated programming of a component, all the fundamental processes of CAM programming must be clearly specified. This includes component analysis, tool selection and the choice of suitable features."

As CAM programming differs in complexity depending on the type of component, the automation team worked in stages. A start was made with electrode programming, which has now been successfully completed. This was followed by mould assembly and the programming of the mould plates. The final stage involved the injection moulded tool cavities.

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Connectivity, mobility and high-speed performance with WorkPLAN 2018 R1

The latest version of WorkPLAN ERP, from Vero Software, has been developed for the specific requirements of production management, in terms of mobility and rapidity from the design phase of a project, right through to delivery of the end product.

In its new 2018 R1 release, the WorkPLAN CRM module enhances performance and accessibility with the introduction of a mobile license solution, resulting from a collaborative partnership with Swing Mobility, a leader in mobile applications.

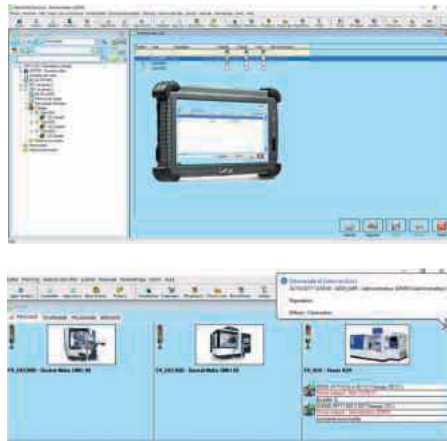
WorkPLAN product manager Christophe Mas says: "Mobility has become an essential tool for everyday company management. Building on experience, the WorkPLAN CRM module offers a highly efficient service for smartphones, tablets and laptops."

The mobile license is available for Apple, Android and Windows platforms. It offers quick access to customer data, tracking and organising CRM actions such as appointments and tasks. Users can quickly display a summary of opportunities, quotes, orders, invoices and consolidated turnover.

Because production management is not confined to the workshop, WorkPLAN 2018 R1 introduces a Packing Management module, offering tight control over shipments and rapid data exchange between different departments, while minimising the need for paperwork. Christophe Mas explains: "The touch tablet allows barcode scanning, real-time data entry and recording of packing data. It will now be possible to make up the packages, edit packing lists and/or labels showing weight, dimensions, and departure date, and to track the progression of each shipment, from package preparation to loading."

To optimise production equipment, WorkPLAN now offers fully integrated CMMS functionality. The new CMMS module defines spare part lists and document management for each machine, as well as allocating time and purchase records for unproductive tasks covered by CMMS operations, and allows real-time tracking of preventive and corrective maintenance schedules.

Christophe Mas says: "The intervention requests can come directly from the



workshop, based on a predefined default, which is a comfort for the users. The new CMMS module uses existing functionalities of the WorkPLAN licence, such as purchasing, quality control, planning, and cost analysis. The accuracy of this new functionality will depend on the functionalities implemented by the users."

To help improve efficiency and performance by maintaining a permanent connection with customers, suppliers and partners, WorkPLAN employs technologies such as EDI, Electronic Data Interchange, and non-standardised APIs as well as database synchronisation with files such as XML, CSV, and Excel, using ODBC SQL or Web Service queries.

Christophe Mas continues: "Amongst other things, this allows the creation of multi-line quotations and bulk order importing, creation and updating files with interface to shipping software, and outsourcing management communication between WorkPLAN databases."

In this major release, several new features and enhancements aim at improving overall workflow when managing projects in WorkPLAN solutions.

After the integration of leave and purchase requests in the 2017 version, Manual Time Management has been renamed Quick Access License, and further enhanced with new functionality, including the integration of intervention requests related to the new CMMS module.

Christophe Mas says: "Across the board, from quotations to quality control through design, manufacturing, technical data management, purchasing, scheduling and

Vero demonstrates a complete suite of solutions at Southern Manufacturing

Vero Software exhibited five of its popular CAD/CAM solutions at the recent Southern Manufacturing exhibition.

VISI, Javelin, WorkPLAN, Edgcam and Radan featured on the joint Vero/Hexagon stand.

The collaboration between Vero and Hexagon was demonstrated by the reverse engineering of a plastic moulding, using VISI software and Hexagon equipment. Visitors were intrigued by the Hexagon ROMER Absolute Arm, which quickly captured 3D point data of the plastic mould, with a capability of 752,000 points per second. Using VISI, this was then surfaced to a solid model and mould tool to be produced and finally checked using the Hexagon ROMER Absolute Arm.

VISI also demonstrated its new mould tool launched in the 2018 R1 software update.

Vero's Javelin and WorkPLAN ERP solutions also featured on the stand. Chris O'Mara, a consultant for Vero's ERP Division, says: "Visitors were looking for a way to streamline production and make sure they are cost-effective in doing so. Our solutions are perfect for managing shopfloor production and scheduling, which was of particular interest during demonstrations."

He says visitors were particularly excited by the scheduling functionality and usability of the software, especially in WorkPLAN, which is a new product for the UK, specialising in bespoke work. They also commented on the overall look of the interface and its ability to integrate with

other Vero products, including Cabinet Vision, VISI, Alphacam and Edgecam.

Edgecam had a successful show, with many manufacturers interested in both milling and turning solutions. Mike O'Neill, support engineer for Edgecam, says: "On day three, we had fantastic footfall on the stand, with many manufacturers asking for demonstrations, as they are currently not satisfied with their incumbent system. The overall feedback was that Edgecam is very user-friendly and they were suitably impressed with the technology on show."

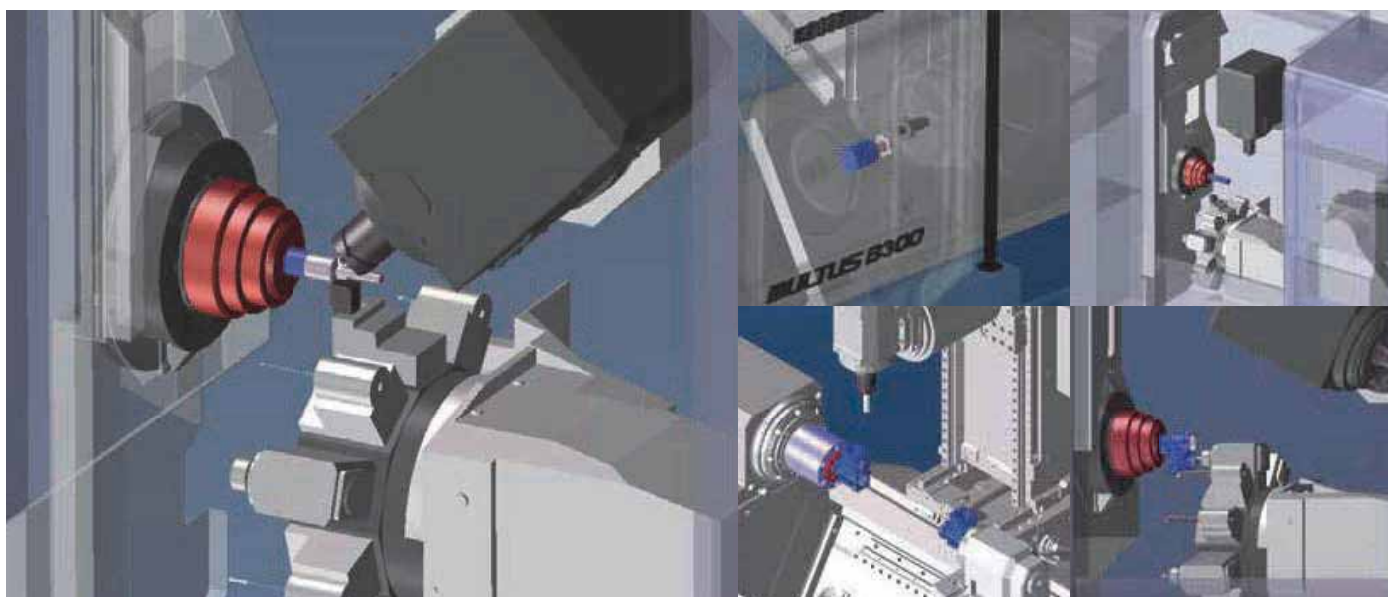
Interest level was also high for Edgecam Designer, a new product released for 2018. Designer, which is available for multiple Vero software brands, features direct modelling technology and combines powerful model editing commands with a full suite of geometry creation utilities. Edgecam customers who received an on-stand demo of the new product were enthused by its ability to adapt designs, regardless of how the original model was created, says Mike O'Neill.

As the only sheetmetal software provider at Southern, Radan found the show a great networking opportunity. Visitors to the stand were particularly interested in the



Radbend and Radan 3D modelling packages, designed to make sheetmetal design simple. Bob Thorne, sales support engineer for Radan, says: "This year's show has been a great opportunity to network with new and existing customers at a vastly improved venue. This was the first public showing of Radpro and a chance to show the latest Radquote and Radmanager, plus 2018 Radan CAD/CAM."

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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

GibbsCAM 12 reinvents the way programmers use CAM software. With a balance of new features and interface enhancements, GibbsCAM 12 delivers a CAM solution that is perfect for both seasoned users and brand-new programmers. It introduces a modern, updated interface that is designed to increase user-efficiency and improve the entire user experience.

Updated user interface

The new user interface brings an up-to-date look and an ability to customise, along with ease-of-use features that users expect, all while maintaining the traditional GibbsCAM personality, character, and workflow. These changes modernise the GibbsCAM interface, making it more familiar and inviting to new users, while preserving the powerful simplicity that experienced users appreciate.

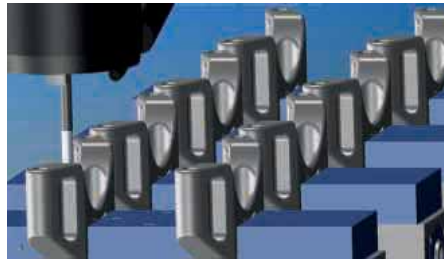
Interface customisation

Menus, toolbars, and palettes can be customised to optimise your workflow. You can easily configure your workspace for quick access to the functions you use frequently, as well as save an unlimited number of customisations, so that different users can quickly load the customised interface they prefer.

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.

In-house development of post-processors

Customers have access to more than 15,000 proven, error-free post-processors, along



with ongoing additions and custom post-processors created to customer's exact specifications. This provides users with postprocessors for virtually every machine/control combination on the market.

SolidSurfacer

Enhancements in Advanced 3D toolpath strategies provide more powerful and efficient tool motion to minimise machine run times. Pre-defined fixtures are now automatically avoided, providing accurate and error-free programming of solid models.

VoluTurn

The new VoluTurn option is the latest advancement in ultra high speed machining for turning applications. It offers manufacturers the ability to significantly increase productivity by reducing cycle times, while also reducing wear on cutting tools by creating constant-load toolpaths when turning with round turning tools.

Multi-Task Machining (MTM) programming capabilities

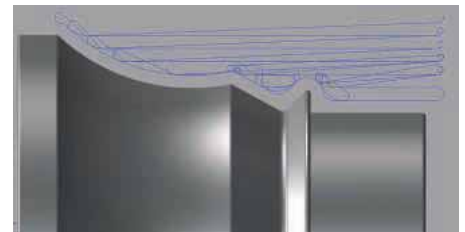
GibbsCAM 12's MTM option delivers cutting-edge programming capabilities for the most complex MTM and Swiss-style machines, including attachments such as part catchers, vices, tailstocks and robots. In addition, the Universal Kinematic Machining (UKM) technology provides users with the ultimate in flexibility and configurability to tackle machines with any number of spindles and axes.

A single solution for all CNC machines

GibbsCAM 12 is a single application, with a single user interface for programming all CNC machines. Whether the customer needs simple or complex parts or uses simple or complex machines, GibbsCAM 12

handles it all with the same, familiar, efficient interface.

As part of this release, video training and curriculum are available for new and experienced users, enabling them to get the most out of their software investments. Existing GibbsCAM customers, under software maintenance, will receive an inapp notification to automatically update the platform.



Ilan Erez, senior vice president and general manager for software at 3D Systems, says: "We continue to listen to customer feedback to provide the highest standard of excellence in additive and subtractive manufacturing solutions. Today's introductions emphasise our continuing pursuit to deliver industry leading software that makes customer's jobs easier, enabling them to be more productive with lower total cost of operations."

Tech CAD/CAM is proud to have been a GibbsCAM UK distributor since 1997 and has been bringing innovation to the manufacturing industry since 1988. The company offers a range of innovative and intuitive CAM software products which aim to be simple to learn and productive to use. Its highly experienced team are able to assess your needs and find the right combination of software, support and service to allow your business to excel and achieve its full potential.

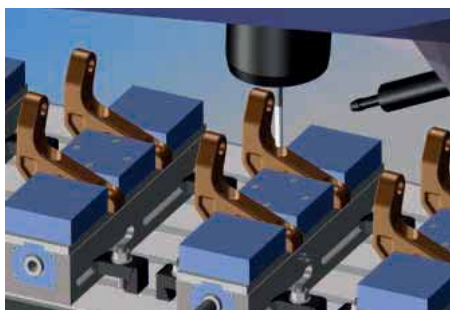
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Embrace the future of British Manufacturing with Autodesk

Autodesk will be sharing its vision of the Future of British Manufacturing at MACH 2018 with 2019 releases of CAM products, including Autodesk PowerMill and Autodesk FeatureCAM at MACH 2018. Visitors can hear more on the main stage at the MACH Conference where Asif Moghal, senior industry manager at Autodesk, will be presenting on the Future of British Manufacturing Initiative.

Since acquiring Delcam in 2014, Autodesk has offered digital solutions that automate and integrate design and manufacturing processes with the latest technology for CAM, additive manufacturing, simulation, robotics and inspection. With Delcam on board, Autodesk has the manufacturing tools, expertise and support to help its customers to make anything.

In addition to the new releases of PowerShape, PowerInspect and FeatureCAM, Autodesk will also be showing the new additive capabilities in PowerMill 2019. These allow manufacturers to successfully exploit the latest generation of additive and hybrid CNC hardware, driving wire-fed and powder-blown processes. PowerMill continues to offer the most demanding customers the programming tools that they need to produce high-quality NC code and drive subtractive, additive and hybrid manufacturing processes.

Visitors to the Autodesk stand at MACH will be able to see a scaled down sample of the RAMLAB (Rotterdam Additive Manufacturing LAB) propeller that was manufactured using PowerMill additive technology. The Port of Rotterdam's RAMLAB initiative is a great example of how entire industries can be disrupted by harnessing additive manufacturing technologies in conjunction with traditional manufacturing techniques.



You can download a free trial today and see how PowerMill can help to manufacture the most complex parts by visiting www.autodesk.com/powermill-free-trial


At the show, attendees will also get the chance to see the technology preview of Autodesk's new smart manufacturing software, Fusion Production, which combines production planning, job tracking, and machine monitoring by using cloud computing and the Industrial Internet of Things (IIoT). While not available commercially yet in UK, interested companies will be able to request access to either the pilot or beta program (free software access) by visiting the stand or www.autodesk.com/fusion-production until the software becomes commercially available.

On the main conference stage on Thursday 12th April, Asif Moghal, senior industry manager at Autodesk, will be talking about the Future of British Manufacturing Initiative, a collaboration between leading UK industry organisations. He will share five practical ways to embrace the future of making things and drive competitive advantage, in an environment where traditional approaches just don't cut it anymore. Visit the stand or www.autodesk.co.uk/futureofbritishmanufacturing to find out more and become a member.

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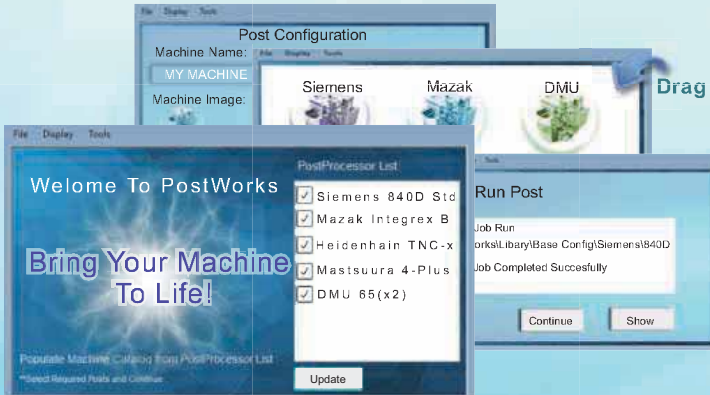


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Measuring quality

Metrology and force measurement machine specialist, Starrett will be exhibiting at the Control exhibition in Stuttgart. The international trade show will run from April 24th to April 27th, 2018 at the Stuttgart Exhibition Centre. Visitors can meet Starrett's engineers to learn how the company's machinery and software can help them improve quality assurance.

Control is one of the biggest events in Europe that is solely focussed on best practice and new technology for quality assurance. Over 900 manufacturers and distributors are set to exhibit at this year's show, demonstrating an array of tools and techniques to give manufacturers a competitive edge.

At Control, Starrett will be exhibiting several machines from its metrology and force measurement lines, as well as introducing visitors to its bespoke force measurement software.

Mark Murdie, metrology support engineer at Starrett, says: "Force testing ensures the delivery of a higher standard of customer experience. Even the stationery market requires force measurement for testing products like clickable pens. Depending on the product and the sector you operate in, you will have different demands of testing equipment and software, in addition to differing levels of inhouse skills to operate the technology.

"This is why we have developed a range of force testing software to suit different needs. Our L1 software, for example, has been developed to specifically meet the



needs of basic load, distance and force measurement testing for production and quality control environments. This software does not require prior programming knowledge and it is pre-programmed with built-in Quick-Test software templates.

"For more advanced requirements, we developed our L2 and L2+ software, which are ideal for lean manufacturing environments. This software is suited to high volume, in-situ production applications where incoming inspection and validation is required. More advanced test setups can be created in seconds using our Test Builder programme without any previous programming experience."

Several force measurement machines will be on view at Starrett's stand, along with a selection of non-contact metrology equipment including video measurement machines and optical profile projectors, such as the VB300.

The VB300 has been designed to meet the demands of the modern metrology industry, without requiring large capital investment. The vertical benchtop projector is ideal for rapid inspection of small, lightweight components, plastic mouldings and small electronic components. It incorporates a fully useable 300 mm diameter upright screen with precision cross lines, overlay clips and integral hood.

The VB300 can also be equipped with either a simple, integrated LED readout display or a choice of Metlogix or Quadra-Check geometric readouts.

The L.S. Starrett Company, founded in 1880, manufactures more than 5,000 variations of precision tools, gages, measuring instruments and saw blades for industrial, professional and consumer markets worldwide.

Like all businesses, the company started with a man and an idea. The man was Laroy S. Starrett; his idea was "to invent something useful that people would want." He had unusual ability, vision and enterprise, but without his high courage the foundation and growth of "the world's greatest toolmakers" would never have happened. He was born in China, Maine, in a farming community, but even as a small boy L.S. Starrett was fascinated by tools

The Jedburgh site was purchased in the 1950's when the company took over the North British Rayon premises.



In 1990, Starrett purchased the total assets of Sigma Optical, a United Kingdom firm which designs and manufactures optical measuring projectors and formed the Starrett Precision Optical Division. A heavy snowstorm in the 1990's destroyed the roof over the precision tool manufacturing area, causing the business to refocus.

In 2002, Starrett introduced its new line of Galileo® video-based measuring systems. These systems are available as both manual and CNC driven machines in two basic ranges and are widely used in the medical field, electronics manufacturing and the computer industry.

Today, the L.S. Starrett Company manufactures in bandsaw, jigsaw and reciprocating sawblades in South America, precision tools, projectors and force measurement equipment in the USA, hole saws, cold steel and bi-metal bandsaw blades and projectors in the UK and uses its China facility mainly for assembly.

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Aberlink provides pace and precision to Meridian

Based in Littlehampton, West Sussex, Meridian Medical Ltd specialises in sterile and non-sterile medical device design, development and manufacture. The company also supplies high quality production tooling for customer projects.

Meridian Medical occupies over 9,000 square feet of purpose-built manufacturing facilities. Impressive amenities include advanced clean room injection moulding capabilities, as well as large clean room assembly and packing operations. The company's areas of sterile device expertise include: drug delivery; IV management; paediatric and neonatal critical care; urology; anaesthesia; orthopaedic device development; general surgical device; accessory development.

Given the nature of Meridian Medical's products and the sectors it serves, the company guarantee regulatory compliance to its clients. Manufactured products are tested and inspected to ensure that only the highest quality products are released for use. To help ensure compliance, all company test equipment is calibrated and traceable to national and international standards.

Meridian Medical's QA department, which remains completely independent of the company's production and design departments, sets standard, end-to-end QA/QC procedures relating to all company activities, for instance, purchasing, production, assembly, packing and shipment.

The business's highly developed quality culture can be illustrated by the recent purchase of an advanced Axiom Too CMM coordinate measuring machine from Aberlink.

James Fenton, managing director of Meridian Medical Ltd, explains: "Meridian Medical Ltd has earned an enviable reputation for our design consultancy services and for our advanced manufacturing provision. We supply high-quality cost-effective disposable medical device services together with comprehensive sterilisation services and logistics. We are registered to ISO 9001:2008, ISO13485: 2003 and FDA 21CFR 820, and quality and reliability are designed and built into every device we produce.

"Although we have a wide range of specialised test and measurement



equipment, increased volumes passing through our busy QA department recently prompted us to search for a suitably accurate, universal dimensional measuring device that had both ease-of-use and speed of operation. Having considered other options, influenced by a very successful demonstration and by several recommendations from local Aberlink users, we decided to buy the CNC version of Aberlink's Axiom Too CMM.

"Now fully operational, not only has our new Aberlink CMM removed the potential for hold-ups in our QA department, the machine's CNC nature and its ability to perform rapid, automated inspection routines, means that it will be able to handle all anticipated future demands.

"Our Axiom Too is now busy measuring first-off and last-off components and also undertaking work such as inspecting a given percentage of each manufactured batch, as dictated by our customers. As traceability is

vital within the medical industry, it helps that the new CMM is able to generate detailed reports relating to the critical dimensions of each inspected component.

"Given the generous size of the Axiom Too's bed and its fully automatic CNC capabilities, we have plans to further exploit the machine's advanced capabilities. As the majority of the components that we measure are relatively small, we intend to invest in fixtures that will accept large batches of components that require 100 percent inspection. In future, having loaded a fixture with parts and recalled the relevant program, the press of a button will then start a fully automated, un-manned measuring routine. On completion of each batch, the generated inspection reports will indicate the status of each inspected component."

The cost-effective Axiom Too is the best-selling CMM from the largest UK-owned coordinate measuring machine manufacturer. Aberlink's popular Axiom Too

is available in both manual and CNC variants in a range of capacities and is described by Aberlink as the 'complete inspection centre'. As it boasts an aluminium bridge with a very low thermal mass, the recently upgraded CMM is ideal for use in either controlled environments such as inspection departments or within less than perfect shop-floor conditions. Thanks to the Axiom Too's use of advanced materials, the machine's reduced inertia also results in class leading speed of operation.

Borrowed from the laser optics industry, the CMM's sturdy granite table consists of an advanced granite/aluminium honeycomb construction. This technology provides natural damping and further improves the machine's thermal properties. Despite the Axiom Too's generous X-Y-Z measuring volume, 640 mm x 600-900-1200-1500 mm x 500 mm, the machine's compact design occupies a relatively small footprint, with the controller and all peripherals housed within the Axiom Too's workbench.

The Axiom Too utilises Aberlink's renowned 3D software, ensuring greater user productivity and profitability. A welcome bi-product of any Aberlink CMM inspection routine is that a simultaneous

picture of the measured component is created on the computer screen. Dimensions between the measured features, mirroring those that appear on the component drawing, can then be simply picked off as required. In essence, this 'smart' software represents an intelligent measuring system that is able to automatically recognise and define the various features being measured. Aberlink 3D is claimed to be the easiest to use and most intuitive CMM software currently available.

Now the largest UK-owned CMM manufacturer, Aberlink's comprehensive range includes 32 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 m long and up to 6 tonnes in weight. Customers are able to select from a wide range of tactile 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 has established a global reputation



for its metrology products which are innovative, easy-to-use and competitively priced.

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Speed and accuracy aids world record attempt

Having smashed the previous mark by 20 mph, Scunthorpe based Becci Ellis set an incredible world record of 264.1 mph on 17th August, 2014 and became the world's fastest woman on a conventional motorcycle over a standing start mile. Achieving the female land speed record also makes her the fourth fastest rider in the world, just 30 mph behind the overall world record set by the late American rider Bill Warner.

Becci's amazing feat was performed at Elvington Airfield in North Yorkshire on a 1,300 cc Suzuki Hayabusa that, when launched in 1999, immediately won acclaim as the world's fastest production motorcycle. In preparation for Becci's record breaking run, her Hayabusa was highly modified by her husband, Mike Ellis with the help of a team of dedicated volunteers and sponsors, enabling it to generate a mighty 650 bhp.

Not satisfied with being the current holder of the record, Becci is now busy preparing for a new attempt to further raise her own record speed. In addition to multiple further mechanical modifications to the previously record-breaking Hayabusa, particular attention is now being paid to the aerodynamics of both the bike itself and to the rider.

Rather than use traditional wind tunnel testing method to analyse and improve the bike's aerodynamic performance, the team behind Becci's latest record-breaking attempt are using advanced virtual simulation techniques.

Increasingly, rather than wind tunnel testing, manufacturers are choosing to use virtual simulation systems in their quest to reduce their products aerodynamic drag. By using computer simulations, engineers and designers are able to model a product's aerodynamics without the need to construct a physical prototype.

To help gather the raw data needed to

enable the best possible virtual simulation outcomes, the team enlisted the help of Manchester Metrology, the acknowledged expert in the field of precise laser scanning and data capture. Mindful of the need to acquire highly accurate data, the staff of Manchester Metrology used a FARO Edge ScanArm HD to undertake the critical scanning routines of the bike and rider.

Mike Ellis explains: "Aerodynamic drag is a strong, unwelcome force that increases with the square of the speed. Therefore, as the speed we achieve doubles, drag quadruples. Given the high speeds that we are looking to reach, it is obvious that much attention needs to be paid to this vital area.

"Without the help of our much appreciated volunteers and sponsors, the previously world record would not have been possible, nor would our new record attempt. In addition to our long standing friends who have enabled multiple mechanical advantages to be gained, our new attempt to better the previous mark is being helped by the staff of Northumbria University Faculty of Engineering and Environment, Department of Mechanical & Construction Engineering, lead by Professor Robert Dominy FIMechE, C.Eng, MSAE, PhD, DIC, BSc (Hons), who have provided invaluable assistance in the field of aerodynamic virtual simulation.

"The raw data needed by Northumbria University for aerodynamic analysis is being gathered by the staff of Manchester Metrology, that is using an advanced FARO Edge ScanArm HD laser scanner to scan all aspects of the bike/rider combination and to generate the required files.

"We consider that virtual simulation methods deliver quicker results than wind tunnels do, they cost less and provide us with better results. A major advantage for us has been that the software used by Northumbria University can instantly indicate where our aerodynamic weaknesses are and provide invaluable feedback on how to improve our designs."

The advanced Edge ScanArm HD is the latest advancement in FARO's popular ScanArm product range and provides point cloud capture with rapid speed, superior resolution and high accuracy. The compact, easy-to-use Edge ScanArm HD combines the convenience of a FaroArm with the power of a Laser Line Probe, creating a



flexible, high performance contact/non-contact portable measurement system.

New functionalities allow users to seamlessly scan across diverse surface materials, regardless of their contrast, reflectivity or part complexity, without the need for special coatings or target placements.

Although relevant to endless other applications, common uses include reverse engineering, certification, prototype part scanning, first article inspection and periodic part inspection.

The Edge ScanArm HD's extra wide scan stripe and fast frame rate helps to boost users' productivity by increasing coverage and reducing scanning time. Also, the compact and easy-to-use instrument dramatically reduces required training time, due to features such as the new crosshair feature, as well as the existing LED Rangefinder which provides real-time scanning feedback.

Reliable, repeatable and highly accurate measurement data is delivered with confidence as a result of the FARO Edge ScanArm HD superior optical performance, while the high definition data of intricate components can be captured in fine detail as a result of the Edge ScanArm HD's 2,000 actual points per scanline and the new blue laser featuring noise reduction technology.

The compact and easy-to-use FARO product dramatically reduces required training times, due to the use of the new crosshair feature. The existing LED Rangefinder also provides real-time scanning feedback.

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MACH • Stand: H19-140/H19-160



Bowers Group showcases its range

Bowers Group will be exhibiting its full range of leading metrology products at MACH. Visitors will have the opportunity to find out more about the range of precision measurement equipment available from the Bowers Group, including a selection of products from Baty, Trimos, Sylvac, Gagemaker, Innovatest, WYLER and ACCRETECH.

Once again, visitors to the show are invited to bring their own material or components to be tested on the day by experts from Bowers, who will be providing working demonstrations of the latest measurement technology. Stuart Millington, sales director of Bowers Group, says: "This years' MACH exhibition will be another fantastic opportunity for Bowers staff to demonstrate outstanding levels of technical expertise and capabilities. We're very keen to show visitors how we can assist with innovative metrology solutions, demonstrating exactly how our products and services can make customer's lives easier."

Bowers Group's will also exhibit new Baty

Venture XT Vision system for the first time in the UK, demonstrating the latest software innovation Fusion MK4, along with the Baty R400 FT2-E touch screen profile projector.

Industry 4.0 will be a particular focus, not only at the exhibition but from the Bowers Group. The new Sylvac F60 series of optical scanning systems will be exhibited at the show, alongside a collaborative robot with a direct interface to the Sylvac Sylcom integrated software solution. The stand will feature Bluetooth gauges from Bowers and Sylvac, illustrating how the interoperability between machines, devices and people is a great example of Industry 4.0.

The Bowers Group stand will also feature the Trimos Labconcept Horizontal Calibration Machine, along with a selection of height gauges including the V series range from Trimos and Hi_Cal from Sylvac. In addition, visitors will have the opportunity to see a selection of Wyler Levelling instruments, Gagemaker thread measuring devices and other hand tools, including products from the famous Moore & Wright brand.



Also on show will be the leading Innovatest range of bench and portable hardness testers, along with the ACCRETECH Rondcom Touch roundness checker and Handysurf portable surface roughness instruments.

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MACH • Stand: H18-310

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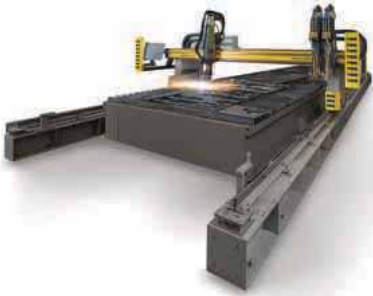
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Leading welding and safety equipment manufacturer ESAB will showcase an impressive range at MACH 2018



high-speed plasma cutting, high precision cutting, plasma marking, thick-plate cutting, dry (multi-gas) cutting, and water injection cutting on a wide variety of materials. Featuring the most advanced gas control system in the industry, m3 Plasma is fully automated by ESAB's Vision CNC. To produce the best cut quality, simply select the material type and thickness and the Vision CNC automatically sets the start, cut and shield gas pressures and flow rates.



WeldCloud

Another highlight on the ESAB stand will be WeldCloud, ESAB's online database that connects multiple welding power supplies to a software platform that manages data and enables analyses to be undertaken and productivity improved. WeldCloud uses 3G, WiFi and Ethernet technologies to collect data from every weld pass performed by connected machines. Security is assured as the data sits within the company's IT system in order to avoid difficulties with firewalls. If necessary, data can be shared with ESAB for troubleshooting or process optimisation. In addition to these traceability, diagnostic and productivity benefits, data can be transferred from the WeldCloud database to individual welding power sources if, for example, enhanced process parameters need to be rolled out. Production engineers, welding engineers, quality assurance managers and maintenance departments all stand to benefit from the scalable WeldCloud platform. WeldCloud will be demonstrated using 'live' welding process data from machines operating at the ESAB stand.



Rebel family

The Rebel family will be on show, including the new 3 phase Rebel EMP 255ic and 320ic. Both machines are compact and lightweight, combine power with mobility and offer flexibility in any fabrication environment. As with all the Rebel family, they are extremely user-friendly and have a multilingual TFT-panel incorporating spare part lists and weld parameter guides for all processes.

Visitors will also be able to see live demonstrations of the Rebel 215ic and the Rebel 235ic. The Rebel 235ic offers multi-process functionality, including MIG/MAG, TIG and MMA. Weighing only 24 kg and with a 235-amp rated output at 40 percent duty cycle, Rebel 235ic has the best power-to-weight ratio in its category.

Combirex DX and m3 Plasma system

The Combirex DX offers large gantry design and performance in a compact package. The rugged gantry features all-steel construction with machined mating surfaces for stiffness and accuracy. Heavy duty weldments support triple machined T-rails to provide a sturdy, stable foundation. Featuring a precision linear rail Y-axis guiding system, precision 3-axis rack-and-pinion drives, digital AC drives and AC brushless motors, this machine delivers the cutting performance you would expect from much more expensive gantries.

The Combirex DX can be equipped with air plasma systems up to 120 amps or ESAB's iSeries Plasma System, which allows the machine to cut and mark with the same plasma torch. Being displayed with the Combirex DX is the m3 Plasma which combines plasma cutting and marking capabilities in a fully integrated, easy-to-use system that delivers high precision and high productivity.

The m3 Plasma system performs



Renegade series

The ESAB stand will also include demonstrations of the Renegade ET 300i for MMA and TIG with high frequency (HF) or Lift TIG arc starts and Renegade ET 300iP, which add control for pulsed TIG welding.



Columbus software

Also on display is ESAB's Columbus software, which makes it easy to program various cutting processes, as well as marking and labeling processes. Intelligent wizards contribute to intuitive operation, so you can perform simple and highly complex cuts, labelling and nesting jobs quickly and easily.

Network compatible, the software has been developed using the leading Microsoft .Net standard, so you benefit from user-friendly, standardised interfaces that allow quick and easy connection to your company's IT system. Columbus also supports Precision Hole Technology™ with a built-in database that automatically assigns the optimum lead-in, lead-out, and process codes required to achieve bolt-ready holes on mild steel up to 1 inch (25 mm) thick.



Cutmaster 60i

The Cutmaster® 60i is for handheld air plasma cutting. It weighs 16.8 kg and provides a rated output of 7.6 kW at 50 percent duty cycle at 60A. It produces a recommended cut of 16 mm, has a maximum sever thickness of 38 mm and provides the fastest cut speed at any thickness material for its class.



MMA electrodes

ESAB will also be exhibiting a comprehensive range of MMA electrodes to suit a broad range of industry-specific welding applications and stainless-steel wires for MIG and TIG processes.



Sentinel A50

The Sentinel A50 helmet will be on display. This helmet's radical design incorporates ergonomic headgear and maximum adjustability to increase productivity, functionality and usability. The Sentinel A50's high-tech features include an almost infinitely adjustable 5-point headgear, a 100 x 60 mm viewing area, an externally activated Grind Button, a colour touch screen control panel and a front-loading convex cover lens that comes in different colour options and changes in 10 seconds.

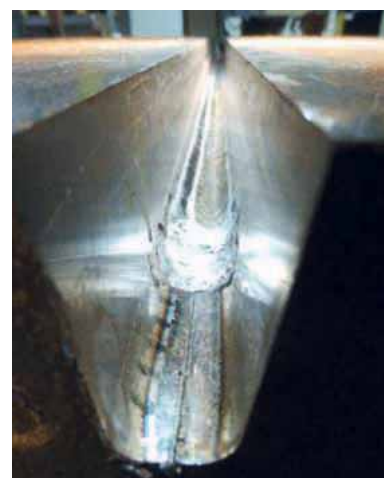


F&G helmets

ESAB will also be launching a new range of F&G helmets; the F20 with a 60 x 110 mm viewing area and F20 Air with a 90 x 110 mm viewing area, both with flip front options and a lightweight shell with comfort headgear. Both incorporate changeable DIN lenses, an inside viewing visor and have a respiratory option with ESAB PAPR (Powered Air Purifying Respirator) unit. The G30 and G30 Air will also be on display; both have changeable inner and outer lens, a lightweight shell, a large inner grinding visor along with comfort headgear. They also have respiratory option with ESAB PAPR (Powered Air Purifying Respirator) unit.

Along with the G30 and G30 Air, ESAB will be exhibiting the G40, G50, G40 Air and G50 Air which are combined welding and grinding helmets. The G40 has a passive mineral glass and the G50 has an ADF (Automatic Darkening Filter), with shade

levels DIN 9-13 and both with flip-up visors. The helmets are rated B in the impact resistance classification, which means they are approved for grinding. Both also have respiratory option with ESAB PAPR (Powered Air Purifying Respirator) unit.



Filler Metal Hub

A Filler Metal hub will be on the stand promoting ESAB's new Filler Metal Databook. Alongside the Databook, will be ESAB's new products PURUS and 10.62 Flux, which were both first exhibited at Schweissen & Schneiden. ESAB's Filler Metal experts will also be on hand to answer any questions and offer practical welding tips and advice.

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MACH • Stand: H17-580

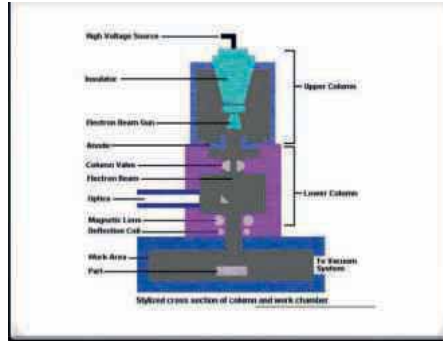
K-TIG vs electron beam welding

Electron Beam Welding (EBW) is a form of fusion welding. Materials are joined by using a beam of high-velocity electrons to create kinetic energy between the two workpieces and cause the two pieces to melt and flow together. EBW is usually performed in a vacuum, so the electron beam doesn't dissipate. German physicist Karl-Heinz Steigerwald developed this form of welding in 1949. EBW is used for specialist applications, such as aerospace, transmission assemblies and bi-metal saw blades. The reason EBW is confined to specialist applications is that it carries very high equipment and preparation costs and places constraints on the work chamber due to the need for a vacuum.

K-TIG, on the other hand, is a single-pass, full-penetration keyhole welding technology which performs a six-hour TIG weld in under three minutes, in just one percent of the time normally required. K-TIG has 8 x the penetration of GTAW, allowing it to perform x-ray quality welds in materials up to 5/8 inch (16 mm) thick in a single pass, without the need for edge bevelling.

Welds are performed at up to 100 x the speed of conventional TIG/GTAW. The average cost saving of K-TIG customers is between 80 and 95 percent. K-TIG is a GTAW process which requires no edge bevelling, uses as little as 10 percent of the gas normally required and produces highly repeatable, x-ray quality welds with superb cap and root aesthetics.

The welds meet US, European & Australasian welding standards including ASME IX, and have been subjected to exhaustive Lloyds-witnessed and certified testing. K-TIG has been exported to 18 countries and is being used in production by many of the world's most productive fabricators in numerous industries from pressure vessels and tanks to power generation and nuclear applications.



K-TIG full penetration welding greatly reduces welding times, labour costs, filler wire consumption, repair costs, gas and power consumption and eliminates bevelling, grinding, back-gouging and reworking. K-TIG's deep penetration can be used to achieve single-pass welds on square butt joints or can be utilised with all standard GTAW preparations. K-TIG is suitable for both longitudinal and circumferential welding in 1G and 2G positions.

Compared to Electron Beam Welding (EBW), K-TIG offers dramatically lower capital and operating costs, far higher fitup tolerance and is a simple, inexpensive and effective alternative for many applications which have traditionally used EBW.



EBW is a high-end process and comes at a high-end price. You can expect to pay around US \$1.2 million for an EBW system and, depending on the size of the vacuum chamber, the capital cost may be higher. By contrast, a complete turn-key K-TIG welding cell costs circa US \$100,000 yet can be utilised for many of the applications which EBW is currently being applied to. In most cases, all existing automation equipment can be used with K-TIG, meaning there are no further costs during setup.

Depending on the power level (for example, 15 kW or 30 kW), thicknesses up to 60 mm or beyond can be penetrated with a single pass when using EBW.

K-TIG comfortably performs single pass welds in 16 mm thick titanium, 13 mm austenitic stainless steels, Hastelloys, Inconels, a wide range of nickel and cobalt

alloys and 9 mm in conductive materials such as ferritic steels & carbon steels. The fact that EBW is performed in a vacuum means no shielding gas is required and oxidation isn't a problem, so the crown of the weld is usually smooth. However, the root bead is subject to a lot of splatter and dressing or grinding must be performed post-weld.



As long as gas properly shields the face and root sides of the weld, the K-TIG process consistently produces smooth and uniform welds that require no dressing or grinding post-weld.

The simplicity of the K-TIG system means that businesses making the switch can expect dramatically lower maintenance costs. The K-TIG system is characterised by virtually no consumable components, all parts extremely robust and the system is rated to 1,000 amp 100 percent duty cycle, far beyond any production welding which will be performed, even in the thickest materials. K-TIG is a simple process, and the K-TIG controller manages the weld parameters. An operator can be trained to proficiency in just three hours, while comprehensive supervisor training can also be completed in just a day or two.

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Automotive ex-Cell-ence

From humble beginnings to a multi-million annual turnover, Sertec is a Midlands manufacturing heavyweight that has reaped the rewards of savvy investment and strategic acquisitions to become a linchpin in the supply chain for global automotive giants

As a Tier One supplier to the likes of Jaguar Land Rover (JLR) and Toyota, Sertec is one of the leading manufacturers of structural body parts in Europe. With eight sites in the UK, as well as locations in Hungary and China, the company has grown at an unprecedented rate from its beginnings as a two-site tool and jig manufacturer operating out of factories in Coleshill and Aston in 1962.

Upon entering the company's headquarters and principal manufacturing site in Coleshill, there is no escaping the JLR connection and Sertec's relationship with the manufacturer has been central to its growth. "It was the launch of the Range Rover Evoke that really changed things," begins Colin Partridge, head of Welding Projects at Sertec Group. "We've grown

tenfold since 2008, from a turnover in the region of £30 m to in excess of £250 m today.

"We manufacture parts for all four quarters of the vehicle. We do a lot of seating work, as well as smaller trim and electrical components from stainless steel. It's not all structural, but the vast majority of our larger assemblies are."

Key to Sertec's success with global automotive manufacturers is its willingness to move with the times and embrace new jointing technologies; particularly given JLR's preference for high strength aluminium.

Colin Partridge continues: "Over recent years, the use of aluminium and high strength aluminium has been JLR's forte. As a Tier One supplier, we've embraced those jointing technologies and diversified from purely resistance welding and MiG-MaG welding though to aluminium SBR (Spin-Blind-Riveting) systems, to support its own growth."

Given the volume and variety of jointing applications that Sertec undertakes,

automation has been a mainstay of its production operations for nearly two decades.

"The company has always dabbled in automation, predominantly on the MiG-MaG side and particularly with the use of robotics. We've worked with robot welding specialist, Cyber-Weld, for over 15 years and our robotic welding applications dramatically increased when we started working on the likes of the Evoke and the Range Rover L405," adds Colin Partridge.

"Ultimately, the difference has been the growth of product and becoming more specialised on the aluminium side. We've gone from being a spot or MiG welding company to one that offers a variety of jointing methods covering dissimilar metals. We now have structures where we can join steel to aluminium, aluminium to aluminium, or even a steel to steel joint using rivet systems."

The longstanding relationship with Cyber-Weld has helped Sertec continue to grow and develop its robotic automated jointing offering with a view to keeping pace



with JLR's own production demand. With robots used across all of Sertec's manufacturing sites, there is one common, and yellow, denominator.

"I've grown up with FANUC robots. I've worked closely with them at other companies and, when I joined Sertec 12 years ago, there were a number of older models in place. Over the years, we've worked with Cyber-Weld to replace the older models and we're now very much in the 21st century, so to speak. We use servo-controlled spot welding guns and everything sits on ethernet IP.

"Flexibility is key for all our robotic applications. JLR has never been about high-volume sales, so we need to make sure our cells are able to adapt the type of work and materials that may be required at a particular moment in time. We have three or four cells that are bespoke to certain applications, but the rest are flexible. Given the need to be flexible, programming is key. Rather than using external PLCs, the FANUC robots allow us to program everything through the PMC inside of the control so that everything is self-contained. This really sets us apart from competitors, who may operate using Siemens or Mitsubishi controls. I don't think many people are aware of how powerful the PMC system is within the controller. We can easily run cells with two robots through the PMC."

Sertec currently has 40 robots at its main site in Coleshill and over 100 in operation across its other UK and European operations. "Given the size of the group, standardising with FANUC gives us a lot of commonality across the group. Crucially this isn't limited to the robots themselves, but also encompasses the operating and programming systems too," adds Colin Partridge.

However, one of Sertec's latest MiG

welding cells to go live is not for JLR, but for another giant of the automotive industry, Toyota. The new £500,000 cell is contracted to Toyota supplier Adient and is designed and supplied by Cyber-Weld. It is equipped with two FANUC ARC Mate 0iB robots, controlled by R030iB controllers and scheduled to produce circa 80,000 rear seat assemblies every year for the new Auris, at Sertec's Coleshill site. It is also equipped with a 500 kg payload turntable of 180° indexing, air-cooled Binzel welding torches and a torching cleaning system.

Colin Partridge concludes: "Many of the welds on the Auris seat structures are safety critical, so the cell has also been fitted with an ARCAgent™ weld monitoring system, which includes industrial PC and cabinets to monitor every weld.

"Ultimately, the complexity of the cells we are building will continue to grow and with that comes the need to embrace new technologies. We're always upping our game when it comes to the equipment we're using in our cells. If we can get that right, then our customers are happy."

At its state-of-the-art headquarters in Ansty Park, Coventry, FANUC UK brings together world-leading capabilities in industrial robots, machine tools and plastic injection moulding machines to facilitate the complete integration of factory automation systems for UK manufacturers.

FANUC UK works in partnership with FANUC Europe Corporation to provide a range of customer support services, including sales, product support, parts, repairs, and training, as well as development of bespoke engineering systems. FANUC UK is a subsidiary of FANUC Europe Corporation and employs approximately 107 staff.

The FANUC Corporation is a leading global manufacturer of factory automation

solutions using Computer Numerical Control (CNC) systems. From its international headquarters at the base of Mount Fuji in Japan, FANUC specialises in the development and manufacture of factory robots and automation machinery, including wire EDM machinery (ROBOCUT), high-speed milling machinery (ROBODRILL) and injection moulding machinery (ROBOSHOT). More than 400,000 FANUC robots are currently operating worldwide.

FANUC develops and manufactures all its components in-house and provides lifetime parts, repairs and support to its customers. Based on more than 60 years of research, FANUC's CNC systems allow manufacturers to maximise their productivity, while minimising downtime. All FANUC systems offer high reliability, strength, control and precision. They are also equipped with intelligent energy management systems, which provide optimum performance using the least energy possible. FANUC is a global leader in CNC systems, currently holding 65 percent of the market share in the global CNC sector.

FANUC was founded in 1956 by Dr Seiueemon Inaba. The corporation now has more than 2,000 robots working on its own lines, with more than 250 offices and 5,200 employees worldwide.

For more information on FANUC or to see its current product range, visit:

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Exceptional cooling to ensure the best possible welding results



The new ArcTig welding process from Fronius

When welding, it is not only seam quality that matters; speed plays a significant role too. Both help the welder to work more efficiently and so reduce costs. With the modified TIG process, ArcTig, Fronius has developed an innovation for mechanised joint welding that addresses these requirements. A special welding torch allows the TIG arc to be focused in a targeted manner and its energy density is significantly increased. Users can weld up to 10 mm thick, high-alloy sheets and pipes without extensive seam preparation, to an exceptionally high quality standard and much quicker.

The ArcTig welding process from Fronius is based on the principle of tungsten inert gas welding, or TIG welding for short. In this process, an arc burns between a non-melting tungsten electrode and the metallic workpiece in an oxygen-free, reactionless gas atmosphere. The current flow heats the electrode, resulting in an electron flow. This reduces the combined resistance, producing a soft, wide arc. The inert protective gas shield means there are no chemical reactions with the liquid weld pool. This enables users to produce a perfect weld-seam appearance without tempering colours and spatter as well as the best weave pattern. TIG welding is suited to a variety of different materials and applications, including tricky materials like titanium.

The ArcTig welding process is designed for applications in container and pipeline construction, in the manufacture of turbines and the construction of special machines, cranes and tanks. The key innovation here is the optimised welding torch with an electrode clamping system, which enables the electrode to be cooled right to the tip. This increases the combined resistance and creates a high arc voltage. Electron emission now takes place over a small area but at an extremely high density. This makes the arc

narrower and more targeted, allowing the user to achieve exceptional weld seam quality. Another advantage of the cooling is that it prevents overheating of the electrode during welding, providing increased arc stability and ensuring a longer service life and improved ignition. Users can upgrade all TIG power sources from Fronius above an output of 220 amperes to the ArcTig process with ease. The only equipment

accelerate processing times considerably, while the welding process also permits higher welding speeds. What's more, material costs are lowered as the weld seam volume is reduced.

The ArcTig process also impresses in terms of operation. Because it is very similar to TIG welding, users do not have to adjust to a new process and can weld immediately without carrying out any time-consuming



The ArcTig welding process from Fronius achieves high welding speeds and outstanding weld seam quality

required is the new welding torch and an additional heat exchanger to provide the cooling capacity and the required temperature stability. ArcTig is also available as a complete system.

Shorter processing times and lower filler metal costs

The focused and high-pressure arc means the ArcTig can be used to weld components in one layer to a material thickness of up to 10 mm. In conventional TIG welding, several layers are often needed. Additionally, it is frequently the case that users no longer need to do time-consuming preparation work on parts. As there is no gap during seam preparation, no weld pool support is required for the ArcTig process. This cuts down on rework to a large extent, since the weld seam is raised to a minimal degree and there is very little distortion due to the reduced heat input. This enables users to

teaching-in. This minimises the need for training and prevents incorrect operation by the welder, as just a few parameters need to be set. Users can make use of standard TIG electrodes that are quick to change and can easily be reground as necessary. The new electrode clamping system clamps the electrode over a large area. To make the weld seam more accessible and enable the arc to be manipulated better, the free end of the electrode can be adjusted as desired depending on the requirements.

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Simply better welding

New B 20K high-performance welding control system

The B 20K welding control system from Bihler combines all process, measurement and monitoring systems in one comprehensive system. Stepless welding frequency adjustment between 1,000 and 20,000 Hz guarantees a highly dynamic and even finer control compared to low-frequency technologies for even better resistance welding results.

From micro to macro welding processes and from resistance soldering processes to heating processes such as annealing, the B 20K covers an immense range of applications. All Bihler welding transformer models from 70 to 250 kVA can be connected to the converter without modifications. This saves a lot of time and money and offers tremendous application flexibility. Furthermore, servo axes for controlling contact welding equipment can also be used to integrate press applications and other options in the B 20K. Motion sequences during welding are performed independent of press stroke and speed.

Users benefit from faster process speeds, simplified peripheral equipment, extended electrode tool life as well as higher production quality. The fully customised man-machine interaction allows for intuitive and simple operation.

Highest process reliability and energy efficiency

The active supply module for the welding voltage ensures high welding process reliability. This protects the B 20K from supply voltage fluctuations and voltage drops. Measuring channels for recording process data for current, voltage, distance, power as well as an additional measuring channel for controlling the welding process, process control and evaluation of the welding processes are standard. Up to 25 profile sections per welding task can be programmed individually with values for current or power, time and frequency. This allows unlimited possibilities to influence the welding task. The welding frequency can also be set to vary with the increasing welding profile. This means that the current



Bihler B 20K high-performance welding control system with servo-controlled GRM-NC stamping and forming machine and Quickchange contact welding module

can be increased up to 50 percent faster, since more energy can be introduced in a shorter time. The highly dynamic control routines for current profile control provide the B 20K with improved current and power control features compared to the previous B 1000 and B 5000 models.

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Can lasers point the way to easing the skills gap in welding?

By Andy Toms, director of TLM Laser

As the UK's modest economic recovery continues and with an ever-increasing focus on manufacturing, the skills gap which has blighted many companies in recent years continues to be a major issue across many different manufacturing sectors. A long term under investment in traditional engineering apprenticeships, combined with a rapid increase in the number of students and graduates opting for employment in non-engineering sectors, has left many companies bereft of the core engineering skills that they now so desperately need.

The severity of the skills gap is costing UK businesses more than £2 bn a year as companies struggle to find workers with the right attributes, according to inaugural research by The Open University published earlier this year. The body reckons companies are having to shell out £2.2 bn on higher salaries, recruitment costs and temporary staff to fill vacancies amid a dire shortage of those with the skills they want and need. On a positive note, The Year of Engineering 2018 is a year-long, cross-Government campaign aimed at raising the profile of engineering amongst 7- to 16-year olds and widening the pool of young people that consider engineering as a career. While this is a welcome initiative, the benefits to UK manufacturers are likely to be in the mid to longer term.

As a way to address the immediate shortage of skilled welders, however, lasers could potentially hold the solution for many companies manufacturing small to medium sized components. The power and flexibility of lasers mean that they are ideally suited to welding a multitude of different material types. Furthermore, the consistency and precision delivered by this process can often replace traditional MIG or TIG welding methods and in doing so help reduce the impact of a lack of skilled manual welders.

Laser welding systems are today available in a wide range of configurations, providing options for manual, semi-automated and fully automated welding using a comprehensive range of laser sources including Nd:YAG and fibre. Lasers also offer distinct advantages over other



methods, including the fact that they can weld a greater variety of metals such as stainless-steel alloys, titanium, aluminium, carbon steel and of course precious metals such as gold and silver.

The welds produced by a laser are much more accurate, have only a small heat affected zone, and characteristics such as weld strength and aesthetic finish are also superior. Lasers are also ideal for applications where access is limited.

Laser welding systems can potentially make an impact on the shortage of skilled manual welders

Process benefits aside, today's laser welding systems are easy to use and the process can be skilfully applied following short training courses, provided either by the laser supplier or industry bodies and associations. Usually completed in just a few days, introductory courses in laser welding provide students with the fundamental laser welding skills needed to allow them to quickly make effective use of their system in a production environment. Such courses generally cover laser safety, welding theory and principles, hand and eye coordination,

positioning techniques and essentials such as welding system operation, parameter selection and settings, troubleshooting and maintenance.

Man and machine in harmony

Unlike traditional MIG or TIG welding processes, which require highly skilled individuals and often take place in a noisy and sometimes dirty environment, modern laser-welding systems provide an easy-to-use, ergonomic, clean and quiet alternative.

The ALPHA ALW Laser Welding System, just one of a comprehensive range offered in the UK and Ireland by Bromsgrove-based TLM Laser, is a seated workstation with ample legroom, allowing the user to work in a relaxed and ergonomic position. This means that work can be carried out over longer periods of time without the user becoming tired, allowing full concentration on the welding task at hand. A patented multi-functional foot switch allows the laser parameters to be set or corrected as required for welding. The ALW features a large work-plate for work-piece positioning.

The joystick, which is used for axis

movement, can be located anywhere on the workplate as required. Axis interpolation when using this joystick differs from other systems on the market and further simplifies operation, as it not only allows movement in each individual axis but also a combination of axes at the same time. This feature eliminates the requirement to produce a CNC programme for relatively simple jobs, many of which may never be repeated. This not only saves time and increases productivity but also enhances the man-machine experience. Another example of how the laser system can aid the operator is the ability to turn off or disable specific axes, further reducing the potential for errors on any specific welding task.

With the capacity within this system to handle workpieces up to 350 kg in weight, and with a movement range in XYZ of 490 mm, 400 mm and 350 mm, relatively large parts can be processed quickly and precisely, either manually with the joystick, semi-automatically with pre-set axis speeds or in fully automatic mode with WINLaserNC software.

A choice of laser sources ranging from 100 W, 150 W, 200 W or 300 W means that the system can be specified for applications

including repair and deposit welding on tools and moulds, or complex welding applications on materials such as aluminium, precious metals, titanium and sensitive alloys. There are many other laser welding systems available, ranging from the small desktop systems often used by jewellers to mobile laser welding systems with an impressive reach capability, frequently used to process and repair large automotive mould tools, or to perform sheet metal welding on large sub-assemblies.

While skilled manual welders are currently the only viable solution for structural welding applications, due to physical size, the fact that training for laser welding is less intense and can be completed in a much shorter timeframe, means that lasers can potentially still fill the skills gaps in many other industry sectors and applications.

Laser welding systems, such as ALPHA's ALW can be operated effectively following a short training course.

TLM Laser is the UK and Ireland



distributor for ALPHA Laser and offer a comprehensive range of laser welding machines and systems.

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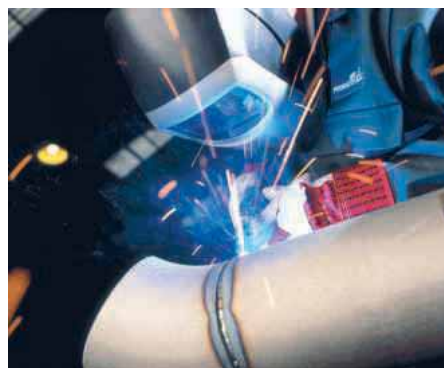
Air Products gives sustainability boost to welding

Air Products, one of the largest suppliers of industrial gases, showcased its new Integra® e2 cylinder and Gastraksm e2 Service at the recent Schweissen & Schneiden exhibition held in Dusseldorf, Germany.

Both the new e2 offerings provide manufacturing industry with a route to a more sustainable approach to welding. They include the latest electronics aimed at improving quality, while also improving efficiency and economy. Features include the digital display of gas consumption, the identification of gas leaks and advanced flow measurement.

With e2, the optimum flowrate is constantly achieved, which not only saves gas from being wasted, it saves money, reduces your environmental footprint and improves weld quality too.

Air Products Gastraksm e2 Service customers will benefit from the latest economiser and gas monitoring technology: the Gastrak® e2 meter and Gastrak® e2 master. Special software is also provided which allows leak checks to be carried out at the press of a button. It also tracks gas flow



rates, total gas consumption and gas mix quality at each use point.

Craig Hunt, director of Packaged Gases Technology, says: "Eliminating waste is vital for a business and the environment. Using the new Integra e2 cylinder and the new Gastrak e2 Service takes care of the gas part of this challenge. Customers can rest assured that they are using optimum gas flowrates and are operating with minimum gas waste. This improves weld quality whilst saving money and time too."

Air Products is a world-leading industrial

gases company in operation for over 75 years. The company's core industrial gases business provides atmospheric and process gases and related equipment to manufacturing markets, including refining and petrochemical, metals, electronics, and food and beverage. Air Products is also the world's leading supplier of liquefied natural gas process technology and equipment.

The company had fiscal 2017 sales of \$8.2 billion from continuing operations in 50 countries and has a current market capitalization of approximately \$30 billion. Approximately 15,000 passionate, talented and committed employees from a diversity of backgrounds are driven by Air Products' higher purpose to create innovative solutions that benefit the environment, enhance sustainability and address the challenges facing customers, communities, and the world.

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Lightweight cobots take on heavy-duty jobs – even welding

Cobots are lightweight: the largest UR10 robot is under 29 kg/64 lbs, so they're easy to pick up and move from one process to another. But they're no lightweights when it comes to heavy-duty processes like welding. In fact, there's already a range of cobot welding systems to choose from. Surprised? Don't be. It's just one more smart application for these flexible, cost-effective, and easy-to-program automation tools.

The flexibility and ease-of-programming of cobot-based welding systems make them especially well-suited for low-volume/high-mix environments, as well as custom or small-template welding processes. However, with high accuracy and repeatability, these systems can also handle long runs with consistent quality. Welding tasks can be programmed in as little as half-an-hour by workers who have no previous experience, while programs can be saved and reused, saving the expense of trained robot programmers. Lightweight cobot welders can be mounted on tabletops, hung from ceilings, or installed into existing welding booths, offering more flexibility than manual welders or traditional fixed robots. Several companies have already announced cobot welding systems.

Universal Robots (UR) and ARC Specialties recently announced the first collaborative

MIG welding system in the US. The SnapWeld Collaborative Robot Welding package is a cobot-assisted, interactive welding system that can be deployed in existing, manual welding booths, eliminating the need for costly new robotic cells. The system is ideal for small job shops that are struggling with the budget, programming, and space requirements of traditional welding robots.

The SnapWeld system includes a Profax wire feeder and water-cooled torch for welds up to 600 amps, along with the UR robot. One of the big advantages of using cobots for a welding application is the ease of programming. SnapWeld was developed with and verified by Universal Robots through the UR+ platform facilitating direct software integration into the UR programming environment, enabling advanced settings to be easily programmed directly on the robot's teach pendant.

"We are getting a lot of requests for integrating Universal Robots in welding booths, so we saw this as a unique opportunity to develop an integrated low-cost system for gas metal arc welding (GMAW) applications that no one else in the market is currently offering," says John Martin, vice president of ARC Specialties, a Certified Systems Integrator of UR robots.

Settings include features such as wire-feed speed and burn-back time, gas-flow time and crater-fill time with instant feedback on welding volts and amps. The result is a fully integrated, low-cost system for gas metal arc welding (GMAW) applications that is ideal for low-volume/high-mix shops.

Another cobot welding system, the CoWelder, is available from Migatronic in Denmark. The CoWelder system includes a UR5 or UR10 robot, depending on payload and reach requirements, along with a Migatronic power source, start/stop safety box, and Migatronic welding torch and torch holder.

The system fits on a tabletop, making it ideal for even the smallest shops, with simple setup and programming for significant savings over traditional complex robotic systems. The robotic welder ensures uniformity in series production, but it is so fast and easy to reprogram that it provides value even for small batches. For high-mix situations, shops can build a library of programs for different workpieces and easily switch among them during a workday.

Migatronic customer Sebastian Jacobsen, project manager at Jyden Bur A/S, Denmark says: "We can program new workpieces in no time. It really only takes 30 minutes for us



to program a new workpiece and a few seconds to recall already stored programs. I don't think it can get any easier."

Speaking of productivity gains, Jens Christian Lægsgaard, general manager of MVI Maskinfabrik in Denmark says: "Our time saved per workpiece is about 50 percent. We produce from ten to 1,000 workpieces at a time. Our efficiency gains are 30-40 percent, owing to the easy switching between programs and welded workpieces - and this is just the beginning."

As integrators look to provide high-ROI automation solutions, welding is a clear target. Integrators around the world are looking first to UR for the cobots to power their collaborative welding systems. Additional solutions have been announced from the Dutch integrator Cobot Automation and US-based SCOTT Automation (parent company of RobotWorx).

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 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 was launched in December 2008, the company has experienced considerable growth, with the

user-friendly robots now sold in more than 50 countries worldwide. At just 195 days, the average payback period for UR robots is the fastest in the industry.

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Learn to weld

Solving the skills gap by tackling unemployment is Weldability Sif's latest bright idea

The welding industry is known these days for both being at the heart of the UK manufacturing sector and an industry looking at a skills shortage with impending consequences in the future. Not as well-known yet perhaps, is the skills revolution being led by Learn to Weld, the education division of UK welding product company Weldability Sif. The Hertfordshire-based business has recently teamed up with the Department for Work and Pensions and the education provider, Learn Direct to deliver a Sector Based Work Academy (SBWA) in welding.

'Get into Welding', as the academy is known, is a six-week course providing an opportunity to study towards a Level 2 EAL 'Performing Manufacturing Operations'. This includes MIG & TIG welding and employability support to help candidates improve their skills and employment prospects, as meeting the requirements of an SBWA. The aim of academies of this sort is to meet immediate and future recruitment

needs by helping to recruit a workforce with the right skills to sustain and grow business; "Get into Welding" is clearly no exception.

In delivering the course, Learn to Weld opened the doors of its modern Technical Training Centre (TTC) to a dozen unemployed jobseekers aged 19 and over. A bright and inviting studio based in Letchworth Garden City, it comes with state-of-the-art welding bays, industry-standard equipment, and a complete 'Virtual Learning Environment.'

Candidates were referred via the Letchworth Jobcentre and screened by Weldability Sif, with the successful applicants starting the academy on 6 November 2017. The results were positive for the budding welders, with David Scarrott for example being impressed by the TTC, describing it as a "professional place where health and safety is paramount. There's definitely no cutting of corners."

With regards to the virtual welding training suite at the TTC, he said he liked



how it gave him more confidence to try welding virtually before "doing it for real." "It really does take away all the worry."

"My progression has been great," was David Scarrott's overall conclusion on the course. "I've got to the position where I know if my welds are fit for commercial use, that I've found my own technique and feel confident enough to show off all my skills to future employers."

Weldability Sif is delivering welder training across the UK via its 36 FE College based welder training studios and its facility in Letchworth is adding to the pool of 11,000 welders created so far.

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Automated sheet metal handling and sorting for laser cutting

Swiss sheet metalworking equipment manufacturer, Bystronic has developed a new loading and unloading system, ByTrans Cross, for its fibre laser cutting machines. It offers users full automation for producing long runs of components while retaining the flexibility of manual handling for fulfilling smaller jobs.

With the very high cutting speeds that fibre laser technology allows, there is a risk that the supply of material and unloading of completed parts and skeletons are unable to keep up, causing bottlenecks and reducing productivity. In such cases, maximising the capabilities of the machine requires an effective material handling system.

The key benefit of ByTrans Cross is its flexibility, due to the modular design. It can be integrated between a laser cutting centre and the warehouse, but is equally suitable as a stand-alone solution to ensure efficient supply of raw metal sheets in various thicknesses and materials to the laser cutting machine.

Automated sorting option

The basic configuration has two loading carriages for storing material. However, with the addition of the new, optional BySort bridge and two sorting heads with gripper modules, unloading with the ByTrans Cross becomes even more versatile.

The automatic sorting system, which can be factory ordered or retrofitted, deposits

processed sheet metal components onto a pair of pallets next to the laser cutting centre. It supports users manufacturing large series where the cut parts need to be unloaded quickly and stacked.

The repeatability with which BySort places the parts is an advantage as, particularly with large cut parts, accuracy of placement is difficult to achieve manually. Precise positioning on pallets facilitates the automation of subsequent processes, as it allows reliable position detection.

BySort also increases the speed of the entire unloading process. Firstly, the cut parts are unloaded and sorted. Subsequently, using a different route, the ByTrans unloads the skeleton. This ensures that the laser cutting system's shuttle table is more quickly available for loading of the next sheet, which the ByTrans Cross brings from its own stock or from the connected warehouse.

Both ByTrans Cross and BySort are controlled using the laser cutting system's touch screen. Bystronic's ByVision Cutting user interface, which is already being used on the latest generation of Bystronic's fibre lasers, integrates the cutting processes and the connected automation. It removes the



Increased processing quality: automated unloading of cut parts using BySort ensures safe, fast and accurate material handling

need for an operator to waste time walking between separate terminals for the laser cutting system and the automation equipment.

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.

The company headquarters are located in Niederönz, Switzerland. Three additional development and production locations can be found 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 Conzeta. In 2016, with more than 2,240 employees, Bystronic achieved a revenue of 598 million euro.

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Modular automation for laser cutting: with the BySort upgrade, unloading and sorting with the ByTrans Cross becomes even more versatile

Comfort and pride – laser applications for our Armed Forces

Lasers perform unseen tasks in the design and manufacture of so many products today and it is often hard to imagine how items we take for granted could even be made without them. ES Precision's lasers play a small part in making life more comfortable for amputees as well as helping to celebrate the past and current service of our military community.

Blatchford is a British company that develops rehabilitation products, many of which are used by veterans of our Armed Forces. Its award-winning range of lower limb prosthetics are designed to provide the best possible mobility, function and comfort after amputation. Optimal control of a prosthetic limb depends on a comfortable and secure connection between limb and socket. Modern liner technology provides excellent cushioning, but the impermeable and insulating materials can allow a build-up of heat and moisture, so they begin to slip and chafe.

The patented technology of Silcare Breathe works by letting air and perspiration trapped between the liner and skin to escape through specially designed laser

drilled perforations. This results in drier skin and a healthier environment for the residual limb.

ES Precision uses its laser technology to drill Blatchford's Silcare Breathe liners with holes that are carefully controlled in terms of position and size for a best possible liner wear experience.

Valour Band is another British company, started by a retired army officer, that works with a division of the Royal British Legion, Britain's Bravest Manufacturing Company, to produce commemorative bracelets which recognise past and current service.

Valour Bands carry a timeline sequence of links representing medals, qualifications and other awards received; they are upgradable with additional links as earned.

ES Precision laser engraves special links with logos for commando, paratrooper, diver and bomb-disposal regiment logos on behalf of Valour Bands Limited. The result is a beautiful and permanent representation on the chosen link.

During 2018, ES Precision has decided to



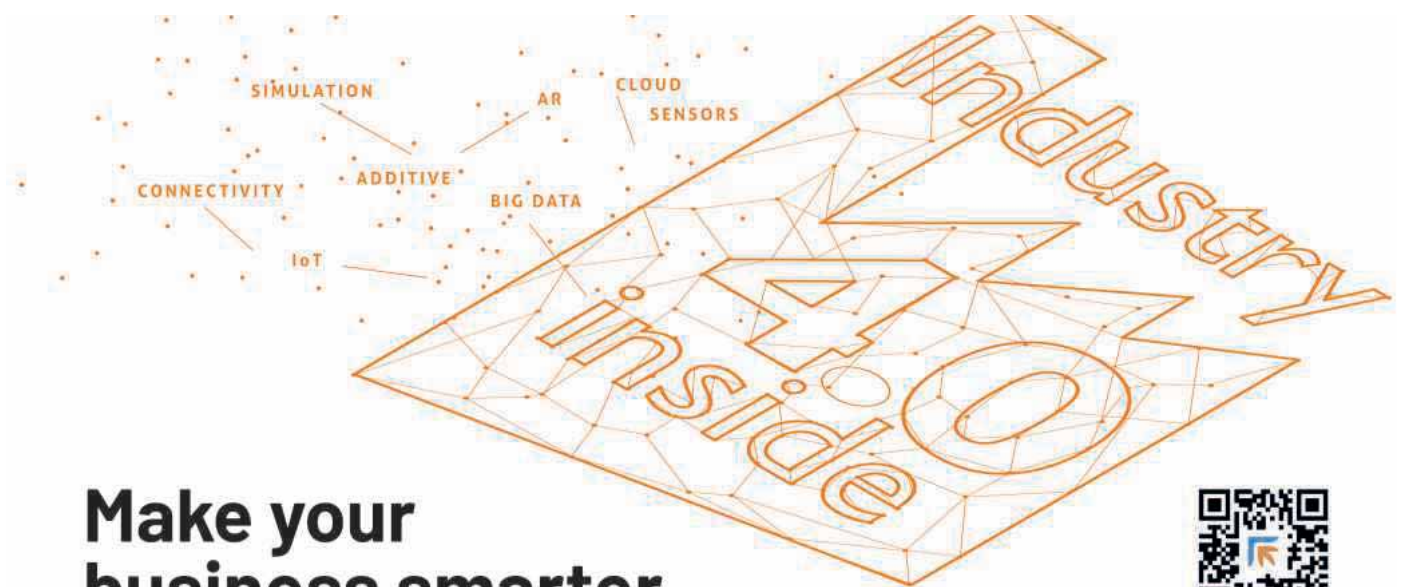
donate 10p per Blatchford liner and 5p per Valour Band link it processes to Help for Heroes.

For more on the services of these companies, visit:

www.blatchford.co.uk
www.valourband.com

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Abrasives recycling: how to save costs and resources when waterjet cutting

The STM OneClean system with a module for fully automatic recycling of abrasive sand makes waterjet cutting systems even more profitable and at the same time, more sustainable.

Waterjet cutting systems need water and abrasive sand to operate. The latter is the biggest variable cost factor in waterjet cutting and a scarce resource. Waterjet cutting systems manufacturer, STM identified the potential here and developed the OneClean modular system for the protection of this natural resource. The abrasives recycling module of the OneClean system makes it possible to recycle more than half of the garnet for additional cutting tasks. This saves procurement, disposal and transportation costs, which makes amortisation possible within about 3 - 5 years at an approximate annual abrasive consumption of 50 tonnes.

"We are delighted that the system has not only captured the imagination of our customers but also that of the expert panel for the Austrian State Prize for Innovation," says STM's CEO Jürgen Moser. The STM OneClean system has been nominated for the ECONOVIUS 2018 AWARD, by which means especially innovative accomplishments by Austrian SMEs are honoured. Interested parties can partake in



Great interest was shown in the OneClean system at the STM innovation day 2018

in-depth discussions on the STM stand A16 in Hall 1A at Cutting World in Essen from 17th to 19th April 2018 and experience live cutting presentations. To get information or an initial consultation visit www.stm.at

The recycling technology

Using a patented process, a specific hydrofilter screens out coarse and fine fractions from the used abrasive into the collection tank of the basic module whereby too coarse or too fine constituents are discharged.

The used abrasive is dried energy-efficiently and automatically mixed with new abrasive from the abrasive container to ensure high abrasive quality. With this system and depending on quality and cutting speed, up to 55 percent of the used abrasive can be reused. The expenditure of energy required for recycling the abrasive is at 3-6 kW minimal. "Cutting quality remains the same compared to new abrasive", says Jürgen Moser. "That not only protects the environment, but also the budget".

Abrasive recycling is one of five linked modules of the OneClean system. The system can be put into operation with a small investment and expanded as required at any time. Without exception all modules are high-quality branded components which have been jointly developed with STM. A consistently solid construction as well as central frame of stainless steel and panelling of aluminium, guarantee the highest wear resistance and mechanical resilience.



The OneClean modular system for fully automatic recycling of water and abrasive sand

Space-saving and compatible

The STM OneClean system stays so compact that it can be used directly at customers' plants, even if they are using a system from an external contractor. All modules are built to take up the smallest possible space and the energy consumption is five times less than that of comparable systems. In this way, STM is able to demonstrate clearly that cost efficiency is by no means a contradiction in terms of sustainable and environmentally compatible operating methods.

Nominated for innovation award

In March, the waterjet cutting system manufacturer was nominated for the ECONOVIUS award for the most innovative small and medium enterprise, presented by the Austrian Federal Economic Chamber. With the nomination, STM was able to prevail against numerous candidates with respect to innovation level and entrepreneurial performance and thus ranks throughout the country as one of the most innovative enterprises in Austria.

STM is a leading provider of waterjet cutting systems with its head office in Eben, Austria and Schweinfurt, Germany. 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.

STM Waterjet Germany, formerly Maximator JET, has been the



Jürgen Moser in an interview about the OneClean system

development and sales location in Germany since 1999. The company focuses on developing and realising highly specialised waterjet cutting systems for all kinds of special applications here. The company STM stands for pioneering production solutions and unlimited individualisation options.

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Make your business smarter

Digital technology applied to industry can provide many answers through tools and methods that define a smart plant. Prima Power applies the Industry 4.0 principles by adding four vital elements to production: sensitivity, data, accessibility and intelligence.

As the machines become sensitive they are able to control the environment and production processes through sensors, actuators, cameras and software, connected to the network. This is the Internet of Things (IoT).

Big data collected by machines are shared in the Cloud and can be used by all company levels, from management to operations. Remote data accessibility allows Prima Power operators, in agreement with customers, to carry out maintenance operations in a very short time, maximising efficiency.

The data shared and collected on the Cloud is processed by software that can monitor production processes and solve problems almost in real time. The resulting knowledge makes it possible to predict potential malfunctions and the relative maintenance interventions.



The machines are able to gather an enormous amount of production data, efficiencies and possible errors. In this way, big data describe the progress of production processes.

Everything starts from the single machine, the atom of the system. Each Prima Power product is already equipped with the four vital elements that make it compatible with Industry 4.0. The union of atoms creates molecules, molecules create life. Each Prima Power machine can be part of an interconnected production network, interacting with other machines and generating even more efficient synergies.



Smart software

Tulus® Power Processing is a flexible manufacturing execution system (MES). With Tulus Power Processing users can control the whole production process, from order management, programming and machine time scheduling all the way to the finished product and reporting. NC Express e3 is a part of the Prima Power software family. It can search for the best suitable sheet size, determine coil cut lengths and nest parts automatically common line for punching, laser and shearing machines.

With Prima Power software you can interact in an easy and user-friendly way through touch screen or a tablet.

Remote diagnostic

Thanks to the analysis of machine condition and performance, you can know in advance when a machine needs an update or when a visit to the customer is necessary. In case of unexpected alarms, thanks to remote

diagnostics, a technician does not always have to visit the site. Fixing a machine remotely, it can be back running in a few hours.

Prima Power is a world-class manufacturer in the field of laser and sheet metal working machinery. It has production plants in Italy, Finland, United States, and China, as well as a sales and service network covering over 80 countries in the world. Prima Power belongs to Prima Industrie Group, which is listed on the Italian Stock Exchange. The Group has recently celebrated 40 years of continuous innovation.

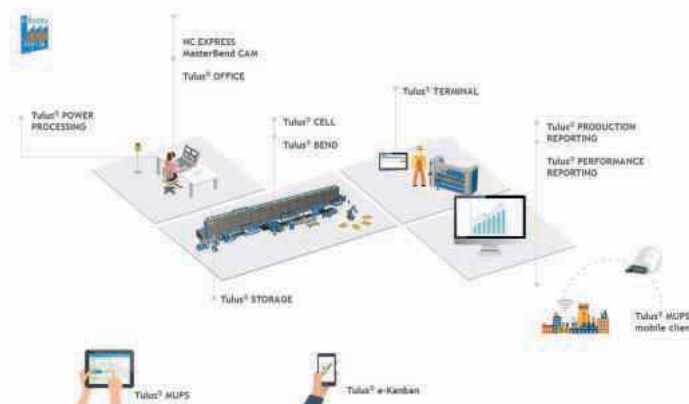
The Prima Power product range is one of the widest in the sector and includes 2D and 3D laser machines, punching and combined systems, press brakes, panel benders, and flexible manufacturing systems.

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Fast and flexible: FOBA's new CO₂ laser markers

High speed, highly variable material suitability and flexible marking options are features of FOBA's new C.0102 and C.0302 10 W and 30 W laser marking systems.

In response to increasing demands for marking quality and speed, FOBA has introduced these new lasers that mark a broad range of materials with highly variable contents. Over 20,000 available system configurations with three different optional wavelengths make the innovative FOBA C.0102 and C.0302 lasers extremely versatile.

Easy-to-use mechanical components, such as detachable umbilical cables in different lengths, allow for a smooth setup within existing production facilities. Even in the toughest manufacturing environments, the laser head is safely protected against dust and humidity due to its IP65/IP54 cover and a powerful fume extraction unit.



The marking field size has been enlarged to a maximum size of 32.2 x 41.9 inches (600 x 440 mm), which is an unparalleled feature. Another distinguishing advantage is that the marking speed has been increased to 2,000 characters or up to 900 m (3,000 ft) per minute. FOBA's C.0102/C.0302 systems are therefore among the most efficient CO₂ marking lasers, even compared to leading 60 W laser markers found on the market.

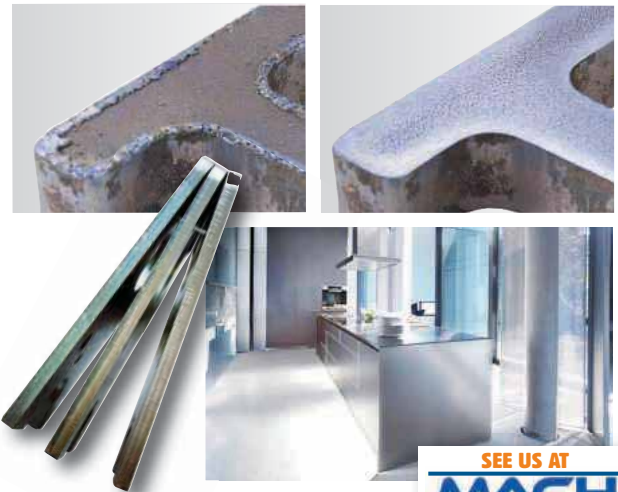
The fact that they require little maintenance, use only a few consumables, boast a long lifespan of the air-cooled laser beam source and provide pinpoint adjustable energy settings, also contributes to highly economic marking.

FOBA's new C-Series CO₂ laser markers are most appropriate for plastic part marking in the packaging or electronic industries but also for metal part processing. The constant further development and optimisation of FOBA's laser systems is driven by and based on decades of close cooperation between FOBA's research and development team with international customers from various industries.

FOBA is an international market and technology leader in the manufacturing and supply of innovative laser systems for marking and engraving. Alltec/FOBA offers OEM laser markers, laser marking workstations and high-precision laser engraving machines, both standard- and customer-specific solutions. In 2009, Alltec was merged with FOBA, the brand name FOBA consolidated and it has become a strong common distribution and service label on international markets. With its headquarters in Selmsdorf, Germany, FOBA belongs to the US-based Danaher Corp., and serves the key markets of automotive part and medical device production as well as aerospace and others.

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How to gain that all important competitive edge and a superior surface finish



Costa offers one of the widest ranges of machines for the rapid and efficient deburring, grinding and polishing of ferrous and non-ferrous metal parts, sheets and coils.

Uniform grinding pressure is applied to the inside and outside contours of the components to deliver the highest standards of finish required for parts up to a thickness of 120 mm.

These technologically advanced machines will also compensate for surface height variations of up to 6 mm and abrasive brush rollers are available for edge rounding to comply with CE standards.

Costa consistently sets the benchmark for deburring and surface finishing machines - offering users a faster payback, higher productivity, lower labour costs with reduced abrasive consumption.



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HBE Dynamic series en route for success

The new HBE Dynamic series from Behringer has been a resounding success. The series is now being elevated into a whole new league in terms of performance level with an array of features provided as standard.

CEO Christian Behringer says: "The HBE Dynamic series addresses increasingly stringent market demands for ever more efficient, more economical and more precise sawing machines. Increased performance, coupled with reduced energy consumption, lower space requirement without compromising occupational safety or handling simplicity, were just some of the stipulations followed by the development process."

The new HBE Dynamic series is available in eight model types with corresponding cutting ranges for straight and mitre cut, covering an extensive field of applications in the steel trade, machine and tool building and in high-end metalworking businesses.

Smart features for the flexible all-rounder

Behringer GmbH provides the HBE series complete with features designed to significantly enhance sawing process reliability as standard. The AFC (Auto-Feed-Control) is just one example. A computer-controlled high-performance cutting pressure control system supplies the data for cutting speed and servo-regulated downfeed. This provides an effective protection for tools against overloading, by tracing the back of the sawblade in real time while sawing is in process.

Christian Behringer says: "With this facility, we are offering our customers premium technology otherwise only available in high-performance sawing machines."

Impressive economy and quiet running

With a superb service life of well in excess of 400 sawing cuts in 42CrMo4 200 mm dia. material, for instance, the HBE321A Dynamic has significantly more to offer than comparable sawing machines, meeting even the most challenging of assignments without hesitation. A sturdy saw frame made of vibration-damping grey cast iron and double band wheel bearings work together to ensure quiet running and cutting precision. Trials confirmed a 30 percent longer service life of bandsaw blades



alongside visibly better cut surface quality. The slight inclination of the band wheels helps prolong the life of bandsaw blades by reducing fatigue due to cyclical bending.

Minimum rest piece length with optimum fixing

Given the rising price of materials, achieving smallest possible rest piece lengths can also be a major benefit. Because achieving this key benefit should not be allowed to compromise clamping safety, the HBE Dynamic series from Behringer comes with a double vice as standard. The less movement occurs during machining, the better the alignment and angular accuracy. More even clamping also means a more precise cut. Material bundles and packages, but also thin-walled pipes, are ideally fixed while a mechanical stop enables rest pieces to be almost completely sawn, so saving costly material.

No compromise energy efficiency

Resource-saving production, sustainability and energy efficiency is currently on everyone's lips. The rising cost of energy is driving manufacturers to rethink existing processes and make use of technological innovations to develop innovative solutions

which will enable higher output to be coupled with lower energy input.

Christian Behringer says: "With the new HBE Dynamic series, we have proved that energy efficiency and high-powered hydraulics are not a contradiction in terms. The use of modern frequency-controlled drive systems, from renowned manufacturers and gearing ratios specifically configured for purpose, mean that simply specifying the kW output of a motor is far from being a guarantee of high cutting output nowadays. In the HBE261A Dynamic, for instance, a sawing drive of 2.6 kW enables a high machine throughput, while requiring minimal energy input. This results in efficient production."

The HBE Dynamic's feed gripper is designed in a rugged gantry version and mounted in floating bearings. It moves along a closed roller conveyor, a key benefit when machining shorter cuts. As re-gripping is only necessary in this machine after a 600-mm cutting length, this saves valuable non-productive time.

Proven process reliability

Lowering the saw frame prior to the cut is performed in the HBE Dynamic using a proven technology, which ensures the

utmost process reliability. Instead of an electronic sensor or manual entry of the height information, the height is detected by a mechanical T-bar which brings the rapid lowering movement to a stop as soon as it senses the upper edge of the material. Behringer engineers gave process reliability clear priority over the use of susceptible electronic systems, as these machines are frequently automated and need to guarantee trouble-free operation when operating unattended.



No-risk chip disposal

As a carefully considered chip disposal system is vital following on from sawing cuts, this aspect was taken into consideration right from the design phase of the HBE Dynamic series. The funnel-shaped machine base enables good access for cleaning and maintenance. The chip conveyor itself can be supplied as a paddle style conveyor or worm and can be simply pulled out. To guarantee the most effective possible cleaning of the saw blade, the HBE Dynamic features electrically-driven double chip brushes, which clean the bandsaw blade of adhering chips synchronously while sawing operation is in progress. A quick-change device permits the brushes to be exchanged without excessive loss of time.

Functionality and design

As the machine is fully enclosed, it not only complies with current CE directives but also addresses growing demands for user-friendly design, occupational safety and environmental protection. The benefits are evident: no contamination of the work environment, reduced noise coupled with an optimum view into the machine through the generously dimensioned viewing



window. The easy-maintenance concept enables simple saw blade changeover and good access for repair or cleaning work.

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Automated sawing, sorting and stacking boosts productivity

An automatic KASTOtec FC 4 bandsaw has led to a three-to-four fold increase in productivity at a family-owned firm in Austria, which develops and manufactures solutions for managing torsional vibration in large diesel and gas engines. Its product range includes flexible couplings and vibration dampers made from steel and composite, which are typically used in ship propulsion systems, power generation, bulldozers and locomotives.

The saw has been equipped with a robotic system for sorting cut lengths. By connecting the cell to the company's manufacturing management system, the user is able to keep track of all production data, ensuring reliable, safe, minimally attended operation. Since December 2016, round and flat bar of mainly tempered steel has been sawn to precise lengths on the KASTO machine, as the previous saws struggled to process the difficult-to-cut materials.

The KASTOtec, with its 430 mm cutting range and smallest cut size of 10 x 10 mm, efficiently handles all of the different sizes of steel bar due in part to the use of tungsten carbide tipped blades, for which the saw was designed. A feature called KPC (KASTO Performance Cutting) adds to the saw's productivity by introducing measures to minimise vibration and optimise damping of the blade. For example, vibration is effectively reduced by a pair of spring-loaded guides on the side opposite the point of cutting, which also ensures quiet operation.

Before opting for this production solution, the Austrian company's managers visited KASTO in Achern-Gamshurst, Germany and were impressed by the technology on offer. They also appreciated the fact that KASTO



A robot places cut sections on one of four pallets



A magazine with space for four bars up to 3,500 mm long supplies the KASTOtec FC 4 bandsaw

was able to offer everything from a single source, including an ABB robot with interchangeable magnetic grippers to automate the monotonous and time-consuming task of removing and sorting cut parts and stacking them at four pallet locations.

The saw was also supplied with a magazine that can hold four bars up to 3,500 mm long, allowing production to run unattended for extended periods. The KASTOtec receives order data including material type, dimensions and number of cut pieces from the manufacturing execution system (MES), which is linked to the saw via a custom interface. It is therefore connected to all upstream and downstream production processes, an important step towards implementing Industry 4.0. As a result, production is considerably more transparent than previously.

KASTO's own EasyControl ensures simple and intuitive operation of the bandsaw cell. A clearly structured graphical interface quickly guides the operator to the required functions. The link to the MES allows processes such as switching between orders to take place automatically, making work easier and ensuring greater process security. Remote access to the system allows any problems with the saw or robot to be rectified quickly.

The dramatic increase in productivity at the Austrian factory is due in part to



The KASTO EasyControl ensures simple and intuitive operation of the KASTOtec

automation and connectivity of the sawing machine and also to the short setup and cycle times for producing some 1,000 different lengths and cross sections of material to manufacture the many torsional vibration management products. The robot-assisted sorting of cut parts has proved so successful that the company plans to use the technology to automate an additional saw.

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Güdel gearboxes drive precision cutting systems

Gearboxes are an essential element in the drive-train of many different types of production equipment. It goes without saying, therefore, that the precision, performance and reliability of machines and systems can only be maintained if the power transmission components are themselves of the highest quality.

Essex-based Blackman and White designs and builds specialist cutting machines for customers across the globe. With a heritage spanning over 50 years, the quality and reliability of the company's comprehensive product range is at the heart of the ongoing success of this family owned business.

Although just one component in the company's cutting machines, the performance and reliability delivered by Güdel's high performance gearboxes plays an important part in helping to maintain this excellent reputation.

Founded in 1964 by engineers Les White and Jack Blackman, Essex-based Blackman & White remains a family-owned company. With sailing a predominant sport in the local area, the company's roots were in sailmaking and the maritime industry. The company has diversified over the last five decades, and the cutting machines manufactured by the company are now used in industries as varied as aerospace and fashion. Blackman & White cutting machines are available with rotary blades, fixed blades and also the latest laser technology, offering solutions for cutting a wide range of materials as diverse as PVC and Kevlar.

Swiss-based Güdel, also a family business and now in its 3rd generation, supplies the gearboxes that are at the heart of Blackman & White's cutting machines. Güdel is a name widely recognised across many manufacturing sectors, and often associated with the company's range of Gantry Robot systems and modules. Every Güdel Gantry Robot however, is built upon the company's own in-house manufactured range of precision components, which includes an impressive range of angle and planetary gearboxes.

Integrating this range of gearboxes allows Blackman & White to build Güdel's reputation for quality and reliability right into the heart of its own machines. According to Blackman & White: "Since moving to Güdel gearboxes, and away from belts and pulleys, the accuracy and reliability has improved our products significantly."

Another important factor for Blackman & White, is the fact that Güdel has an extensive international reach, in over 30 locations around the world, allowing easy access to support if required.

Güdel's portfolio of high-performance angle gearboxes covers five different sizes. Named to correspond to the centre distance, in mm, between the input and output shafts: 030, 045, 060, 090 and

120, they offer an extremely broad choice of gear ratios, thirteen in total, ranging from two to 60. This enables users and machine builders to easily cover the most common application areas.

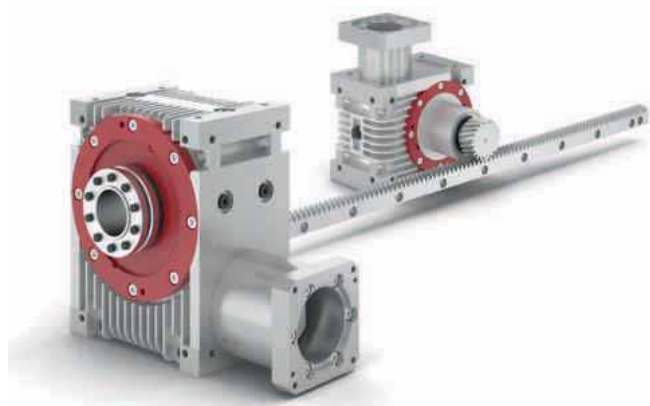
This range of high-performance angle gearboxes is ideally suited to harsh working environments and the cooling fins on the body castings guarantee optimum heat dissipation, even at high duty cycles.

Güdel brings flow to industrial automation by delivering intelligent motion solutions. The result is a good feeling and measurable added value at the same time. Absolute reliability and maximum efficiency. The company refers to this as "Work in FlowMotion." As a basis for mutual trust and reliability Güdel appreciates and respects its partners, acts carefully and responsibly, and keeps its promises.

It pursues and implements technical and operational innovations from unique concepts, discoveries and developments. It engages customers with an open mind and an attitude of innovation and it is open to discovering and implementing new technologies.

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