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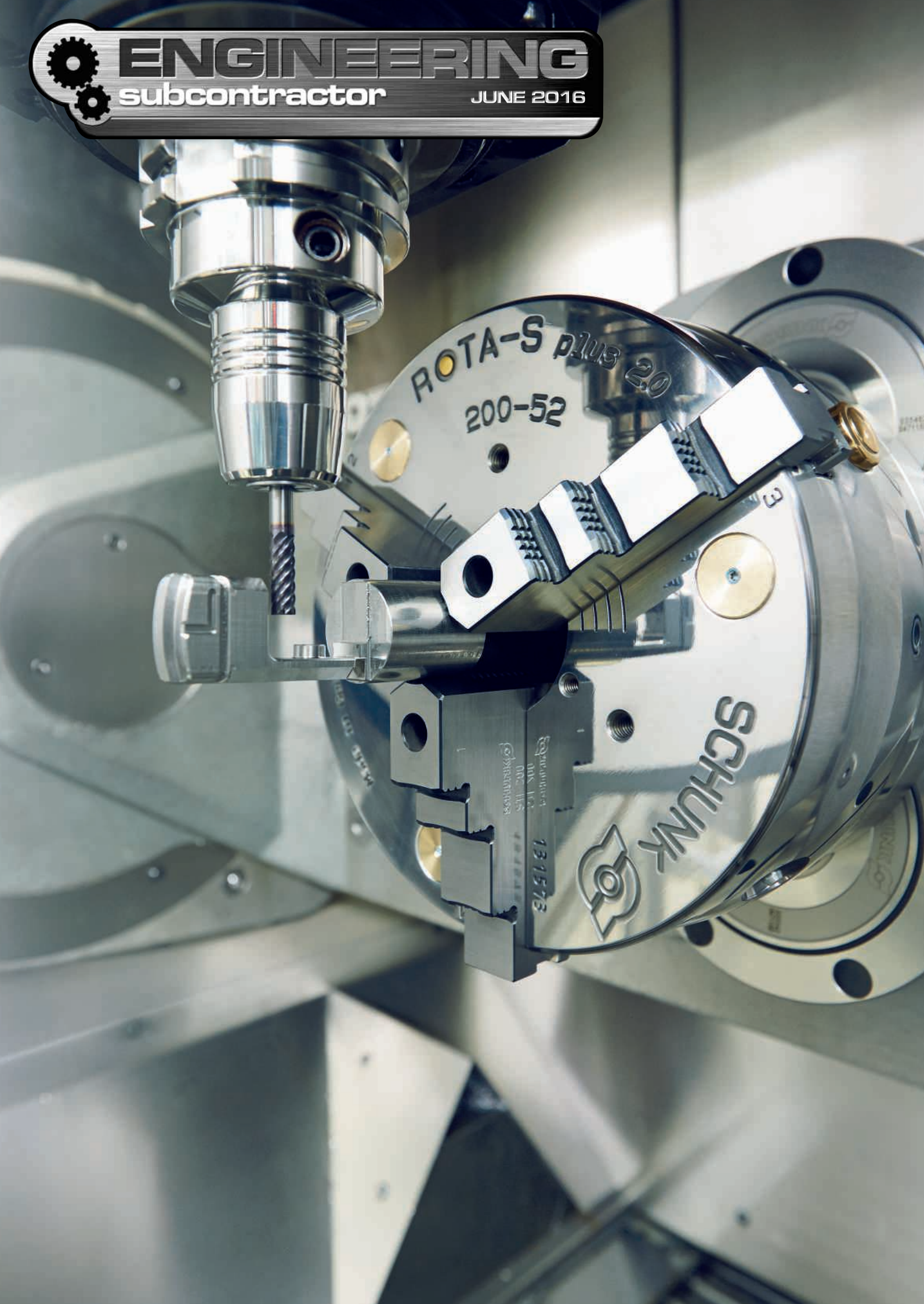

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VOLUME 13 | No.6 ISSN 1742 -5778

www.rbpublishing.co.uk

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Published by Roger Barber Publishing
Enterprise House, Foundry Lane, Horsham, West Sussex, RH13 5PX
Tel: 01403 266022 Fax: 0208 916 0033

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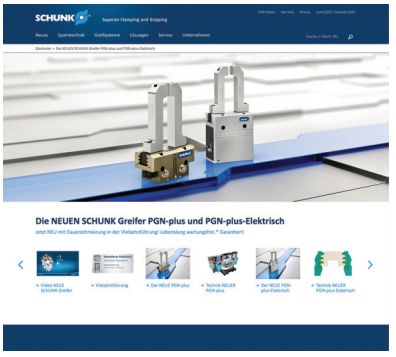
Design & Production: Roger Barber Publishing
Print: Holbrooks Printers Ltd, Portsmouth, Hampshire

SCHUNK launches new website

Modern and efficient with plenty of multimedia content is how the competence leader for clamping technology and gripping systems describes its new-look website. At **www.gb.schunk.com** the innovative family-owned company now offers comprehensive and attractively presented information about the world's largest portfolio of more than 11,000 standard components for clamping technology and gripping systems.

The website is an instant eye-catcher. On closer investigation, it also becomes apparent that the primary goal of the SCHUNK relaunch is to create a more user-friendly and intuitive website. Whether via PC, tablet or smart-phone, the interface allows users to quickly and easily find the suitable components for their projects. Navigation is facilitated by convenient search options based on key words, products, industries and main topics. All relevant technical information is available down to the variant level.

In addition, the website is packed with supplementary information on the specific components. The content includes everything from technical data and CAD files in 2D and 3D formats to application photos, videos, catalogues, operating manuals and accessories. Numerous best practice examples provide a comprehensive overview of the diverse applications for SCHUNK modules and solutions, from metalworking through automotive, food processing and electrical engineering to optics, medical technology and wood machining. The site also provides extensive information about the company and its partnership with SCHUNK brand ambassador Jens Lehmann, as well as career opportunities at SCHUNK. All content is regularly updated to ensure that users always receive relevant information.



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Changing of the guard at DMG MORI

At MACH 2016 Dr. Masahiko Mori, president of DMG MORI, greeted members of the UK press to explain the recent merger of the German and Japanese divisions of the company.

Excited to be at the show Dr. Mori said: ''I came here this morning from Seoul. I started this tour three days ago. I was in Shanghai for an exhibition and also Seoul for an exhibition. Almost every week we have 2-3 exhibitions in the world.'

''Last week we made an announcement that we have a 76 percent share (Japan) of DMG MORI. Before this it was 60 percent. This is very important.''

Dr. Rüdiger Kapitza, chairman of the executive board of DMG MORI AKTIENGESELLSCHAFT, has resigned from his position after 20 years as CEO. Replacing Dr. Kaptiza in the role is the former head of production development Christian Thones.

Dr. Kapitza joined the executive board of the company in 1992 and has been the chairman of the executive board of the company since 1996. In this position he pressed ahead with the integration of DECKEL MAHO before founding the DMG sales and service organisation. During his term, Dr. Kapitza strengthened the former GILDEMEISTER Aktiengesellschaft and positioned it globally. The cooperation with the Japanese partner, DMG MORI CO.LTD. was also established through Dr. Kapitza's efforts and guided to a joint success worldwide. He leaves the executive board by mutual agreement with the supervisory board.

Dr. Kapitza says: "With the global positioning and a dedicated young management team at DMG MORI AKTIENGESELLSCHAFT, I consider the company to be in good order. DMG MORI can look to the future with optimism and pride."

Concerning the future of DMG MORI Dr. Mori said: ''Effectively this means the two companies are becoming closer to being one single company.'' From an employee and technology point of view Dr. Mori explained that the partnership between Germany and Japan would be equal: ''The split is still 50/50 technology and employee wise in respect of each other.''

It remains clear that despite the changes

DMG MORI remains committed to its customers as Dr. Mori concludes: We want to become a more customer focused organisation. Our customers in the UK tend to be working in high-end manufacturing and need higher levels of technology. I think there will be a move to more customised machines.''

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New metrology facility focuses on subcontractors

A brand new MEPC metrology facility is set to launch this summer at Silverstone Park managed by Hexagon Manufacturing Intelligence.

The purpose-built, 3,000 sq ft, state-of-the-art facility has been set up within the Innovation Centre of Silverstone Park and officially open its doors in July.

John Drover, sales manager for Hexagon Manufacturing Intelligence, says: "We are absolutely thrilled to be launching this specialist facility within the iconic Silverstone Park and are hugely excited about the real, tangible difference this will make to not only SME and start-up businesses but to the engineering subcontractor industry as a whole.

"Our engineers and application metrology specialists are able to deliver inspection, validation and quality control of components through the use of Hexagon systems which are capable of measuring to the sub-micron level, enabling our customers to achieve high performance and accuracy each and every time. But being able to verify and validate predefined standards for accuracy, reliability and precision is something that many smaller businesses are unable to achieve due to financial restraints and restrictions.

"Through this new facility, we are opening up exclusive access to both the equipment and the support to enable tier two, three and four suppliers across the UK to achieve first-rate provable standards. By also offering dedicated training programmes, along with networking opportunities, this new facility will not only help facilitate growth and development across the SME sector, but will help raise standards industry-wide."

Roz Bird, commercial director of Silverstone Park, says: "We are delighted to be working in partnership with the team at Hexagon Manufacturing Intelligence to launch this fantastic new facility, which will provide SME businesses with unique access to a wealth of support and specialist expertise.

HEXAGON
MANUFACTURING INTELLIGENCE

"The launch of the metrology facility forms a vital element of our overall vision for Silverstone Park, which is to create a truly global destination for engineering, innovation and business development, and we are hugely excited about what the future holds both here and for the industry as a whole."

For further information regarding Hexagon Manufacturing Intelligence's new Metrology Facility at Silverstone Park, contact:

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"A cracking show"

The Manufacturing Technologies Association (MTA) has announced that visitor numbers for MACH 2016 were well up on the previous show

25,627 people visited MACH 2016 at the NEC, representing an increase of almost 10 percent on MACH 2014. James Selka CEO of the MTA which organises the exhibition on behalf of the industry says: "We are in buoyant mood after the show. There was a real buzz around the halls during MACH and all the effort our exhibitors put in to making the show the spectacular showcase it was have been worthwhile. It was fantastic to see so many people passing through the NEC, many visiting more than once, creating a real celebration of the UK's advanced manufacturing technologies sectors."

James Fudge, head of events, adds: "We're so pleased that so many exhibitors have already reserved their stands for the 2018 edition of the exhibition and we'll continue to innovate to ensure that MACH retains its position as the UK's premier manufacturing showcase."

In a special presentation on Tuesday evening at the show, the plans for MACH 2018 were unveiled, including the move to a new set of Halls at the NEC. This means all the stands will be on one level and in location, enabling easier access through five entrances.

Feedback for MACH 2016 from exhibitors across every spectrum of the industry has been consistently upbeat.

Martin Burton, UK sales manager at XYZ Machine Tools, described it as "a cracking show," with orders booked for 23 machines at the event and more to follow as a result of a very high level of solid enquiries during the week. With 18 machines on display highlighting the diversity of the XYZ Machine Tools range, the stand was busy from doors opening on the Monday to the exhibition closing on the Friday. The level of enquiries was extremely good with a significant proportion of those highlighted as high potential.

"The response to our attendance at MACH was superb and the order and enquiry levels can be classed as a roaring success. All in all it was a cracking show for XYZ. Particularly pleasing was that five of the confirmed orders were from customers that we have not dealt with before, which is always encouraging.

"Enquiries came from all sectors of industry and company sizes, from one-man businesses to large multi-nationals. A trend that did surprise us was the number of recent start-up businesses as well as companies that had returned to manufacturing, with some quoting bad experiences with overseas component suppliers," he says.

Bristol-based MACH Machine Tools Ltd has also reported that its attendance at MACH 2016 was a phenomenal success.

Exhibiting for the second time at the show, the company, established by directors Matt Andrew and Marc Bowers in 2013, used the event to showcase new machines, like the recently-introduced MACH L-1340 manual lathe and MACH SG 818 surface grinder, as well as ever-popular, best-selling models, like the MACH VS-1 Turret-type milling machine, to visitors.

Matt Andrew calls it: "A great show that generated a high number of quality leads and enquiries as well as numerous orders placed over the five days.

"Naturally enough the MACH VS-1 was again a firm favourite with seven orders taken during the week."

The new models making their debuts at MACH also received a positive and warm reception.

"The fact that we sold three MACH L-1340 lathes and two MACH SG 818 surface grinders over the five days, direct

from the stand, proves beyond doubt the strength, success and prowess of both the MACH Machine Tool brand and the MACH machines we provide.

Bob Tunks, owner of Hertfordshire-based BK Tooling, sealed the deal at MACH for the company's latest acquisition, a state-of-the-art Sodick AD35L linear motor die sink machine, to ensure BK's EDM capabilities stay ahead of the game when tackling the intricacies of the latest medical device designs.

As he explains: "We pride ourselves in being a "boutique" toolmaker and moulding specialist, focused on meeting the increasingly challenging demands of the low to medium volume injection moulding sector.

"We undertook a joint project with a company which was using Sodick technology and could immediately see the benefits in terms of speed and quality of finish which they achieved."

Hone-All director, Andrea Rodney says: "Overall, MACH 2016 yielded more enquiries than MACH 2014, but we had to work a lot harder for these sales leads. This was down to the poor location of the 'UK Manufacturing Zone' that was tucked away at the back of the hall."

Despite this understandable "gripe," Hone-All was predominantly pleased with the overall event. Andrea Rodney continues: "The over-riding factor was that MACH was better attended and more positive than people expected. Furthermore, with the large machine tool companies having a great show and selling large quantities of machine tools, it brings the confidence factor back that has been ebbing away in recent months in the wake of an underperforming oil & gas sector and the clouds that have loomed over the UK steel industry. It's extremely positive for so many subcontractors and OEMs to be buying plant at the show, as this gives the whole industry the 'shot-in-the-arm' that it needed."

As well as educating the market as to why it should be investing in Hone-All's unique subcontract service, the company also put great emphasis on the additional capacity of its two new TIBO Tiefbohrtechnik deep hole boring machines that were acquired in 2015. This 'niche' technology combined with their large capacity roller manufacture and gun-drilling capability was undoubtedly sought after by many visitors to MACH 2016. The two machines have increased capacity and extended Hone-All's maximum boring capacity to 250 mm with a length of 3.1 m, making the new machines the perfect complement to the company's 4 m turning capacity.

Gewefa UK managing director, Keith Warner reports: "MACH 2016 was a tremendous success.

"Initially the show started slowly, but by the Tuesday the enquiries were flooding in, exceeding our expectations significantly. The quality of enquiries and their potential value bolstered the feeling that visitors, both engineers and procurement personnel, had come with the intent of doing business."

All sectors, including aerospace, automotive, the wider manufacturing scene and general subcontract engineering were represented in those visiting the Gewefa UK stand and this included both existing and new customers, with significant orders being placed by both categories.

Keith Warner continues "Great interest was shown in the new Gewefa Venturi Securlok chuck, with orders being placed by aerospace cutting tool suppliers and our aerospace end-users.

"EWS driven and static tooling for lathes made up a significant proportion of the show enquiries, as did the Pibomulti range of speed increasers and angle heads. Other products under the Gewefa banner also stimulated great interest, offering great potential and projects for us to follow up and turn into orders.

"It was a simple and straight forward decision for Gewefa UK Ltd to book a stand for 2018. The general opinion by ourselves and on speaking to fellow exhibitors was that this was the best promoted MACH exhibition to date," he concludes.

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XYZ Machine Tools
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Mills' magnetic attraction pulls in the crowds

When you have the biggest presence at MACH, exhibit 19 machines from your stand including the largest machine tool at the show and use the event to launch seven new Doosan machines into the market, you expect to be busy.

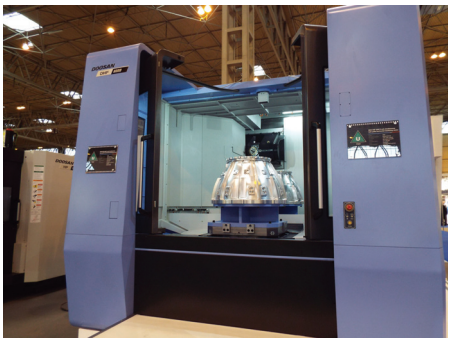
And so it proved for Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, that announced that its attendance at MACH 2016 was incredibly successful and that 18 new Doosan machines were sold direct from its stand in Hall 5 over the five days.

Mills CNC approached and exhibited at MACH 2016 in an upbeat mood. The company had just experienced strong and resurgent sales in the first quarter, especially in February and March, and was using the MACH exhibition as a high-profile, national platform to launch seven new Doosan machines into the market.

While not necessarily setting specific sales targets to be achieved during the show, the company was quietly confident that a good number of machines would be sold there and then from its Stand, and that significant leads and enquiries would also be generated.

As it transpired, a total of 18 new Doosan machines were sold making this year's MACH the most successful in Mills' history.

Kevin Gilbert, Mills CNC's managing director, enthuses: "MACH was brisk, busy and brilliant for us.



The new large DHF 8000, a 5-axis simultaneous, twin-pallet horizontal machining centre, was the largest machine tool to be exhibited at MACH

Mills' new 'plug and play' SERVAL Compact Automation Cell

"We were, quite literally, rushed off our feet every day and welcomed hundreds of visitors onto our stand.

"The fact that we sold 18 machines was a real bonus and demonstrates the continuing and enduring popularity of Doosan machine tools amongst precision component manufacturers."

The machines sold during MACH included a number of Doosan models making their MACH debuts. These included the new 8" chuck/65mm bar capacity Lynx 2100 compact, high-performance lathe and the new DNM 5700 3-axis vertical machining centre equipped with a large 570mm Y-axis stroke and the latest Fanuc 0iF CNC control.

Proven and popular vertical machining centres like the Doosan large-capacity DNM II 650 also sold well and there was a noticeable increase in enquiries, resulting in actual sales during the MACH week, relating to Doosan machining centres with Siemens controls.

Machines that particularly drew in the crowds on the Mills stand included the new large DHF 8000 5-axis simultaneous, twin-pallet horizontal machining centre, which incidentally was the largest machine tool to be exhibited at MACH, the recently-launched Puma 4100 and Puma 5100 lathes and Mills' new 'plug and play' SERVAL Compact Automation Cell.

Kevin Gilbert continues: "It might appear somewhat clichéd to say that our stand had something for everyone, but with lathes, turning centres, 5-axis machines, 3-axis machines, tapping centres, horizontal machining centres, multi-axis mill-turn machines and a high-productivity automation cell all being showcased, it most definitely was the case.

"The Doosan range is extensive and comprehensive, and its depth and breadth is second to none.

"Visitors, I'm sure will have been impressed by what they saw of us at MACH. But I can guarantee that a visit to the Mills CNC Technology Campus in Leamington to see the 70+ Doosan machines we hold in stock and the other improvements made to our facility in recent months is even more impressive."

"MACH was brisk, busy and brilliant for us," says Kevin Gilbert, Mills CNC's managing director

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It's all about you

Guhring has its 'best MACH ever'

Describing MACH 2016 as 'the best MACH ever' is a pretty bold statement for a company that has appeared as a regular fixture at the UK's showpiece event for many years. But that is exactly what Birmingham cutting tool manufacturer Guhring has confirmed about MACH 2016.

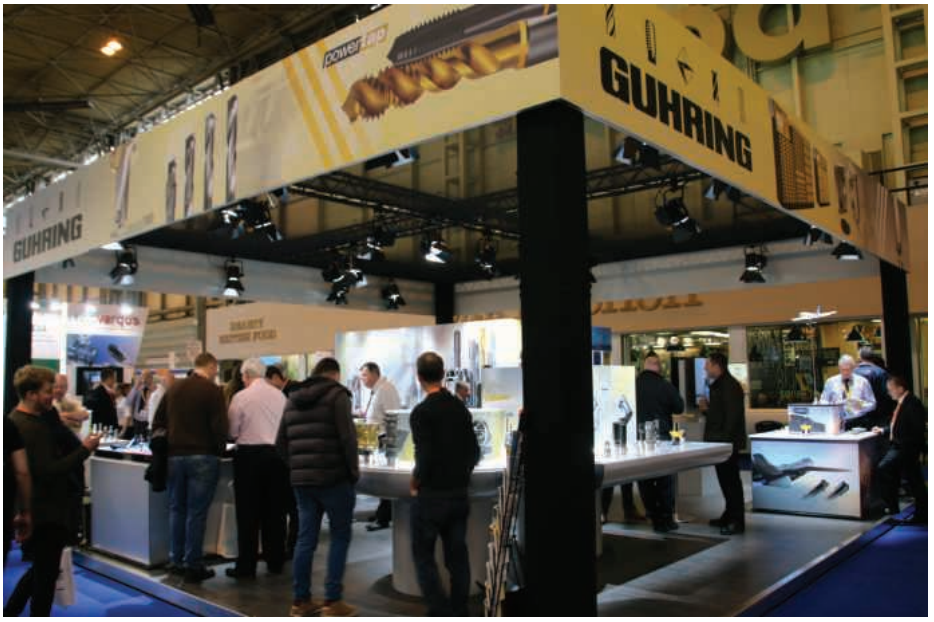
This glowing endorsement for MACH 2016 is the result of a number of factors. From a quantifiable perspective, lead generation at MACH 2016 was at least 20 percent beyond any previous show. This figure could have been even higher, as Guhring UK's national sales manager, Dave Hudson says: "With the exception of the inherently quieter first and last day of the show, MACH was unbelievable for Guhring. We had a constant flow of people on our stand and there were even people queing to get on our stand. This is unprecedented for any MACH exhibition. Our team couldn't take enquiries fast enough, such was the traffic flow on our stand."

Why such a success?

At MACH 2016, Guhring changed the line-up of products on its stand and this really pulled the crowds. Dave Hudson continues: "Guhring is inherently known for its drilling, threading and specific milling ranges, so we changed our focus for MACH to target a new audience. We designed our stand to emphasise some exceptional new product lines the market wouldn't generally associate with the Guhring brand. Our bespoke line of PCD tools targeted the aerospace and automotive engineers to great effect. Manufacturers of cylinder heads, engine blocks and aerospace assemblies were captivated by our extensive PCD tools. Likewise, stand visitors enthused at our new Tool Management System. Unlike other tooling suppliers, Guhring produces the complete solution from the vending machine and drawer configuration through to the GTMS software and of course the tool supply. All this combines to provide an extremely flexible solution that was continually being demonstrated at MACH."

The Guhring team was overwhelmed with enquiries for the PCD range, the vending machines and also the toolholding lines. Dave Hudson states: "As the leading manufacturer of hole making products, we also put emphasis on the toolholding systems to support our tools. Again, this strategy paid dividends with unprecedented enquiry levels for our synchro tapping heads, shrink fit toolholders, hydraulic chucks and quick-change tooling systems. The realisation that we can provide a complete solution was a revelation for many visitors and a major factor behind our 'best ever MACH'."

With regard to its milling line, Guhring has won plaudits for its impressive RF100 Diver end mills, a range that was demonstrated at MACH alongside the brand new RF100 Speed. The RF100 Diver is a multi-purpose tool for drilling, ramping, slotting, roughing and finishing operations. With an unequal helix and a 45° plunge angle, the RF 100 Diver is taking the solid carbide end mill market by storm. To complement the Diver, Guhring also showed off its new RF100 Speed. Developed for high metal removal rates when machining steel, the new RF100 Speed differentiates from the 'all-rounder' RF100 Diver with its uncomparable roughing performance.



Dave Hudson concludes: "We had video footage of the RF100 Diver and Speed on screens on our stand and the crowds were mesmerised by the capability of the tools. The quality of the video footage of the RF100 Series being put through its paces was better than any on-machine demo we could have ever done. With great videos, unique bespoke displays; and of course groundbreaking product lines, Guhring had a winning combination of displays that contributed to such a great show."

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Enthusiastic response to MACH 2016 from ETG

Southam-based Engineering Technology Group reports a very positive response to its attendance at the MACH 2016 exhibition where it had two stands featuring machine tool and automation technology and a stand dedicated to workholding and fixturing.

ETG had eleven fully operational machines on its stand in Hall 5 including the latest releases from Chiron, Stama, Nakamura-Tome, Hardinge and Quaser. It also debuted its newest principle Halter Automation, while on the workholding stand the sales and engineering teams from ETG Workholding and Hyfore reported an excellent show.

A welcome early visitor to the Engineering Technology Group (ETG) stand at the MACH exhibition was Sir Chris Hoy MBE the former track cyclist and six times Olympic gold medallist.

After he had officially opened the Show he took time out to visit a few of the stands including ETG, where an example of a finish machined innovative cycle frame caught his eye. The frame was machined on an ETG supplied Quaser 5-axis machining centre by North Bucks Machining Ltd (NBM). A frame was being machined on a Quaser VMC as part of a demonstration on the ETG stand.

CNC machined bike frames are still fairly rare and this particular downhill bike example is the brain child of NBM director Stewart Palmer, a fifth generation engineer with past experience of machining F1 race car components and high performance engine parts. Stewart's parents founded North Bucks Machining in 2011 and he joined the fledgling business soon after, with the aim of taking the company out of conventional 3-axis machining into the era of 5-axis, in which he was particularly adept.

Machining skills aside Stewart also enjoys cycling in his spare time, and with the dream of creating his own project suddenly possible he spent 18 months designing and building his first bike frame.

NBM invested in a Quaser MF630U after Stewart's previous experience with Bridgeport CNC's brought them to Southam based ETG who identified the Quaser VMC as the most suitable machine for their overall needs.

"ETG took onboard our machining environment while being aware of our long term aims so we opted for a machine that gives us ample scope," explains Stewart.

Sir Chris Hoy MBE discusses the innovative CNC machined bike frame with ETG marketing team members Dick James (right) and Chris Bryniarski (centre)

"The five axes aside, and the contouring capability in particular, it has a really good table size of Ø500 and we opted for a 48 BT40 tool capacity ATC mindful of the complexity of many of our projects, particularly moulds and tools, which require multiple tooling set ups.

"We also specified Blum touch probing and a Heidenhain control as this was the one I was most familiar with."

The MF630 is a fully simultaneous 5-axis VMC with rapid movement across its X, Y, Z axes of 32/32/16 m/min respectively. It is equipped as standard with a coolant chiller and through coolant capability and features positional accuracy of 0.008/0.004 and a 12,000 rpm NC40 coupling spindle.

The company now uses the Quasar in conjunction with Open Mind's HyperMILL cam software, an upgrade that made the bike project possible. Working from Stewart's sketches of the frame a 3-D model was created, then virtually simulated loads and stresses on the design undertaken before the machine work began.

After completing the stress tests the aim of the design was to improve the strength and structural integrity of a mountain bike. To eliminate weak points and weight, NBM used solid aluminium billets and i-beam technology to scallop out the sides of the frame to reduce mass. They calculated they could machine rib thicknesses down to 5mm on the Quaser whilst retaining structural integrity but there was still a high level of machining and skill required.

The design consists of three core features, the main frame, the seat post and the swing arm that connects the main frame to the rear wheel and suspension with the all aluminium frame weighing less than 7 kg from an overall billet weight of 165 kg.

The project is still in its infancy but Stewart has ambitions to further enhance the design of the frame to reduce the overall weight from 6.75 kg to approximately 5 kg, well within the capabilities of the Quaser machine.

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New Star GB lathes unveiled at MACH

One of the highlights of MACH 2016 t was the presence of Star GB, whose open-plan stand showcased the latest and greatest sliding head machines from their impressive range.

Star GB managing director Steve Totty is a stalwart exhibitor at MACH and a firm believer in its power to bring their machinery to new markets:

"We do the MACH exhibition every two years and it's a good opportunity for us to brand ourselves into the marketplace. In Japan Star is building bigger sliding head machines now, up to 42 mm, so we can now attract people from a normal fixed head background who can take the advantages of sliding head technology in speed and accuracy that normally would be made on a fixed head machine."

Among their array of machinery were a couple of new additions, each representing advancements in Star's capabilities.

The largest diameter Star machine to date, the SR-38, can accommodate bar up to 42 mm diameter in non-guide bush mode, putting the machine in direct competition with twin spindle twin turret fixed head machines. The machine is equipped with a fully programmable B-axis, enabling angular features on both front and back working along with 5-axis simultaneous capabilities where required.

Fitted with the Fanuc 31-IB5 control system, the machine can work bar as small as 5mm diameter with high levels of accuracy. It also offers excellent metal removal rates and can machine 40 mm bar down to 20 mm in a single hit, all with a footprint just 12 percent bigger than the current Star SR-32J.

Designed with ease of setup in mind, the SR-38 is ideal for both small and large batch production. The flexibility on offer has already proven popular with existing customers - so much so that there were five orders placed last October before any delivery dates were even available.

However, the main draw at Star's stand was the unveiling of the brand new SV-20R. The smaller sibling of the SV-38R, this machine is designed to handle intricate high-value parts, bringing Star's trademark capability and production speed to the medical and aerospace industries. The SV-20R's platen is equipped with five cross-working driven tools, seven turning tools and a flexible 8-station turret making it ideal for the high-speed machining of complex components. The ability to perform balanced turning and milling operations, together with the Super Positioning function, empowers the user to reduce the majority of idle time within any program, therefore greatly reducing cycle times. The independent 8-station driven rear tool platen further increases the amount of overlapped operations that can be carried out to improve cycle time and productivity.

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SCHUNK creates synergy with MACH exhibitors and visitors alike

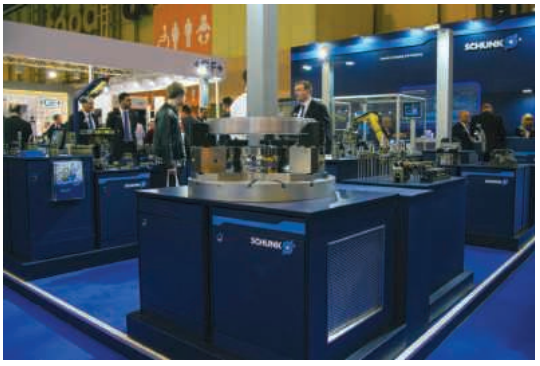
MACH 2016 was all about 'Synergy' for SCHUNK. The workholding, toolholding and automation specialist had its equipment on at least nine other exhibitor stands at the UK's showpiece manufacturing event - a glowing endorsement for the industry leading brand. With SCHUNKs world leading equipment in operation on the stands of DMG MORI, Fanuc, ETG, Citizen and ABB Robotics to name but a few, Schunk was clearly the first choice automation specialist and workholding partner for exhibitors and MACH visitors alike.

With an exhibition stand more than double the size at previous events, MACH proved the ideal platform for announcing new product launches, a new web portal and also new area sales managers. On top of all this, SCHUNK had industry experts on-hand to discuss SCHUNK's latest product innovations that meets the criteria of Industry 4.0. The culmination of all these factors has brought the SCHUNK sales team a record number of sales leads and enquiries from exhibition visitors.

Acknowledged as the world's first fully-automated design and ordering tool for additive manufactured gripper fingers, the SCHUNK eGrip is a browser-based, license-free application to create and order tailor-made gripper fingers in just a few mouse clicks. Users just have to upload STEP or STL data of the part to grip, and add specific information such as weight, gripper base, mounting direction and relative position of the part to the gripper. The software automatically configures the gripper fingers around the part, generating the optimal finger design and immediately giving price and estimated delivery information.

For machine shops and manufacturers attending MACH, SCHUNK drew customers' attention to the latest interfaces available for the SCHUNK TRIBOS system. Developed to improve surface finishes and tool service lives, the innovative TRIBOS system and its new interfaces will deliver a higher level of standardisation for precision tool holding. Some of these micro machining interfaces are now available with the TRIBOS RM and TRIBOS MINI ranges.

Additionally, SCHUNK emphasised the benefits of its TENDO E Compact hydraulic expansion toolholder at MACH 2016. Capable of reducing setup times by up to 60 percent whilst generating 2000 Nm of torque, the TENDO E Compact delivers micron precision for a host of machining applications. With this precision toolholder, even demanding applications with tight tolerances on the form, position and surface finish can be rapidly and reliably machined.



Alongside these products was the market leading MAGNOS range of magnetic chucks. Taking the renowned MAGNOS to a new level, SCHUNK has equipped the MAGNOS with a permanent display that informs the operator on the clamping status of the magnetic chuck. At MACH, customers could see at a glance whether the MAGNOS is activated or not.

The magnetic chuck is fixed to the machine table and then connected via a sealed quick release connector to the control unit. As soon as it is activated, the light of the permanent status display turns to green. The display works independently from the power supply and will also be visible if the power cable has been disconnected after activation of the permanent magnet. With the MAGNOS square pole plates, workpieces can be quickly clamped and are machined in one setup from five sides, ideal for 5-axis machining.

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HPC expands capacity and orders latest Cincom L12

The need to further improve competitiveness with the advantage of shorter machining cycles on smaller and often high accuracy turn-milled parts drew HPC Services once again to the Citizen Machinery stand at MACH 2016 to conclude an order for its 11th Citizen Cincom CNC sliding head machine.

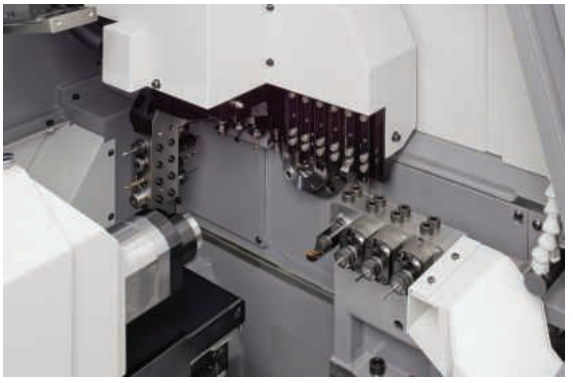
Managing director Paul Cobb says: "We have excellent opportunities to produce smaller parts and the Citizen L12-VII gives us the best combination of speed, accuracy, flexibility and access for fast changeovers. Also, with the ability to quickly switch from guide bush for long slender work to non-guide bush, the new machine will create even greater savings on shorter work."

Reflecting on the show, Citizen Machinery UK's managing director Geoff Bryant says: "We found the exhibition exceeded our expectations with visitor intent and customers planning investment for the short term, which created five orders for Citizen and Miyano machines from the stand. We left the show with an ongoing order potential that is very positive. Customers are now seriously considering purchases from the recent additions to our machine range which would ideally suit their production needs in the medium term. This has certainly given our sales and application teams a host of projects to work on."

Paul Cobb's decision, finalised on the first morning of the show, will add the 5-axis L12-VII to the nine 32 mm capacity and one 20 mm L20 Citizen machine installed at Ilkeston factory. He says: "Around 20 percent of our current work will suit this machine and with its level of versatility we should be able to slash by up to half existing cycle times already proven on our larger capacity machines.

"Most important for us, is that it will increase our competitiveness when quoting for smaller diameter work."

He plans to take maximum advantage of its minimal idle time for positioning and overlapping cycles and, with the 15,000 revs/min high speed spindle and 10,000 revs/min available on both the sub-spindle and driven tools, he reckons he can maximise the performance from the tooling held in the machine's 27 available positions.



Citizen's Cincom L12-VII ordered by HPC Services at MACH 2016 is the 11th Citizen to be installed at its Ilkeston factory

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Record-breaking number of leads

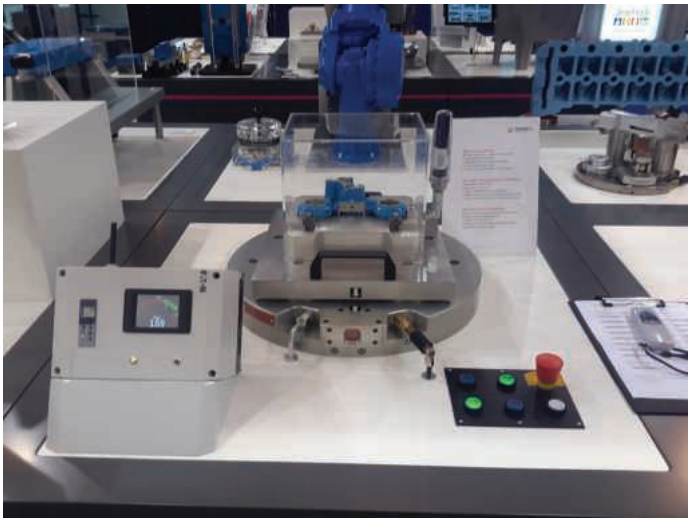
A record-breaking number of high quality leads has resulted in Roemheld experiencing its most successful MACH to date. Due to the extensive range of products available, the decision to have different technology zones on the stand attracted a wide range of visitors from colleges, consulting, aerospace and all areas of UK manufacturing.

Terry O'Neill, managing director of Roemheld UK says: "A high percentage of visitors were potential new customers and nine out of ten visitors came on to our stand with a specific requirement in mind. The fact our stand was split into different sectors enabled us to more easily focus on the right product areas for individual needs. We were also a student friendly stand, as we were keen to support colleges training the next generation of engineers."

Of particular interest to visitors to the stand was Roemheld's new hydraulic workholding range that included the Compact, Mini-Compact and Hinge Clamps. The Remote Pressure Sensing innovation proved to be a keen topic for discussion, while the E-Tec range of electric operated swing clamps generated interest from the nuclear, packaging and special purpose industries.

As a manufacturer, Roemheld was also able to exhibit some bespoke 5-axis solutions on the stand that would not generally be available from third party agents. The ability to use 5-axis vices to grip on just 3 mm continued to be of interest, while the new PC80 Pallet Clamp for small 5-axis machines and automation systems proved popular due to its compact size and high clamping force.

The recently launched Stark Zero Point Mechanical Clamping Pallet for machining centres and direct clamping of products into fixtures and machine tables also proved a talking point on the stand. The Modulog range of material handling products also generated interest from companies ranging from small SMEs to low to medium volume vehicle and component manufacturers.



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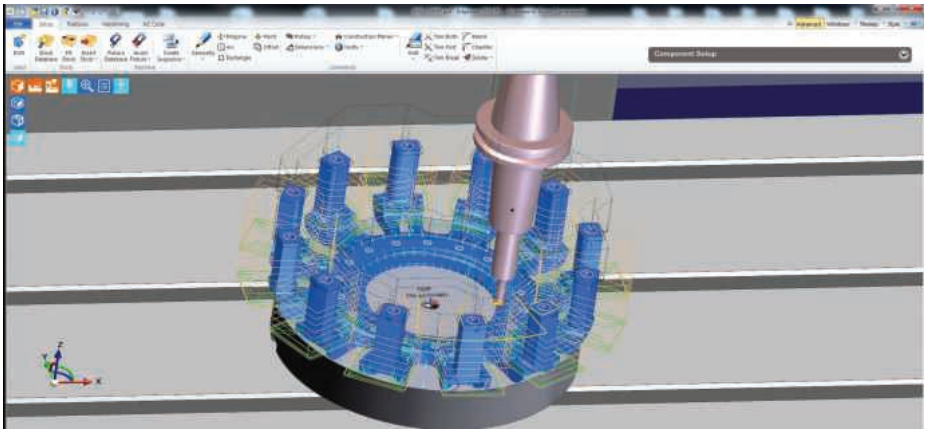
Edgecam manages the right strategy for taking the brakes off

Automating much of its CAM programming for specialised motorsport braking pistons means Alcon Components can create CNC toolpaths for hundreds of variants in two minutes.

"If we didn't use Edgecam's Strategy Manager system, our more complex pistons would take around four hours to program," says production engineer Warren Knight."

Alcon has a long history of supplying innovative race-winning brake and clutch technology to F1, touring and NASCAR cars and World Rally Championship teams, including helping Sébastien Loeb take seven successive driver's titles for Citroën.



Marketing manager Emeline Wilson explains that as well as pistons and the aluminium and cast iron calipers they fit into, Alcon also produces brake discs, master cylinders and brake pedal boxes, brake pad solutions and high performance sintered and carbon clutches.

Also as an OEM tier 1 supplier for road car companies, key customers include Jaguar Land Rover and Bentley. The company also supplies braking systems for military vehicles and armoured cars, both of which have heavy armoured panels and need more substantial brakes.

The pistons inside Alcon Components' brake calipers come in many different sizes, and Warren Knight states that, as the typical batch size is relatively small and most parts are designed for a specific application, it would be impractical to spend several hours on programming:

"We use Strategy Manager to automate a considerable number of Edgecam's machining applications on the pistons. Individual features change considerably – such as being longer, shorter, having a smaller diameter, a larger diameter, smaller bore and longer bore, and also include mill slots, undercuts, holes and chamfers, amongst others.

"We simply load a piston into Edgecam, insert the Strategy Manager files we need, and within two minutes we've got a program coming out for each variant. It not only looks at sizes and features, but also changes speeds and feeds for different materials such as titanium, aluminium and stainless steel."

Warren Knight uses Strategy Manager to build flexible strategies, utilising his own extensive knowledge of Alcon's requirements, in a simple flow chart format which defines the rules governing how the part will be machined, creating consistent, repeatable G-code.

Having used Edgecam at a previous company since the turn of the century, he was largely responsible for Alcon installing it in 2015. He says coupling Edgecam and Strategy Manager with a new Doosan Lynx 220 for manufacturing the pistons has completely revolutionised the way they work:

"The piston programs are all for mill-turn applications, and include sub-spindle pick-up, transfer and machining. Previously we were making pistons in two operations – either on two separate machines, or on one machine but with a second set-up between operations."

With pistons going into all Alcon's calipers, it means they are used in around 80 percent of the company's products. Production engineering manager, Brian Cutler says: "We're always adding to our range, with new brake discs or calipers, and if a caliper contains two, four or six pistons they can each be a different size, so the short setup and programming times that Strategy Manager gives us are proving to be a real asset for the business.

"Seeing the toolpaths on the computer in the office means they will also be perfect at the machine when we start to cut metal."

Edgecam has also reduced the cycle times on the more complex pistons from around half an hour to ten minutes.

"Using Edgecam and Strategy Manager means we can get products to market faster and respond to customer requests quicker. Overall it makes us even more efficient as a company."

While Edgecam drives a further five CNC machines producing Alcon's full product

range, the Doosan Lynx is the only machine currently driven with programs involving Strategy Manager. However, Warren Knight has conducted research on using both Edgecam and Strategy Manager for manufacturing discs, too, and is looking for this operation to go live before the end of 2016:

"As discs are also a major part of our business, this will be another big time-saving for us," he concludes.

Offering a full in-house R & D, design, machining and assembly service from its Staffordshire headquarters, Alcon also has a dedicated team in the United States.

One of Alcon's latest products is a triple plate carbon clutch aimed at rallycross drivers, and designed to be one of the most competitive clutches on the market. This new 2016 clutch is approximately ten per cent lighter than its predecessor, offering 18 percent reduction in inertia, as well as 38 percent reduction in deflection.

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

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

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A racing certainty

The Spanish have a special relationship with motorsports, in particular MotoGP, the pinnacle of professional motorcycle racing. Almost all the top riders come from Spain, with the exception of a few Italians, such as the very notable Valentino Rossi. What they all have in common, though, is a 3-axis race bike simulator developed and built by Haas ST-30Y user, Mecanitzats Muntada, in Barcelona. They use the simulator for indoor training, and to maintain familiarity with some of the world's greatest race circuits.

Owner Joaquim Muntada says: "I worked in a machine shop from 14 years old. I did two years of vocational training and at 16 worked in a plastic injection moulding business. However, essentially, I'm self-taught. Although I enjoyed my work, my true passion was rallying as a co-driver and navigator. I competed and won several big competitions, including the Spanish national championships.

"It was my interest in motorsport that brought Haas to my attention, through the company's involvement in NASCAR. We only have one Haas machine, an ST-30Y turning centre with motorised tools and Y-axis, but it has made a big difference to our activities.

"Most of our current work is small runs of complex parts for the food, pharmaceutical, and aeronautic sectors. We make a lot of moulds and dies, and a few parts for motorsport, including some for rally teams, as well as housings for the gyro-stabilized video cameras mounted on the rear of MotoGP bikes.

"The main reason we bought the Haas was to reduce the number of setups for any particular part. We tend to machine small batches, so reducing setup times is vital.

"We're currently using the Haas machine to make parts of a pump for ingredient dosage measurers used in food production. The tolerances are tight, and we're only making thirteen-off, but the material is Inox 316 stainless steel. The ST-30Y is a very rigid machine; there's no vibration, unlike the machines we used previously. Once the part is tempered, it's re-machined and finished.

"The Haas live tools provide high-torque cutting for off-centre milling, drilling, and tapping. There's more than 100 mm of Y-axis travel, which gives us a lot of flexibility. The ST-30Y has allowed us to develop and make a much better version of the lateral movement coupling for the on-board MotoGP camera. The camera tilts as the bike leans, so the image is always horizontal, which gives viewers a great feel for the angles through corners.

"Aside from the machine's spec, it's obvious to me that it's designed and built by people who understand machining and the challenges faced by operators; lots of little design features that make life easier, like a toolholder on the front panel, so the tools are to hand, and a small shelf on the back of the control. I can really imagine the Haas engineers spending time on the shop floor studying how an operator works, and then incorporating those ideas into the design.

"Subcontract machining has always been our bread and butter, but during quiet periods, I found myself craving more of a challenge. That's when I decided to design and build the MotoGP simulator called the CKU Sport Fitness.

Joaquim Muntada is the owner of Mecanitzats Muntada which is based in Barcelona, Spain

"To develop the simulator, I partnered with my friend, Catalan rider Alex Criville, the 1999 500cc world champion and Javier Ullate, mechanic of the Yamaha official team in MotoGP. The CKU Sport Fitness is an official MotoGP sanctioned product, and Marc Marquez, Valentino Rossi, and Tito Rabat already use it to maintain their familiarity with various tracks. But, it's being developed, constantly. Team and rider sponsors also use it for promotional purposes.

The company is currently using the Haas ST-30Y to make parts of a pump for ingredient dosage measurers used in food production

"Powered jacks driven by servomotors move it in two axes, to simulate acceleration, braking and cornering. The rider faces a screen displaying real-time footage of MotoGP riders lapping at race speed. We get some useful feedback from our customers. For example, Valentino Rossi asked if we could make it wheelie!

"We're using the Haas ST-30Y turning centre to make the brake movement axis and the lateral movement axis for the simulator.

"We're extremely happy with the Haas turning centre and with the support and service we receive from the Spanish Haas Factory Outlet, based in Barcelona. We haven't had any problems with the machine, but it's good to know service, support, and spare parts can be on-hand the next day.

Mecanitzats Muntada used a Haas ST-30Y to develop and build the 3-axis race bike simulator used for indoor training and to maintain familiarity with some of the world's greatest MotoGP race circuits

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Prodrive chooses MX as its trusted data exchange provider

Majenta Solutions has announced that Prodrive Ltd, a world leading motorsport and technology business based in the United Kingdom, has chosen MX as its data exchange platform. After exploring the market for a data exchange provider that would meet their needs, Prodrive decided to take out Majenta's MX 100 plan. This is Majenta's best-value package that will provide up to 100 users with the facility to send and receive an unlimited number of files in a highly secure environment.

There are a number of reasons why Prodrive chose to work with MX. Prodrive carefully researched the market before concluding that MX would be the most suitable data exchange provider for its needs. Prodrive had a strict set of demands that it required from their secure data portal and, as part of the research process, took out a free trial of MX, which allowed access to the full version for 30 days.

"The system was extremely easy to use," says Enrique Goddard, support specialist at Prodrive. The dashboard documenting recent activity was popular with users at Prodrive, which had a "good look and feel," he added.

During the trial of MX, Prodrive found that any minor on-boarding questions were resolved quickly and efficiently and as two of Prodrive's customers already use MX as their trusted data exchange provider, it was confident that MX would provide an excellent level of service.

Majenta's technical account manager, Wes Whitmore states: "Prodrive was looking to replace its incumbent tool due to the down-time seen during upgrades, as well as concerns over the future of the tool.

"The company had good prior experience of MX via Aston Martin but also high expectations if they was to take it on for their own use. By working closely over the period of their detailed benchmark, we were able to quickly and efficiently show that MX was able to address any concerns raised by their existing toolset, as well as demonstrating other key user benefits of MX for secure data exchange, automatic notification and one-click reporting."

MX is a powerful browser-based solution that enables its users to transfer large files quickly and securely. MX is already trusted by leading automotive OEMs, their suppliers and colleagues to share data across all corners of the globe, and Majenta is confident that Prodrive will greatly benefit from their exchange portal.

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DMG MORI is well ahead in 5-axis machining

Wellahead Engineering in Aberdeen has been working in the oil and gas industry for 18 years and has invested in a DMG MORI DMU 95 monoBLOCK® to offer a better service to its customers and enable it to diversify into new markets.

Mike Coutts, managing director says: "We produce turnkey parts for downhole tools, wellhead and wireline equipment, working from concepts supplied by our customers. Additionally, we offer a bespoke repair service. Investing in 5-axis machining will enable us to be more competitive in our core business and give us more opportunities in new markets. We are currently the only company north of Glasgow with a DMU 95 monoBLOCK. We ran an open day for our customers and the response has been really good and they welcome our new 5-axis capabilities. We anticipate that the machine will provide a big boost to our business."

The company has had two Maho MH800 machines for over 12 years and their reliability has been second to none so, when it decided to invest, it wanted a quality machine, making DMG MORI the manufacturer at the top of its shopping list.

During the decision making process, Wellahead was impressed by the knowledge of the DMG MORI sales and technical staff in helping them to choose the right machine and investigate the best options for its type of work.

Mike Coutts says: "Much of our work is cylindrical, so we specified a 26" 3-jaw chuck which has enabled us to cut down considerably on the fixtures we use. This chuck, the 5-axis capabilities of the machine, the Siemens control with its special technology cycles and the on machine laser probe for tool setting has enabled us to reduce the number of operations down to a maximum of two and halve setting and programming times."

Previously parts had several turning, milling and boring operations on different machines. The DMU 95 monoBLOCK enables this all to be done on one machine.

Mike Coutts continues: "We went on a factory tour at DMG MORI and we could see that the engineering and build quality were phenomenal and we could appreciate the versatility of the design. We could have invested in another 3-axis machine, but the capabilities of the DMU 95 monoBLOCK opened up new horizons for us. DMG MORI's technical support has been invaluable in introducing us to new ideas for machining and new cycles to optimise productivity."

Rigidity is impressive with the machine able to take full depth cuts with a 60 mm porcupine cutter with no vibration. The company's older machines would not have the torque necessary for such heavy cuts.

Mike Coutts says: "We buy quality tools and we are finding that not only is tool life longer, but we can cut faster as well. The high pressure coolant is excellent for through tool coolant enabling us to wash swarf out of deep holes with ease."

For one component with 12 holes, previously it took seven minutes to peck through each hole. On the DMU 95 monoBLOCK all 12 holes were completed in seven minutes with a U-drill straight through with no pecking and only using 11 percent of the machine's power.

Transparency in its service performance is a high priority for DMG MORI and it has a team of Hotliners to answer customer's questions and resolve problems. Response times and repair times are continuously and rigorously monitored. Currently 96.75 percent of calls are returned within 1 hour and Hotliners resolve 39.92 percent of problems over the phone free of charge. Service response for an engineer on site is 0.9 day for MORI derived products and 1.5 days for DMG derived products. More importantly, 58.75 percent of faults are fixed on the first visit. The performance target DMG MORI is working towards is one day or better for all products. In addition to high standards for after sales service, the company also ensures that pre installation logistics and training is carefully planned.

Wellahead employs highly skilled engineers and runs an apprentice programme to build its workforce. Two of its engineers attended the basic training for the DMU 95 monoBLOCK which was then followed up with extra training.

Sam Morson, one of the trainees, says: "DMG MORI answered all our questions, we were not just left to it. The after sales support is good and the people we have contact with are nice to deal with."

Mike Coutts concludes: "The pre installation checks were extensive, making sure we were ready to take delivery, with all the services in place and that we had sufficient access for delivery, all very thorough. We have a two year cycle for investment and, assuming we have sufficient work to justify further equipment, we would not hesitate to invest in another DMG MORI machine."

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Latest Reiden universal 5-axis mill/turn introduced to the UK

The latest addition to the highly successful Reiden RX-Series of combination 5-axis universal milling and turning machining centres is now available from 2D CNC Machinery Ltd.

The new RX12 incorporates Reiden's patented double-drive spindle technology (DDT) with the new machine developed around Hydropol, a highly rigid specialised concrete and steel composite for the bed and column that can be completely recycled.

The machine has axis travels of 1,300 mm in X, 1,450 mm in Y and 1,000 mm in Z with rapid traverse rates of 50 m/min. In addition, the A-axis for the spindle is 0 to 90 degrees to enable horizontal and vertical cutter positions. The 1,200 mm diameter rotary table which has a swing of 1,200 mm and rotates through a programmable gearless drive up to 400 revs/min.

The construction of the Reiden RX12 around its Hydropol composite provides high orders of inherent stability. It absorbs vibration and has significant levels of dynamic stiffness. In producing the composite against a normal cast iron frame, 30 percent less primary energy is used and CO_2 levels are 66 percent lower.

Both 5-axis milling and turning operations can be integrated into a single machine setting and benefit from Reiden's patented spindle DDT development.The spindle is able to swivel between horizontal and vertical planes within one second and the slim head design has pneumatic clamping to hold position when used for turning cycles in conjunction with the direct drive rotary table. The table has automatic imbalance detection and counterweights to minimise vibration.

The DDT spindle concept uses two separate motors built into the same housing which are connected via a bevel gear drive coupling arrangement. According to the machine program, hydraulic power is used to engage or disengage the higher torque system which also enables the unused drive to freewheel.

A hybrid bearing system is hydraulically pre-loaded to support the higher torque drive and the spindle head is water cooled

through a specifically designed labyrinth of channels. The spindle arrangement has through-the-tool coolant supply.

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Tube bending toolmaker expands subcontract machining capability

Established in Blackpool 21 years ago, Entech Engineering has within the past five years invested in a new, purpose-built factory as well as modern inspection equipment and new machine tools to keep in the forefront of technology. The company specialises in the manufacture of original and replacement manipulation tools for tube in a wide variety of diameters, wall thicknesses and materials, catering for a similarly extensive range of bend diameters.

The amount of tube bending carried out by manufacturing industry in the UK, while extensive, is limited by the size of the market. Looking for growth opportunities, a few years ago Entech's owner Garth Moreton started producing complex prototypes and other one-off items. He also took on low volume production work for the automotive, aerospace, Formula One, furniture, leisure and medical sectors.

The same machines that produce the bend dies, wiper dies and mandrels for tooling are employed to undertake subcontract work. They comprise five 3-axis machining centres with indexing fixtures and X axes up to one metre, plus a couple of CNC lathes.

Contract machining accounts for a relatively small proportion of turnover. So last year, Garth Moreton took the decision to expand this side of the business and set about acquiring a new machining centre that could undertake the widest possible range of work in terms of both size and complexity. After much research, he decided on a German-built Spinner 5-axis machining centre with 40-taper spindle and a 1,520 x 520 x 460 mm working volume. It was installed in April 2015 by sole UK sales and service agent, Whitehouse Machine Tools.

Garth Moreton explains: "When producing bend tooling, you know roughly what size of part you are going to have to machine, whereas on the jobbing side, the next component could be small and intricate or a metre and a half long.

"We knew we needed a 5-axis CNC machine to maximise the variety of work we could tackle. It also enables economies and faster lead-times by cutting down on the number of setups. But large, 5-axis plant tends to be very expensive. The answer proved to be the Spinner U5-1520, which is essentially two machines in one. It comprises a 5-axis machining station at the right hand side of the working area, which uses the three linear axes and two rotary axes provided by a trunnion-mounted, 500 mm diameter, rotary table.

"By positioning it in the horizontal plane, a long component measuring up to 1,520 mm can be laid across the rotary table and the fixed table to the left of it. 3-axis CNC machining can then take place throughout the whole working area."

The first component put on the machine could, however, fit comfortably onto the fixed table alone. For the toolmaking side of the business, it was a segment of a 500 mm diameter bend former machined from a 500 x 300 x 250 mm billet of tool steel.

Attempts were made to machine a similar segment on one of the older machining centres on site. However, vibration of the 35 mm diameter, indexable-insert ball nose milling cutter made it very difficult to hold tolerance. Moreover, tool life was poor, 10 sets of 10 mm diameter button inserts were used for the roughing and finishing passes.

When the component was machined on the Spinner using exactly the same cutter, the improvement was dramatic. Higher speeds and feeds increased metal removal rate by more than 50 percent, while tool vibration was not discernible and only two sets of inserts were needed to complete the job. Not only that, but the resulting surface finish was so good that only a minimal amount of subsequent hand polishing of the tool was needed.

Of the machine design, Garth Moreton says: "I am wary of 5-axis machines on which the rotary table is in a fixed, horizontal plane, as the fifth CNC axis has to be provided by a B-axis spindle head, which I believe compromises rigidity and accuracy.

"There are a number of trunnion-type, 5-axis machines on the market, but unusually on the Spinner the axis of rotation is from front to back. It gives added versatility by allowing the fixed table to be positioned adjacent to it in the X-axis, enabling the machining of long components that straddle both tables."

When placing the order for the U5-1520, again with versatility of machining in mind, Garth Moreton specified the inclusion of a number of options including high pressure coolant at 22 bar, elevated spindle speed and rapid traverses, a tailstock to support shaft-type work when the rotary table is vertical, a Blum TC52 tool probe and a TC54 probe for component datuming.

The latter is particularly useful for increasing productivity through the reduction of setup times. According to Chris Law, the company's first apprentice 20 years ago who was promoted to director in 2015, instead of having to clock parts into position it is simply necessary to probe the component surfaces and the necessary offsets are input into the control automatically. If the component is clamped in an orthogonal position, there is a five minute time saving, but a full 20 minutes can be saved if the component is being setup at a compound angle on the rotary table. After the component has been machined, the same probe may be used to check that the part is within tolerance before it is removed from its fixture.

Another advanced feature of the installation is the inclusion of CCTV cameras within the working area, allowing Garth Moreton and his staff to monitor machining on their laptop or mobile phone out of working hours. It gives added confidence when leaving the machine to run unattended overnight. Garth Moreton concludes: "Installation of the Spinner machining centre has been a resounding success, so much so that if the machine is free we will always put the next job on it rather than on one of the other machining centres. I wish I could put every job on it.

"Several of us went out to the Spinner factory near Munich to see how the machines are produced and were very impressed. We have since built a good working relationship with Whitehouse Machine Tools and any issues have been resolved quickly over the telephone.

"We are currently working a day shift, Monday to Friday, plus some overtime in the evenings and on Saturday morning, so we have a lot of potential spare capacity on the U5-1520. If the right work comes in, we will increase weekend working and consider putting on an extra shift."

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www.wmtcnc.com

All angles covered with new 5-axis vices

For convenient and extremely precise workpiece clamping, Thame Workholding has now introduced the new Makro Grip Vario Vice from Lang. Developed exclusively for Lang Centring vices, the new Makro Grip incorporates a number of new innovations that guarantee a precise, robust and flexible workholding solution.

From a flexibility perspective, the new Makro Grip Vario Vice has jaws that are equipped with Lang's patented Vario-Tech pins. The pins act as a location system that enables repeat clamping accuracy of 0.01 mm.

Pins can be depressed or extended from the jaws to act as an extremely precise location system for the clamping of non-uniform parts. When the single or batch of components is complete, the depressed pins can be blown back into position with a compressed air line. The benefit of the pin system for the end user is that no parallels or end-stops are required and the repeat clamping precision is second-to-none.

The exciting new vice is available in two variants, the Makro Grip Precision Vice Vario 77 and the Vice Vario 125. The smaller Vice Vario 77 Series is available with three base lengths of 130, 170 and 210 mm that respectively provide a clamping width up to 55, 95 and 135 mm. The Vice Vario 77 has an exceptional maximum clamping torque of 70 Nm with a maximum clamping force of 14,000 N. The combination of assured clamping forces and a high repeat accuracy built into a compact clamping system makes the smaller of the two systems a must have for any machine shop aiming to reduce setup times in the machine shop.

With 20 mm diameter base pins that are spaced at a distance of 96 mm, the larger Vice Vario 125 has been optimally designed for stability under more robust cutting conditions. Depending upon which of the four variants that are selected from the Vice Vario 125 Series, the customer can be confident in the rigidity of the system that boasts a maximum clamping force of 20,000 N with a heavy duty construction from 12 to 18 kg. Offered with a maximum clamping range of 100, 150, 200 and 250 mm, the Vice Vario 125 has a base length from 210 to 360 mm for optimised resistance to cutting forces.

Thame Workholding is supplying the innovative new Lang vices with spare pins and o-rings to match the pins.

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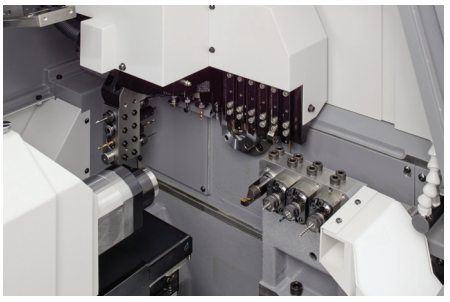
Next generation 5-axis sliding head

By maximising on modular construction techniques, the latest generation of the popular Citizen Cincom A20 tops the economics league of CNC sliding head machines to major on the rewards generated by high performance and lower price ratios.

The 5-axis Cincom A20-VII introduces the opportunity to extend its capacity with an option 25 mm bar size and has the added flexibility to be easily reset between normal guide bush and non-guide bush operation which can be carried out within just 30 mins.

This capability around the guide bush increases flexibility from the same machine frame plus improved economics when machining shorter workpieces with the added advantage of smaller bar end remnants. Due to the increased parts produced per bar length, this improves productivity through a lower frequency of bar changes while an extended machining stroke of up to 200 mm, reduces longer workpiece re-chucking time.

The original A20 series was launched a decade ago. Then it set the pace for its higher rigidity for a sliding head machine coupled with additional power to take more generous cuts and the fastest rapid traverse rates of any sliding head machine. This next generation maintains the same strategy but also capitalises on the lower cost factors associated with modularity of build and



takes maximum advantage of using common frame and castings as the new 'icon' L-Series launched last year.

The speed of the main spindle is now 10,000 revs/min from a 3.7 kW drive and the 1.5 kW sub-spindle delivers 8,000 revs/min. The machine has a 21 tool capacity with the gang tool post (X1-Y1) holding five turning tools. Four tool positions up to 10 mm diameter are available for front drilling and four 0.75 kW, 6,000 revs/min driven tool positions are available for cross machining. There are also four tool positions available on the gang tool post for back drilling and four further positions on the separate back drilling tool post with a further option of increasing the specification to driven tools in a rotary holder.

The Citizen Cincom A20-VII maintains the record setting high speed positioning at 32 m/min. This has proven to be very popular in reducing non-cutting times along with direct C-axis indexing enabling deceleration direct to a chosen position, and axis feed overlap that starts the following axis feed prior to completion of the current movement.

Parts collection with a workpiece exit conveyor is standard and a 150 litre coolant tank is standard with increased porting for chip removal.

HPC orders the latest CINCOM L12 at MACH 2016

The need to further improve competitiveness with the advantage of shorter machining cycles on smaller and often high accuracy turn-milled parts, drew HPC Services once again to the Citizen Machinery stand at MACH 2016 to conclude an order for its 11th Citizen Cincom CNC sliding head machine.

Managing director of HPC Services Paul Cobb says: "We have excellent opportunities to produce smaller parts and the Citizen L12-VII gives us the best combination of speed, accuracy, flexibility and access for fast changeovers. Also, with the ability to quickly switch from guide bush for long slender work to non-guide bush, the new machine will create even greater savings on shorter work."

Paul Cobb's decision, finalised on the first morning of the show, will add the 5-axis L12-VII to the nine 32 mm capacity and one 20 mm L20 Citizen machines installed at the Ilkeston factory.

Paul Cobbs says: "Around 20 percent of our current work will suit this machine and with its level of versatility we should be able to slash by up to half existing cycle times already proven on our larger capacity machines. Most important for us, is that it will increase our competitiveness when quoting for smaller diameter work."

He plans to take maximum advantage of its minimal idle time for positioning and overlapping cycles and with the 15,000 revs/min high speed spindle and 10,000 revs/min available on both the sub-spindle and driven tools, he reckons he can maximise the performance from the tooling held in the machine's 27 available positions.

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A new slant on horizontal machining centres

The promise of increased throughput, reduced energy costs and lower service and tool costs with Heckert's new cost-competitive Focus line of horizontal machining centres, as well as the ability to remove aluminium at up to 10 litres a minute with the Starrag 800X 5-axis machining centre, will prove attractive to aerospace OEMs and their multi-tier suppliers visiting the Starrag UK stand at this year's Farnborough International Airshow.

Heckert is one of nine established and leading machine brands within the Starrag Group, which includes the TTL software division that has an unrivalled reputation in multi-axis CAM applications, automated CNC machining systems and adaptive machining software. The result is a comprehensive array of machining solutions for every aspect of aerospace and aircraft manufacture.

The new three-machine Heckert Focus line, which align perfectly with the Starrag Group's philosophy of 'Engineering precisely what you value', offer up to 10 percent increases in throughput via reduced machining times, up to 20 percent savings in energy costs via the adoption of Blue Competence policies, and up to 10 percent savings in service and tool costs.

The new machines complement the Starrag Group's expertise in the heavy machining of large gear casings, as well as the production of primary structural components for fuselage, tail unit and wing areas. Starrag is also especially adept at providing solutions for turbine blade, blisk, casing and fuel system machining, as well as gyroscope components, electrical connections, sensor parts and gear components.

The Starrag range, for example, includes the 800X which boasts a 30,000 revs/min 120 kW spindle for fast and effective machining. The machine also features an A axis range of -110 deg/+60 deg, so no angle heads are required for completing a range of complex features in a single setup.

In addition the machine, which has feed rates of 60 m/min in X, Y and Z, a maximum workpiece swing diameter of 1,400 mm and pallets of 800 mm by 1,000 mm to handle loads of 2,000 kgs, can accommodate up to 465 tools.

Visitors to the stand (in the Swissmem area), will be able to gain details of all Starrag solutions, including Droop + Rein machines for landing gear applications, Berthiez engine casing boring/grinding, Starrag 5-axis blade machining centres and well as Ecospeed high-speed machining centres which, on aluminium workpieces, can achieve floor-to-floor time savings of 60 percent by transforming a four-tonne billet into a 120 kgs complex structural part in less than 20 hours.

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

Starrag Group products are marketed under the following strategic brands: Berthiez, Bumotec, Dörries, Droop+Rein, Heckert, Scharmann, SIP, Starrag, TTL, and WMW. Headquartered in Rorschach, Switzerland, the Starrag Group operates manufacturing

plants in Switzerland, Germany, France, the UK and India and has established a network of sales and services subsidiaries in numerous other countries.

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Dramatic growth for Irish subcontractor

24 Hurco machine tools purchased in a decade

In 2009, almost all of Galway subcontractor Dawnlough's turnover came from the design and manufacture of special-purpose tooling for the medical device manufacturing industry. This work continues undiminished and Boston Scientific, Stryker, Medtronic and Abbott are among many regular customers.

Over the past six years, however, turnover has increased five-fold largely as a result of entering the aerospace sector, which has grown to account for 50 percent of the firm's business.

Managing director Brian McKeon says: "We anticipate that our aerospace work will rise to 70 percent of turnover by the end of 2017, which is remarkable as it all happened unexpectedly.

"Towards the end of 2011, a Chinese subcontractor failed to supply parts to BE Aerospace in Ireland for first-class and business-class aircraft seats, so we were asked to step in and rescue the situation. We produced 2,500 components and it grew rapidly from there."

The subcontractor has since gained AS9100 RevC accreditation for quality management in the aircraft industry and has also been awarded Tier 1 supplier status to BE Aerospace and Bombardier. Dawnlough exhibited at the Paris Air Show for the first time in 2015, receiving several promising enquiries.

Current aerospace contracts entail machining wing sections and fuselage parts from aluminium and stainless steel, as well as cobalt chrome engine mountings, up to a maximum size of 1,270 mm x 508 mm. This current limit is dictated by the presence on the shop floor of a Hurco VM30 vertical machining centre (VMC). It is one of 23 prismatic metalcutting centres at the Galway factory from the same supplier, which has also delivered one CNC lathe with driven

tooling, designated TMM8, for producing components up to 256 mm diameter by 588 mm long.

Brian McKeon bought his first Hurco machines in 2005 through Irish representative, Michael Gannon, and has added new models regularly. Most are 3-axis VMCs, four of which are equipped with a 4th CNC axis to reduce the number of setups required for machining complex parts. Often, 4-axis interpolative machining is needed, as there are few right angles or square edges on aircraft structural parts.

The rationale ten years ago was to upgrade Dawnlough's milling section and move away from G-code data input towards conversational programming for one-offs and small batches, for which the Hurco control is ideal. There was still a lot of mould tool production at the time, which was the company's original specialism when it was formed in 1987.

One of the most recent Hurco VMCs to be installed is a 5-axis VMX30Ui, which arrived in 2014. It joined another make of 5-axis machine on the shop floor for one-hit machining of components that were becoming increasingly complex. One in particular was an aerospace part produced in left- and right-hand variants that ran 20 hours a day for 18 months.

A recent job on the VMX30Ui involved sculpting a claw foot for the leg of a first-class aircraft seat out of solid bronze using a 3 mm diameter ball nose milling cutter at 14,000 rpm and a 3+2 axis cycle. With its 18,000 rpm spindle, the machine is ideal for such accurate, fine detail work. Cycle times are made quicker by Ultimotion software in the latest Hurco twin-screen control, which runs proprietary WinMax version 9 software. With up to 10,000 blocks variable look-ahead, it delivers fast cycle times and excellent surface finish.

Having five seats of SolidCam, Dawnlough prepares its more difficult programs off-line. However, Brian McKeon says that it is often faster to program even quite complicated geometries conversationally at the control on the shop floor. This is the case for 2D work and some 3D shapes, where advantage can be taken of the Swept Surface functionality in WinMax to create 3D geometry automatically. The operator can input a 2D shape as the sweeping contour and a second 2D path along which it is to be moved to define the solid shape.

The next step for the Galway firm will be to equip the 5-axis Hurco with an Erowa Robot Compact automated pallet changer with 205 positions for multiple pallet types. In this way, 24/7 utilisation of the resource will be achieved.

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New Victor vertical machining centre

Renowned for the robust build quality of its machine tools, Rochdale based Victor CNC is delighted to announce the arrival of its VCenter-P106 vertical machining centre. The new VMC has been designed to optimise productivity and reduce cycle times for subcontractors serving a broad base of industry sectors.

At the heart of the 3-axis machine is an emphasis on speed, which is highlighted in a 48 m/min rapid feed rate and a high speed 12,000 rpm spindle. This message of speed is re-enforced with an automatic tool change time of just 2.1 seconds. Despite its impressive speed credentials, the new VCenter-P106 has a table capacity for parts over 600 kg on its 1,120 by 520 mm table, a testament to the robust build quality that Victor is renowned for.

For the heavy duty machining of parts, the VCenter-P106 has a BBT-40 spindle or SK40 configuration with an 18.5 kW spindle motor that delivers high torque levels for heavy cutting operations across its 1,060 mm by 600 mm by 560 mm (X, Y and Z) work envelope. As standard, the VCenter-P106 is

supplied with a Fanuc 0i-MF CNC control with 10.4" colour graphic display, manual guide i, AICC-2 (200 Blocks) and Victor's unique VSS Macros.

Like all machine tools from the Victor stable, the VCenter-P106 is offered with a host of optional extras to suit the demands of each individual customer. In the case of the P106, Victor can install through spindle coolant, air through spindle, oil mist cutting (MQL), probing for automatic tool and part measurement, rotary table and linear scales for the utmost in precision. In addition, customers can specify a 15,000 rpm spindle, oil skimmer, automatic doors, 4th and 5th axis interfaces, a 40 tool carousel and air conditioning for the electrical cabinet.

Heidenhain TNC-620 and TNC-640 Controls are also available as options. All this is packed into a heavy duty machine that has an overall weight of 6,850 kg and a compact footprint of just 3.36 m by 2.8 m. Within this structure is a certified Meehanite casting with a column width of 1270 mm at the base. It is from this wide base and the overall construction, the P106 derives its outstanding vibration damping and rigidity characteristics.

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High accuracy wire-EDM machines

Manufacturers involved in micro-machining operations and applications are being urged to investigate the potential of GF Machining Solutions' X-type AgieCharmilles wire EDM machines. These machines deliver the highest accuracy by eliminating pitch and positional errors.

The machines in question (all designated as X-type) are the AgieCharmilles CUT 1000 X, CUT 1000 X OilTech, CUT 2000 X, CUT 2000 X OilTech and CUT 3000 X. All feature adapted mechanical structures and exhibit impressive thermal stability, with all machines undergoing rigorous testing and calibration to ensure that they deliver enhanced process reliability and are up to the job.

Increased pressure on manufacturers to produce ever more complex and accurate components in large volumes makes the choice of machine tool critical. To meet these demands GF Machining solutions has improved the already high accuracy of its wire EDM machines by eliminating pitch and positional errors through a regime of inspection and testing that leaves nothing to chance.

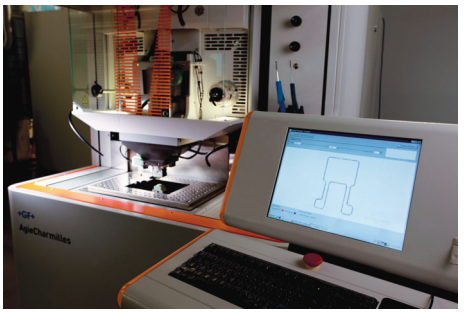
The CUT 1000 X and CUT 1000 X OilTech machines deliver pitch accuracy of ±1.0 µm over 200 mm by 140 mm, and a M-shape form accuracy of ±1.0 µm.

The CUT 2000 X, CUT 2000 X OilTech, and CUT 3000 X machines deliver pitch accuracy of ±1.5 µm over 340 mm by 240 mm (460 mm by 320 mm for the CUT 3000 X size), and form accuracy of ±1.5 µm.

Right from the start

Expert geometrical and erosion inspections ensure the results that manufacturers and their customers expect.

Prior to any installation, GF Machining Solutions' engineers machine a large number of holes in a plate and then use a high-precision coordinate measuring machine (CMM) to measure the position of



each hole's centre. The CMM results are then reloaded into the computer numerical control (CNC) of the X-series machine. This calibration of the machine's CNC guarantees perfect pitch and positional accuracy from the outset.

This means that manufacturers can confidently machine high-precision stamping tools and multi-cavity moulds for the electronics and IT sectors (for example) as well as micro-components used in the science and medical devices industries.

As well as the inspection, calibration and testing the X-type machines are equipped with a range of features all designed to ensure the highest accuracy in micro-machining applications.

Highest productivity

In addition, the X type machines offer manufacturers a wide range of productivity and quality-enhancing game-changers:

Exclusive Automatic Wire Changer (AWC) Two-wire spool allows the use of larger diameter wire or premium wires for the main cut and then the automatic switch to smaller diameter wire for the finishing cut. This results in faster cutting speeds and cycle times. Productivity is further boosted by fast and reliable wire threading as well as straightforward and dependable wire disposal via the integrated wire chopper.

Versatility and flexibility, such as the ability to insert urgent and priority machining jobs into manufacturers' production schedules can be achieved by using the machines' onboard job management system.

Perfect wire threading, irrespective of the machining conditions, are achieved with the machines threading expert facility, a retractable device driving the wire from the upper guide to the start hole.

Absolute quality results are achieved with the machines' Integrated Vision Unit (IVU Advance). With an embedded charge-coupled device (CCD) camera linked to a backlight - installed on the lower arm of the machine - IVU Advance allows pre-setting, in-process measurement, and scanning of machined contours to ensure accuracy and reliability.

Triumphant return to MACH for GF Machining Solutions

GF Machining Solutions has reported that its attendance at MACH 2016 was a huge success.

Over 350 different companies, and 480 visitors in total, took time to meet company staff and view the four machines being showcased on GF Machining Solutions stand over the week with the new CUT E 600 wire EDM machine, which was making its UK debut at MACH, earning rave reviews and generating a significant number of leads and enquiries.

Managing director Martin Spencer says: "MACH 2016 was a great show for us. Over 30 percent of the companies that visited us were 'new' (i.e. not existing customers), and we took five orders direct from the stand as well as sealing the deal on a further six machines.

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Mazak extends entry-level range with two new machines

Yamazaki Mazak has extended its range of entry-level machines with two new turning centres designed for machine users demanding high quality at an affordable price.

The new QUICK TURN COMPACT (QTC) and QUICK TURN PRIMOS (QTP) are both aimed at the general subcontracting market, specifically those subcontractors involved in small to medium size manufacturing operations. There are optional variants for each machine type, which should ensure that the correct choice of machine specification is much quicker for customers, with resulting shorter lead times.

The QT COMPACT range is a high performance turning centre equipped with a Mazak manufactured driven tool turret with either 500 mm or 1,000 mm bed and a bar capacity of ø65 mm or ø80 mm. Each variant is available with an optional Y-axis, and /or an optional second spindle. There are two variants of the QT COMPACT available; the QTC 200 which is equipped with an eight inch chuck, a maximum speed of 5,000 rpm and a peak torque of 167 Nm, and the QTC 300, which has an ten inch chuck, a maximum speed of 4,000 rpm and a peak torque of 356 Nm.

The machine is controlled by the SmoothC control, the latest edition to the Smooth Technology portfolio, incorporating state-of-the-art motion control technology. A productivity package is available that includes bar feed interface , parts catcher and higher power coolant options.

The QT PRIMOS is a compact, high performance 2-axis turning centre with high productivity and a small footprint, making it ideal for subcontract manufacturers requiring simple turned components in volume production.

The PRIMOS is available in three variants. The PRIMOS 50 S has a bar capacity of ø32 mm, and is equipped with a 5,000 rpm 7.5 kW spindle capable of 48 Nm of torque, whilst the PRIMOS 100 S has the same spindle speed but possesses a 9 kW spindle and an increased maximum bar capacity of ø36 mm, as well as a higher 75 Nm of torque. The PRIMOS 150 S has a maximum bar capacity of ø51 mm and uses a lower speed 4,000 rpm 11 kW spindle, capable of 131 Nm of torque. The machine is equipped with MAZATROL Smart conversational control.

All of the PRIMOS variants are equipped with a Mazak-manufactured turret and are capable of rapid traverse rates of 30 m/min in both the X and Z axes. A large capacity standard oil pan, which comes as standard, reduces coolant temperature rise to ensure high accuracy machining. All variants are also equipped with a tool eye, which can be programmed for automatic tool measurement and compensation. The design of the machine enables easy chip removal from the rear, which allows multiple machines to be closely packed together.

An optional integrated gantry loader is also available on all PRIMOS variants to accommodate automated loading for larger batch sizes and high volume manufacturing.

Both the QT COMPACT and QT PRIMOS are equipped with direct drive spindles and full circumferential brakes, which are standard on Mazak machines due to their superior performance compared to belt

drive spindles and conventional disc brakes. The use of direct drive also helps to ensure a smaller footprint for the machines.

Whilst the machines are 'entry-level' there is no compromise on build quality, with both the COMPACT and the PRIMOS built in line with Mazak manufacturing and quality standards. In addition, customers specifying entry-level machines will benefit from the same levels of Mazak aftersales service and support as other machines in the Mazak range.

Dr. John Liverton, product manager at Yamazaki Mazak comments: "Entry-level machines have always been important to Mazak because one of our core philosophies is to support our customers through the different stages of their development, from turning through to more complex machining methods.

"The development of our entry-level range, with the additions of the new QUICK TURN COMPACT and QUICK TURN PRIMOS, is as important as the development of our 5-axis, multi-tasking or horizontal machining capability, because this type of machine is often the first time a customer has owned a Mazak.

He concludes: "These new machines, alongside the QUICK TURN NEXUS, complete our entry-level range and provide an ideal introduction to the benefits of Mazak ownership at a competitive price point with no compromise on quality."

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How insert coating can redefine productivity

Imagine a manufacturer that is more productive and profitable than all of its competitors, with quality products, output that's unheard of and no deviations to the delivery schedule. Staffan Lundström, product management, Parting & Grooving and Bimal Mazumdar, product manager, Sandvik Coromant explain what it would take to achieve such a status

As the metal cutting industry becomes more and more competitive, machine shops are continually looking for ways to deliver market differentiation. In combination with stricter environmental requirements, machining operations are becoming increasingly automated to ensure energy efficiency and streamlined production with a minimum of waste, interruptions and late deliveries.

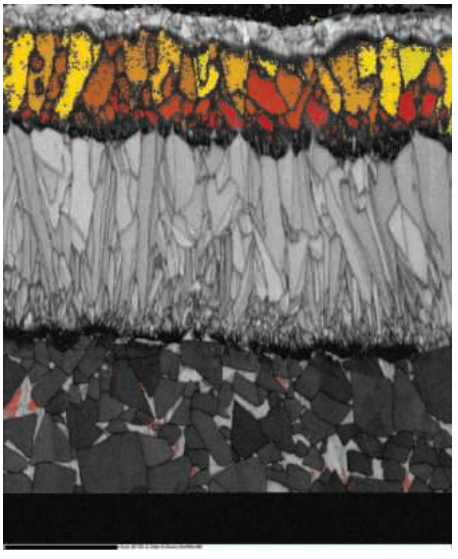
The automotive industry is not just at the forefront when it comes to automated manufacturing processes, but leads with its willingness to communicate the amount of energy required to produce each vehicle. Cutting force in component machining operations is just one part of that equation, while recycling, scrap and number of inserts used, are other parameters that have to be included.

Maximising output

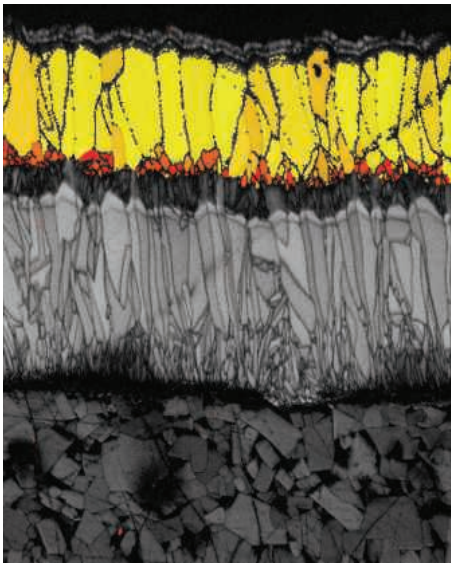
The objective for tooling suppliers is to design premium cutting tools that can handle ever greater speeds, feeds and depths of cut, in order to maximise output. However, production planning today is far more holistic than it has been historically. In fact, increasing the cutting data by 30 percent in a certain operation is no longer sufficient. As a result, demands for sustainable manufacturing along with automated, unmanned production call for a completely new understanding of productivity.

Market surveys indicate that the majority of machine shops place process security and the potential to run unmanned at the top of their wish lists, followed closely by higher metal removal rates. In truth, the ultimate aim is to combine all three ambitions.

Steel turning in the ISO P25 material classification is the backbone of operations at machine shops around the world, which makes it a good focus area for the purposes of this article. The P25 category covers the whole range, from unalloyed to high alloy steels, from soft and sticky to hard and abrasive, and from low specification to high. Of course, machinability differs considerably from steel type to steel type, particularly as the material comes in workpiece variants that include forgings, castings, bar, tube, rolled, drawn, untreated, hardened, tempered and pre-machined.



In conventional (CVD) alumina coatings, crystal growth direction is random. The microscope image shows the random crystal orientation as different colors. Each crystal direction is given a unique colour (red to yellow)



The new Sandvik Coromant InveioTM coating has uni-directional crystals and a uniform crystal growth direction. Every crystal of the alumina coating layer is lined-up in the same direction (shown as a uniform yellow colour of the alumina crystals in the image)

Turning in the ISO P25 area

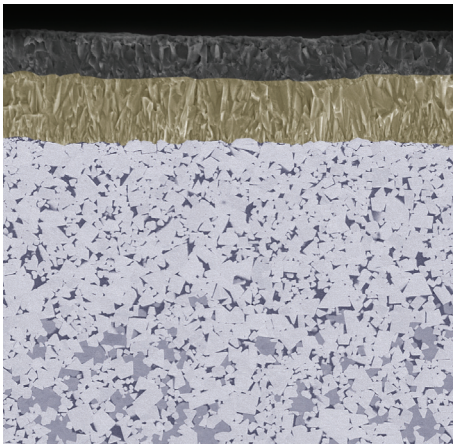
Factors to consider

To maximise output, the selected insert for each type of steel must balance a number of factors. These include durable and predictable tool life, which will lead to fewer stops for insert changes, as well as high reliability for limited or unmanned supervision, guaranteed surface quality throughout the life of the insert, and a broad application area. The latter entails sourcing an insert that can deliver excellent performance in continuous and interrupted machining, and from finishing to roughing, in a wide variety of steels. In turn, this will reduce tooling inventory, handling and storage costs.

The ability to machine a multitude of steel with different hardness properties is also vital. With this in mind, the condition of the edge-line is particularly important as it can help achieve the highest possible process security and repeatability, reduce the need for supervision and thus boost the potential to run unmanned. In short, the edge-line must possess the necessary hardness to resist any plastic deformation induced by extreme temperatures in the cutting zone. Furthermore, although it might sound obvious, the insert coating must adhere tightly to the substrate. If the coating fails to stick, the exposed substrate deteriorates rapidly. A chipped or broken insert can result in production stoppages and unacceptable scrap.

Throughout the years, leading cutting tool suppliers have strived continuously to offer insert coating properties that offer ever-greater levels of adhesion, toughness and wear properties, predominantly by optimising the microstructure and post-treatment processes. Among the most significant breakthrough in recent years is Inveio™, from Sandvik Coromant, which uses advanced material science to align the direction of crystals in the coating.

In conventional CVD coatings, the direction of crystal growth is random, but this latest breakthrough manages to control the crystals so that each one is lined-up in the same direction, towards the top surface. Controlled crystals give a substantially stronger edge line that endures high temperatures and intermittent conditions, for longer. Most importantly for manufacturers, machining processes and tool life become predictable, while as an additional benefit, the technology ensures a high proportion of recycled carbide material is utilised.



Inveio coating is an innovation in tool material technology that fundamentally changes the coated insert. It has uni-directional crystal orientation achieved through the new CVD-process, presenting a stronger, uniform structure of the coating. New properties emerge that are advantageous for withstanding the forces and temperatures of the cutting-zone, giving a much more durable insert contact-surface. The edge-line of the GC4325 insert is more resilient, giving improved predictability of the insert capability. Controllable, continuous tool wear provide a combination of very high process security, long tool-life and potential for higher cutting speed.

Proven technology

Many are already experiencing the advantages of aligned crystals, including Bajaj Motors of Agra, India, a supply chain partner to major automotive OEMs that include Tata, Suzuki, Nissan and Renault. Customers of Bajaj require excellent quality at the lowest possible cost and just in time delivery. Due to the high volume of components, it's impossible to measure and check every one. As a result, the tools and suppliers selected by the company are evaluated carefully prior to adoption.

So, what does a new coating have to do with a more holistic way of evaluating productivity? Actually, quite a lot. At Bajaj, which is producing steel components in their millions every year to customers that require outstanding quality at low prices, the pressure is on. High machine utilisation is crucial and the company needs to trust that every component will meet close tolerance demands. Exploiting the aforementioned benefits of coated inserts featuring crystal orientation technology, Bajaj Motors is finding it can improve productivity and reduce its cost per component substantially.

GC4325 with Inveio™ technology

The complete assortment of new insert grades for steel turning and cast iron milling with Inveio technology includes GC4325, GC4315 and GC3330

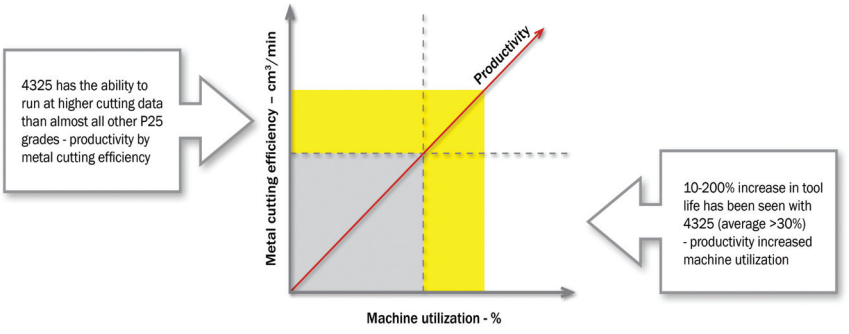


Diagram – Productivity throughout the large and varied P25 area is to some extent an individual measure, depending upon the type of production. But generally it is a combination of machining efficiency, often measured in metal removal rate, and machine tool utilization, in pieces machined per hour. For the cutting edge, this comes down to the good old values of cutting data and tool life

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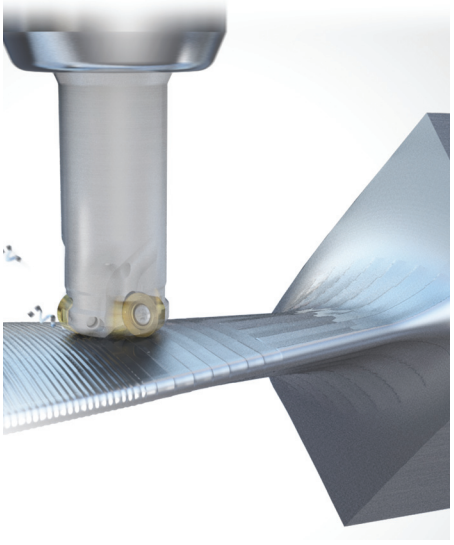
New round insert cutter for difficult-to-cut materials

For machining difficult-to-cut materials with a high level of accuracy and efficiency, Mitsubishi Materials has now launched its new ARP series of round insert milling tools.

The ARP series has been developed for the machining of stainless steels as well as titanium alloys and other heat resistant alloy materials that are commonplace in the aerospace and power generation industries. Under test conditions, the impressive new ARP series has delivered tool life improvements of over 40 percent, efficiency improvements up to 20 percent and cutting force reductions of 16 percent when compared to other products.

These significant gains have been achieved by developing an extremely accurate insert seat that realises minimal change of run-out accuracy when indexing the inserts. Furthermore, the ARP delivers an exceptionally strong seating configuration that has a two side location face to prevent inserts from moving during cutting.



Strong clamping system

This robust positioning is complemented by an innovative insert geometry design that has a special rake face on each quadrant of the inserts to generate smooth chip flow and reduce cutting resistance. This development creates an even chip flow whereas conventional inserts compress the chips toward the centre of the insert. When these features are combined with the course, fine and super fine pitch cutter bodies, increases in efficiency beyond 20 percent can be realised.

To suit a diverse range of machining applications, ARP are available with cutter bodies that include an arbor type in diameters 40, 42, 50, 52, 63, 66, 80 and 100 mm. These bodies offer course, fine and super fine insert pitches with a choice of 4 to 11 insert seats per tool depending upon the diameter. For machining smaller surface areas and intricate forms, Mitsubishi has also launched a shank type that is available in standard and long lengths for processing difficult to reach cavities and forms. These standard and long reach tool bodies are offered in diameters 25, 32, 40 and 50 mm with two to five insert seats to meet a vast range of machining applications. In addition, screw-in type tool bodies in diameters 25, 32 and 40 are also available.

To enable end users to maximise the potential of this ARP line, Mitsubishi has adapted three high performance insert grades. The new MC7020 CVD coated designation is available for machining stainless steels over prolonged periods. This grade achieves outstanding tool life and consistency that is credit to its cemented carbide substrate and is coated with a TiCN base that extends tool life when machining a wide variety of stainless steels. This base is then coated with a micro grain Al2O3 that further improves the wear resistance. This final layer is an ultra- smooth coating that prevents abnormal damage such as weld chipping.

For the machining of heat resistant alloys, Mitsubishi is offering its PVD coated MP7100 and MP9100 insert grades. With multiple coating layers, these grades stabilise machining performance and prevent cracks and edge chipping from penetrating through to the substrate. This extends tool life and consistency on particularly difficult materials. In addition, the respective insert grades are offered with three individual chipbreakers that focus on edge sharpness through to uncompromising edge strength. The variety of geometries enable the end user to apply the ARP series to everything from precision finish machining through to medium machining applications and even heavy interrupted cutting.

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New money saving developments from Walter at the AMRC

The latest results of tooling expert Walter's never-ending product development strategy saw a tranche of higher productivity, money-saving tools announced to the UK market during a special update for Walter GB's technical sales team held at the University of Sheffield Advanced Manufacturing Research Centre (AMRC) with Boeing.

With all the innovations promising reduced cycle times and longer tool life, resulting in considerable cost savings for users, the event reinforced how the cost-effectiveness of all the new tools could be further enhanced across the company's already comprehensive ranges of turning, drilling, threading and milling solutions.

The product launch was being staged at the AMRC where, as a Tier 2 partner, Walter GB works in conjunction with AMRC engineers and some of the latest CNC machines available to push the boundaries of machining routines in the quest for ever more efficient and effective production.

One major highlight of the event was the introduction to the UK of the M3255, a new generation porcupine cutter available in diameters from 50 mm to 80 mm and with from four to six flutes carrying 16 to 30 inserts (depending on diameter/flutes) featuring the new Tiger.tec Silver CVD-coated WXM45X carbide grade.

With 27 degree helix and 12 degree radial rake angles, plus four cutting edges for peripheral inserts and two cutting edges for the lead inserts, in operation only one edge of the M3255 is in contact with the workpiece. The result is lower than usual running costs, with a tool life of seven hours per cutting edge achieved on titanium workpieces.

It was reported that in tests on titanium structural parts for a major US passenger aircraft manufacturer, the M3255 cutter was run at a cutting speed of 45 m/min and a feed rate of 163 m/min, producing a width of cut of 25.4 mm at a depth of 76.2 mm, to achieve a metal removal rate of 23.7 in^3/min compared to the former 10.7 in^3/min.

In another example, the new cutter was used for rough pocketing on the AMRC's Starrag STC 1250 machining centre, machining a 250 mm by 120 mm by 74 mm deep pocket in titanium in 14 minutes.

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Everything runs like clockwork for ACT

The Advanced Carbide Tooling (ACT) stand at MACH was a hive of activity, with the highlight a demonstration of customer products that use ACT tools proving a master-stroke. The Hinckley cutting tool company showcased gold and rodium plated clocks from Sinclair Harding, a West Yorkshire manufacturer of fine clocks that can cost in excess of £30,000 and sometimes up to £250,000.

Commenting upon the clocks, ACT's managing director, Denis Houghton says: "The engineering masterpieces were drawing more attention from serious engineers than any short skirted models or giveaway gimmicks. The engraving tools used on the clocks were also demonstrated on rings produced by Geti Rings a Birmingham jewellery manufacturer. These aesthetically impressive products highlighted the precision, quality and capability of the Nine9 range and as always, we were taking orders on the stand for next day delivery."

MACH 2016 yielded an even higher order intake than the previous show. This was largely down to the attractive promotions that were running in line with the demo parts on the stand. During MACH, and for a limited period beyond the show, ACT is running a promotion on its Nine9 multi-function tool for spotting, chamfering, grooving and engraving. The multi-functional tool can accommodate a range of inserts such as the W-Spotting, Corner Rounding and 60 degree Spot Chamfer inserts to deliver astounding flexibility for the end user. With a 50 percent Promotional Saving to new customers on the multi-function tool, as well as special offers on the corner rounding and NC Helix Drill tools, ACT took record enquiries and sold an extremely high number of tools at the show.

The promotional offer on the NC Helix Drill at MACH provided customers with the opportunity to buy the NC Helix Drill tool holder and get two free inserts. This promo is also available for a limited period beyond MACH. The innovative Nine9 multi-functional NC Helix Drill has been developed to eradicate 'non-cutting' times through its ability to conduct helical

interpolation milling, ramping, slotting, counter-boring and drilling with a single tool. This flexibility is emphasised by the requirement for just six different tools for drilling precision holes from 13 to 65 mm diameters.

The new Nine9 NC Helix Drill from ACT can be viewed at: **https://www.youtube.com/watch?v=Lj_FJwFCrxE**

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High Feed Drills benefit from a Dragonskin upgrade

The C900 High Feed Drill from WNT was already setting the benchmark for indexable insert hole machining performance and productivity. Now, with the addition of DCX1420 Dragonskin-coated inserts available, the standards have been set higher.

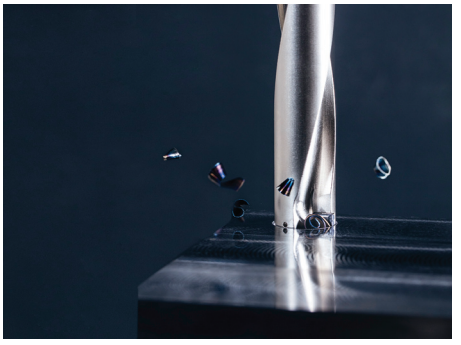
The new Dragonskin DCX1420 insert grade, which has a CVD coating, has been developed specifically for use in the peripheral insert pocket of the C900 High Feed Drills from WNT. When used in conjunction with the existing PVD coated CCN1430 insert grade, in the centre insert position, tool life is extended and cutting speeds can be increased by up to 30 percent. This combination of insert grades maximises each tool coating's performance characteristics, with the CCN1430 having much greater toughness to better handle the low surface speed found in the centre of a drill, while the DCX1420 grade with its Dragonskin CVD coating has improved wear resistance allowing the higher cutting data to be achieved.

When using the new DCX1420 inserts in the C900 High Feed Drills, cutting speeds in steel components can be as high as 390 m/min and 230 m/min in stainless steel, with feed rates up to 0.3 and 0.23 mm/rev respectively, subject to machining conditions, coolant supply and workholding.

In addition to the new grade the diameter range of the C900 High Feed Drill has been extended to include drills of 12, 12.5, 13, and 13.5 mm diameter starting the series.

Continuing the changes to WNT's drilling catalogue, the WNT Polydrill can now also benefit from the CCN1430 universal insert grade. This grade has been optimised for the drilling of steel, stainless steel and non-ferrous materials and users benefit from the insert's universal approach, meaning greater flexibility and reduced stock of inserts, optimised performance in terms of toughness and wear resistance.

"These latest developments in insert drilling technology are part of WNT's ongoing drive to reduce manufacturing costs for its customers, either through maximising cutting performance as with new grades such as DCX1420, or improving



DCX1420 Dragonskin-coated inserts have been added to WNT's drilling range, raising drilling performance even higher

general machining economics with developments such as those with the Polydrill system by extending use of our CCN1430 grades and simplifying there use," says Tony Pennington, managing director, WNT (UK).

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New carbide burrs and cobalt drill

Dormer Pramet has added several new material specific carbide rotary burrs to its existing assortment. The ST cut geometry is suitable for machining steels, while the VA design is for machining stainless steels. Available in a variety of shapes, both offer improved operator control and generate less temperature which, in turn, increases tool life.

These latest designs offer improved performance and up to 50 percent higher metal removal rates, compared to standard carbide burrs.

The A147 drill is primarily for machining stainless steel and titanium

In addition, the new GRP cut is for machining fibreglass and composite materials. Available with drill point and end mill styles, its design reduces splintering and improves entry and exit surface quality.

To support the introduction, Dormer has added three new sets to its burrs assortment. This includes five piece sets featuring the ST cut for steels, the VA design for stainless steel and a coated Double Cut set.

Dormer Pramet launched its new range of carbide burrs 12 months ago to enhance its ancillary tools program for general machining applications. The comprehensive assortment of designs and shapes include ball nosed cylinder, pointed tree, oval, flame, 60° and 90° countersinks, cones and inverted cones varieties.

Meanwhile, a new high speed cobalt (HSS-E) jobber drill has been launched by Dormer Pramet:

The A147 is primarily for machining stainless steel and titanium. Capable of drilling to depths up to 6 x D, the Bright finish A147 features a split point geometry. This improves penetration through the workpiece allowing for reduced torque requirements, improved hole-quality and longer tool life.

Its addition supports Dormer Pramet's existing high speed steel (HSS) quick spiral jobber drill, the A108, which also machines stainless steel in general applications.

Dormer Pramet's versatile A147 can also be used for a wide variety of materials including steel, copper and aluminum.

To download a pdf version of the new carbide burrs brochure visit the website.

Watch the new range in action at **www.youtube.com/dormerpramet**

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Cost-effective turning on smaller batchwork quantities

In order to harness the latest advantages in cermet inserts for precision turning technology of longer tool life, excellent wear resistance and superior consistency of size and surface finish when compared with tungsten carbide, Sumitomo Electric Hardmetal has introduced two new grades T1000A and T1500A of uncoated cermet inserts. The highly flexible in use, sharp edge inserts create a greater cost-effective source for smaller batch quality turning operations against the more normal and more expensive coated cermet insert.

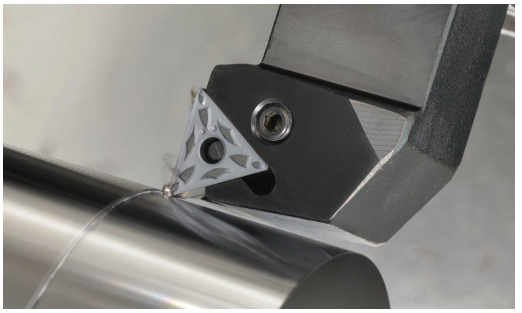
The uncoated Sumitomo T1000A (P10) cermet grade incorporates a dual structure for excellent wear resistance and toughness and is ideal for applications such as fine finish profiling and continuous high speed cutting of cast iron, soft materials, ferrous powdered metal, high carbon and alloy steels.

The T1500A (P20) incorporates a series of 3D chipbreaker designs that enables a stable, quality finish to be obtained such as when interrupted cutting cycles are involved where they maintain a high order of resistance to insert fracture and cracking.

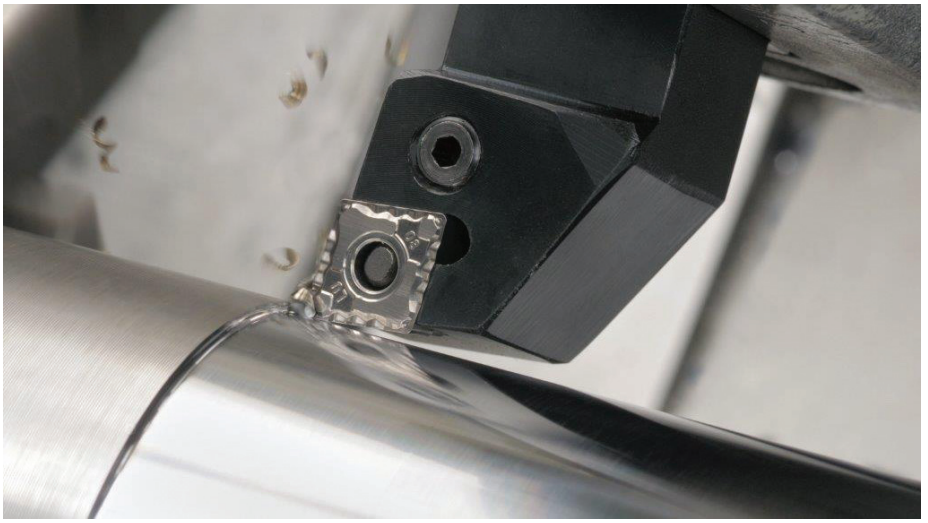
Recent cermet development by Sumitomo has led to the performance envelope of the material being dramatically increased with improved toughness to bridge the gap between ceramics and tungsten carbide. Cermet is more chemically inert, has a higher hot hardness than tungsten carbide and is made from a ceramic material giving high wear resistance while a metal binder is used to improve toughness. This means finish turning can often eliminate polishing or even grinding. Cutting speeds can also be increased without compromise to tool life and, due to the high stability of the material, it is ideal for near net shape part machining and tight dimensional control.

T1000A has a high resistance to welding (built-up edge) even when cutting softer materials as well as ferrous powder metal. It incorporates a composite 'Hard Phase' that uses a dual mix of strong but brittle ceramic particles in a soft, but highly ductile metal matrix to enhance its toughness making it ideal for cutting speeds between 100 and 400 m/min.

The T1500A provides a stable, ultra-high quality finishing operation giving precise dimensional accuracy in medium duty and light interrupted cutting cycles. This insert optimises the balance between 'Hard Phase' where fine TiCN grains form a composite with a hard phase of courser grains in the binder. Having both a core and outer layer, these are combined to enhance hardness and toughness for increased wear resistance and suppression of cracking. Typical cutting speeds are between 50 and 300 m/min.



In recent trials involving multi-diameter profiling on 34CrMo4 steel gear shafts, the T1500A DNMG insert enabled tool life to be extended from 800 parts per cutting edge with a competitor insert to 1,000 parts. The operation was run with coolant at 140m/min at a feed rate of 0.15 mm/rev and depth-of-cut of 0.25 mm.



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ITC offers versatile Widia 90 degree milling range

With cutters that can be used for shoulder milling, profiling, face milling, slotting, ramping, helical and circular interpolation whilst achieving true 90 degree shoulder milling, the Victory Shoulder Mill (VSM) 17 platform from Widia is a robust and versatile job-shop winner.

Now available from Tamworth cutting tool experts Industrial Tooling Corporation (ITC), the VSM17 has been designed for low horsepower machine tools. The new Widia VSM17 from ITC delivers the benefit of reduced horsepower requirement and higher spindle speed and feed rates, which essentially means more parts per shift.

The VSM17 cutter bodies have an integral chip gullet design that demonstrates excellent chip evacuation and with its hardened-steel construction and hardened pocket seats, the new milling line exhibits high resistance to deformation. The VSM17 offers aggressive ramping capability up to 8.8° with a maximum 16.45 mm depth of cut. This enables users of the new VSM17 to benefit from significantly improved productivity rates when rough machining

with low powered machine tools. The impressive VSM17 line is available in a variety of designations that include shell mills, screw-on type cutters, cylindrical shank and Weldon shank end mills with a through coolant facility.

The VSM17 inserts have strong cutting edges, a corner radii and positive rake faces that provide a true 90 degree wall while providing excellent wall and floor surface finishes. This geometry also enhances tool life, consistency and overall performance when measured against competitor products. The innovative geometry is complemented by a number of insert grade designations that make the VSM17 suitable for high performance machining of a multitude of material types. The VSM17 is available from ITC with starter kits also available upon request. The starter kit includes a cutter body and ten inserts that are now available for end users that are keen to improve the productivity and performance levels of their milling operations.

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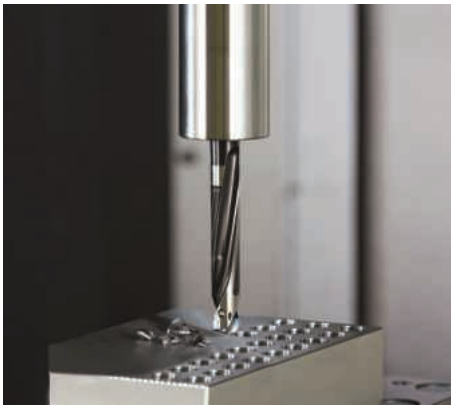
Modular drill with low cutting force for excellent drilling accuracy

Reduced deflection thanks to optimised drill bit, high smoothness during deep drilling, good chip control and easy drill bit replacement yield highly efficient and extremely precise results

Advanced ceramics specialist, Kyocera is launching the new Magic Drill DRA, a highly efficient drill with an easily replaceable drill bit, which achieves superb drilling accuracy at a low cutting force. The optimisation of the drill bit and chip flute as well as a special coating ensure high stability and long tool life.

In the current climate, the trend is towards a diverse range of materials to be processed which are also becoming lighter and lighter. Therefore, a drill needs to be capable of being used for different materials while maintaining high drilling precision.

Drilling accuracy is a function of the holder's stability and the degree of deflection during drilling. A larger drill bit reduces deflection and thus increases stability and drilling accuracy. However, clamping or jamming of chips may occur due to the smaller chip flute, particularly when drilling deep holes. With its Magic Drill DRA, Kyocera optimally resolves this conflict



between greater stability and smaller chip flute.

The Magic Drill DRA is a highly efficient modular drill that combines superb drilling accuracy with excellent chip control. The drill bit ensures high stability. It is 20 percent larger than that of competitors, and its helix angle and flute design have been optimised, which prevents deflection. The excellent drilling accuracy is achieved by reducing the cutting force by means of a special S-shaped chisel edge that minimises thrust and vibration during drilling.

Consistent chip removal is made possible thanks to an optimised chip section and support groove with a wider fillet (5D, 8D). When signs of wear and tear appear, it is easy to replace the drill bit in no time at all. The screw that holds the drill bit to the holder merely has to be loosened, not completely unscrewed, and then tightened again after the replacement. Moreover, Kyocera's MEGACOAT NANO PR1535 coating ensures long service life of the drill bit and stable processing of different materials.

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New Gripsafe gripmeter

Making health and safety headaches a thing of the past

Pratt Burnerd International, a division of 600 UK, has launched its new chuck force measurement Gripsafe gripmeter at MACH 2016. The Gripsafe accurately measures and records chuck gripping forces within seconds.

This new, innovative product, suitable for use on all makes of chuck, has been developed to help customers comply with health and safety legislation, allowing them to ensure that their chucks remain fit for purpose.

The new Gripsafe is a vital health and safety instrument. It is clear that if a chuck is poorly maintained, has damage or excessive wear, grip force can be seriously compromised.

This is relevant on all lathes, from manual through to full CNC lathes and turning centres, whether industrial or educational. No one can afford to ignore the loss of grip that chucks succumb to over time, which can rapidly become a hazard if not maintained and monitored regularly. Pratt Burnerd believe that the Gripsafe will prove to become a welcome tool for health and safety managers and lathe operators alike, who have to meet safety standards.

The Gripsafe ensures reliable and accurate measurement of the gripping force being applied by the chuck under both static and rotating conditions. All that is required is to clamp the Gripsafe unit in the chuck and quickly run the tests, with instant results. It will immediately become clear if the chuck needs attention or replacing.

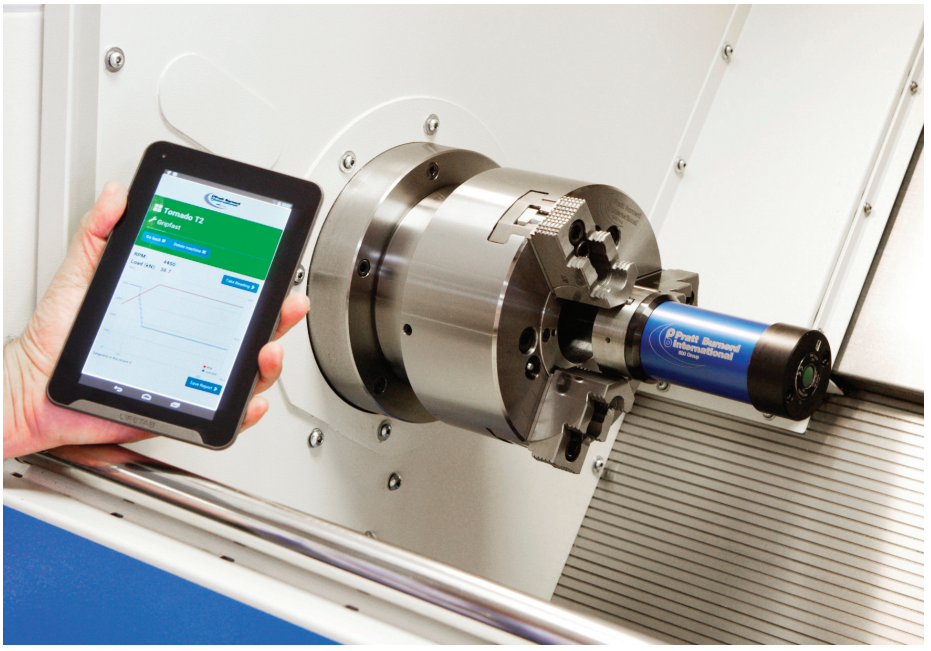
The Gripsafe, utilises the latest 'state of the art' WiFi communication technology. Unique embedded software provides end-users with many valuable features that include providing extensive data collection as well as analysis and storage.

The Gripsafe accurately measures static and dynamic chuck gripping forces up to 100 kN per jaw at a rotational speed up to a maximum of 6,000 rpm and is compatible with all three and two jaw chucks. It comes supplied with extension rings to enable use with increased diameter chucks and is able to connect to any WiFi compatible device.

Additionally, the in-built Gripsafe software provides real-time data capture incorporating all essential functions needed to conclude analysis. Its main features include: a rechargeable battery with USB charging interface and battery level indicator; Multiple machine 'file save' and 'session' features; Data export to .CSV file function; Test certification print facility with automatic time and date stamping and automatic re-calibration reminder.

The Gripsafe gripmeter can be purchased outright, or alternatively be rented for an agreed timeframe to suit individual maintenance schedules.

Howard Bamforth, sales director at 600 UK says: "Our aim at 600 UK and Pratt Burnerd is to continually develop products through our UK based research and manufacturing team to bring the best new machine tool and chucking products to the market for our customers. We firmly believe that the Gripsafe chuck force measurement gripmeter falls directly into that category, with its innovative design giving customers clear value and fully satisfying their ever growing need to comply with health and safety legislation."



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

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

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

Laser marking
Laser marking is a technologically superior alternative to inkjet marking. It requires no consumables and can operate on a continuous high speed basis when integrated into customers' production lines. The business has its own technology and proprietary software. Customer applications are diverse and range from telecommunications to pharmaceuticals. The requirement for increased product and component traceability is one of the market drivers.

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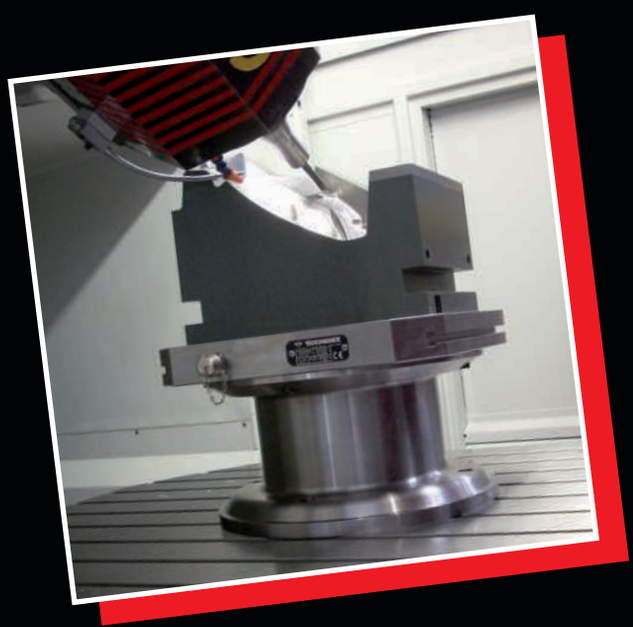
Workholding for 5 axis machines?

The answer's YES



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Increased productivity and efficiency

At MACH 2016 REM Systems showcased a range of brand new workholding and automation products from Erowa that look set to offer increased efficiency and productivity to UK machine shops.

Erowa's mineral cast tombstone cube combined with the company's ingenious MTS (Modular Tooling System) zero-point workholding system results in a high efficiency fixturing system. It maximises the working area and allows the operator to setup the workholding while the machine is in operation. The tombstone and finished machined parts are exchanged very quickly for the freshly loaded one, keeping the spindle downtime to a minimum. The MTS system ensures precise positioning and stability even with heavy machining operations.

Made of quartz sand, sand, rock flour and epoxy resin, the new mineral tombstone offers low weight with a lower density than aluminium, combined with a high degree of vibration damping that is up to 10 times better than cast iron and a low degree of thermal conductivity, making it an ideal base for precise workholding.

Every successful product has the potential for improvement, and Erowa's MTS zero-point clamping system is a perfect example. Originally launched in 2001 and supplemented with the advanced MTS+ version in 2008. At MACH 2016 REM Systems will launch Erowa MTS 2.0 that combines the advantages of the two previous versions in one single product: 60 percent more clamping power with a reduced opening pressure.

The Erowa MTS (Modular Tooling System) is an open system so the maximum workpiece size simply depends on the working envelope of the machine. Whether it is a case of small pallets on just one MTS chuck or large pallets on several MTS chucks

or base plates, any combination is possible. Positioning accuracy is better than 0.005 mm. MTS+ provides monitoring of the clamping system, ensuring the pallet is clamped securely each time as well as providing the feedback required for automation.

Produced from high strength INOX material, the latest MTS 2.0 is fully compatible with the existing Erowa zero-point systems and offers increased performance with a clamping power of 20 kN equating to a class-leading holding power of more than 60 kN.

Also new at MACH is Erowa's CleverClamp system with clamping elements that are specially tailored for producing one-off and low volume parts. The seamless, modular tooling system is simple to handle and serves a wide variety of applications. The elements are designed to fit together flexibly combining to decrease setting-up times, increase machining times and improve productivity.

Base rails provide the backbone of the CleverClamp workholding system, and they can be used horizontally or vertically. Suitable clamping elements can be quickly and precisely located using the rail's positioning grid. The combination of stops and linear or pull-down clamping elements support to accurate and secure holding of workpieces in any orientation.

REM Systems was established in the early eighties to service Swiss EDM machines. This activity brought the company into contact with the Swiss tooling and automation company Erowa and it has been its distributor in the UK and Ireland since 1987.

At about the same time, it also became the distributor for another Swiss company, TRIAG that produces multi-vice systems. Recently it become the distributor for a third Swiss company, FTool that manufactures EDM tooling systems. REM Systems association with these companies, coupled with many years' experience of machine tools and production engineering, means it is well placed to help customers in their pursuit of lean manufacturing processes.

EROWA's field of activity is tool and mould making, as well as precision

mechanics. Thanks to innovative, practice-oriented system solutions and a comprehensive range of services the small company, setup in 1970, has become an internationally successful corporate group and employs a total of 300 people in Switzerland and in subsidiaries in Germany, France, Sweden, the USA, Japan, Singapore, China and has representation in other countries.

The close-knit marketing and distribution network guarantees closeness to customers and prompt service worldwide. Regular customers include small, medium-sized and large companies in the machine-building, aerospace, medical, automotive, electronics and watchmaking industries.

Erowa is located in Reinach and Büron, close to Luzern, in Switzerland.

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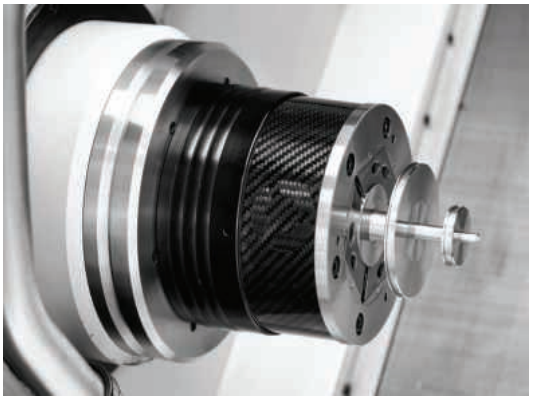
Hainbuch takes orders at MACH

The new products introduced by Hainbuch at MACH 2016 certainly had visitors in a spin with the company receiving a high number of orders at the show. With a vast array of workholding and automation solutions receiving their MACH debut, the Staffordshire company certainly pulled the crowds with the exceptional level of innovation.

Commenting upon the success of MACH 2016, Hainbuch UK's managing director Nick Peter says: "Our strategy at MACH was to give more attention to serious enquiries and not just 'collect business cards'. This has paid dividends as we sold a number of workholding products at the show and our after show 'follow-up' has been very focused on priority enquiries. The result of this rapid and attentive response has also yielded a high number of after-show sales."

The industry leading workholding company also had its products in action on stands of more than seven leading machine tool vendors at MACH, something else that proved extremely positive at the show. As Nick Peter continues: "At MACH 2014 we were located in Hall 4, away from the machine tool suppliers. This year we were located very close to the machines that were using our equipment and this paid dividends for us. The high number of machine tool sales and enquiries at MACH, resulted in machine tool engineers directing their buyers straight to our stand for the workholding solution. We sold a lot of equipment to new customers as part of this strategy and the synergy we have built with machine tool builders is invaluable."



In addition, the German component clamping specialist used its stand location to network with the machine tool vendors. Nick Peter says: "Despite MACH being a very busy show, we made time to network with the machine tool vendors that demand high-quality workholding solutions. This also proved very beneficial to both Hainbuch and the machine tool suppliers, as it gave us an opportunity to educate engineers about the latest solutions."

Whether it was clamping of stationary or rotating parts or even automation solutions, the latest products from Hainbuch delighted the engineers attending MACH. One product in particular that pulled the crowds and was sold in large quantities during and after the show was the new SPANNTOP Nova workholding system.

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Hydraulic version of low-profile clamping system enables automation

Finnish workholding equipment manufacturer, OK-VISE Oy, has introduced new, hydraulically actuated versions of its low-profile clamping products. A typical automated system was demonstrated using the manufacturer's Multi Rail System RM at MACH 2016 on the stand of UK distributor, 1st Machine Tool Accessories.

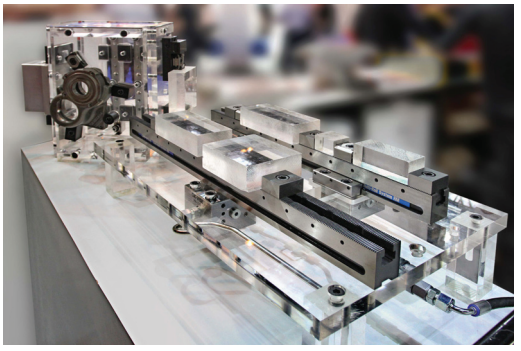
OK-VISE clamps work on the principle that when tightened they expand, simultaneously pressing the workpieces against the guide to prevent any possibility of play. Small in size yet exerting a clamping force up to 150 kN, the clamps are designed to fit between workpieces and take little space on the fastening base, be it a T-slot table, base plate, serrated rail or other platform.

Fastening involves a single bolt located in the centre of each clamp, ensuring quick setup times. Normally carried out by hand, the procedure may now be automated using a hydraulic cylinder that sits under the fixture on a 3-axis machining centre table or behind the clamping faces of a tombstone on a 4/5-axis machine.

Standard clamp models are single-wedge with serrated jaws and have a hardness of 48-52 HRC, while smooth jaws can alternatively be specified. Double-wedge versions are available that create an additional pull-down action. Machinable jaw models for workpieces of irregular shape are available, as are special types to suit castings and wire EDM applications. Wedge and jaws are made of through-hardened tool steel.

Compared with traditional workholding, low-profile clamps do not take up as much space in the machining area. There is hence the possibility to put more components under the spindle, so tool changes per part are fewer, machine uptime is maximised and operator intervention is reduced.

Offering a comprehensive range of top quality products at competitive prices, 1st Machine Tool Accessories is a leading supplier of workholding and machining accessories. These include collets; chuck jaws; Kitagawa and Bison chucks, rotary tables and vices; Chick workholding equipment; Abbott and Leave fixturing and clamping products; Darex tool sharpeners; OK-Vises; Brighetti reduction bushes; CoolJet high pressure coolant systems; Micromag filtration units; machine mounts; and Overbeck deburring twister lathes.



Automated, hydraulically actuated clamping on an OK-VISE Multi Rail System RM being demonstrated on the 1st MTA stand at MACH 2016. A hydraulic OK-VISE tombstone clamping arrangement is shown behind

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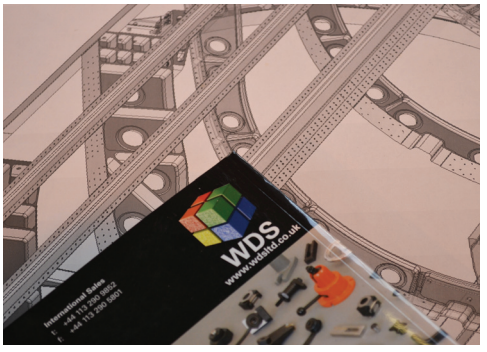
Supporting industry from design through to specification

With over 80 years of manufacturing and distribution experience, WDS Component Parts Ltd. has supplied standard parts, machine accessories and workholding components to many different industries around the world. Its engineers have taken advantage of such varied experience to learn from the unique challenges and requirements of each industry to develop one of the most comprehensive ranges of standard parts in the market as well as a bespoke engineering service that benefits customers globally.

WDS supplies components to an array of worldwide markets including OEM, machine build, aerospace, defence, motorsport, marine, automotive, rail, MRO and medical. Because WDS manufactures the majority of its product in-house, it has had to invest in a manufacturing infrastructure and its engineering knowledge to enable it to develop high quality solutions for such a wide range of requirements. This investment is a benefit to all customers, whether they're a start-up manufacturing business or a Formula 1 team.

Chris Putman, sales and marketing director for WDS, says: "We're well known for offering a product range that has unrivalled depth, but that's only possible because we've been listening to, and learning from, our customers for decades. Whether your priority is accuracy, reliability, specialist materials or simply cost competitiveness, we understand that different industries have different requirements and we're constantly expanding our range to ensure we have an answer for all of our customers."

Unlike most distributors of standard parts, who are re-selling components that have been manufactured all over the world, WDS has in-house engineering capability that allows the business to offer a unique level of technical support, whether that's finding the right off-the-shelf product or designing a bespoke solution. Projects undertaken by the WDS Bespoke parts design and manufacture service range from an adaptation of an existing part through to a completely unique solution designed and developed specifically for the customer.



In total there are now over 20,000 standard parts available direct from the WDS website, in most cases available for same day despatch ex stock.

Fully rendered, 3D CAD models are available for all parts on the website with free rapid download in 13 formats and in 83 legacy versions.

WDS Component Parts Ltd
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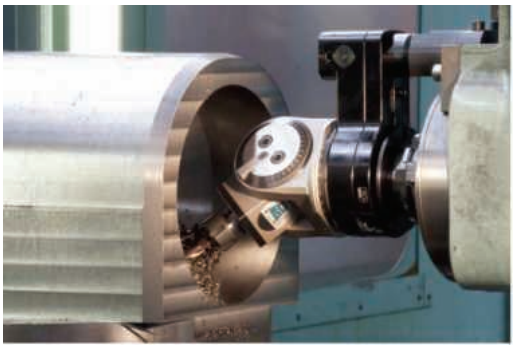
New precision angle heads can increase efficiency and functionality



The latest addition to YMT Technologies Tooling Division's comprehensive list of high quality products is the O.M.G. range of milling, drilling and tapping angle heads for improved efficiency and functionality. The Yeovil-based company offers an extensive range of cost-effective high precision tool and workholding solutions, as well as efficiency-improving machine tool and workshop ancillaries. All of the products offered by YMT, including the new O.M.G. range comes with full pre- and post-sales technical support.

Based in Cavriago, North West of Bolonga, Italy, O.M.G. has over five decades of experience manufacturing ancillaries specifically designed to increase manufacturers' productivity. The company has established a global reputation for its range of angle heads, spindle speeders, revolving turret and multi-spindle heads, as well as bespoke, application-specific solutions designed for customers in the most demanding industry sectors, such as aerospace, defence and marine.

Jason Short, YMT Technologies' tooling and equipment manager, explains: "O.M.G. is an engineering company with a longstanding tradition for producing solutions designed to increase the productivity of almost any manufacturing business. YMT and O.M.G. share the same drive, to provide customers with reliable and robust methods of increasing output so that they can compete effectively in a global market."

One of the most popular ranges produced is the TA Series of angle heads. The bodies are machined from a solid steel billet for rigidity, and are Niploy (chemical nickel plating) treated and anti-corrosion coated for extended service in harsh environments. The ground spiral bevel transfer Gleason gears are fitted with class ABEC7 or 9 precision taper roller bearings for smooth operation, even under heavy cutting loads.

Available in 25 sizes for drilling up to 26 mm diameter, for maximum flexibility the TA Series features a modular spindle interface, which can be changed to suit almost any machine tool. Tapers available include BT, SK, HSK, CAT, Capto and KM. A wide variety of tool holding methods are also supported, with tool shank fixing including ER collets, Weldon whistle-notch, HSK, Coromant Capto and Komet. All angle heads are supplied with coolant channels that feed from the torque arm to nozzles next to the tool. Through tool coolant can be specified via the torque arm up to 10 bar, or with high pressure seals fitted up to 70 bar through the angle head.

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Take a deep breath

By Tony Hopkins, business manager products at Nederman Ltd

Breathing can be defined as the passage of air into and out of the lungs to supply the body with oxygen. A simple involuntary act the vast majority of us take for granted. However, in a workplace without adequate dust or fume control, that simple act could be contributing to short or even long term health problems.

Workers in bakeries, paint sprayers and those who inhale solder fumes in the electronics industry are susceptible to Occupational Asthma. Welders can suffer from Chronic Obstructive Pulmonary Disease, whilst Occupational Alveolitis can develop in employees in food processing industries. Those who work with asbestos, nickel or chromium risk Lung Cancer.

The Control of Substances Hazardous to Health (COSHH) regulations, part of the Health and Safety at Work Act, places a duty on employers and employees to ensure that exposure to hazardous substances is either prevented or adequately controlled.

Where this exposure is caused by the potential release of hazardous dust or fumes into the air, the release must be controlled. This is achieved most effectively and economically by the use of Local Exhaust Ventilation (LEV) which aims, by the use of effective hooding, booths, etc, to capture the dust or fumes at source and protect not only the process operator but also his or her colleagues in the general factory environment who would also be at risk should the dust or fumes be allowed to escape. The Health and Safety Executive has published a guide to LEV, HSG258 'Controlling airborne contaminants at work', aimed not only at the suppliers of LEV systems but also the employers and their representatives whose duty it is to manage these systems and prevent exposure of their workforce to airborne hazardous substances.

Regulation 9 of the COSHH Regulations requires that thorough examination and testing of LEV systems is carried out at least once every 14 months, however in some instances the testing intervals are much shorter. For example, processes involving the abrasive blasting of metal castings require monthly testing, whilst dust or fume generating processes in the non-ferrous casting industry require testing every 6 months. Employers not adhering to the required test frequency, or often not having any testing done at all, are putting their company at risk of enforcement action from the HSE. Furthermore, it puts employees at risk from potentially underperforming LEV systems that are not providing an adequate level of control. Often a reduction in effectiveness of an LEV system can be a simple maintenance issue. This can include the need for new filter media, new fan belts or even wear and tear in the ductwork that

can cause leaks and reduce the amount of air available at the point of dust or fume generation. This can be highlighted in an LEV report and suitable action can be taken.

Working closely with the HSE, the British Occupational Hygiene Society (BOHS) has developed the course P601: Thorough examination and testing of Local Exhaust Ventilation systems. Successful completion of the course enables an engineer to competently evaluate the design and effectiveness of LEV systems and their component parts, undertake the statutory testing in line with established procedures and record the results in a suitable format.

Nederman has a dedicated team of engineers P601 qualified to inspect, test and maintain all types of LEV systems irrespective of its design or manufacture and they are regionally based throughout the UK to provide nationwide coverage.

Nederman is a world leader in industrial air filtration. It is a specialist in solving problems relating to fumes, gas, dust, recycling, working conditions and an efficient production environment. Many Nederman solutions have been ground-breaking innovations within the metal fabrications industry, vehicle repair shops, plastic and composite processing, the chemical, food and woodworking industries and many more. Services cover everything from project planning to installation, commissioning, testing and maintenance.

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New dust collector filter combines flame retardant, conductive properties

The new HemiPleat® FR Carbon dust collector filter from Camfil Air Pollution Control (APC) is the first to combine flame retardant and conductive properties in a single filter that also offers high efficiency, long service life, and energy-efficient performance.

The special carbon-impregnated filtration media is designed for dust-handling applications that require flame resistance as well as dissipation of static charges, including many metal dusts, fumed silica dust, plastic, PVC or composite dusts, pharmaceutical dusts and carbon black/toner dusts.

The cartridge filters are especially suited to explosive dust applications, making it possible to conform to NFPA and ATEX requirements and lessen the risk of ignition sources due to static electricity charges.

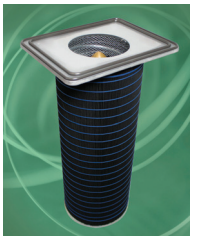
The new "two-in-one" conductive/flame retardant filters often allow the use of dry media-type dust collectors in applications where they otherwise could not have been used. They are available in a choice of two media types: the standard HemiPleat open-pleat high efficiency media and the HemiPleat eXtreme nano fibre media, which offers a MERV 15 efficiency rating and enhanced performance on difficult dust/fume applications and highly explosive processes.

For product information, visit:
https://camfilapc.eu/products/hemipleat#conductive

New responsive website showcases dust collection technologies and expanded product offerings

Camfil Air Pollution Control (APC) has launched a new web site designed to showcase the company's expanded family of dust, mist and fume collection equipment for a full range of manufacturing industries. It is a responsive web site, designed for all types of devices: Whether viewed on a computer monitor, tablet or smartphone, the web page detects the browser type and automatically reformats for optimum viewing. The new site is online at **www.camfilapc.com**

Camfil APC's new site provides instant access from the home page to the five key product lines: the company's recently added lines of mist collectors, wet scrubbers and compact dust collectors with cleanable filter systems, as well as the flagship line of Farr Gold Series® cartridge dust collectors.



The viewer can readily browse key industries and applications for all products, as well as installation photos, processes, and lists of common dusts to locate relevant information. Case studies and tutorials, regulatory updates on emission control and combustible dust, and a video library can also be accessed from the home page. A search function and new "Quick Links" tab make it easy to drill deeper into related content. Image carousels, expandable captions and other visual enhancements make it easy to interact with the site and load information quickly.

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E2S adds light to family of hazardous location warning signals

E2S Warning Signals, the leading independent warning signals manufacturer, has added visual signals to its explosion proof and corrosion resistant GNEx family.

Suitable for all Zone 1, 2, 21 & 22 hazardous location signalling applications the GNEx beacons have extended temperature range with IECEx and ATEX Ex d approvals. For high ambient light or long distance signalling the GNExB2 beacon is available in 10, 15 and 21 joule variants producing up to 902 cd, a very high output Xenon strobe. The smaller sized GNExB1 is available for where a 5 joule (up to 117cd) unit meets requirements. Three flash patterns and second stage, set by users, are a standard feature with all GNEx beacons, depending on base model and power (DC or AC) supply.

On-site removal and replacement of the lens filter, such as for colour changes, is simple. Polycarbonate, UV stable lenses are available in Amber, Blue, Clear, Green, Magenta, Red and Yellow as separate spare parts. Installation time is minimised by design with the GRP enclosure having a threaded flame path, multiple cable entries and a large termination area.

Complementing the GNEx range is the GNExJ2 Ex d junction box, which, having multiple cable entries and terminal configurations is suitable for a large variety of applications.

Both 15 and 21 joule versions can be supplied as a plate mounted assembly configured with up to four Xenon strobe beacons with a junction box or five beacons without a junction box.

The new Xenon strobe beacon visual signals broaden the GNEx family which includes alarm horn sounders, PA loudspeakers and manual call points for activation of fire alarms, gas detection and emergency shutdown systems.

E2S is the world's leading independent signalling manufacturer. Based in West London, England the company designs and manufactures a comprehensive range of signalling products for industrial, marine and hazardous area environments. E2S products are available globally via their distribution network, details of distributors are available on the company's website. Additionally, E2S has a dedicated distribution hub in Houston, Texas for local product distribution and technical support.

E2S Warning Signals
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New light curtain takes safety to the next level

A tough addition to SICK's flagship safety light curtain family, the deTec4 Prime is an extra-rugged, high-performance light curtain that is easy to install and use. It is also suitable for harsh environments and exceptionally wide machines.

With the SICK deTec4 Prime, it is easier than ever to achieve hazardous and access point safety protection up to PLe/SIL3. It is ideal for a wide variety of applications such as machine tool operation; automotive production; warehousing and logistics and FMCG goods handling and packaging.

With integrated laser alignment for simple installation, the SICK deTec4 Prime provides full end-to-end protection with no blind zones and a wide scanning range up to 21 m. It complements the highly successful deTec4 Core safety light curtain which has set new protection performance standards since its launch in 2013.

With integral dip switches for simple in-situ configuration, the deTec4 Prime is quick and easy to commission without the need for a computer. Cascading up to three deTec4 Prime safety light curtains minimises wiring complexity and reduces the number of safety inputs in the control cabinet. The coded light beam option prevents optical interference between devices in side-by-side applications.

The SICK deTec4 Prime offers protective field heights in increments from 300 mm to 2,100 mm and a choice of finger (14 mm) or hand (30 mm) resolution providing protection against operator intervention in accordance with EN ISO 13855 in applications covering up to 21 metres. It is a type 4 device (IEC 61496), enabling compliance in applications with requirements up to PLe (EN ISO 13849) and SIL 3 (IEC61508).

Configuration and range adjustment is automatic, requiring no additional setup; diagnostics indication is simple and additional functions such as EDM monitoring or manual reset are activated automatically by connection.

A combination of the innovative mounting bracket configuration, semi-circular contours and alignment LEDs greatly facilitate the installation process meaning the SICK deTec4 Prime can be installed quickly and easily in seconds. LEDs along both sender and receiver indicate the field, OSSD's and state of the light curtains allowing efficient maintenance and diagnostics. The deTec4 Prime allows the connection of a reset button and/or the facility to monitor external devices (EDM) which can reduce wiring and the need for additional devices in the control cabinet saving space.

The SICK deTec4 Prime benefits from a tough, IP65 or IP67, impact and warp resistant enclosure with an operating temperature range from -300 C to +550 C guaranteeing operation in harsh conditions and a variety of demanding industrial environments.

SICK launches next-generation safety laser scanner

With the launch of its next-generation safety laser scanner, the microScan3, SICK is promising a new era of improved personal safety and productivity. The microScan3 is the first safety laser scanner to use SICK's patented scanning technology, safeHDDMTM (High Definition Distance Measurement), based on advanced time of flight measurement.

SafeHHDM enables the microScan3 to operate reliably in difficult ambient light, dirty or dusty conditions where other technologies can fail. The microScan3 packs unprecedented performance into its compact size, with excellent resolution and detection of difficult-to-see materials with a wide range of 5.5 metres and 275 degrees.

The uniquely-developed and patented high definition distance measurement algorithms used for the safeHDDM scanning technology use multi-signal evaluation to achieve a level of measurement reliability never before seen in safety scanners. Even a very dark object with just 1.8 percent remission, e.g. black clothing, is reliably detected.

The microScan3 achieves up to 30 mm object resolution, a protective field range of up to 5.5 metres and a warning field range of up to 40 metres. Up to eight fields can be programmed with two monitoring cases and there are three universal I/O connections which can be assigned various signals.

With a bright multi-colour clear-text display and additional status LED's, the microScan3 provides on-the-spot operational status and easy to understand diagnostics information to allow adjustments or corrections to be made locally.

SICK's new Safety Designer software makes commissioning almost intuitive and the Smart core memory retains configurations allowing for rapid device changeover. SICK microScan3 has a lightweight, rugged metal housing with vibration resistant brackets, enabling easy installation and adjustment. M12, 8-pin connectors, mini USB interface and system plug with integrated configuration memory ensure simple, low cost, smart connectivity.

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A solution to your dust problem

Metal, wood or plastic, ESTA mobile dust collectors remove almost any type of dust or chips produced when working by hand or with machines.

The dust is usually captured directly at the processing machine and routed to the filter unit through a connection piece. The dust can also be captured by appropriate extraction elements, such as a hood, extraction arm or table. Due to the compact design and smooth-running castors, the ESTA dust collectors are flexible and can easily be moved to any operating location.

These mobile dust collectors have been tested and awarded with many certificates for specific applications, and are with different filter media and filter cleaning systems. As a result, they are operable in almost all sectors. Optionally, many dust collectors are available as ATEX versions (ATmosphere EXplosible) and therefore suitable for use in explosion-prone areas.

The DUSTOMAT 4 features: individual and multiple extraction of free-flowing and dry dusts; direct extraction at processing machines; connects to hood collectors, extraction arms and smaller pipe systems; Hepa or ATEX version (optional); available in the eco+ version for maximum efficiency and safety; power savings of up to 50 percent due to the newly-developed ESTA EasyControl device panel.

The DUSTOMAT 10 includes: removal of shavings and free-flowing dust; individual workplace extraction at machines and manual workstations; direct extraction at processing machines; connects to hood collectors and extraction arms; suitable for most types of dust; tilt-back filter housings for easy dust disposal.

The DUSTOMAT 16-M features: extraction of mineral dust occuring in the masonry industry, for example stone, graphite and concrete dust; individual workplace extraction at machines and manual workstations; awarded the class "M" test certificate for the extraction of toxic dusts.

The DUSTOMAT S includes: extraction of sticky and long-fibre dust (such as textile fibres, flock dust or foil tinsel); removal of dust produced during transfer and filling processes in the packing industry; ideal for the textile and flock industry.

The Wet separator NA features: individual workplace extraction of sticky materials; suitable for environments that give off a lot of spark; available as dust extractor, cleaning vacuum or as pre-separator; optionally available as ATEX version.

A product catalogue can be downloaded from the website covering ESTA's large product range for the effective and efficient extraction and filtration of dust, shavings and fumes.

ESTA Apparatebau GmbH & Co. KG
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Dickies new look 2016 catalogue

The new Dickies 2016 catalogue has nearly 200 pages of fresh photography on core lines. With new graphics, icons and pictograms, it is easy to follow and it is packed with a number of exciting new products and ranges, with style, functionality and quality being paramount in driving the Dickies business forward.

New products include ED24/7 trousers that are not only practical for the everyday working environment but also comfortable and stylish. The 245 gsm fabric ensures they are tough but light enough to retain agility.

Also new for this year are the Eisenhower premium shorts which follow the popular Eisenhower premium trouser which was the must have work trouser for 2015. They are made from a mix of the premium fabrics rip stop and cordura, with a clever design of pocket details (zip off holster pockets). The fit has been ergonomically designed to be able to move and provide maximum comfort. The new shorts are available in black with additional tool pockets, in cordura with Teflon coating.

Following on from the popular two tone range is the two-tone high visibility range, which includes a jacket, hoodie, trousers, T-shirt and waistcoat. The new styles are all certified to the new high-visibility standard EN ISO 20471.

To offer warmth while working, Dickies has also introduced the Lewiston jacket, power stretch softshell black with grey contrast a two way mechanical stretch and comes with a bonded fleece.

With over 90 years' experience in workwear manufacturing, generations of workers have found Dickies to be a brand they can trust. Employing the latest developments in fabric technology and manufacturing techniques, Dickies' high performance workwear is suited for even the harshest working environments.

Dickies' quality workwear is available in both traditional and modern styles and delivers performance, comfort and protection at an affordable price.

The new catalogue is available to download at **www.dickiesworkwear.com** or to order the print version email: **uksales@dickies.com**

Ready..preset..go

The purchase of a tool presetter is probably the single most effective solution to increasing machine tool utilisation and to achieving greater levels of manufacturing efficiency.

by Mike Welsh, Mike Welsh Communications

The stimulus for the introduction of tool presetters to the pre-machining stage was global industry's adoption of qualified tooling. As a consequence of the improved accuracy of tool-shanks and holders and the use of precision inserts, repeatability of location became assured, and the dimensions of tools set offline became guaranteed. Manufacturer's rapid implementation of qualified tooling encouraged the establishment of what is now the extremely efficient practise of offline presetting.

Machine shops now use various forms of tool presetter devices to enable tools to be set to a known size before being loaded into the machine tool. Offline presetting delivers multiple advantages, the practice removes the need for trial cuts, it reduces company's scrap levels, releases valuable production time, improves the surface finish of the workpiece and reduces consumption of consumable tooling such as carbide inserts.

Despite the major technical developments, in terms of accuracy and ease of use, that have been made since the introduction of the technology, in real terms tool presetters have significantly reduced in price. This has enabled cost-effective systems to be embraced by even the humblest of manufacturing companies. So effective is the use of tool presetting techniques, it is now acknowledged that a production facility wishing to increase output by the purchase of a further expensive CNC machine tool, can frequently achieve similar productivity gains by investing in a relatively inexpensive tool presetter.

Production cells located within large factories have proven to massively increase their efficiencies following the imple-mentation of tool presetting routines. Offline presetting allows machine tools to operate at maximum efficiency and enables downtime to be minimised through the instant availability of preset tooling as part of job-kit issuing systems, or when used in conjunction with the application of methods such as Kaizan.

The upsurge in global demand for tool

presetters has resulted in the emergence of a wide variety of designs from an increasing number of tool presetter manufacturers, this keen competition has resulted in the current availability of tool presetters that match most machine tool applications and company budgets. Examples are available, from impressive optical based machines that encompass advanced geometric capabilities, to basic, inexpensive models that use electronic scales and indicators as a means of measurement.

Most tool presetters are now capable of sending data from each of their measuring axis to label printers, tool management software or directly to machine tool control systems.

Although tool presetters are usually purchased to help release additional productive machine time and to minimise scrap levels, users find that a welcome by-product is significant reductions in their consumable tooling spend.

To help prove the remarkably quick pay back times that can be achieved, most tool presetter manufacturers are happy to demonstrate their products at potential customers' premises.

The modern practice of setting tools offline, means that previous sequential methods are replaced with much more efficient, simultaneous processes that release substantial amounts of previously wasted production time.

In contrast to traditional methods, it is thought that that an off-machine tool presetting procedure delivers a time saving of 2-3 minutes of machine downtime. Therefore, by extension, 20 tool changes in an eight hour shift results in time savings of between 40-60 minutes.

These figures are based on the efficiencies gained by a single machine tool in just one day. As a tool presetter is able to service the needs of multiple machine tools, the cost justification argument becomes ever more compulsive.

Put simply, by presetting tools manufacturers are able to increase productivity levels by more than 10 percent without the need to invest in further expensive and space consuming machine tools and employing additional staff.

As offline tool presetting enables the full latent productive potential of machine tools

to be released, the efficiencies gained by users new to the technique means that they are often able to report ROI figures measured in less than six months.

Often used in conjunction with tool presetting, Tool Management Software (TMS) enables users to achieve the best possible management of tool data and to further increase overall efficiencies and machine tool utilisation.

QUALITY DRIVES PRODUCTIVITY

Make it perfect the first time,
the ten-thousandth time, every time.

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HEXAGON
MANUFACTURING INTELLIGENCE

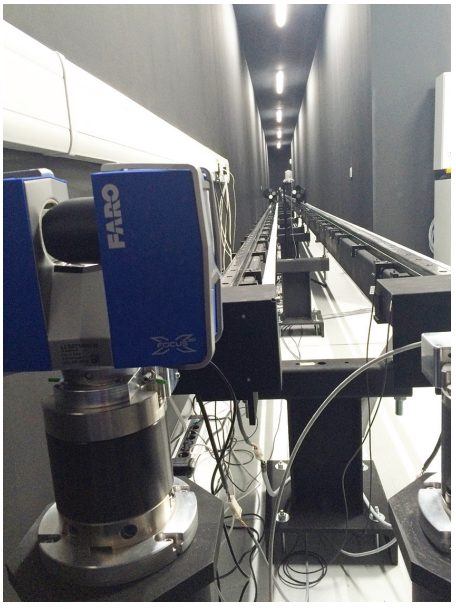
New FARO service and calibration centre

FARO Technologies, Inc. (NASDAQ: FARO), has officially opened its new service and calibration centre in Rugby, Warwickshire.

FARO UK's move to the spacious new facility was prompted by ever rising sales, the recent introduction of several advanced new products and its determination to deliver even higher levels of customer care.

Danny Melville UK regional manager says: "In addition to providing extremely accurate, robust and easy to use portable CMMs (coordinate measuring machines) and 3D imaging devices, the staff of FARO UK delivers industry leading levels of service to our valued customers. Our new service and calibration centre will allow us to offer even greater levels of service and to carry-out a wide range of in-house product demonstrations."

FARO UK has continued to grow over the last 20 years and the opening of the new centre promises to further enhance operations. Setting up a new service centre is a big investment, but in order to serve its customers in the best possible way the company recognised it was a necessary commitment. Joe Arezone, managing director for Europe, Middle East & Africa said: "There was previously just one customer service centre located in Stuttgart, Germany. We have outgrown that service centre and our customers have told us that they want local service.'' David Homewood, sales operations director for FARO added: ''As we grow the operation we will grow the inventory both here and in Stuttgart.''



The new service and calibration centre will provide faster turnaround times, reduced travelling time for customers and of course local service. Customers will benefit from a drop off and collect service, elimination of air freight costs and a local inventory of spares and accessories. The centre will be open five days a week with a dedicated, local UK service team to support field based diagnostics. At the press briefing for the launch of the new centre David Homewood said: ''If customers are in a panic situation they love it if you can be there quickly. 50 percent of our customers are small to medium sized businesses and we are selling into milling, grinding and turning with metrology.''

Concerning future investment David Homewood said: ''Automation is where we are investing. We really see automation gathering pace in the industry now. A lot of repetitive jobs in manufacturing will in the future be done by robots. It is safe, simple and also price needs to be competitive.''

FARO UK has around 30 employees based in the UK including a number of regional account managers. This enables the group to have good nationwide geographic coverage and to be able to respond to customers quickly and efficiently. FARO work to international standards and consider regular periodic product checks to be good practice.

David Homewood says: ''Different technologies require completely different environments to calibrate them. We build in diagnostic checks into the products and provide full international traceability. We check the whole product all the way through. The whole 360 degrees.'' Quality control is key.

All Faro training is bespoke. The training is tailored to the customer and once a product has been delivered customers will be trained at their own premises. After training customers will be shown how to measure their parts. The company sells three days training as standard with a device.

FARO is one of the world's most trusted sources for 3D measurement, imaging and realisation technology. The Company develops and markets computer-aided measurement and imaging devices and software. Technology from FARO permits high-precision 3D measurement, imaging and comparison of parts and complex structures within production and quality assurance processes. The devices are used for inspecting components and assemblies, rapid prototyping, documenting large volume spaces or structures in 3D, surveying and construction, as well as for investigation and reconstruction of accident sites or crime scenes.

FARO Technologies UK Ltd
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www.faro.com

High accuracy, miniature angle encoder

A very compact, incremental encoder for measuring angles to a high degree of precision has been introduced by Heidenhain, which says that the unit has 10 times higher resolution and reproducibility than competitive products due to its superior signal quality, low noise and high interpolation rates.

Designated ERO 2000, the angle encoder was originally designed for use with galvanometer motors used, for example, to move mirrors and provide positional feedback in laser applications involving beam steering, microscopy or marking. Other uses are to be found in small measuring arms, for positioning piezoelectric motors, and in micro systems such as goniometers for determining the angle between the faces of a crystal or a blade edge.

The encoder does not have an integral bearing, resulting in low start-up torque, absence of heat generation from friction, direct coupling of rotor and stator to the host equipment, greater reliability and minimal maintenance. The comparatively large mounting tolerances and the possibility of adjusting both the incremental and the reference-mark signals make assembly easy. A wizard in the software guides the user through the required steps.

The compact ERO 2000 incremental angle encoder from Heidenhain has 10 times higher resolution and reproducibility than competitive products due to its superior signal quality, low noise and high interpolation rates

The hub is fixed to the low-inertia circular scale, making the latter easy to adjust, whether its specification is 360 degrees / 2,500 line count / 18.6 mm diameter, or a 45 degree segment. Customised and application-specific versions are possible, in particular with regard to the design of the hub and scale assembly.

The 5V DC scanning head generates a 1Vpp sinusoidal voltage signal and operates at up to 14,000 rpm. Excellent thermal stability is claimed between the extremes of operating temperature, which are -10 and +70°C.

ERO 2000 is the first of what will be a product family by the end of 2016. The range will comprise models with line counts from 1,600 to 23,000 and scanning heads with a TTL interface.

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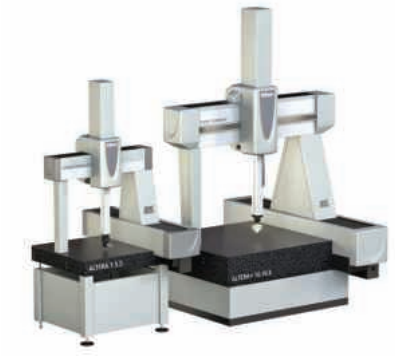
Extended CMM range brings improved performance and larger sizes

The ALTERA ceramic bridge coordinate measuring machine (CMM) range, manufactured by Nikon Metrology, has been extended by the introduction of high accuracy ALTERA+ models as well as larger size machines. Now comprising 30 standard models and seven bridge sizes, the core ALTERA programme offers solutions for an array of applications and requirements, from the smallest measuring volume, 7.7.5 up to the largest, 60.20.15. ALTERA+ includes standard sizes ranging from 8.7.6 to 25.10.8 for inspection of critical components manufactured to the tightest of tolerances.

Thanks to optimised designs and the use of advanced materials, ALTERA provides high performance and superior accuracy across a host of metrology applications, including harsh shop floor environments. Probing support is extended with REVO 5-axis scanning technology to improve CMM productivity dramatically for complex tactile inspection applications. Notably, ALTERA is delivered with a manufacturer's 10 year accuracy guarantee.

Built and designed to exacting standards, ALTERA CMMs use advanced ceramic components for structural integrity and enduring performance. With near perfect stiffness-to-weight ratio, ceramic guideways facilitate impressive accuracy: 1.4+L/375 (E150 according to ISO10360-2:2009). The ceramic bridge is resistant to temperature variation, while the stress-free, horizontal ceramic beam and advanced multi-point bearings counter any negative effect on accuracy when using long probes.



Nikon Metrology's ALTERA ceramic bridge CMM programme has been extended by the introduction of high accuracy ALTERA+ models and larger size machines

ALTERA CMMs support an extensive range of tactile and non-contact probing and software options. Multi-sensor technology extends capability to measuring parts that are large or small, 2D or 3D, hard or soft and prismatic or free-form. Software options consist not only of CAMIO and CMM-Manager, but also MODUS to operate the Renishaw REVO-2 probe head.

The shop-floor-ready ALTERA CMM makes use of several innovative new features. Folding guideway covers protect the air bearing guideways from airborne contaminants such as dust and oil. Superior pneumatic, self-levelling vibration isolators provide optimum performance in areas subject to high levels of low frequency vibration. Automation can integrate machine tools, transfer systems and material handling to form flexible manufacturing systems.

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Bowers creates bespoke air gauging system for aluminium gearcases

Rotork, a leading actuator manufacturer and flow control company, works closely with companies in the oil and gas, water and waste water, power, marine, mining, food, pharmaceutical and chemical industries across the globe. Rotork's products and services are used throughout the world to improve process efficiency, assure safety, and protect the environment.

Rotork is a specialist supplier of actuators, adaptions and accessories to the international valve and actuator industry. It provides an extensive range of valve actuators, designed to withstand the challenges of operating valves in harsh environments, including subsea and nuclear. It also provides a complete range of assembly and test services.

Within its range of actuators, Rotork produces a gearcase made from aluminium alloy. Among other features to be inspected on the gearcase are seven critical diameters, six parallel and one taper, ranging in diameter from 21 mm to 184 mm. The size and form of these features are extremely important because when they are fitted with their mating part, a flame proof joint is formed.

Each of these diameters is required to be meticulously checked for roundness and diameter, with tolerances varying between 0.020 mm and 0.050 mm. The results from each measurement are then collated and recorded within Rotork's statistical process control (SPC) system.

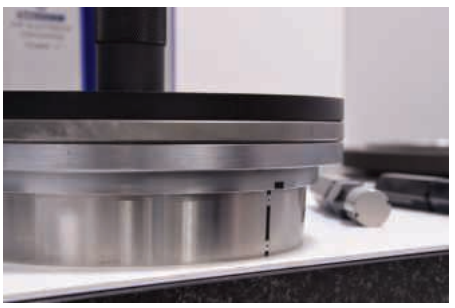
Rotork had been using a contact gauging method of measurement for many years. However, due to the abrasive nature of the material and the tendency for aluminium alloy to "cold weld" itself to any part that it comes into contact with, Rotork approached Bowers Group with a view to discuss the merits of changing over to a "non-contact" gauging method for these parts.

Air gauging is a measuring system that makes no physical contact with the component at the measurement point. Bowers Group has many years of experience in producing air gauges, and in January 2015 invited Rotork and its associates to a meeting at their Camberley demonstration centre to discuss the merits of moving to a non-contact air gauging solution.

Rotork has made substantial investments over the years in the Sylvac D300s Digital displays, and understandably wanted to retain this equipment as the preferred digital display for the measured results. At that time, Bowers did not have an air gauge system that could be used in conjunction with the Sylvac D300s display, and so the process began to develop such a bespoke solution.

In conjunction with a current air gauge supplier, Bowers put a proposal forward for an eight channel air gauging station that incorporated all of the requirements stipulated by Rotork. This system would be capable of linking in with the Sylvac D300s Digital displays, as requested. Early testing of the system showed the measuring results to be extremely stable, and the system proved easy to calibrate and very simple to use.

Based on these encouraging early results, Rotork placed an order for two identical systems in July 2015, and the manufacturing process began. The manufacturing process



was completed in late October 2015 and the first of the two systems was delivered to HPC (a key machining partner to Rotork) for testing on the Series 2 components.

Paul Dennett, quality engineer at HPC says: "The results are looking very good, even on the diameter 36.0 mm bore which only has a 0.020 mm tolerance. I must also say that the gauging is much more shop floor friendly than the old contact style gauges."

In December 2015, Rotork placed a further order for a 10 channel system based on the same principle. Bowers Group are expecting to have this completed by the end of April 2016.

Bowers provides a wide choice of cost effective, quality measuring instruments. Supplementing Bowers' own range of gauges, its sole UK agent status means that they can offer UK customers superior products from many preeminent metrology companies, such as Trimos, Sylvac, Gagemaker and Wyler.

In response to customer demand and as a result of the company's continued investment in cutting-edge technology, Bowers now produces an increasingly comprehensive range of affordable, quality instruments intended for other applications, such as depth and external gauging.

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Hexagon machine measures up to nuclear inspection role

Hexagon Manufacturing Intelligence UK is playing a key role in the development of advanced production processes for the civil nuclear industry.

The measurement solutions provider has supplied a new Leitz PMM-C 12.10.7, an ultra-high precision coordinate measuring machine, which offers sub-micron resolution of large parts and samples, to the Nuclear AMRC.

It means the centre, led by the University of Sheffield and based on the Advanced Manufacturing Park in Rotherham, now boasts the most accurate and largest scale metrology capabilities within the high value manufacturing catapult network of research centres.

The Hexagon Manufacturing Intelligence Leitz PMM-C 12.10.7 was chosen for its ability to inspect components and samples up to 1.2 m in length and weighing up to 1,750 kg. It is also equipped with a Precitec LR chromatic confocal probe for non-contact measurement of critical faces to nanometre resolutions, Profiler R sensor for automated tactile surface roughness measurement and an ultra-high precision rotary table to aid inspection and measurement of rotatives, blades, gears and splines.

Carl Hitchens, head of machining and metrology, at Nuclear AMRC says: "We chose the Leitz because of its stability and accuracy. Quality is critical in the civil nuclear industry and the machine's sub-micron accuracy allows us to reach a deeper understanding of the manufacturing process.

"We can then use this understanding to inform, improve and optimise the process, helping companies to demonstrate that parts made by new processes can meet the quality requirements of their customers."

On-machine inspection of large high value components is a major area of study for the Nuclear AMRC where a Hexagon Manufacturing Intelligence DEA DELTA, the largest gantry CMM available in any research centre, and Hexagon's PC-DMIS NC machine tool metrology software are also in use.

Multi-sensor systems are the future so the investment in the Leitz platform not only enables the centre to be an early adopter of next generation technologies, but also ensures the research team can validate and test systems with the support of Hexagon, a Tier One member, and other manufacturing partners.

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New measurement product guide now available

Precision sensor manufacturer Micro-Epsilon has published a new, 36-page measurement product guide for 2016 that is packed with a host of innovative products.

The fully revised edition provides a summary of Micro-Epsilon's comprehensive range of products, from sensors for displacement, distance, position and length measurement, to 2D/3D laser sensors for dimensional measurements, non-contact temperature sensors, thermal imaging cameras, optical micrometers and fibre optic sensors, colour sensors and LED analysers, sensors for specific OEM applications, and full turnkey measurement and inspection systems.

New products included in this edition include the optoNCDT 1320/1420, a groundbreaking range of laser triangulation sensors with integrated controller. These sensors offer machine builders, systems integrators and OEMs an unrivalled combination of technical benefits in terms of their compact size, performance (up to 4 kHz measuring rate) and ease of installation.

Also included is the new confocal IFS2406, a high performing yet compact range of confocal chromatic sensors that are almost 60 percent smaller than their predecessors, enabling simpler integration into restricted spaces.

Other new products included in this edition are the capaNCDT 6110 range of capacitive sensors; the eddyNCDT 3001 and eddyNCDT 3005 series of eddy current displacement sensors; the scanCONTROL 29xx series of laser line profile sensors; thermoMETER CT Video/CS Video infrared temperature sensors with crosshair laser sighting and video output; the TIM G7 and TIM M1 USB thermal imagers for the glass and metal processing industries respectively; and the reflectCONTROL Compact measurement system for the detection of defects on shiny surfaces.

As well as providing information on sensor products, the catalogue also describes the various measuring techniques that the sensors employ, whilst providing application examples supported by photographs and illustrations wherever possible. The Guide also provides a technical specification summary for each sensor series, including selection factors such as measuring range, linearity, resolution, repeatability, measuring rate, profile frequency and response time.

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OPEN MIND revolutionises aerospace structure machining

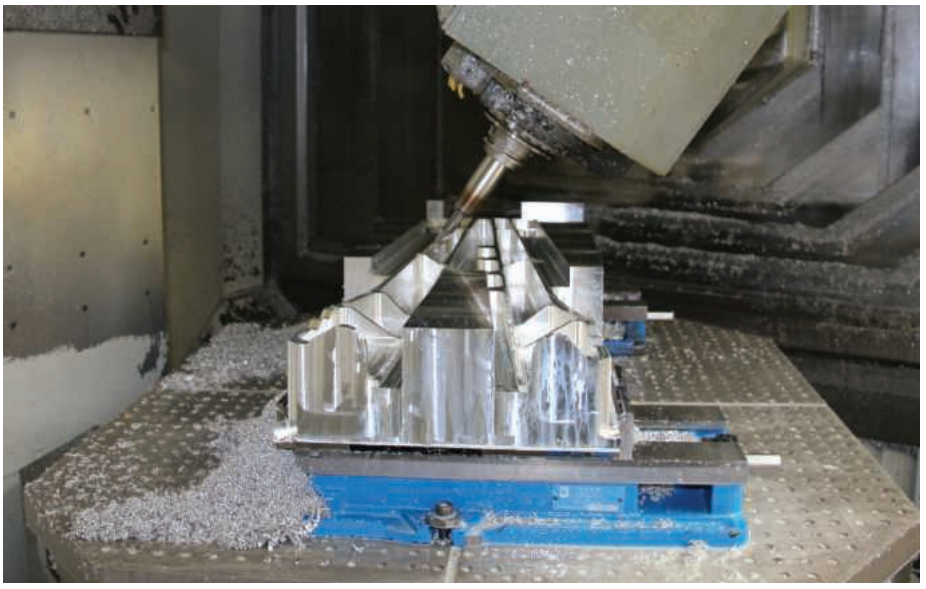
Midland Aerospace takes-off with MAXX machining

Just over 10 years ago, Midland Aerospace invested in a 5-axis DMG machining centre and OPEN MIND's hyperMILL CAM software to support the new investment. A decade later and the astounding growth at Midland has seen the arrival of an additional five 5-axis machine tools and an extra three seats of hyperMILL.

In the last three years, the manufacturer of aero engine and wing structure components has moved to a new 45,000sq/ft factory to double its floor-space. This floor space has since been filled with over £2 m of new equipment from DMG, Hermle, CMS, Hexagon, Amada and many more. The reward for its investment is turnover growth of 20 percent and staff numbers increasing by 30 in just two years. The growth forecast is set to continue with the company now being one of the 40 elite aerospace businesses working under the UK Government's new SIG (Sharing In Growth) program.

Midland Aerospace managing director, Eamon Lyons says: "We were SC21 members, but the SIG Program is way beyond SC21. Focusing on marginal gains within our business to support the Government strategy to 'protect and develop' the UK aerospace supply chain, the benefits are immediately noticeable. We started the first phase in January 2016 and we project the SIG investment in our business to be in excess of £1 m over the next four years."

The Government support for Midland Aerospace is just reward for its ongoing investment in technology and staff. Eluding to the machine tool investments, Eamon Lyons says: "5-axis machines are a necessity for leading aerospace suppliers and to ensure our machines run at their optimum, we invested in hyperMILL. Our initial decision in 2005 was based on two factors. Firstly, a leading F1 team did a three-month feasibility trial of all the leading CAM vendors and OPEN MIND came out on top by some distance. If an F1 team can invest so much of their leading engineers' time as a resource it was a good enough endorsement for us. It also justifies the importance of high-end CAM software. Secondly, we wanted to protect our machine investment with 5-axis software that guaranteed collision avoidance, OPEN MIND was the only company that could meet our needs."



Since the initial investment in 5-axis machine tools and hyperMILL, both the 5-axis machines and CAM seats have increased. The four hyperMILL seats help Midland to develop, prototype and batch manufacture parts for customers; with anything from 50 to 100+ parts being programmed with hyperMILL every month.

Eamon Lyons continues: "Our choice of CAM vendor was justified with the comprehensive anti-collision protection. It was more than justified with the 'mirroring' feature that is used for wing parts that are up to 30 percent of our business. Mirroring slashes programming times on 'opposite-hand' parts and it removes programming bottlenecks. Furthermore, the ease-of-use for our programmers is another major benefit. But the real sign that we invested in the best CAM package is the relentless development of new CAM

features that make our daily jobs ever easier."

hyperMILL MAXXimises productivity for Midland

Whilst the programmers are full of praise for hyperMILL and the on-going product enhancements, they are equally delighted with the on-machine productivity gains. One feature that has slashed cycle times is the hyperMAXX machining module. Midland was invited to trial the new module at the AMRC on one of its titanium structural parts that consists of six pockets on each side.

Taking the part to the AMRC, the hyperMAXX package reduced the cycle time for each 18 mm deep pocket from 40 minutes to just three. The complex part that previously required 40 hours of machining is now finished in less than 10 hours. The hyperMAXX roughing module trebled the recommended feed rate and almost doubled the speed rates to deliver a productivity gain of 280 percent. Despite the change of parameters, tool life with the solid carbide Dormer end mill was improved from 30 minutes to over two hours.

Eamon Lyons says: "Our customers demand components in a time window that varies from 24 hours to 2 weeks; having hyperMAXX machining on the shop-floor certainly streamlines our production and eliminates any bottlenecks. With up to 75 percent of our work consisting of brackets and rib parts such as A-Frame wing components, hyperMAXX has proven invaluable."

However, OPEN MIND has now incorporated new features into hyperMAXX and re-branded the package 'MAXX Machining' and Midland Aerospace is currently trialling the new features with astounding results. The new MAXX Machining package has a '5-axis tangent plane' machining feature that works in conjunction with barrel cutters to increase the tool 'step-over' rate by 5-10 times depending upon the tool geometry. This instantly reduces rough machining cycle times by 75 percent and finish machining times by 90 percent. For Midland Aerospace, the early indications are of complete success.

As Midland Aerospace Programmer, Ian Jones confirms: "Up to 90 percent of our machining time can be spent finishing tight corner radii in pockets, as we have previously had issues with chatter and miss-match marks. By using the tangent plane feature and special tools, we now have 6-7 mm of the tool in contact with the part. This improves the finish, eliminates chatter and miss-match marks and it significantly improves machining times."

Not only is the new MAXX Machining module slashing cycle times on finish machining, but another new feature, '5-axis helical drilling' is drastically reducing rough machining times. The machining strategies of the previous hyperMAXX package were impressive, but the new MAXX Machining package with its 5-axis tangent plane machining for finishing and 5-axis helical drilling strategy for roughing are both setting new standards.

The new 5-axis helical drilling strategy in MAXX Machining enables the customer to use a face mill or a large end-mill to utilise trochoidal tool paths that remove large quantities of material at exceptional speeds. The early indications from trials at Midland Aerospace are extremely positive for the company's parts that demand pocket milling.

OPEN MIND's technical sales manager, Matt Coulson says: "hyperMAXX made huge improvements for Midland and it looks like MAXX Machining will take things to a completely new level. Over the next few weeks, we'll be implementing strategies to deliver cycle time, surface finish, component quality and even tool life improvements.

However, part of our remit as technical engineers is to ensure customers are getting the most out of hyperMILL, and one standard feature that too many customers overlook is the 'automated process' macros,

which is a standard hyperMILL Function. For example, to program and machine an M10 threaded hole, the programmer must input parameters such as the centre drill, drill, tap and chamfer tool. hyperMILL will enable the customer to automate this process by saving the complete process as a 'macro' in a Database and recalling the macro for future M10 threads on subsequent jobs. By automating processes, the customer can significantly cut programming times."

Eamon Lyons concludes: "We knew we were making the best possible investment for our company 10 years ago when we opted for hyperMILL. At no point in the last decade have we regretted that decision. In fact, the continual development of hyperMILL, the arrival of subsequent features such as hyperMAXX and now MAXX Machining have confirmed that we own the best CAM package in the industry. In addition, having OPEN MIND engineers like Matt visit us to ensure we maximise our use of the package underpins the fact that we made the right decision to invest in hyperMILL.''

OPEN MIND Technologies AG is a leading developer of CADCAM software and postprocessors for designing and manufacturing complex moulds and parts. OPEN MIND offers an extensive range of products, from 2D feature-oriented solutions for milling standard parts through to software for 5-axis simultaneous machining. With their hyperMILL software, which is used in the automotive, tool and mould manufacturing, mechanical engineering and aerospace industries, OPEN MIND Technologies AG is represented in all the important markets in Asia, Europe and North America.

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Collaborative enabling software proves popular

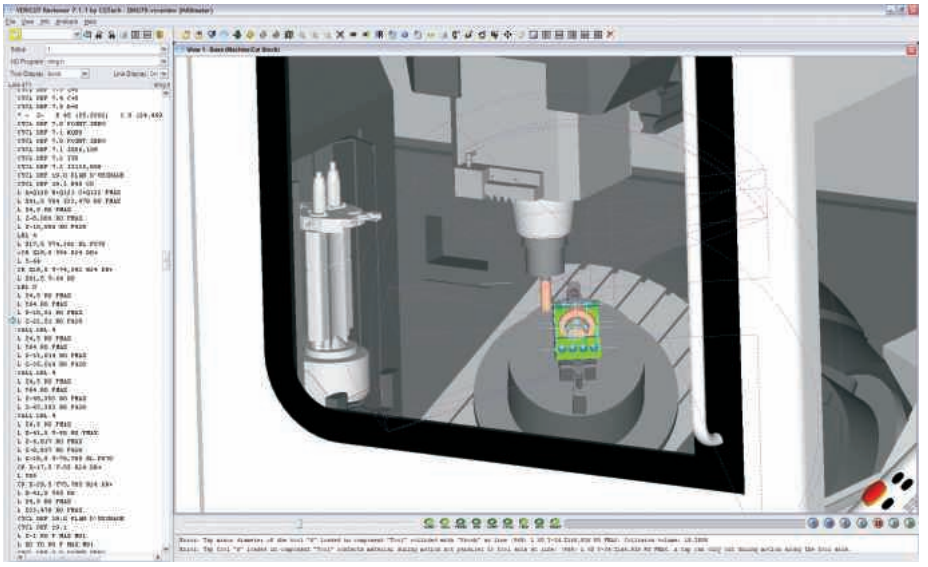
CGTech, the developer of VERICUT, the leading independent CNC simulation and optimisation software, welcomed around 220 visitors onto its stand at MACH 2016. A popular destination for existing customers, and those considering protecting their machine tools and improving efficiency, was the Reviewer 'demo bar'.

Nada, gratis, zip, nothing, not a single bean and completely free, that is what it costs to run VERICUT Reviewer files. Yet this powerful software from CGTech provides enterprise-wide manufacturing collaboration that even extends beyond the geographic location of any company. A foundation for a truly paperless operation Reviewer can generate in-process inspection instructions and 3D digital documentation from simulated in-process machined features.

Seamless integration is the goal of CGTech and a big step towards this is the free issue software to run the VERICUT Reviewer files. It is available to download from the VERICUT DVD for companies using the CNC optimisation and simulation software or from the CGTech website, and it will play Reviewer files on all versions of Windows desktop PCs or Windows compatible handheld tablets, as well as Apple iPads.

UK sales manager, Rob Lightfoot, says: "It is an advanced communications method, instead of using paper we are using the full simulation power of VERICUT. Although the file is generated by VERICUT once it is created it can be seen outside the software completely licence-free using Reviewer.

"Make no mistakes; errors on the shopfloor are expensive. It is critical that the machine operator and CADCAM programmer communicate effectively. The implications of poor communication go well beyond wasted programmer and machine time. Something as simple as a poorly



defined setup instruction sheet can result in scrapped parts, broken cutters, or a damaged machine. Worse yet, a late delivery can result in the loss of future business. When all of these risks are combined, it's difficult to quantify the value of good communication."

Although it is freely available the 3D Reviewer is a very powerful tool that can also help improve communication with customers, suppliers, and anyone else that can benefit from having access to a 3D simulation. Anyone can play the 3D simulation forward and backward to see material being removed or replaced. Error messages and NC program text is highlighted when a collision on the stock or fixture is selected. Cutting conditions and a tool path line display can be optionally shown. The user can rotate, pan and zoom and the cut stock can be measured using a variety of measurement tools.

As well as handheld digital devices it is also possible to download the software and the Reviewer file on to a USB memory stick so that it can be sent to customers anywhere around the world, or share the file simulation during a video conference. In addition to the 3D simulation, the user can embed traditional reports in PDF format that can be easily accessed from within the app.

Rob Lightfoot says: "You can even highlight areas of concern with video capture or listing the line number in the Review file. It provides full collaboration between the people who designed and programmed the part and those who are going to run it."

While creating reports is a necessity for any machine shop, digital tablets, either using Windows or Apple, are the way to run Reviewer on the shopfloor.

Rob Lightfoot concludes: "Customers are adopting this digital method of removing paper from the shopfloor. With the depth of information available companies that are running first-off parts during the nightshift no longer need the programmer to be there, all the information is contained within the simulated Reviewer file. The VERICUT operator has always been able to do this and now the machine operator can as well with all the information about the machining process collated and available it is a truly collaborative tool to review the process."

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Efficient Software feathers its nest at MACH

UK software development company Efficient Software is pleased to report a record number of demonstrations of its automatic nesting solutions at MACH 2016.

Glenn Whitwell, co-owner of Efficient Software, says: "We have had a fantastic showing at MACH with the stand being a hive of activity for the whole week. The reaction we got to our new Ultra-Performance nesting engine was amazing with both end-users and potential CADCAM partners identifying the potential material cost savings and being keen to explore the software further. Along with our user base that has almost reached 16,000 users worldwide, I think this firmly cements our status as one of the world's most trusted providers of automatic nesting solutions and technology."

Since its launch in 2011, NestFab has commanded a strong following in technical textile cutting applications where material costs are high and even small improvements in material efficiency can add up to large cost savings over the course of a year.

The latest version has a much greater focus on nesting for metal cutting jobs with particular highlights being a powerful new importer supporting the very latest CAD versions, new PDF production reports to aid with part identification during production along with Ultra-Performance, the all-new nesting engine which provides the world's most efficient nesting efficiencies to obtain maximum time and material savings.

The new NestFab offering is ideally situated as a companion product to CAD or controller software without automatic nesting facilities or as an upgrade to existing nesting software. With no need for a permanent internet connection, NestFab is several steps up from the MyNesting pay-as-you-go offering.

NestFab V2 can be downloaded for immediate trial from the company's website at **www.nestfab.com**

Efficient Software Limited is a privately owned software company based in the UK. It's co-founders, Glenn Whitwell and Robert Hellier, successfully ran their former business which was founded to commercialise their PhD research into automatic nesting in partnership with the University of Nottingham. In 2014, Glenn and Robert performed a management buy-out of that business and created Efficient Software to better reflect their ambitions for developing the most accessible yet powerful nesting solutions.

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Innovation in machining and simulation

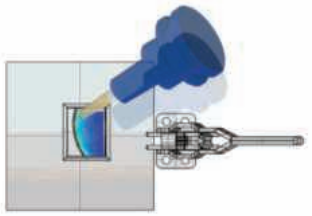
ModuleWorks, a leading supplier of CADCAM components for toolpath generation and simulation, has announced the latest release of its CAM components, ModuleWorks 2016.04, the first major update of 2016. Each ModuleWorks release contains many new and enhanced features across the product range. This latest version includes new features for 5-axis, 3-axis and simulation.

ModuleWorks is at the forefront of 5-axis machining and simulation technology, providing the toolpath and simulation technology that powers many of the leading CAM systems available around the world today.

The new tilting to common direction feature enables you to find a single tool axis orientation, either on the full toolpath or on an individual contour. It can be used for all tilting strategies. When tilting to a common direction, the tool axis is set to a normalised, single direction for all toolpath points.

Laser aided manufacturing is a new toolpath creation feature that can be used for motion control of manufacturing systems that are mounted either on robots or inside standard milling machines.

The new adaptive roughing strategy ensures the cutting conditions remain almost constant. This offers significant



improvements compared to conventional constant offset roughing strategies. The strategy avoids full-width cuts and guarantees a stable load on the tool which enables a faster material removal rate.

With the new lead-in and lead-out extensions, the approach and retraction movements are smoother and more gradual.

The new 3D trimmer for triangle and mesh parallel cuts significantly improves the quality of rest finishing toolpaths and the accuracy of the steep shallow boundary calculation. A new feature for avoiding plunge during adaptive roughing enables you to machine only the pockets where the helical approach can be performed.

Tailstock is a new type of object available in the machine definition for simulation. Tailstocks are mostly used to center a rotary part on a lath to avoid bending and vibrations while machining. The entire tailstock can be moved along a linear axis until it touches a stock or workpiece that is clamped on the machine. The simulation shows the complete range of the stock's functionality.

The measuring functionality to measure the distance between points has been extended and can now be used between machine components.

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Bartec success story leads to major award for 123 Insight

123insight won SME Solution of the Year in the IT Europa awards in April this year as a direct result of the successful implementation and demonstrable savings made at a tyre pressure sensor manufacturer

Bartec Auto ID Ltd, based in Barnsley, South Yorkshire, previously relied on a discontinued DOS-based Australian system to handle bills of materials, but with limited stock management. It also experienced rapid expansion and as a result the reliance on individual staff became too great.

General manager, Matt Woods says: "We were a small cottage industry, and we grew quickly over a very short period. Our production manager was taking on all the responsibility, whether it was the procurement, the manufacturing side of it, despatch and even down to development. You just can't do it all as one person. If we hadn't have taken on a system that individual would have not have been able to cope."

Technical director, Charles Beal adds: "We also didn't know where any of the stock was. There was no way that an auditor could go through it as you couldn't tell what the value was. One of the driving forces was that the MD wanted to get accurate stock valuations. We didn't know what we had in stock, and didn't plan ahead, always buying from the people who could supply the quickest who'd charge twice as much as getting it from normal distribution. So it was costing us a lot of money to do it that way as well."

In 2011 the company started to evaluate MRP systems and were recommended to look at 123insight by two existing users, one of which being another 123insight case study customer.

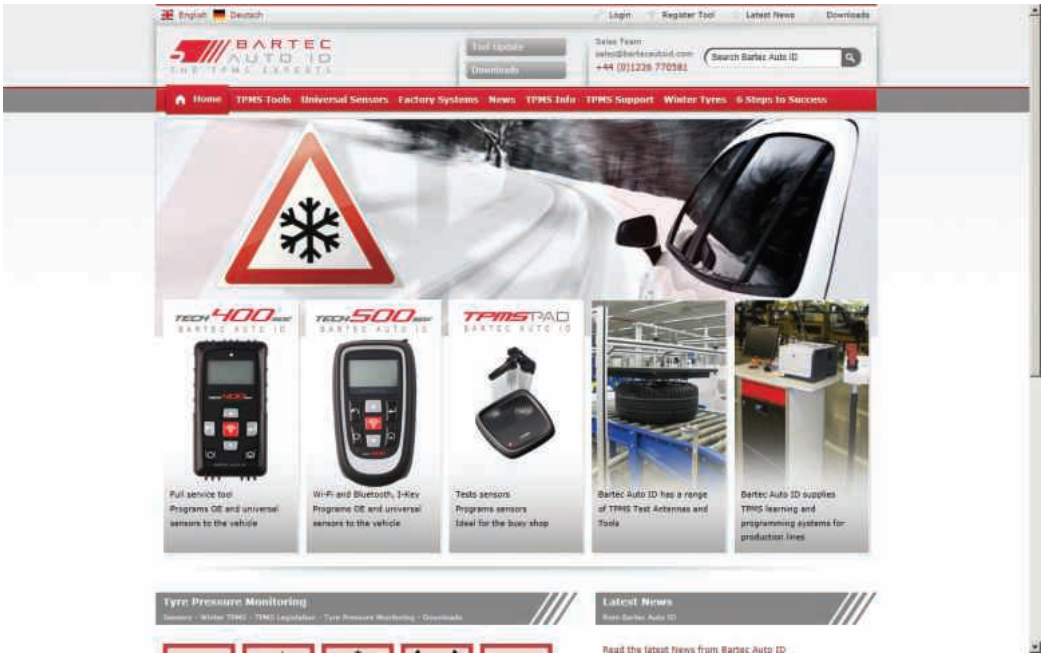
Charles Beal attended a 123insight Evaluation Workshop in November 2011, and liked the fact that various companies could attend the same event. Bartec then sent staff to the no-obligation training in March 2012, understanding that if they decided that the system wasn't suitable for them they could walk away with nothing to pay. After training was completed the decision was made to move ahead with 123insight and they started the process of migrating data from their DOS system and a collection of spreadsheets that were used in various departments across the business. The process of reshaping and migrating the data took around seven months.

"The majority of that time was spent doing stock checks and getting the data into a format that we could import it," says Charles Beal. "Some of it was in the old system, but a lot of it was on spreadsheets. We also had to go out and physically check stock and assign part numbers as we didn't have our own part numbering system. With 123insight you can change the part number later and it reflects through everything else, which is really neat. So when someone

screws something up you can easily change it."

Bartec went live across stock and purchasing in January 2013 and immediately noticed benefits. Roles became much more defined within the business, and visibility of workloads was much clearer.

Matt Woods says: "It allowed us to identify the roles and responsibilities, because clearly one individual can't do it all. By putting everything on the system it highlighted that we needed to have a buyer, we needed somebody in production to handle works orders, somebody in goods in, and as a result that helped our purchasing manager, Dawn Lewis. She's a lot happier with the job and we actually ensure that the product happens when we say it's going to happen. So from that perspective it's been really good. "



Stock saw massive improvements, with the amount of goods dropping by over half from £1.2 m to under £600,000.

"The reductions mainly came from redundant products, products that were listed incorrectly, stock we'll never use again and items that we just purchased too much of at the time," explains Matt Woods.

Stock accuracy also benefited greatly, with Matt citing stock inaccuracies have been virtually eradicated: "We've got various different stock checks that take place now. We have components and we have completed units. Components get checked six-monthly and units get checked each quarter. As a result we are constantly checking our stock, so when it comes round to performing a final stock check it's very simple."

Lead times saw the most drastic reduction, with customers often able to receive goods 85 percent faster than before:

"Now we actually produce goods in a timely manner. A lot of our components can be on 12-18 week lead times, even 20 in some cases. If a customer says they want to buy X and we quote 20 weeks you can imagine that they'll just go somewhere else. We've been able to look at these long lead time items, establish their validity and purchase them. We can therefore reduce stockholding to the extent where our maximum lead time now is about four weeks. We actually supply most products within 2-4 weeks."

Charles Beal adds: "It takes the panic away. Customers such as Bosch have ordered 1,000 of an item and then upped it to 6,000. As we have a system we knew we could probably do it, whereas before we'd have just panicked."

Purchasing experienced knock-on benefits, as staff could identify faster-moving items more quickly and order more strategically. Matt Woods believes that this ability to 'bulk up' has saved at least £20-30 k.

After additional training for production staff in 2014/2015, further benefits were realised. Staff had more visibility of other departments. For example, the despatch staff could see if more than one order was due for a specific customer, so that orders could be shipped together, saving significantly on courier costs.

Bartec is taking advantage of 123insight's ability to associate documents with anything, such as a part, bill of material, customer or works order. Inspection templates are now associated with subcontract orders, where previously there had been some quality issues and this has proven very successful.

Charles Beal says: "Bosch have very strict quality requirements. We had an issue with quality with some injection moulded plastics, so we set up a separate template for Bosch plastics. It detailed exactly what they needed to do, with photographs of exactly what it should look like, what was acceptable and what wasn't. They really liked that and hadn't actually come across a similar system before. It also enabled us to set subcontract-supplied goods up for 100 percent inspection when we knew we had problems and then set it back to 1 in 100 when we were happier with the subcontractor."

Bartec plans to extend 123insight's reach throughout the business in 2016, implementing SFDC (Shop Floor Data Collection) in production and taking further advantage of CRM+. Matt Woods explains: "At some point CRM will be used a lot more. We don't use it to its full capacity at the moment, but I think we need more training to understand what its full capabilities are and what it will give us. We're doing things in chunks, so we're taking bits of the business at a time and trying to better those areas.

Charles Beal concludes: "I like the business model where you haven't got this enormous up front cost, and if it didn't work out then the only investment was the training, which was nothing like spending £20-30 k on a piece of software. I think for our business it's at the right level. We didn't want anything which gave us a completely automatic system. I like the way the MRP gives suggestions that you can either decide to do or not. It doesn't force you to do anything. If you're not careful you can end up with a system that gives you nothing because it is so difficult to manage."

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Global release brings Lantek users closer to Industry 4.0

Lantek, a world leader in sheet metal software systems is launching the global release for 2016 of its Lantek Factory concept. The new version is inspired by sheet metal companies around the world producing parts for sheet metal, tubes and profiles for over 30 years. The new functionality takes producers closer to Industry 4.0 for advanced and agile manufacturing.

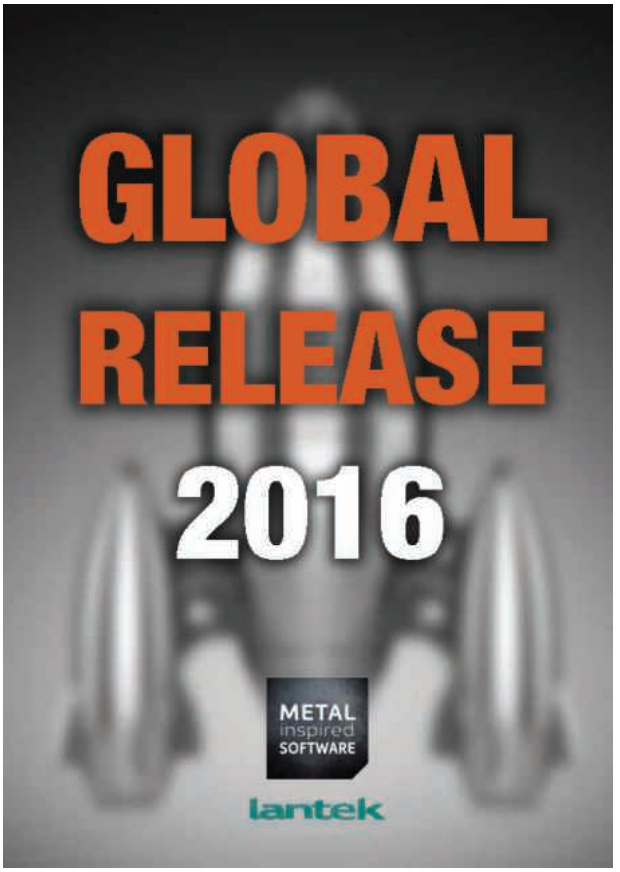
Advanced automatic geometry recognition for multiple parts and dynamic lead in/out positioning reduces programing times, while the new Bevel 3D Designer allows interactive irregular bevel design in 2.5D. Part cost calculation has also been enhanced in compensation for head up/down times and sheet load/unload times.

Cutting gains some improved strategies that optimise heat in the metal sheet during cutting, cut micro-joints at the end of machining, optimise hole destruction and for punching include specific strategies for special tools such as wheel or deburring. A new piercing strategy for thick materials, EcoPierce, saves both energy and time for thick parts.

Lantek has introduced a complete new CAD toolbox for tube design to ease the design of tubes and the incorporation of machining features necessary for successful cutting. Capabilities include multiple shapes for tube ends and for text on tubes as well as enhanced machining features such as break holes, control of ordering and direction of cut, weld preparation and micro joints as well as verification and simulation of the process. Step-by-step, forward and rewind simulation give a true representation of the movement of the machine. To make this type of work easier, the software now supports 3D CAD formats from Autodesk Inventor, CATIA, SOLIDWORKS, Solid Edge, Parasolid, PTC Creo, Siemens NX and VDA.

Additionally, it can also utilise Excel data presented in the correct format to define the tube. The extra CAD formats supported will make it possible to work with a 3D model adding any necessary machining features in the Lantek software.

During the tube cutting process the system now has island management on common cuts to improve efficiency and on 3-axis tube cutting machines it has chuck avoidance and a triple contour cutting strategy. For 5-axis tube cutting machines, the Lantek software can now support the Mazak FabriGear and has extra features such as automatic vector correction, turret and drilling tools management and dynamic cutting for thick H section parts.



In the Lantek Workshop family of software new configurations enable the lag time between work centers to be checked, the arrival of outsourced work monitored and the working capacity by time limit examined. New visual tools let users see the estimated time sum for an execution date and get reports on the available capacity by work centre. Lantek has also introduced a new web based version of Lantek Workshop Capture specifically designed for use on a tablet. By making data capture mobile, it will simplify and speed up the process and encouraging users to enter data reliably and make it easier for managers to review the current situation in the workshop from wherever they are.

In Lantek Integra, the company has improved the quotation stages of its ERP system with tools for calculating costs associated with operations and new dynamic pricing controls, which allow companies to apply different mark-ups according to commercial considerations or, if preferred, the capability for various methods of margin calculation. New quality assurance features keep track of returns including reasons for the return, replacement parts, credit notes and returnable packaging management. The traceability offered here helps to reduce the instance of returns and, for packaging, helps companies to maintain their obligations for recycling.

Enhancements in REPLICA have improved system integration. The new Opentalk system makes it possible for a machine to send events in real time and transfer them to the management systems, while the Powersync system enables integration between Lantek software and the management systems already in place within a company, synchronising defined data sets to a specified schedule or on demand.

The features in the latest Global Release will help companies improve efficiency, communication, cooperation and integration and give them some valuable tools for the implementation of Industry 4.0.

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Delcam adds robot for additive manufacturing research

Delcam has added an ABB robot fitted with a Fronius CMT Advanced welding head to the range of manufacturing equipment at its Birmingham site. The new unit will be used mainly for research into the programming of robots for the additive manufacturing of metals with Delcam's PowerMILL Robot software.

Cold Metal Transfer welding was initially developed by Fronius to join materials with different properties, in particular for welding aluminium to steel. The process uses very high frequency movement of the wire to give a clean, spatter-free material transfer. It provides a stable, reproducible deposition of material that Delcam believes should have great potential in metal additive manufacturing.

The ABB robot arm offers six axes of movement, with an additional two axes, tilt and rotation, provided by the table holding the material. This additional flexibility allows parts to be oriented into the optimum position as they are being built so enabling complex shapes to be created with less need for extra support structures.

PowerMILL Robot makes it as easy to program a robot for machining as it is to program a 5-axis machine tool. As a fully-associated application inside PowerMILL, users have access to all the multi-axis machining strategies within PowerMILL and can use all the system's project management options to manage, store and retrieve data.

As well as making it possible to program robots for additive manufacturing, PowerMILL Robot can be used for tool-to-part applications, especially for machining large parts, such as composite panels that need to be trimmed, or for part-to-tool applications, such as grinding or polishing.

For further information on Delcam's PowerMILL Robot, contact:

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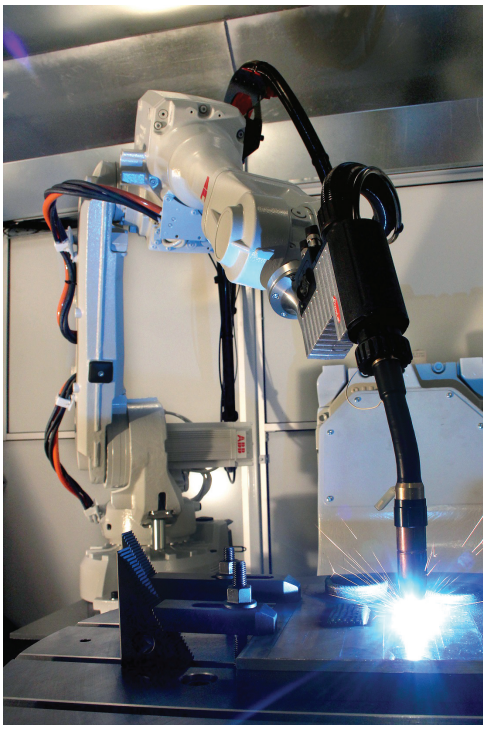

The ABB robot at Delcam will be used for research into metal additive manufacturing

Research funding for 'cold spray' metal additive technology

The benefits of metal additive manufacturing or 'cold spray' technology are set to be enhanced by dedicated EU-funded research. Dycomet UK, which is at the leading edge of the technology in this country, believes the project, that unites five partners from industry and research, will be of significance with a range of substrates. Moreover, it says, the work will also open the door for new material combinations to be developed across a number of industrial sectors including automotive and aerospace.

"Cold spray technology is an additive manufacturing process in which metal powders are accelerated to supersonic speeds in order to adhere to material surfaces," explains Nick Gilfillan, Dycomet UK's managing director. "The material deposition process is based on the kinetic energy allowing variable depth coatings to build up, as required, without thermal defect in the substrate."

He explains that the main advantages of low pressure cold gas spraying are the lack of heat input, high processing speed and

low investment cost: "With both our portable low pressure and fixed high pressure variants, the deposited layer can also be directly machined or re-worked immediately after the process," he adds.

The research project 'Efficient Manufacturing of Laser Assisted Cold-Sprayed Components' (EMLACS) aims to improve adhesion on different substrates by using high speed laser surface structuring. New material combinations can then be developed for industrial use, with the deposition of metallic materials (copper or aluminium) on, for example, carbon fibre and glass fibre reinforced substrates.

In addition, the new technology can be applied in novel ways in electronics manufacturing, such as on a housing for fanless heat removal from electronic components.

"As a distributor and developer for cold spray equipment, we have seen significant interest in a wide range of sectors in just our first few months of operation and we believe the technology is opening up exciting opportunities for both designers and manufacturers alike," continues Nick Gilfillan.

"Now, with important research support such as that being conducted under the EMLACS banner, the resultant benefits and advantages are set to become even more clear-cut. We look forward to being able to present the relevant findings to the marketplace in the near future," he concludes.

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Behringer goes from strength to strength in the UK

The continuing success of the Vernet Behringer installations in the UK of semi-automated and automated system solutions for steel stockholders and steel fabricators

Behringer Ltd reports a continual list of successful installations in the UK of the high performance HD-Xevo saw/drill/milling lines, with deliveries and completion on time for a number of satisfied customers.

The HD-Xevo gantry design drilling machine from Vernet Behringer with an integrated heavy duty Behringer mitre bandsaw is used for drilling, milling, slotting, thread tapping and scribing beams and profiles. Features include linear movements of up to 20 metres per minute and a significantly higher throughput when machining profiles for sawing, drilling and milling.

The HD-X EVO is equipped with three drilling spindles, each featuring an independent X-axis with a 500 mm traversing path. In the clamped 500 mm zone, the machine is able to achieve a tolerance of ± 0.1 mm. All axes are positioned by means of servo drives using ball screws.

Another benefit of the new system is the facility for milling large holes and notched shapes. This saves the need for any downstream work steps. Marking using the "V scoring" method allows characters above and beyond the customary numerical and letter combinations to be inscribed on all 4 sides of the product if required. This feature provides solutions for the present and future demands on traceability of product.

The Vernet Behringer machine is ideally suited for the use of carbide drills, as plenty of spindle power and speed are provided by the high-grade 15 kW drive systems and up to 4,000 rpm. The use of new and exclusive milling tools enables even faster production, providing an unrivalled degree of performance. What's more, the entire machining process comprising combined milling, drilling and sawing can be three-dimensionally depicted and tracked on screen. The drilling machine has a clamping width of 1,200 mm, with drilling diameter range of between 8 to 50 mm.

The Integrated Behringer HBP mitre bandsaw range is specifically designed for integration with this system.

With a cutting range of up to 1,200 x 510 mm and two directional mitres of 30° on the right to 30° on the left, the machine is ideally suited to address the needs of the steel construction industry and the steel trade.

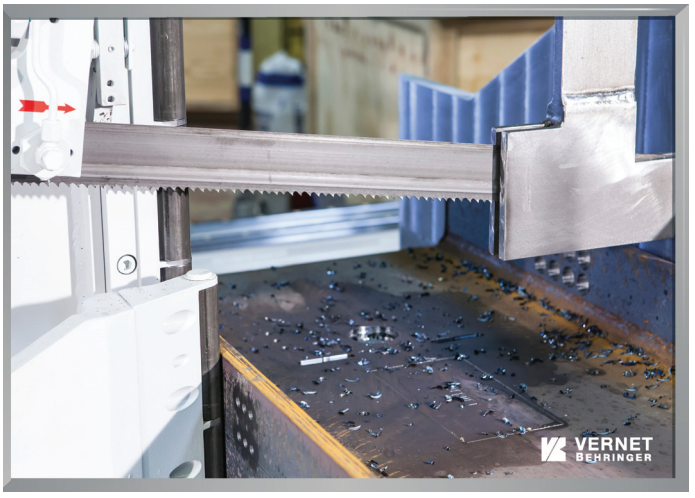
The inclined saw frame reduces the maximum engagement length of the bandsaw blade and is specifically designed to ensure the perfect cutting of large beams or rectangular hollow profiles. With its high-powered saw drive packing a full 13.2 kW output and optional servo feed with AFC (Auto-Feed-Control), it is capable of achieving impressively high cutting performance levels. Used in combination with finely graduated cutting force regulation, the feed and cutting speed are adapted in line with length of saw blade engagement in the material. The result: guaranteed high cutting performance due to consistent chip removal and an optimum tool service life. It is also ideal for use with carbide bandsaw blades.

Used in combination with the shot blasting technology provided by Rösler, production lines are configured together (sawing, drilling, shot blasting and painting) all from a single source.

Simon Smith, managing director of Behringer Ltd, reports: "In addition to saw/drill/milling lines, we also manufacture a comprehensive range of steel processing machines such as: standalone mitre cutting band sawing lines; straight cutting band sawing systems; small to large plate processing and angle line machines; compact drilling systems; robots for profiles; comprehensive range of Behringer Eisele circular sawing machines.

"We have a long standing partnership with Rösler GmbH (surface finishing). This also includes the production of individual infeed and discharge devices and roller conveyor systems. Our in-house steel construction department implements specifically tailored systems, of which mainly examples exist in the UK."

Within the framework of Partners 4 Steel, Behringer also supplies the entire plant technology, including a suitable control system. Depending on the requirements, infeed and discharge roller conveyors, cross conveyors or length measuring devices can be added. For low-manned operation in the steel trade, for instance, a computer-controlled material management system ensures unambitious order assignment, from incoming material through to the assembly site.



"Our transport management system functions dynamically and takes care of smart navigation of the product through complex systems. It determines the most practical, fastest or shortest route to the order picking location, depending on the wording of the order," explains Simon Smith.

Partners 4 Steel, abbreviated to P4S, attach particular importance to customer cooperation. Working closely with the end user, the three partners engineer the perfect individual solution from their extensive performance spectrum.

Behringer Ltd was established in 2013. The UK branch of Behringer Group supports the large number of installed Behringer, Behringer Eisele and Vernet Behringer machines in the UK. The modern service facility based near Leighton Buzzard holds stock of spare parts and offers comprehensive technical support with spare parts, service and new project enquiries.

The large showroom holds stock of straight and mitre bandsaw and circular sawing machines available for demonstration.

"We work hard with customers offering service contracts as an ongoing support that creates that important closer working relationship," says Simon Smith. "As a team, we pride ourselves on offering a good service to our new and existing customers. Service is the key to success and we are recruiting more staff in line with the growth of the business."

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Third IMET bandsaw for B+M Steel

Leading UK steel stockholders and fabricator, Barclay & Mathieson (B+M Steel), has taken delivery of one of the very latest IMET fully automatic large capacity incremental feed bandsaws from cutting technology specialist, Addison Saws.

Installed at B+M Steel's Glasgow depot in January 2016, the IMET H700 NC saw will be used to cut both large and small quantities of steel bar, either individually or by bundle. It will process a wide variety of products, including flat, hollow and solid sections, as well as steel beams.

Impressive cutting tolerances and impressed with IMET

"We chose the IMET fully automatic large capacity incremental feed bandsaw because of the very close cutting tolerances and production capabilities it offers," comments Barclay & Mathieson's general manager, Stephen McLean. "Our decision was also influenced by the reliability and capability of the two IMET two-way-mitre bandsaws we purchased from Addison Saws last year. They have brought considerable benefits to our production strategies."

Time-saving enhancements

To bring as much efficiency as possible to the cutting process, the IMET H700 was supplied with 12 m long fully automated in-feed rollers and 5 m long fully automated out-feed rollers, while to further tailor the saw to Barclay & Mathieson's requirements, a 41 mm blade was specified.

"We also worked closely with Addison Saws and IMET to incorporate a particularly innovative solution into the roller assembly, to enable smaller sections of cut steel to drop directly into a hopper unit ready for bagging and dispatch," adds Stephen McLean. "This feature will provide a major time-saving advantage when producing smaller cut pieces of as little as 30 mm in length. Because of their confidence in the IMET brand, Addison Saws was also happy to include a two-year warranty."

Decision based on service and confidence

"We are delighted to have been invited to supply a third IMET heavy duty steel saw to Barclay & Mathieson," comments Addison Saws' sales director, Chris Wilson. "The order was all the more rewarding as B+M Steel based their decision to buy largely on their experience of the IMET bandsaws they bought from us just 12 months ago, our ability to accommodate their special requirements and the high levels of service they have received both from ourselves and IMET."

Addison Saws is the only UK-based sawing technologies specialist to offer machines from IMET, a manufacturer at the forefront of circular sawing machines and bandsaws for metal cutting for almost fifty years. Highly robust and specially developed for cutting steel, the IMET H700, H800 and H1202 NC bandsaw models offer:

Incremental DC drive material gripper feeder
Optional power rollers
F1500 version with 1,500 mm feeder
F3000 version with 3,000 mm feeder
NC control with 99 cutting programs
Inclined sawblade for optimum cutting of sections
Material height sensor with rapid approach
Swarf collection tray

The IMET H700 from Addison Saws

Leading the way in sawing technology since 1956

This year Addison Saws celebrates 60 years at the forefront of sawing technology. Established in 1956, Addison Saws brought a new breed of metal cutting solutions to the UK and, in doing so, created a whole new market for bandsaws and circular saws. Today, 60 years on, Addison Saws continues to lead the way in metal cutting technologies and offers an extensive range of full CNC machine tools, from the world's premier industrial machine manufacturers, all supported by uncompromising levels of customer care. The Addison Saws product range includes everything from simple, manually operated machines to highly sophisticated, fully automated sawing lines and has recently been increased with the addition of heavy duty 3, 3+1, 4 and 5-axis long-bed multi-piece machining centres. Addison Saws is part of the Addison Group, an organisation that also includes sawblade re-manufacturing specialist Dynashape, and tube-bending technology specialist, Tubefab.

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Quick tube length checks with new measuring table

Precise and accurate measuring of lengths in a cutting process is vitally important. For this reason and following requests from its customers, Bewo Cutting Systems has developed the Solitair, a practical and user-friendly measuring table for the rapid measurement of product lengths, suitable for processed tubes and solids.

Ton Vugts, International sales manager at Bewo, explains why it's so important to check your product lengths during the cutting process: "There is always the possibility of blade wear. If the saw blade wears, product lengths cannot be guaranteed. If you check the length of every 100th product with the Solitair, you will stay in control of the cutting process and you're guaranteed a batch with the desired product length."

Ton Vugts has also noticed changes in the market: "We see that customers of our clients demand increasingly accurate precision when it comes to the tolerance of product lengths. With the Bewo Solitair measuring table you get absolute measurement results with minimal deviation. This makes the Solitair an extremely suitable tool to check whether processed products have the desired length. The Solitair measuring table is equipped with a convenient printer for making measurement reports. You can easily draft measurement reports with self-dictated text. With the printer you will be able to give bundled measurement reports to your customers for example."

The Solitair measures products up to 3,000 mm with a diameter up to 115 mm. Furthermore the Solitair is based on the same concept as the familiar Bewo measuring table, the MT, but with a new design. The main difference between the MT and Solitair is that the Solitair is modularly built, using the latest production techniques. This results in very competitive pricing.

Bewo presented the practical Solitair measuring table for the first time at the Tube & Wire exhibition in Düsseldorf, Germany in April this year. During the exhibition visitors could try out or watch demos of the Solitair. Now, multiple clients from Europe and the United States are using the Solitair and are delighted with the results.

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KASTO orders confirm that UK manufacturing is alive and well

Immediately following the MACH show in Birmingham, Ernst Wagner, managing director of KASTO's subsidiary in Milton Keynes commented: "The end of 2015 was superb for sales of our sawing machines and storage systems, but the start of this year was uncharacteristically subdued.

"That was until the UK's recent machine tool technology platform, MACH 2016, when everything changed.

"We are delighted to have secured multiple orders, which are always a bonus, as the priority at trade shows is to plant seeds for future business."

He added that the number of attendees with authority to purchase was excellent, certainly during the middle three days, and interest was shown across all KASTO product ranges.

Existing and new customers gathered to see demonstrations of automatic and semi-automatic band and circular saws for the workshop, high-productivity KASTOtec bandsaws designed for cutting tough alloys with a carbide blade, and KASTOwin bandsaws capable of using either a carbide or bimetal blade for sawing a wide variety of materials, especially steels.

Star of the show was the patent-pending, upstroking KASTOwin tube A 5.0, which made its UK debut. A lot of interest was shown in the machine's ability to saw pipe and tube efficiently using a carbide blade cutting from the bottom upwards. The action avoids the risk of damaging the teeth, which can easily occur when cutting downwards into the nest of swarf that collects inside the bottom of a tube.

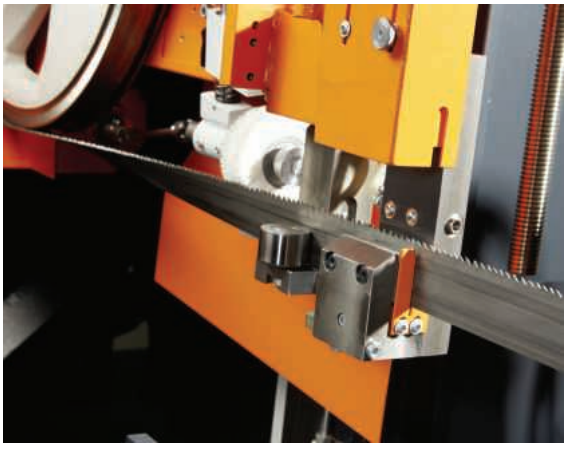
Ernst Wagner reported some rapid cycle times. Ovako alloy steel tube, 16MnCr5-1.7131, 254 mm OD, 180 mm ID, 255 cm^2 total sawn area was initially processed at the recommended speed of three minutes per cut. However for exhibition purposes, the upfeed was greatly increased to 350 mm/min, allowing the same stock to be cut in less than one minute.

Part of the reason for the speed of the KASTOwin tube saw is the KASTOrespond feature built into the machine's CNC system. The adaptive control feature is shared by five downstroking bar saws in the range, including the smallest A3.3 model

The KASTO UK team at MACH 2016 in front of the new KASTOwin tube A 5.0 upstroking bandsaw for cutting tube and pipe

with a maximum cutting capacity of 330 mm diameter, which was demonstrated on the stand at MACH.

KASTOrespond automatically records the force on the band and an algorithm continually varies the feed rate within milliseconds so that the force on the carbide or bimetal blade is maintained at a constant, optimised value.



The result is constant chip load per tooth (fz), taking into account the material width being cut at all points in the cycle, its hardness and toughness, blade type and condition, band deviation and power drawn from the drive. It leads to the fastest possible cycle times as well as long blade life through minimisation of vibration.

All KASTO saws are available for viewing and test cutting at the company's UK headquarters and showroom in Milton Keynes. A similar service will soon be available in Sheffield at the company's new Northern showroom, which is due to open in May.

Ernst Wagner concluded optimistically, "We know that once prospective customers visit our showroom and work hands-on with any of our sawing machines, more often than not they buy one.

"Our sales success rate of far than greater than 50 percent is down to potential users being able to see and experience the real differences with KASTO technology and how that leads to lowest cost per cut."

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At the cutting edge for 30 years

Harrison is a major supplier of band, circular and segmental saws from leading manufacturers Wikus, Tenryu, Lennartz and Segmetal and is the only company in the UK with automated band saw welding facilities. It has two fully automatic welding centres, with the welding capacity to weld around 800 blades per day plus extensive servicing facilities for TCT and HSS circular and segmental saws.

Harrison carries stock in excess of 1 million pounds and offers a full next day service for all orders placed before 3pm. A large range of metal cutting saws includes many unique innovations.

Kentai high precision high production circular saw machines are offered with an automated magazine feed system and output component conveyor system. They are designed to operate the latest hi-tech throw away carbide circular saws. Due to the extremely heavy duty power system and gear box, the machine can operate at high levels of production, achieving very low levels of vibration and resulting in exceptional blade life.

As far as band saw machines are concerned, Harrison offers models from two alternative manufacturers:

Pegas Gonda from the Czech Republic offers a range of over 40 machines, including small general purpose machines, medium to large structural semi- and fully automatic CNC machines, as well as a range of production billeting machines and special purpose machinery with the capacity of up to 1.6 metres.

Harrison has also recently been appointed as an agent for Cosen band saw machines. Cosen has been selling its machines in the UK for many years and has established a strong reputation for the machines' durability, reliability and precision.

It also produces specialised machines for the cutting of super alloys and high production billeting saws.

In order to keep up with the growing demand for its machines, Harrison will shortly open a new machine tool showroom technical centre with over 20 machines in stock available for immediate delivery or demonstration.

Before purchasing machines, customers can be provided with information about their capabilities, blade life and cost-per-cut etc., so that the performance can be compared with their existing machinery. Often it is possible to demonstrate considerable savings through the selection of the most suitable machine blade and lubricant.

Harrison offers full training and maintenance programmes covering the full range of machinery.

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KALTENBACH unveils new plate line up

The KALTENBACH Group of companies has recently announced the launch of a new series of its highly successful 'KF' Processing Centres for Steel Plate.

The company launched the first model from the new line up, the KF2114 in 2014, with a 2,100 mm plate width capacity, oxy and plasma fuel cutting capability and single machining head with 14 tools for drilling, tapping, countersinking, marking and milling operations.

KALTENBACH has now added three new models to complete the family, the KF1614, KF2614 and KF3114, with plate width capacities of 1.6 m, 2.6 m and 3.1 m respectively, combined with a 6 m length capacity as standard.

All models in the new KF range are designed for high productivity throughput of cut and machined plate components for industries such as structural fabrication, heavy engineering, yellow goods and steel service centres.

The KALTENBACH KF machines work via an infeed gripper system, which clamps and controls the feed of the material through the solid portal frame of the machine itself. The gripper unit controls the plate from both the side and the rear, maintaining a high degree of control and accuracy and is mounted on a heavy duty linear drive system with servo control.

All machines are able to process materials up to 100 mm thick and are equipped with a 14 tool single head as standard. An optional second head can be added, again with 14 tools and working in synchronisation with the first to significantly increase the output capability. Both heads can be equipped with oxy and plasma fuel cutting capability, with the option of either 260 or 400 amp plasma sources. Common line cutting is included as a standard feature, reducing waste material for parts with common edge geometry.

Designed with the latest processing technologies in mind, the new KF series are also all fully capable of milling functionality. The portal frame, spindle mounting and drive are specifically designed for carrying out milling work, with a powerful 34.5 kW drive motor on each spindle providing the speed and torque required for milling slots, pockets, shapes and holes where flame cutting or drilling are not possible. The increased capacity tool changer permits a greater range of tooling to be retained in the machine, whilst the optional clamping roller ensures that the material is securely pressed against the machine bed, in order to reduce vibration and unwanted material movement.

Good pieces are removed from the machine after cutting via a tilting discharge table which supports and lowers the parts away from the parent plate and tilts to eject them to either a collection bin below or to a conveyor system. An outfeed roller conveyor is also available to support the material skeleton as it emerges from the cutting area.

Machine control is via a user friendly, Windows™ based, touch-screen system for program execution and machine operation, supported by the well renowned Lantek 'Expert II Cut Plus' software package for nesting, design and data import, with 'Expert III' for extended functionality and data feedback.

The new KALTENBACH KF series is available with a wealth of options to suit a wide range of customer requirements, including marking functions, extended materials handling capabilities and software add-ons for workshop organisation and offline programming.

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KALTENBACH

Carbide bandsaw blades improve cutting of special alloys

Bahco's latest range of long life carbide bandsaw blades delivers improved performance when cutting special alloys used within industries including aerospace, aviation, defence and power generation. The hand tool and cutting specialist is renowned as a global leader in carbide blade cutting technology, ideally suited to the most challenging applications.

The new 3860TC blades, manufactured in the UK using the most advanced technology, have been designed to cut alloys including titanium, aluminium, stainless steel, Hastalloy, Inconel and Waspalloy.

Based on Bahco's renowned 3860TMC unset carbide blade, the new TC range is now available at highly competitive prices. Its multi-chip design, producing seven chips from a four tooth pattern, maximises cutting performance and blade durability within niche applications.

The new assortment includes:

3860TCA: a blade with a rake angle of 12 degrees, designed for maximum efficiency when cutting big aluminium blocks.

3860TCZ: with zero degree rake angle, this blade is specially made for cutting chromed induction hardened bars or graphite. It is also suitable for cutting non-metallic materials which do not produce chips.

3860TCT: with a ten degree angle, this blade has been designed to open up new markets for unset carbide, at competitive prices; it is suitable for the same applications as TMC blades. There are also finer TPI's available. It is also suitable in those areas where carbide blades with triple set, type 3868, and the multi-set, type 3881, are being used.

Bahco's high technology bandsaw blade manufacturing centre in South Yorkshire produces both Set Tooth and Unset Tooth carbide blades.

The key product differences are:

Set tooth: the carbide tooth tip is the same width as the band; the cutting clearance is created by setting the tooth.

During production the carbide tooth is formed from a carbide ball, ground to create both chamfered and un-chamfered tooth

tips of different heights. The finished ground teeth are set to give cutting clearance.

Unset tooth: the tooth is wider than the bandsaw material; the wider tooth tip creates its own cutting clearance.

During production the carbide tooth tip is formed from a carbide cylinder, ground to form tooth tips with different heights and differing amounts of chamfer.

For technical details or sales information on Bahco's wide range of carbide bandsaw blades, contact:

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Special effects experts choose ESAB welding and cutting equipment

s-f-x.com specialises in pyrotechnic, atmospheric, mechanical and electronic special effects for television, films, music videos and commercials. Since the 1980s the company has been involved in high-profile projects ranging from Top Gear and Taggart, to Dead Man Running and Captain Corelli's Mandolin.

A common requirement is for dramatic sparks, which are traditionally produced using pyrotechnics. However, pyrotechnics have risks associated with them due to their highly combustible nature and the heat generated when they burn, plus they require safe storage and create a major administrative burden because they are classified as hazardous. Ten years ago Scott MacIntyre, the founder and now special effects supervisor at s-f-x.com, decided to seek a better alternative and, being aware of industrial welding cutting equipment from a user's perspective, asked his local distributor what might be available for use on-screen.

Scott MacIntyre was shown the Arcair SLICE Battery Pack exothermic cutting system, which is effectively a 'baby' thermic lance, and was immediately impressed by the machine's power and ability to cut through almost anything. He could see this would be ideal for films where, for example, a bank robber needed to be shown cutting open a safe or where a shower of sparks was required. He also realised that the Thermal Dynamics Drag-Gun Plus Plasma cutter could be used to show more precise cutting operations. A third item of equipment demonstrated was a Thermal Arc multiprocess welding inverter, and the potential for this was also realised straight away. All three sets of equipment were purchased and immediately put to good use for fabrication and special effects on the Crash Test Dummies TV series.

Clearly there are hazards associated with equipment powerful enough to cut or weld metal, but the processes can be started and stopped at the press of a trigger and, provided the power source is isolated from the mains, the portable equipment is entirely safe and has no special licensing, storage, transportation or other regulatory requirements. Scott MacIntyre had been a user of ESAB welding equipment for many years prior to the purchase of the new equipment for producing special effects.

Having experimented with the equipment and filmed a number of different special effects, Scott MacIntyre found that showing some footage to clients created a lot of excitement, not just because of the effects that could be produced repeatably and controllably, but also due to the greater safety compared with using pyrotechnics.

The lightweight welding inverter can easily be carried up a ladder, set up in the desired position, and started and stopped via a radio controlled switch rigged up by one of the s-f-x.com team. The direction in which the sparks fall can be controlled by means of a short length of scaffold tube and, if the director asks for more sparks or fewer, it is simply a matter of adjusting the voltage/current knob as if it were a 'volume' control.

The Arcair SLICE has featured a number of times on-screen to show vault break-ins, as well as for cutting through steel-reinforced doors, roller shutters and vehicles. Designed primarily for fire and rescue services, the Arcair SLICE is highly portable and needs no separate power supply, so it is very easy and quick to set up anywhere. For lighter-duty applications, the Drag-Gun Plus Plasma cutter is ideal, being fully self-contained with its own air compressor. Its visually impressive fine stream of bright plasma has also featured in films. In a particularly unusual application, the plasma cutter was used for ice carving.

Both the Arcair SLICE and the Drag-Gun Plus have been used for hundreds of other tasks. For instance, when filming on location in a disused warehouse that will be demolished after filming has finished, the Arcair SLICE has cut through steel joists that have been in the way; on other occasions, the Drag-Gun Plus has cut out profiles for silhouettes, and for cutting lettering for title sequences.

Scott MacIntyre is delighted with the ease of use of the equipment, saying: "All we need is a 240 V supply and we can be working virtually anywhere. If we need more cutting rods, welding wire or oxygen bottles, we can always get these locally. And if the task is not safety-critical, the cutting and welding equipment is easy enough to be used by anyone with the bare minimum of training."

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Planes, trains and automobiles

Leading aerospace stockholder enjoys the benefits of MEGA fast-cutting circular sawing techniques

Perhaps not trains, but Gould Alloys counts itself as a leading supplier of high integrity ferrous and non-ferrous metals to both the aerospace and motor sport industries and also serves other industries such as defence, power generation and oil and gas exploration and production.

Established in 1984 in North East Derbyshire, close to the heart of Sheffield's steel manufacturing industry, Gould Alloys is a privately owned and independent company, whilst remaining part of a large international group of companies.

The company's stock range includes aluminium, alloy steels, stainless steel, nickel alloys, titanium, and phosphor bronze in both aerospace and commercial specifications/alloys, spanning all semi-finished forms.

Highly experienced in the use of bandsaws, including Danobat machines supplied by Prosaw, the company has now invested in a circular saw for the very first time, having recently taken delivery of a MEGA circular saw from Prosaw.

Designed to be used with stainless steel and alloy billets of up to 100 mm diameter, the carbide tipped blade slices its way effortlessly through the billets in less than 10 seconds. The same cut would take approximately seven or eight minutes using a bandsaw.

A delighted production manager, Gary Smith reveals: "The MEGA saw not only helps us to drastically improve our delivery times but also allows us to take on work with shorter lead times than we normally would. Also, since the circular saw is inherently more accurate than a bandsaw for this type of application, we save about 1 mm of material per cut. This is an additional factor that adds to the significant cost savings that we already enjoy by using this machine."

"We have also been very impressed with Prosaw's performance, both from the perspective of engineering ability as well as from their continued and excellent after sales support."

Prosaw offers the complete range of

quality bandsaws, circular saws, machining centres and steelworkers. For more than 50 years Prosaw has supplied manual, semi-automatic and fully automatic saws with vertical and horizontal, mitre, pivot action and twin column bandsaw configurations. In addition to the machines themselves, Prosaw also designs and builds materials handling systems to fit your requirements.

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Marking the future

Anyone intent on making Industry 4.0 happen has to keep an eye on the details. One such detail is that the success of the smart factory actually comes down to a "talkative" product. The marking laser by TRUMPF leads the way.

In tomorrow's smart factories, it will be the machines that call out their capacities, control the results of their own work and ask raw materials and products what they are and what is to be done with them. Achieving the smart factory is one of the goals of the German government's Industrie 4.0 initiative, and other highly industrialised countries have adopted similar initiatives.

Giving a machine more "brain" is a massive job, encompassing software, sensors and automation, not to mention software and hardware interfaces for exchanging data. TRUMPF's Jörg Smolenski, who is responsible for marketing and sales for the marking laser, explains: "There's never a shortage of space for those kinds of components in the machines. Where we do run out of space is on the workpiece. The question is, where's the room on a newly hatched part for the brains that would allow it to communicate with the next set of machines?"

Making the smart factory a reality starts with a talkative product

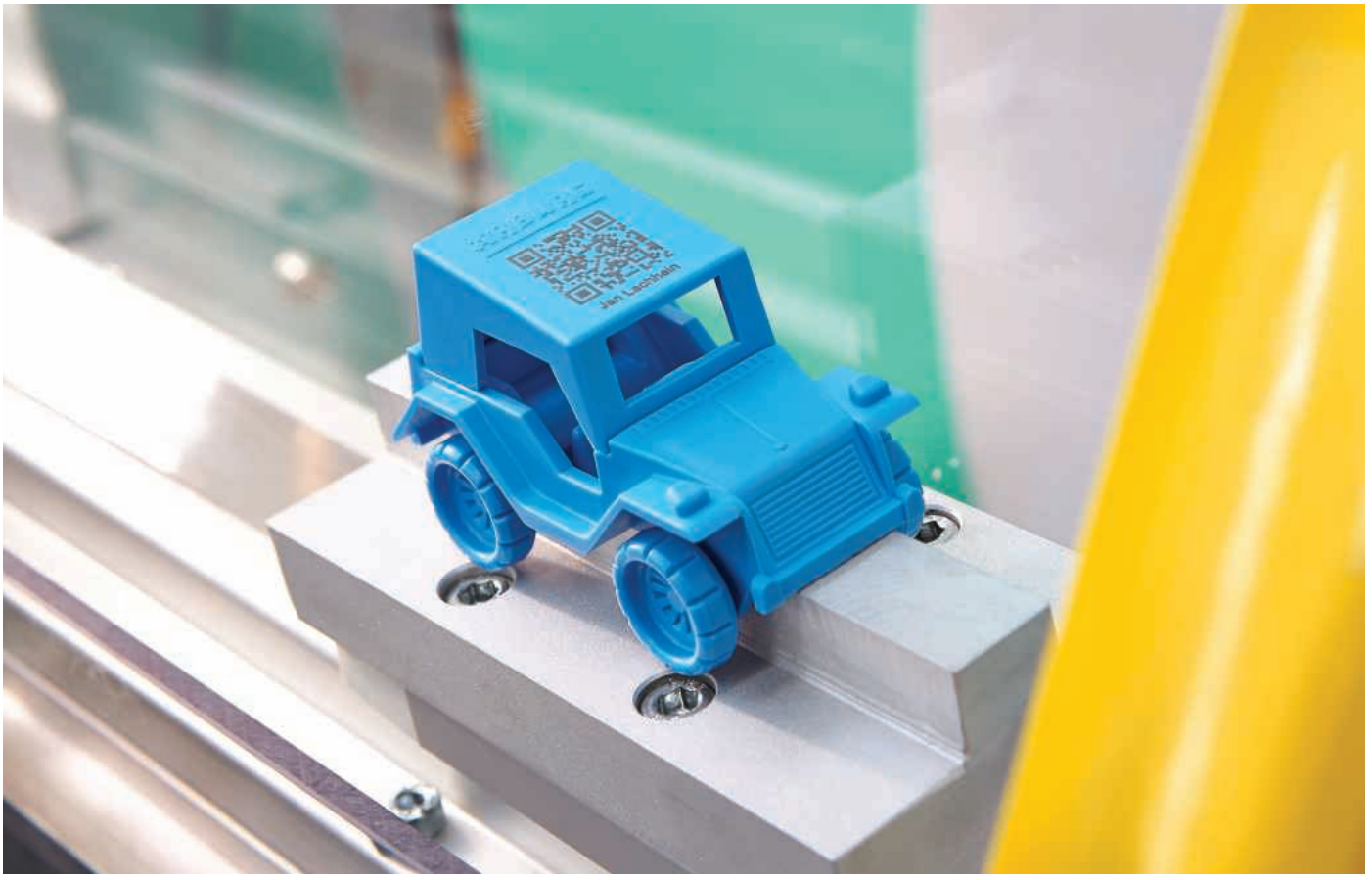
Jörg Smolenski has a simple answer: a workpiece doesn't need a brain if it is sent out into the world with identity papers in the form of a clear marking: "Then all that's left is for each machine to be able to set, read and replace markings. This can be achieved very easily using a data matrix or a QR code, and it saves a lot of space too."

Traceability becomes Industry 4.0

In the German city of Tuttlingen, engineers at Chiron, a company that builds vertical CNC machining centres, have seized on the idea of automatic marking. As Thomas Marquardt, the company's head of automation, puts it: "Even if it's not specifically about Industry 4.0, it's very important to our customers that their products can be identified and traced from the very first workstation. That's often a condition for landing a contract in the first place."

This explains why Chiron set out to find a solution that would make custom marking a natural part of what the machine does. Chiron showcased the result: a FLEXCELL UNO type automated manufacturing cell with a permanently integrated marking station and in-process measuring station.

In this setup, the handling robot in the CHIRON FLEXCELL UNO first places the finished part into the measuring station, where the workpiece is measured. The robot then transfers the part to the marking station where, providing the measuring data are perfect, the machine marks its product



as a finished part, perhaps giving it a data matrix code that stores key manufacturing data or a reference number for the part such as a series or batch number.

The code that says everything

"Standard manufacturing data might include date of manufacture, machining station, supplier number and order number," explains Thomas Marquardt. "But it's also possible to include other codes in the marking, of course." For instance, these codes could tell a transport system where the part needs to go or inform the next machining station's control system which program to start. This is how traceability becomes Industry 4.0.

Although it's a marking laser by TRUMPF that does the marking, as far as future customers of the machining centre are concerned everything comes from Chiron, including the laser.

Thomas Marquard sees this as a major plus: "This deep integration helps combat reservations about lasers and at the same time stresses our expertise in the minds of customers. It turns a marking station into just another equipment option that we manage ourselves."

The database that knows everything

In Loßburg, only around 70 kilometres north of Tuttlingen, ARBURG engineers and developers have been tackling the same questions. Drawing inspiration from the company's history as well as its product range, they incorporated a database into their solution that takes a large step toward Industry 4.0.

Oliver Giesen, head of projects in Loßburg, explains: "ARBURG's host computer system (ALS) gives you the option of storing all relevant manufacturing and quality assurance data for each individual part." That way, the code doesn't even have to store manufacturing data. Instead, it holds the link to the part's history stored in the database.

Arburg gives an example of exactly how this interplay of database, machine, quality assurance and marking would work. Using a custom chip card, the parts for a toy buggy are made. Before leaving the manufacturing cell, the roof of each future buggy is given a laser-marked QR code. At the same time, the machine control system deposits all manufacturing parameters in the ALS database and assigns them to the relevant code. Once the buggies are assembled, an automated quality assurance system checks and documents the result. Using the QR code, the ALS then immediately matches the results to the right buggy.

To make all this work, the machine still needs a marking laser, albeit in somewhat of a supporting role. "It's not the hero of our story," admits Oliver Giesen. From his customers' point of view, the marking laser is meant to be only a small, unobtrusive helper; something that is just there and something that customers ideally don't have to worry about. "As if it were nothing more than a lamp," he adds.

Integrated to the point of being invisible

Of course, a marking laser is a lot more complex than a simple lamp. But according to Jörg Smolenski, the comparison neatly sums up the idea behind the easy integration of marking lasers from TRUMPF.

Marking laser hardware is a firmly established closed system comprising easily built-in components, i.e. PC, electronics, laser source and lens. With its standardised interfaces, the software used is also clearly heading in the same direction. Up to now, TRUMPF technicians have been a fixture of the integration phase, bringing the company's expertise in the interaction of laser light and materials.

In many cases it is an advantage to let the laser supplier manage any laser issues. "But the picture changes once a manufacturer decides to offer marking lasers as a standard option," says Jörg Smolenski. "At that point, it makes more sense not to have a third party working with you on your machine. And we make this possible with the marking lasers by TRUMPF."

No matter whether your focus is on traceability or Industry 4.0, the "talkative" product is already a series-production reality. It's a step toward the smart factory, even if there is still a lot to do before the robotic arm asks: "Are you still reading or shall I turn out the light?"

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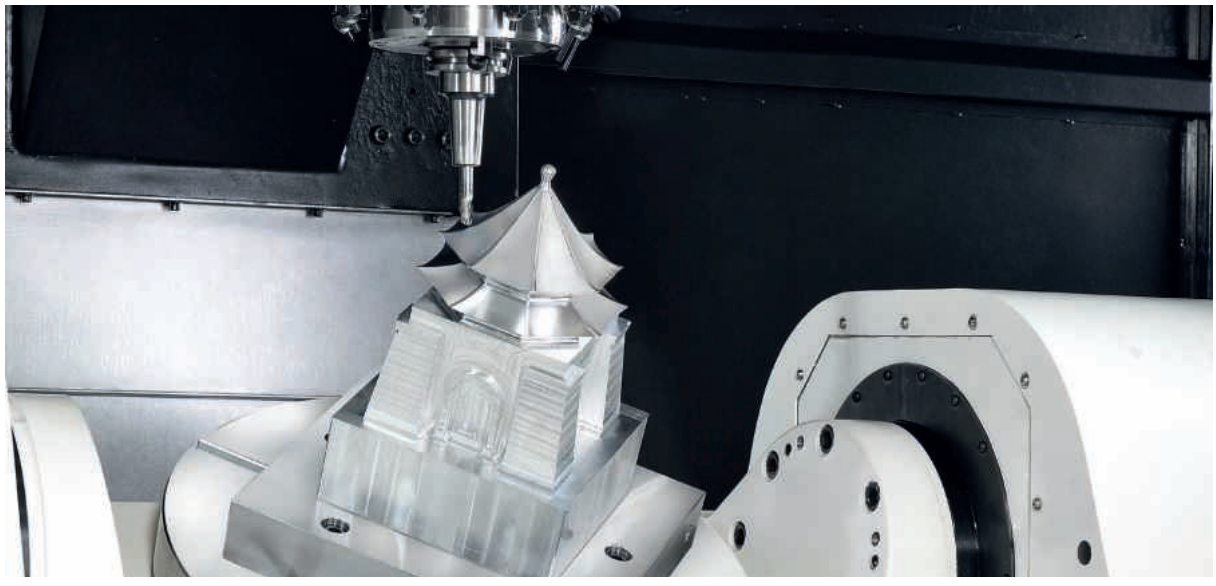

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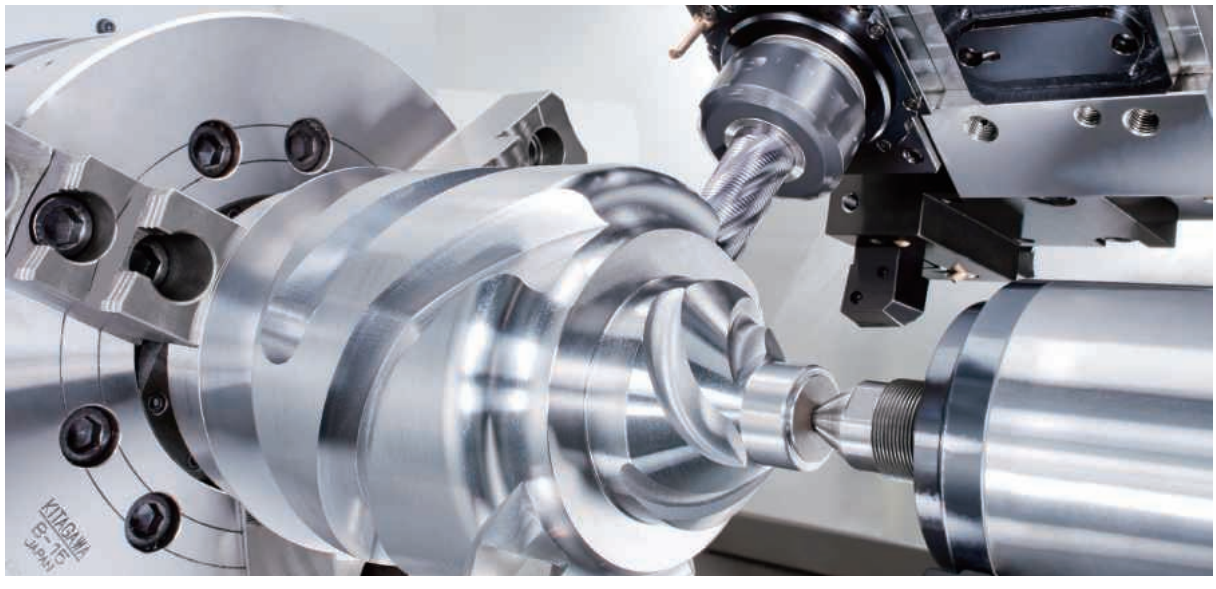

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