

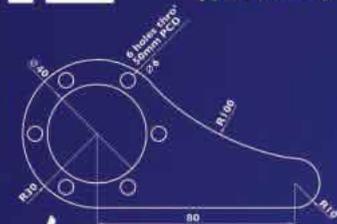
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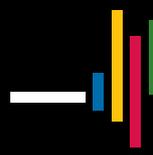
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- CAD/CAM • DEEP HOLE DRILLING
- LASER CUTTING

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

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

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Seven machine HD VMC range launched by XYZ

XYZ Machine Tools has expanded its vertical machining centre range with the addition of its seven machine HD (Heavy-Duty) range. These new machines supersede the previous range of box-slideway machines in the XYZ range while at the same time complementing the new Linear Rail machines that have been added to XYZ's catalogue.

The XYZ HD range maximises metal removal rates thanks to their solid Meehanite cast beds and columns, along with induction hardened, ground and Turcite-coated box slideways. With X-axis travels ranging from 660 mm through to 3,000 mm there is a machine in the range to suit the majority of machining applications across a variety of industry sectors. The smallest machine in the HD



range is the XYZ 660 HD, which features increased X and Y travels over its predecessor of 660 mm and 450 mm, yet retains a compact footprint making it ideal for most machine shops, while the XYZ 1100 HD replaces the earlier 1020 machine and now has X and Y travels of 1,100 and 610 mm respectively. The full range is the XYZ 660 HD, 800 HD, 1100 HD, 1510 HD, along with three 'super-heavyweight' machines, the XYZ 2010, 2510 and 3010 HD completing the line-up.

Along with increased axis travels, the four smaller HD machines also have increased spindle power where it was deemed necessary. For example, the XYZ 660 now has a 25 kW spindle, an increase of 123 percent over its predecessor. Spindle speed is also improved by 25 percent to 10,000 revs/min, with other machines in the range gaining around 66 percent extra spindle power. As with all machines from XYZ Machine Tools, the HD range is well specified, using the Siemens 828D ShopMill control with 15-inch touch screen fitted as standard, with the control pendant-mounted on several machines in the range for further ease of use. In addition to the standard specification across the range users have a series of options, such as 4th and 5th axis attachments, swarf conveyors and on-machine tool and workpiece probing.

"With the HD machines now in place, we have a solution for every metal cutting application, for companies making their first steps into CNC machining with a ProtoTRAK controlled lathe or mill through machining and turning centres to the flagship of the XYZ range, the UMC-5X gantry-style 5-axis machining centre," says Nigel Atherton, managing director XYZ Machine Tools.

XYZ Machine Tools Tel: 01823 674200

Email: nigel.atherton@xyzmachinetools.com www.xyzmachinetools.com

Renishaw encourages uptake of STEM with FDC launch

Global engineering technologies company Renishaw officially launched its Fabrication Development Centre (FDC) on March 28th, at the company's Miskin facility in South Wales.

John Barber reports from the opening

The Fabrication Development Centre
The FDC is a unique educational resource for hands-on learning. It aims to inspire young people and to encourage a pipeline of talent into science, technology, engineering and maths (STEM) careers. The FDC contains two classrooms, staffed by a qualified teacher and Renishaw's STEM ambassadors. It is equipped with state-of-the-art equipment, including 3D printers.

Its many facilities provide a unique opportunity for young learners to experience modern engineering close up and solve real engineering problems. With state-of-the-art technology classrooms, up to 30 school students can be accommodated at a time, supervised by fully qualified education outreach staff. The facility provides a unique opportunity for young learners to experience modern engineering. Free workshops can be specifically tailored to meet individual school curriculum needs in order for students to discover the exciting world of engineering and to really consider it as a future career option.

Speaking at the opening, Chris Pockett head of communications at Renishaw, said: "We care about people, we care about education, we care about raising aspirations and we care about helping people to fulfil their potential, so they can make a



difference in the future in their chosen career paths.

"Everyone is aware of the skills shortages that we face within the technology sectors. It is a real challenge not just for the future, but one that we are grappling with today. However, while the technology sector can do little about the shortages that it faces today, we can collectively take control of the future.

"We believe that the Fabrication Development Centre represents the potential education sector model for others in the sector. Every pupil and student that first visits the FDC is given a tour of the Miskin facility. So not only are they given

high-quality, classroom-based teaching, and hands on projects to reinforce their learning, they also get to see the practical application of STEM subjects in a real-world setting."

"We truly hope that many will be inspired to pursue careers in the technology sector."

Chris Pockett continued: "Today we are also launching our education partnership with Bloodhound. We have had a relationship with Bloodhound for a number of years. We started working with the team on producing additive parts and then last October we agreed to come on board to help the team with funding towards the public trials."

"We absolutely buy into the vision that Richard Noble and the rest of the Bloodhound team have for this project, which is all about inspiring the next generation that are going to power the UK sector forward."

Andy Green OBE, current holder of the World Land Speed Record and BLOODHOUND SSC driver, officially opened the facility and said: "It is about bringing the science and technology to roaring, vivid, exciting, supersonic life for a whole generation to try and spark the excitement about science and technology in today's generation for tomorrow's world.

"We are working towards solving the shortages in engineering in this country and thank you to Renishaw for not only being at the cutting edge of technology and



supporting the vision, but also for spreading the education message.”

Simon Biggs, education outreach officer at Renishaw, said: “With companies already struggling to recruit skilled candidates, it is important to get more young people interested in STEM subjects at GCSE and A-Level. Creating engaging educational experiences for pupils at a young age can be essential to their selection of the subject at degree or apprenticeship level.

“The Fabrication Development Centre not only gives pupils a chance to escape the classroom, but it also enables them to grasp the link between the school curriculum and industry. They can take part in motivating workshops that complement the exam specification and give them a better understanding of the career opportunities available to them in the future.”

Large numbers of young people have already experienced success from using the facility, including students at Radyr Comprehensive. After using the FDC for just a few months, the school noticed increased motivation among the pupils. Radyr Comprehensive School now plans to extend its use of the facility across the three years of its GCSE programme to increase the interest and uptake of design subjects.

Schools in the Bristol, Gloucestershire and South Wales areas can access an online booking form from the education outreach section of Renishaw’s website. Here, schools, pupils and teachers can also find more information on Renishaw’s work with young people and engineering careers advice - <http://www.renishaw.com/en/education-outreach--34713>

Renishaw in Wales

In 2011 the purchase of the 461,000 sq ft former Bosch facility and associated land near Miskin, South Wales gave Renishaw the

space and opportunity it needed to support its growth and development. By the end of 2017, Renishaw had invested £45 m in the site acquisition and refurbishment as well as in the purchase of plant and machinery. It has already created over 350 new jobs and has well developed plans for the site to support research and development and manufacturing in new areas of its business. The co-location of research and development, design and manufacturing functions at Miskin provides many advantages. Better communication, design for manufacture, shorter product development times and more responsive design and test capabilities can be significant advantages for research and development projects.

Building on and creating new, strong relationships with research and educational organisations in Wales, Renishaw is leveraging its skills and experience in metrology and additive manufacturing to create exciting new developments in healthcare. The proximity of the Miskin site to good transport links and a wide variety of potential collaboration partners in life sciences, with support from national and local government, will give Renishaw the opportunity to create new centres of expertise and new jobs. Renishaw has opened a Healthcare Centre of Excellence at its Miskin site to provide manufacturing capacity for medical parts as well as facilities for training, demonstrations and research.

£45 million has been outlaid to date on site acquisition, refurbishment, production plant and machinery. Planning application has also been approved for further development of the Miskin site. The planned facilities provide additional capacity for the company and for other businesses to establish operations at Miskin, providing many more employment opportunities.

Gareth Hankins, director of Group Manufacturing Services, said: “This part of the world has a very strong heritage in terms of manufacturing.”

Chris Pockett added: “We announced our half year results at the end of January and they were generally very, very healthy. We grew in all of our key regions and our current headcount figure is quite compelling. Back in September 2009, we had 1,850 employees and now we have over 4,700 today. It has been staggering growth by any measure. There are around 2,800 UK based Renishaw employees. The majority are based in Gloucestershire where there are five sites and we have 370 staff based at our Miskin site.”

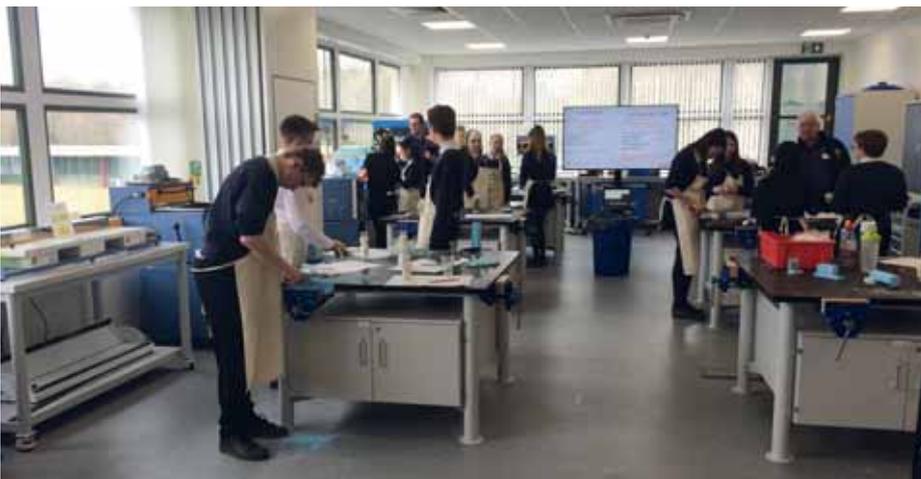
Chris Pockett said: “You can see from the plans that we are an ambitious company and we are here to stay. We offer around 110 work experience placements with two dedicated work experience weeks in July in Gloucestershire and we are running a week in Wales. We have been massively over subscribed and it is becoming very, very popular.”

Engineering apprenticeship programme

Renishaw operates a popular apprenticeship programme for young engineers. An apprenticeship with the company provides the experience and practical skills required to start a rewarding career in engineering. In its award-winning training academy, surrounded by expert mentors, youngsters gain hands-on engineering know-how and nationally recognised qualifications through a unique blend of education, training and work placement.

Chris Pockett concluded: “Throughout its history, Renishaw has understood the importance of developing its own talented people. Renishaw’s first apprentice was hired in 1979 when the company was barely six years old. Today we have over 130 apprentices in training, we are hiring a record 50 apprentices this year and in 2017, through our various education outreach programmes here in South Wales and in Gloucestershire, we engage around 8,000 pupils and students either directly or through programmes that we fund with our education partners.”

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MACH attendance increases again

The Manufacturing Technologies Association (MTA), which owns and organises the MACH exhibition, has announced that the number of trade visitors to MACH 2018 was up five percent on the equivalent figure for the last event in 2016.

23,125 trade visitors came into the halls at the NEC between 9th and 13th April. 19,445 of these visitors registered directly with MACH (a seven percent increase on 2016), with an additional 3,680 registered with one of the co-located exhibitions visiting MACH too.

James Selka, MTA CEO says: "It was great to see so many people at MACH 2018. For all those using or supplying manufacturing technology, MACH is the place to do business and keep up-to-date with the latest technology. That so many people made sure they were there is testament to the strength of exhibition and its place at the heart of UK manufacturing."

The total number of visitors, including students, who toured the exhibition and experienced a range of hands on activities in the Education and Development, was 24,654. The growth in the exhibition and the increase in the complexity of the technology on display (10 percent more machines were lifted into position than in 2016) drove a 24 percent increase in the number of visitors who attended for more than one day, up to 1,889. Wednesday 11 April was the peak day, with 7,331 trade visitors in the Halls.

2018 saw the exhibition move halls to the newer Atrium side of the NEC, which enabled MACH to be presented in a single space, on one level.

With so much of the manufacturing technologies supply chain under one roof, it is no surprise that a lot of business is done between exhibiting companies and there were over 5,583 representatives from them,



to add to the number of visitors at MACH during the week.

As far as highlights of the 2018 event are concerned, there was a noticeable focus on automation and advanced manufacturing.

Traditional machine tools were, of course still a mainstay of the show. Celebrating its 50th anniversary in style, Hurco has announced 34 orders worth £2.5 million taken at MACH 2018. The High Wycombe-based company opted for a larger stand of 260 m² for this year's exhibition. It was an opportunity to showcase three new models: the 5-axis VC500i, the new bridge-design BX50i and the completely upgraded "XP" Lathe range. In total, 11 machines were demonstrated, including five different 5-axis machine configurations, each ideally suitable for different applications.

According to John Pattison, managing director of industrial parts washing specialist MecWash, growth is not just being talked

about, it was clearly demonstrated at the show: "MACH mirrored what we have witnessed over recent months from customers seeking to invest in new washing systems as their own orders rise. The footfall on to our stand wasn't just to view our technology, it was to discuss specific investment projects from existing and new customers

who are experiencing a surge in orders themselves and looking to ramp up production."

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. Taking place 9-13 April 2018 at the NEC in Birmingham, the biennial exhibition 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. For more information visit www.machexhibition.com.

The Manufacturing Technologies Association (MTA) is the UK trade association for the Manufacturing Technologies industry. The MTA represents the core of engineering-based manufacturing and aims to promote the use and innovation of advanced technology in manufacturing.

Further information about the MTA and its members can be found on at www.mta.org.uk

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It's all about you

All roads lead to Mills CNC at MACH 2018

Over 3,000 visitors to its stand, hundreds of enquiries and 20 machine tool orders taken at the show

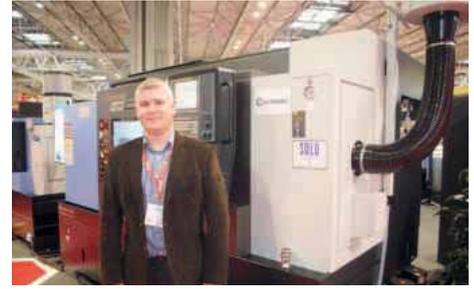
Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has announced that its attendance at MACH 2018 was a 'tremendous success' and, according to managing director Kevin Gilbert: "was the best MACH show in the company's history."

Mills CNC exhibited 16 Doosan machines on its stand at MACH. Many of them, including the Doosan DVF 5000 5-axis machining centre, the Doosan NHP 4000 horizontal machining centre and the Doosan V8300M were new models making their UK debuts at the show.

In addition to new machines, the company also showcased a number of its popular, best-selling Lynx and Puma lathes and DNM vertical machining centres at the event.

Mills, as always, invested heavily in its presence at MACH. As well as having one of the largest stands at the exhibition, the company showcased its range of machines and services from, what was described as "an eye-catching and thought-provoking" themed stand that impressed visitors and customers alike.

Tony Dale, Mills CNC's technical director, says: "We were delighted with visitor and customer reaction to the stand and, despite the new location of the MACH exhibition at the NEC in Halls 18, 19 and 20, our stand drew in the crowds."



Naturally enough, the success of any exhibition or Open House, certainly from a return on investment perspective, will be judged against the number of orders, enquiries and leads taken and generated. At this year's MACH event, Mills surpassed its own high expectations and welcomed over 3,000 visitors onto its stand. The company also reported that hundreds of 'serious' enquiries were generated at MACH and that 20 machine tool orders were also taken.

Tony Dale continues: "Clearly the 20 machine orders were the 'icing on the cake' but what was also illuminating and impressive was the diversity, scope and scale of the orders taken.

"We took five orders for Doosan vertical turning lathes, including two for our new V8300 machines and we also secured an order each for a large-capacity Doosan Mynx 9500 vertical machining centre and a VC 3600 (twin-table) vertical machining centre. The remaining orders were for Lynx and Puma lathes and DNM machining centres."

Mills also reported significant interest in its new DVF 5000 and DNM 4000 machines, and that systematic follow-up of enquiries taken during MACH has resulted in more sales being taken.

MACH 2018 also provided the ideal venue for a number of customers to confirm their Doosan machine tool orders. These included:

- RT Quaife Engineering Ltd that confirmed an order of two new Doosan NHP 6300 horizontal machining centres and a Doosan, 30 pallet, LPS (Automated Linear Pallet System). The machines and LPS system will be delivered and installed at RT Quaife's new manufacturing facility in Gillingham later in the year and will be the first high-productivity LPS system of its kind to be installed by Mills in the UK.

- Elder Engineering (Herts) Ltd that confirmed an order for a Doosan Puma 2600SY Mk II lathe.

- Cogsdill-Nuneaton Ltd that confirmed an order for a Doosan DNM 6700 machining centre.



- Ballpark Engineering that confirmed an order for a Doosan Lynx 2100 lathe.

- Lenane Precision Ltd that confirmed an order for a Doosan VC630 5-AX 5-axis machining centre with a Siemens Control.

Tony Dale concludes: "MACH 2018 was an exceptional show and the Mills team worked hard to make it a success. We are actively involved in following up the hundreds of leads and enquiries taken at the event and, even though we were delighted to take 20 machine tool orders during the five days, are confident that the MACH effect will be the catalyst for many more machine tool orders in the weeks and months to come."

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Cincom 

Mazak focuses on subcontractors with diverse machine display at MACH 2018

General subcontractors were impressed by a range of new machines and automation equipment on the Mazak stand at MACH 2018, all capable of improving machine shop productivity and efficiency.

One of the star attractions was the UK-manufactured QUICK TURN 250MY + TA-12/200, a combination that offers a turning centre combined with a 'plug and play' automation system including a FANUC robot.

The pairing of the turning centre and robot was designed to appeal to customers requiring a single source supplier for both machine tool and automation and attracted machine users requiring lights-out and unmanned running capability.

For ease-of-use, the robot operating system is embedded into the machine's SmoothG CNC, providing a seamless interface for the operator. The TA-12/200 is capable of moving a maximum payload of 12 kg/200 mm diameter and is equipped with separate grippers for loading and unloading.



One of the star attractions on display was the new UK-manufactured QUICK TURN 250MY and TA-12, a 'plug and play' turning centre and robotic machine tending solution

The QUICK TURN 250MY + TA-12/200 is efficient to automate even for small batches with an easy robot programming system that targets setup of new components in under five minutes. Operator safety is ensured by a fenceless security system featuring a laser scanner with zoned warning and protected areas, which allow safe access for the operator. Mazak calculates that the automation solution could have a payback period of as little as six to eighteen months.

Subcontractors were also interested in the



Mazak's latest machine to feature a Siemens CNC is its VTC-760C, which is controlled by the new Siemens 828D control

latest Mazak machine to be fitted with Siemens control, the VTC-760C vertical travelling column machining centre, which is equipped with the new Siemens 828D control.

The travelling column design of the VTC-760C provides optimum machining flexibility, including dual load configuration. The machine benefits from a compact footprint, along with a long X-axis stroke and large 2,300 mm fixed table that provides excellent stability.

Most importantly, the VTC-760C is a highly productive machine, powered by a 12,000 rpm spindle and rapid traverse rates of 42m/min in the X-, Y- and Z-axes.

The inclusion of the new Siemens control represents an entry into the commodity market, as the 828D control panel is a mid-range CNC for turning and milling machine tools. The 15.6" touch screen display runs on SINUMERIK Operate 4.7 and features a built-in QWERTY keyboard with USB and ethernet access.

The CNC benefits from advanced features such as ShopMill work-step programming enabling programs to be written on screen via a simple dialogue. It also features Siemens multiple clamping function that actively reduces the number of tool changes. In addition, a built-in onboard maintenance planner is included, which facilitates easy integration of regular maintenance schedules into production. The control can also be configured to send SMS messages to operators, machine setters, or service and maintenance technicians to

provide alerts for tool life, availability of blanks and upcoming maintenance schedules.

Alongside it on the Mazak stand was the VCN-530C, a vertical machining centre that can boast the highest levels of productivity in its class. For subcontractors, the machine can deliver reduced cycle times thanks to the high speed 42 m/min rapid rates, outstanding acceleration and fast chip-to-chip times. The model on view at MACH featured an optional 18,000 rpm high speed spindle and a large capacity 40 tool magazine. High accuracy and thermal stability are ensured by the combination of ballscrew cooling plus Mazak's thermal compensation system.



Also on display was the VCN-530C, a UK-built vertical machining centre powered by a high-speed 18,000 rpm milling spindle

The final highlighted machine of interest to subcontractors was the high-productivity QT-COMPACT 300MSY L, an entry-level machine boasting high end features such as a Y-axis and second spindle. This machine features a 12-position turret with driven tooling speeds up to 4,500 rpm. The integrated main spindle provides higher accuracy and performance compared to competitor belt drive spindles. The machine features Mazak's class leading SmoothC control with high speed processing and both conversational and EIA programming.

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Measurement Solutions wins orders at MACH

MACH 2018 proved to be a resounding success for metrology innovator Measurement Solutions, with the company selling several Metrascan 3D Inspection Systems throughout the week, as well as a host of other 3D scanning, measurement and inspection technology. Four Metrascan units have been sold to major UK automotive OEM's and a leading F1 team.

Lead generation at MACH was extraordinarily high for Measurement Solutions and the Metrascan certainly proved popular among show visitors. However, the high-end inspection equipment isn't exclusive to high-end OEMs and F1 teams, as area sales manager Deryk Lamb explains: "We sold one Metrascan 3D Inspection System with a Handyprobe portable CMM to Stevenage Sheet Metal, a subcontract automotive sheet metal manufacturer. The six-figure order was placed on the fourth day of the show to significantly improve component quality and conformity to Stevenage Sheet Metal's impeccable standards."

The 50 employee Hertfordshire manufacturer has facilities that include CAD design services, CNC bending and punching, laser cutting, painting and powder coating, shearing, graining and welding. Stevenage Sheet Metal showed an interest in scanning technology two years ago. However, the Metrascan 3D technology has only been available in the UK for the last 18 months, so as soon as the Letchworth company saw the Metrascan at Chasestead, a supply chain partner, a decision to investigate further was made. Stevenage Sheet Metal visited MACH, received a demonstration and the decision was instantly made.

If you have a metrology requirement, contact Measurement



Gary Byatt MD of Stevenage Sheet Metal with Measurement Solutions Deryk Lamb

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An advertisement for ITC Industrial Tooling Corporation Ltd. The background features a stylized red and black geometric shape resembling a jagged arrow pointing upwards. In the center, the slogan "HELPING YOU MAKE IT" is written in red capital letters. Below the slogan, a row of various industrial drill bits and end mills is displayed. At the bottom left, the ITC logo is shown, consisting of a stylized 'itc' in black and red, followed by the text "industrial tooling corporation ltd". At the bottom, contact information is provided: "CYBER HOUSE, 1 KEPLER, LICHFIELD ROAD INDUSTRIAL ESTATE, TAMWORTH, STAFFORDSHIRE. B79 7XE", "T: +44 (0)1827 304500", "E: SALES@ITC-LTD.CO.UK", and "W: WWW.ITC-LTD.CO.UK". On the bottom right, there are social media icons for Facebook, Twitter, and YouTube, with the text "Follow us on:" above them.

Citizen breaks its sales records at MACH

Citizen Machinery UK (CMUK) left the MACH 2018 exhibition on a high with 46 machine orders worth over £6.3 million directly linked to the show of which 18 were confirmed and concluded during the week and a further 28 pending final specification agreement, application discussions or financial approval.



Managing director Edward James says: "This was an important endorsement to the activities of the new management team and especially rewarding to the effort put in by everyone in the company to achieve record exhibition sales at a UK event."

He then recalls how this rolls on from the new team's success in 2017. "We achieved a record year in sales, the first quarter of 2018 set a further standard and the Japanese recognition of the business strategy has been rubber stamped with the setting up of our £2 million new CMUK facility with 600 m² showroom in the West Midlands. This is in addition to our headquarters in Bushey, Watford."

Important among the new order placements were totally new customers to the Citizen Cincom sliding head and Miyano fixed head technology.

Deputy managing director Darren Wilkins says: "Of orders placed so far from the show or that are under final discussions, 14 involved totally new customers. I also want to endorse the reaction to our patented Low Frequency Vibration (LFV) technology demonstrated on Cincom L20 and L12 machines plus the first introduction to the Miyano range through the BNA-42GTYLFV. In total, 18 orders were taken at the show for LFV machines worth some £1.9 million."

Darren Wilkins follows on by explaining how 'Citizen's Finance' has proven to be such a vital contributor to the show's success helping customers justify their planned investment.

Darren Wilkins says: "Securing competitive funding and providing a professional service for something considered as a challenging subject by many has further strengthened the confidence in the Citizen and Miyano brands."

CMUK sales, application and finance teams are running flat out following up each positive enquiry, confirmations and intended order placements while helping with internal justification and machining cycle applications of some customers.

Darren Wilkins continues: "The arrangement and confirmation of any finance arrangements can be quite involved but the level of support we are giving will lead to further significant order placements over the coming weeks."

"Totally separate from MACH and in the week following, three machines not attributable to the show, have been ordered worth another £500,000."

Citizen adds LFV technology to higher speed CINCOM L12-VIILFV for smaller diameter work

Citizen Machinery has further developed the programmable application control of chip size through its leading Low Frequency Vibration (LFV) cutting technology by applying it to the 12 mm capacity Cincom version of the popular L-Series. The 5-axis Cincom L12-VIILFV incorporates high spindle speeds of 15,000 revs/min, to maximise performance on smaller diameter work in a



compact machine requiring just 1,760 mm by 820 mm floor space.

Available through Citizen Machinery UK, the Cincom L12-VIILFV can also be specified with a 16 mm capacity bar size option to extend the capability and maximise productivity from the in-built rigidity of the design to accommodate LFV technology. These include special build standards, slideways, bearings and ballscrews plus control and software.

LFV cutting technology enables precise programmable control of chip size while eliminating deflection on very small diameters when turning. LFV can also be selectively applied to drilling, grooving or even thread cutting plus providing an important aid to machining difficult materials from plastics and copper to high alloy steels. Through the high speed Cincom control, the servo axes in X- and Z- can be selected to provide independent rapid oscillation of the cutting tool, creating in effect, air gaps in synchronisation with the rotation of the spindle.

The machine features a 3.7 kW 15,000 revs/min main and 0.75 kW 10,000 revs/min sub-spindle, a removable guidebush assembly for economic bar usage on shorter components, with a guidebush stroke per chucking of 135 mm. Rapid traverse rates are fast at 35 m/min to minimise non-cutting positioning times.



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ZEISS presents Smart Measuring Lab at MACH 2018

At MACH this year, ZEISS presented its extensive range of cutting-edge measurement and inspection technology, cleverly connected by the ZEISS Quality Network solutions.

On the road to Industry 4.0, measuring and inspection technology is increasingly being used as a control tool in manufacturing. However, as a part of this new role, the technology needs to capture quality data more flexibly and quickly at different sites: in the measuring room, at-line and in-line. This technology must merge and evaluate this data and make it available to persons and/or machines for control input. That's where the ZEISS Quality Network comes in.

The ZEISS Quality Network offers a strong partner network for generating, networking and interpreting quality data, whether at your suppliers' facilities, in the measuring lab or in a highly automated manufacturing environment.

Software solutions such as ZEISS PiWeb combine the quality data of multiple measuring systems to create dynamic

graphic measurement reports. This enables measuring technology, production and quality management to easily access all measurement reports anytime and anywhere. This makes the display and analysis of your measurement data easier than ever before.

At MACH this year, ZEISS showcased a wide range of measurement and inspection systems, cleverly connected by the ZEISS Quality Network solutions. CMMs on display included the DuraMax shop floor CMM and PRISMO bridge-type CMM with DotScan and LineScan sensors. Optical systems on the stand included the O-SELECT digital measuring projector, COMET fringe projection system and O-INSPECT 543 multi-sensor measuring machine, along with a Virtual CT system. There was also a number of microscopes available to try, including the LSM 800 particle analyser and Smartzoom 5 automated digital microscope.

The stand also featured a dedicated Virtual Reality Zone, where visitors could take a 360° tour of the ZEISS customer



centre in Rugby, dedicated to delivering demonstrations, contract measurement services and bespoke training courses.

The ZEISS UK head office is located in the heart of Cambridge, after a move from Welwyn Garden City. The Cambridge facility provides an excellent customer interaction centre showcasing the latest technologies from ZEISS.

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XYZ starts and ends MACH on a high

In the two months prior to the MACH exhibition, XYZ Machine Tools recorded its two best-ever months for machine orders. This may have indicated that customers were preempting MACH and getting their orders in early, but this wasn't the case with the exhibition delivering exceptional sales and enquiries. All of which continues the positive trend for the Devon-based machine tool company.

Machine orders for February and March came to over £7.5 million with £4.5 million being taken in February alone. This figure was helped by an Open House at XYZ Machine Tools' Devon headquarters and a

further three orders for its UMC-5X gantry-style, simultaneous 5-axis machining centre, the high specification and capability of which is proving extremely popular. "With these high levels of sales activity preceding MACH, there was some slight concern that the exhibition would be quiet, but how wrong can you be? From day one, our stand was extremely busy and over the week we took orders for 24 machines valued at over £1 million," says Nigel Atherton, managing director, XYZ Machine Tools. "In addition to these firm orders, we also logged 640 enquiries, which will lead to more orders in the coming days, weeks and months. A fantastic result for us and all credit to the entire team at XYZ for making MACH the success it was."

MACH 2018 saw a number of debuts from XYZ which helped to raise interest, including ROBO-TEND, a robot-based automation cell with vision system suitable for use on machining and turning centres that is both modular and mobile, allowing true robot automation to be within the reach of traditional subcontract engineering



Pre-MACH sales success continued at the UK's leading machine tool exhibition for XYZ Machine Tools

businesses. The revolutionary HP Multi Jet Fusion 3D Printer was also shown by XYZ for the first time. This system can improve 3D printing speeds ten-fold and move the technology into the production environment. The previously mentioned UMC-5X also made its MACH debut along with a number of other machining centres from XYZ's Linear Rail and Heavy-Duty ranges.

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High-speed machining centres cut cycle times by up to 70 percent

Subcontractor progresses to 5-axis machining after success of first Brother S700X1

Even after extending the day shift, Suffolk-based subcontractor CTPE was still having difficulty producing aluminium covers for a medical housing in two operations quickly enough on an ageing, 40-taper, 3-axis machining centre after the customer raised the call-off rate to 100 per week.

A new production route proposed by Whitehouse Machine Tools based on the supply of a Japanese-built 30-taper machining centre from Brother, also a 3-axis model, promised a halving of the cycle time and consequent elimination of the problem.

So a Brother S700X1 was installed in August 2016. Whitehouse edited the existing program and, although it is still a two-operation job, the cycle time was indeed reduced by 50 percent to one hour, as had been demonstrated during time trials in the supplier's Kenilworth technical centre and showroom.

The saving is principally a consequence of four times faster tool change at 1.4 seconds, a 16,000 rpm spindle with through-coolant rather than the 6,000 rpm of the previous machine, four times faster acceleration at 2 g to linear rapids of 50 m/min instead of 18 m/min, and the fact that the program runs so much faster in the latest Brother CNC C00 control.



Since the machine was installed, CTPE has gone a step further by optimising the program to machine six parts on the table with 14 tools and adopting new types of cutters. The effect has been to reduce the cycle time per part further to just 30 percent of the original.

In another example to demonstrate the magnitude of the savings obtained, an aluminium flow housing for a customer in the scientific sector was previously

produced in three operations on a 3-axis machine in 15 minutes and is now produced in an Op1/Op2 cycle on an S700X1 in six minutes, representing a 60 percent time reduction.

Alex Taylor, who runs the subcontracting firm in Mildenhall with his father Chris, says: "It was our first machine from Brother and also our first 30-taper capacity. We were impressed with the quality, compact footprint and speed of the Japanese machine when we saw it in Kenilworth and comments about Brother both online and by word-of-mouth were complimentary.

"After the S700X1 arrived, we were able to get one to two weeks ahead on the medical cover job, whereas before we were always struggling to keep up with the current week's production."

Such was the success of the project that, when a second multinational company in the medical sector, a long-standing CTPE customer, asked for a new family of 6061 aluminium parts to be produced, Chris and Alex Taylor had no hesitation returning to Whitehouse for an identical S700X1, this time fitted with a 2-axis Nikken table. It replaced another 3-axis vertical machining centre in June 2017.

The parts were being machined in the USA but the German-based OEM wanted a single source of supply and was confident of



the Suffolk subcontractor's capabilities. Six components are required, half of which are suited to 3-axis metalcutting while the others benefit from five-face machining in two operations using 3+2-axis cycles, as otherwise they would need eight setups on a 3-axis machine.

Chris Taylor says: "We like the 3-axis Brother and 2-axis Nikken combination, as we are able to mount the compound table on one side, leaving the rest of the machine table free for fixturing a second component in a vice for 3-axis machining. In that way, we can get two-operation components off complete each time we open the doors."

He adds that, in a similar price bracket they looked at a number of 40-taper, 5-axis replacements for their old machining centre, but they could not compete with the speed of the nimble, 30-taper machine. The smallest cycle time saving achieved to date by swapping an existing job onto an S700X1 is 40 percent. The company has also won new 5-axis work as a result of having the capacity on the shop floor and some of those jobs have already repeated.

The Brother machines are especially appropriate for CTPE, which processes a lot of aluminium. One of the new medical parts is quite large for a 30-taper machine at 180 x 50 x 50 mm but the Brothers cope with it well, despite more than three-quarters of the billet's material being removed.

Accuracy achieved is down to ± 5 microns positional tolerance, better than is possible on many 40-taper machines. Chris Taylor pointed out that CTPE also produces components in steels including stainless on the S700X1s, although a 30-taper machine would not be appropriate if one is doing that all day.



On a final note, Alex Taylor confirms: "Before we bought the Brother machines, other users had commented on their reliability. Tooling suppliers, who tend to keep their ear to the ground, reported similarly. Certainly, we have not had any downtime on either S700X1 since they were installed."

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HIGHLIGHTS

- + Small footprint = reduced floor space costs and many possibilities for the machine layout
- + Reduced idle times = short workpiece travel distances and tool-change times
- + Excellent overall equipment effectiveness thanks to high availability and excellent machining quality
- + Ease of Operation = highly accessible work area, quick machine set-up and part measurement

- + Energy efficient = reduced energy costs
- + Loading concept = manual, robot, gantry, as well as, EMAG TrackMotion automation system
- + Powerful main spindle allows for heavy duty machining
- + Common parts strategy, standard spare parts warehousing = reduced maintenance costs
- + High rigidity = Machine bed and overall design allow exceptional component quality

New MECOF 5-axis machining centre

NCMT, sole sales and service agent in the UK for the Italian-built Mecof range of travelling-column, horizontal-spindle milling machines and gantry-type, vertical-spindle machining centres, launched the UMILL 1500 at MACH. The portal, 5-axis vertical machining centre has mill-turn and high-speed options and joins the larger UMILL 1800 introduced to the UK at the end of 2016.

The versatile machine has a 1,500 mm x 1,500 mm x 1,100 mm working envelope and does not require special foundations. It is suitable for 5-axis and five-sided metalcutting applications in industries as diverse as aerospace, oil and gas, power generation and automotive.

There is a choice of spindles, either an HSK 100-A/T, 58 kW, 12,000 rpm version delivering up to 372 Nm of torque, an HSK 63-A, 63 kW, 20,000 rpm, 125 Nm alternative, or an ISO 50, 48 kW, 6,000 rpm, 750 Nm mechanical spindle. A-axis head positioning is in a plane at an angle to the table, allowing deployment of the spindle from horizontal to vertical as well as undercutting at up to 15 degrees.

There is a choice of two torque motor-driven rotary tables. The 1,400 mm x 1,200 mm milling table has a 20 rpm drive, a maximum torque of 3,000 Nm and accepts workpieces weighing up to 4.5 tonnes, while a 1,400 mm diameter mill-turn table offers 260 rpm, the same torque and supports 3.5 tonnes.

Despite its large size the machine is highly productive, with up to 60 m/min feed rate in the linear axes. The tool magazine can have 80, 120 or 200 pockets. Control is by either the Heidenhain 640HSCI or Siemens 840D sl.

UMILL machines mark a departure for Mecof, whose previous entry point was machines with 4 m in X, rising to 20 m. The show will provide an opportunity for NCMT to highlight the many production possibilities across a wide spectrum of applications in aerospace, automotive, rail, mould making, prototyping, power generation and machine building.

Adhesive workholding to be demonstrated

NCMT demonstrated on Okuma and Makino machines the advantages of a photo-activated adhesive system from the US, Blue Photon, for which it is sole



European agent. The method is ideal for securing awkwardly shaped parts for tight-tolerance machining and inspection. The process involves applying an adhesive that is cured by ultraviolet light via an LED spot curing system. The adhesive contact points can be sheared to free the workpiece by rotating the gripper pins in the fixture plate with a spanner. The residual adhesive can subsequently be removed by the application of hot water or steam.

Use of the technique is predicted to grow rapidly due to its ability to hold components securely with a shear resistance of up to 200 kg per gripper point yet allow cutters excellent all-round access for machining on five sides. Unlike magnetic clamping systems, it can be used to secure not only ferrous metals but also non-ferrous metallic parts as well as ceramics and composites, including delicate materials.

Blue Photon is ideal, for example, for clamping a turbine blade to enable the fir-tree and wedge face on the root as well as the shroud end features at the tip to be machined in one hit. Traditionally, due to clamp interference, multiple operations are required. The novel turbine blade fixture incorporates four gripper inserts that, once adhesive has been applied and cured, hold the blade securely by one side of the aerofoil.

Tests have shown that the clamping force produced by the fixture can easily withstand the requirements of machining. Material removal rate actually exceeded that achieved when the blade was mechanically



clamped, as the pressure had to be limited to avoid component distortion and marking.

Other advantages of Blue Photon clamping are an absence of workpiece distortion, good damping properties to suppress chatter, reduced cost of fixtures for holding complex parts and elimination of locating lugs on castings. A recent innovation is the introduction of smaller diameter grippers for smaller workpieces and lighter duty machining applications.

More information can be found at:
www.ncmt.co.uk/pioneers-in-machining-technology/products/bluephoton/

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Larger, top quality machining centre has entry-level price

The German manufacturer of 3- to 5-axis machining centres, Hermle has expanded its Performance Line machine series with the addition of the C 650 to the existing C 250 and C 400 models. They sit alongside the company's core machine range comprising six machines from C 12 to C 62.

Sales and service agent in the UK and Ireland, Gosport-based Geo Kingsbury says that there have been no compromises in the build quality of the C 650 machining centre or indeed its smaller counterparts. The only limitation is that they are available with fewer options, which is the reason for their economical price.

The work envelope of the C 650 is defined by X-, Y- and Z-axis travels of 1,050, 900 and 600 mm, positioning it in capacity between the C 42 and C 52. Every Hermle machine shares the same fundamental attributes including a modified gantry design, mineral cast bed and an integrated, trunnion-mounted rotary table for the fourth and fifth CNC axes, if specified. All these features contribute to rigidity, low vibration and high machining accuracy.

In the 3-axis version, the rigid table can accept workpieces weighing 3,000 kg, making it ideal for tool and mould making. Alternatively, precision machining of components up to 900 mm in diameter by 600 mm tall and weighing 1,500 kg is possible on the ± 115 -degree swivelling rotary table of the 5-axis version. Minimal idle times result from 6 m/s² acceleration to 35 m/min rapid traverse in all axes.

Spindle options are 15,000 or 18,000 rpm and both are equipped with Hermle's patented collision protection system. In the event of impact in the Z-axis direction, the energy is absorbed by six displacement sleeves to minimise and often prevent spindle damage.

The integral magazine for 42 tools can be expanded by 50 or 88 additional pockets. Various other options include enhanced cooling and chip management, extractors, as well as tool breakage monitoring and measurement, touch probes and precision packages.



Standard CNC system is Heidenhain's TNC 640, which offers the full programming capability of this proven, high-end control. The GUI has a large, full colour, 19" TFT flat panel monitor and the control can be swivelled to the magazine loading station so that the operator can enter tool data directly into the control.

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2D CNC Machinery expands 5-axis machining portfolio

Now available through UK distributor 2D CNC Machinery is a recent development by German machine tool builder Alzmetall of its GS 1400/5-FTD, 5-axis bridge-type machining centre. The machine is able to provide a complete in-cycle production sequence involving 3-D turning, boring and milling, precise contour milling and five-sided machining on very complex components including the precision machining of customised gear forms.

Not only does the multi-axis 'Box-in-Box' bridge-type centre have the capability to combine more traditional multi-stage operational sequences into a single cycle, but it also has the ability to create high orders of precision, contouring form and geometry. This is achieved due to the original design, the standard of build and construction around its patent-pending '4-Guideway System' where the bridge is carried inside the machine structure. The more traditional bridge-style method is to mount the bridge on top of the side supports with just two guideways. As a result, the Alzmetall design is able to

maximise the benefits of the latest software advances in control technology.

The Alzmetall GS 1400/5-FDT centre is able to produce in a single operational sequence turning and boring sequences and finish mill gear forms.

The 31 tonne, 5-axis GS 1400/5-FDT bridge-type machining centre has strokes of 1,200 mm in X by 1,300 mm in Y and 800 mm in Z with a rapid traverse of rate of 82 m/min in each axis. Positional accuracy is within five microns. The A-axis has $\pm 140^\circ$ and swivel and rotary axes are powered by a direct torque drive motors delivering a 30 m/min pivoting speed. The 800 mm turntable, 1,000 mm option, has a loading of three tonnes with 2,400 Nm of torque available. The larger table has 3,400 Nm of torque.

The spindle is powered by 82 kW, 14,000



revs/min motor with 500 Nm of torque with tool magazine options between 33 and 250 pockets. Tools up to 125 mm dia, 250 mm with adjacent pockets left empty, can be exchanged in seven seconds chip-to-chip.

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GF Machining Solutions' show of strength at MACH

GF Machining Solutions, the EDM, 3- and 5-axis milling, laser texturing machine tool specialist, as well as a leading automation and tooling system supplier, showcased a range of its advanced technology solutions on its stand at MACH.

The company exhibited five machines in total on its stand with a number of them making their MACH debuts at the 2018 event.

In addition to the five 'physical' machines, the company also showcased a range of its new and, from the markets' perspective, perhaps less well-known technologies to visitors i.e. Micro-Machining, Additive Manufacturing (AM) and dedicated 5-axis machines specifically aimed at manufacturers of turbine blades, impellers and blisks, via videos, digital presentations.

Martin Spencer, GF Machining Solutions UK's managing director, says: "We used MACH to promote the unrivalled breadth and strength in depth of our machine tool technology portfolio and, just as importantly, to position ourselves as a proven and trusted advanced manufacturing solutions provider.

"Prior to the show, we set ourselves some ambitious targets in terms of machine tool sales and enquiries and manufacturing project confirmations. Analysis of the figures reveals that we exceeded these targets by a factor of three."

With so much to see and take in on GF Machining Solutions' stand, it was difficult to identify specific technology highlights on view. However, according to Martin Spencer: "there was significant interest, amongst all visitors, in our labour saving and process security innovations and technologies."

From a wire EDM (WEDM) machine perspective visitors were impressed with the



AgieCharmilles CUT P 550's 'onboard' automation and the way it improves machine tool utilisation and uptime as well as reducing operational and labour costs.

Specific highlights here included the machine's new and innovative Automatic Slug Management (ASM) and Automatic Slug Removal capabilities.

Continuing with the theme of reducing costs, it was not surprising that visitors were drawn to the AgieCharmilles FORM P 350 (die-sink) machine, which was integrated with s System 3R WorkPartner 1+ automation system.

From a 5-axis milling perspective, there was much to see and admire with the Mikron MILL P 500U and Mikron 200U LP having pride of place on GF Machining Solution's stand.

Specific highlights included GF Machining Solutions' Spindle Collision Protection technology which uses a mechanical system that enables the machine's spindle to deflect slightly in X, Y and Z axes during a

collision and employs a sensor system that detects any deflection and stops the machine before the spindle/spindle bearings are damaged.

Martin Spencer says: "MACH 2018 was a great show for us. Visitor numbers were high and leads, enquiries and actual sales taken during the five days all exceeded our pre-show targets.

"One thing that was really notable was that virtually all customers and visitors we interacted with were busy, had strong forward order books and were confident about the future.

"We are actively following up the leads and enquiries taken during MACH and I am confident that the level of interest amongst visitors will soon translate into actual sales in the not too distant future."

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Patternmaker buys a second 5-axis machining centre

On the second day of MACH 2018, a local firm, Summit Patternmaking placed an order on the Hurco stand for a 5-axis machining centre. When the VMX42SRTi B-axis machine is delivered at the end of May, it will double the pattern and tool maker's 5-axis machining capacity, although the firm also operates four 3-axis VMCs.

Production of models and patterns for vehicle interiors are a particular specialism, accounting for two-thirds of turnover. Gauges, jigs, fixtures and tools for the automotive and aerospace supply chains are also to be found regularly on the shop floor.

Summit Patternmaking director Duncan Willetts said, "We carry out a lot of 5-axis machining of automotive replication gauges and also of Formula One race car parts.

"Apart from needing more capacity, we were looking for a bigger working volume to cope with larger parts and a more robust machine to process denser model boards as well as alloys."

He believes that the 7.5 tonne Hurco machining centre with its 35 kW / 119 Nm spindle he has chosen is ideal for these

applications. Provision of the fifth CNC axis via a ± 90 degree swivelling spindle head rather than a trunnion was favoured, as it provides a larger working volume, right up to 1,067 x 610 X 610 mm for 3-axis work.

Tolerances held at the Birmingham factory are typically ± 0.05 mm. These are easily achieved on Hurco 5-axis machines, which are considerably less expensive than many models on the market that Duncan Willetts researched before placing the order.

From 5-axis machining centres to large format machining centres designed for the aerospace and energy sectors, there is a Hurco CNC machine for you. The flagship VMX line is the workhorse of 3-axis CNC machining centres. However, the company does not stop at milling. It has worked diligently to ensure its turning centres are up to par with its mills. The TMX, TMM, and TM lines include a range of turning centres with chuck sizes up to 25 inches and mill turn machines that support the "done in one"



philosophy. Whether you are turning, milling, doing 2D parts or 3D parts, Hurco CNC machine tools, equipped with integrated control, let you get down to the business of making chips faster than any other CNC machine tool.

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Autodesk launches PowerMill 2019 CAM

by Clinton Perry, PowerMill product marketing manager

PowerMill is Autodesk's CAM solution for high-speed and 5-axis machining. It offers a comprehensive range of strategies and powerful editing tools to ensure efficient, safe and accurate machining, especially for companies that are using sophisticated CNC machine tools to produce complex shapes in challenging materials. PowerMill is used in a wide range of industries but is particularly successful in mould, tool and die, complex aerospace and automotive applications.

Additive manufacturing

To meet the growing trend for CNC machine tools that offer both additive and subtractive capabilities, PowerMill 2019 provides a dedicated suite of additive strategies and simulation tools. These are specifically designed to solve the unique challenges of programming these hybrid machines. PowerMill can generate safe and efficient toolpaths to drive directed energy deposition (DED) processes that utilise wire-fed or powder-blown hardware.

These are not simply subtractive toolpaths

in reverse, instead PowerMill offers highly specialised 3- and 5-axis programs that can be used to reliably build entire components from scratch. Alternatively, localised features or surface coatings can be applied to existing parts, allowing components to be enhanced or repaired. Of course, being PowerMill, manufacturers have instant access to a vast library of subtractive manufacturing strategies meaning critical features can be CNC machined where needed.

5-axis collision avoidance

For 5-axis programming, PowerMill's collision avoidance tools have been further improved. A new "automatic tool-axis tilting" method for collision avoidance simplifies hugely the programming of 5-axis machines. The new option provides a single solution that helps generate smooth and safe 5-axis motion for all model shapes and toolpath types, making it as easy to create 5-axis program as it is 3-axis code.



Vortex from stock

PowerMill's high-efficiency roughing strategy, or Vortex, was one of the first high efficiency roughing algorithms to hit the world of CNC machining. The 2019 release sees the inclusion of a new "From Stock" option that is based on the "Adaptive Clearing" technology provided in other Autodesk CAM software products.

This new option creates toolpaths with offsets that are based on both the shape of the part being produced and the stock being milled. The result is toolpaths that are considerably more efficient, with shorter machining cycle times and fewer tool retractions.

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Hartford Hartrol Plus CNC system

The latest and most powerful yet user-friendliest CNC system, Hartford's Hartrol Plus, was demonstrated at MACH by T W Ward CNC Machinery (Ward CNC). With two Hartford vertical machining centres on show, visitors to the stand were able to see for themselves how this innovative 'Intelligent NC' control breaks new ground with integrated features and a multitude of applications for unmatched levels of user-friendliness and enhanced machine productivity and machining management data.

Available in 15 or 19-inch versions, the touch screen CNC is built around a 32 Gbyte Mitsubishi core and, as standard, incorporates a raft of applications for improved operator use and in-built machine monitoring/diagnostics, including: program analysis with estimated machining times; machining path simulation; 2,700-block look-ahead functionality; five-face and Z-axis workpiece calibration; real-time spindle monitoring; automatic feed control; machine/operator daily/monthly utilisation levels.

The Hartrol Plus system incorporates sub-groups of functionality for different tasks throughout the manufacturing process, including program preparation, operator machining aids and production statistics.

For example, in addition to inputting via the screen any shape or contour for machining, the control also accepts two-dimensional DXF drawings from which it will automatically create programs using the NAVI MILL function. All this can be done while the machine is in-cycle, with therefore no disruption to the machining process.

Also, operators can quickly access an M Code list and a routine that calculates cutting conditions, required/suggested speeds and feeds which can be easily altered to suit, depending on material being machined, for instance. This information can be stored and easily recalled for future use, decreasing the time to program forthcoming jobs.

Integral with this is program simulation, for example, backlash and curvature radius analyses, showing actual in-cut times and tool paths as well as possible collision points, decreasing the potential for costly and time-consuming damage to workpiece and machine.



In addition to spindle load monitoring and automatic feed control, the CNC system's machine monitoring cache also incorporates a tool location display plus a work schedule management function that integrates with the Hartnet machine/operator utilisation routines.

The machine management functionality also embraces tool lists and alarms for maintenance, as well as CCD imaging, so users can view operating status without stopping the machine/opening doors and also take stills for reference and incorporation into route sheets for future batch runs. Compatible with Industry 4.0 technology, this eliminates the need for printed route sheets and instead provides up-to-date, real-time process steps.

In addition to the two Hartford vertical machining centres that were on display, the Pro-1000 and the heavy-cutting HCMC-1682, Ward CNC's MACH stand also showcased the AXILE G8 5-axis overhead gantry-type vertical machining centre alongside five Hyundai-Wia machines: LM1800TTSY turning centre; L2000LSY slant bed CNC lathe; the award winning XF-2000 5-axis vertical machining centre; LV-450 compact VTL and iCut 400TD twin-pallet/dual table vertical machining/tapping centre.

T W Ward CNC Machinery Ltd is one of the UK's leading suppliers of CNC machine

tools to a wide range of OEM's and subcontract metal cutting companies across many engineering sectors. The company was originally part of the Thomas W Ward Group, which had its origins in Sheffield over 130 years ago and which grew to be a major industrial conglomerate with worldwide activities.

Ward CNC currently employs over 45 people and is the sole UK distributor for a number of the world's leading machine tool manufacturers. Additional and complementary activities include the supply of late model reconditioned and remanufactured CNC machine tools to worldwide markets, which are carried in stock and processed in its 5,500 square metre facility at Albion Works, Sheffield.

Ward CNC customers include well known and respected companies involved in aerospace, oil & gas, construction equipment, defence, medical equipment, automotive, power generation, OEM equipment manufacturers and precision subcontractors.

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Latest innovations from 1st MTA

Considered to be the largest manufacturer of barfeeds in the world, lemca produces 4,500 units a year. The Italian company exhibited two of its latest innovations at MACH 2018 on the stand of UK agent, 1st Machine Tool Accessories.

Industry 4.0 enabled bar feeding

The first was wireless data communication from a lemca barfeed, allowing much more information to be transmitted compared with a hard-wired connection.

lemca's area sales manager, Andrea Psotti who assists 1st MTA in looking after the UK sales market, explained that the solution is unlike those offered by others in that it allows the customer to integrate the equipment more conveniently. Instead of having to be connected into a factory's intranet to achieve wireless data flow, the lemca barfeed and lathe communicate via the cloud.

Reliance solely on an Internet link simplifies setup. It also has the advantage that equipment status and performance can be monitored on a PC, tablet or a

smartphone away from the factory, for example when travelling.

Andrea Psotti pointed out that in 2013, lemca was the first barfeed manufacturer to start researching connectivity and was the first with a wireless data solution. In Italy alone there are more than 300 lemca Industry 4.0 barfeed installations and the popularity of the system is quickly growing.

All lemca barfeed models can be Industry 4.0 enabled. The system shown at MACH 2018 was on one of the manufacturer's flagship models, the BOSS 338 HD.

First retrofittable bundle loader

Magazines fitted to a barfeed can extend the length of uninterrupted operating time considerably, but until now such equipment has been a factory fitted option and a user may not have been ready for it at the time of the original purchase.

At MACH 2018, the first-ever bundle loader capable of being added to a barfeed already installed and running in a factory was launched on the stand of lemca's UK agent, 1st MTA. Called the Caddy F, it was



demonstrated working with the BOSS 338 HD barfeed. Capable of accommodating a 250 mm diameter bundle of bars weighing up to 2.5 tonnes, the loader is of open design so can easily be replenished with new stock material.

Availability was also announced of a Caddy P version, which is a multi-rack system capable of up to 2 m of additional capacity.

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Steering engineers invest in Star sliding head lathe

Coventry-based steering system manufacturer, Pailton Engineering, has made its biggest investment in the last three years, with its purchase of the flagship Star GB ST-38 CNC sliding head lathe. This machine provides a solution for mill-turn parts and is packed with functionality, to ensure Pailton Engineering can keep up with the increased demand for bespoke steering systems.

The ST-38 is Star's flagship model, adding to the two other Star machines currently on the factory floor at Pailton Engineering's facility. Three 10 station turrets allow up to 70 tools to be loaded to the machine at one time, providing greater productivity. Each tool can be easily removed with Star's unique clamping mechanism permitting fast setup and changeover.

The new machine is part of a larger investment to transform Pailton Engineering's factory floor. Two other recent capital investments include a high-spec Mazak machine and a SOHMAX drilling and tapping machine. The company has reinvested over £700 k into the business

every year for the past two years, and the latest Star GB investment is part of a larger business transformation.

Cy Wilkinson, managing director of Pailton, says: "We've always invested in equipment that will give us extra capacity and increased engineering flexibility. The purchase of the Star ST-38 was the next natural step for us as it now gives us up to 38 mm diameter bar capacity. Capable of multi-axis milling and balanced turning, this is one of the most powerful and capable machines on our factory floor.

"This one machine does the job of multiple machines on the factory floor, saving time and floor space. There are numerous tools and toolholders available, which allows us to work in new ways and increase skills across the workforce. The machine can carry out back angled milling, back angled inner threading and simultaneous cross drilling, which will have a huge effect on product development."

Together, these new machinery



investments bolster Pailton Engineering's product development to ensure bus and coach, military, and commercial vehicles are equipped with made to measure steering systems, designed for extreme applications.

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Die-sink EDM boosts productivity by 50 percent

Hertford-based Neptune Engineering has continued investing in the latest Sodick die-sink technology by acquiring a new AD35L machine from Sodi-Tech EDM. By offering up to 50 percent more speed than the machine it replaced, the Sodick AD35L has eliminated a bottleneck and delivered important extra capacity to this progressive toolmaking specialist.

With over 40 years of history, the future changed for Neptune Engineering in 2010 when Gary Statham took over the business from his father. Demonstrating impressive ambition, he relocated the company to much larger premises, twice the size, and began investing in a host of new manufacturing technologies, including, in 2013, a Sodick VZ300 wire EDM and Sodick AD30L die-sink EDM. This capacity has now been bolstered by the introduction of the AD35L die-sink model.

Gary Statham says: "Due to increasing order books we were encountering a bottleneck in our die-sink EDM processes. We had an ageing machine that needed replacing, so the decision was taken to invest. Having had such good performance from our existing Sodick machines over the past five years, we decided to return to Sodi-Tech EDM."

As luck would have it, soon after the AD35L had been installed, a significant order arrived from one of Neptune's electrical industry customers for a series of six-cavity injection moulds. The tools are used to mould domestic plugs, sockets and switches for a major electrical brand.

Gary Statham says: "The timing could not have been better as the new Sodick is at least 50 percent faster than the machine it replaced. We have been able to process the tooling much quicker. The machine will be busy on this work for a number of months to come."

Each mould tool and insert is complex, as plugs, sockets and switches typically contain features such as compound curvature, blended radii and freeform surfaces. The cavities and inserts produced by the new Sodick AD35L are all manufactured from tool steels such as H13 to tolerances within $\pm 0.01\text{mm}$. Moreover, the company typically seeks a "zero finish", essentially a polished surface which does not require any secondary operations; a factor that is readily accommodated by the AD35L. This is important as Neptune is synonymous with quality, a position attained by successfully combining extensive industry knowledge with the use of modern technology and ongoing investment. The company's multi-skilled and experienced staff offer optimum flexibility from the initial design stages through to project completion and validation. A full turnkey solution for all moulding requirements is offered, with in-house design and moulding services.

Gary Statham says: "Although we have a wealth of knowledge and experience in precision engineering, mould tool manufacture and injection moulding, there's a lot of competition out there. As a result, we find ourselves working quite hard to balance quality, speed and price, not just in the electrical sector, but across



all the industries that we serve, which include medical, thin-walled packaging and automotive. We've had a good couple of years, so the time was right to invest in another machine that could take us to the next level in terms of capacity and performance."

Gary Statham says that ultimately the new die-sink machine has made the company more efficient, which in turn has helped to reduce lead-times for the benefit of customers. "Everyone wants tools that are quicker, cheaper and more accurate, and we can only achieve this by continuing to invest in the latest manufacturing technologies such as the Sodick AD35L," he says. "The machine has been spot-on since it arrived in terms of both speed and quality – the finishes are so good. We also experience far less wear in comparison with older machines."

Gary Statham concludes with a word about Sodi-Tech EDM's customer support, which he says has been excellent throughout their relationship: "Sodi-Tech EDM always offer the personal touch and solve any occasional issues very quickly."

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Life in the fast lane

Founded in 1958 by the four Walklett brothers, Ginetta has a long and successful history of producing hand-built road and race cars. By the time it was acquired by Lawrence Tomlinson's LNT Group in 2005, it had gained a reputation as one of the most renowned British heritage race car brands. Taking the lead in British race car manufacturing, Ginetta is putting the UK at the heart of world-class motorsport, selling cars across the world and training the brightest stars in motor racing.

Ginetta offers a genuine route for progression from entry level competition, right the way through to international motorsport platforms. Occasional race



enthusiasts can choose to hire a car or host a corporate day, while the more seasoned racing driver can experience driver training on an advanced track day. The Ginetta Championships provide competitive racing for everyone, from the Ginetta Junior Championship with drivers aged 14-17 racing the multi-disciplined G40, to the Michelin Ginetta GT4 SuperCup. Broadcast live on ITV4, it is a stepping stone into a career in professional motorsport.

Every car is hand-built in a state-of-the-art, 75,000 ft² factory just outside Leeds in West Yorkshire. Ginetta employs some of the UK's sharpest engineering and manufacturing talent to take each model from concept to reality, combining thorough engineering and quality control with the ability to move rapidly from prototype to production.

In 2016 Ginetta invested in its first CNC machine, a Haas VF-4SS Super Speed vertical mill with 12,000 RPM spindle, 24 +1 tool stations and 4-axis control. The machine is central to the manufacture of the new G58. An evolution of the popular G57, the

latest prototype was created in response to feedback from existing customers and will boast a 6.2 litre V8 engine, capable of producing 575 BHP. Tipped to be one of the fastest track day machines on the market, the G58 will lap within four seconds of an LMP2 car, at a fraction of the cost.

The VF-4SS is also cutting parts for the new G60-LT-P1, recently unveiled at Autosport 2018, which is bound for the 2018/19 FIA world Endurance Championships, including Le Mans 24 Hours.

The last few years has seen unprecedented success, with company turnover increasing by nearly 50 percent. Investing in Haas, as well as in research and development, alongside further improvements to the range have led to growing demand from international markets.

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ITC blows swarf away with new chip fan

For machining applications that generate significant levels of swarf, Industrial Tooling Corporation (ITC) Ltd has now introduced the new Chip Fan from BIG KAISER. The innovative new Chip Fan from BIG KAISER is a tool that offers a fast and safe method for removing chips and coolant from the work envelope without stopping production.

The blades of the Chip Fan are turned by the spindle on the machine tool. With a finely balanced design, the new Chip Fan operates at spindle speeds up to 12,000 rpm to provide powerful, high-volume air cleaning. This is efficiently achieved without any of the dripping coolant and flying chip issues that are associated with conventional air hose blasts.

To ensure its long life and durability, the BIG KAISER Chip Fan is manufactured from a high-strength anodised aluminum. Furthermore, the chip fan comes with a pre-drilled hole that allows through coolant spindles to distribute coolant through the centre of the fan to rinse off tables, fixtures and workpieces. Following this cycle, the fan runs at a high speed to remove any



remaining chips or coolant, thus performing two cleaning operations in a single step. Ideally, the Chip Fan should be programmed into the machining cycle to minimise spindle downtime and maximise operator efficiency. Safety is also improved as all the swarf and coolant is neatly contained within the machining enclosure and kept off the shop floor.

Commenting upon the arrival of this new system, Giampaolo Roccatello, VP for Sales at BIG KAISER says: "Keeping production equipment clean significantly improves reliability and quality while also ensuring a quieter working environment. Our new Chip



Fan means chips and coolant can be quickly and easily removed without any interruption to production. This maximises productivity and prevents unpleasant costly delays."

For further details on the new Chip Fan and how to keep your machine clean whilst maximising uptime and utilisation, please contact ITC.

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Okuma offers cutting-edge machining solutions for aerospace manufacturers

Visitors to the Farnborough International Airshow, held from 21st-22nd July, will be able to discuss Okuma's extensive aerospace portfolio with the experts on-site. Complex aerospace parts 'done-on-one'

Equipped with a powerful TRUMPF TruDisk laser, Okuma's LASER EX series of super multitasking machines enables high-quality laser metal deposition (LMD) to create complex parts like Inconel turbine blades with integrated cooling channels. To maximise efficiency, the LASER EX series is able to automatically switch between up to four powders mid-operation without changing the nozzle. To eliminate the need to completely replace worn or damaged parts, the LASER EX series enables easy spot repairs via LMD. Laser hardening reduces thermal deformation to a minimum, resulting in unparalleled workpiece accuracy. The LASER EX machines' capabilities include conventional turning, cutting, milling and grinding even of materials like titanium and Inconel. This is especially useful for finishing aerospace components to achieve excellent surface quality.

Large parts machining

With a 1 m square pallet, its sheer dimensions make the MU-10000H 5-axis machining centre an impressive sight to behold. Given its high-torque, high-speed machining capabilities and chip removal rates up to 1,000 cm³, it also delivers the



performance to back up its size, as it handles even large titanium components like 200 kg engine cases with ease.

Maximum efficiency in 5-axis machining

Okuma has partnered with renowned experts to offer the best solutions for the demanding aerospace industry. In order to make full use of the abilities of modern 5-axis machining centres, the manufacturer co-operated with CAM developer OPEN MIND on their performance package hyperMILL MAXX Machining. With its innovative CAM strategy 5-axis tangent

plane machining time savings of up to 90 percent can be achieved. In addition, the package includes modules for efficient roughing, finishing and drilling, which allow for significant time savings and increased surface quality.

Smart factory solutions

Okuma's comprehensive smart factory application Connect Plan enables advanced factory visualisation, data processing and analysis as well as predictive maintenance, all in service of facilitating highly productive smart manufacturing in the Industrial Internet of Things.

To see these and other aerospace solutions such as m&h on-machine gauging and Vandurit's rollFEED Turning in action, manufacturers are welcome to attend Okuma's workshop in Krefeld, Germany. Interested parties can register for either date of the one-day event via www.okuma.eu, or <https://www.okuma.eu/newsroom/events/>.

Okuma Europe GmbH is the Germany-based sales and service affiliate of Okuma Corporation, a leader in CNC machine tools, founded in 1898 in Nagoya, Japan. The company is the industry's only single-source provider, with the CNC machine, drive, motors, encoders, spindle and CNC control all manufactured by



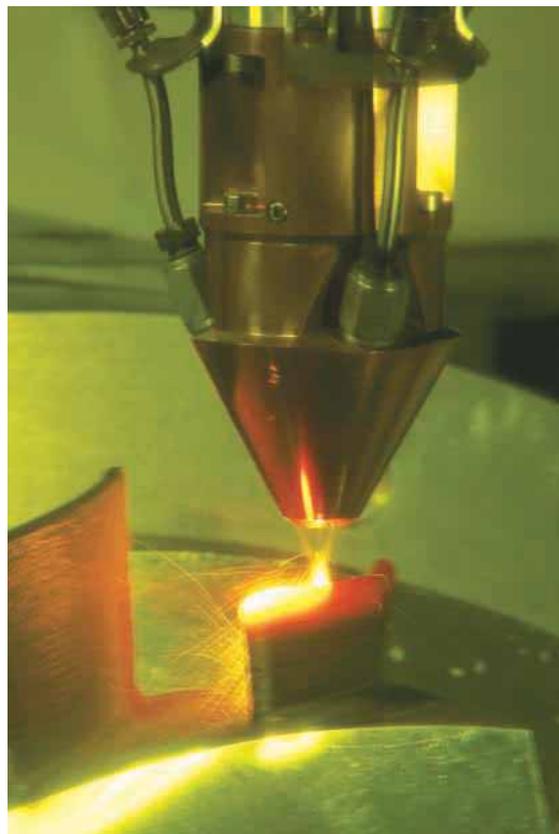
Okuma. Okuma's innovative and reliable technology, paired with comprehensive, localised service protection, allows users to run continuously with confidence and maximising profitability. Along with its industry-leading distribution network, Okuma facilitates quality, productivity and efficiency, empowering the customer and enabling competitive advantage in today's demanding manufacturing environment.

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

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

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

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



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Turbex to promote cleaning and anodising equipment

A specialist provider of washing solutions, FPI (Flourescent Penetrant Inspection) lines and surface treatment equipment to the aerospace sector since 1981, Turbex will focus at the Farnborough Airshow show on cleaning machines and lines for manufacturers and MRO organisations in the aerospace supply chain.

Emphasis is placed on problem-solving to meet customers' needs, especially for processing parts of complex geometry to a superior standard.

The Turbex product portfolio includes the Galvatek range of surface treatment lines, notably for chemical cleaning and anodising. More than 600 turnkey installations in over 35 countries have been designed, delivered and installed. The equipment is typically automated and is renowned for modern technological developments that ensure efficiency, reliability and low emissions.

Galvatek is especially well known in the aerospace industry, as its multi-stage lines for chemical cleaning, anodising and etching are widely used. Continuous development ensures that technological advances create better and more efficient processes for industries where precision and fault-free operation are required.

Chemical surface treatment plants are built either for one specific purpose or as part of a larger package for preparing parts for other surface treatment phases. Turnkey solutions are regularly supplied, complete



with waste water purification and recycling systems.

Non-destructive testing (NDT) and component cleaning are closely related. Through Turbex's experience of cleaning, it has developed an extensive knowledge of the FPI process and the systems required. Its FPI systems utilise expertise in automation and process control to provide consistency and traceability.

Precision cleaning machines with basket rotation and flood wash options will also be promoted. These machines use a world-patented system whereby rotation of the holding basket and spray jets is individually adjustable, allowing them to rotate in the same or opposite directions. Programs can be tailored, together with other movement options such as rocking of the basket, to clean even the most complex parts efficiently. Integral condensing eliminates the need for extraction.



This equipment is aimed primarily at high-precision cleaning applications in the aerospace sector with the possibility of simulated clean room conditions.

Another focus will also be modular and bespoke, high precision, ultrasonic cleaning machines with automation. A hallmark of their construction is multi-frequency ultrasonics, where a single transducer can generate two different ultrasonic frequencies. Consequently, dissimilar components and materials can be processed optimally in the same tank.



For processing larger parts such as casings, landing gear components as well as aerostructures, Turbex offers the ACV range of front-loading, spray washing and rinsing models. They are particularly popular for degreasing and precision cleaning prior to NDT. Standard sizes range from one to three metres in diameter, although larger machine sizes are available.

The PLC-controlled machines provide a high level of cleaning performance due to ingenious design principles combined with high spray pressures and liquid flow rates achieved by the powerful pump.



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HALL 4 - 4042

Supplier of German machine tools introduces additive manufacturing equipment

Visitors to the Farnborough Airshow this year will be able to discuss on a single stand the merits of using top-quality CNC turning, prismatic metalcutting and grinding equipment from eight different machine tool builders in Germany, as well as additive manufacturing equipment from France capable of highly consistent production of components in large volumes. This is because Geo Kingsbury is sole sales and service agent for all of them in the UK, Ireland and the Middle East.

The machine tool producers are: Index and its subsidiary, Traub, which offer CNC single- and multi-spindle lathes; Hermle, which builds 3- to 5-axis machining centres; four large prismatic metalcutting machine manufacturers, Burkhardt + Weber, F Zimmermann, SHW and Waldrich Coburg. The latter machine ranges are handled by Geo Kingsbury's Large Prismatic Machines (LPM) division in Warwick.

At the beginning of 2017, Geo Kingsbury setup a new Grinding Technology (GT) division in its Warwick office following the company's appointment as agent for grinding machine manufacturer, Haas Schleifmaschinen. Use of the grinders is strong in the aerospace industry, particularly in the competitive field of turbine blade tip and root grinding.

In early 2018, the supplier's product portfolio was extended further by its appointment as exclusive distributor for AddUp, a joint venture owned by two giants of French industry, Michelin and the Fives industrial engineering group. It takes Geo Kingsbury into a new area, as it is now able to offer production solutions based on powder-bed additive techniques that Michelin has developed over the past 15 years for the production of tyre mould inserts.



Richard Kingsbury, managing director of Geo Kingsbury, says: "We are delighted to be able to showcase our full range of top-quality German machine tools at Farnborough and to be able to introduce our additive manufacturing division's capabilities.

"Senior representatives will be on our stand to engage commercially and technically with managers and engineers in the aerospace manufacturing sector.

"Right across the range of applications and component sizes, from a few millimetres to tens of metres, we can offer turnkey solutions that are optimised to a user's requirements, with full support every step of the way."

He mentions some of the highlights being promoted this year. For example, a little-known benefit of F Zimmermann's high-speed, portal machining centres is the option to fit a patented M3 ABC 3-axis head. Full 6-axis CNC machining may be undertaken continuously because the ± 15 -degree B-axis avoids the pole position problem of traditional 2-axis A/C rotary-tilt heads, whereby when A is at zero degrees it cannot move.

The M3 ABC can swivel, tilt and incline to any angle, significantly reducing machining times as well as improving component surface finish, as cutter chatter on the surface of a component due to excessive C-axis movements is eliminated. As a result, a cavity with sloping walls in an aluminium aerospace component can be machined between 30 and 40 percent faster - a massive productivity advantage.

Burkhardt + Weber and Geo Kingsbury have used the latter's experience in machining titanium airframe parts to develop this side of the German machine builder's business. With pallet sizes ranging from 630 mm to three metres, the structure of the machines is perfect for titanium machining due to the high torque on the spindle and rotary axis, stable build, large working envelope and the ability to automatically exchange long tools.

In the realm of smaller machining centres with working volumes up to 1.4 m³, Hermle enjoys considerable global success as a supplier to the aerospace sector. The trunnion design and 5-axis configuration of its machines allow, for instance, efficient automated milling of radii or chamfers on edge features of aero engine parts. Traditional dressing by hand is labour intensive, time consuming and tends to produce variable results.



Removal of sharp edges with a milling cutter eliminates possible stress points, takes away material that could otherwise detach and cause blockage or wear, improves a component's appearance and promotes safe handling. Titanium aerospace components can be profiled so that edge radii are within ± 25 microns and surface finish is better than Ra 0.8.

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HALL 4 - 4135



Mastering the challenges of hard turning

Hard turning has been used for decades to streamline and in many cases eliminate cylindrical grinding operations. It's fast, accurate and, thanks to tooling suppliers such as Kennametal, a broad assortment of predictable, cost-effective cutting tools is available to tame even the most difficult hardened steels, superalloys, and chilled irons. However, as the aerospace, automotive, power generation, and other industries continue to develop even more robust metals, cutting tool manufacturers must evolve as well with high-performance tooling to tackle these materials.

Best of breed

That's exactly what Kennametal Inc. has accomplished recently with its introduction of KBH10, a new breed of polycrystalline cubic boron nitride (PcBN) hard turning insert designed specifically for the challenges of today's demanding market place. Helmut Gremer, senior engineer for global machining technology, says the new insert complements Kennametal's existing PcBN grades KBH20 and KB5630 by providing the extreme wear resistance needed to successfully turn hardened metals up to 65Rc, especially where very fine surface finishes are required.

As he explains: "We've seen that many manufacturers are decreasing the allowable tolerances on bearing journals, rings and pistons, gear hubs, and so on. For example, dimensional tolerances of < 4 µm or less are increasingly common, as are surface requirements better than Ra < 0,4 µm. This new grade closes the gap for these and other customers that need superior tool life when finishing such parts."

In one example, a well-known automotive manufacturer was able to more than double tool life, from 150 pieces per edge to 350 pieces, during an internal facing operation on a 140 mm, 5.5 in, diameter 5115 alloy steel bearing hub that was previously



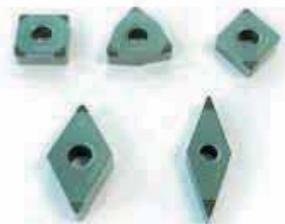
heat-treated to 62 HRC. A driveshaft producer achieved similar results, increasing tool life from 250 to 450 pieces per edge when turning 58 HRC UC1, similar to S53 steel on its vertical turret lathes, consistently maintaining a 6 Rz surface finish while doing so.



tolerances noted earlier. Also, as KBH10 is available in several different geometries and edge preparations, it's quickly becoming the go-to insert for a wide cross section of manufacturers and their turning applications.

Helmut Gremer says: "KBH10 is ideally suited for fine-finishing operations, yet is tough enough to handle light interruptions or varying depth of cut operations. Also, because cutting pressure and therefore heat is reduced, crater and flank wear are likewise reduced, extending tool life. There's also a lower occurrence of the white layer that plagues many hard part machining operations."

This last part is accomplished through KBH10's unique edge preparation. Rather than the traditional waterfall or radiused hone applied to virtually all PcBN cutting tools, Kennametal has developed a special shape that is both sharper and freer cutting than competing solutions yet still tough



Making the hard case

In each instance, cutting speeds of 180 m/min were used, 590 sfm, with depths of cut averaging 0.15 mm, 0.006 in and feedrates ranging from 0.22 to 0.32 mm per rev, 0.0087 to 0.013 ipr. In each case, the customer saved thousands of dollars annually in insert costs compared to its existing solution, while substantially reducing downtime due to tool changeovers.

The KBH10 substrate is completely new. Its PcBN composition is designed for up to 20 percent higher cutting speeds, while providing equivalent or in some cases far greater tool life. Kennametal engineers were frequently able to achieve Ra 0.2 and Rz 1 surface roughness, while consistently maintaining the profile and dimensional

enough to withstand the rigors of hard turning.

Helmut Gremer concludes: "Five years ago, no one was able to generate edges like this, let alone measure them, but thanks to some fairly recent advances in metrology and machine tool technology, we can consistently produce this hone shape, which reduces passive cutting forces by up to 40 percent. Together with KBH10's tougher substrate, also new, we've produced an insert that achieves a fine balance between wear resistance, hardness, and sharpness.

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High-performance tooling and machining solutions from M.A Ford

As high performance cutting tool manufacturer, M.A. Ford Europe, marks its twentieth anniversary this year, Engineering Subcontractor takes a look at the company's history and products, as well as speaking to managing director, David Ward, about recent developments and its future

The most recent UK productivity statistics, released by the Office for National Statistics (ONS) in April, reported that, in the last three months of 2017, labour productivity grew by 0.7 percent, a level not seen since before the global financial crisis. In addition, the report goes on to say that manufacturing productivity grew by 2.6 percent over the previous quarter. Productivity is a key driver for all manufacturing sectors, but has a particular interest to subcontracting, as production efficiency is an essential and integral part of profitability. This is an area where M.A. Ford Europe has been active supporting UK manufacturing businesses for two decades, with its high-performance tooling ranges and machining solutions.

M.A. Ford Europe's US parent company was founded in 1919 and, with its headquarters located in Davenport Iowa, will be marking its centenary next year, while in the UK, the company's operations are split across two sites.

The UK, central stock and distribution facility is based in Derby, which holds around 10,000 line items of stock, while its UK manufacturing and custom tools division is located in Leeds, which also handles tool re-manufacture and re-grinding.

David Ward explained: "Before we set up the Custom Tools Division five years ago, all standard tooling, including special tools, were sourced from M.A. Ford in the US. Since then, we have invested around £5 million in our manufacturing facilities to expand our UK standard tool manufacturing capacity and create a new technology development and training centre, while also introducing a new custom tool design and manufacturing solution."

M.A. Ford Europe's investment in manufacturing capacity and productivity improvements reflects the demands and expectations of the markets it serves.

David Ward continued: "The quicker a component can be machined, the more

competitive the business becomes, which makes it more attractive to prospective customers providing quality and performance are not compromised.

"This is a fundamental part of subcontract manufacturing and is one of the reasons why our tooling is used so widely, as we are always pushing our tooling performance to the limit, whether that be metal removal rates, machining strategies, tool life or surface finish."

Over the past few years, M.A. Ford Europe's focus on extracting the best performance from its tooling has led the company to introduce new related technologies, as part of its 'Integrated Manufacturing Solutions' (IMS) process that can deliver significant performance improvements beyond just increasing cutting speeds and feed rates.

David Ward explained: "Reducing manufacturing costs is a constant pressure and we found that a large number of the prospective customers we were talking to around three years ago were looking to change from their existing supplier to reduce tooling costs as a way of improving profitability, rather than looking at ways of improving manufacturing efficiency.

Since then, the IMS process has expanded and now combines M.A. Ford's high performance solid carbide tooling and Rego-Fix® non-pull out toolholders with specialised high-speed machining (HSM) tool path software and BlueSwarf® Dashboards anti-vibration analysis to optimise the machining process for virtually any component.

While IMS has been a key development for the company, it has also been active in developing new tooling ranges, coating technologies and tool geometries, which was evident on the company's stand at the MACH show with a number of product launches.

At the top of the list was the new 'XT-9 Series 380' end mill for high speed



machining of Inconel, Titanium, stainless steel and similar difficult to machine materials, which uses the company's latest ALTIMA Xtreme AX coating technology and a nine-flute design to reduce harmonics.

Alongside an extension to the five-flute V5LCB solid carbide end mill range, which incorporates integral chip breakers, M.A. Ford's first range of indexable tooling was also launched at the show.

The 'High Feed Series' milling ranges from the company's cost-effective FordMAX range, incorporates both cylindrical and modular shank end mills for roughing operations on 3D machining and die and mould applications.

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On the 9th and 10th of October 2018 we'll be hosting the Inspiration through Innovation Manufacturing Best-Practice Event at our Technology Centre in Alcester.

It promises to be bigger and better than in previous years with 20 innovative machining demonstrations, 9 topical and informative Seminars and over 40 exhibitors taking part.



We'll be providing you with more information about the event and what's taking place nearer to the date.

This is just a quick 'heads-up' to make sure you put the dates in your diary.

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HEADS UP



SECO 

New coatings improve tool life

Materials that are difficult to machine can present significant challenges to cutting tools, particularly when it comes to small and miniature parts. To address these applications when using tools from Horn's Supermini product series for machining holes from 0.2 mm diameter, the German manufacturer has developed EG3 and EG5 coatings.

The distinction between the two types rests in their substrates and layer thickness. They are extremely smooth so have low friction, reducing the amount of heat transferred to the tool, especially the cutting edge. A golden wear layer coating improves wear detection.

Numerous in-house tests plus feedback from customers has confirmed the excellent performance that the new EG3 and EG5 coatings achieve. In comparison to previous coatings they can double tool life, depending on the material.

The new coatings have been developed for the Supermini, Mini and 312 tool systems. Supermini is primarily used for boring and grooving of hole diameters from 0.2 mm. The Mini tool system comes into play in similar processes, but for diameters starting at 6.0 mm. Triple-edged inserts in the 312 system are also used for grooving and parting off of hole diameters from 46 mm, as well as for external machining.

Face milling cutter and shoulder mill range extended

Horn's milling tools, based on Boehlerit products, have been expanded to include the ETAttec 45P face milling cutter and the ZETAtec 90N roughing mill.

ETAttec 45P arbour milling cutters, with diameters of 50 mm to 160 mm, are equipped with between five and ten 7-edged inserts. The tools not only offer a 45-degree angle of attack and positive



geometry, but also generate low cutting forces, ensuring smooth machining coupled with high levels of productivity. This is an important user benefit, particularly in cases where less powerful machines and unstable workholding are being used.

Owing to the multifunctional concept involving one toolholder for two different insert versions, the inserts designed for face milling can easily be swapped for round cutting inserts if profile milling needs to be carried out, for example.

Where the new arbour milling cutters really show their strengths are in applications involving machining of long-chipping materials such as stainless steels, titanium or nickel-based alloys. For these materials, inserts with or without chipbreaker geometry and in various steel grades are available.

ZETAtec 90N arbour milling cutters with diameters from 50 to 160 mm are equipped with five to ten inserts, each of which has six cutting edges.

Precision-sintered insert

The S64T insert with chipbreaker geometry is an evolution of the previous version. In addition to the more extensive working range it offers, the precision tool with six cutting edges features a range of chipbreaker geometries and the new EG5 coating. By virtue of this coating, as well as the carbide substrate, the new insert is suitable for machining any kind of steel.

The new series of precision-sintered, six-edged tools with ground inserts comprises a number of variants with different cutting widths. The S64T type enables groove depths of up to 5.5 mm. Four tools with the .1A geometry are designed for grooving and parting off, while four with the .DL geometry are for grooving, parting off and simple longitudinal turning.

The control afforded by the chipbreaker



geometries ensures exceptional surface quality on the groove flanks and the straight cutting edge creates a clean groove base. Designed as neutral inserts, they can be clamped on either a left or a right hand square holder with internal coolant supply.



New solid carbide drills for steel and stainless steel

The new DPP range of solid carbide drills from 4.0 mm to 18.0 mm diameter is available in two geometry variants. Notable features are the high surface quality, the precision of the ground geometry and the cutting-edge preparation. Together with various coating options, they ensure reproducible results.

DDP tools for 3 x D, 5 x D and 8 x D hole depths have been designed for a universal range of applications. The materials they are most suited to cutting are unalloyed, cast and alloyed steels with a tensile strength of up to 1,000 N/mm².

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Sumitomo mills deeper shoulders with GS chipbreaker design for DFC type cutters

Sumitomo Electric Hardmetal has developed a new style GS chipbreaker that overcomes problems and improves control of the process when milling deep shoulders and slots involving up to 6 mm depth-of-cut on components using its SEC-Sumi Dual Mill (DFC) Type cutter body range.

When successfully introduced two years ago, the DFC Type Dual Mill was a breakthrough in cutter body and insert design. The XNMMU inserts bring new levels of economics in reduced costs as they are available as double-sided inserts with six corners.



Sumitomo Electric Hardmetal has developed a new style chipbreaker for deep shoulders and slots for its DFC Type Dual Mill Range

With the addition of GS to the existing XNMMU series of three chipbreaker inserts this specifically accommodates deeper cutting situations up to 6 mm in steel and cast iron. The existing chipbreakers were targeted at L for light milling, G for general purpose and H for roughing as well as heavy interrupted cuts plus hard steel milling. The cutting edge of the GS chipbreaker is set at 25 degrees with a range of corner radii between 0.4 mm and 1.6 mm. The cutting edge enhances the toughness of the insert which also incorporates a wiper edge that helps to optimise machining accuracy and surface finish.

The new cutter body and insert development of DFC capitalised on the benefits of higher security and accuracy of index by separating the location area from the cutting edge so that it is able to match the machining accuracy of single-sided inserts. It also provided higher stability under cut and especially when high, optimised feed-rates are involved.

DFC Type Dual Mill spans shank bodies in standard and fine pitch between 25 mm and 80 mm diameter with between two and seven teeth. Shell mill cutters are in standard, fine and extra fine pitch between 50 mm and 160 mm diameter and with between four and 16 teeth.

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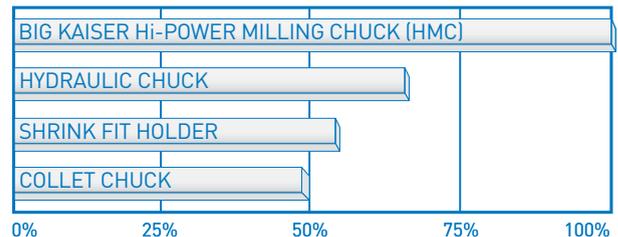


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Best MACH on record for cutting tool specialist

The decision to invest in the largest MACH exhibition stand in the Group's history proved to be a correct one, as record numbers of visitors visited the Ceratizit WNT stand over the five days of the show. With the stand design focusing on industry sectors and how Ceratizit WNT cutting tools and workholding solutions can maximise productivity for customers, there was a constant stream of visitors keen to learn more.



Glenn Stanton, UK & Ireland sales manager, says: "Over the five days we registered 1,550 leads with an incredible 436 of those being taken on Thursday alone, making it our best-ever MACH exhibition. What was also encouraging was the diversity of those visiting the stand, with visitors coming from a variety of engineering manufacturing sectors from across the whole of the UK, with a good number also travelling across from Ireland."

Beyond the cutting tools, the star attraction on the Ceratizit WNT stand was the impressive Rolls Royce Trent fan disc as used on the Airbus A380 aircraft. It was on loan from the Advanced Manufacturing Research Centre (AMRC), where the Ceratizit Group is a Tier One Member.

Tony Pennington, managing director of Ceratizit WNT Ltd, says: "The fan disc drew lots of attention and is typical of how we are providing smart and industry-focused solutions to manufacturing companies. The

components in the disc and other elements of the engine are machined using Ceratizit Group tools.

"MACH is also a good opportunity to gauge trends and our perspective as a supplier of cutting tools. It is encouraging to see that the high level of capital spending on machine tools is continuing. We had some very positive conversations with people from small, medium and large businesses, who are all in a positive mindset. We were also encouraged by conversations we had with those working in the oil and gas sector, where the feeling was one of that area gaining strength again, with customers reporting themselves to be very busy again."

New catalogue keeps things current at WNT

Visitors to MACH 2018 were able to put WNT's acclaimed logistics system to the test by ordering a copy of its brand new supplementary tooling catalogue, which was delivered to their place of work the following morning. This supplementary catalogue documents every tooling upgrade that has been added to the WNT range over the past two years and runs to almost 400 pages.

Tony Pennington says: "Our standard



catalogue already contains over 55,000 items, but at WNT we never stand still and, in the two years since that 1,200+ page publication was printed, we have added to that number with a combination of brand new products and extensions to existing ranges. The new supplementary catalogue will ensure that our customers continue to have information on the latest cutting tool technology at their fingertips."

The catalogue contains details on a diverse range of tools, toolholding and workholding and brings customers fully up-to-date with the WNT product portfolio.

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Guhring celebrates products and personnel at MACH

From the perspective of promoting new product lines and meeting the industry, MACH 2018 was a major success for Guhring. The Birmingham cutting tool manufacturer yielded lead generation that surpassed previous exhibitions with a high level of new business contacts collected. MACH 2018 marked the swansong exhibition for longstanding managing director Mike Dinsdale.

Mike Dinsdale has spent the last 39 years serving Guhring and the wider industry with distinction. On the penultimate day of the show, the MTA recognised this achievement by presenting him with a cake on the Guhring stand that said 'with congratulations and thanks from the industry'. Presented by MTA president Geoff Bryant, who has also recently retired from Citizen, the presentation was an emotional occasion filled with tales of days gone by.

The Guhring stand was filled with new products that were globally launched at EMO in 2017, many seen in the UK for the first time.



Guhring national sales manager, Dave Hudson says: "The show was excellent for us. We generated well over 500 sales leads and our range of micro tools from 0.5 mm to 3 mm proved particularly prominent. Everything from our end mills, drills, gun-drills, reamers and thread-mills were very popular, while the new 104 and 106 Series for grooving, boring, broaching and threading and the three-fold interchangeable 305 system for external and internal machining also drew interest.

"We also had 'Spector' on the stand; a robot built by the Robochallenge Team. This engineering marvel won the world title at the 'King of Bots' tournament in China in 2017. Another crowd puller was a high-end rifle. On a personal note, Mike Dinsdale has



been a driving force behind Guhring for almost 40 years and as a company and a team, we cannot thank Mike or credit what he has given our business enough. Mike has been instrumental in building our business and brand and, with the completion of our new headquarters last May, Mike has set the foundation blocks for the next 40 years. Mike will be retiring later in the year and to see him networking with customers and staff at MACH with the same passion that has built the business, was a pleasure."

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Even better groove milling

Key updates to proven groove milling solution

Trouble-free precision groove milling in an easy-to-use format is what manufacturers are set to enjoy by using the latest CoroMill® 331 indexable insert cutter from cutting tool and tooling systems specialist Sandvik Coromant. New features set to deliver multiple advantages to customers include internal coolant and light cutting geometries for stable and secure machining.



Jenny Häll, product manager for groove milling at Sandvik Coromant, explains: "We have introduced a number of new features that help meet customer demands such as process security, component quality and cost. Arguably most notable is the addition of internal coolant, which helps regulate heat in the cutting zone for long and predictable insert tool life. This factor is especially beneficial in ISO M and ISO S materials stainless steel and heat-resistant alloys, which exhibit poor thermal conductivity. Additionally, internal coolant provides excellent chip evacuation, a key factor for groove quality and process security."

Enhanced process security promotes trouble-free machining, a factor that is further supported through the introduction of light cutting geometries. For ISO M and

ISO S materials, L30 and L50 geometries replace the company's existing assortment for good conditions/light applications and tougher conditions/heavy applications respectively. For ISO P (steel) and ISO K (cast iron) materials, the M30 geometry now complements the existing assortment. M30 is purpose-designed for the delivery of secure machining where weak setups and long overhangs are present.

Another factor underpinning process security is enhanced cutter rigidity. In applications where long overhang or elevated levels of vibration are likely to be present, CoroMill 331 can be deployed with Silent Tools™ damped adaptors. Here, the shorter arbor cutter bodies of CoroMill 331 bring the cutting edge closer to the Silent Tools damping mechanism, thus providing an even more stable tool with a reliable performance.

Extra process security and stability deliver higher component quality to manufacturers in industries such as energy, aerospace and automotive. Typical parts to benefit include hour glass valve bodies, aerospace brackets, flap tracks and steering knuckles, to list but a few. CoroMill 331 offers high levels of versatility that render it suitable not just for groove milling but for parting, double half-side machining, shoulder milling, face milling, back-face milling, gang milling and circular interpolation.

Better security in machining also promotes productivity. CoroMill 331 offers true 90° corners and excellent metal removal rates that make this cutter the most productive of its kind.



Ease-of-use is a further requirement of machine shops the world over. For this reason, CoroMill 331 makes use of spring-loaded cassettes with serrations that provide security and easy setting for the desired width. Moreover, a pin-controlled adjustment range enables manufacturers to set the cutter with high accuracy for precise groove dimensions.

A wide range of tools is available in an extensive choice of diameters, widths, insert geometries, corner radii and grades, along with a large selection of mounting options.

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Safe as well as efficient

The HAIMER Safe-Lock™ pull out protection system is becoming the industry standard. The HAIMER Safe-Lock pull out protection system ensures safe cutting tool clamping. Special drive keys in the toolholder perfectly match the spiral shaped grooves on the cutting tool shank, thus creating frictional clamping forces and a positive locking form-fit. This effectively prevents the cutting tool from pulling out of the toolholder. Furthermore, it increases the productivity through faster permissible speeds and increased tool life.

However, Safe-Lock has not only found enthusiastic followers in the aerospace industry. Working at Glätzer, Daniel Rautenbach knows how fiercely competitive and thorough the automotive industry can be. The managing director of the CNC-Machining Specialists, located in Solingen, explains: "Perfect quality and delivery reliability are the basic requirements in order to quote in our industry. Pricing is highly competitive." Therefore, in his business, the difference between profit and loss comes down to

process efficiency. Hence quality without compromise is a must.

The milling tests with Safe-Lock convinced Ingo Schulten, operations manager, and the other employees at Glätzer.

Ingo Schulten says: "To me the switch to Safe-Lock seemed obvious, like using an electric starter instead of a crank to start a car. The cutting data improved significantly. The tool life increased by 40 percent consistently."

Safe-Lock is also becoming increasingly popular in other industries and during HSC machining with high-helix end mills as well as in trochoidal milling. During trochoidal milling operations, where the cutting speed and axial depth of cut can be increased through software support, productivity is significantly improved. Thus, milling operations are carried out three times faster with deeper depths of cut, even when it comes to hard and difficult to machine materials. However, this also increases the danger of tool pull out. Even though only a thin chip is usually removed during trochoidal milling operations, often the



entire length of the cutting tool edge is used during the process. This results in higher axial forces which force the operator to pay attention to safe cutting tool clamping. A shrink fit chuck with Safe-Lock is the ideal solution since it offers more security than the Weldon system, is easier to install and can be clamped very precisely.

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New 2018 catalogue

A new catalogue from ZCC Cutting Tools is now available. With the new design, it offers an easy-to-use, customer-friendly and clear presentation of the contents. The cutting data tables and charts are completely revised, simplified and standardised making it much easier and quicker to use. In addition to other minor corrections and additions, the catalogue also includes many new products such as lathe tools with Inner coolant facilities and the square shoulder milling cutter EMP09 with new LNKT12 * -GM inserts.

If you require additional copies of the catalogue in printed form, contact your ZCC Cutting Tools Europe representative. The PDFs of each section in turning, milling and drilling can be downloaded at any time from **www.zcct-europe.com** under the tab "Products".

Using the latest production technologies, ZCC-CT produces high quality and high performance cutting tools. The extensive product range includes carbide indexable inserts, coated and uncoated, indexable insert made from cermet, CBN, PCD and

ceramics, solid carbide tools, as well as tool holders and milling bodies. ZCC-CT is a long-term and reliable partner in the global metal cutting industry.

Research and development is a very high priority at ZCC-CT. In its production departments the world's most modern equipment and advanced machinery from Germany and Switzerland is used, and its new machine investments are always higher than the Industry averages.

The ZCC Cutting Tools Europe GmbH company was founded in 2003 in Düsseldorf to serve the European market optimally. In 2015, the company was awarded the NRW.INVEST AWARD for outstanding investments.

The award was presented by the Ministry

of Economic Affairs and the state-owned business development agency was NRW.INVEST. ZCC-CT Europe has grown steadily from just under 1,400 to 4,000 square metres of office and logistics space. Currently, the head office in Germany is based in Düsseldorf and currently has around 70 employees, who are supporting the field sales throughout Europe. In addition to the central headquarters in Düsseldorf, ZCC-CT Europe has locations in England, Italy and France.

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New VPX 200 and 300 indexable insert cutter series

Mitsubishi Materials, extensive high performance, indexable insert milling cutter range has been expanded to include a brand-new type - VPX

Tough

The modern metal cutting industry demands multi-functionality and overall toughness in new indexable milling cutters. These demands led Mitsubishi's design team to pursue the tough machining characteristics of a tangential type cutter. Arranging inserts tangentially allows the core of the cutter body to be larger than in a conventional, radially mounted type. This adds overall rigidity and permits higher cutting loads to be subjected without creating excessive tool deflection. Consequently, higher levels of feed and speed can be realised so end users benefit by being able to use the tools' multi functionality on differing small job batches without changing tools and also utilise ever more efficient machining strategies on longer, unmanned, high volume production runs.

Multi-functional

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.



Tangential double-sided inserts

The insert geometry provides the required toughness together with the ability of multi-functionality. Most tangential insert cutters require the use of a dedicated insert for ramping applications, but the innovative top edge geometry of the insert used on VPX means that only one type is needed for all machining methods. This reduces stock of inserts for end users and also prevents potential costly installation mistakes. Importantly, the inserts are double-sided and therefore provide the essential element of economy.



A single flat rake face on the insert improves chip disposal and provides accurate wall face step overs with a cusp height of only 8 µm when deep wall machining. Additionally, the minor cutting edge that blends smoothly into a large corner radius also provides a benefit by providing the ability to achieve good component surface finishes. The top face geometry combines the minor cutting edge and a relief angle that makes ramping possible.



Designed for security and accuracy

Both the cutter body and insert have large contact areas on three faces for secure and stable clamping. This suppresses any deflection of the insert caused by the loads during machining. An additional convex location bar on the insert further adds strength, rigidity and security of location.

Insert grades and coatings

Eight 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. A fusion of Mitsubishi's TOUGH SIMGA coating technologies, both PVD and CVD, provides state-of-the-art protection for the carbide substrates.

VPX 200 and 300 series cutters are available in two different sizes to accommodate both large and smaller machines. The 200 series has 09 size inserts, whilst the 300 has larger 12 size inserts and both series are available in shank, screw-in and arbor types, ranging from Ø16 - Ø80.



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ITC celebrates its most successful event

MACH 2018 proved to be the most successful event that Industrial Tooling Corporation (ITC) has participated in so far. While many commentators will pin the show success on a buoyant market and a new floor layout for Tamworth manufacturer ITC the crowds were drawn in by a stunning stand design, a Suter MMX500 racing bike and the sheer diversity of its product range.

Generating more enquiries than at any of its previous MACH appearances, ITC had a huge level of interest across the Widia, BIG KAISER and ITC product ranges. While the Suter racing bike drew visitors to the spacious and inviting stand, it was the technology that made visitors stay, enquire and show genuine interest in the latest product lines.

Georgia Stewart-Jones, marketing & internal sales manager at ITC says: "The racing bike pulled crowds to the stand and, as soon as visitors had a glimpse of the high precision 'Bluetooth' boring technology from BIG KAISER that was next to the bike, general interest suddenly turned to serious discussions with our technical engineers. We



had numerous enquiries from manufacturers that didn't realise BIG KAISER products were available in the UK. Some visitors didn't realise that ITC was a UK manufacturer or that we do specials, whereas other visitors couldn't comprehend how extensive our portfolio of product lines has become. The fact that ITC is a UK manufacturer of standard and special tooling lines with fast-turnaround times has already won us business from MACH."

"In the aftermath of MACH, we have measured our sales leads and there is no specific pattern or limit to the enquiries. We received significant leads from every corner



of the UK from Scotland to the South East and they varied from automotive, oil & gas and aerospace OEMs to small subcontract job-shops. In the first week after the show, we have sold a range of solid carbide taps, drills, VariMill end mills and much more to a number of aerospace subcontractors. Additionally, we have just received a large order for BIG KAISER BBT30 collet chucks from a FANUC customer that needed high precision BBT collet chucks to complement its recent ROBODRILL purchase."

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Achieving the best of both worlds

Versatility has become a necessity for modern cutting tools, but should this requirement compromise a quality end product?

Milling cutters, for example, which can support roughing to finishing applications in all materials are not uncommon in the marketplace.

The challenge today is to achieve versatility, while also meeting the dimensional and finish demands that were once only placed on tools designed for a specific operation and material type.

Dormer Pramet's Econ LN is a highly cost-effective, versatile milling option, capable of supporting numerous operations in most materials and still producing an excellent surface finish.

The positive axial geometry on the universal 90° cutter allows for lower cutting forces and smoother machining in steel, cast iron, stainless steel, non-ferrous metals and hardened materials.

With an internal cooling system close to the cutting edges, a combination of wiper inserts, secure clamping and reduced power

consumption, the Econ LN delivers fast chip-evacuation and a consistently high quality surface finish.

Compatible with the Econ LN are the LNGX 12 and LNMU 16 inserts with four-cutting edges. The LNGX 12 inserts support helical interpolation, ramping and progressive plunging, while the LNMU 16 inserts are strong and robust for long tool life when machining steel and cast iron.

In a recent example in North America, an end user was face milling gas turbine end caps made of stainless steel using a large horizontal mill.

The Econ LN 80 mm face mill with LNGX 120508ER-MF M6330 insert allowed the customer to use a feed-rate that was 44 percent higher than the previous option.

It meant they ran the equivalent of three finished parts on the first edge, with the insert showing little to no wear. The Econ LN reduced cycle time by 18 minutes just in this single operation and achieved five pieces per edge over the original competitor's one piece per edge.

For more information on the Econ LN



range as well as the LNGX and LNMU inserts, visit www.dormerpramet.com or contact your local Dormer Pramet sales office.

Dormer Pramet
Tel: 0870 850 4466
Email: sales@dormerpramet.com

MAPAL creates new tool dispensing possibilities

MAPAL has now introduced its new UNIBASE-M tool dispensing system for the optimal storage and management of tools, components and accessories. With the focus on ease-of-use, the new system can be configured according to customer requirements. This also applies to all the new variants in the UNIBASE-M range.

Vertical cabinets for assembled tools

If large and heavy tools are assembled on the shop-floor but not immediately required on the machine tool, they should be stored away to prevent potential damage. Cabinet drawers with a maximum load-bearing capacity of 75 kg are not ideally suited for this, as they often reach their capacity limits when loaded with several completely assembled tools. Sometimes, on account of its length, the tool can only be stored horizontally and this presents a risk to the cutting edges. It is with situations like these in mind that MAPAL has introduced the new UNIBASE-V expandable cabinet. The new UNIBASE-V has up to four electronically lockable vertical drawers and each of the automatically opening drawers has a maximum load-bearing capacity of a generous 600 kg. These drawers are equipped with loadable toolholders designed according to the customer's specifications. The vertical drawers are compatible with existing UNIBASE-M systems and are controlled via the master unit.

Individual tool dispensing machines for safe storage of small parts

The new UNIBASE-C cabinets for controlled individual tool dispensing complete the storage module. A large number of small and single parts can be stored in a UNIBASE-C cabinet in a compact area. When an item is selected, only its individual compartment opens. This reduces the risk of theft and optimises inventory control. The UNIBASE-C is available in standard versions and it can be used as a stand-alone solution or incorporated into existing UNIBASE-M systems.



New software with open web interface

MAPAL has developed new software for the UNIBASE-M tool dispensing system that connects the tool dispensing system to existing ERP systems. It carries out permanent, automatic inventory monitoring and offers user-specific and comprehensive evaluation features. Possible actions will be displayed for each item, if permitted, making retrieval of specific items just a few clicks away. Additionally, the software can run on tablets, mobile devices and external computers.

In the new version, the search logic has been completely revised to significantly increase the ease-of-use. Previously, the search



function was transaction-based and it often required several selection criteria to access the searched item. Now, instead of a transaction, the sought-after item immediately appears. The search function is now considerably faster and more convenient to locate products and tools.

The second major innovation of the new software is the open web interface. The software is compatible with 'Internet of Things' and is remotely accessible. It can be controlled by any end device and operating system. Master data and movement data can be exchanged via the open, Cloud-based c-Com platform without restriction. Since October 2017, the new software has been delivered with all tool dispensing systems in the UNIBASE series. Customers' existing systems can be updated to the new software if required.

MAPAL Präzisionswerkzeuge Dr Kress KG is one of the leading international suppliers of precision tools for the machining of practically all materials. The company, founded in 1950, supplies leading customers in particular from the automotive and aerospace industries and from machine and plant engineering.

The English subsidiary MAPAL Ltd was founded in Rugby in 1993 and since then has ensured fast, direct contact to customers in Great Britain for sales and service. Currently there are around 50 employees at MAPAL Ltd, which also offers engineering and other services from the MAPAL range.

MAPAL Ltd also has a production unit to be able to offer direct service and short reaction times. In 2015 MAPAL UK expanded again, taking over Rainey Engineering, its long-standing partner in Northern Ireland. This represents a great benefit for MAPAL UK, allowing it to gain a greater regional presence and additional production capacity.

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Better control over consumable materials

Individual goods issuing systems increase the security of supply and reduce wastage by up to 50 percent

Digitalisation and automation are becoming increasingly integrated into production systems. The daily supply of tools, personal protective equipment and necessary reorders are ensured by goods issuing systems, for example.

Goods issuing systems make it possible to maintain an overview of tools and personal protective equipment (PPE) and to better plan for future demand. If systems are used for targeted individual goods issuing, wastage of protective gloves and earplugs can be reduced by up to 50 percent. This is the result of the initial experience acquired by customers of the Hoffmann Group with the new individual goods issuing system GARANT Tool24 PickOne.

Individual goods issuing systems make possible complete control of the consumables. This is because employees must log on to the system before they can open the withdrawal compartments and remove items. Even the stock levels of classic C-articles can be monitored precisely.

To make optimum use of the available space, issuing systems can be tailored exactly to the requirements and for the products that have to be managed. GARANT Tool24 PickOne therefore offers four different compartment sizes, which the customer can configure modularly. Depending on the size of the compartments, the cabinet has at least ten levels with 160 compartments and can have up to 20 levels with 640 compartments. With a loading capacity of up to one tonne, the GARANT Tool24 PickOne also enables around-the-clock management of solid carbide tools and other heavy items. This is possible as the system is set up for 24/7 operation.

To ensure that the issuing system always carries the correct stocks of the tools and personal protective equipment, an interface to the materials management system of the production operation is essential. This makes it possible for re-orders to be initiated automatically and a reliable supply of tools and PPE items ensured. In larger



production facilities, multiple goods issuing systems are typically operated in parallel. When choosing a new goods issuing system, it should be noted whether the system can be used as master or slave and can be connected to a uniform control unit. GARANT Tool24 PickOne is compatible with the complete systems in the GARANT Tool24 product family.

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Systemised storage helps Rolls-Royce achieve gold standard

The upgrading of the Complex Fabrications department at Rolls-Royce Hucknall, has brought together, under one roof, a number of departments to create a world-class manufacturing facility for the aerospace and marine activities of the site, which over the years has been at the forefront of engine development within Rolls-Royce.

One of the key elements in ensuring that this new, updated, facility operated as efficiently as possible was the introduction of standardised storage for work in progress as well as tools for individual employees. Having worked with System Store Solutions on a previous project in Hangers 8 and 10 at Hucknall, which had seen a major installation of cabinets, workbenches, and racking, manufacturing manager Chris Comery had little hesitation in renewing that relationship:

“We spent time, as you would expect, planning the layout of the Complex Fabrications facility and part of that planning was to standardise on storage. We had a collection of old toolboxes and racking, which was far from where we wanted to be, so the opportunity to work with System

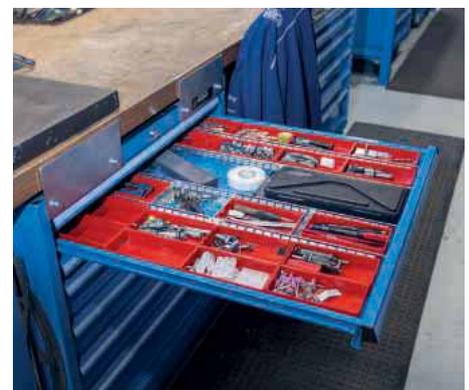
Store Solutions again to deliver a fresh, efficient workplace was welcome.”

The project involved installation of workbenches, under bench storage for individual employee tools and equipment, racking for work in progress, as well as cabinet storage for equipment needed for machinery such as CNC press brake tooling.

With the installation of the Fami storage cabinets by System Store Solutions, the team at Hucknall has everything in its place and readily to hand, making for improved efficiency and housekeeping.

Chris Comery says: “Image is important to our business and what we now have, with the standardised storage solutions is a workplace that is neat and tidy, and one that looks like a Rolls-Royce facility should look like. The installation of the storage by Systems Store Solutions was also extremely straightforward and efficient, with their team leaving us with everything in place, exactly to our plan.”

Such was the impact on efficiency that the new storage systems brought to the Complex Fabrications facility, that



Chris Comery and his team extended its use to the supply chain for the facility. Continuing the standardisation of storage systems made perfect sense and Pattonair, a supplier of vital consumable parts direct to the shop floor at Hucknall, has also invested in racking provided by System Store Solutions.

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SCHUNK introduces groundbreaking technology at MACH

SCHUNK introduced a range of innovative new products at MACH 2018. Since entering the UK and Irish market 20 years ago, SCHUNK has gained market recognition, steady growth and added value to its customers through products and services.

Martin Kent, general manager of SCHUNK Intec Ltd says: "We are very proud to celebrate this milestone. Over the last 20 years, SCHUNK has remained strong through many changes in the economic climate. We are looking forward to delivering substantial additional value to our customers and innovation to the industry."

SCHUNK's stand at MACH showcased well established products, such as the VERO-S Quick Change Pallet System, TENDO Hydraulic Toolholder, PGN-plus Gripper, MAGNOS Magnetic Clamping Technology and ROTA-S Manual Lathe Chuck. Alongside these existing products, the company also presented the following new innovations:



VERO-S NSE3 is a new flagship for quick-change pallet technology. SCHUNK has yet again boosted the performance characteristics of the VERO-S NSE3 138 as compared against previous top sellers. An enormous pull-down force of 8,000 N or 28,000 N with activated turbo function as well as increased dimensional stability for the module body have a positive impact on the rigidity of the clamping solutions.

Even the highest tilting moments and transverse forces can be reliably absorbed when parts are clamped at the base then machined at height, for example. Clamping and positioning also occur via a short taper with a repeat accuracy of < 0.005 mm with the premium modules. This ensures maximum precision even in the most



demanding applications. Due to the conical fitting, the clamping pins can also be joined into the modules eccentrically, making this process incredibly easy. The actual clamping is done via spring force without any external energy supply; it is form-fit and self-locking. The workpieces remain safely clamped in case of a sudden pressure drop in the air system. A pneumatic system pressure of six bar is sufficient to open the clamping modules.

Under the new brand name Co-act (collaborative actuator), SCHUNK also presented its gripping technology program for safe human-robot collaboration. SCHUNK Co-act JL1 gripper, the world's first intelligent gripping module for human/robot collaboration, directly interacts and communicates with humans. Adjustments to the gripping processes can be made in real time using diverse sensor systems. Various "senses" are used to record, evaluate, and communicate situational, ambient and operational conditions.

SCHUNK magnetic chucks display clamping status

SCHUNK MAGNOS magnetic chucks provide low-deformation workpiece clamping, free accessibility and a fast workpiece change. To further increase operating comfort, all new SCHUNK MAGNOS square pole plates are equipped with a status display by default. It displays the current clamping status continuously, even when the magnetic chuck has been disconnected from the control and is in pallet storage with clamped workpiece for instance.

Status monitoring via machine control
By selecting the appropriate connection

cable, both small magnetic chucks with 4-PIN connectors as well as large magnetic chucks with 7-PIN connectors can be actuated. Equipped with plug connectors, each cable can be exchanged quickly and easily. Moreover, it is possible to assign vacant slots at any time with additional magnetic chucks.



To ensure process reliability in automated applications, it is possible to monitor each individual magnetic chuck. To do this, the individual clamping state is transmitted via a PLC interface to the system control. The SCHUNK MAGNOS KEH plus control unit is completed by the handheld remote SCHUNK MAGNOS HABE-S plus that is also modular. This allows control of the individual magnetic chucks and the individual 16-step holding force regulation process.

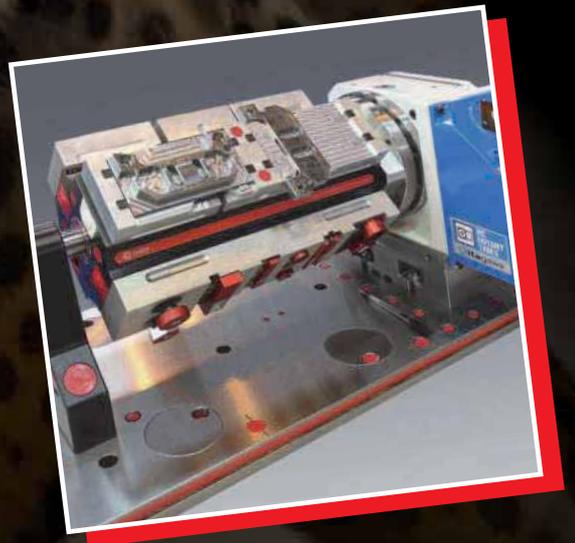
The hand-held remote control continuously provides information on the individual clamping status of the connected magnet chucks via LCD display and LED. In the case of malfunctions, error codes are also provided on the display, making trouble shooting simple.

The competence leader for gripping systems and clamping technology is also putting a modular designed control unit onto the market, which gives users a high degree of flexibility and operating comfort. The SCHUNK MAGNOS KEH plus is universally suitable for all SCHUNK square and radial pole plates. One, two, four or eight magnetic chucks can be actuated at the same time, depending on the basic version.

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New workpiece palletising and handling systems from France

New from 1st Machine Tool Accessories is a range of workpiece handling cells, allowing components to be clamped manually onto pallets, automatically loaded into store and subsequently retrieved for robotic transfer into and out of 3-, 4- and 5-axis machining centres. The equipment is ideal for long periods of unattended and lights-out running and hence for extracting maximum benefit from investment in machine tools. The cells are manufactured by French company Engineering Data, located in Fondettes, near Tours, which appointed 1st MTA as sole sales and service agent for the UK and Ireland with effect from 1st March 2018. The modular pallet handling systems are said to increase production output from non-pallet-change machining centres by up to 50 percent.

At MACH, the demonstration model on the 1st MTA stand was an EasyBox T30, a compact system with a footprint of just two square metres that can be configured to feed a machine from the left, right or front. Two versions are available for storing 42 or 64 pallets. They are equipped with a 3-axis robot capable of handling components up to 200 x 200 x 180 mm and a maximum load of 30 kg including workpiece, fixture and pallet.

Half a day's training is all that is needed for an operator to be conversant with the system, which is designed to automate small to medium batch production. The single load/unload station is positioned at an ergonomic height at the front of the store for convenient workpiece clamping and unclamping. An adjacent touch-screen

panel for operating the robot is easily interfaced with all major types of machine tool control including Heidenhain, Siemens, FANUC and Mazatrol.

A larger EasyBox T100 for handling 100 kg pallets, also in a compact version, will be available from the second quarter of 2018. Additionally, offered are a rail-mounted linear version, L-range, for feeding up to six machining centres and a 350° R-range rotary version for feeding one or two machining centres. EasyClamp self-centring vices are also available.

Workholding and automation solutions with bespoke options

Workholding, automation equipment and drill sharpening specialist, 1st Machine Tool Accessories showed its extensive range of products for raising production output and maximising return on investment from machine tools.

A theme of this year's stand was the company's ability to provide an array of customised solutions. Such bespoke equipment can solve complex production problems or, in standard applications, substantially reduce setup and idle times. The results are extra versatility, fewer clampings and higher levels of efficiency, accuracy and repeatability.

Specific innovations were announced, including the availability of a new zero-point clamping system from the Czech Republic under a new agency agreement with V-Tech and Industry 4.0 functionality for bar magazines manufactured by Lemca, Italy, which is represented in the UK and Ireland by 1st MTA.

New zero-point clamping system

The highly repeatable zero-point clamping system from V-Tech has outstanding versatility, allowing easy integration with existing



workholding equipment and enabling drastic reductions in setup times.

Intended primarily for highly accurate, safe clamping of workpieces on CNC machining centres, the pneumatic, quick-change system features powerful, 24 kN retraction of the clamping pin in each receiver and a positioning accuracy of better than 5 µm.

Mechanical vices, clamping chucks and bars and special workholding fixtures can be accommodated in the receivers, while positioning slots allow precise 90° indexing. The self-clamping mechanism, which uses high power springs to secure the workpiece and fixture, ensures that the force is still applied after the air has been disconnected. Pneumatic power is only required again for release.

The high clamping force of the receiver is made possible by the design of the pneumatic piston, the shape of which is optimised for even distribution of contact whilst maintaining compact dimensions. Clamping bases are available to hold one, two, four or six receivers, which are 135 mm in diameter but only 41 mm high, so little Z-axis travel is lost.

1st Machine Tool Accessories Ltd

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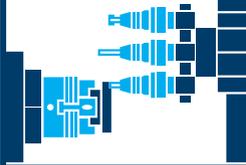
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Hyfore demonstrates its expertise at MACH

Giving manufacturers complete control and increased speed over their machining operations was on the agenda for Hyfore at MACH.

The UK workholding specialist displayed the latest technology from eight global specialists on its stand, including advancements in vices, clamp jaws, high speed tooling holders and roller drive rotary tables.

It also strengthened its relationship as the sole UK distributor of Midaco by showcasing a small pallet receiver, which demonstrates what the pallet changers could look like on a machining table.

Gary Dickenson, managing director of Hyfore, says: "Industry today, at all levels of the supply chain, are looking to get the most out of their machines, whether that is speed, accuracy or capacity."

"One of the ways they can do that is improving the workholding and making sure the part is held in a way that offers the optimum manufacturing efficiency and improves the life of the machine tool."

"This is why MACH is such an important show for us and one where we can demonstrate possible solutions and have experts on hand that can talk through bespoke fixturing and some of the other technology that may help.

"We are the only UK supplier of products from major brands, such as Spreitzer, Matrix, Acrow, Hardinge, Buck, Midaco, Sankyo, UCAM and Kosmek."

Hyfore has spent more than 30 years working with customers on designing and manufacturing workholding at its Coventry facility, with its expertise used by firms supplying precision parts to the aerospace, automotive, commercial vehicle and medical sectors.

In recent years, it has been slowly developing its e-commerce facility to amass more than 100,000 standard workholding products that can be used with CNC machining centres sold across the world.

Its website, www.hyfore.shop, has seen a 20 percent surge in orders over the last twelve months and stocks off-the-shelf vices, collets, gauges and chucks, not to mention specialist parts such as 4- and 5-axis tables.

Rob Beckett, workholding product manager at Hyfore, says: "Our work in bespoke workholding gives us a great



insight into what customers need and how quickly they require it. This has been fed into the evolution of Hyfore.Shop, with an easy to use website, great search engine to find things quickly and next day delivery available in the UK."

Hyfore Workholding Ltd was established in January 2001. For over a decade Gary Dickenson and Darren Underhill have led the management team and more recently, Rob Beckett joined as workholding product manager. Since its inception, the company has experienced continuous growth and currently employs thirty-six dedicated, highly-trained professionals at its design and manufacturing facility in Coventry. Being centrally located, Hyfore is strategically positioned to service engineering businesses throughout the United Kingdom and Europe.

The company specialises in the design and manufacture of high quality, bespoke fixtures and workholding systems for metal cutting, welding and assembly applications.

The business also boasts a full in-house CAD/CAM 3D fixture modelling design team, employing six highly skilled personnel who consider themselves the most-experienced in the UK

In order to get the most out of CNC Machines, Hyfore assists its clients to realise significant savings in medium and high-volume CNC production using cost-effective bespoke hydraulic fixtures and standard workholding systems that help increase machine utilisation. Hyfore



specialises in the design and manufacture of high quality, bespoke workholding systems for metalcutting, welding and assembly applications.

The company completes work for a broad spectrum of business sectors, including general engineering, automotive, aerospace, medical, oil & gas and many more.

Hyfore Workholding is dedicated to realising significant savings in medium and high-volume CNC production to its customers, using cost-effective bespoke workholding systems that help increase machine utilisation.

Hyfore also offers a subcontract, on-demand metrology service, that utilises the very latest Mitutoyo CMM measuring equipment, housed in a dedicated temperature-controlled environment.

Hyfore Workholding Ltd
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www.hyfore.com

Extremely short setup times for sliding head tools

Tool Selection for Sliding Head Tooling is the dedicated catalogue from WNT for all users of sliding head machines. The catalogue contains details of over 11,000 cutting tools and accessories designed especially for sliding head lathes, including 5,000 completely new products to the WNT range.

Among these new tools is the innovative XHeadClamp system, which can be used to change the cutting edge or geometry of a tool in a matter of seconds. This clever exchangeable head system significantly reduces machine downtime and therefore costs. The design eliminates, in most cases, the need to re-datum tools, even when changing from one insert style to another.

The basis of the XHeadClamp system from WNT is the modular interface between the square tool shank and the interchangeable cutting head. These cutting heads come with a variety of insert pockets, allowing various turning, grooving and threading applications to be undertaken. Once a batch of components has been machined, it is a simple procedure to

exchange heads to either refresh an existing tool or to change the style of insert completely. Typically, a single screw secures the head in place. With this removed, the head can be exchanged in a matter of seconds. As long as the new head contains an insert with the same nose radius, the coordinates/datum points of the tool will be the same, making programming straightforward.

The simple, straightforward, uncomplicated way XHeadClamp works means the next component/batch can be machined immediately with practically no corrections needed, thereby maximising the machine's efficiency. Process security is assured, as it is impossible to fit the head incorrectly.

The versatility of the system means that, not only can it be used for various indexable insert dimensions but also for any indexable insert geometry within the same system size, regardless of whether they need to be positioned on the left or right. When combined with the wide selection of indexable inserts available from WNT,



suitable for machining a variety of materials, such as steel and non-ferrous metals but also super alloys such as titanium or Inconel, the efficiencies are there to be taken advantage of. WNT will further develop the XHeadClamp range with the addition of through tool coolant soon. The current and future development of the XHeadClamp system will be fully compatible with each other.

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Innovative workholding solutions

Thame Workholding is a leading provider of highly-efficient workholding solutions to UK industry and increasingly beyond. Regarded by its customers as a true innovative supplier, in addition to designing and manufacturing a wide range of both standard and bespoke workholding products in-house, Thame Workholding is able to deliver numerous inventive solutions from many leading specialist companies.

Thame Workholding is the trading name for Thame Engineering Company Ltd, a company formed by a management buy-out in 1987. However, the company can trace its roots back to 1946 when Thame Engineering Company (Oxon) Ltd was founded in Thame, Oxfordshire, a company whose core business was toolmaking and subcontract manufacturing. A range of soft jaws was introduced after the company was incorporated in the 1950s. This popular product line developed and grew into one of the most comprehensive ranges of chuck jaws in the world and represents the genesis of Thame Workholding's current, all-embracing workholding range.

At the time of the MBO, the company relocated to its current site in Long Crendon, Buckinghamshire. To enable the prompt delivery of cost-effective, efficient workholding solutions the modern 12,000 sq ft facility houses a range of 3-, 4- and 5-axis machine tools with multi-pallet and automated loading enabling unmanned machining. The company's advanced manufacturing resources is supported by a first-class CMM inspection provision and a 3D CAD and CAM modelling service. Thame Workholding is accredited to Quality Standard ISO 9001:2008 with the scope of design, manufacture, assembly, supply and maintenance of workholding equipment.

The company's experience and expertise in the field, plus its access to a comprehensive range of workholding products, allows it to fully understand customers' needs and to provide optimum workholding solutions. In addition to its own manufactured products, famous brands available from Thame Workholding include:

HWR Spanntechnik, a company that specialises in the clamping of round, cubic and geometrically bulky workpieces that are sensitive to deformation. HWR Spanntechnik's range includes the Inoflex 4 Jaw compensating and self centering chuck,



with the new VL style weight reduced version recently introduced for 5-axis milling and vertical turning applications.

Samchully is a renowned supplier of high-quality standard power chucks and manual chucks, along with rotary tables, steady rests and other workholding accessories.

New to the Thame Workholding range are the high-precision, Swiss manufactured rotating and dead centres from Rotortool and lastly the Lang range from Lang Products, including the company's famous Makro Grip, Quick Point and Robo-Trex automation system.



An example of the efficiency provided by Lang's Robo-Trex automation system is the recent system installed in Qualiturn's new Qualimill milling department. Thame Workholding staff worked closely with the company with the aim of establishing a highly efficient lights-out working regime. The installation of an advanced Robo-Trex automatic handling system is now enabling highly efficient lights-out milling operations throughout each night and has released the latent productive potential of the machine tool it serves.

The Lang Robo-Trex robot system feeds a

Doosan DNM500 machining centre from two trollies. The trollies serve as mobile storage mediums for multiple vices that hold workpieces ready to be loaded into the machine. Depending on the part sizes involved, each trolley is able to store up to 42 loaded vices. The highly efficient Lang Robo-Trex system uses an articulated robot with a handling gripper that is capable of loading and unloading workpieces of up to 12 kg.

Fed by the Lang Robo-Trex, the Doosan machining centre runs throughout the day shift. The system's trollies are simply pre-loaded with parts to be machined by Qualimill staff, in an area remote from the machining centre, then pushed into place. Following a machine cycle, each finished part is returned to a trolley: When full, the trolley is wheeled away and a second trolley loaded with workpieces is added. The flexible system ensures that no machining downtime is experienced. Moreover, before the end of daytime production the Robo-Trex trollies are replenished with workpieces enabling the Doosan machining centre to run in a highly efficient lights-out mode throughout the night.

Robo-Trex trollies are available in two sizes: the first has a capacity of 30 vices, with a maximum part size of 120 x 120 x 100 mm; the second model has a capacity of 42 vices with a maximum part size of 120 x 100 x 70 mm. The Robo-Trex system is able to handle four automation trollies. Therefore, depending on part size, the available storage capacity increases to 120/168 vices.

The patented, edgewise mounting of the system's vices ensures maximum space utilisation, while accessibility to the clamping device allows workpieces to be exchanged, without removing the vice.



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

Explaining the reason for purchasing the Robo-Trex system Qualiturn MD, Nick Groom, says: "Having been motivated to launch our Qualimill division by strong demand from our loyal mill-turn customers, we have now applied our tried and tested working practices to our milling operations. To help satisfy the rising demand for our milling work we recently considered purchasing another high-yield CNC milling machine. Although, inspired by the successful lights-out operating methods we employ in our mill-turn operations, we explored the technology that would allow the efficient lights-out running of an existing CNC milling machine. We found the ideal answer in the Lang Robo-Trex automation system from Thame Workholding.

"As the first company in the UK to install the new Robo-Trex system, we have



continued our steadfast commitment to embracing cutting-edge, highly efficient production equipment and methodologies. Having previously enjoyed the benefits of other Lang workholding systems supplied by Thame Workholding, we already had great confidence in the quality of Lang products.

"Our Robo-Trex now feeds a Doosan DNM500 machining centre in our Qualimill subcontract milling department and gives us

highly efficient lights-out production capabilities. The great success of our Robo-Trex automation system means that we already have plans to install a second system."

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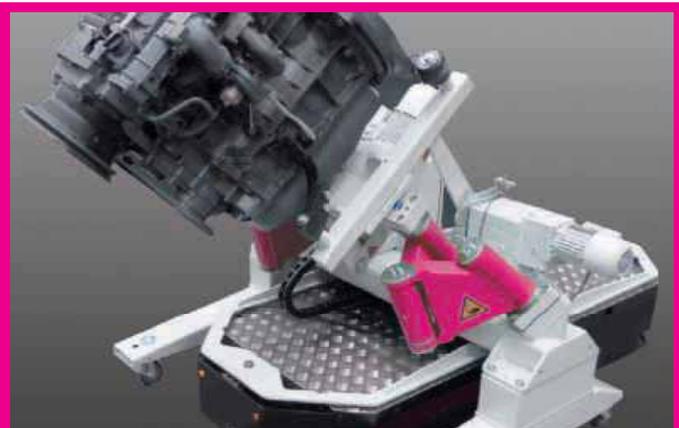
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Workpieces perfectly palletised

With the Easylock and Power Grip zero-point clamping system, RÖHM offers optimally matched palletising solutions for all requirements.

When being set up, machine tools are not used productively and don't contribute to earnings. The clamping process of the workpiece is also a time-consuming and cost-intensive factor. That is why it is necessary to reduce the setup times to a minimum, especially in single part and small batch manufacturing. RÖHM, the clamping and gripping specialist, solves this challenge with its zero-point clamping systems. Here, RÖHM offers two systems for different requirements. Both meet the requirements for the best-possible utilisation of the machine's capacity by swapping pallets in and out in just seconds.

Due to the robust and rust-resistant construction, both systems are suitable and can be used throughout, starting with machining, continuing with eroding up to the measuring machines. The workpiece is set up outside the machine tool while the machine is running. Due to standardised interfaces, the pallet with a clamped-in workpiece can be used for all manufacturing processes without any zero-point loss.

RÖHM puts high priority on offering the right system for any application. Hence, the Easylock zero-point clamping system prevails in detail with a large scope of functions and an attractive price. Possible fields of application range from hydraulic or pneumatic actuation up to manual actuation. The Easylock Plus expansion is also equipped with system control with an integrated cleaning function. The Easylock is suitable for a large number of demands that are placed on palletising systems today. In the process, it achieves a change-over accuracy of 0.005 mm.



RÖHM has its Power Grip palletising system in its programme for high demands placed on precision. As an ultra-precision system, it allows change-over accuracies of 0.002 mm making it considerably more accurate than the Easylock. In addition, the clamping monitoring is directly integrated. In short, RÖHM meets the highest demands with the Power Grip.

As a system supplier, RÖHM offers palletising and clamping devices from a single source. The prefabricated pallets can be combined in a modular system with a multitude of RÖHM standard clamping devices. There is no need at all for costly and time-consuming adaptation of the clamping devices or pallets. In addition, RÖHM offers prefabricated pallets for vices and chucks as well as universal pallets.

Intelligent lubricating tool

The innovative and patent-pending Lubritool lubrication tool from RÖHM enables automatic lubrication of tool clamping systems in milling machines and machining centres in just seconds.

In the high-paced, everyday life of production there are topics that are still unpopular. Maintenance is certainly one of them. This is because it takes time and is often neglected. A reminder of the

forgotten lubrication suddenly comes if the performance deteriorates or even fails. To counter this, RÖHM is now bringing an absolute innovation to the market: the Lubritool lubrication tool.

Innovative and registered for a patent, it enables automatic lubrication of tool clamping systems in milling machines and machining centres within seconds instead of minutes.

The fact is that after around 75 hours of operation or alternatively 20,000 tool changes, HSK clamping sets should be serviced to ensure the process reliability. In most cases, the manual lubrication process means shutting down the machine and hence downtime for several minutes. In addition, deviations from the optimum time for lubrication as well as the amount of lubricant are the case. This is not to mention that lubrication is forgotten completely in many cases.

To make all this a thing of the past, RÖHM developed the innovative Lubritool lubrication tool. After being informed of the correct time by the machine controller, the Lubritool product innovation is swapped in automatically directly from the tool magazine and provides the HSK clamping set with the ideal amount of lubrication in just a few seconds. In this way, costly and time-consuming maintenance work or even complete machine downtime can be prevented. In short, nobody has to deal with the topic of maintenance of the clamping set again.



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Hainbuch sets new records at MACH

Workholding and clamping innovator Hainbuch has started 2018 in spectacular fashion and the first quarter performance is set to continue after an outstanding MACH. Recording its best first four-month period ever, the exhibition yielded a lead generation rate more than double that achieved during the 2016 event.

Commenting upon the exceptionally high enquiry level at MACH 2018, Hainbuch UK's managing director, Nick Peter, says: "We received more than double the enquiries at MACH than we did two years ago. We are very particular about the names we take as we only want to be speaking with manufacturers that have a serious interest. The Hainbuch team has already qualified the leads and we have to either visit or quote upwards of 100 businesses. Of these companies, at least 60 percent are new names to our business and this is great news for Hainbuch. We have a quote to order ratio in the region of 70-80 percent, so we'll be expecting to generate a lot of new business as a result of exhibiting at MACH.

"The diversity of enquiry covers the

complete range from the Hydrok hydraulically actuated stationary chuck, and the Manok stationary chuck, through to the TestIT clamping force gauges, the TOPlus and SPANNTOP mini chucks, the new MANDO Adapt series, the Centrex face drive attachment and the new Magnetic Modules. There were also a number of Hainbuch clamping systems on machine tools around the exhibition and a number of stand visitors came over from machine tool stands, as they had purchased machines at MACH that will be supplied with our technology. This emphasised the value of our collaboration with machine tool builders and how our product lines complement and maximise the flexibility and capability of industry leading machine tools."

With everything workholding on the Hainbuch stand from 5-axis component clamping through to stationary and rotary



solutions, the Staffordshire company offered something for all industry sectors and manufacturing applications. If you couldn't make it to MACH and you would like to find out why Hainbuch is a leader in clamping technology, contact the company for more information:

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A secure influence on machining

Hydraulic chuck for turning offers market-leading security

Cutting tool and tooling system specialist Sandvik Coromant has introduced a high-precision hydraulic chuck for turning operations that offers the market's best pull-out security. CoroChuck® 935 has been designed to deliver fast, rigid and secure clamping, time after time.

With clamping security assured, machine shops can confidently perform demanding turning operations, including those with long overhangs. In fact, CoroChuck 935 ensures a clamping length of four times the

bar diameter. Developed for use on lathes, turning centres and multi-task turn-mill machines, the new hydraulic chuck covers most common machine interfaces.

Åke Axner, global product manager for machine integration at Sandvik Coromant, says: "The design principal behind the high level of security offered by CoroChuck 935 is based on fulcrum technology. A thin, brazed membrane offers an optimised clamping function whereby expansion creates two distinct clamping points on each side, fulcrums. The concept ensures the clamping force repeats for every use, providing the best possible pull-out resistance and damping performance."

Further benefits of the new chuck include the use of EasyFix sleeves to provide the correct centre height and help reduce setup time. EasyFix sleeves are a solution for cylindrical boring bars that sees a spring plunger mounted in the sleeve click into a groove on the bar to guarantee the correct centre height. The metallic sealing also



offers good performance in applications that require high pressure coolant. Moreover, EasyFix facilitates excellent cutting action and improved insert life.

CoroChuck 935 is available in 20 and 25 mm bore sizes, ¾ and 1 inch, to suit Coromant Capto®, HSK-A/C/T, cylindrical shank and VDI machine interfaces. Imperial sizes are available in Coromant Capto and cylindrical shank interfaces.

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Nikon Metrology drives Quality 4.0

Nikon Metrology sharpened its focus on inspection automation at Control 2018. As the growth of Industry 4.0 accelerates, quality control needs to keep pace with these latest evolutions. Digital, automated and connected inspection enables complete process control from design through to manufacture, defined by the term 'Quality 4.0'.

Industry 4.0 is the digitisation of the whole design to manufacturing process. It aims to increase competitiveness of the manufacturing industry by introducing a more efficient and flexible production process with quality instilled from beginning to end.

It fundamentally changes the role of the quality department: the goal is no longer to control quality but rather to drive the production process to consistently deliver products with the right quality. This is called "Quality 4.0" that builds on the latest developments in device connectivity, cloud computing and artificial intelligence. The effectiveness of "Quality 4.0" however highly depends on the data that drives it.

Future-proof inspection systems are characterised by:

- Digital inspection - enabling direct comparison with CAD data
- Automated inspection - providing operator-independent, reliable data, in a timely fashion
- Connected inspection - ensuring better part traceability and feedback to up- and downstream production steps

At Control 2018, Nikon Metrology exhibited a complete portfolio, amongst a range of automated quality inspection solutions and demonstrated how this meets the demands of Quality 4.0: digital, automated and connected inspection. Nikon Metrology also partners for different product lines to deliver the best application and versatility for its customers.



100 percent part inspection with automated CT inspection

An important challenge to manufacturers is to increase product quality, which can be achieved through more frequent and timely inspection. Recent advances in high-flux, high-resolution X-ray sources, coupled with automated CT inspection and robot-based loading systems, enable fast inspection of production samples, with micron accuracy and low cycle times. This opens the gate to a broad span of automated defect and dimensional accuracy inspection applications, ranging from batch inspection of small plastic injection moulding parts up to 100 percent inspection of dense turbine blades.

Automated body-in-white inspection with the Laser Radar

The Laser Radar mounted on a robot provides a unique alternative to the shortcomings of the traditional car body inspection methods. This shop floor system provides accurate, dimensional measurements in the car coordinate system, allowing direct comparison to CAD without the need for a reference part. Its high-speed measurements fit within short production cycle times. The Laser Radar measures almost any surface, including highly reflective bare body panels as well as shiny painted surfaces. This robust measurement ability means the LR can be used for body-in-white (BIW), panels and flush-and-gap inspections on finished cars. As in-line inspection application software, Nikon Metrology presented solutions from Metrologic and InnovMetric, as well as demonstrations on these partner's respective booths.

Focus on optical scanning solutions

The complete portfolio of CMM laser scanning, portable laser scanning and optical gear inspection was on display at Control. The cutting-edge ModelMaker H120 handheld laser scanner incorporates blue laser technology, ultra-fast frame rate, specially developed Nikon optics and the ability to measure the most challenging materials, representing the next generation of portable laser scanning.

For CMM-based laser scanning, LK



Metrology demonstrated robot based CMM inspection featuring ALTERA with laser scanners.

Industrial microscopy and video measurement further extend application scope

As a world leader in imaging technology, Nikon provides an extensive portfolio of industrial microscopes and digital camera systems with outstanding versatility, performance and productivity for any application. High-end stereo microscopes, upright microscopes and inverted metallurgical microscopes were displayed, along with microscope peripherals and applications from various strategic partners JEOL Neoscope scanning microscope, semi-automated material analysis from CLEMEX and Inspectis portable microscopes, amongst others presented on the Nikon Metrology booth.

For video measurement, users could experience both NEXIV and iNEXIV demonstrations with a variety of optical and tactile application software. A NEXIV based video measurement system with automated wafer loading was also displayed.

Nikon Metrology offers a broad range of metrology solutions for applications ranging from miniature electronics to the largest aircrafts. Nikon Metrology's innovative measuring and precision instruments contribute to a high-performance design-through-manufacturing process that allows manufacturers to deliver premium quality products in a shorter time. For further information, contact:

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Third Dimension celebrates record growth

Third Dimension, a world-leading developer and manufacturer of non-contact, precision profile measurement solutions, has announced record turnover, up 25 percent last year, with a 20 percent increase in staff. This expansion will continue in 2018, with more staff members joining the 1st and 2nd Line Support team to provide great customer care, either by desktop support or at the customer facilities.



GapGun, its best-selling handheld laser measurement system, is now sold in 25 countries worldwide. This is thanks in no small part to the company's global distributor network. Last year Third appointed new distributors in the UK, Indonesia, Thailand, Vietnam, and South Korea. It is seeking to expand this network in Northern Europe and other key international markets.

Third Dimension has strategically chosen to focus on key vertical markets, such as aerospace, automotive, energy and general manufacturing. It is supporting a buoyant metrology market with opportunity for growth in 2018, as manufacturers are continuously seeking to improve production and quality control processes. Third Dimension is perfectly aligned to support improved quality control through reduced inspection time, providing great accuracy and repeatability.

Last year the company won its second Queen's Award for Enterprise, this time for Innovation. This follows its first Queen's Award for Enterprise in the International Trade category in 2015.

Built on the principle of laser triangulation, GapGun is being used to control production quality in automotive, aerospace, turbine and energy industries worldwide by OEMs such as Airbus, Volkswagen, Lockheed, Mitsubishi and Bombardier, to name but a few.

Never one to stand still, Third Dimension demonstrated cutting-edge applications of two products at this year's Control, following on from their launch at last year's event:

The first, Vectro is specifically designed for automated use and replicates the advanced capabilities of GapGun enabling integration for use either robotically or as a fixtured installation for ultra-fast, high accuracy quality control systems.

Inspect, Third Dimension's second new product, is a software tool that has been designed to flexibly analyse a component's profile when used alongside the GapGun or Vectro. It's quick and easy to use, with multi-section drag and drop tools to provide accurate and traceable digital inspection results, which shadowgraphs and contracer systems just can't match.

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aliconona

Form and roughness. In one system.

By Alicona.
That's
metrology

InfiniteFocus is based on the technology of Focus-Variation. Users measure form and roughness in the μm and sub- μm area. With the new generation of InfiniteFocus, Alicona supplies the fastest optical sensor in its class.

Optical 3D surface measurement

Tight tolerance measurement with high accuracy

At Control 2018, Alicona presented μ CMM, its latest optical 3D Focus-Variation measuring instrument.

The new development from this innovative company that developed the FocusVariation technique moves the company squarely and firmly into production. Alicona states that this system sets a new benchmark in production measurement techniques.

The newly developed μ CMM is the only purely optical micro-coordinate 3D measuring system available and provides high levels of accuracy not available on multi-sensor machines. Users benefit from all the advantages of tactile coordinate measuring technology, with optical surface measurement to measure dimensions, position, shape and surface finish of components with just the one optical sensor.

When supplied with GD&T software, the μ CMM offers high geometric accuracy of a number of 3D features in relation to each other. This provides the ability to measure small surface features with sub-micron accuracy in a very short time. In addition to geometric position, users are able to measure surface finish in the same measurement cycle, providing improved productivity.

The spectrum of measurable surfaces includes all common industrial materials and composites such as plastic, PCD, CFRP,

ceramics, chrome, silicon and so on, including matt and polished, reflective components. The simple operation is implemented by single-button solutions built into a specially designed hand-held remote controller. This provides automated measuring sequences and allows measurements to be taught in via the built-in Automation Manager. The XY stage is mounted on air-bearing axles with linear drives that enable wear-free use and high-precision, rapid measurement. This makes μ CMM ideal for permanent use in production.

Flexible, expandable and automatable

The μ CMM is designed for easy, flexible, and expandable use by multiple operators. This is implemented by a series of options that extend the application range of the optical CMM and maximise fields of use in production measurement technology. The motorised "Real3D Rotation Unit", for example, turns the 3-axis system into a 5-axis system and enables users to measure components from several, arbitrary perspectives. This allows contactless measurement of surface features such as flank angle, chamfer angle, thread pitch or undercuts.

The automation of measurement series is implemented by the "AutomationManager" automation interface. The μ CMM therefore offers the fully automatic measurement and evaluation of surface roughness parameters and GD&T features. An administrator defines the corresponding measuring programs, which are started by an operator (e.g. operator in production) at the push of a button. The programs to be measured are selected via drop-down menu or barcode scanner. The measurement result is then completely operator-independent. The μ CMM is also ready to be used based on integrated production concepts following modern manufacturing concepts. In Industry 4.0 or Smart Manufacturing, machines, production systems and measuring instruments connect and communicate with each other to enable adaptive and self-controlling production.

Application areas comprise aerospace, automotive, precision engineering, tools and dies, precision stamping, coating, cutting tools, composites and electronics.

μ CMM can be used to measure



dimensions, position, shape and surface finish in all these application areas. Due to its 3D modelling capability, the application areas are wide ranging.

Alicona is a global supplier of optical 3D surface measurement solutions for quality assurance in the lab and in production. The company's key competence is the measurement of form and roughness of even complex, miniaturised geometries. With Focus-Variation, its key technology, it offers a technique that combines the functionalities of a micro coordinate measurement machine (CMM) with those of a surface measurement system. For a user, this means to measure both form and roughness of components on a real basis. The stable and robust technology of Focus-Variation delivers repeatable and traceable measurements even in a production near environment.

The Alicona product range includes a number of standard as well as special solutions. Research and development acts very close to the direct need of industry, which enables the design of both standard products as well as special solutions based on industrial partnerships.

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Vision Engineering launches TVM instant measurement system

Vision Engineering unveiled its new TVM Field of View (FOV) video measurement systems at Control. The system combines time-saving instant field of view measurements with versatile measurement tools that cater to the needs of operators on the shop floor.

The system's small footprint saves space in the workshop or laboratory, while TVM's exceptional ease-of-use eliminates operator errors and significantly reduces time, providing a valuable asset for a wide range of quality assurance applications, such as instant go/no go assessments.

As with other measurement and inspection systems from Vision Engineering, the TVM systems can be configured to suit specific applications. The fixed stage FOV system enables instant, accurate measurements of small components, while the addition of a manually-controlled stage extends measurement for larger components up to 200 mm x 100 mm.

The combination of a flat field telecentric lens and collimated sub-stage lighting facilitates TVM's measurement of components of any shape or form, including

turned parts, pressed metal components, injection moulded plastics, tubes and cables.

TVM series comprises two systems: TVM20 and TVM35, with field of view (FOV) sizes of 20 mm and 35 mm respectively.

Both systems are designed to meet rigorous quality assurance applications in electronics, automotive, aerospace, medical and plastics manufacturing: offering rapid, accurate non-contact measurement.

Components can be instantly measured within the field of view, with no need to adjust the focus or change the position of the subject under inspection.

TVM's comprehensive, user-friendly software supports a broad range of applications delivering the precision and clarity that would be expected from expensive high-end video measurement systems. The rich suite of features includes simple data import/export, image stitching and reporting facilities.

Commenting on the launch of the TVM series, Mark Curtis, managing director of Vision Engineering says: "We've listened to our customers and combined the best parts



of our existing metrology range into a compact system that really offers fast and flexible measurement to meet the needs of QC/QA requirements. This marks a new era of high accuracy field of view measuring."

Built on Vision Engineering's sixty years of optical inspection and metrology expertise, the TVM 20 and TVM 35 are precision-manufactured in the UK at Vision Engineering's new global headquarters in Surrey.

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Fast, high-resolution 3D motion and deformation sensor

With the new ARAMIS SRX system, GOM has extended its range of 3D sensors for the dynamic measurement of 3D coordinates, 3D displacements and surface strains.

The ARAMIS systems are non-contact and material-independent measuring systems based on digital image correlation (DIC). They provide information on the properties of the used materials and the behavior of the resulting parts under load. The results form the basis for product durability, geometrical layout and reliable numerical simulations and validations.

The high-resolution ARAMIS SRX sensor comprises the latest camera technology, including 12-megapixel cameras and can be used for various applications. In high-speed materials and components testing, up to 2,000 images per second can be captured. Thus, the failure behaviour of parts can be captured locally and over time in high resolution. A special HD mode was developed for crash applications. In this mode, high-speed sequences can be analysed in high resolution with an image recording rate of 1,000 Hz. The combination



of high resolution and high speed allows precise results for applications that require both capturing an event in detail over time and capturing local effects.

The ARAMIS SRX is complemented by the GOM Touch Probe, a tactile measuring system expansion, which is optically tracked by the ARAMIS system. The GOM Touch Probe allows tactile measurements of coordinates at areas that are difficult to access optically. Tactile measurement is also useful to align the part.

Moreover, the ARAMIS SRX shows a high stability and process reliability and is very user-friendly, which is why it is primarily used in industrial environments. The specimens can be measured independently from their



geometry and temperature with accuracies up to the micrometer range. Time-consuming and expensive part preparation is not necessary anymore. For statically or dynamically loaded specimens and parts, ARAMIS SRX provides precise 3D data, such as coordinates, displacements, velocities and accelerations, surface strains and material characteristics. This data serves as input parameters for numerical simulations (stress-strain curve, etc.) and evaluations of 6 degrees of freedom (6DoF).

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Creaform and Metrologic Group announce worldwide partnership agreement

Metrologic Group and Creaform have entered into a partnership in which Creaform integrates Metrologic Group's software suite with its new CUBE-R™ 3D automated dimensional inspection solution. This laser scanning, all-in-one solution features Metrologic Group's advanced 3D measurement programming and inspection software packages, Silma and Metrolog X4 i-Robot, and combines efficiency and reliability of robotisation in an automated industrial measuring cell.

The CUBE-R is an off-the-shelf, fully integrated, automated 3D inspection solution designed for manufacturing companies requiring automated quality control directly on the shop floor. It optimises the MetraSCAN 3D-R™ metrology scanner with the use of Metrologic Group's robot-dedicated measurement software, Metrolog X4 i-Robot. The solution thus provides a flexible plug-and-play, alternative to coordinate measuring machines and other robot-mounted, structured-light 3D scanners.

Speed and volumetric accuracy

The CUBE-R extends the capabilities of the MetraSCAN 3D-R for the dimensional measurement of parts ranging from 1 m to 3 m with metrology-grade volumetric accuracy under real-life shop-floor conditions. Unlike conventional systems, the CUBE-R delivers both speed and volumetric accuracy, consequently insuring a significant increase in productivity.

User-friendly, easy-to-operate

Integrating Metrologic Group's Silma X4 i-Robot and Metrolog X4 i-Robot, the CUBE-R delivers an array of benefits: the

software calculates the most efficient positioning of the sensor and the best collision-free trajectories for the robot; the same software manages the optical 3D measurements, simultaneously provides advanced analysis of the results, even when computing huge point clouds; it edits personalised, easy-to-understand reports. In short, the Metrolog and Silma X4 i-Robots turn the CUBE-R into a simple automated measurement solution, easily operated by a non-specialist operator.

Multi-benefit solutions

High productivity: performs effective inspections on several hundred parts a day, even on dark or reflective parts with complex geometry

Multitasking: maximises production cycle and throughput by simultaneously operating data acquisition and delivering analysis in a continuous and uninterrupted measurement flow

Most efficient 3D measurement programming and computing. Best-in-class measurement software suite, able to manage huge point clouds

Automatic field calibration procedure: no accuracy drift over time and continuous operation

Minimum operator training: easy-to-use and short learning curve to keep up with fast production pace

Complete turnkey solution: no integration required, fully enclosed and shop-floor ready

Smaller factory footprint: a complete 4.1 m x 4.1 m x 3.1 m turnkey solution with a flexible shop-floor configuration

"Metrologic Group is dedicated to developing the automated 3D metrology market through its X4 i-Robot platform," says Stéphane Auclair, division vice-president, marketing & product management at Creaform-AMETEK. In addition to being recognised as a world leader of dimensional metrology software, Metrologic Group is the only independent



software partner to integrate robot path planning and simulation with other automation-type functionalities. Partnering with them for the commercialization of the CUBE-R was an obvious choice for us."

"The CUBE-R is yet another illustration of the ability of the Metrolog and Silma X4 i-Robot software suite to control singly the



most advanced 3D measuring solutions," says Bertrand Gili, President of the Metrologic Group. "Combined with the CUBE-R, our software suite brings advanced 3D inspection technology to the shop-floor and offers easy-to-program, easy-to-operate quality control routines for complex robotised inspection scenarios. It definitely sets a new standard in all-in-one laser line scanning robotised 3D inspection."

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A whole new dimension in sensor technology

The latest sensor systems from ZEISS offer increased efficiency along with greater flexibility for the user. At the Control trade fair in Stuttgart, the company presented several sensors from its portfolio, including the next generation of roughness sensor, the ZEISS ROTOS, and the ZEISS DotScan.

The new enhanced ZEISS ROTOS roughness sensor can be used on coordinate measuring machines to perform standard-compliant surface waviness and roughness inspections, even on complex workpieces, all in a single measurement run without any reclamping. This cutting-edge innovation simplifies and speeds up the measurement of all surface parameters from the drawing in a single process step. The sensor makes it possible to check the size, form and location tolerances together with the roughness parameters on a single machine. Instead of requiring separate stylus instruments to capture more significant form deviations such as waviness or roughness, these can now be performed on a CNC-controlled CMM.

The innovative design of the new ZEISS

ROTOS enables the inspection of nearly all workpiece characteristics. Thanks to the three rotatable axes and multiple stylus arms, it is also possible to measure deep boreholes and difficult-to-reach surfaces. Even overhead measurements are not a problem for this sensor. Programming the surface parameters is quick and easy because the ZEISS ROTOS is completely integrated in ZEISS CALYPSO, the company's measuring software.

Meanwhile, with the ZEISS DotScan it will soon be possible to inspect sensitive, reflective and low-contrast surfaces more quickly than ever before with the ZEISS O-INSPECT multisensor measuring machine. Starting in May 2018, all new systems come as standard with an interface for the ZEISS DotScan chromatic-confocal white light sensor. Due to technical requirements, measuring machines already in use can still be operated with or retrofitted for the chromatic focus sensor (CFS). The switch to the ZEISS DotScan sensor for all multisensor measuring machine models will offer several



advantages to customers. Unlike with a CFS sensor, operators using the ZEISS DotScan can switch it in and out as needed.

The sensor is available in three sizes for different measuring ranges: one, three and 10 mm. Moreover, operators can now use a rotary table on the ZEISS O-INSPECT to optimum effect with the ZEISS DotScan for optical scanning.

Thanks to the innovative integration of the sensor in all interfaces, the operator can insert the probing system in the measuring software and capture the data points on the component using the standard ZEISS CALYPSO user interface without any difficulty.

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New precision measuring devices launched at Control

RPI UK, the world-leading specialist developer and manufacturer of precision positioning devices for high accuracy rotary and angular inspection systems, launched GeoSpin and QuadMatic rotary tables at Control.

GeoSpin has been specifically developed for the measurement and assembly of smaller engines in the aerospace industry, such as short-haul and business jets. The product has been developed in response to huge demand from the industry.

GeoSpin significantly increases the reliability of measurement data, which enables rotor stacking software to accurately manipulate component parts, resulting in precisely aligned rotor assemblies. GeoSpin has been independently verified and proven to offer operational improvements over traditional measurement methods.

QuadMatic meanwhile delivers a whole new world of accuracy and precision to the CMM industry. Held in granite, it simplifies the measurement of symmetrical or prismatic components including scanning

applications by simplifying measuring procedures, increasing CMMs' application range and effective measuring volume which in turn increases the flexibility, productivity and efficiency of the CMM.

As well as these newly developed products, RPI also demonstrated its LabStandard. This enables operation in both horizontal and vertical axis applications and combines a preloaded axial and radial rolling bearing to provide high rigidity in both planes ideal for heavy off centred loads. LabStandard is essential for anyone working in metrology, fine machining or precision testing.

Jim Palmer, RPI's sales manager, says: "QuadMatic and GeoSpin are delivering a whole new world of accuracy and precision measurement. They can be used in manufacturing and quality control and can't be beaten for flexibility and performance over a wide range of calibration and inspection applications."

Leaders in rotational innovation, RPI operates in any market requiring high load, rotational accuracy and precision,



specifically aerospace, gas turbines, CMM, calibration and standards labs, universities, optics, scientific research, navigation & guidance systems, encoders, Hirth couplings and precision gears.

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A new era in UK CAM software

MACH 2018 began in spectacular fashion for OPEN MIND Technologies, with the CAM specialist selling three seats of hyperMILL® CAM software in the first two days, an additional four by the end of the show and another three in the week after MACH. Located at the entrance to Hall 17, the prime position yielded an unprecedented level of enquiries and sales.

Four of the seats were sold to prestigious subcontract manufacturers, whilst another seat was sold to Iver-based Newmax Precision. The Buckinghamshire aerospace and defense manufacturer is taking delivery of its first 5-axis machining centre in July, a Matsuura MX330. Realising its existing CAM software will not deliver the 5-axis machining strategies to drive the Matsuura, Newmax Precision director Adrian Bundy visited MACH to buy a seat of 5-axis CAM software. hyperMILL was the preferred choice.

For engineers looking for a paradigm shift in turning strategies, OPEN MIND had the answer here too. The new Vandurit rollFEED® turning system is a collaboration between Vandurit and OPEN MIND that now offers an exclusive hyperMILL CAM strategy to match the groundbreaking roll turning development. This collaboration introduces a new solution for CNC turning that increases process reliability and significantly reduces machining times and tool wear by up to a staggering 90 percent.



A new era in UK CAM

Commenting upon OPEN MIND Technologies performance at MACH, sales director Ken Baldwin says: "We had a couple of hundred leads from MACH and we did countless demonstrations. We were phenomenally busy throughout the week and at times the interest level was quite overwhelming. Compared to MACH 2016, it is evident that the OPEN MIND brand has really grown and there is a huge swing in the industry from other CAM vendors to hyperMILL. There were very few 'casual' walk-on visitors at MACH, but everyone that

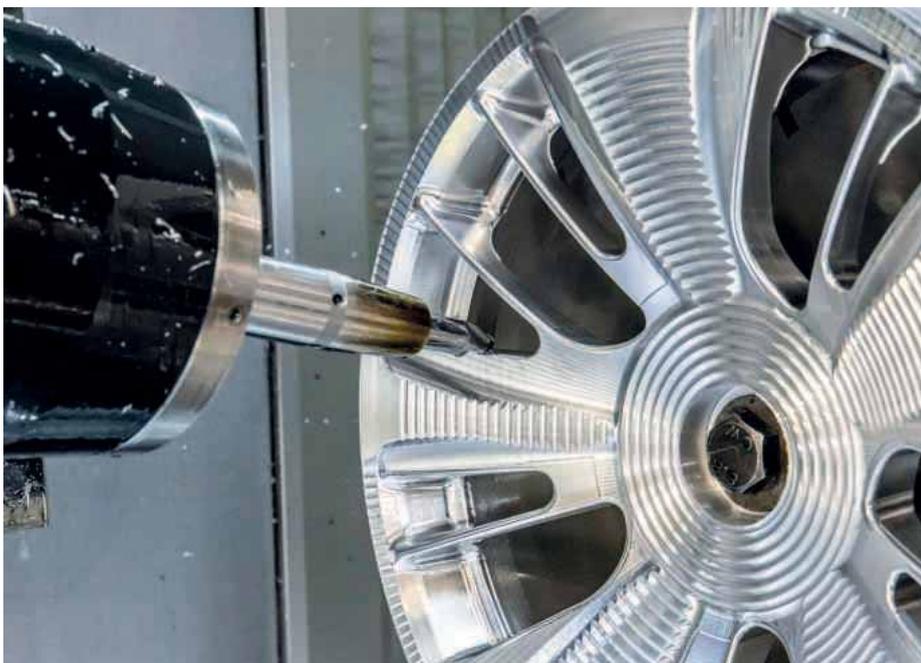
approached us was a serious buyer that was seeking us out.

"We were also really pleased that the MTA had grouped all the CAM suppliers close to each other, as our stand and the demonstration parts were really eye-catching and that made our technology instantly appeal to visitors. This was supplemented by some very impressive demonstration parts on the Mazak, DMG MORI, XYZ and FANUC stands that were all applying hyperMILL to highlight the capabilities of their machines through our software."

"We have qualified all our leads and there is no stereotypical customer. Our enquiries vary from OEM's to subcontractors, from 3-axis machinists and first time 5-axis companies through to established high-end complex component manufacturers. Likewise, the enquiries for hyperMILL ranged from the most basic packages through to the latest hyperMILL VIRTUAL Machining Centre package and the Vandurit rollFEED turning system. MACH 2018 demonstrated that OPEN MIND is the 5-axis CAM vendor of choice, something our team and our customers have long recognised."

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

OPEN MIND develops optimised CAM solutions that include a high number of innovative features not available elsewhere to deliver significantly higher performance

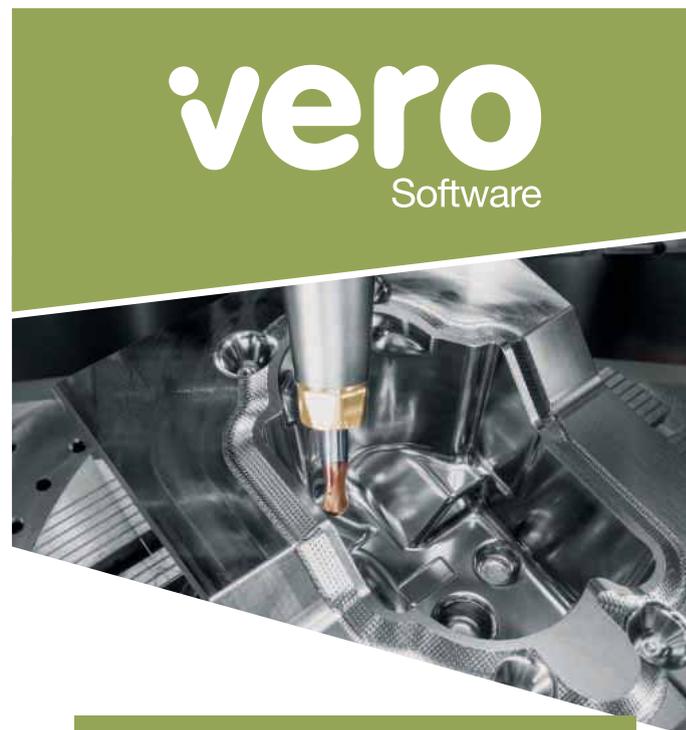




in both programming and machining. Strategies such as 2.5D, 3D as well as 5-axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the hyperMILL CAM system. hyperMILL provides the maximum possible benefits to customers thanks to its full compatibility with all current CAD solutions and extensive programming automation.

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

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**THE WORLD'S #1
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Vero Software is a world leader in CAD/CAM software with a proven track record of reliable product delivery. Vero provides solutions for the tooling, production engineering, and sheet metal industries with unparalleled ease of use and sophisticated toolpath generation.



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Updated FeatureCAM application from Autodesk

FeatureCAM is a familiar CAM program from Autodesk and has been pretty much the go-to solution for over two decades. There is always a challenge to make the very good even better and the company believes that it has made a major step forward with FeatureCAM 2019.

As its name suggests, FeatureCAM offers a feature-based CAM approach. Instead of having to program a machine stage by stage, the operator can program it using everyday shop terms, such as 'turn', 'bore', 'bolt' and so on. It has sufficient intelligence to recognise needs and requirements from such terms and will automatically adopt the right speed and torque strengths without having to be instructed, line by line.

Faster and more customisable

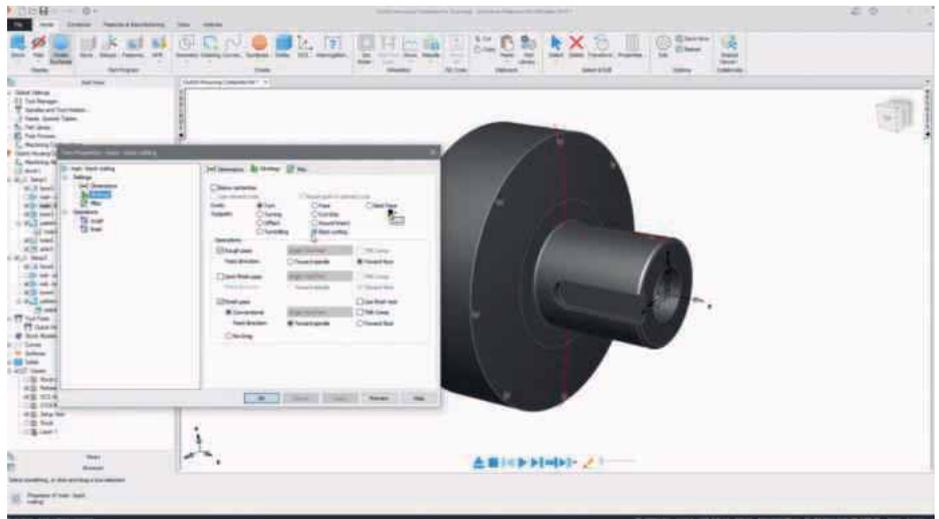
FeatureCAM allows the user to program a process more quickly and to get consistent results across a wider variety of parts and machines as well. It has a huge range of customisable settings supplied with the program. The user can even set customised settings as their default, which saves a lot of time in going through layers and layers to get to the right parameters.

There are other software apps that offer similar features, but FeatureCAM has the advantage in that it is built as features, from the ground up. Every non-essential step that can be taken out of the process helps with speed and consistency, in software programs as much as in Lean Manufacturing.

The Directed Automated Feature Recognition (DAFR) capability automatically recognises holes, bosses, sides, and pockets in a single workflow, which enables faster programming. While standard AFR slices the model in the active Z-axis and produces complete features as it makes its way down the model, DAFR allows the user to select the features they want even before recognition begins.

Saving time while cutting material

This is not as step-by-step as existing software. It minimises programming time and helps to reduce cycle time. In a break with convention, DAFR can also be used in turning projects; it gives users the option to choose index angles. This helps to reduce the number of Z axes required and so speeds up cutting. Centre drilling programming has been enhanced with the



introduction of additional parameter controls for centre drills.

Both custom tip and included angles can now be set on the tool, which means that centre drills can be used for defining more accurate chamfers. There is no need for additional operations to adjust tip angles; the NC code is automatically adjusted in the process. Safety and part accuracy are greatly improved and cycle times can be cut significantly. Setup, creation and editing have been amended to improve the user experience.

FeatureCAM 2019 has introduced Tabs in place of the 'wizard' in the setups dialog, which helps to speed up decisions enormously. FeatureCAM 2019 also combines the Z-axis selection functions into a single button, which is more intelligent. It also makes for better edge picking.

Modify centre drill geometry

Snapping grids have new options for displaying lines, dynamic scaling and grid size control. The curvature tool now has an additional tool to indicate the draft angle of chosen faces. In another step to improve ease-of-use and productivity, the Thread list now features thread families grouped together, along with access to more

standard threads, such as ACME and Trapezoidal. The Tool Post window colours and icons help identify main and sub-spindle operations, as well as tool or spindles for Swiss machining.

A number of hidden menu options are now in the features dialog, including log and initialisation files and post-processing debug options. Roughing and finishing passes can be set in grooves. The new back cutting feature addresses the use of new inserts, such as the Sandvik™ prime turning™ range.

The new tool pass strategy allows you to turn in all directions with the same insert. This extends insert life, while improving metal removal rates. It also makes Using for better machine utilisation, reductions in setup time and fewer tool changes. This all helps to cut cycle time and component cost.

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Best-in-class results from Alphacam's new nesting engine

Tests on the new nesting engine unveiled in Alphacam 2018 R2 show a 17 percent improvement in material yield.

Using proprietary technology to deliver what brand manager Hector Henry says are "best-in-class geometry," toolpath optimisation and part handling, the nesting engine also provides faster calculation times, along with improved feedback and graphics. He says that the overall theme of the latest release is to save time and improve productivity.

Parametric Rules have now been migrated to C# and have an enhanced GUI and functionality, allowing for greater control, improved UX and simpler, more

streamlined, logic statements, which he says has improved productivity and reliability.

The Face Milling Cycle has been enhanced and is now part of Alphacam's Core Functionality, creating intelligent toolpaths, allowing user to face, surface, mill irregular and multiple geometries.

Hector Henry says: "This improves productivity, as the user doesn't need to create several operations to achieve the same result."

Productivity has also been improved through the new order by Intersecting Geometry function which saves significant time when ordering the sequence of a complex job. It works by letting the user select a previously created geometry to define the order of geometries or toolpaths, based on those which intersect the selected geometry first.

The Parametric Sketcher is now considerably more powerful, thanks to an updated UI, meaning the window can be resized. There are also improvements to the Sketcher's geometry creation tools, for creating

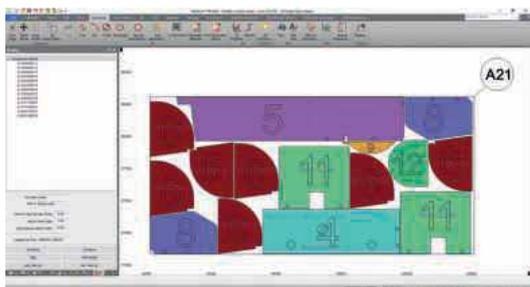
fillets and chamfers as part of the Geometry creation tool set. This improves productivity as it does away with the need to calculate those points.

Enhancements to Alphacam's dimensioning system provide greater clarity when printing and presenting information. User-defined suffixes for both the primary and alternate units, as well as a scale factor, mean that two separate values can now be displayed.

Importing CAD models has been updated through the support of SolidWorks configurations.

Hector Henry concludes: "Alphacam now has a new interface for users to select which configuration of an assembly to import, without the need to ascertain that the last version saved in SolidWorks matches the one they want."

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Tebis UK welcomes APH3G as its latest customer

Tebis UK has announced APH3G as its latest customer. The deal, which was finalised at MACH 2018, sees APH3G introduce the Tebis Trim solution to its busy shop floor. The company, alongside its sister company AP Hollings, based in Benfleet, Essex, specialise in Vacuum Forming and Fibreglass Moulding plus CNC & CMM Inspection Services.

Andy Hollings, director for APH3G, explains why it chose Tebis for the business needs: "Upon looking at various companies and the packages they offered, we found Tebis to be very user-friendly, with the technical capabilities being perfect for our requirements."

The fully equipped Tebis CAD/CAM package for trimming enables automated offline NC programming for series machining of moulded plastic and complete parts. You are able to standardise your programming work in the NC Job Manager and protect your machines and tools with simulated collision checks. Calculations can run in the background whilst preparation of additional parts can take place in the

foreground. Other functionalities of the Trim solution include extensive analysis, design and preparation functions for both curves and surface geometry and machinery kinematics for up to five axes.

Phil Smith at Tebis says: "It's great to be able to welcome APH3G on board as a Tebis customer. The work they do will benefit greatly from our bespoke Trim solution and we very much look forward to working with them".

The benefits that Tebis Trim packages can offer include no size limitations, easy preparation of manufacturing geometry for NC programming, time savings when creating 3- to 5-axis trimming programs in offline operation, increased manufacturing speed, accuracy and quality and increased reliability with Virtual Machine simulation. Operations are all easy and intuitive, which can reduce throughput times and costs.

Andy Hollings concludes: "We have found



the support and the service we have received to date has been superb and of the highest standard. We are looking forward to creating a long-term relationship with Tebis, including looking at more software for our other machine tools."

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FARO laser templating technology supports the composites industry

Streamline assembly and increase production throughput

Manufacturers that use composites to build their products or parts probably have, as one of their primary goals, to minimise the size and weight and maximise the strength of what they are producing. One important key factor they need to consider is the timely and accurate location and positioning of composite plies.

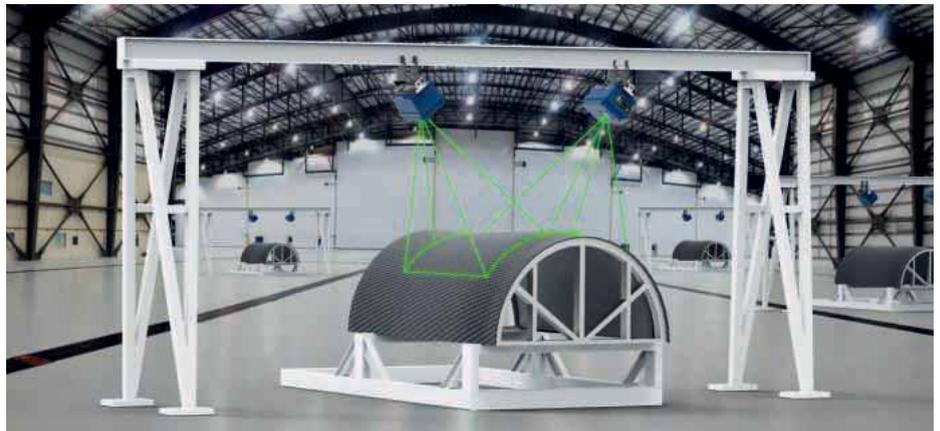
When composites were introduced, its unique properties had significant effects on reducing the size, weight and power aspects of major components for the aerospace, automotive, space and shipbuilding industries. Unfortunately, the labour-intensive nature of composites lay-up production certainly did not reduce the manufacturing costs. However, FARO's laser projection technology is helping to change that.

This technology finds specific applications in the field of composite materials, allowing companies to shorten production cycles, reduce scrap/rework and increase overall productivity.

One of the key applications is related to the lay-up of composite laminates onto a tool for a build-up manufacturing process.

Manufacturers look for ways to locate and place plies as quickly and accurately as possible in order to streamline the layup process. Some companies use templates or Mylars to attempt to expedite the layup process and ensure location accuracy. They need to measure, cut and build the templates, i.e. Mylar, hard tooling and paper operators must then pull and place the templates properly for each ply of each job or part. Often, hand measurement and human intervention are required to properly place these templates, while most composites layups involve multiple plies.

Using outdated tools, such as tape measures, makes the layup process slow and sometimes inaccurate. Even the use of physical or Mylar templates to attempt to accelerate the process can be difficult as it involves pulling the proper template, aligning and placing it, affixing it and then maintaining that position during the actual layup process. Templates show operators where to place plies, but templates need to be placed correctly prior to placement of



the plies which is time consuming, and labour intensive.

Templates and hard tooling also create a significant expense when it comes to building, storing and maintaining them.

In addition, the ability to make engineering changes on-the-fly has opened tremendous opportunities for advancements in engineering design and application. However, physical templates can therefore also quickly become obsolete, not only when new parts are created but also when engineering change orders (ECOs) are introduced, while engineering change often necessitates a new template. Also, when developing and launching a new product, the number of Engineering Change Orders (ECOs) can be quite extensive.

The FARO TracerM Laser Projector allows manufacturers to handle all these challenges in an effective and efficient way. It reduces layout times, speeds ply placement, shortens production cycles improving productivity and reduces down-time and scrap/rework during layup.

The FARO TracerM projects a template of laser light onto the composite tool, outlines the exact location and orientation of the composite ply materials and does so in the proper sequence, according to the job's CAD based ply (layer) schedule. The use of these virtual templates dramatically improves cycle time for very complex layups that take dozens to hundreds of plies.

Furthermore, eliminating the time it takes to build physical templates is crucial to

reducing manufacturing costs and time to market.

Using laser projection also greatly reduces the pain points of the ECO process, allowing rapid incorporation of changes in days rather than weeks or months. When the CAD model is changed, laser projection changes are uploaded to the computer that controls the projector and the changes are immediately implemented on the next production unit.

Last, but not least, with computer and laser-guided assembly, the possibility of having defects during the layup process is greatly reduced because laser-guided assembly solutions, such as the FARO TracerM, ensure the highest production quality level, regardless of the experience and the skills of the personnel in the various shifts.

Laser projection technology also provides valuable assistance for Advanced/Automated Fibre Placement (AFP) machines. AFP machines automatically place fibre on to a tool. In particular, they are used to place fibre in the correct orientation, speeding up the layup process. Traditionally, manufacturers checked fibre angles using hand tools. However, this is time-consuming and labour-intensive and stops production.

Laser projection technology is a fast method of verifying ply orientation. By adopting a laser projector solution, fibre angles can be visually verified during the projection process. The FARO TracerM

Laser Projector projects the desired line, fibre angle line and an operator visually checks using the projected line as a guide and a protractor.

Laser projection also allows the hand layup of ply less than the AFP's minimum course length.

In this way, Laser Projection Technology reduces time and labour to check fibre angles. No physical tools, other than a protractor, are required to check fibre angle and fibre angle verification is independent of the AFP machine.

3D laser projection for laser-guided assembly and production

The FARO TracerM Laser Projector



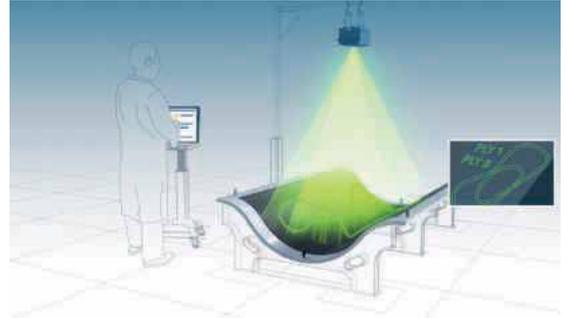
accurately projects a 0.5 mm wide laser line onto a 2D/3D surface or object to provide a virtual template that enables operators and assemblers to quickly and accurately position components with absolute confidence.

The clearly-defined laser template is created with the use of a 3D CAD model, enabling the system to visually project a detailed laser outline of parts, artifacts, or areas of interest.

The result is a virtual and collaborative 3D template able to streamline a wide range of assembly and production applications, allowing companies to improve productivity and quality.

The ability to guide a process sequence, along with accurately locating and orienting components, increases manufacturing efficiencies. Costly non-conformances are eliminated by implementing a simple, reliable, repeatable and cost-effective solution to streamline production processes.

The FARO TracerM not only reduces the use of expensive physical templates and hard tooling but also reduces or eliminates scrap and rework.



For large assemblies and/or in space-constrained areas, multiple TracerM projectors can be controlled from a single workstation to provide large-scale virtual templates in one coordinate system.

The TracerM is the ideal solution for companies operating in the aerospace, defence, heavy equipment, shipbuilding, railway and composites sectors, where the accurate positioning, alignment and assembly of large, cumbersome components is a regular and often problematic requirement.

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Lantek collaborates with Belgian laser manufacturer

Lantek, a multinational pioneer in digital transformation for the sheetmetal and fabrication industry, is collaborating with Balliu, a Belgian manufacturer of laser cutting machines for sheet metal, to provide its customers with management and process digitalisation solutions. The objective is to help it on the path towards digital transformation to evolve technologically towards advanced manufacturing.

The sheet metal sector is going through a stage of great changes, which is driving companies to interconnect machines, processes and plants globally using digital technologies. A high level of connectivity and integration provides a large amount of data and allows manufacturers to see production needs in real time, as well as to anticipate possible errors and carry out more efficient maintenance. The tangible benefits of having connected factories include a decrease in costs and an increase in productivity and efficiency. Companies that do not go digital in the next 3-5 years are likely to be left behind.

Francisco Pérez, director of Lantek's OEM

channel, says: "Despite the fact that access to technology has become democratised and its cost is not as high, the rapid changes we are experiencing make it necessary to carry out this digital transition in collaboration with firms who have the necessary knowledge to develop and implement the appropriate technology. In this sense, Lantek presents itself to its customers as a trusted firm to support them in their digital transformation."

Lantek's mission is to promote and help the digital transformation of companies in our sector, accompanying them in this transition and adapting to their different states of digital maturity. The specific advanced manufacturing solutions developed by Lantek are exclusive for the sheet metal sector.

Alberto Martínez, CEO of Lantek, says: "The digital transformation of our customers is the challenge that will keep us occupied in the coming years here at Lantek. We are facing the Fourth Industrial Revolution,



which will change the way we manufacture. Our commitment to growth and to supporting our customers in the process of digitalisation has led us to invest an additional 1.6 million euros during 2017 in R&D, as well as in our implementation and project development teams."

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3D printing platform selected for US Air Force research

3D Systems has announced that its Figure 4™ production system has been selected for the US Air Force-sponsored research focused on integrating high-speed 3D printing into the aircraft maintenance supply chain. Overseen by America Makes, the national additive manufacturing innovation institute, and led by the University of Dayton Research Institute (UDRI), this initiative project brings together 3D printing and aerospace manufacturing leaders, including 3D Systems, Lockheed Martin, Orbital ATK and Northrop Grumman.

Through this project, the US Air Force will explore how 3D Systems' Figure 4 production system can be used to reproduce aircraft components for decades old planes that may no longer have reliable sources of replacement parts. This effort demonstrates capabilities for rapidly delivering replacement parts just-in-time without minimum order quantities, eliminating the need for parts warehousing and reducing time of aircraft on ground.

According to America Makes, legacy aircraft used by the US Air Force require parts that may be out-of-production due to manufacturing obsolescence costs to create, low-quantity requirements, poor documentation, or other availability-related challenges. The "Maturation of Advanced Manufacturing for Low-cost Sustainment" (MAMLS) programme, an America Makes programme funded by the Air Force Research Laboratory (AFRL), has just reached Stage III and announced multiple awards on three key topics that will have the most impact for defence maintenance, sustainment and logistics and the overall strategic readiness of the USAF and DOD.

While 3D Systems direct metal printing and stereolithography technology had been featured in prior MAMLS phases, this new

project marks the first time the US Air Force will deploy what it calls Digital Light Processing (DLP) technology to supply low criticality components, including electrical connectors, knobs, elastomeric grommets, and spacers for legacy sustainment equipment.

Figure 4 was selected by this team over all other DLP machines because it is the fastest, most accurate 3D printing technology available. Recently released data on Figure 4 production highlights part print speeds up to 65 mm/hr, with prototyping speeds of up to 100 mm/hr. The Figure 4 platform delivers part accuracy and repeatability, with Six Sigma repeatability ($C_{pk} > 2$) across all materials. The combination of speed and accuracy, complemented by a light-based UV curing process that takes minutes versus hours with heat-based curing processes, yields the world's fastest additive manufacturing throughput and time-to-part. This substantially cuts down the time required to manufacture parts, enabling faster repair and reduced time of aircraft on ground.

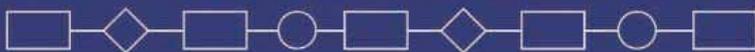
Dr Tim Osborn, research scientist at the



University of Dayton Research Institute, says: "We were pleased with the speed, resolution, surface finish and scalability that we achieved using 3D Systems' solution. Our goal is to further explore this technology and establish a clear development, vetting, and transition pathway for the emerging DLP technology in the Figure 4 machine for transition to the US Air Force."

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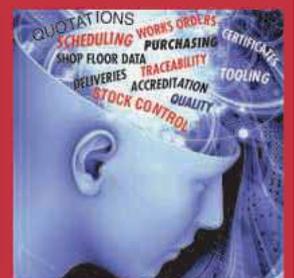
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New metal additive manufacturing system for high heat and crack prone materials

GE Additive has unveiled the Arcam EBM Spectra™ H, a new metal additive manufacturing system, designed to handle high heat and crack prone materials. The Arcam EBM Spectra H complements the company's existing electron beam melting systems.

Unveiled at the RAPID + TCT 2018 show, the new system is available to pre-order. It will be manufactured at Arcam's plant near Gothenburg, Sweden with expected delivery from Q4 2018 onwards.

Unique additive production of high heat and crack prone materials

As manufacturers make significant steps towards serial production, they require larger, faster, industrialised solutions and machines that are capable of handling high heat and crack prone materials, such as titanium aluminide (TiAl). Today, electron beam melting remains the only commercial additive manufacturing method able to support TiAl production requirements.

Initially, the Arcam EBM Spectra H will support both TiAl and Alloy 718, with additional Ni-super alloys will be supported from 2019. GE Additive's materials science team is currently exploring future opportunities for a wider range of high heat materials, including nickel superalloys, tungsten, CoCr, stainless steel and metal matrix composites.

Reducing cost through increased productivity

The Arcam EBM Spectra H incorporates a range of new features and enhancements to drive down cost by increasing the productivity of the system: an increased build speed of up to 50 percent; a 6 kW HV-unit means that all pre- and post-heating steps take half the time compared with current EBM machines; these improvements will increase the build speed even further; improved heat management through the incorporation of a moveable heat shield to keep heat in the build area; improved layering procedure reduces the need for heating, saving approximately five hours for a full height build; a 39 percent increased build volume from 200 x 200 x 380 mm to Ø250 x 430 mm; auto beam

calibration - Arcam xQam™ automatic calibration technology improves the position and focus accuracy and removes the need for manual calibration, reducing the process from three to four hours to 15 minutes. This innovation will be incorporated on the Arcam EBM Spectra H and all Qplus systems.

The project team is currently exploring the potential for future in situ part qualification.

End-to-end industrialisation

Reducing dependency on operators and incorporating automation technologies to improve accuracy has been in focus during the development of the Arcam EBM Spectra H.

The improved and automated power handling process includes: development of an automated, self-dosing sieve and hopper filling station process; powder weight is controlled in the PRS and inside the hopper filling station; simplified machine setup; automatic powder hoppers; self-closing when lifted and self-opening when mounted in the machine; one powder distribution setup for each material only; calibration of the fetch position only needs to take place during a material change, no longer before machine start; closed powder handling maintains batch integrity and reduces the risk of contamination; the operator is protected from the powder; a dust tight



environment in all steps of the process maintains powder batch integrity. removal of unwanted particles is handled by a thorough process; a cyclone for small and low-density particles, a sieve for coarse particles and magnetic traps; selection of PRS materials in contact with powder; protection plates in the blasting cabinet are the same material as the powder.

"This new system shows our commitment to developing industry-leading additive machines, materials, and services. We remain focused on accelerating innovation across sectors and helping the world work smarter, faster and more efficiently," says Jason Oliver president and CEO, GE Additive. "It's great to be able to show the Spectra H here at RAPID and get feedback from across the industry. We have created what we think is an amazing system that demonstrates how Arcam continues to push the possibilities of EBM technology."

"Spectra H is the result of really hard work by a cross-functional team from across the GE Additive family, supported by insights and feedback from a handful of internal and external customers," says Karl Lindblom, general manager, Arcam EBM.

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Robotic handling raises sawing productivity

Volker Bühler, group manager for robotics at German sawing machine and storage system manufacturer, KASTO, describes the widening choice of automation systems on offer to minimise labour costs and increase production output from the company's circular sawing and bandsawing machines. The production solutions are available in the UK and Ireland through the firm's subsidiary in Milton Keynes.

Industrial robots make production more flexible and efficient, from batch sizes of one to large volumes. They also improve working conditions for operators and can significantly reduce costs in stockholding and manufacturing operations. More and more, operators of sawing systems are automating them with robots, as they are fast, reliable, precise and if necessary can work continuously 24 hours a day without human intervention.

Robotic systems are taking over numerous process steps following sawing, starting with removal of the cut pieces, continuing through deburring, chamfering, measuring and marking and on to weighing, sorting and stacking on pallets or in containers. The parts can be transferred to a driverless transport system and taken elsewhere in a warehouse or factory.

Automation starts with material feeding. Stock to be cut can be supplied to a machine by means of a roller conveyor or magazine, for example, sparing workers the effort of lifting and reducing the risk of injuries. Depending on how it is equipped, the



sawing machine can run attended, with the control system holding all parameters of a job including material diameter, band speed, rate of downfeed, cut length and number of parts.

Volker Bühler says: "In complex processes involving numerous work steps, we use combinations of different robots, grippers and other end effectors.

"When large quantities of material with only a few different component geometries are sawn, it is relatively easy to automate the downstream processes.

"The situation is different with custom sawing involving diverse materials and dimensions. The greater the variety, the

more difficult it is to cover all the possibilities."

He explained that end-of-arm tool selection is an important factor. A robot must be able to deal with all the objects it encounters while using as few attachments as possible. It reduces procurement costs, minimises idle times and increases productivity. Users have a choice of mechanical, magnetic or vacuum grippers, which should be as compact as possible to give the robot easy access to the cut parts.

With the help of the right components, sawing can be combined with other automated operations to create complex, highly integrated systems that are seamlessly connected by continuous material flow. It includes upstream storage as well as downstream handling.

KASTO can implement combined storage and sawing systems for its customers in which all processes are automated, from storage of the raw material to retrieval of the cut parts. The control software can be linked to existing ERP systems for greater transparency and efficiency. Sawing can even be integrated with other processes like turning or milling within a digitised, Industry 4.0 production environment.

Volker Bühler concludes: "With automated sawing technology, companies can react more easily to order peaks and dramatically reduce idle times. It can make a big difference economically.

"We have calculated that, depending on shift model, investment in an industrial robot



with a machine like our KASTOvariospeed circular saw can pay for itself in less than a year.

"When you consider that such systems are used for more than ten years on average, users can reduce their operating costs for a very long time."

Robot technology also helps to improve working conditions. It relieves employees of heavy, tiring and monotonous tasks and the risk of accidents and injuries is reduced. Moreover, the cut parts are of better quality because robots process them with equal precision, sort them reliably and stack them



neatly. The latter is particularly beneficial if subsequent operations on the parts are automated.

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HBE Dynamic Series on route for success

The new Behringer HBE Dynamic series has been a resounding success and is now being lifted into a whole new league in terms of performance level, with an array of features provided as standard.

The HBE range comprises the following machine sizes: HBE 261A, 321A, 411A, 511A, 663A, 860A and 1060A, together with a comprehensive range of semi-automatic, mitre cutting and automatic mitre cutting range

“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: these were just some of the stipulations followed by the development process”, recalls CEO Christian Behringer. 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, as standard

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. “With this facility, we are offering our customers premium technology otherwise only available in high-performance sawing machines”, says Christian Behringer.

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. As 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, thus saving costly material.

No-compromise energy efficiency

Resource-saving production, sustainability and energy efficiency are currently on

everyone’s lips. The rising cost of energy is driving manufacturers to rethink their existing processes and make use of technological innovations to develop innovative solutions which will enable higher output to be coupled with lower energy input.

“With the new HBE Dynamic series, we have proven that energy efficiency and high-powered hydraulics are not a contradiction in terms”, explains Christian Behringer. 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, which adds up to 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. The 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

The machine is fully enclosed, thus not only complying with current CE directives but also addressing 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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South Wales steel service centre makes significant investment

Llanelli-based steel service centre, Dyfed Steels Ltd recently completed the first phase of its investment in a large volume of new machinery from KALTENBACH, representing a significant increase in steel processing capacity.

The new KALTENBACH Sprint A2506 / KPC 2504 6 turbine shotblasting and painting line, with a 2.5m width capacity, was the first machine to be installed. The system is able to process steel sections, plates and thin materials, cleaning at a high output rate to an SA 2.5 standard.

Pieces emerge from the shotblaster in a completely clean state and immediately pass into an automatic 4 head paint line that applies water-based primer paint to give an all-round, even coverage with minimal paint waste and optimal cleanliness. Painted parts then pass through a drying tunnel, emerging touch dry and are immediately ready for processing.



The system allows Dyfed Steels to load on new materials direct from on-site stock and remove rust and mill scale in a single pass, adding the primer paint without the need to handle the materials again until they are offloaded for the next processes.

Alongside this system, Dyfed Steels has installed a new KALTENBACH KBS 105 DG/KDM 1015 sawing and drilling line for additional output capacity to complement its existing KALTENBACH machinery. The system has a material capacity of up to 1,000 mm x 500 mm and includes a number of extra features for increased process efficiency and flexibility.

The KBS 1051 DG Bandsaw is fitted with the KALTENBACH 'AFC' technology that uses a unique system to adjust the saw blade angle during the cut. Using either bi-metal



or carbide saw blades, the AFC system is able to considerably increase cutting performance, resulting in a very fast, clean cut without any detrimental effects on blade life.

The KDM 1015 drill installed alongside the saw is an equally high-performance model. The 3-axis drill is fitted with powerful drives to allow drilling with HSS, solid carbide and carbide tipped tools, along with the ability to tap, countersink, contour mark and execute an extensive range of milling operations for additional flexibility.

The KALTENBACH design of the sawing and drilling system ensures that all elements of the line are optimised for fast, efficient operation. This includes the material transport systems and length measurement devices, all of which work together to minimise any time wastage between operations. An automation pack is also installed on the machine for minimal operator intervention between material loading and unloading. This results in an extremely efficient overall system that offers excellent processing times across the full range of processing requirements.

Dyfed Steels has furthered its investment with two more machines from



KALTENBACH, the first being a KALTENBACH KBS 1301 DG Sawing line, with a 1,300 m x 700 mm capacity for processing larger materials. This heavy-duty bandsaw offers bi-directional mitring, material stamping and assured performance on the very heaviest material sections. The KBS 1301 DG is a highly proven model in the industry and a favourite amongst fabricators and steel service centres around the world.

Secondly, a ZINSER Z4125B flat bed plate processing centre will shortly be delivered for the drilling, oxy-fuel and plasma cutting of steel plates.

ZINSER is a long-standing partner of KALTENBACH, manufacturing flat-bed, thermal cutting systems, built to suit each customer's particular needs. For Dyfed Steels, the new machine includes a 3 m width capacity and 22 m length capability for processing multiple plates with optimum efficiency. The machine includes twin oxy-fuel heads plus plasma cutting with advanced CNC bevelling. Also included is a heavy-duty drilling system with tool changer, for drilling, countersinking and tapping holes up to 40 mm diameter using HSS and carbide tooling.

This series of investments by Dyfed Steels represents a major boost to its production capacity, efficiency and services. The upgrades to its existing KALTENBACH machinery, ensures its competitiveness and enhances its capabilities for the future.

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Improve productivity and quality with Thermal Dynamics

SKH SIA was established in 1993 and today the company from Rīga, Latvia specialises in the manufacture and construction of industrial buildings, storage tanks, pipelines, thermal insulation of buildings and general building and construction. With numerous certifications that enable it to serve different industries, SKH is continually investing to develop its engineering capability, including capital equipment. In January 2017 SKH decided to improve the productivity and quality of a large cutting table by retrofitting it with state-of-the-art CNC control and plasma cutting technology from Thermal Dynamics.

Initially SKH contacted CNC Baltic SIA Cutting & Welding, a firm in Rīga that supplies, installs and supports welding and cutting machinery and accessories. CNC Baltic recommended retrofitting a Thermal Dynamics iCNC Performance CNC controller and a Thermal Dynamics Auto-Cut 200XT plasma cutting system. SKH subsequently accepted CNC Baltic's proposal and the two companies signed a cooperation agreement.

The installation took place on site at SKH over a two-week period, with CNC Baltic's technicians working through both weeks and over the weekends to ensure the upgraded machine was recommissioned on time. In addition to the equipment mentioned above, CNC Baltic installed new lifters for the plasma and gas torches, and replaced the servo motors on the X and Y axes. The bearings on the portal were also changed, as were the rack-and-pinion drives. New wiring harnesses were installed, and the machine portal and guideways were cleaned and painted. With such a major upgrade, CNC Baltic made sure its engineers and technicians were available when the machine was put back into production in order to deal with any teething problems as quickly as possible.

Andrejs Afanasjevs, owner of CNC Baltic, says: "Throughout the project we worked closely with Thermal Dynamics. In particular, the Thermal Dynamics engineering team were very helpful and we benefited greatly from their knowledge and experience with the Thermal Dynamics equipment. As soon as SKH started using the upgraded machine

I was confident we had used the right equipment. The controller is very easy-to-use, with the operator only needing basic computer skills to program it. In fact the system is so easy-to-use that we could train the operators without any assistance from the Thermal Dynamics representatives."

When the Thermal Dynamics iCNC Performance was introduced to the market a couple of years ago, it was described as a game-changer for the industry, offering high-end performance and quality of cut, but at a far lower cost than comparable CNC controllers. Features include built-in process databases, 3-axis drive outputs, three encoder inputs, programmable I/O, a 15-inch touchscreen and WiFi.

Complementing the iCNC Performance, the Auto-Cut 200XT plasma system has a rated output of 200A, a cutting capacity of 50 mm, edge starting, and it pierces mild steel up to 35 mm thick, 25 mm for production piercing. For thicker material, the iCNC Performance controller is used with a gas torch to cut steel up to 200 mm thick.

The local Thermal Dynamics representative was Konstantin Demidov, the area sales representative for Russia and CIS, says: "This project has been a team effort, with input from CNC Baltic as well as our



own application engineers and service engineers. We found CNC Baltic was a good company to work with, as they are very customer-focused and have great technical experience. The upgraded machine is now easier to use. All the cutting parameters are set in the CNC controller, so there is no need for the operator to set anything on the machine. For SKH, the end result of the retrofits is a vastly improved machine, with far superior quality of cut and higher productivity."

Sergejs Gulko, the owner of SKH, adds: "Our cutting machine was getting old and we realised it could be retrofitted with new technology at a lower cost than buying a completely new machine. We are now benefiting from a machine that cuts faster than before and leaves a cleaner finish. Components require much less post-processing prior to welding, which saves a lot of time. Overall, we are very pleased with the performance of the machine."



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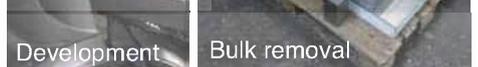
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Esprit & Hypertherm - perfect partners at MACH

Esprit Automation, a leading manufacturer of CNC plasma cutting machines, recently participated at the UK's largest manufacturing show MACH 2018 in Birmingham. The company has been attending this bi-annual event since 1992 and is a familiar face to returning guests. Esprit was eager to demonstrate at the event how it has pushed the envelope on cutting machine technology.

This year, Esprit showcased its flagship plasma cutting machine, the Lightning HD. Alongside this was the XPR300®, which represents Hypertherm's greatest step forward in plasma cutting technology ever. Hypertherm's new class of plasma called X-Definition™ gives industry leading cut quality and superior performance on all metals because new technologies such as Vented Water Injection™ (VWI), plasma dampening, and Vent-to-Shield technologies are incorporated. The result is squarer cut edges, markedly less angularity and excellent surface finish on non-ferrous metals like aluminum and stainless steel. When combined, the Lightning HD and XPR300 create the reference standard for high-precision plasma cutting. Customers report that components cut on the Lightning HD machine with Hypertherm technology are comparable with laser cut parts.

Esprit also launched its latest innovation at MACH: a digital dashboard that provides an insight in to real-time operations, providing improved performance, reliability, and uptime - all key factors in a cutting machine's real-life usability.

"The launch of a digital dashboard for plasma cutting machines pulls the industry into 2018." says James Perrin, from Esprit Automation. "While the technology has leapt forward year-on-year, system

management software has needed to catch up for some time."

Esprit produces a range of advanced plasma cutting solutions for customers covering a wide range of industries throughout the world with manufacturing in Nottingham, England since 1986. Esprit Automation and Hypertherm's partnership goes back nearly three decades. In 1990, Esprit chose Hypertherm as its exclusive supplier of plasma cutting technology, allowing both companies to specialise their hardware to complement the other.

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Hypertherm announces major version release of ProNest CAD/CAM nesting software

Hypertherm, manufacturer of industrial cutting systems and software, has announced the release of ProNest® 2019, a major version update of its advanced CAD/CAM nesting software for automated cutting. This new release contains more than a dozen new features and enhancements designed to make customers more efficient and profitable.

New features include: raster to vector conversion to quickly convert .jpeg and similar images into CAD files for cutting; fly cutting for faster laser cutting on thin material and the ability to pierce without slowing down or stopping the cutting head; design2Fab® 6 integration, so customers cutting sheetmetal can access fittings directly from ProNest; drag rotation for



faster manual nesting and even better plate utilisation, especially when nesting around the contours of larger parts.

Tom Stillwell Sr, product marketing associate for Hypertherm CAD/CAM software products, says: "Regardless of cutting method, plasma, laser, waterjet, oxyfuel, or combination punch, ProNest 2019 builds on an already strong foundation to ensure customers have the features they need to improve their productivity and profitability. At the same time, this new version continues to include features that more fully automate the cutting process and expand user capabilities through smart factory and Industry 4.0 integration with ERP/MRP systems and a host of other supporting software."

ProNest software is selected by more cutting machine manufacturers than any other brand. It is the only software with full support for Hypertherm SureCut™ technology, including True Hole®, Rapid Part™, and True Bevel™, plus easy setup, and optimised process parameters.

In addition, Hypertherm is releasing upgrades to its ProNest LT and ProNest LTS software for lighter production environments. Users with an active software subscription can upgrade to the new version of their respective product at no additional charge and continue to receive unlimited technical support, and other benefits. Hypertherm designs and manufactures industrial cutting products for use in a variety of industries such as shipbuilding, manufacturing, and automotive repair. Its product line includes cutting systems, in addition to CNC motion and height controls, CAM nesting software, robotic software and consumables.

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Picking the right blade

Bandsaws date back to at least 1809, when William Newberry received a British patent for the idea. These blades were highly impractical because of the inability to produce accurate and durable blades. Nearly 40 years later, Anne Paulin Crepin devised a welding technique to overcome the issues. Today, bandsaws are used to cut a wide range of materials, from timber and metal to meat and cardboard. However, choosing the right blade for the right material can be difficult. Follow these tips to pick the right bandsaw blade for your needs:

Cutting steel? You need:

- A blade with positive rake angle, or the angle of the tooth face
- Raker or trapezoidal teeth set design
- Strong and wear resistant blade material or carbide tipped teeth

Suggested blades: Intenss PRO; Advanz MC7

Cutting copper? You need:

- A specialised high-speed steel blade or carbide tipped teeth

- Positive rake angle
 - Trapezoidal teeth set, where the tooth edge is slightly thicker than the blade
- Suggested blades: Primalloy; Advanz MC5

Cutting aluminium? You need:

- Carbide tipped teeth
 - Positive rake angle
 - High resistance to fatigue, abrasion and shock to extend blade life
- Suggested blades: Advanz MC5; Advanz FS

Cutting composites? You need:

- A blade with a continuous or gulletted cutting edge
 - High fatigue resistance
 - High strength blade material to prevent premature breakage
- Suggested blades: Advanz CG; Advanz DG

Cutting wood? You need:

- Specialist wood cutting blades
- Hook tooth shape
- Positive rake angle, or standard 0° rake angle
- Raker tooth set, where teeth are set left



and right, followed by one unset tooth

Suggested blades: Woodpecker Premium; Woodpecker Pro

Cutting paper, plastic or rubber? You need:

- High carbon steel or stainless-steel blade
- Single or double-edged bevel
- Straight, scallop, wavy or V tooth cutting edge

• Extremely sharp blade

Suggested blades: Band Knives; Duratec Super FB

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Upgraded bandsaw blade cuts toughest materials, with longer blade life

Following stringent testing and field trials, a major upgrade of Bahco's popular 3851PR bandsaw blade has been carried out, improving blade hardness, toughness and performance. This upgrade now offers a wider operating envelope within each TPI, coupled with more precise tooth form, making the new 3851PRX ideal for cutting the toughest materials. It's a more universal blade which will cut a greater range of workpiece sizes and shapes than conventional blades.

"This represents a massive evolution of the 3851, with improvement in three key areas: raw material, geometry and production process," says Peter Storr, Bahco's bandsaw specialist in the UK. Here's a summary of the improvements made:

Raw material: a new, higher grade of HSS Special design wire is now being used, improving both the hardness and toughness of the blade.

Geometry: the changes in geometry have only affected the variable tooth, giving a



distinctive new look to the 3851PRX family and clearly differentiating it from the rest of Bahco's bandsaw assortment. The more traditional constant tooth (H & HA & R) version remains unchanged.

Production process: the 3851PRX is manufactured using machinery specially developed for the upgrade, giving a better, consistent finish to the material. It also generates less friction and vibration, consequently improving fatigue failure.

Trials and tests: the upgrade has been strongly supported by R&D testing and field trials, using prototype, standard and main competitor blades.

Field trials were designed to replicate real life application while scientific tests evaluated how the blades performed when used in extreme conditions. In both test types, the new 3851PRX outperformed the old 3851 and its main competitors.

Product features and benefits: the improved blade is now available as a complete assortment from 6 mm to 80 mm. It offers cutting solutions in both production cutting and general-purpose applications.

Improved chipping resistance is achieved without compromising hardness, with less vibration and greater resistance to heat and wear, giving longer blade life.

Applications comprise: contour cutting, including aluminium and stainless steel, along with production cutting and general-purpose applications, cutting solids, bundles, even profiles and castings.

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Evolution is power

In April, Prima Power introduced the Laser Next 2141 3D fibre laser machine. Over 150 customers were present at its Turin headquarters, as well as media representatives from around the world. John Barber reports from Italy

Prima Power is the Machinery Division of Prima Industrie. The Group's experience in 3D laser working machines is unique in the sector and dates back to 1978, when the first 5-axis laser robot was developed. Today its 3D laser product range is one of the widest on the market and represents more than 25 percent of the company's total revenues.

In Turin the company announced the launch of its new Laser Next 2141 3D fiber laser machine to a packed audience. The product is designed and developed to satisfy the needs of stamped-metal-parts manufacturers in diversified industrial sectors, such as job shops, press shops, aerospace, agricultural, and automotive. The Laser Next 2141 will provide them an unparalleled flexibility in terms of processes, part sizes, and configurations, combined with state-of-the-art performance, quality, and accuracy.

Laser Next 2141 is the new product in Prima Power's 3D fibre laser machine range and the latest evolution of the Laser Next family. All the winning features of the Laser Next 1530 and 2130 systems, highly specialised for the processing of components for the automotive industry, are made available in this new product, which is designed to be as universal and multipurpose as possible.



Speaking at the launch, Ezio Basso, CEO of Prima Industrie S.p.A, said: "We recently celebrated our 40th anniversary and in these 40 years we have done a lot of things across different technologies, different products and different industrial divisions. We have 40 years of innovation and we are also celebrating the anniversary of our 3D laser machine. It was the first 3D laser machine in the world. At the time when we had the first machine we also had our first measuring machine. This remains in our DNA; accuracy is in our DNA."

"Today we are here to present to you the

newest member of the Laser Next family: the Laser Next 2141. This is a new machine, but it has been built upon the experience of the other machines in the family. We are sure that this machine will be reliable and flexible, allowing the customer to cut, weld and to do different applications."

Luca Bianchini, sales & business development manager at Prima for 3D laser systems, added: "The Laser Next brings speed, accuracy and reliability. Accuracy is in our DNA and the speeds and reliability of the product is particularly impressive."

The working volume of this machine is the largest on the market at 4140 x 2100 x 1020 mm, with a very compact footprint, and it is suitable for virtually all 3D stamped and flat sheetmetal part sizes. Its technological features allow it to process both three-dimensional and two-dimensional parts and to easily switch from cutting to welding applications. The new Laser Next 2141 is the new reference in its market segment thanks to its working envelope, performance capability and accuracy.

Laser Next 2141 is the perfect balance of speed, accuracy, and reliability. The linear motors on the main axes, the direct drive on the focusing head and advanced control systems, provide the highest dynamics in its market segment, with single axis speed of 120 m/min and trajectory speed of 208 m/min. This is combined with maximum



accuracy, Pa and Ps= 0.03 mm, in a very large working envelope and with the best Overall Equipment Efficiency (OEE).

Laser Next 2141 is available in different configurations to better suit any production.

The standard version with fixed tables exploits the entire working envelope to process large parts and features great accessibility from all sides. With the Split Cabin configuration, the working volume is separated by a removable wall and a sliding roof into two halves, where the parts are alternatively processed or loaded/unloaded in total safety. In this way, machine productivity is increased and, when needed for larger parts, the wall can be removed to restore the entire working envelope.

For the fastest part handling operations without machine stops, cover time operation, the Turn-Table configuration is available. This is the ideal solution for large-series production of medium to large-size parts. The Shuttle Table version allows the fast and automatic movement of parts and fixtures outside the working area from the sides or the front of the machine. This is the solution for allowing large and heavy parts to be handled outside the working area and in case of complex setup. Combined with the split cabin, the Shuttle Table configuration also allows cover time operations.

With its versatility and performance, Laser Next 2141 opens up new horizons for 3D parts processing. The Laser Next family, launched on the market in 2014, set new standards in large-series production of automotive components in terms of throughput and reliability. These unique features are also made available for small to medium-batch sizes for a wide range of applications in addition to hot stamped parts. What really sets this product apart is the combination of the highest productivity and efficiency with all-round flexibility.

Laser Next 2141 is equipped with either a three or 4 kW Prima Power fiber laser, featuring high reliability, quality pumping



diodes, better protection against back-reflections, a patented highly-reactive electronic shutter, and a high integration into the system.

As with all Prima Power products, Laser Next 2141 is "Industry 4.0 inside" and features innovative solutions for digital manufacturing and cloud-based communication. This productive and flexible machine interacts with the factory and with the whole enterprise. Customers have the power to remotely monitor, control, and predict the production process for the highest efficiency.

Prima Power's 40-year experience in 3D laser processing is really unique. Thanks to a continuous dialogue with customers and partners operating in the most diversified industrial sectors, Prima Power has learned their needs and expectations and has translated them into this new product. Laser Next 2141 will definitely help them improve their production and gain a strong competitive advantage.

Prima has long-established collaborations with big car manufacturers at a global level. Ezio Basso said: "Our customer base is also made up of job shops, press shops and automotive Tier 1 and Tier 2 suppliers.

"We firmly believe that when you deliver a machine to the customer this is not only the supply that you offer but also the service that you provide them with. This is the reason why our customer service teams are spread all over the world. We have 490 people that are working next to the customers in order to support them, improve their application and to train them to get the most out of our products."

"The good results in the year 2017 were

supported by the excellent performance of our 3D laser business, which enjoyed strong investments from automotive and aerospace markets. Also significant was the growth of systems sales, driven by the Industry 4.0 technological shift to connected machines and automated production lines.

"Our products are under the umbrella of green means. This means they have less impact on the environment, they are more efficient and are also less expensive to operate. For each product line we launch one new product every year."

Prima Industrie has a long history of innovation. The group has pioneered many laser and sheet metal technologies over the last four decades. This forward-thinking approach is still at the base of its success and allows the company to remain at the forefront of technology. Prima Industrie develops new laser sources that are increasingly efficient and sustainable and has developed advanced and effective "Industry 4.0 inside" solutions for digital, data-driven manufacturing and service.

The company invests between five and six percent of its revenues in R & D, collaborates with major universities and research centres and participates in important European research projects, often as coordinators."

Ezio Basso concluded: "We are an innovation company and we want to keep innovating.

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Water is for cutting

What happens when a steel and scrap dealer wants to offer his customers an additional benefit, researches it on the Internet and finally makes a decision? It purchases a waterjet cutting system. Granted, it does not really sound like a completely commonplace solution, but one with lots of potential as the example of Eisen Neumüller in the Lower Austrian city Ennsdorf shows. Founded in 1966 by Herma and Johann Neumüller, it has since developed into one of the most modern steel traders and disposal enterprises in Austria. About 110 employees currently handle up to 400,000 tonnes per year in a total space of around 100,000 sqm², approx. 30,000 sqm² of which are hall space, and generate about €142 million in revenue. The logistical location at the Ennsdorf harbour, including a company wharf and track system, is very convenient.

New business areas sought

Simon Schuster, head of marketing and IT at Eisen Neumüller, recounts: "We have been offering all kinds of products for steel construction for a long time already. That is nothing new for us, but customers very often also have steel cutting requests with such specific requirements that we eventually had to outsource these orders. This was the real reason to think about expanding our internal service range.

"We wanted to offer our customers attractive, added value, but at the same time had to ensure that this would not make us direct competitors of these customers. To put it simply, we thus went on a search for the jack of all trades device.

"The specifications or requirements were



clear so far; the cutting technology required for this not so much. I have to admit that we approached the search pretty naively at first. With hindsight, this was not a mistake though, quite the opposite. It allowed us to obtain information about the various technologies, or rather their advantages and disadvantages without bias."

Water is for cutting

Jürgen Moser, managing director of STM Stein-Moser GmbH, says: "Custom cutters especially are initially very vague about their requirements. For instance, Eisen Neumüller knew only that they wanted to also cut rectangular tubes. Since that was not a great problem for us and we could present them even more advantages, they were highly enthusiastic about the flexibility of our waterjet cutting systems."

STM is a leading provider of waterjet cutting systems with its head office in Eben in Pongau and Schweinfurt, Germany. Since 1992, it has developed waterjet cutting systems for the steel, aluminium, metal, plastic, composite material, stone and glass industry, among others.

Jürgen Moser continues: "Test cuts have shown that you can cut almost all materials at great energy and cost savings with this system and that it also meets our primary cutting requirement. It should be added that it is, unlike laser or plasma, a cold cut and there is no thermal deformation or material hardening."

The choice was ultimately made for a large-format STM PremiumCut waterjet high-performance system with the complete equipment. It is ideally suited for cutting tasks with high accuracy requirements and high speeds, as well as for pipe machining. The systems are additionally very resource-saving and distinguished by extremely low current, water and air consumption, as well as the greatest upgrading and adjustment options.

Modular system and short paths

Simon Schuster says: "Also, not quite insignificant for us was the fact that the company is in Austria and the paths are short. The operation is also incredibly easy, thanks to the sophisticated software. With many other manufacturers, we really had the impression that you need to be a CNC programmer to be able to operate the machines, but the easier, the better."



STM SmartCut is the name of the central part of each STM waterjet cutting system. The software is a full program for creating or importing drawings for setting process specific parameters for waterjets, all the way to the calculation of costs. It also handles the complete control, from pump pressure to abrasive dosing all the way to the cutting speed. The latter is supported by a continuously updated material database.

Jurgen Moser says: "One part of this software, namely the user interface, is a proprietary development of our company." It was a response to market requirements, because many users appreciate highly flexible software. It allows them to intuitively set all parameters in the graphical user interface for instance.

Separate pipe cutting module

Flexibility is also a key attribute of the system layout. An intelligent modular system combines the advantages of standard components with a preferably high level of individualisation. Since the individual components are designed for modular use, all waterjet cutting systems can be adjusted perfectly to the respective requirements. This has the additional advantage that these

systems can later be upgraded or converted without problems and without high additional costs.

Jurgen Moser says: "By adjusting the machines to very specific user requirements, we give our customers only what they really need and also want to have. This saves costs. Also, since these are standard components, they are naturally also easier to maintain and service later on."

Incidentally, the pipe cutting request of Eisen Neumüller was also very specific. STM developed a special pipe cutting module for this which not only matches the size of the system but can also be installed in a flexible manner, if necessary.

Fully booked

Simon Schuster concludes: "By now, the waterjet cutting system has gained a type of momentum and the main intended purpose for which we actually purchased it has taken



somewhat of a back seat. We are still cutting mostly steel. However, we get all kinds of order now. Even if they do not advertise it in a big way, they still have to hold back their customers a little. We would not be able to complete all orders, as we are already fully booked two weeks in advance now.

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How the UK manufacturing industry can prepare for Industry 4.0

With the manufacturing industry in the midst of a fourth industrial revolution, it's time for manufacturers to recognise the huge potential digitalisation can offer to their business. But just what do companies within the sector need to do to effectively prepare for the momentous changes within the industry and how can manufacturers ensure they're playing a part in positioning the UK as a leader of the revolution?

Charles Corner, managing director at full service sheet metalwork manufacturer, Malton Laser, explains how optimising existing business practises and embedding smarter production processes will assist in affirming the UK's position at the forefront of the imminent global manufacturing revolution:

Industry 4.0 represents an era in which computers and automation will combine like never before. Computer systems will be equipped with learning algorithms to control elements of machinery, with little input needed from human operators.

Physical systems will soon become part of 'the internet of things', a network of devices connected via the internet to share data. This can already be seen within Smart Homes with air conditioning, heating, lighting and more being adjusted remotely via devices away from the building.

So, what does this mean for manufacturers? It means change. It's important your business is adaptable to technological advancements as keeping up-to-date with the latest technology will impress clients and ensure your processes are current and user-friendly.

Automation is hugely prevalent within Industry 4.0, allowing increased production with machinery running for long hours without human error, finger marks, injury, sick days or holiday. This can be an incredible asset for a business, proving incredibly efficient and producing large quantities of products in a short time. Knowing how fast a machine can produce finished goods is a key benefit for both manufacturers and customers. It is much easier to work to specific time frames when you know how quickly you can turn around an order.

So, how will this innovative machinery



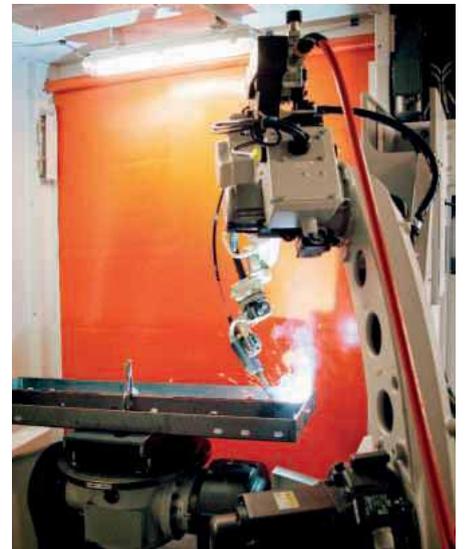
will affect your workforce? Control systems are relying less and less on human input and have the ability to take on roles once performed by trained hands, for example, car manufacturers using 3D printing and robotics for the majority of work.

It's inevitable that some elements of automation will replace certain parts of a workforce, but keeping a dedicated team of staff willing to develop skills in other areas such as operating, engineering, CNC systems and computer programming, can help a company excel. This expertise will be sought after to control machines and programme computers moving forward.

Having recently invested in a robotic welder, I've seen first-hand how these machines can assist a workforce. Instead of seeing automation as a replacement, it needs to be viewed as a development, freeing up employees for projects which require diligent members of staff and ultimately, increasing the workload you can put through the business.

Manufacturers able to achieve this balance of staff versus automation will have the opportunity to flourish their business, whilst future-proofing throughout Industry 4.0.

The cutting-edge machinery being created will break boundaries for manufacturers, making it easier than ever to enforce a low-manpower, high-productivity structure. This is a strategy I have always



strived to enforce within my company and believe it's helped considerably in Malton Laser's success over the years. Fully embracing Industry 4.0 will be a large investment, but you'll be on the path to becoming a preferred supplier to current and new customers. Ultimately, manufacturers which undertake an intelligent approach to Industry 4.0, are the ones that will be able to compete profitably in the most demanding global markets.

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Let Kimla whet your appetite with waterjet technology

The UK manufacturing industry growth is at a 30-year high, resulting in more manufacturers investing in the latest machinery.

Bradley McBain, managing director of MBA Engineering, suppliers of leading cutting equipment, discusses waterjet technology, one of the most innovative options when it comes to cutting machines.

When it comes to revolutionary machinery, abrasive waterjet technology is currently the most advanced because of its ability to cut practically any material, from very soft, such as gel and sponge, to some of the hardest materials in the industry, for example, glass, granite, marble and ceramic. The thickness of these can reach up to 200 mm, which is almost impossible for the majority of alternative form-cutting technologies.

With the ability to cut such a wide variety of materials, this can add numerous strings to a manufacturer's bow. Offering services to cut building components such as stairs, window sills, countertops and monuments, alongside plastic, cork and sponge can be

attractive to a client and gives reassurance they can rely on you to cut whatever they may put your way.

In addition to abrasive material, the machines only use water to perform, offering a sustainable element as no hazardous waste is created while the closed loop system ensures all the water can be reused. As the water provides a cooling element to the cutting, these machines have no heat affected zone, so materials such as plastic can be cut without warping, melting or distorting which would not be the case with other methods of cutting.

Kimla's cutting-edge machinery features a low-pressure piercing option. This is essential when cutting glass, stone and ceramic, which are all prone to splintering during piercing. The low-pressure option reduces the jet impact force, providing a more economical process and reducing the chances of potential damage. There's definitely a misconception that these machines are slow when it comes to cutting such materials.

However, the accelerations and operating



speeds of waterjet cutting are constantly developing. The cutting time of these machines has reduced radically and it is now more common to find that the limit in cutting speeds is down to restrictions in the capabilities of the control systems. Therefore, all Kimla machines are equipped with technology which allows unrivalled cutting speeds.

Overall, Kimla waterjet machines offer an extremely precise, innovative solution to metal cutting needs.

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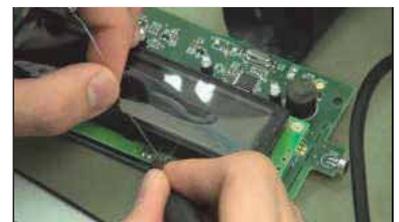


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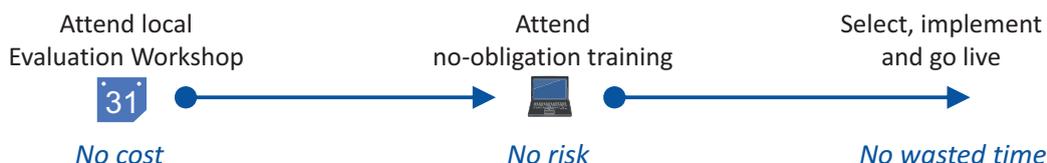


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