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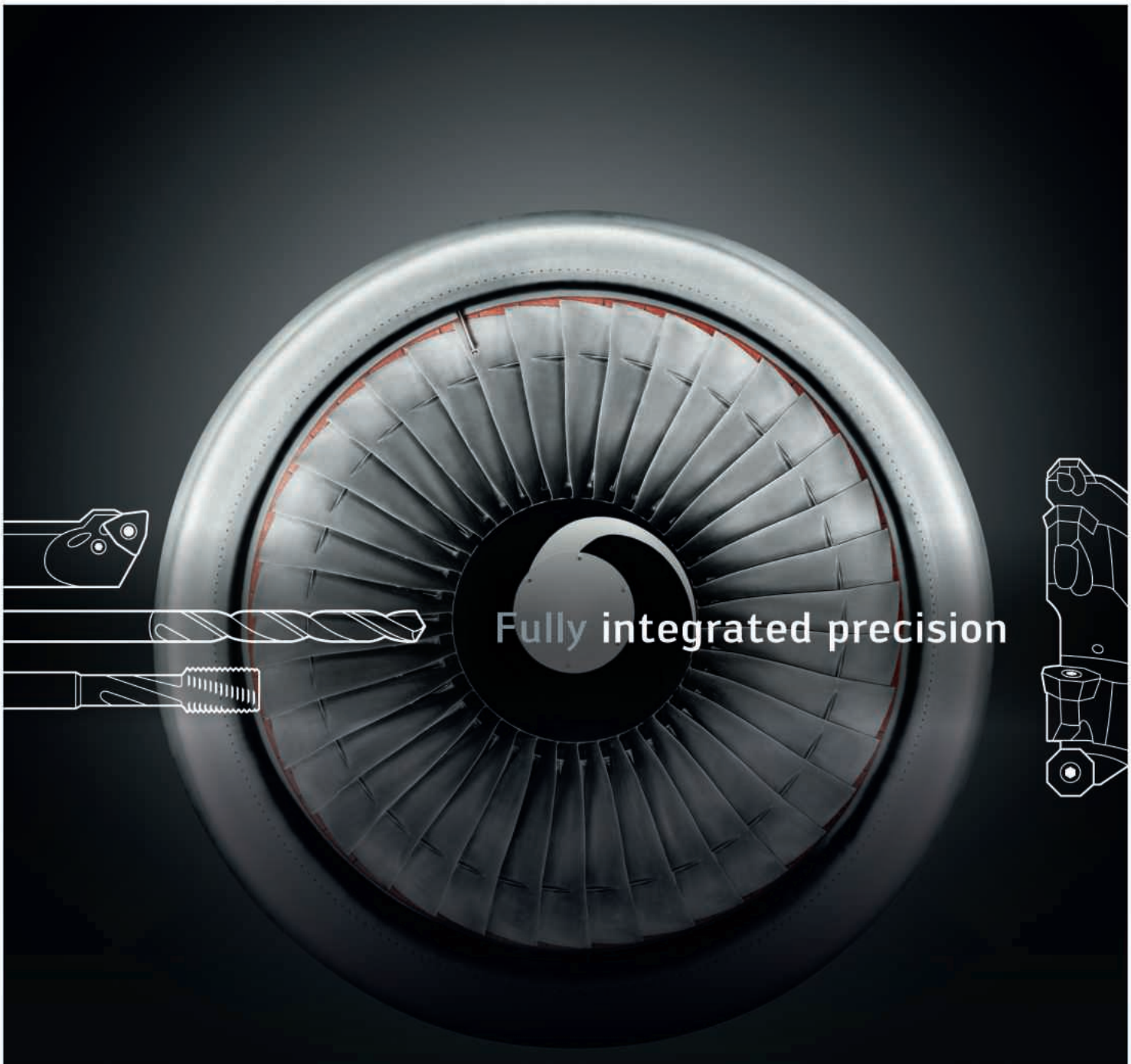

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MEDICAL REPORT
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Innovative coating technology takes the next step

Since the introduction of the Dragonskin coating for indexable cutting inserts, the advantages of WNT's innovative coating technology have become apparent, with customer feedback highlighting significant increases in tool life due to less wear and a strong performance. It was a logical move, therefore, to take the next step and also coat rotating tools with Dragonskin technology and the universal WTX-Uni solid carbide drill series is the first recipient.

As one of the most popular universally applicable drills in the WNT product range, the WTX-Uni drill is a logical choice for this treatment. Early reports indicate tool life increases of up to 40 percent. The WTX-Uni with Dragonskin coating was well received when it was unveiled during a customer event co-hosted by WNT Germany and its partner DMG MORI. A practical demonstration of the new WTX-Uni enabled customers to see the unique performance of the drill in action for the first time and the reaction was extremely positive.

Whilst the visual appearance of the Dragonskin coating with its gold colouration is obvious, it is at the microscopic level where the coating is even more impressive. The combination of the Dragonskin coating, carbide substrate and drill geometry deliver tremendous resilience and high levels of wear protection that allow for elevated cutting speeds and elongated tool life, making the WTX-Uni drills ideal for applications where high speed and process security are a priority. As the name implies, the WTX-Uni has a wide application range across steel, stainless steel and cast iron components and is available in a diameter range of 3–25 mm with three standard shank styles available (HA, HB, HE).

"With these features the WTX-Uni drill is a true all-rounder that will fulfil the highest demands of industry," says Tony Pennington, WNT (UK) managing director. "With the addition of the Dragonskin coating the WTX-Uni easily outperforms its predecessor, with longer tool life and improved performance and in line with WNT's drive to reduce manufacturing costs for its customers this higher performance is available at the same price as the original WTX-Uni drills."

Any existing customer wanting additional information on the WTX-Uni range, or a machining demonstration, should contact their local technical sales engineer, while new customers can organise a visit by contacting:

WNT (UK) Ltd
Tel: 0800 073 2073
Email: tony.pennington@wnt.com
www.wnt.com

Star Open House details announced

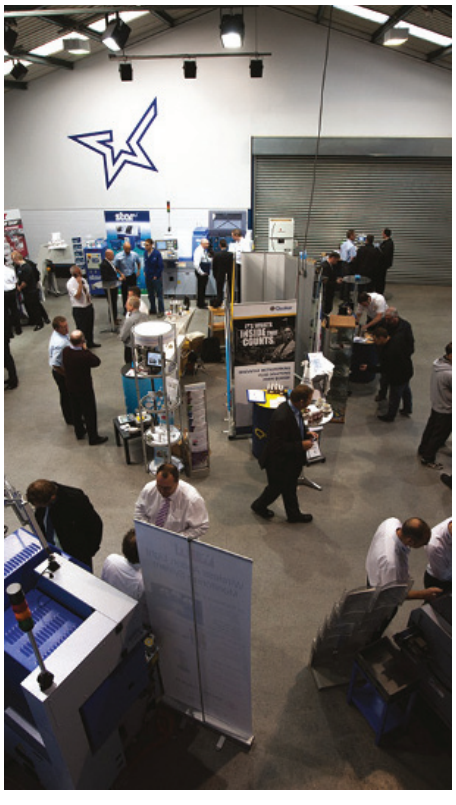
Following the success of this summer's technology event, Star GB has announced the dates of its Autumn Open House for 2015. The event will take place from Tuesday 20th through to Thursday 22nd October at Star's main office in Melbourne, Derbyshire.

The Autumn Open House promises to showcase the latest innovations in sliding head technology. The Star team will be on hand to share their unbeatable technical knowledge, helping users new and old to unlock the full potential of their manufacturing array.

Among the exclusive machine demonstrations, a brand new Star sliding head lathe will be unveiled in the UK for the very first time. The new Star SR-38 sliding head lathe is Star's latest edition to its growing arsenal of 38 mm mill-turn machines and boasts balance turning capability together with a fully programmable B-axis and an 8-station independent rear platen. This machine will be making an appearance fresh from EMO Milan, along with the SV-38R, whose diameter is capable of extending to accommodate 42 mm bar.

Also to be exhibited are a variety of other Star lathes including the SW-12RII, SB-12R Type G, SR-20RIV Type A together with a complete manufacturing cell demonstrating the SR-20J, FMB bar loading magazine, long parts unloading, and high pressure coolant.

Stay tuned to **www.stargb.com** for updates on other attractions, including partner displays, hospitality, and more information on the machine announcements.



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RK International signs agreement with aerospace specialist

RK International Machine Tools has entered into a five-year agreement with Aero-machinery Ltd to market the range of Modig machine tools. Sweden-based Modig Machine Tools is renowned for being a world leader in innovation and technology in the area of high speed machining. It is best known for its one-hit machining of aluminium aircraft stringers and its research into higher productivity and uptime performance in the aerospace industry is relentless.

The latest developments include the Modig Extrusion machining centre. Designated the HHV, it provides a massive 50 percent productivity gain over earlier Modig Profileline machines, making it the most competitive processing machine in today's market for machining Stringers or Longerons. The company has delivered more than 40 HHV's over a four year period, many to customers placing multiple orders.

A further development of the HHV machine is its use on bar stock as opposed to extrusions. This new model features a heavier spindle and headstock. The key advantages of the Modig HHV-BAR machining centre are: a reduction in extrusion stockholding; the ability to machine similar designed components from bar; an entry into precision engineering sectors, such as electronics and medical components, while retaining the ability to machine in one cycle aerospace stringers.

RK International Machine Tools will focus on developing the market for the HHV-BAR machine within its existing customer base that encompasses businesses throughout the full spectrum of the UK precision engineering sector as well as OEM and Tier one aerospace manufacturing, and to identify new opportunities for this high-performance machining system.

Key features of the HHV Bar Mill are its ability to machine bar stock up to 140 mm square and 5000 mm long, four axes (X, Y, Z and U), with 10m/s^2 acceleration in all axes and accuracy of +/- 20 arc seconds on the rotary axis. The main spindle is a Fischer version B 30,000 revs/min HSK E63 unit, which is combined with a 24 position tool changer as standard. This combination of features results in cycle times between 40 and 60 percent faster, whilst the use of bar stock rather than billet reduces material use by as much as 30 percent and significantly reduces fixturing requirements.

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XYZ takes 2-OP on tour

XYZ Machine Tools recently took its innovative 2-OP portable vertical machining centre on tour, demonstrating the concept of the machine to more than 70 companies over a series of five one day events. The reaction from those companies was extremely positive, with all of them 'getting' the concept, several placing machine orders on the spot, and many more generating extremely strong enquiries that will lead to further machine sales.

With improving the UK's productivity a hot topic at present, this was a perfect opportunity to introduce potential customers to the significant benefits that the portability and versatility of the XYZ 2-OP can bring to the typical subcontract engineering company. Key to these benefits

is the fact that when used in conjunction with existing machines, the XYZ 2-OP creates a highly productive cellular manufacturing capability.

"It was great to see that virtually everyone that attended the roadshow events immediately got the concept of 2-OP, in particular the versatility that it can bring to a conventional machine shop through the advantage of increased productivity that cellular manufacturing brings," says Nigel Atherton, managing director of XYZ Machine Tools. "Cellular manufacturing up to now has been out of reach for those businesses producing small to medium batch sizes, the XYZ 2-OP changes all of that."

Due to the XYZ 2-OP's small footprint of just 1220 mm by 760 mm and weighing just 1100 kg it can be located, using the supplied pallet truck, to anywhere it is needed. By moving the XYZ 2-OP to the work, not the other way around it creates a terrific opportunity to reduce the labour content of every component, irrespective of batch size, and free up valuable spindle time on other machines.

During the five one-day 2-OP tour events, that took place at XYZ's showrooms in Livingstone, Blackburn, Nuneaton, Waltham Abbey and Burlescombe, six XYZ 2-Ops were ordered. In addition enquiries were taken that XYZ estimates will lead to a further ten machines being ordered in the very near future.

Visit the XYZ Machine Tools website and watch the 2-OP video at:
www.xyzmachinetools.com

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Powering ahead

Steed Webzell assesses how machining companies are overcoming the challenges of working in the somewhat beleaguered oil and gas industry

With many oil and gas companies putting their investment plans on hold in light of the plunging global oil price, opportunities for the industry's subcontract supply chain are being squeezed, or so many would think.

Providing a clear demonstration that ambition, technical know-how and astute management can overcome market conditions, is Ellesmere Port-based Deeside Precision Engineering. This forward-thinking and rapidly growing company was formed in May 2014 by Paul Carr: "Prompted by a management buyout I began talks with a material supply company, G&H Stainless Ltd, with the view to starting up a new precision engineering company to cater for the oil and gas industry."

G&H offered the start-up capital, material supplies and a global customer base to boost the number of contacts already harboured by Paul Carr.

"We found large, modern premises in Ellesmere Port, and once word got out that we were starting a new company, a lot of people I'd worked with previously decided to join our team," he says. "The CNC operators and programmers who joined all recommended we bought Haas. So, our first two vertical machining centres were a second hand Haas VF-0 and VF-2."

Five months later Deeside had become an ISO-9001 registered company and completed its first £1 million of business. Investment in new Haas machines followed in the shape of a VF-9 and two VF-4 vertical machining centres. The VF-4 models are both equipped with HRT-210 4-axis rotary tables.

"We had the through-spindle coolant option on the VF-4 machines upgraded to 1000 psi," says Paul Carr. "We cut a lot of high nickel, duplex and super duplex stainless steels, so it's been a real benefit."

The machines are currently producing complex parts with BX-ring joints for subsea applications. Bores up to 11" depth are being created in 625 nickel.

Clearly, investing in the latest machine tool technologies can pay real dividends in both winning and maintaining contracts in the increasingly tough oil and gas marketplace, as another subcontract specialist, Glasgow-based Well Machined, can verify. The company is using the enlarged machining capacity offered by its new Hartford machining centre and Hyundai-Wia CNC lathe supplied by TW Ward CNC Machinery to buck the depressed trend by being able to take on larger components.

With the Blockbuster Pro 3150 double-column vertical machining centre offering an X-axis capacity of over 3 m and the Hyundai-Wia L400LC slant bed lathe providing maximum turning lengths and diameters of up to more than 2000 and 640 mm respectively, the machines have played a key role in enabling Well Machined to attract work on large (long) gauge carriers for down-hole tooling applications. Made from various materials, including super duplex and Inconel, the carriers can measure more than 3 m long and up to 250 mm outside diameter. Indeed, according to the company's sales director, Paul Rafferty, the investment was really a case of "build it and they will come", he says, "because the machines immediately attracted additional, larger capacity work, from our existing customer base".

He adds: "There's no doubt that the global oil and gas market is suffering and without these machines we would be finding it a much tougher business environment.

"In addition to being considered fit-for-purpose and excellent value for money, what really sealed the order for T W Ward CNC was the fact that both machines were available from stock," continues Paul Rafferty. "I could see that the oil and gas component machining market was going to be squeezed and I knew that if we didn't move quickly we would miss out."

A little further south, Cramlington-based subcontractor Algernon Precision Engineering specialises in tackling difficult materials. Parts machined from stainless steels including duplex and super duplex account for three-quarters of throughput. Most of the remainder are produced from nickel superalloys such as Inconel, Hastelloy and Monel.

In September 2014, the company invested in its first 5-axis machining centre, a Hurco VMX42SRTi with twin-screen control. The idea was to simplify the manufacture of increasingly complex components for its range of customers from sectors such as oil and gas and subsea.

The 5-axis machine succeeded in achieving significant cost-per-part reductions, mainly through five-sided machining with three axes interpolated and the two rotary axes clamped, while some 4-axis simultaneous work has also been carried out. The term 'invest to progress' has never rung more true!

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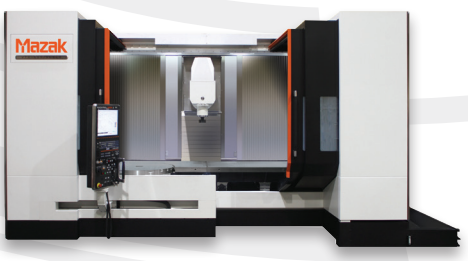

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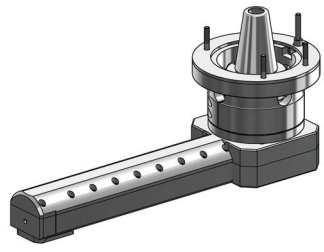
It's all about you

Coventry Engineering solves those difficult machining challenges

The needs of the oil, gas and energy industry sector require the provision of processes and systems that operate in increasingly difficult and hostile environments. The need for more innovative raw material extraction methods has meant the increased use of more exotic materials and more complex component parts. These parts have to manufactured using more advanced machining solutions. The use of today's state-of-the-art multi-axis machine tools provides most of the capability to machine these parts, but with the increasing need to machine complex features inside a component bore such as long internal keyways, slots and spline forms, additional tooling is sometimes required.

This is where Coventry Engineering's Centreline range of standard and bespoke driven tooling comes into its own. Centreline has many solutions in the field which give customers the ability to finish machine a part in just one or two setups that would previously have been very time consuming or even impossible. The ability to access small bore sizes and reach sometimes



up to one metre or beyond inside a component can be accommodated with specially designed heads. These can be configured to interface with most types of modern machine tools, including multi-axis mill-turn lathes, horizontal borers or large capacity vertical machining centres.

The use of high quality ground gears and precision heavy duty bearings matched with in-house manufactured parts provides a solution that will enable features to be machined to tighter and tighter tolerances. Internal locknut collet chucks allow for better spindle bearing support, allowing higher capacities to be mounted into a smaller size. Ground helical and spiral bevel gear drives are used and all heads are grease lubricated and fully sealed against ingress of coolant and chips. Solutions are available which allow high pressure coolant to be directed either through or at the cutting tool and heads can be contoured in order to give the required component clearances but also keep the inherent strength needed, especially in long reach applications. Heads can even be supported in the component bore by the use of either fixed or retracting guide pads.

Coventry Engineering has many years of experience in the design and manufacture of these bespoke solutions and can draw on a vast archive library to match the specific machining challenge presented. The use of 3D CAD with solid modelling and CAM software matched with multi-axis CNC manufacture and CMM certainly gives Coventry Engineering the edge.

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www.coveng.co.uk

Extended bed lengths on the Victor Vturn 40 and Vturn 45

Taking up feedback from its extensive customer base, Victor CNC has now enhanced the remarkably successful line of Vturn 40 and Vturn 45 turning centres by offering the machines with extended bed lengths.

Until now, the VTurn 40/220 and VTurn 45/220 had a length between centres of 2165mm with Z-axis travel of 2200mm. However, customer feedback has deemed that the exceptional capability and rigidity makes the mid-range Vturn 40 and 45 suitable for even longer parts than currently possible.

The existing dimensions for the VTurn 40/220 and 45/220 will remain unchanged with the introduction of the new Vturn 40/325 and Vturn 45/325 which offer an extended distance between centres of 3,425 mm, with a Z-axis travel of 3,250 mm. The popular swing over bed of 780 mm, the maximum standard turning diameter of 620 mm and the swing over carriage of 620 mm will remain unchanged.

The footprint of the new additions to the Vturn Range will retain their compact depth

and height dimensions of 2.7 and 2.2 m respectively. To incorporate the extended bed length, the footprint of the machine will have the length increased from 6.7 m to 8.1m for both the Vyurn 40/325 and 45/325.

With the new capacity available in the Vturn range, Victor has built-in elements such as larger motors with increased torque, more robust ballscrews and a coolant tank capacity increase from 450 to 700 litres. All this takes the overall payload of the VTurn range from the existing 14,000kg for the Vturn 40/220 and 45/220 up to 17,000kg for the new Vturn 40/325 and 45/325.

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UK manufacturing comes together at Advanced Engineering 2015

From 4th to 5th November, the UK's advanced engineering communities will come together for their own bonfire night display: in this case the 2015 edition of Advanced Engineering UK, including co locating shows: Composites Engineering Show; Aero Engineering Show; Automotive Engineering Show; Performance Metals Engineering, together with one of the most comprehensive free conference programmes in the industry.

Rapidly shaping up to be the largest Advanced Engineering to date, more than 750 exhibiting supply chain partners will be meeting and doing business with engineering and procurement management from OEMs and top tier supply chain organisations across aerospace, automotive, motorsport, marine, defence and more.

Innovation, innovation, innovation

Providing more feature exhibit areas than any other trade event in its sector, Advanced Engineering UK is particularly well positioned to showcase the kind of innovative technology the UK is particularly known for, with an emphasis on its commercialisation possibilities. Typical areas of coverage will include graphene, wearable/printable electronics, smart materials, additive manufacturing, new approaches to design and manufacturing and much more.

Free to attend presentations from the highest quality speakers

Across the show floor, six Open Conference auditoria will host presentations ranging from companies like Boeing, to industry bodies such as Composites UK. Short, sharp deliveries will provide attendees with quickly accessible industry intelligence, applications case studies, and technology updates.

The co-locating show zones are:

The Composites Engineering Show:

Reflecting UK industry's increasing demand across diverse sectors for harnessing the benefits of composites materials, the Composites Engineering Show 2015 is a single UK showcase of the very latest in composites materials, composites processing equipment, tooling and technologies, related design and simulation technology, specialist composites processing services, composites test and inspection technologies, and much more.

The Automotive Engineering Show:

Representing the UK's only dedicated show and open conference for automotive body, chassis, powertrain and supply chain engineering, the Automotive Engineering Show 2015, provides a showcase of specialist UK and international engineering services, technology and supply chain partners supporting the UK's multiple vehicle engineering programmes, from passenger cars to performance vehicles; from commercial vehicles to motorcycles, specialist low carbon vehicles and the engine sector.

The Aero Engineering Show:

The Aero Engineering Show 2015 is the UK's only dedicated show and open conference for the aero structures, power plant and aero systems engineering communities: it is

a unique annual showcase of technology and engineering suppliers supporting the UK's critically important Aero Engineering supply chain, the second largest in the world.

Performance Metals Engineering:
The addition of this show is a response to increasing demands for higher performance from metallic materials in a range of capabilities vital to tomorrow's engineering programmes, calling for greater strength, lighter weight and extended functionality with processing efficiency.

New innovators showcased at Advanced Engineering thanks to Magna International with KTN Support
Advanced Engineering UK has announced that global Tier 1 automotive supplier, Magna International will be increasing its involvement at this year's show.
Magna International, supported by the Knowledge Transfer Network, will host and sponsor the Enabling Innovation Poster Zone, a major area at the show, where the ideas and concepts from the UK's up and coming innovators are showcased.

Magna will also run 1-2-1 meetings with interested innovators, deliver a keynote in the show's conference programme and take an expanded exhibition stand.

The Enabling Innovation Poster Zone will provide a unique opportunity for early stage innovators to showcase breakthrough ideas, products and processes to the UK's largest advanced engineering audience. The 'poster' submissions will come from incubator level organisations, university students, research-based companies and start-ups. The Zone will give the 13,000 visitors attending Advanced Engineering the chance to uncover potential technologies, partners and untapped capability.

Magna's R & D team additionally will invite potential innovation partners for 1-2-1 meetings. The sessions will offer innovators with the opportunity to discuss new concepts and products, with opportunity for direct investment, collaborative programmes and potential licensing agreements with Magna's R&D decision makers. Magna is very active in the UK technology community; interfacing with venture capital firms to locate opportunities, actively working with universities on new technologies, collaborating with multiple start-ups leading to a recent joint venture agreement.

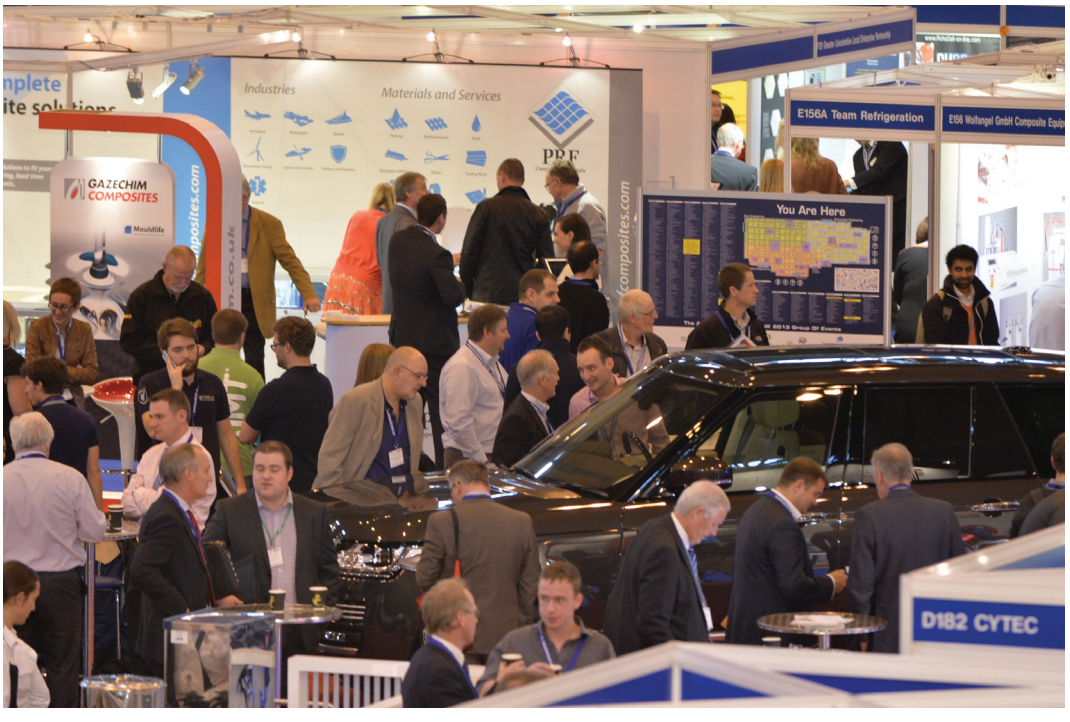
Ian R. Simmons, Vice President of Business development and R&D at Magna International, explains the deepening connection: "Successful commercialization of innovation is one of Magna's key targets. The Advanced Engineering Show in the UK is helping Magna to demonstrate that we are open for business to suppliers, universities and start ups that have new or innovative technology. Future collaboration and partnerships will be key to Magna meeting the demands for the next wave of technologies for our global customers."

Magna International is one of the largest automotive suppliers in the world, with 319 manufacturing operations and 85 product development, engineering and sales centres in 29 countries. Katie Crocombe, Advanced Engineering event director, explains why the company's involvement is so important:

"Automotive is one of the critical engineering sectors served by the show; to have a global company that supports every major car manufacturer in the world, so deeply integrated with the show demonstrates the importance of the UK as a global automotive manufacturing powerhouse, and of the event itself as one of its major catalysts.

"This November's Advanced Engineering is all about providing opportunities to commercialise innovation, as well as networking up and down the engineering supply chain; our ambition is to provide the perfect opportunity for new concepts to be shared, and OEM engineers and innovators to meet. The Enabling Innovation Zone, Magna's programme of meetings plus its stand will create so many opportunities for this to happen."

Advanced Engineering 2015 integrates multiple show exhibit zones with the UK's largest free-to-attend engineering conference programme. The show spans key sectors including aerospace; automotive; motorsport; marine, civil engineering, and more. It also includes over 750 exhibitors and more than 170 speakers, delivering sessions from 6 purpose built auditoriums at the show.



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Ultimate compact CNC performance with new design

Isel UK's proven CNC desktop machine ICV 4030 has been redesigned, offering users even better performance and easier operation.

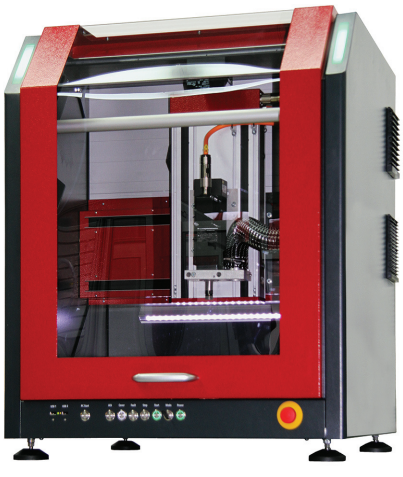
This impressive, new machine boasts: improved balanced door opening system giving easier entry with higher gantry clearance and longer travel in the Z-axis; easier access for attaching the 4th axis and general handling of machine parts and material; a fresh, modern facelift for the desktop machine's chassis.

The improved compact ICV 4030 epitomises the standard of engineering and practical attention to detail that people expect from leading manufacturer Isel.

German engineering, British innovation

Isel is renowned for innovative products and quality engineering. Its range of CNC and milling machines plus associated components demonstrates these qualities. The ICV 4030 is a perfect example of what vision, creativity and practical understanding can achieve. Plus you'll value the additional advantage of local support from the Isel UK team.

Isel UK is the UK gateway for CNC technology solutions and industrial automation components manufactured by Isel, the highly respected German engineering company. From CNC machines and routers to aluminium profiles and linear motion products, Isel UK offers you the perfect solution.



Isel has a global reputation for designing, developing and supporting quality components and systems. Every product benefits from first class engineering with the entire range manufactured in Germany.

Isel UK offers local support for customers based in the UK and Ireland. You'll enjoy proactive advice and outstanding customer service and support.

CNC desktop revolution: The redesigned ICV 4030

The reliable ICV 4030 gives you distinct advantages of minimal maintenance and optimum efficiency. This CNC desktop machine comes with: maintenance-free EC servo motors and drives systems within the controller and in the Isel X-Y-Z linear units; central lubrication points for easy servicing; unique Isel linear motion sealing system offering protection from machining chips and dust.

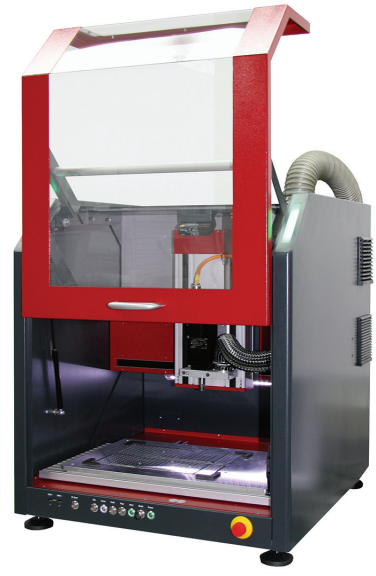
Its size is its strength. With general ICV 4030 dimensions of 770 x 836 x 900 mm, this machine offers ultimate operational versatility and is ideal for small industrial workshop, laboratory and studio operations. An Isel workbench made of aluminium profiles is the perfect solution for mounting the machine.

A complete, stand-alone solution

The integrated 4-axis machine controller PC iPC 25 computer with WINDOWS® operating system is mounted in the back of the ICV 4030 machine. It therefore provides a complete stand-alone machine solution. The ICV 4030 has an I/O module for interface options and standard power requirement of 230 V / 16 A.

All linear axis components are from the Isel range of linear motion bearings based on precision ground steel shafts with patented pre-loaded linear recirculating ball bearings. Isel anti-backlash ballscrews and ballnuts are pre-loaded to zero clearance giving positional repeatability accuracy of +/- 0.0 2 mm.

High frequency spindle motors are fitted to the ICV 4030 machine. Speed options are available up to 60,000 rpm for milling and engraving non-ferrous metal, resins, plastics, foams and wood. Other options



include tool height switch, tool cooling system, automatic tool changing and clamping vacuum bed and pump systems.

A full range of CADCAM 2D and 3D software solutions are available with option for fourth axis rotary axis machining.

Isel has a remote internet maintenance support service via Team Viewer and its team of support engineers provide user-friendly fault analysis. All of the products and components are manufactured 'in-house' in Germany to Isel's exacting high standards at affordable prices. The ICV 4030 offers performance, convenience and cost effectiveness.

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Delcam to show modelling, machining and inspection

Delcam will demonstrate the latest releases in its range of manufacturing software at the Advanced Engineering exhibition. New releases will be on show of the modelling-for-manufacture CAD system, PowerSHAPE, the PowerMILL CAM system for high-speed and five-axis machining, the FeatureCAM feature-based programming system and the PowerINSPECT inspection software.

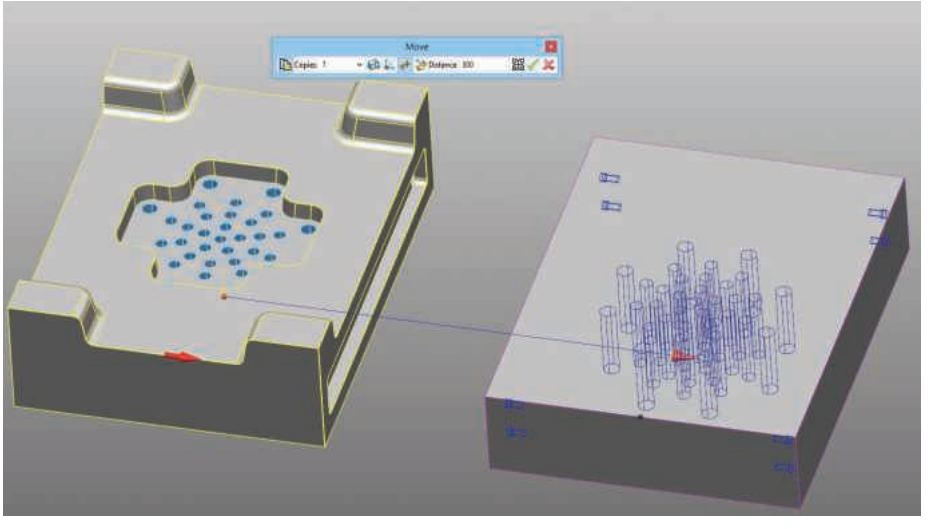
The 2016 release of PowerSHAPE Pro software will help users to complete complex designs more quickly and more easily. In addition, a combination of new, more efficient, code and the extension of multi-threaded calculations to many commonly-used tasks will make the software significantly faster than any previous version.

One key enhancement allows groups of features to be copied between two solids in a single operation. While the features do not need to be of the same type, the most common application is expected to be in copying patterns of holes from one solid to another, for example from one mould plate to any other plate in the mould stack.

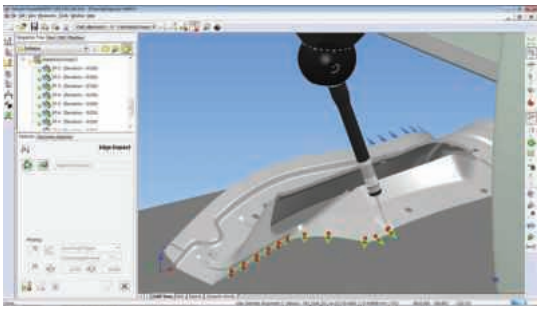
The main enhancement in PowerMILL 2016 is the ability to mirror complete machining projects in one operation and to maintain automatically the machining characteristics, for example to specify automatically whether climb or conventional milling should be used in each section of the toolpath. Previously, only individual toolpaths could be mirrored.

Automatic mirroring saves considerable time whenever right- and left-hand versions are needed of a part or tool. It will also be faster to program the machining of symmetrical objects since it will be possible to program one half and then mirror the toolpaths to complete the program.

The new version of FeatureCAM includes a range of enhancements to give high-quality results on all types of machine tool, including complex mill-turn equipment and five-axis machining centres, while retaining the rapid programming times for which the software is renowned.



PowerSHAPE 2016 allows groups of features to be copied between two solids in a single operation



The most significant new option is the ability to duplicate the physical constraints of the machine tool in simulations in FeatureCAM. Machine-tool limits can be added to the models to be used in the simulation for 3-, 4- and 5-axis milling machines, for turning equipment, and for mill-turn machines, including those with multiple turrets and/or multiple spindles. It is then possible to check that the chosen machine tool is capable of completing the proposed program for all types of equipment, from the simplest lathe to the most complex multi-tasking machine.

The latest release of PowerINSPECT makes it easier to complete fast and accurate inspection of complex assemblies, such as a mould tool. The main improvement for users of CNC CMMs is the addition of support for MCR20 and FCR25 probe change racks. PowerINSPECT can now incorporate probe changes into fully-automated measurement sequences.

The new version also includes automatic feature extraction for point-cloud batch inspection, easier navigation of the history tree, better control over RPS alignments and new options for collision checking. Delcam is a supplier of advanced CAD/CAM software for the manufacturing industry. The company has grown steadily since being founded formally in 1977, after initial development work at Cambridge University, UK. It is now a global developer of product design and manufacturing software, with subsidiaries and joint ventures in North America, South America, Europe and Asia, with a total staff of over 800 people and local support provided from over 300 re-seller offices worldwide. It was listed on the London Stock Exchange until 6th February 2014, when it was acquired by Autodesk. It now operates as a wholly owned, independently operated subsidiary of Autodesk.

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Wogaard flies into the NEC

As part of a continuous business improvement plan, Mettis Aerospace, a leading global service provider of precision-forged and machined components in titanium, aluminium and special steels, has installed the Coolant Saver on a number of its advanced Matsuura machining centres producing critical components.

Operating from a single integrated 28 acre site in Redditch, Mettis Aerospace delivers value added engineering solutions to optimise the design and manufacturing process for a number of renowned industry leaders, and the company has extensive customer approvals from Airbus, AgustaWestland, Boeing, Bombardier, GKN Aerospace, GE Aviation, Honeywell, Kawasaki, Messier-Bugatti-Dowty, Rolls-Royce, Spirit Aerosystems and United Technologies.

Employing over 530 highly skilled staff, the site is the company's international headquarters and comprises 56,000 m² of forging, machining and processing facilities that include heat treatment and kitting. This provides Mettis Aerospace with the perfect environment to design, test and assemble complex forged and machined aero engine, landing gear, airframe and nacelles, as well as flight control components.

It was as part of a continuous improvement initiative that the Wogaard Coolant Saver was first introduced to the 3,000 m² machine shop. A cell containing two Matsuura MX-520 5-axis CNC machining centres was being pushed to its limits as the customer had ramped up the volume for a family of titanium components being produced. A further two identical machine tools were ordered and have been installed to meet demand. However, it was noted by Team Leader Dave Bayliss, that each of the swarf skips contained a significant volume of coolant that was being dragged out by the titanium chips.

Phil Ketch from the company's Business Improvement Team investigated potential solutions and after a thorough appraisal of the various equipment available on the market he found the Wogaard Coolant Saver provided the most efficient and cost-effective solution. Having seen the unit in operation, Dave Bayliss measured the volume and cost of coolant that was being lost and subsequently disposed. He says: "In this cell we use a 10 per cent coolant to 90 per cent water mix and we measured the exact volume being dragged out at 90 litres per week. So, we calculated the cost of the coolant at £1,285.92 and added the cost of disposal at £304.50 for every 4,000 litres; an annual expenditure of just under £1,600 for one machine."

Wogaard will be exhibiting on **Stand B87a** at the Aero Engineering Show.

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5-axis machining of large automotive tools

Over the last 18 months, Asquith Butler, a long-established British machine tool manufacturer synonymous with its range of large capacity, travelling gantry (vertical) and travelling column (horizontal) machining centres, has become the exclusive UK distributor for a range of high quality machining centres from three European manufacturers, Zayer, Sahos and Mubea Systems. The agreements cover machine sales, installation, commissioning and service support. Asquith Butler is delighted with its success so far, having sold a number these cutting edge machines into the UK market.

The Spanish firm Zayer has also been particularly successful across Europe and in its home market in the last 18 months. For example, it has sold two large 5-axis machines for toolmaking, one to Audi Tooling Barcelona and another to Batz, located near Bilbao, which manufactures stamping tools for vehicle component production. The company supplies JLR, BMW, Volvo and other famous marques.

Paul Hinchliffe, managing director of Asquith Butler based in Brighouse, West Yorkshire, sees considerable potential for these machines in the UK, especially in the automotive sector. Here he describes Zayer's two latest projects to provide a flavour of the manufacturer's capabilities and strengths:

Audi Tooling Barcelona's new tryout centre

Acceptance of the Zayer TEBAS 6000 by Audi Tooling Barcelona was completed in April 2014. The machine has gone into the firm's 4,000 sq m Tryout Center in Martorell, opened in March 2014, where it makes die sets for producing car body parts. These are extensively tested before delivery to customers. The investment, which included the installation of three 2,500-tonne tryout presses, has doubled the number of people employed at the site to 110.

The Zayer TEBAS 6000 5-axis machining centre installed in the new Tryout Center at Audi Tooling Barcelona, Martorell

The 5-axis TEBAS 6000 completed the equipment installed at the new centre. Boasting very high volumetric accuracy, the machine has two universal, automatic milling heads capable of being orientated in 360,000 positions. One is a 45 degree mechanical head powered by a 45 kW German-made Kessler motor offering spindle speeds up to 6,000 rpm, while the other is a 30 degree head with a 23 kW, 24,000 rpm electrospindle ideal for fine finishing cycles. All Zayer heads are renowned for their compactness and reliability.

The fully enclosed machine has a 6,200 by 2,500 mm table and distance between columns of 3,500 mm. Travels in X-, Y- and Z- are 6,000 mm, 4,250 mm and 1,500 mm respectively. Cameras are positioned under the cross beam and there are probes for tool measurement and for use with Zayer's proprietary ICAL system for automatically calibrating the milling heads. Control is by a Heidenhain iTNC 530 HSCI contouring CNC system with all-digital interfaces. The machine is distinguished by its polymer concrete bed mounted on springs to prevent vibrations affecting the surface finish of the dies.

The new facility significantly enhances the quality and speed of support that Audi Tooling Barcelona provides to Audi's production plants worldwide as well as to its main customer, SEAT.

High speed, 5-axis finishing at Batz

Founded in 1963, Batz is part of Mondragon, the largest cooperative industrial group in the world. The firm's headquarters are in Igorre, 20 km from Bilbao and 1,500 people are employed in more than 15 facilities worldwide.

Stamping dies have been produced since the start. It was supplemented in 1982 by an automotive systems division for series production of vehicle components. More recently, the company has focused on new and lightweight materials, particularly for the aerospace industry, while renewable energy is another area of activity.

The MEMPHIS 7000 high speed, 5-axis machining centre pictured at the Zayer factory before being shipped to Batz

For its core business of stamping die manufacture, capacity issues meant that a dedicated machining centre was needed for finishing large dies, for which purpose a Zayer MEMPHIS 7000 high speed, 5-axis machining centre has been installed.

Longitudinal travel is 7,000 mm, distance between columns is 5,000 mm, and dies are fixtured on a table measuring 6,500 mm by 4,000 mm which can support 15 tonnes per square metre. Very high levels of productivity are ensured by cutting feed rates up to 20 m/min and 40 m/min rapids.

The gantry-type machine was supplied with four spindle heads that can be automatically exchanged, providing an unrivalled level of versatility in production. One head is rated at 43 kW / 6,000 rpm and there is a 30-degree head of the same rating offering 360,000 positions in 0.001-degree increments. An extended, L-shaped, 12 kW head is for machining awkward areas within dies at up to 2,000 rpm, while the fourth head carries a 23 kW electrospindle capable of finish milling at speeds up to a maximum of 18,000 rpm.

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High precision, 5-axis machining of components

A large capacity, 5-axis production centre with a -30 / +180 degree swivelling B-axis motor spindle has been introduced by DMG MORI. Called DMU 125 P duoBLOCK, it incorporates extensive cooling of the machine elements and is said to produce components to a level of precision 30 percent higher and with better surface finish than its predecessor. Energy consumption has also been significantly reduced.
For the first time in this fourth-generation machine, a precision package is available that includes cooling of the machine bed and column, of the servo feed drive in the X-axis, and of the ballscrews and nuts in X, Y and Z. There is also a shield around the base of the machine that mitigates the thermal effects of draughts.

These innovations are overlaid on an already extensive set of measures for temperature control. They involve cooling of the rotary B- and C-axis motors, the C-axis gears, the motor spindle and housing, all linear guideways and the Y- and Z-axis servo feed motors.

The machine is both rigid and dynamic, enabling a high level of productivity when milling tough materials like titanium and tool steels. The aerospace and mould making sectors are therefore key target markets.

Rapid traverses of 60 m/min in all axes minimise non-cutting times. The standard 12,000 rpm, 35 kW spindle with a torque of 130 Nm (40% DC) can be replaced with numerous alternative spindles, such as the new 15,000 rpm, 52 kW, 400 Nm (40% DC) version. A spindle growth sensor is included that detects axial displacement of the rotor relative to the stator and sends a compensation signal to the control.

High accuracy machining is further promoted by the HSK-A100 tool taper. The wheel-type tool magazine is space saving and offers cutter exchange in 0.5 second. Depending on its configuration, the magazine can accommodate up to 453 tools.

The large working volume of the DMU 125 P duoBLOCK is defined by travels of 1,250 mm in X and Y and 1,000 mm in the Z-axis, enabling machining of workpieces up to 1,250 mm in diameter by 1,600 mm high and weighing a maximum of 2,500 kg. There is a torque table (FD) version capable of turning components in-cycle.

The machine is supplied in DMG MORI's latest livery and is equipped with the new ERGOline control panel and the CELOS interface to a high specification Heidenhain or Siemens CNC system. CELOS includes APPs that allow consistent management, documentation and visualisation of order, process and machine data. By combining sales and service activities, DMG MORI offers a broad product portfolio and unique market presence. The cooperation covers sales and all technical services, such as customer services, training courses and technical support. About 7,000 employees are available to assist customers in 159 sales and service centres in 57 countries.

DMG MORI brings together German and Japanese tradition, precision and technological leadership in machine tool building. Behind DMG MORI is the combined engineering mastery of 65 years of Mori Seiki and 143 years of GILDEMEISTER.

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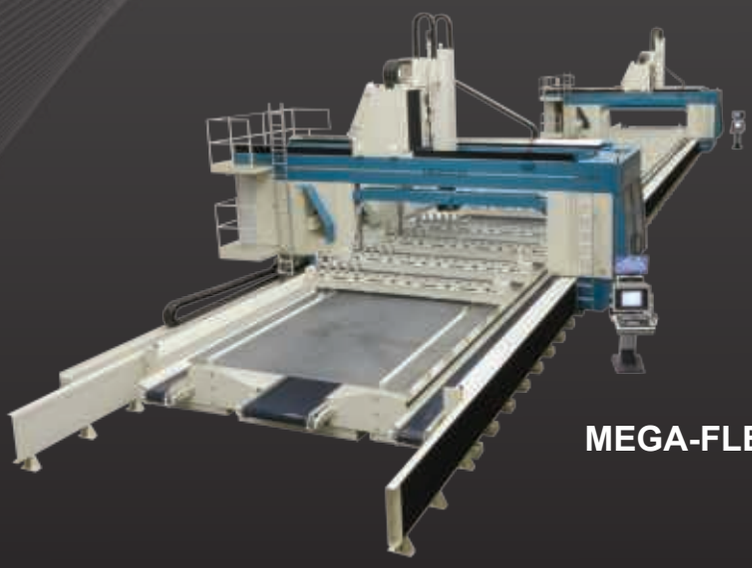

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Pulling out all the stops

Leading precision component manufacturer increases 5-axis machining capacity and capabilities through latest Mikron HPM 450U investment

Solihull-based precision manufacturing specialist, Midland Precision Equipment Company Ltd (MPE), has recently invested in a new Mikron HPM 450U high-performance 5-axis machining centre from GF Machining Solutions.

The machine, installed at the company's 13,500 sq ft facility in August 2014, is the fifth Mikron 5-axis machine tool to be acquired by MPE in the last seven years and reflects the company's commitment to continuous improvement by investing in the latest advanced manufacturing technologies.

Since being installed the HPM 450U has been, and continues to be, used to machine complex, high-precision and technically-challenging civil aero-engine components (e.g. housings, fuel pump bodies, impellers, blisks etc.), in small volumes from a range of materials including aerospace steels and aluminium.

Purchase rationale

The new HPM 450U was purchased to provide the company with much needed additional 5-axis machining capacity due to a number of its already established aerospace, mainly OEM, customers significantly ramping-up their production requirements.

MPE's managing director, Adam Ormandy says: "Although we welcomed the new work we knew that it would stretch our existing 5-axis machining capacity. Rather than try to make do with what we had, we made the decision to invest in another 5-axis machine."

Naturally enough the first port of call for MPE was GF Machining Solutions as they had already supplied the company with four Mikron machines.

Adam Ormandy says: "We have a good working relationship with GF, and have always been impressed with their applications and technical support and after-sales services, as well as with the performance and reliability of their Mikron milling machines".

MPE, first established in 1941, works closely with its customers from prototype design through to full part production. The company is heavily involved in its customers' NPI (New Product Introduction) initiatives, and works in conjunction with them to design and develop robust and repeatable manufacturing processes and procedures for specific parts/families of parts.

MPE's perspective regarding NPI is to create production layouts, inspection control plans, CNC and CMM programmes etc. as early as possible in every NPI project, the objective being to effectively create a sealed manufacturing process.

Adam Ormandy explains: "It was important that the new machine was

equipped with the Heidenhain iTNC 530 control in the first instance as this was the approved CNC control system and would enable programs and parts to be transferred between our 5-axis machines''

Other key determinants affecting the machine selection concerned the machine's spindle capabilities and its integrated automation features.

MPE currently requires its machines to run unattended, and in the future will further expand its existing lights-out operations.

To ensure these objectives could be achieved it was important the new machine had a good-sized automatic tool changer and automatic workpiece pallet changer.

A final concern was the machine's ability to provide full simultaneous 5-axis, instead of just 3 + 2, machining capability.

MPE in truth were keen to invest in a second Mikron Vario 5-axis machine but were informed by GF Machining Solutions that this machine tool range had been discontinued and had been superseded by the new HPM 450U series.

Adam Ormandy says: "This was not a problem per se, and we were able to specify a high-performance HPM 450U equipped with a 20,000 rpm spindle; a 10-station integrated workpiece pallet changer; a large 170-position ATC; through-spindle coolant capability and an on-board tool breakage and measurement system."

The machine was delivered on time, and with technical support from GF Machining Solutions' application engineers, were soon cutting metal.

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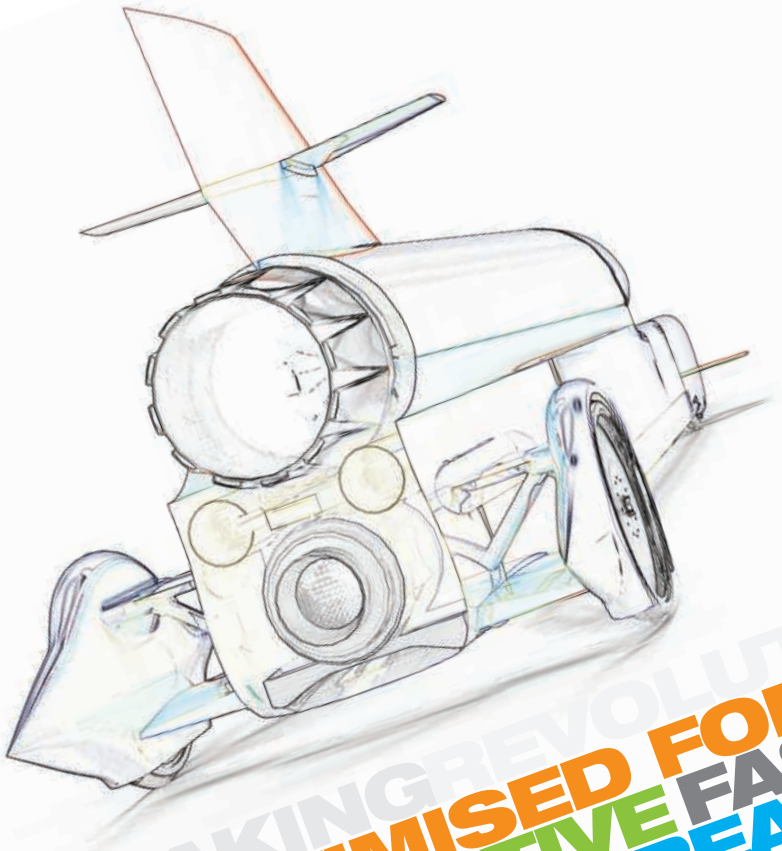

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AUTODESK.

Northumberland subcontractor adopts 5-axis machining

Algernon Precision Engineering, a subcontractor based in Cramlington, specialises in tackling difficult materials. Parts machined from stainless steels including duplex and super duplex account for three-quarters of throughput. Most of the remainder are produced from nickel superalloys such as Inconel, Hastelloy and Monel.

In September last year (2014), the company invested in its first 5-axis machining centre, a Hurco VMX42SRTi with twin-screen control. The idea was to simplify the manufacture of increasingly complex components for its diverse range of customers from sectors such as oil and gas, subsea and automotive.

The 5-axis machine succeeded in achieving significant cost-per-part reductions, mainly through 5-sided machining with three axes interpolated and the two rotary axes clamped, while some 4-axis simultaneous work has also been carried out. Drawing tolerances are generally to within ± 50 microns, although ± 10 microns is sometimes specified.

The company is now targeting the aerospace supply chain, which is strong in the north of England, to win extra work for which the 5-axis Hurco will be ideal and is also looking to the medical sector, which requires complex parts machined from difficult materials.

The ISO 9001:2008-accredited subcontracting firm was established in 1987 by managing director Graeme Watson, an experienced engineer who previously held positions in well-known engineering companies in the Newcastle upon Tyne area.

He started out in 440 sq ft premises on the Algernon Industrial Estate near the north end of the Tyne Tunnel with two lathes, a milling machine and a pedestal drill, all manually operated. Work mainly centred on producing tools and parts for blow moulding machines.

Even at that time, the company adopted the policy of training its own staff rather than hiring skilled machinists. Ninety percent of shop floor employees have come through as apprentices, the longest serving having been with the company for 25 years.

A variety of component and fixture manufacture was gradually taken on and three years later Graeme Watson added an adjacent rental unit, doubling the factory space. It was not until 2000, however, that the company was able to make a big step forward to a 2,300 sq ft factory on the same estate.

At that stage, Graeme Watson operated only two CNC machines, both lathes, but that was soon to change. The firm was doing well, having received a lot of work from oil and gas customers and other offshore equipment suppliers. Additionally, a substantial amount of machining work was supplied to the automotive sector. Manufacture of repair components for production machines and lines was another specialism.

Towards the end of his tenure on the Algernon Industrial Estate, Graeme Watson bought his first Hurco machine, a Hawk CNC mill. It was closely followed by a VM30 vertical machining centre with a 1.2-metre X-axis and 4th axis rotary indexer. The machine greatly increased the size of component the company could produce and was ideal for milling shafts.

A key driver for choosing the latter machine was the WinMax conversational control system, which lends itself to shop floor programming of simple to complex components, without the need to use time-consuming G- and M-codes. After three days of on-site training by Hurco, Graeme Watson and his operators were proficient. The speed with which cycles could be created, assisted by the power of WinMax to calculate unknown points on cutter paths, fitted well with Algernon's need to produce a lot of prototypes and small batches quickly.

By the time Andrew Marley joined Algernon in May 2014 as business / engineering development manager, three more Hurco machines were on the shop floor.

Algernon Precision Engineering has continued to invest for the future with the purchase in July 2015 of a Hurco VMX60ti with 1,676 mm x 660 mm table, which gives the company a stronger and more competitive position in the manufacture of even larger components.

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Multi-application added to machining centre

Starrag UK has announced a new addition to the Heckert range of high-speed Dynamic machining centres, with the larger capacity HEC630D U5 MT offering up to 5-axis machining capability utilising a NC swivel head, plus turning/turn-mill operations via a high-speed (900 revs/min) rotary turning table option.

With X-, Y- and Z-axis travels of 850 mm, 700 mm and 850 mm, respectively, and corresponding rapid axis traverse rates and feed rates of up to 100 m/min, the new machine's focus is clearly on reduced cycle times and single set-up finish machining.

Maximum productivity is also addressed by rapid tool change from the standard 60-tool chain magazine (80-tool optional) standard, for tools up to 160 mm diameter and 400 mm long, chip to chip is just 2.7 secs, and the 1,000 kgs capacity of each of the machine's two pallets. Pallet change takes only 9.5 secs.

Machining accuracy of six microns over the full linear axis strokes is guaranteed by Starrag's renowned rigid machine build construction principles based on thermo-symmetrical design, coolant temperature control and temperature compensation to complement digital AC servo drives and pre-loaded ballscrews.

In addition, the speed at which swarf is discharged also creates the ideal environment for dry machining on the 24 kW standard spindle machine. A 37 kW/350 Nm torque option, with reinforced column, is offered for heavy-duty applications.

The HEC630DU 5 MT's heightened machining flexibility is courtesy of the NC swivel head and NC rotary table.

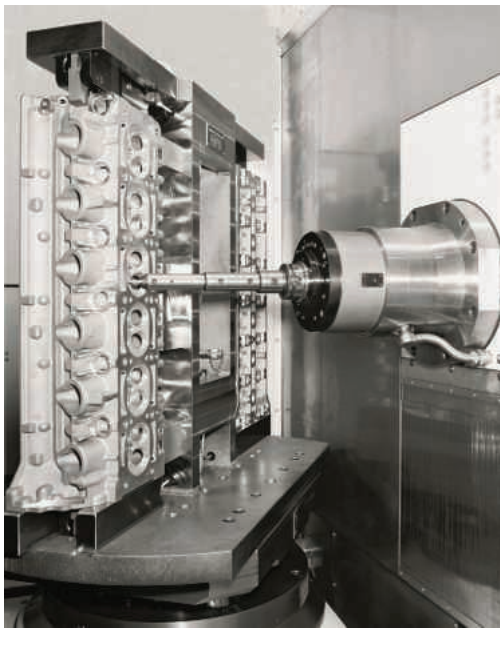
In place of a horizontal spindle, the 50 kW, 18,000 revs/min head has a swivel angle of 15 degrees to 195 degrees and boasts a ramp up time of just 0.7 seconds. With direct drive of 32.5 kW producing 900 revs/min and a resolution of 0.001 degrees, the NC rotary table provides multi-face, one-hit machining including interior, exterior and 'straight' turning tasks.

Offered with either Siemens Sinumerik 840 D or Fanuc Series 31i CNC systems, the HEC630D U5 MT features as options tool life/breakage monitoring, ARTIS adaptive control, and tool and process monitoring, Brankamp CMS monitoring and the SAM service and diagnostic system.

Like the other machines in the Heckert Dynamic range, the HEC630D U5 MT is equally at home in stand-alone operation or as part of a flexible manufacturing system.

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. Starrag Group is listed on the SIX Swiss Exchange (STGN).



Heckert's new Dynamic HEC630D U5 MT high-speed machining centre offers rapids of up to 100 m/min

With the NC swivel head providing five-axis machining capability, and a rotary table option offering turn-mill operations, the HEC630D U5 MT is the latest addition to Heckert's large-capacity machining centre range.

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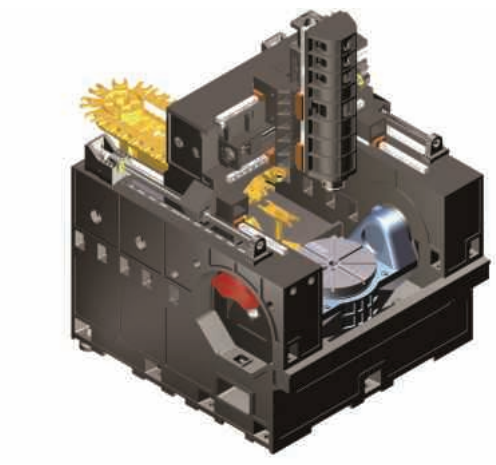
Universal gantry-style 5-axis machining centre

Based on a high rigidity, overhead gantry design with a patented backlash elimination system and twin, Y-axis ballscrew drives for high precision 5-axis and five-face machining, the Wele Universal Gantry UG-Series is available in capacities of 550 mm by 700 mm by 500 mm (UG550) and 800 mm by 950 mm by 650 mm (UG800).

With the Wele Mechatronic product range available through 2D CNC Machinery based in Hinckley, the machine builder has the pedigree of its 'Grade One' sister companies Mitsui Seiki and Toyoda Machine Tool within the JTEKT Group; itself a sub-group of world leading volume car maker Toyoda.

As a result, technology transfer, build quality and reliability is assured. Included within the machine specification is Heidenhain linear scale feed-back for each axis and the special Wele developed high precision A-axis +30 to -120° trunnion.

This 2-axis unit has some 6,000 Nm of torque available to drive the trunnion rotational axis which carries the C-axis



800 mm diameter rotary table. On the larger machine this table will accept loads up to 1 tonne and rotate at up to 100 revs/min with the high torque drive developing up to 2,300 Nm. Each machine can be fitted as an option with a fixed rectangular table or either a single or smaller duplex C-axis rotary tables. Rapid traverse rates are 48 m/min in each main axis with acceleration of 5 m/sec².

There is a choice of built-in spindles. As standard a 30 kW, 115 Nm, 14,000 revs/min unit is fitted, with option of a 35 kW, 22,000 revs/min drive. An umbrella-style tool magazine holds 30 tools as standard with option of 60 positions and tool exchange can be made with the trunnion unit held in any working position.

Being of compact gantry design, floorspace demands are small with the larger UG800 requiring just 5 m by 3.3 m. Important in the machine design is a moveable roof which accommodates automation for loading or allows overhead cranes to have a clear access for loading/unloading heavy components.

Control is via Heidenhain iTNC 530 or Fanuc 31iM-A5 available as an option.

2D CNC Machinery Ltd.
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Advanced Engineering Techniques impressed with Haas

Advanced Engineering Techniques (AET) is one of the UK's leading subcontract engineering providers, supplying to a host of sectors including road transport, coach and bus, construction equipment manufacturers and rail. AET are perfectly placed to supply finished and assembled components line-side with a comprehensive range of in house services, including laser cutting, metal forming, press-braking, fabrication, robotic welding, machining and assembly.

Founded in 1989, AET is one of the largest and fastest growing subcontract engineering companies in the North of England, with a highly skilled and experienced workforce utilising the very latest technology.

Situated in Sheffield, the company operates from a 65,000-ft^2 manufacturing facility on a 2½ acre site and currently employs 180 staff. The organisation's policy of developing its skills base, in addition to the continued commitment to invest in the latest plant and equipment, allows AET to remain at the forefront of the industry with a yearly turnover in excess of £11 m.

Managing director, David Birch bought the company's first Haas machine after seeing one being put through its paces at Sheffield's Advanced Manufacturing Park. He explains: "Our CNC machining workshop is now exclusively Haas. We had a couple of older machines that needed replacing and in 2002 we bought two Haas verticals, a VF-1 and a VF-5. These machines impressed us so much we've continued to invest in Haas and we're currently running four lathes and five mills.

"Our latest purchase was a VF-9, which was installed at the end of 2014. We decided on the VF-9 as the bigger bed gives us real flexibility. We machine some very large components like chassis for double decker buses and tipping links and arms for diggers. The VF-9 is powerful with lots of torque, which is ideal because we often use large diameter end mills on stainless steel. It still makes me smile when I see a big U-drill push through steel, like the proverbial hot knife through butter. We're currently using it to machine railway fishplates."

In rail terminology, a fishplate is a metal bar that is bolted to the ends of two rails to join them together in a track, usually using four or six bolts. The top and bottom edges are tapered inwards so the device wedges itself between the top and bottom of the rail when it is bolted into place.

"We take advantage of the long table on the VF-9 and load it up with as many parts as possible. Our fixturing allows us to drill and machine 10 fishplates in one setup. The fishplates are 45 mm thick EN-24 mild steel and we use a 32 mm U-drill to cut the boltholes. We specified through-spindle -coolant, which has cut our cycle time for the drilling operation by 40 percent."

The Haas VF-9 vertical machining centre has 2,134 x 1,016 x 762 mm xyz travels. The 30-hp spindle runs up to 8,100 rpm. It has a 24-pocket side mount tool changer and is available in both 40 and 50 taper.

"We run two shifts at the moment, with each CNC operator running two or three machines. They all like the Haas control, which is very easy to use. We've found it to be similar to Fanuc and the built in can-cycles and macros are really useful. "

Most importantly, David Birch states that the Haas machines have allowed AET to reach and maintain the standards demanded by its customers.

"The machines have helped us to evolve," he says. "We can now simply design the parts on our OneCNC CAD/CAM system, and the finished program can be downloaded via a USB stick to the machine. It really is that simple. We have hundreds of parts programmed. We simply select the required component, and the machine takes care of the rest. Our operators can easily make any adjustments directly at the control."

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Export success for Ionic

Ionic Engineering, a dedicated user of CNC sliding head turn-mill centres from Citizen Machinery UK, is now exporting half of its subcontract machined components across Europe and into the USA, largely related to the switchgear, safety valve and electrical sectors. As a result of this continued success, sales have doubled since 2008 when the first Citizen L20-VIII was installed and the company is now spending some £400,000 on a machine shop extension and new equipment.

Ian Fitzwater, managing director, attributes much of the success of his 22 people business and especially the turn-milling of components up to 42 mm diameter to his team of three, plus a recent trainee operator that are involved with the turning section under works manager Neil Titmus. "Our turning section team has certainly been able to exploit the full capabilities of the Citizen-supplied machines on many, mostly difficult components." says Ian Fitzwater

In the ensuing seven years, his five progressive purchases of Citizen sliding heads and one Miyano fixed head turning centre has meant the company has benefited from the continuous improvements in the machines' design. In particular, he maintains, the applied production technology has helped to not only maintain the UK and overseas customer base and its changing demands but also importantly, draw in new business from new as well as existing companies.

Qualifying its progressive order book, Ionic is now investing £400,000 on new

machinery for its turning and milling sections plus, by September, expanding of its 8,000 ft^2 production shop with another 2,700 ft^2 extension. This area will become the turning centre, housing the Citizens and Miyano, which then provides extra floor area in the main factory for new machining centres and support services. The company also has a further 2,000 ft^2 just down the road and a sheetmetal facility.

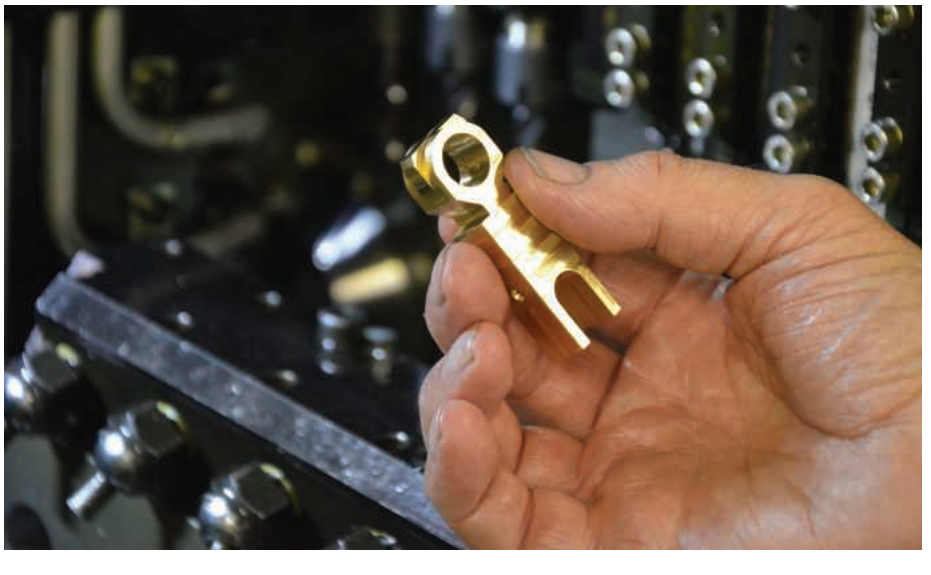
When he compares the new A32 specification against a Citizen L20X installed just two years ago, he maintains the new machine will take over certain well-proven components from the L-Series machine bringing the benefit of increased productivity from its heavier duty cutting cycle capability. In addition, the faster processing software and the added ability to overlap more tools in an operation will aid improved spindle utilisation and free-up the L20X to accommodate more complex components.

Ionic Engineering was formed in 1988, when Ian Fitzwater's employer, where he was production manager, decided to close its machine shop. He was able to acquire the machines and took on nine people to provide a subcontract machining service covering industrial switchgear, switch bodies, linkages, indicators and safety related items such as explosion proof housings.

In 2008, the decision was made to install a Citizen L20-VIII which, said Mr Fitzwater: "Completely opened our eyes bringing immediate new opportunities. From that day we forgot about secondary operations, fixtures and even gauges on turning work as we focused on what could be achieved with single cycle sliding head processing."

Meanwhile, the Miyano BNA-42S installed in 2011 is mainly engaged on larger up to 42 mm diameter bar work which can involve very complex cycles, and most parts produced tend to be shipped to customers in the USA.

The Citizen A32-VIIPL on order is rated as the fastest 32 mm sliding head machine that is currently available, with 7-axes and the flexibility of 23 tools. Six can be applied for turning, four driven tools for cross machining, nine for back-end cutting and five tools for front end cycles. The main spindle is 7.5 kW and the sub-spindle 3.7 kW with a 1 kW, 5,000 revs/min drive for the rotary tools.



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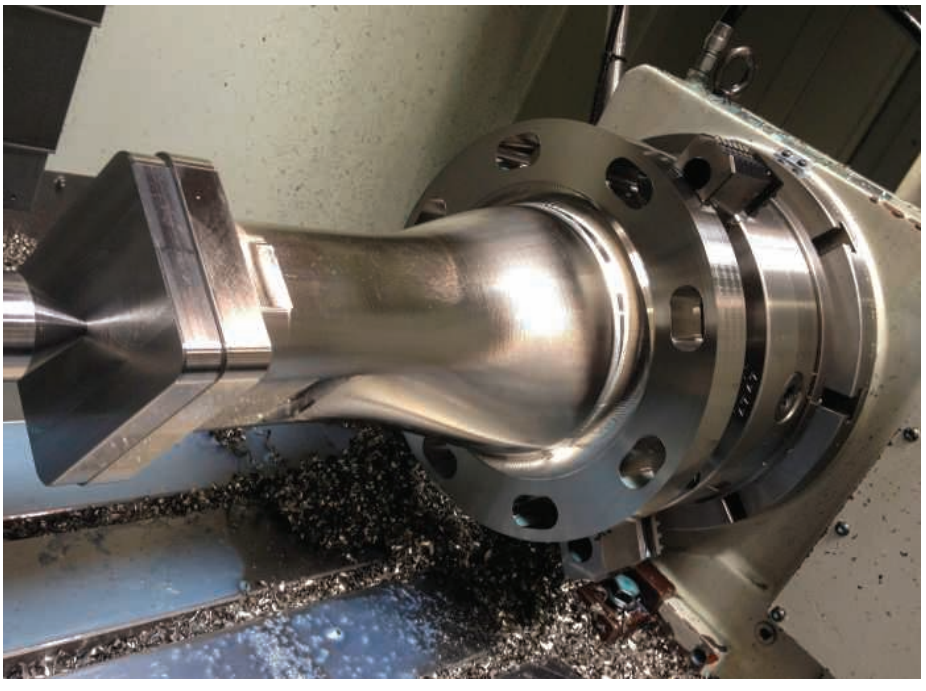
Opportunity leads to long-term success for MH7



Back in 1989 when Mark Hirst set up MH7 Engineering in Brighouse, West Yorkshire, with just a turret mill, centre lathe and an old Ward 7 turret lathe, his ambition at the time was simply to provide a niche service to all of the local manufacturing companies who were getting rid of their own toolrooms and maintenance facilities. Now, 26 years later, he still provides a service to machine one-off parts for machine breakdowns and the occasional mould tool, but MH7 has diversified into general subcontracting and specialist manufacture of parts for anything from workholding fixtures, through racing car wheels to soap extrusion systems.

"Our core focus still remains the low volume, one-off, end of the market where we can use our toolroom skills to get our teeth into specific problems and challenges. This has given us extensive experience of many different industries, and we have been able to transfer the needs of one industry to another, providing solutions that others may not have come up with," says Mark Hirst. In addition to the toolroom type of work MH7 also takes on precision subcontract work and provides a design service to those customers that require it. This has led to some intricate and unusual components being machined.

Along the way this diversification has meant investment in machine tools and as well as gear cutting and EDM equipment for specialist odd-job work MH7 has also brought in a number of more conventional machines, in the form of XYZ ProTURN lathes, one with a three metre bed length, an XYZ Minimill 560, an XYZ 1510 vertical machining centre with fourth axis capability and most recently an XYZ 1020 vertical machining centre. "We purchased our first ProTURN lathe before we had any CNC machines and the ProtoTRAK control was a good introduction, that has allowed us to progress from there and it is particularly suited to the type of work that we do. The initial ProTURN lathe we bought was specified with a 3 metre bed, which we bought on spec as we didn't have any work of that length at the time. Now that we have experience of the ProtoTRAK control and also the Siemens on the XYZ machining centres, our next move will be to go full CNC with an XYZ lathe to supplement our existing capacity," says Mark Hirst.

The XYZ vertical machining centres are also being used to maximise the capabilities of MH7, especially the XYZ 1510 with the fourth axis option. A recent project to machine a burner exit adaptor in 316 stainless from a billet was completed on the XYZ 1510 with ease. Another customer required some complex milling to be completed on an outlet to be used for testing turbochargers. Slightly less exotic, but forming a regular source of work for MH7 is the work it does for workholding specialist John Walton, in particular it manufactures a number of specialist Rock Steady work steadies, many of which end up back with XYZ for use on its XL range of large capacity lathes. These range in size from what could be classed as conventional three-point steadies through to a one-off, gear driven, four point steady recently

completed by MH7. The XYZ machines have made the manufacture of all of the parts that MH7 machine that much easier, due to the versatility of the machines and the ease of use of both the ProtoTRAK control on the lathes and the Siemens 828D ShopMill Control on the vertical machining centres. An example of this is where Mark Hirst takes advantage of the user friendliness of the machines, when machining one-off components for his collection of motorcycles, including a Coventry Eagle Flying 8, which he rebuilt from a box full of bits. Mark machined a variety of parts such as push rods, engine casings, spindles and gears on the XYZ machining centres and lathes.

The ongoing customer service provided by XYZ is also an important aspect in Mark Hirst's decision to keep buying from XYZ: "Given the nature of the work that we do we are often under serious time constraints and it is reassuring that we can simply pick up the phone to XYZ and they will deal with any problems we have that way if possible, providing ongoing support for programming issues as well as talking us through any machine issues, allowing us to get a problem solved without having to wait for an engineer on the rare occasions we need that support. If I didn't like the XYZ machines, I wouldn't keep buying them!"

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Big aspirations for press tool specialist

A newly established press tool design and manufacturing business specialising in automotive 'body and white' tools has set out its stall with an impressive manufacturing capability based around two Quaser vertical machining centres.

Supplied by the nearby Engineering Technology Group, the machines purchased by 2G Tooling Ltd include the UK's largest capacity Quaser, a MV234P VMC, which has an impressive machining envelope of 2000 mm x 762 mm. This gives 2G the capability to service its tier one customers who in turn are supplying components to high end OEM vehicle builders.

The other Quaser is a smaller MV184E VMC which is a highly adept machine with a very compact footprint yet can still accommodate workpieces of 1000 mm in length.

"We have a lot of experience in this sector and from the outset were determined not to fall short in terms of machining capacity," explains partner Chris Peters who with his brother established the company which started trading in January 2015.

"Obviously, investing in two such impressive specification machines from a new business start-up we were a bit apprehensive but we had very positive feedback from the outset and a number of potential customers had been approaching us almost before we were in business," he explains.

"Newly built premises to accommodate the new machines were acquired and from the New Year we haven't looked back. The two Quaser's have been fantastic, I had not heard of them before we spoke to ETG, but they are extremely well built, have many features that on others are extra's and obviously came at the right price.

"We spoke with ETG's Business Finance team about the purchase details and they were most helpful. Obviously a business start-up is pretty demanding on the cash flow but Andrew Bullard and his finance team at ETG were both knowledgeable and accommodating and helped us over the first few months."

The larger MV234P VMC offers high speed, high power machining being based on a highly rigid cast iron frame with large X and Y travels accommodated in a compact footprint.

As explained, the table size of 2000 x 762 mm with a 2,000 kg table load capacity is ideal for accommodating 2G's largest press tools. Supplied with a BT face and taper contact spindle, 48 tool magazine and thro coolant, the only addition Chris Peters made to the standard machine specification was the addition of thro air.

"Mostly we machine in tool steels such as Uddeholm Holdax and SV21 with some machined parts specified in aluminium," says Chris Peters. "We also do a fair amount of prototyping offering customers a full CAD to machining service using VISI Series design and machining software. These days pre-build tools have to produce parts to meet similar standards to the final production parts so we value the accuracy and repeatability that the VMC's offer us," he adds.

Working in tandem with its 'big brother', the MV184E makes use of Quaser's unique spindle technology and grease replenishment system while offering coolant and chip management alongside machine thermal management. Both machines are equipped with Heidenhain controls.

Chris Peters is confident his new business is starting to fill a niche in an industry that has largely moved overseas.

"Being a small operation we can be highly flexible and we work very closely with our customers, to the point that they are often here to watch and contribute to prototyping,"

"The fact we have invested in a machining capacity to over two metres demonstrates we mean business and that customers know they have a reliable UK based resource almost on their doorstep. Such close co-operation coupled with the toolmaking expertise is we hope, a cornerstone of our future success,"

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CNC International introduces new EDM machine

As a name synonymous with high quality EDM and 5-axis machining solutions, the Exeron brand has now launched its latest innovation, the EDM 312 MF30 that is now available in the UK from EDM specialist CNC International.

The new EDM 312 MF30 has been created to be a robust, compact and versatile machine that is ideal for a wide variety of applications. Extremely compact with an overall footprint of 1950 by 1800 by 2500 mm (WxDxH), the EDM 312 has a work envelope of 450 by 300 by 300 mm in the X, Y and Z axes. This travel is provided over a table of 820 by 400 mm. Not only is the work envelope remarkably spacious for a compact machine, it has also been designed to support heavy loads in the Z-axis with a maximum table load capacity of 800 kg. The small overall footprint of the EDM312 MF30 is credit to the Exeron R&D team that has manufactured a machine that integrates all process related systems and units within the compact frame of the machine. From a precision perspective, the EDM312 has digital AC direct drive servo motors and linear glass scales for the highest possible drive and control dynamics. This is complemented by oversized slides and guideways on the X and Y axes to create precision and repeatability levels unsurpassed in the EDM marketplace.

To improve ease of use for the end user, the tank of the EDM312 MF30 can be lowered and driven whilst filled to provide complete access to the workpiece. By permitting the 900 by 520 mm work tank to be moved with a full tank, mid-cycle modifications are simplified for the end user and this reduces non-cutting cycle times. Contributing further to the productivity level of the EDM312 MF30 is the fully simultaneous CNC path control that is driven by a user friendly PC. This works with a familiar Windows based interface that presents the latest technology available. Highlighting this, the CNC control is based on a completely new Metro style software concept that has been designed specifically for touch screen operation.

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SpecDrum trusts in Colchester lathes for conveyor pulley machine tools

SpecDrum Engineering, one of the world's largest suppliers of conveyor pulleys, has purchased a 3-metre Colchester Mastiff centre lathe and a Colchester MultiTurn 3000 CNC lathe from 600 UK, as part of an investment at its County Tyrone manufacturing facility.

The company produces in excess of 50,000 pulleys annually, the majority of which are used within the crushing & screening, recycling, aviation and materials handling industries, and are sold throughout the UK & Ireland and the whole of Scandinavia.

With production levels placing increasing demand on existing manufacturing machinery, the company began looking at options to update its machine tooling capability, leading it to speak to Irish machine tool specialist Gillen Machine Tools.

A renowned supplier of superior machine tool solutions in both Northern Ireland and the Republic of Ireland, Gillen Machine Tools has the distinction of having served as 600 UK's Irish distributor for the Colchester brand for the past 20 years, delivering, installing and commissioning all models of Colchester lathes.

From the lathe upgrading process, SpecDrum wanted to see improvements in specification and technology, but also needed the transition to be as seamless and simple as possible.

This drove a decision to purchase the latest and most appropriate Colchester models from previous supplier, 600 UK, to secure exceptional equipment of a style operators would already be familiar with.

SpecDrums new 3-metre Colchester Mastiff centre lathe and Colchester MultiTurn 3000 both offer exceptional performance using simpler lathe controls. Packed with safety features and designed for long-lasting precision and productivity, the 3-metre Mastiff is renowned for its ability to perform, owing to its electronically variable speed spindle drive and Constant Surface Speed option. Providing further capabilities, the chosen MultiTurn 3000 CNC lathe also delivers, particularly when it comes to versatility, as it can be set to a variety of tasks, simply and effectively, as well as being able to handle heavy duty components with comfort and precision.

With both machines installed and operating beyond expectations, SpecDrum has considered the 'upgrade' operation to be a major success, equipping them with lathe machinery that's both simple to use, and fit for the future.

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SGS Tool Europe to launch Z-Carb HPR at EMO

SGS Tool Europe will launch the next generation of its Z-Carb High Performance tools at EMO, Milan, **Hall 5 Stand B42**. The new range of Z-Carb HPR five-flute roughing end mills are ideally suited to aggressive high speed roughing and finishing machining applications.

The specialised five-flute design is engineered for increased productivity compared to three and four flute end mills resulting in high metal removal during the machining process and subsequently reduced cycle times.

Using SGS variable indexing geometry to provide improved chatter suppression over symmetrical designs, the new Z-Carb HPR is available in a variety of lengths, with square, and corner radius options, and is available with the exclusive Ti-Namite-M heat resilient coating for superior performance in difficult to machine materials such as titanium. With a hardness value of 3,600 (HV) features of the advanced coating include high wear resistance, reduced friction with a co-efficient of friction of just 0.45, an oxidation temperate of 1,150°C and excellent prevention of cutting edge build-up.

Enhanced cutting performance will be of key interest to companies working in aerospace, automotive, mould and die, energy, medical and general precision engineering. In fact any sector looking to achieve high performance titanium machining especially applications with deep pocketing and aggressive ramping.

Designed using the latest FEA software the cutting force and torque are reduced by more than 10 percent thanks to the patent pending variable design of the Z-Carb HPR which improves shearing capability and tool life. Specially designed for the five-flute tool the radial rake balances positive cutting action and edge strength, while the end

grind features include a positive axial rake for improved shearing and lifting of material and increased clearances to eliminate edge build-up during ramping.

Engineered for strength, chip evacuation, and increased productivity over three- and four-flute end mills the specialised five-flute design offers a performance increase of between 20 and 40 percent. The variable flute pattern provides excellent chatter suppression over a range of spindle speeds while the open centre design delivers efficiency during entry movements into the workpiece. The helix angle has been engineered for balance between positive cutting action and reduced contact area to control tool pressure and spindle load.

A central hole delivers coolant effectively to the cutting zone for enhances chip removal when pocketing or slotting. Typical ramp angles of five degrees are easily achieved; greater than five degree ramp angles are obtainable. Entry feedrates can achieve 100 percent of the slotting value and the open centre provides an ideal exit for central coolant and chip flushing while maintaining aggressive ramp angles.

During roughing operations one times diameter slotting capability is typical, 50 percent radial by 150 percent axial heavy profiling is common. True high speed machining is supported by the variable geometry design and open fluting to eliminating vibration. Productivity is increased as the specialised geometry promotes high chip load at aggressive feedrates, while achieving a surface finish of 1.8 micron Ra or better on most materials.

Alan Pearce, managing director EU operations, says: "SGS has an active ongoing commitment to research and development. Our reputation for quality and ever-increasing our focus on value at the spindle pushes us to continually innovate and discover the very best cutting tool technology. The Z-Carb HPR is the latest product of this passionate pursuit. Extensive field tests of this new cutting tool have yielded higher material removal rates than expected while meeting or exceeding expected tool life."

SGS Tool Europe is a premier manufacturer of high performance, precision solid carbide rotary cutting tools, with a metric and an imperial inventory of over 16,000 items, plus an industry leading bespoke special tooling service to meet customer specific requirements. Headquartered in Ohio, USA, SGS has a 25,000 ft^2 European headquarters and manufacturing facility in Wokingham, UK.

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WNT applications team cuts tooling costs for Velden Engineering

When Bolton based subcontract engineering firm Velden Engineering (UK) Ltd was faced with spiralling tooling costs on one particular milling operation, it turned to WNT's technical applications team to provide a viable solution.

When machining high value components with extended cycle times process security is paramount as cutter failure leads not only to lost time, but also the risk of scrapping valuable components. This was a problem faced by Velden, which was using a 63 mm diameter facemill, using small, single side, high feed inserts to machine components for the oil and gas industry out of 17/4PH stainless steel. They could achieve the cycle time required with the original tool it was using, but Velden was finding that this tool life was extremely inconsistent, ranging from 14 minutes upwards, with no indication when tool failure would occur. These insert failures were catastrophic, wiping out the cutter body on each occasion. "It got to the stage that we were spending £8000 - £9000 per month on this particular cutter and inserts, which simply wasn't sustainable, the tooling supplier blamed our material, but we had no issues with other operations, so we had to find an alternative," says Lee Valentine, Velden Engineering's plant manager.

It was at this time that an ecast promoting

WNT's new HCN 5235 and HCF 5240 carbide grades landed in Lee Valentine's inbox. These grades have been developed specifically to improve performance when machining difficult to cut alloys, such as those found at Velden, which go into products for the offshore/subsea sector. A cutter and inserts were ordered and they matched the the toolife of the competitor inserts, but consistently. Also, the RNHU 1205M5 inserts from WNT also featured indendations that allowed accurate indexing of the insert as an edge became worn. The combination of the improved reliability of the tool life and the accurate indexing eliminated all of the insert failures that Velden had been experienceing. "I have seven or eight smashed cutters on my desk from the previous supplier, since changing over to the WNT inserts we have not damaged a single cutter and, we can confidently rely on the tool life to determine when to change the inserts, leading to significant cost savings," says Lee Valentine.

From this initial success Velden then took up the offer of additional applications support from WNT. Making use of WNT's Technology Centre in Sheffield, Velden shipped over samples of material and WNT's technical applications team got to work to investigate the optimum tooling strategy for the part. WNT took the opportunity to test a number of inserts, grades and geometries on the material, but came back to the original RNHU inserts in grade HCN5235. The result was slightly modified cutting data that reduced cycle time on the components by an additional 10 percent. The 12 mm button inserts are now running in production at 180 m/min surface speed, 1500 mm/min feed rate and at a depth of cut of 2.5 mm. Tool life remains constant and to date not a single cutter body has been damaged.

"Key to this service for Velden was the fact that WNT took the evaluation of the machining process off-site to its Technology Centre in Sheffield. Up to now if we had wanted to test, or develop, machining strategies we would have had to do it on our machines, eating into valuable production time to carry out tests that may, or may not have been beneficial. The fact that WNT took over responsibility for all of that and we

didn't lose a single minute of machine time was a major benefit for Velden." says Lee Valentine.

The HCN 5235 insert grade from WNT (UK) is making significant in-roads into reducing cycle times and cutting tool costs, as they are focussed on the machining of heat resistant alloys and titanium. The success of the grade is down to the combination of new carbide substrates, high technology coating, and the latest generation chip-breaker geometries. These combine to give excellent swarf control and protection to the cutting edge, resulting in improved cutting performance and productivity.

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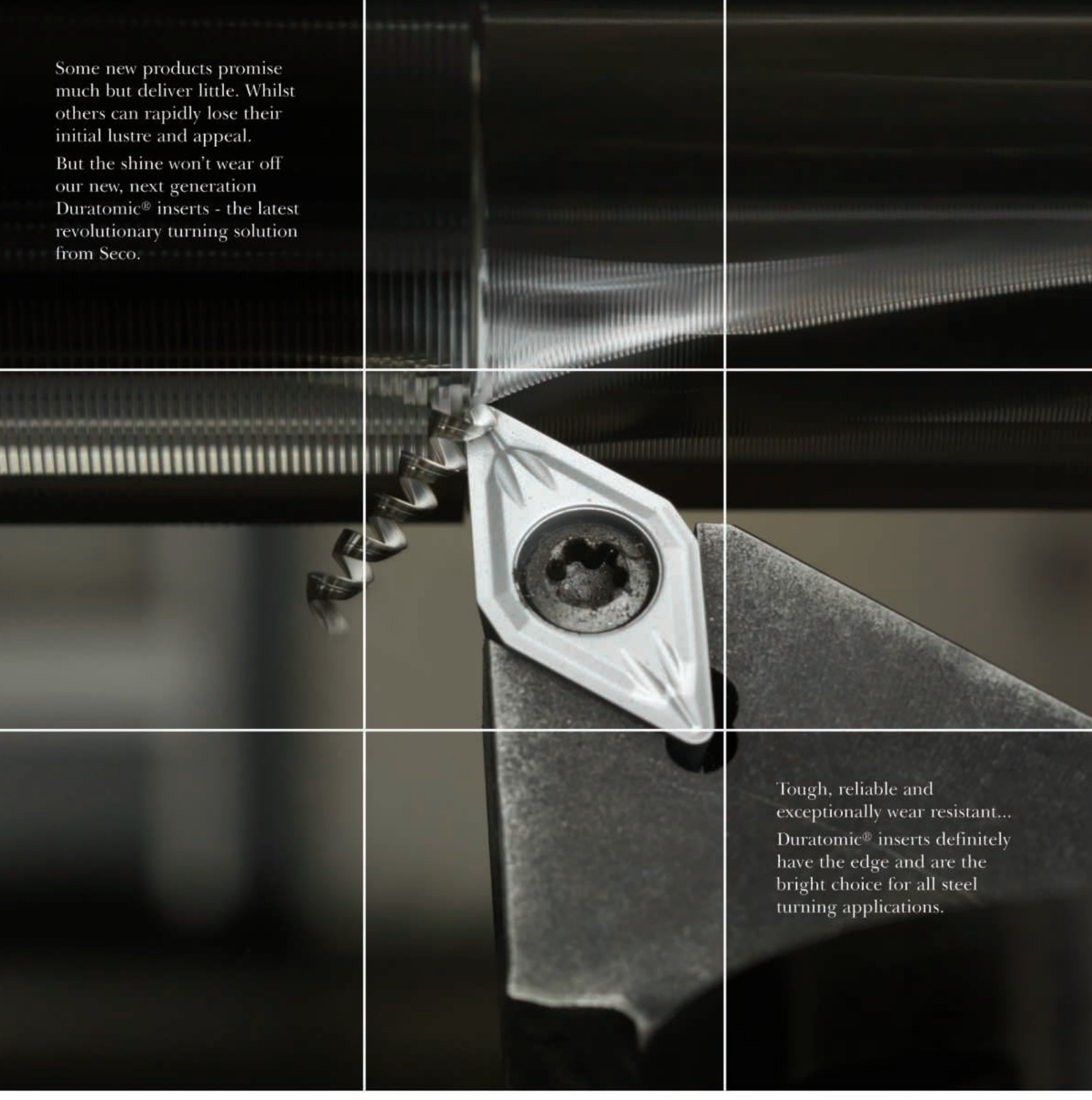
Email: tony.pennington@wnt.com
www.wnt.com



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Walter applies engineering Kompetenz to titanium machining

Leading tooling manufacturer, Walter has launched a new and innovative series of milling tools specifically aimed at the machining of titanium. The new tools are a result of the company's Engineering Kompetenz strategy that involves ongoing development work and partnerships with aerospace OEMs and their suppliers, as well as with CAM specialists and machine builders.

The new Walter M3255 tangential porcupine cutter, and Walter Prototyp Ti40, Ti45 and Ti50 cutters, for rapid material removal and for semi-finishing and finishing respectively, offer "economical yet the most efficient and profitable solutions" for every company involved in the machining of titanium.

Available in diameters of 50 mm to 80 mm as standard, the M3255 tangential porcupine cutter can also be supplied at any 'odd' diameter between these limits, while the Ti40 is available from 12 mm to 25 mm diameter; the Ti45 from 16 mm to 25 mm; and the Ti50 from 9.5 mm to 25.4 mm.

All are complemented by the Walter ConeFit modular toolholding technology for ease of setup as well as providing maximum stability for semi-finishing and finishing operations.

With rapid metal removal, high edge life and product security as by-words and ideally suited to applications such as wing or fuselage assemblies, the M3255 cutter is based on a high-strength, rigid core and monobloc design as well as an optimised flute design for rapid metal removal via a 27° helix.

With adjustable radial coolant outlets, the cutter will shoulder mill with maximum efficiency and is adept at slotting, too. The cutter features Walter's latest Tiger.tec Silver inserts of WSP45S grade, and each insert has four cutting edges.

Following a similar philosophy, Walter has applied concentric tool path strategies to its Prototyp Ti cutters, where the dynamic tool path cutting width is always controlled via CAM. The result is effective metal removal with consistent finished size and surface quality using tools with asymmetric helix design and micro geometry (which assures controlled cutting pressure and avoids deflection).

The tool is always running in an optimised data condition and therefore avoids chatter, edge rubbing and damaging vibration, while also offering controlled wear rate.

The Ti tools, which are optimised for thin wall deep pocket finishing, are available with 'anti' pull-out shanks to suit a variety of matching spindle adaptors. The tools are ground with a back radius to create soft blend lines and a long cutting edge that achieves a flat wall surface.

ConeFit avoids the unnecessary investment in long, solid carbide tools by being an interchangeable head (face and taper) modular locking interface system. It combines a VHM changeable milling head with a steel tool shank. VHM tool shanks and monoblock spindle adaptors with HSK63, SK40 or Capto C5 and C6 are also available.

Blended tool paths are assured by the use of the ConeFit technology, which also allows constant step finish climb milling to minimise deflection in deep pocket wall finishing.

Walters's Tiger.tec silver inserts for roughing steel

With an aluminium oxide layer that is 150 percent thicker than conventional layers, the new Tiger.tec silver WPP05S indexable insert from tooling giant Walter GB is targeted at roughing applications on steels. The insert offers longer than usual tool life even at the highest operating temperatures: in tests on a forged 42CrMo4 part, cutting speeds of 380 m/min were successfully achieved and tool life increases up to 75 percent were gained.

Tiger·tec silver cutting tool material offers speed, reliability and longer tool life. Increased cutting speed is a result of the coating using aluminium oxide with an optimised microstructure which extends the time it takes for crater wear recesses to form.

Increased process reliability and toughness are achieved thanks to the material's post-treatment, where compressive stresses are introduced into the coating which prevents fractures to the cutting edge.

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Rainford has a long neck for hard machining

Capable of machining hardened steels up to 70HRc, Rainford Precision has now extended the new range of HSB and HSLB ball nosed cutters from Union Tool. The HSB series is a stub length tool with a short cutting length to improve rigidity and performance whilst the HSLB is a long series tool for machining difficult to reach surfaces and cavities with its 5XD reach.

Machining materials in a hardness range beyond the comprehension of most cutting tool manufacturers, the HSB and HSLB two fluted end mills from Rainford Precision push the boundaries of hard machining. This is credit to the new Hard Max coating technology that is unique to the Japanese tooling manufacturer. The Hard Max coating improves oxidation resistance to improve productivity on a range of materials that include carbon, pre-hardened and alloy steels, hardened steels up to 70HRc, cast iron, copper, titanium and heat resistant steels.

The ability to machine a diverse range of materials up to 70HRc is permitted by the innovative geometry as well as the coating technology applied. The ball tip point has a super-negative rake angle that increases the thickness of the cutting edge to promote chipping resistance when dry or wet cutting of difficult materials. In addition, a negative rake angle on the cutting edge periphery further improves machining performance, chip flow and surface finishes by reducing vibration and deflection. This feature is particularly prominent on the longer HSLB range where the long reach characteristics have the potential to instigate vibration.

The HSB series of ball nosed end mills are available in diameters from 0.6 to 12 mm with the majority of tool radii targeted at diameters up to 2 mm. With up to 70 tool designations available, Rainford can provide a variety of radii with a selection of cut lengths for each tool radius, all available off-the-shelf. The new HSB is available with a cut length from 0.06 mm on its 0.03 mm radius tool through to 22 mm on its 6 mm radius cutter with a selection of cutting lengths offered on each radii to deliver the optimal conditions for machining hard materials. To increase rigidity and machining performance, the HSB is supplied with a shank diameter from 4 to 12 mm with a short cut-length geometry that eliminates vibration and any harmonic effect when cutting difficult materials at high speeds. This cutting performance is further enhanced by an overall tool length from 50 to 110 mm that eliminates vibration and creates stability under difficult machining applications.

For longer reach applications, the HSLB Series has been extended to offer diameters from 0.1 mm to 6 mm with ball nose radii of 0.05, 0.075, 0.1, 0.15, 0.2, 0.25, 0.3, 0.4, 0.5, 0.6, 0.7, 0.75, 0.8, 1, 1.25, 1.5, 1.75, 2, 2.5 and 3 mm. The smallest 0.05 mm radius tool provides a 0.08 mm length of cut and an overall length of 45 mm and this overall geometry is retained through to the largest 3mm radius tool with its 4.8 mm length of cut and overall length up to 120 mm. To ensure the most robust and resilient machining conditions, the HSLB has a number of flute lengths available and this is complemented by a shank taper angle of 16 degrees to minimise vibration. With 109 new tool dimensions added to the HSLB and 17 new additions to the HSB Series, Rainford Precision can cater for all your hard machining tasks.

Union Tool Europe specialises in the distribution throughout Europe of world-class micro drills and routers for the PCB industry, as well as leading edge and high precision end mills for the Die and Mould making industry. High accuracy linear motion guides are also distributed via Union Tools Pan-European distribution network.

Union Tool Europe also offers a wide range of services including complete technical support, after sales service, technical audits, kitting, ringing, repointing, machine maintenance and tool management systems.

Rainford Precision Machines was founded in 1991 by owner and MD Arthur Turner. For over 24 years, it has supplied precision tooling of the highest quality to the precision engineering industry, forming strong relationships with suppliers and clients alike.

From its headquarters in Rainford, St Helens, the company acts as a middleman between UK engineers and exotic tooling manufacturers from all over the world. It supplies high quality cutting tools from companies such as Union Tool, Iwata, Kyocera Micro Tools, Osawa, Yamawa and Xactform.

Rainford Precision is also the exclusive UK supplier of the German precision machining centre manufacturer, KERN Microtechnik, whose flagship machine, the Pyramid Nano is quoted as working to +/- 1um on the workpiece.

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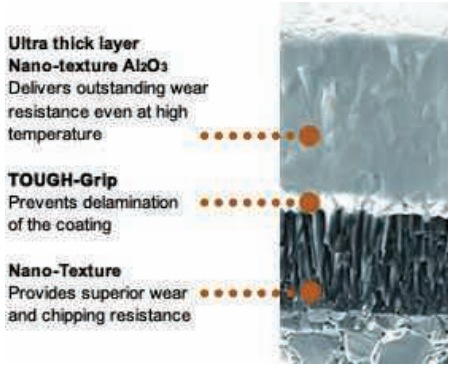
New insert series pushes the boundaries of steel turning

ISO insert series for steel turning
Mitsubishi Materials is now pushing the performance boundaries of steel turning beyond the realms of its competitors with the introduction of the new MC6015 insert grade. The new ISO series of CVD coated inserts are ideal for the ISO application range from P05 to P20 and have been developed with Mitsubishi's patented Nano-Texture Coating Technology. This technology delivers exceptional wear and edge chipping resistance, even when machining at the high performance parameters required in todays' metal cutting world.

The unique new nano-texture coating operation optimises the crystal growth to tightly compact the crystals into a uniform structure that prevents edge failure and prolongs tool life. This Al2O3 ultra thick layer makes MC6015 the insert selection of choice for continuous machining of steel, especially when conducting high speed, high feed machining that generates extreme surface temperatures. This new patented layer is coated with a smooth and hard wearing surface that prevents abnormal damage and weld chipping.

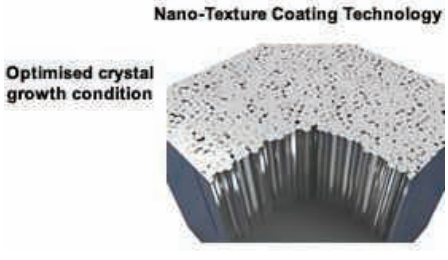
Below the smooth surface and nano-texture layer, Mitsubishi has introduced its new TOUGH-Grip Technology layer and is the second of two patented technologies that are included in the MC6015 series. The TOUGH-Grip Technology is an interface between the insert layers that is controlled at the nano-level. The benefit of this technology is that it allows the TOUGH-Grip layer to provide an extreme bonding to prevent delamination of the various layers. This



results in uncompromising performance with tool life and consistency that is far beyond alternate insert grades.

MC6015 has a gold coloured Ti compound top-face layer that delivers outstanding heat and wear resistance. This special Ti compound also helps to eliminate crater wear on the AL2O3 layer, which makes the new MC6015 grade suitable for high speed machining. Whilst this combats the onset of crater wear, Mitsubishi has also coated the flank surfaces with a smooth layer that prevents abnormal wear and chipping. When integrated with the microscopic TiCN coating, the smooth layer delivers improved surface finishes and consistent tool life.

The MC6015 insert grade is available with a vast array of chipbreaker geometries to provide the optimal performance parameters for light, medium and heavy cutting applications on carbon and alloy steels. Offered in positive and negative designations with a wide variety of geometries and chip breakers for each type. Whatever the insert required, Mitsubishi has the corresponding tool holder available to guarantee that steel turning performance expectations are met with the new MC6015 series.



The new SMART MIRACLE end mills are now available
New technologies at the forefront of design
The latest development of the original and highly successful Miracle coating is called Smart Miracle. This series of end mills have been treated with a newly developed (Al, Cr)N group coating that delivers substantially better wear resistance. The surface of the coating has been given a smoothening treatment resulting in better machined surfaces, reduced cutting resistance and improved chip discharge. This is the next generation of coated end mills that delivers long tool life and is the first choice when machining stainless steels, titanium alloys, Inconel and other difficult-to-cut materials.

ZERO-µ Surface
With the ZERO-µ Surface, the cutting edge retains its sharpness. While previous technologies often resulted in diminished sharpness, the ZERO-µ Surface achieves both smoothness and sharpness, as well as longer tool life.

Improved gash shape
In addition to employing a conventional two-stage gash, the bottom of the gash has been rounded to avoid the concentration of stresses, thereby improving fracture resistance. Additionally, an optimised pocket size helps improve chip discharge performance.

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Floyd increases flexibility with new interchangeable head tooling line

Floyd Automatic has now extended its cutting tool line with the arrival of the W&F Micro range of interchangeable tools. The new tooling system from Floyd Automatic Tooling has a completely interchangeable head design that provides a versatile, quick change solution that retains precision to 0.002 mm.

The new W&F Micro Series utilises 'Face & Taper' contact technology to guarantee precision repeatability of 0.002 mm whilst giving the end user a remarkably fast tool change, which is ideal for pre-set tooling systems. The tool holder of the W&F Micro range remains in the machine whilst the head can be rapidly removed with a single screw that enables the operator to change inserts outside the machine if desired. For more spacious machine tool work envelopes, the inserts can be changed quickly with a single screw that requires no further adjustments.

With a single screw that locates the interchangeable head in the tool holder, the W&F Micro system has an innovative design that delivers the highest possible stiffness, rigidity and precision. This is guaranteed by a patented cylindrical stabiliser design that permits precise insert changes with speed and confidence.

The interchangeable heads are available with a wide variety of head types that can be specified for general turning, facing, profiling, parting and also internal profiling and boring operations. Furthermore, the head designs are available in left and right hand formats with through coolant available upon request. The diverse design of the compact heads, makes them suitable for all types of turning application whether it's on a Swiss type machine, a multi-spindle or even a general turning centre.

The toolholders are available with an 8 by 8 mm, 12 by 12 mm or a 16 by 16 mm square shank with an overall length of 80 mm. These compact toolholders are robust and rigid, which enhances tool life and surface finishes for the end user whilst making them suitable for use on all machine tool types.

The arrival of the W&F Micro turning line satisfies the desire of end users to achieve a completely flexible and interchangeable system that can reduce tooling inventory and the associated costs whilst maximising the potential of tool positions in machine tools with limited capacity.

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Marlor Tooling creates a lasting impression

Cutting tool specialist Marlor Tooling has moved into a new, purpose-built facility to offer customers an unrivalled service for the development, design and manufacture of special-purpose tooling, as well as tool regrinds.

The 10,800 ft² building on the Woodston Industry estate in Peterborough is home to Marlor Tooling's 31 employees who utilise nine state-of-the-art Walter Helitronic tool grinders and two Walter Helicheck tool measuring machines plus a comprehensive range of support equipment.

The facility also features an integrated tool development centre where bespoke tooling solutions are developed to meet customers' specific tooling demands, including facilities for tool design and prove out.

This state-of-the-art centre houses a Helitronic Power Diamond 'two-in-one' tool erosion and grinding machine, for the processing of HSS, carbide and PCD/CBN-tipped tools in a single set-up, and a Helicheck Pro tool measuring machine. Both machines feature robot loading/unloading and pallet systems, the Power Diamond also has a wheelchanger.

Such levels of technology are not only proving advantageous for clients seeking special-purpose tooling solutions, but they are also being put to good use as a training centre for Marlor Tooling's two apprentices.

In addition, they are also in action at night for unmanned grinding and inspection routines as part of the company's highly successful tool regrinding operation.

As well as featuring a state-of-the-art EDM drilling centre for the production of coolant through-holes in tools, the company's new facility also houses: Six Helitronic Power tool grinders (four equipped with 40-tool disc loaders for unmanned/lights-out machining); Helitronic Power tool grinder (equipped with robot loader and eight-station wheelchanger for unmanned/lights out machining); Helitronic Diamond tool grinder with EDM for PCD tooling (equipped with robot loader and eight-station wheelchanger for unmanned/lights out machining); Helitronic Micro, with robot loader, for the machining of tools down to just 0.5 mm diameter (and down to 2.5 mm for regrinding); and two Helicheck Pro tool measuring machines (one with robot loading for 100 percent inspection).

Marlor Tooling provides the full spectrum of special-purpose tool manufacturing and regrinding services covering drills, reamers, cutters and other tooling up to 370 mm long and 320 mm diameter, as well as gear hob (including solid carbide) regrinds.

According to managing director Kevin Taylor, the company's new facility has been designed and constructed, and operates, to create an unrivalled customer experience in all aspects of the company's operations and with every possible client-interface.

"With dramatic company signage that can be seen even before you enter our site, our new factory has been designed to purposely create a lasting impression on everyone who visits us, indeed I extend an open invitation for existing and potentially new customers to come and see our facilities,"

"This begins with a modern exterior design then progresses into our light and clean shopfloor filled with best-in-class tool grinders, EDM drilling and a multitude of production machinery surrounding high-tech tool measurement in an air-conditioned room.

"Importantly, the sophisticated tool development centre will enable us, and our customers, to continually benefit from Marlor Tooling's special purpose tool design and manufacturing expertise, a service that is increasingly being used when 'a standard tool just won't cut it''

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NTK introduces hard turning insert grades

Renowned for market leading cutting tools for hard part machining, NTK has now launched its new line of hard turning insert grades. The new range of PVD TiCN coated B5K and B6K inserts have been created to improve performance when conducing high speed turning of hardened steel, grey cast iron, ductile cast iron and steel rolls.

The two new CBN coated grades have been developed to enhance productivity and extend tool life when machining hardened steel and additional difficult to cut materials. The new B5K grade is suitable for the continuous to light interrupted machining of hardened steel and its geometry also makes it suitable for the finish machining of ductile cast iron. For more robust machining demands, the B6K complements the B5K with its ability to conduct medium to heavy interrupted machining of hardened steel.

The new B5K grade delivers outstanding wear resistance when continuous and light interrupted turning at cutting speeds in the region of 200 m/min with depths of cut up to 0.2 mm. For heavier cutting parameters, the B6K has the capability to run at a cutting speed beyond 220 m/min with a depth of cut up to 0.2 mm at a feed rate of 0.08 mm/rev.

In comparison to competitor grades, the B5K and B6K provide extended tool life and improved feed and speed rates that enhance productivity. All this is provided with wear and impact resistance that gives the end user confidence that the insert will not fail during prolonged periods of turning.

The B5K and B6K are offered with a wide variety of insert geometries that include TNGA, VNGA, CNGA, DNGA, DCGW, SNGA and many more. With corresponding tool holders for each of the insert designations, NTK can supply the new grades with 2, 4 or 6 cutting edges per insert. This significantly reduces the 'cost per edge' for the end user. The inserts can be operated with or without coolant supply.

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New cutting-edge measurement system

Automation and production-integrated measurement technology play an increasingly important role in manufacturing. Alicona, supplier of high-resolution optical 3D surface measurement systems, is reacting to this development with its new EdgeMasterX cutting-edge measurement system . With this instrument, users can customise quality assurance in production exactly according to their individual measurement demands and achieve even greater automation. Typical applications of this system include the measuring of inserts, drillers, cutters, and other tap tools. The EdgeMasterX is the result of Alicona's consistent improvement of the EdgeMaster, a globally used system for the quality assurance of cutting tools.

The most remarkable feature of the new EdgeMasterX is the automatic multiple measurement of edges. Users can now measure various edge parameters at different positions on a tool to verify the desired edge preparation. It is also possible to measure one or more user defined edge parameters of several tools of an entire batch. Additionally, a motorised rotation unit now allows users to measure multiple, also chamfered edges of a tool in a single measurement cycle. All of the Edge-MasterX's measurement capabilities designed to automate quality assurance are based on a one-button solution. This means that once a measurement has been started, no further user interaction is necessary. Traffic-light colour codes immediately indicate to the user any geometric deviations from a CAD dataset or reference geometry.

Like its sister model, the EdgeMasterX is designed for use in a production environment. As such, it offers solid high-resolution measurements even when subjected to vibrations, fluctuations in temperature, and extraneous light. Users also profit from traceable and highly repeatable results.

The EdgeMasterX measures all the classical edge parameters such as radius, various angles, bevel length, chipping, and tool wear. It automatically detects form deviations and visualises them using a

special colour coding. The EdgeMasterX also allows users to apply ellipse fits to a high-resolution edge profile, increasing the number of radius parameters to two. This makes it possible to measure the "true" edge shape. Alicona's solution therefore clearly differs from that of other suppliers whose edge-preparation measurement systems use only one radius parameter.

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Mollart's multi-surface roller burnishing tool

A carbide roller burnishing tool able to burnish multiple surfaces of a component including internal and external diameters, radii, counterbores and end faces as part of a single CNC turning process is now available through Mollart Engineering of Chessington, Surrey.

The multi-surface boring bar style roll burnishing tool uses a conical, cup-style carbide roll that freely rotates on a precision bearing. In use the design is able to accommodate both axial and radial forces generated from the pressure and direction of feed on the component.

The tool can even be used directly on pre-ground components that require a burnished texture level of finishing as well as very tight tolerances. An animation of the operational cycle of the tool showing ID, OD and face burnishing cycles is available.

A prime example from Mollart Engineering is the transformation of the surface finishing of impeller motor shafts for a customer. Through its application development the in-cycle burnishing has been integrated into the turning process

eliminating a subcontract grinding process. The 316 stainless steel motor shaft had two critical ground diameters 50 mm by 100 mm long and 54 mm by 70 mm in length. Both had to be produced within Ra 0.4 surface finish.

By changing the process to roller burnishing, the multi-surface S2075-00 burnishing tool was able to work on pre-sized diameters leaving 0.025 mm of stock material and then, during the same programmed cycle on the CNC lathe, finish the two critical diameters in a total machining time of under 130 secs. The machine was run at 800 revs/min with a 0.1 mm/rev feed for the burnishing element. The tool was set to size via a sidescrew in the shank against a pre-loaded spring that

accommodated bi-directional loading on each diameter in order to take up any variation in the turned surface of the part. The tool has two sets of springs to accommodate bi-directional loading. One set is located within the tool shank which enables the entire head assembly to deflect when the carbide roll is pushed against the surface of the part and a second spring is located behind the carbide roll. This allows the roll to deflect when the tool is fed directly onto a flat face or shoulder.

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MAPAL tool gathers no swarf

By adopting an innovative reamer, suggested by precision cutting tool expert MAPAL, for use in the manufacture of diesel engine front covers, Shield Group has greatly improved productivity and virtually eliminated downtime caused by previous tool-related problems.

Accurately finishing 20 mm diameter holes in a 12 mm thick steel plate doesn't sound like a particularly demanding application but when machining time must be kept to an absolute minimum and uninterrupted production must be maintained for long periods, the challenges soon become significant. It was for help in addressing these challenges that engineers at Shield Group approached MAPAL.

At the time, the finishing operations on the holes were being carried out with single-bladed carbide guide-pad reamer. On paper, this appeared to be a good choice but in practice it was found that after only a few holes, the reamers started cutting significantly oversize. Careful investigation revealed the cause of the problem, the reamer was becoming magnetised and was picking up swarf particles from the workpiece, during the arduous machining process

To address this problem, and to allow the precision reaming operations to be carried out at a faster rate, MAPAL suggested switching to one of its HPR series reamers with a unique Cermet cutting head. As Cermet is non-magnetic there could be no problem with swarf pick up, while the superior cutting properties of the tool would allow a significant increase in the machining rate.

In addition, MAPAL HPR tools have a replaceable cutting head, which means that they are a particularly cost-effective solution. Since the head is attached to the tool using MAPAL's innovative HFS head-fitting system, accurate runout and interchangeability within microns are guaranteed.

In use, the HPR reamers have fully lived up to expectations. They are allowing Shield Group to finish ream each of the holes in the engine mounting plates in under a second, while delivering an excellent finish on the

bore and achieving h7 tolerance. Tool life before the cutting head needs to be replaced is in excess of 1,000 holes, and the problem of swarf pick up has, as was anticipated, been completely eliminated.

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New line of indexable universal tools from ITC

The new WIDIA M200 series of indexable milling cutters is now available from Industrial Tooling Corporation (ITC) for linear ramping, helical interpolation, pocketing and profile milling operations. The new milling line features double-sided round carbide inserts with up to 12 effective cutting edges to improve economy and reduce tooling costs whilst significantly improving productivity.

For high feed machining with confidence, the new WIDIA M200 has a unique anti-rotation feature for excellent stability when milling at high feed rates. Furthermore, the innovative pocket design is extremely easy to index the inserts with unsurpassed repeatability. Added to this, the cutter body is supplied with allocated markings for each insert seat, which guarantees correct alignment of the insert in the pocket.

The cutter bodies have been developed with a high clearance design that has impressive rigidity characteristics whilst giving the M200 the flexibility to conduct a raft of pocketing, profiling, 3-axis and 5-axis

machining operations that include linear ramping and helical interpolation. This makes the new WIDIA milling line suitable for everything from rough to semi-finish cutting in face milling, shoulder milling, pocketing, and profiling applications. The flexibility of this new line makes it particularly well suited to complex applications such as turbine blade machining and difficult applications in the mould & die industry.

The cutter body of the M200 is available as a screw-on type, cylindrical end mill type, shell mill or a Weldon type. The screw-on tool body is offered with a maximum diameter from 25 to 42 mm with 25 to 32 mm being available for the cylindrical and Weldon tools. For end users with larger surface areas that demand high material removal rates, the shell mill is offered in diameters from 30 to 125 mm

The inserts for the M200 are available in 10, 12 or 1 6mm IC sizes with eight cutting edges on the 10 mm insert and 12 edges on the 12 and 16 mm designations. To provide effective machining of a broad spectrum of materials, the inserts are available with an ML geometry for machining stainless steel and high temperature alloys, an MM geometry for general purpose applications and an MH geometry for heavy applications on cast iron and high strength steel.

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Tailor-made cutting tool solutions you can depend on

Fenn expands Custom Tool Division

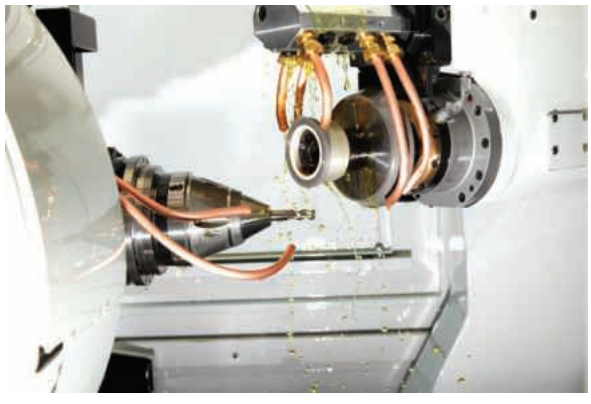
UK cutting tool manufacturer and distributor Fenn, established in 1982, has recently made significant investment with the purchase of an ANCA MX7 machine and a Robbi Cylindrical Relief Grinding Machine to further strengthen its manufacturing facility and develop its Custom Tool Division. These additions bring together the total of ANCA CNC tool and cutter grinders at the facility to seven.

After launching its manufacturing facility back in 2000, Fenn has seen continued development and growth. Its reputation within the industry has been underpinned by the success of its Fetoga Solid Carbide Endmill Range, which recently saw some new introductions in Fenn's new solid carbide endmill catalogue this July.

Fenn has further strengthened its reputation within the industry with its expanding portfolio of market leading tooling, fully integrated tool management systems, inventory control systems, pre-setting, heat-shrink and balancing systems, all carefully selected to ensure customers receive the very best performance from tooling and systems alike. As sole UK agents for these unique European brands, Fenn is able to offer customers an exclusive product portfolio and supply a complete tooling package for customer projects, from conception through to completion.

Although Fenn boasts an impressive range of products, it understands that many customers may have requests for non standard bespoke tools. Fenn's Custom Tool Division is dedicated to the design and manufacture of special tooling for the more unique applications customers encounter.

Managing director Martin Fenn explains: "Fenn is dedicated to proving the support that really matters to our customers. We are always focused on improving customer productivity, whether that entails supplying standard products from our extensive product ranges, or designing bespoke solutions for application specific tooling.



"Our Custom Tool Division offers both one-off specials and supply contracts with the most competitive lead times. With the ability to turn around modifications to standard tooling and complete specials within short time frames, we have built a solid, regular customer base and won supply contracts with some of the UK and Ireland's top aerospace component manufacturers.

"The introduction of the new ANCA and Relief Grinder has allowed us to push production to the next level and the advancements in software have greatly enhanced the scope of specialised tooling that can be produced in terms of both accuracy and complexity. We have also recently streamlined our standard product ranges. This means we can dedicate even more time to our Custom Tool Division."

Whether it be requests for modifications to standard tooling, such as relief grinding, or the designated manufacture of non-standard inventory, Fenn's team of technical engineers and manufacturing personnel will create quality bespoke solutions to meet the customers' specific requirements.

Providing innovative cutting geometries and coating technologies is at the forefront of Fenn's service, with the emphasis on providing effective manufacturing solutions to a wide range of industries such as aerospace, medical, general engineering, power generation, defence, oil & gas, automotive, composite and motorsport. Fenn's manufacturing facility is set up to accommodate applications ranging up to 32 mm in solid carbide and caters for a broad scope of requirements in standard, long and extra long in both roughing and finishing forms, including coolant feed applications in various flute configurations.

As an ISO 9001 Certified company Fenn is dedicated towards quality management and offers customers full documentation support, including drawings and inspection reports which are available as standard.

Fenn also offers customers flexibility with its Fast Track service for the quick turnaround of specials where tooling can be delivered to customers within 48 hours, subject to the application. Fenn also works closely with selective coating companies who offer tailored logistic services to meet customer demands allowing a swift turnaround for most coating requirements.

Alongside its Custom Tool division, Fenn also offers customers a regrind service to help customers achieve maximum tool life and deliver significant cost reductions. They also offer an efficient carbide recycling service, which can be tailored to meet individual needs.

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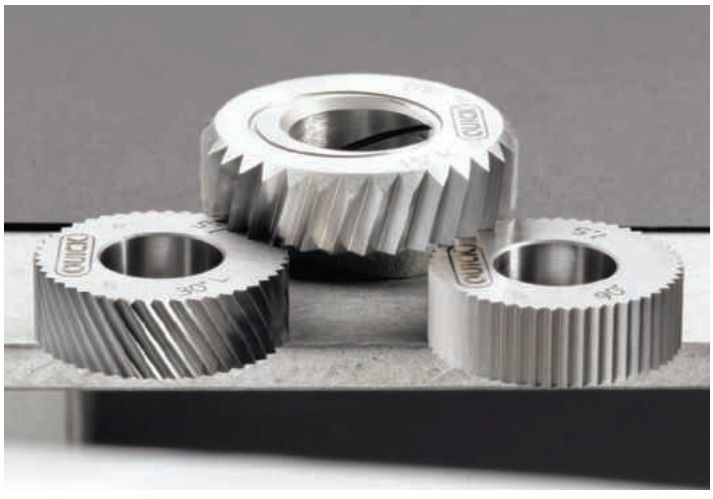
Cutwel introduces QUICK knurling solutions

Cutwel, a leading engineering cutting tool supplier has recently launched a new range of knurling tools. Manufactured by QUICK Tooling GmbH in Aldingen, Germany, this high performance Knurling range offers both cut and form knurling tools. The tool holders are available for both conventional and CNC lathes as well as sliding head and automatic lathes, while the knurling wheels come in a selection of different sizes and profiles which can produce a wide variety of knurling patterns.

Knurling wheels from QUICK Tooling are made with premium HSS powder metal giving excellent tool life and making them ideal for use on a wide range of materials. They are made on state-of-the-art toolmaker lathes to the highest degree of precision and then heat treated in electronically controlled hardening plants and also subject to a constant quality control process.

Cutwel was established in 1996 and was appointed as the sole UK agent of YG-1 Cutting tools of South Korea, the world's 3rd largest manufacturer of round shank cutting tools and shortly after for Korloy Inc, also of South Korea. The company started in a small office in Mirfield, West Yorkshire with the aim of supply engineering cutting tools direct to end users purely through telesales.

Cutwel is a family owned business and one of the UK's largest independent engineering tooling distributors, employing over 50 people and based in a purpose made 24,000 sq ft distribution facility near the M62 in Cleckheaton, West Yorkshire. The company represent several global cutting tool manufacturers including YG-1,



Korloy, Gerardi, UFS, Insize, Benz, Blum-Novotest, Mahr, Millers Oils, Jeton, Chandox, LMT, Karnasch, M.Conti and More

The product range on offer has grown from cutting tools to also include workholding, toolholding, measuring tools and lubrication.

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ACT takes the 'edge off'

With high speed production becoming ever more prevalent in the modern machining era, Advanced Carbide Tooling (ACT) has now introduced its latest time saving technology, the Nine9 NC De-Burring tool. This innovative new cutting tool has been developed to achieve high speed and high feed deburring and countersinking on all manner of machine tools from sliding head lathes through to machining centres with productivity and tool life parameters that far exceed existing technology.

The ability of the Nine9 NC De-Burring line to run at feed rates up to 6 times faster than alternate solutions is credit to its patent-pending 6-flute edge geometry. The R&D team at Nine9 are renowned for introducing benchmark technology; and with the new 6-fluted, single edged line of TiAlN coated carbide inserts, groundbreaking cutting parameters can be achieved.

Capable of deburring and countersinking hole diameters as small as 0.5 mm, the high precision series is the tool of choice for processing 60 and 90 degree chamfers. The NC De-Burring line is capable of creating chamfer depths from 0.1 to 1.75 mm with astounding precision and surface finishes. With a single cutting edge on each insert, the NC De-Burring line retains exceptional positional accuracy of the deburring depth and diameter. To enhance flexibility of the new NC De-Burring series, the corresponding toolholder also accommodates the Nine9 range of XO60 engraving tools.

The toolholder is manufactured from a high alloy steel to maximise rigidity and prolong the tool life of both the 6 mm diameter toolholder shank and the insert. The toolholder has a brazed carbide shank that eliminates vibration that consequently extends insert life. To guarantee the desired precision and run-out results, the new NC De-Burring tool shank is ground to a h6 tolerance. The toolholder has an overall length of 60 mm and ACT recommends that a maximum overhang length of 30 mm is used to ensure optimal results.

To achieve these optimal machining

results, ACT also recommends that the new deburring line is used in conjunction with a high precision toolholder that can obtain run-out levels of 0.01 mm and below. To establish such levels of precision, ACT suggests customers utilise high precision collet chucks, hydraulic chucks or shrink fit systems.

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Microloc helps reduce non-machining times

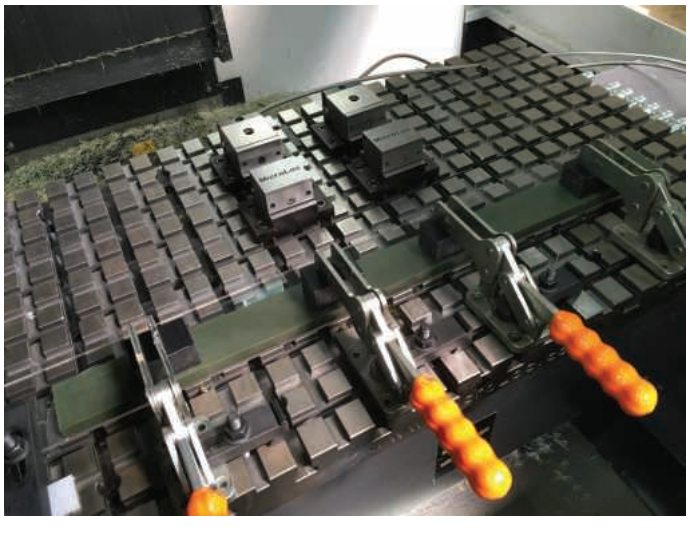
Northampton-based ABG Rubber & Plastics has just purchased a new Leadwell V-22i machining centre and, to optimise the performance of the latest addition to its plant list, the company has installed a Microloc workholding system.

The company manufactures anything from F1 and motorsport components down to simple parts like chopping boards. It offers a comprehensive range of plastic and rubber materials coupled with its own production facility that converts materials into finished components. From prototypes up to full production runs, ABG can provide materials such as cut-to-size sheet, block, strip, coils and billeted rods of rubber, sponge, plastics and laminates.

ABG Rubber & Plastics shift supervisor and CNC machinist Anthony Morbey says: "We initially installed the Microloc system on one machine and now it's on almost all our machines. The reason we opted for the Microloc system is because it is easy to set single or multiple parts on the machine. It is also very easy to set datums and provides huge clamping forces that provide stability. This stability enables us to grip on surfaces as small as 2.5 mm."

Despite primarily machining plastic components, the Microloc system doesn't damage the parts. Anthony Morbey continues: "We can tighten the system as we desire and the Microloc system enables us to feel the torque level we require. Recently we moved from the manual system up to the hydraulic Microloc system. This is because the manual system would take more time to clamp upwards of six to eight parts that would be machined in every single machine setup. With the hydraulic device, we can just place the parts in the machine, hit the button and the parts are all clamped in one go."

In general, the components at ABG Rubber & Plastics are machined in batches from four to ten at a time in a single setup on the Microloc base plate. However, the compact Microloc system and the dimension of the plastic parts will allow the Northampton company to produce up to 16 parts in a single setup. At ABG, the hydraulic Microloc system has been installed on a Leadwell V30 machining centre. The 75 mm pitch grid plate allows for the clamping of parts in the 75 mm width range. It also has a series of clamps and locators that can be actuated manually or via the M-Codes in the CNC controller. What this means for ABG is that its machine operator doesn't have to undergo the time consuming process of manually clamping and opening each vice on the clamping plate. The machine operator therefore only has to load and unload the Microloc system within the Leadwell machining centre.



In addition, the Microloc grid plate and clamp system supports the machining of more diverse components. Anthony Morbey says: "With particularly long parts, the Microloc device can clamp the part along the whole length of the job and not just in the middle like conventional systems."

What this gives the company, is improved surface finishes and extended tool life credit to greater clamping forces over the entire length of long workpieces. In contrast, the Microloc system is also being applied to complex geometry workpieces and standard square or rectangular components.

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Schunk set to grip the crowds

At Advanced Engineering 2015, SCHUNK will be promoting a range of innovative toolholding and workholding products that have been developed to improve productivity, efficiency and quality for end users whilst reducing cycle times and production costs for end users.

Many manufacturers have now recognised that they can improve surface finishes and tool service lives by utilising the innovative TRIBOS system and at Advanced Engineering 2015 the latest interfaces will be on show. These new interfaces deliver a higher level of standardization for the precision tool holding systems for micro machining and are now available with the TRIBOS RM and TRIBOS MINI ranges.

The TRIBOS-Mini that has been designed for high-speed micro applications can now be integrated with a high-speed HSK-E 20 spindle interface. The clamping technology experts at SCHUNK believe this newly standardised interface is superior to many short taper interfaces due to its accuracy at high speeds. In addition, it needs much less space compared to the HSK-E 25 interface. SCHUNK has designed the robust TRIBOS-RM with an extended L1 dimension of 78 mm especially for high-efficiency 5-axis machining.

In order to allow precision machining of hard-to-reach areas, the mount can also be combined with the standardised TRIBOS-SVL tool extension with adaptations for HSK-A 32, HSK-A 40, HSK-E 32 and HSK-E 40 interfaces. In addition, SCHUNK has expanded its range in such a way that many of the previous special solutions will now be included in the standard catalogue. For example, TRIBOS-Mini will be standardised with ø 1, 1.5, 2, 3, 4, 6 mm and 1/8 inch. TRIBOS-RM with ø 3, 4, 6, 8, 10,12 mm and 1/8 inch. In addition to the HSK-A 25, -A 32, -A 40, -E 25, -E 32, -E 40 interfaces that are already available, both mounts will also be offered for HSK-E 20, HSK-F 32 as well as for BT 30 and SK 30. These units from SCHUNK are part of the world's most comprehensive programs for high-precision tool clamping and can now be manually actuated via the SVP Mini and SVP-RM devices, something that will be of great interest at the forthcoming event at the Birmingham NEC.

Additionally, SCHUNK will be keen to emphasise the benefits of its TENDO E Compact hydraulic expansion toolholder. Capable of reducing setup times by up to 60 percent, whilst generating 2000Nm 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.

Another product that will be of interest will be the innovative SPM Plus 138 fixture membrane. Manufactured from aluminum, the SPM Plus provides the clamping of a multitude of geometries from all sides with its innovative pull-down effect. Firstly, a 0.5 mm high tuning ring is inserted between the quick-change pallet module and the fixture membrane and then the exact workpiece geometry is milled according to the blank on the fixture's clamping surface. Once prepared and the tuning ring removed, the workpieces can be inserted within seconds and the complete circumference be clamped by locking the VERO-S module. This in turn deforms the fixture membrane to provide the clamping.

Since the whole process is carried out within the elastic range of aluminum, the clamping operation can be repeated several thousand times. In contrast to conventional clamping blocks, the clamping force of this clamping method is carried out at the circumference of the whole workpiece contour and not just along an axis. Due to the clamping depth of only a few millimetres, the workpiece is fully accessible from five sides. The fixture membrane can be located on the quick-change pallet module with a repeat accuracy of less than 0.01 mm. To view some of these new innovations from the market leading toolholding, workholding and gripping specialist, visit **Stand G5** at Advanced Engineering.

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Hainbuch takes mandrel clamping force to the MAX

Hainbuch has now launched its new MAXXOS mandrel system for machining in the most challenging of environments and applications. Incorporating Hainbuch's innovative hexagonal clamping geometry, the new MAXXOS can significantly improve clamping forces and improve sensitivity to contamination.

Hainbuch's existing customers may already be familiar with the technology that currently exists on the company's TOPlus range of chucks. However, by transferring

this technology to its mandrel line, Hainbuch can boast clamping force increases beyond 30 percent when compared to existing systems. Hainbuch's decision to now also integrate this hexagonal geometry for the mandrels was completely logical, since this criteria is as important for I.D. clamping as it is for O.D. clamping. Thanks to the hexagonal geometry, now an unattained clamping force and rigidity is reached with optimum precision also for I.D. clamping.

This mandrel system is available for demanding workholding applications such as hard turning when high clamping forces and rigidity are required and also grinding operations where resistance to contamination is needed. The bore sizes of the MAXXOS are available from 10 mm to over 150 mm. In terms of reducing contamination, the robust and powerful MAXXOS mandrel also demonstrates first-class attributes. Force is transmitted through positive locking, which results in optimum process reliability and long maintenance intervals. The full-surface contact and the lubrication significantly reduce friction and also enable sensitive clamping for fragile work pieces. MAXXOS has fully proven its talent, particularly for components with the highest process requirements.

Furthermore, the MAXXOS incorporates a pull-back location system that guarantees remarkable precision and repeatability levels for the end user.

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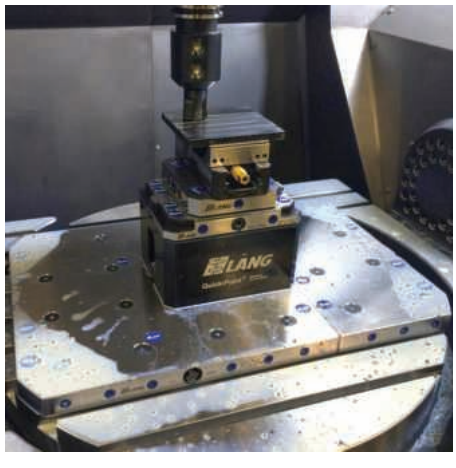
Thame offers efficiency on a plate

Now available from workholding and fixturing specialist Thame Workholding, the Lang Quick-Point multi-clamping system is the latest addition to the company's modular zero-point clamping system that can be retrofitted to almost all machine tool tables, making it a perfect solution for time saving change-over of vices, fixtures and workpieces.

The new mechanical, multi-clamping grid plate system allows up to four vices or fixtures per plate to be clamped and released using only one actuation screw, making it possible to reduce and divide setup time by a factor of four, increasing the ease of operations. The various ways to equip the machine table by aligning different sized grid plates is almost unlimited and the plates work in any orientation. This will help machine shops achieve maximum space and flexibility on the bed or table of any machining centre or milling machine.

Two grid plate sizes are available with an array of four by four or two by four locations, measuring 384 by 384 and 192 by 384 mm respectively. The Quick-Point plates can be placed in any configuration on the machine tool's bed or table to provide multiple locations for fixtures and direct component location, as well as the fitting of the Lang Makro-Grip system that requires just 3 mm of clamping depth on a square or rectangular workpiece to provide maximum holding power at minimum clamping force. Advantages include material savings due to minimal wastage and unrestricted access for five-face machining that facilitates the use of short cutting tools.

Sales director, Maurice Day says: "The new Quick-Point multi-clamping grid plate system will increase the flexibility of any machining centre, as the worktable effectively becomes a large zero-point reference. At just 27 mm high it is one of the lowest systems in the world, which minimises the reduction in the distance between the spindle nose and the workpiece. With exceptional positional repeatability and accuracy the system can



drive up manufacturing efficiency with less time spent loading and unloading more parts can be machined per hour."

Established in 1946, Thame Workholding originally specialised in the manufacture of soft jaws. Over the years the company has developed and expanded its range of TEC branded chuck jaws into one of the most comprehensive in the world.

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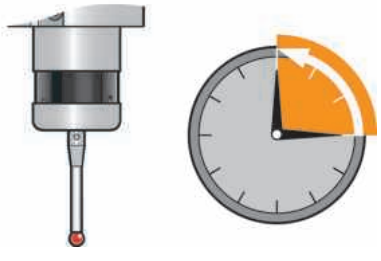
Renishaw unveils its latest innovations

Inspection Plus with SupaTouch optimisation delivering intelligent speed

Renishaw will introduce Inspection Plus with SupaTouch™ optimisation at EMO 2015, Milan. This enhanced software package automatically optimises on-machine measurement cycles to minimise cycle time and maximise productivity.

The software features an easy-to-use optimisation process to automatically determine and select the highest feedrates a machine tool can achieve whilst maintaining measurement accuracy. It also uses intelligent in-cycle decision making to implement either a one or two-touch probing strategy for each measurement routine.

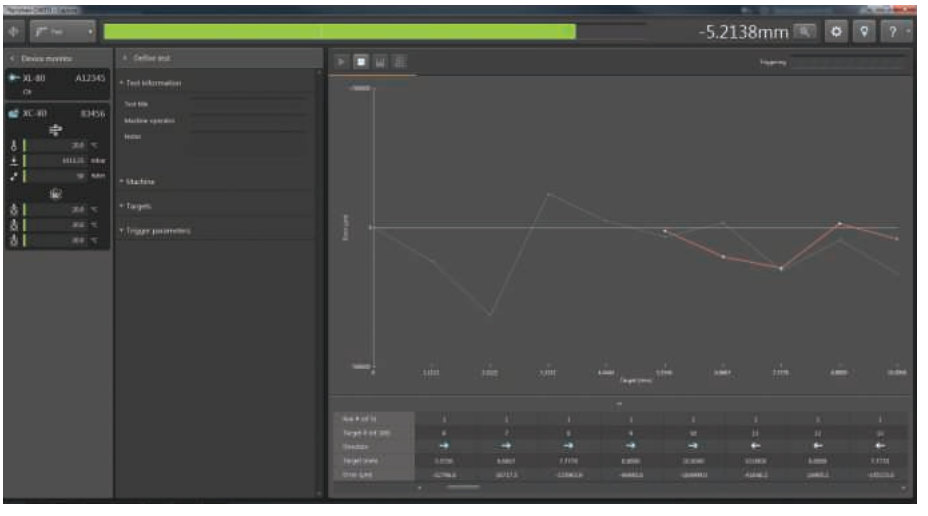
Inspection Plus with SupaTouch optimisation eliminates the need for manual optimisation of on-machine positioning feedrates, measurement feedrates and



strategies. When compared with traditional software cycles, it provides a significant cycle time reduction of up to 60 percent on CNC machine tools.

To ensure maximum accuracy, the software detects any measurements taken during machine acceleration or deceleration phases and compensates for errors by taking corrective action and remeasuring. It also introduces a calibration process that improves measurement repeatability in all directions and improves the accuracy of probe positioning during multi-axis vector moves.

Inspection Plus with SupaTouch optimisation enhances the many proven benefits of Renishaw's established Inspection Plus software. With this new software, users can significantly improve cycle times and on-machine measurement results, maximising the productivity and profitability of their machine tools.
For further information on machine tool probes and software, visit:
www.renishaw.com/mtp



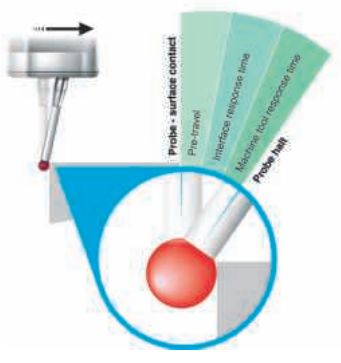
New CARTO software solution for calibration systems

Renishaw is launching a new free software suite for Renishaw calibration systems at EMO. The suite includes Capture and Explore, which provide data capture and analysis for the XL-80 laser interferometer system. CARTO release 1.1 supports linear, angular and straightness measurement with a choice of keypress, position and remote (TPin) triggering. CARTO features a new database system which automatically stores and organises data for the user, simplifying operation and allowing users to quickly and easily compare data with historical results. Capture has been introduced to the CARTO suite as an improved and updated data capture application with the following features

The orientation of machine movement is detected automatically, reducing the chance for human error in the process.

The intuitive user interface allows new users to begin capturing data quickly with less requirement for training.

All the core functions are available on one screen for efficient navigation. ISO-10360 target sequences can be automatically



created, simplifying a challenging test setup.

Explore brings the advances of XCal-View data analysis software to the CARTO suite with the following features:

Tests in the database can be searched by different criteria (such as machine name, operator, and date etc.). This enables users to review historical test data conveniently.

Multiple data sets can be overlaid on the same screen for visual comparison.

Linear error compensation files can be created from test results.

Customisable test reports can be created with choices such as graph line thickness and adding company logos.

The intuitive CARTO user interface allows new users to begin capturing and analysing data quickly, without the need for training or reading lengthy manuals. The capacity for customisation throughout the suite means that both Capture and Explore can be tailored to suit an individual user's requirements.

Further development on CARTO will follow to add more features, including rotary, flatness and dynamic measurement. CARTO release 1.1 will be available to download free of charge from:
www.renishaw.com/carto

For further information on Renishaw's calibration and performance monitoring products, visit:
www.renishaw.com/calibration

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Measuring material thickness is now easier than ever before thanks to the new Elcometer MTG Ultrasonic Thickness Gauges.

Rugged, fast and incredibly easy to use, the new Elcometer MTG range of hand-held ultrasonic thickness gauges accurately measure up to 500 mm (20") thick.

Thanks to the easy to use menu system in multiple languages, these gauges can be used with little or no training – ideal if you are new to NDT or are a Level III Inspector.

Key features include: measurement modes including Pulsed-Echo (P-E), Echo-Echo ThruPaint™ & Velocity Mode, ideal for determining the homogeneity of a material; user programmable calibration memories, ensuring accurate and repeatable results; displays readings, statistics, bar graph, run chart, reading and differential and B-Scan; up to 40 user programmable limits, with audible and visual pass / fail warnings; store up to 100,000 sets of readings in 1,000 sequential or grid type batches; integral zero disc and intelligent transducers for automatic probe recognition. With exceptional repeatability and reproducibility, the new Elcometer MTG range of ultrasonic thickness gauges offer unrivalled accuracy of ±1% across the full range 0-500 mm (20") on smooth, rough, curved, coated or uncoated surfaces. Wirelessly connect to ElcoMaster® data management software via Bluetooth® or USB to PC, Android™ or iOS mobile device, generating professional reports in minutes.

Elcometer is a leading manufacturer of high quality inspection equipment, with specialised divisions dedicated to coatings inspection, ultrasonic NDT inspection, concrete inspection and metal detection.

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Mitutoyo provides pace and precision for ITP Engines

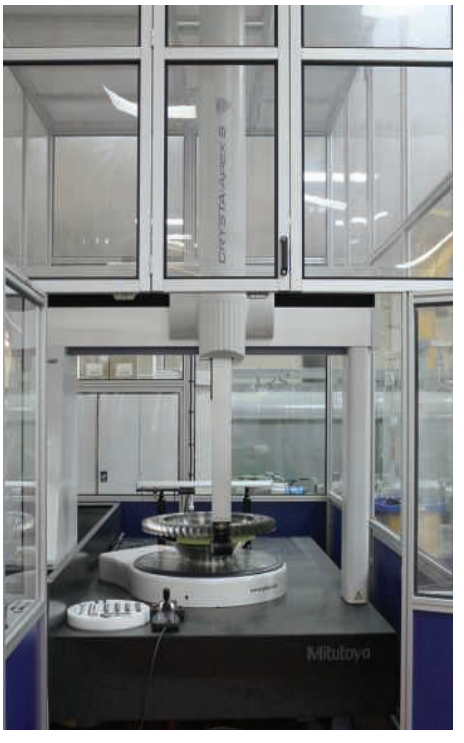
Over recent years, a wide range of advanced machine tools have been developed to help satisfy the global aerospace manufacturing industry's requirement to produce parts faster than ever before. Although these innovative machines manufacture complex components within much faster cycle times, often increased production levels create bottle-necks in inspection departments. To help avoid these hold-ups, progressive aerospace manufacturers are increasingly including state-of-the-art inspection technologies in their investment plans.

Having selected the most appropriate machine tools to enable the efficient production of blisks and IBRs (aero-engine components consisting of a rotor disk and blades), the management at ITP Engines, Lincoln recognised the need to invest in advanced quality control equipment. The proposed inspection system needed to be capable of accommodating the demanding dimensional tolerances of the company's blisks and IBRs, and also have the required high-speed, high-accuracy scanning capabilities that could keep-pace with increased production.

Rafael Castro, factory manager at the ITP Advanced Manufacturing Facility, explains: "As ITP Engines is a leading global company that delivers high-technology products and services in the aeronautical and industrial engine market, product quality is all important to us. Although our search for an innovative, faster inspection system was prompted by the need for our inspection provision to keep up with our increased output, we also realised that our planned purchase represented an ideal opportunity to further enhance our precision capability and also to increase the amount of data captured for analysis.

"In addition to other metrology technologies we considered non-contact optical systems, although the physical nature of our blisks and IBRs and the potential for reflections from the materials we use meant that this technology was not suitable for our needs. We also looked at several alternative conventional CNC coordinate measuring machines that had scanning capabilities. Some CMM providers could deliver certain aspects of our requirements and others had potentially suitable systems in development. The only CMM manufacturer who offered a total working package that could meet our demanding criteria was Mitutoyo and, after an impressive demonstration, we were happy to place an order.

"Mitutoyo's proposed answer to our measuring requirements was an advanced Crysta Apex C, CNC coordinate measuring machine fitted with a Renishaw Revo measuring head and a high-precision Rotary Precision Instruments (RPI) rotary table to provide a fourth axis. In addition, the company suggested the use of Mitutoyo MCosmos3 and MAFIS Express software. Although Mitutoyo's recommended combination of a high accuracy CNC CMM, a Revo measuring head, a rotary table and relevant software was able to provide excellent results, Mitutoyo's technical staff were happy to work with ITP Engines to further develop and integrated the system's various elements to ensure the delivery of a package that was ideal for our needs."



Mitutoyo's answer to ITP Engines' inspection needs is based on an advanced Crysta-Apex C Coordinate Measuring Machine that was designed and constructed using all Mitutoyo's vast experience in CNC CMM technology. The machine is built using lightweight materials and has an innovative moving-bridge type machine structure, providing excellent motion stability and high accuracy. In addition, the Crysta-Apex C has a temperature correction function that enables the accurate measurement of parts under shop floor conditions.

Rather than using a conventional probing system, the Mitutoyo CMM was supplied fitted with a Renishaw REVO, 5-axis measuring head that is able to perform continuous surface scanning to deliver full 3D geometry in a single scan. The state-of-the-art REVO head is able to overcome the limitations of three-axis scanning methods. REVO uses synchronised head and machine motion when scanning,

rapidly following changes in part geometry without introducing dynamic errors. The CMM is able to move at a constant velocity whilst measurements are being taken, without impacting accuracy.

Further enhancing the speed and accuracy of Mitutoyo's integrated solution, when being measured ITP Engines' Blisks and IBRs are held securely and manoeuvred on a highly-precise RPI rotary table that was specifically designed as a fourth axis for use on high-accuracy coordinate measuring machines.

As the Crysta-Apex C CMM is located on ITP Engines' shop-floor, close to a production cell, the CMM was installed in a dedicated enclosure and is isolated, by the use of specialised dampers, from the possibility of vibrations transmitted from the company's machine tools.

Rafael Castro continues: "Customer requirements demand that all airfoils on all Blisk and IBR components are measured. An average part has about 60 airfoils and each airfoil needs to be measured in at least 6 sections, each one with around 200 points. With a future production greater than 1,000 blisks and IBRs a year, optimisation of our inspection process was vital.

"The Revo scanning head on our Mitutoyo CMM features continuous surface scanning, capturing full 3D geometry in a single scan, which is a major improvement when compared to the traditional technology of intermittent single-point touches. In addition, the use of a high-precision rotary table allows us to use a smaller and more precise Mitutoyo CMM.

"As the increased amount of points we are now scanning had the potential to make post processing more time consuming, a software tool was developed by the ITP UK´s controls team in Whetstone to reduce data analysis time.

"Now fully operational, our new method is up to 6 times faster than our previously used conventional system. In addition, our Mitutoyo CMM system has further enhanced our already impressive accuracy capability, and provided us with much improved measurement data.

"CMM inspection has taken a step forward in the ITP Group. All of the new generation blisks and IBRs can now be measured using this new method. Our next step will be to extend our advanced new scanning technique to each of our remaining complex parts."

Mitutoyo coordinate measuring machines are available in a wide range of sizes and accuracy classes and cover practically all precision 3D measuring applications. Mitutoyo CMMs represent an excellent investment in terms of productivity, versatility, quality of construction, training and service support.

Drawing on the unparalleled technological expertise of a world leader in metrology, each machine component is designed using the latest CAD techniques to ensure maximum performance. In addition, to guarantee longevity, all CMM parts are manufactured from materials best suited to their purpose.

A wide range of available contact and non-contact probes enables numerous kinds of measurement tasks can be performed, Mitutoyo CMM's impressive hardware is complemented by comprehensive analysis software that rapidly interprets measurement results.

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Innovative new range of PixeLINK cameras

Leading industrial imaging distributor Scorpion Vision is now distributing an innovative range of PixeLINK industrial cameras using new CMOS sensors for affordable superior image quality. The highly popular PixeLINK USB 3.0 Camera line is aimed at customers in the machine vision, life sciences and microscopy markets across the UK.

The new range of cameras are renowned for their use of an innovative type of CMOS sensor equipped with a global shutter. Due to this feature, these CMOS sensors can negate effects such as skew, wobble and smear which other CMOS sensors have previously been prone to. Like other CMOS sensors, they also do not suffer from the effects of blooming, produced by cameras using traditional CCD sensors, which can cause flaring and streaking on images.

The CMOS sensors in the USB3.0 Camera range also offer a much higher resolution and faster frame rate than that available in traditional CCD sensors. Priced at far more affordable rates than can be offered by CCD-based cameras with similar resolution and frame rates, the new range of USB 3.0 cameras have set PixeLINK truly ahead of their competition.

Paul Wilson, director at Scorpion Vision, says: "We've been a PixeLINK distributor for about seven years and in that time have seen the superior performance their cameras offer. Side by side, competitive cameras with the same sensor don't have the same performance. The PixeLINK models offer faster refresh and less noise and have a very robust software interface. These new cameras from PixeLINK can be considered as a direct replacement to CCD based cameras - the image quality is as good as CCD, with minimal noise."

PixeLINK USB 3.0 Camera's high frame rate capability enables them to be used in a wide range of applications.

Paul Wilson adds: "The superb capabilities of the USB 3.0 range mean they are ideal for use in just about any application. With the uptake of HD video and even 4K, these cameras may even have a place in broadcast business."

Scorpion Vision is the major UK distributor of this innovative range of cameras, which can be purchased directly from the Scorpion Vision website: **www.scorpionvision.co.uk/catalogue-index/industrial-cameras/pixelink-cameras**

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The thread professional

New universal measuring machine takes a real step into the future

»threadCheck« does more than simply measure all metal-cutting tools to the renowned ZOLLER quality standard. Its new feature, a sixth axis, enables thread-cutting tools with a tapered pitch to be measured without distortion. This makes this thread professional a universalist and a specialist at one and the same time in a single system.

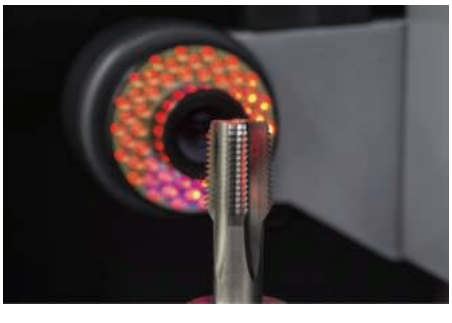
The demand for thread-cutting tools has risen exponentially over the last few years. The measurement and inspection of your specific geometries is a challenge for conventional measurement technology. In particular with small and complex geometries, mechanical or tactile measuring methods are imprecise and it is a resource-intensive process to record these geometries.

»threadCheck« from ZOLLER not only continues the well-known and proven functions of the globally established 'genius' series, but with its sixth axis also masters the specific requirements involved in eliminating distortion related to pitch on tapered threads.

With its functional, streamlined design and total encased to protect it from dirt and external light sources, »threadCheck« can be confidently placed in a production environment.

Manufactured using the highest-quality components on the market, with six CNC-controlled axes and a fully-automatic pivot-mounted optic carrier, it is able to record even highly specialist tooth flank geometries, independently of the operator, inductively (i.e. without physical contact) and at the click of a mouse button. Thread geometries and a vast and diverse array of flank relief parameters can be recorded without distortion and without physical contact.

The automatic detection of contour and



form as well as the profile on the radial relief involves a fully automated search, focus and output process involving just three steps – all to the highest standard of precision in the micron range, even with complex flank geometries.

Seamless documentation

Demands on grinding and sharpening businesses as well as tool manufacturers are rising to an increasing extent. 100 percent checking, traceability and process safety are becoming required standard features. »threadCheck« records all measuring results seamlessly, and detailed protocols (i.e. reports) are available as a standard feature.

Moreover, the measurement of every single tooth or specific group of gear teeth is summarised and documented in a compiled protocol. When remeasuring individual parameters, it is not necessary to measure the entire tool once again. Instead, you can access the data of individual measuring processes in a targeted manner.

The software makes the difference

Precision goes without saying. Having said that, the ability to implement complex measurements in an easy-to-use manner has to represent a clear economic advantage. With a high level of automation and with clearly laid out software that is intuitive to use, using »threadCheck« for measurement work is simple, reliable and cost-effective. With a large selection of 'pilot 3.0' measuring programs, »threadCheck« is able to contend with a tremendously versatile range of demands.

More than 'simply measuring': integration in the production process

The measuring of tool parameters in a precise and fully automatic manner is one thing - the process of reliable and efficient transfer of that data to the production process is another thing altogether. These seamless operational processes are achieved through the ZOLLER database, and through interfaces to all commonly used third-party systems, reducing time and cost, preventing machine downtime and eliminating data input errors. This is because »threadCheck« is not a stand-alone solution but is instead one that provides interfaces to CAD and NC programs and, using the GDX data exchange format, also to all machines.

Future-proof system

To archive and administer grinding wheels and grinding wheel packages efficiently for machines and for all types of tool, »threadCheck« can be supplemented at any time by a tool management system. This means that detailed information about grinding wheel packages can be stored conveniently and merged virtually in a graphic tool assembly program. It is no problem at all to compile and define measuring parameters for these grinding wheel packages from your office desk, in conjunction with a ZOLLER-TMS connection.

With its 'five plus one' axes, the thread professional therefore not only delivers the precision for which ZOLLER is renowned, but also takes a further step into the future of measurement technology with seamlessly certifiable quality. Integration in the existing production process and the scope for modular expansion make »threadCheck« into a system fit for the future.

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Hexagon opens second user machine showroom

Hexagon Metrology UK has completed the latest phase of its ongoing investment programme with the opening of a second user co-ordinate measurement machine showroom.

The new facility at the measurement solutions provider's head office in Telford offers a selection of used Hexagon Group machines, suitable for either tactile probing or scanning, which have undergone an extensive and thorough reconditioning process.

As an original equipment manufacturer, Hexagon Metrology also repairs or replaces all of the key elements of the machines as necessary. It equips them with the latest software and firmware, including the RC1 retrofit controller, which often boosts accuracy performance and exceeds the original specification.

Hexagon Metrology provides the same service and support services as new machine purchases, meaning warranty, service and calibration packages, and part programming can be provided locally.

"While the overall performance of these machines may not be to the current state-of-the-art standard, we're able to greatly extend the service life of the equipment to ensure that another customer can still enjoy the benefits," explains Hexagon Metrology UK's sales and marketing director Brett Green.

"Even though high-end CMMs have never been as affordable, our second user offer recognises that the level of investment required may not always be available."

Hexagon Metrology's ongoing investment programme has already involved the opening of a new precision centre in Milton Keynes, expansion of its product portfolio plus new IT and customer service systems.

Hexagon Metrology offers a comprehensive range of products and services for all industrial metrology applications in sectors such as automotive, aerospace, energy and medical. It supports its customers with actionable measurement information along the complete life cycle of a product, from development and design to production, assembly and final inspection.

With more than 20 production facilities and 70 precision centres for service and demonstrations, together with a network of over 100 distribution partners on five continents, Hexagon empowers customers to fully control their manufacturing processes, enhancing the quality of products and increasing efficiency in manufacturing plants around the world.

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Bowers announces sales and support for the Sylvac-Scan range

As the exclusive UK reseller for Sylvac, Bowers Group has announced that, following Sylvac's recent acquisition of the TESA-Scan division from the Hexagon Group, Bowers' optical measuring arm, Baty International will now be handling sales and support for this important product line.

The Scan products complement Baty's existing range of optical measuring instruments by offering an ideal solution for the measurement of turned parts.

The Scan 52 is the first horizontal machine specially designed for workshop measurement close to the machine tool. The concept is to measure the parts in the same position as they are machined. The intuitive software with its one-click measure function is perfect for multiple users.

The Scan 25/50 are the entry level vertical machines for measurement of smaller cylindrical parts. These models feature an integrated projector on the left side of the machine, allowing the operator to preview the profile image. With the workpiece secured, the machine moves it through the optical path whilst scanning the profile. The

open design of these machines makes them easily and quickly accessible by the operator.

The Scan 50 CE Plus / Plus machines offer a motorised axis used to incline the workpiece to the helix angle of the thread, thus allowing a true projected image of the thread form. This unique and exclusive Sylvac slewing system allows the operator to measure many more features on threads, such as minor diameter and root detail, on ball screws for example.

All models in the Scan range are available with a rotating part axis for dynamic measurement such as concentricity and non-symmetrical features.

Interested parties can submit an application study request to Bowers Group and, of course, are invited to get a full demonstration of the new Scan instruments at the impressive new demonstration suite at Group headquarters in Camberley.

Bowers Group specialises in delivering a full and comprehensive range of precision measuring solutions to some of the most competitive and demanding shop-floor environments. Over the years, Bowers has proven its success with rapid, sustained growth and now prides itself on being the world's leading bore gauge manufacturer; in terms of both production volume and breadth of product range.

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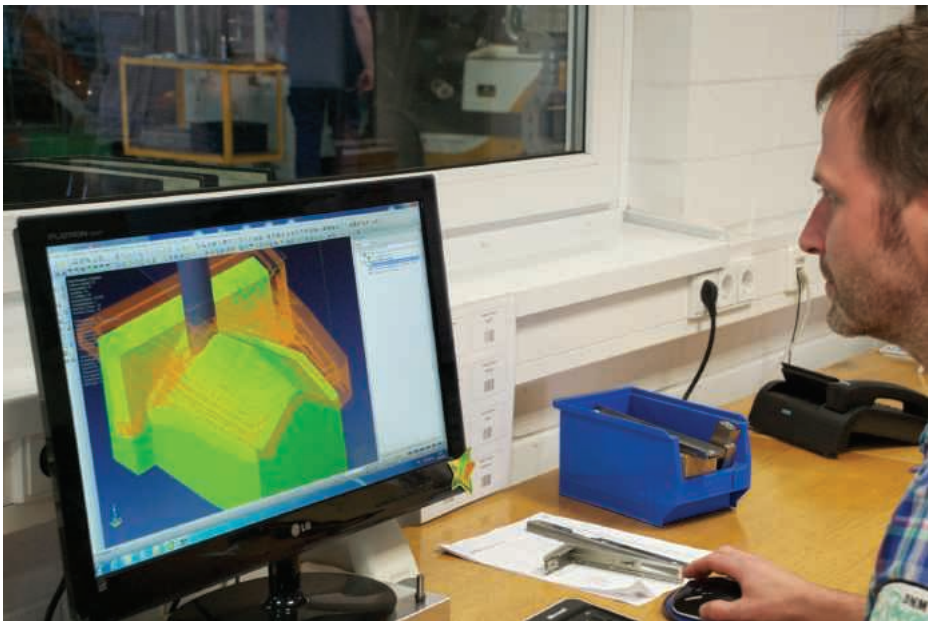
Vero software key for toolmaker expansion

Using the VISI suite of CADCAM applications from Vero Software significantly reduces the overall costs of each project for a German toolmaker, and makes it easier to implement innovative design ideas.

Based in Velbert, Volker Gehlen Werkzeugbau GmbH have a 30 year history of providing innovative solutions for stamping and forming industries. They are going from strength to strength, with the acquisition of a stamped component manufacturing company, acquiring new machines, and the addition of new products to their range.

Volker Gehlen, managing director, says a vital factor in their success has been upgrading all CADCAM operations to VISI's integrated 3D tool making solution. It was the software's consistent operating philosophy for CAD and CAM that initially made it a front-runner when they were looking to change. "We made the final decision after a trial installation and training from VISI's German reseller Mecadat AG. VISI proved to be so easy to operate, and can be used so intuitively that it was giving us a high level of efficiency after only a few days."

The company's turnkey solutions to customers throughout Europe include technological advice, prototype construction, and tried and tested full suites of tools. And he says VISI software helps them stay at the top of their game. "We've invested heavily in CADCAM and use VISI exclusively to design our tools. We can't imagine doing it any other way now."



Three designers each have a workstation equipped with VISI Modelling, and the stamping die module VISI Progress for strip layout and 3D tool construction. Lukas Gehlen, who is in charge of design and production, says: "The hybrid modelling combines a Parasolid kernel with surface modelling, giving us a faster and more flexible workflow that can handle any geometry type."

Two additional workstations feature VISI Modelling and 3D Machining to provide NC programs for the company's four Hurco and DMU CNC milling machines. A more recent software addition is the VISI PEPS-Wire licence to support the generation of NC programs for three state-of-the-art Sodick wire eroders, one of which is the AQ 1200 L, able to process metal more than four-and-a-half feet wide, weighing up to four tons.

Other software modules include VISI Compass for manufacturing automation, which uses preset processing definitions to create automatic NC programs for feature based drilling, milling and wire erosion geometries. Finally, the shop floor runs VISI Viewer for checking CAD models in a paperless environment to verify where each component fits.

However, he says they offer much more than just high quality tools. "We support our customers from the original idea right through to the finished product. And VISI plays a key role at the start of that process, by helping us carry out a feasibility study and 3D evaluation to confirm in the early stages that the parts will function correctly."

VISI is also used to edit 3D CAD data supplied by customers, which is then transferred to their ProJet HD3500 3D printer. This produces fully functioning, fit for purpose, acrylate components up to 300 mm, hardened by UV light, for prototypes and pre-series parts. "We can print entire assemblies, including moving

parts, with a maximum size deviation of 0.2 percent, at a thickness of 10 µ. If a pre-series is ordered, we 3D print first, so the customer can test it in terms of size, form and function. Then we supply the first 50 metal parts, so the client is able to fully test the form and fit during the development stage without having to pay for costly prototype tools and modifications."

Their traditional tool making and stamped part production has also been strengthened with the purchase of a 200-ton press. The high-tech machine has a servo drive giving a flexible adaptation of the ram speed and acceleration, producing 60 percent more parts in the same time, while still saving power.

"We can test and optimise the newly developed tools under realistic production conditions, providing the customer with a proven tool that can be used immediately."

Lukas Gehlen concludes: "Overall, we use VISI to design and produce our tools much more efficiently, and we are able to react

with more flexibly to customer requirements." He says being able to seamlessly import data into the VISI core modeller means there are no problems with customers' files, which saves a tremendous amount of time compared to how long projects used to take. "VISI makes it significantly easier for us to implement ideas; and as tool optimisations can be made much quicker, this significantly reduces the overall cost of projects for our clients."

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A revolution In CAM machining strategies

At a recent technical seminar hosted at the Mazak facility in Worcester, OPEN MIND Technologies presented its next generation of CAM software and the machining strategies within, to an expectant audience. Now, we've all been in a seminar where the presenter tells us 'This will be the next big thing' only to be somewhat underwhelmed by what followed.

In this instance, OPEN MIND Technologies UK managing director, Adrian Smith presented new features available in its latest version of hyperMILL 2015 CAM software. Claiming it will be a paradigm shift in machine tool strategies. Initially taken with the obligatory pinch of salt, the engineers at this seminar were soon engrossed in the presentation and engaged in some pretty technical dialogue during the Q&A session that followed. Why? Because OPEN MIND genuinely has created the next 'big thing' for the modern machine shop.

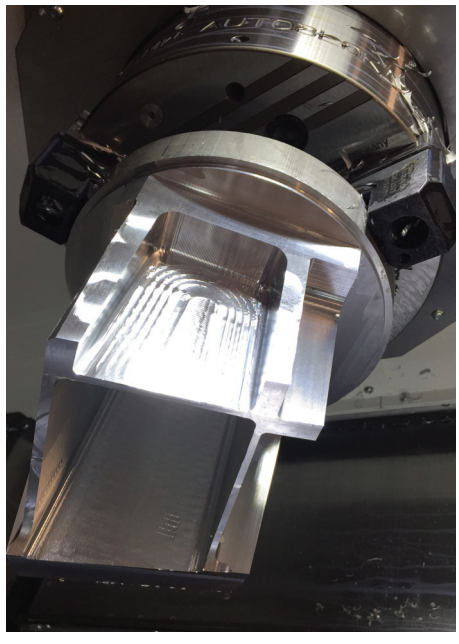
The revolution in machining was demonstrated at the Mazak Technical Centre on a Mazak i-400 multi-tasking machine tool with cutting tools supplied by Quickgrind. The 'revolutionary' new feature from OPEN MIND is its new MAXX machining strategy. Essentially, the new feature supports the geometry and collision checking of conical barrel cutters, tangential barrel cutters, lens tools and barrel tools. This 'next step' in machining strategies is so far ahead of the industry that only a limited number of cutting tool vendors are supporting the production of such tools.

So, what's all the excitement about?

The new strategy only displays a circle segment of the cutter, which means that very large radii of up to 500 mm can be realised with a cutting tool that has a shank diameter of just 10 to 20 mm. The benefit is a huge increase in machining area, which delivers astounding cycle time reductions and tool life improvements. By using a large circle segment, the tool can achieve a significantly higher step-over rate while keeping the same scallop height. This provides huge savings with surface finishes equal or better than previous methods. As well as reducing tool wear through using a larger surface area of the tool, the new strategy reduces tolerance deviations caused by heat warping or spindle growth.

Comparison of MAXX machining with special tools against a standard ball nose

The new strategy was demonstrated in terms of performance and surface finish by comparing a ball nose tool with a 150 mm lens geometry on a 10 mm tool shank. However, the lens or barrel tool strategy can be applied to cutting tools with shank sizes from 6 to 20 mm. It was apparent that a ball nose tool is only capable of a small step-over whilst generating a high level of wear on the limited contact point between the tool and the job. In comparison, the large step-over of the lens tool improves cycle times by 90 percent whilst extending tool life. However, a benefit that couldn't be overlooked is the surface finish improvement. The ball nose



achieves a surface roughness of 0.001 mm compared to 0.00006 mm with the lens tool that used the same machining and step over parameters. This enables a greater step over to be achieved to get the same surface roughness. For the end user, this provides the potential to either obtain the same surface finish with a much bigger step over, which reduces machining time or to accomplish a far superior surface finish with the same cycle time.

The new MAXX machining strategy is compatible with a vast array of tool geometries and can also be applied to 5-axis cycles such as tangent plane and tangent machining, swarf cutting, contour milling and 5X ISO-top milling. With the ability to access difficult to reach surfaces and generate cycle time savings beyond 90 percent, the new development is easy to use and safe to program.

Quantifying the benefit

OPEN MIND's Adrian Smith was keen to highlight the potential application areas where the new strategy within hyperMILL would benefit end users, with particular benefits achievable for manufacturers of all manner of complex parts, regardless of industry sector. Making the potential almost limitless. However, one example that did resonate with delegates was the benefits from machining a simple surface area of 200 by 100 mm and comparing the MAXX machining strategy between a 10 mm

diameter ball nose tool and a conical barrel tool with a radius of 500 mm on a 10 mm shank. The ball nose tool used an efficient step-over strategy of 0.2 mm compared to a 3 mm step over on the barrel tool.

Commenting upon this, Adrian Smith says: "The 500 mm radius is just a single example of what we can achieve with these tools and the MAXX machining strategy. We are also working closely with cutting tool specialists to deliver a 1500 mm radius tool on a shank size from 6 to 20 mm diameter. The philosophy is that the larger the tool radius, the larger the step down. For example, customers would match the tool radius with the accuracy of the machine tool. This is because a smaller radius allows the machine tool to maintain the positional tolerance without effectively 'rolling over the edge'. The more precise the machine tool, the larger the radius we can apply and thus the greater the advantage."

The result was a total tool path distance of 100 m for the ball nose tool and just under seven metres for the barrel tool. The result was a machining time of 39 minutes for the ball nose tool compared to a staggering three minutes for the barrel tool. When the delegates picked their tongues from the floor, the OPEN MIND team was quickly bombarded with technical queries regarding the potential of the package. If you want to book your place on the next 5-axis milling and MAXX Machining strategy seminar, contact:

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MARKATOR presents new lightweight marking system

FlyMarker mini: probably the lightest, battery operated hand-held marking unit in the world

The new hand-held marking system FlyMarker® mini is making its debut at EMO 2015 in Milan. The fourth generation of the mobile dot peen marker can be described as a new milestone in the history of the battery operated hand-held marking units. The new FlyMarker mini builds on the strengths of the proven previous models and convinces with its lightweight and compact design, as well as its highly-competitive introduction price of only 3,990.00 Euros plus VAT.

As well as this attractive price-performance ratio, the hand-held marking system for durable and unforgeable markings is characterised by its light weight of only 2.7 kg and its high quality construction. The marking unit convinces with fast marking times, a self-explanatory and intuitively to operate software and a dirt-resistant keyboard, which is very durable compared to a membrane keyboard. The housing is made of glass fibre reinforced plastic and is with this more break resistant than for example housings from die-cast aluminum.

Due to the numeric keys which are directly integrated in the keyboard, numbers which are often used in industrial applications can be typed in directly without accessing a submenu of the software. This means an enormous time saving for the operator during operation. Characters and numbers as well as individual company logos, test symbols or Data Matrix Codes can be marked.

The FlyMarker mini has an ideal centre of gravity which is designed for mobile use. Due to its ergonomic design, the device sits perfectly in the hand and an effortless operation is possible, also in vertical work positions. An additional handle is mounted on the front face of the marking system. This handle allows an ergonomic two-hand operation and an even easier, precise and secure positioning of the marking system on the work piece to be marked. Slipping away during the marking process can be avoided. If there is less space between work pieces, the second handle at the front face of the system can be dismounted easily.

Thanks to the lighter weight, this marking unit can be carried through the works premises directly to the workpiece to be marked, just as would happen day by day with a common cordless screwdriver. This is very helpful when big and unmovable work pieces need to be marked. For the

transportation to another construction site or a different hall, the practical carrying case can be used. The scope of supply contains two Lithium-Ion batteries. With this, time consuming marking tasks can be carried out without interruption.

The powerful Lithium-Ion battery enables a completely mobile work with the FlyMarker mini. Tripping hazards due to power cables or cables for compressed air supply as well as accidents at work due to common stamping tools belong to the past.

The marking force of the solenoid which was especially developed for mobile marking purposes can be adjusted individually to the material and the needed marking depth. Nearly all materials can be marked, from plastics, aluminum, stainless steel up to hardened steel. Subsequent processing such as sand blasting, coating etc. don't present a problem in most cases and the marking remains visible.

The high class marking result of the FlyMarker mini can be achieved due to the stable and long-life mechanics. The high-quality linear guides in x- and y-direction are double guided. Compared to systems with a swinging axle, it is with the FlyMarker mini possible to create very precise multi line markings. The marking area of 65 x 30 mm can completely be used. Due to a continuous, solid and robust base support with integrated positioning plate, a high mechanical stiffness can be guaranteed.

The software can be operated intuitively through to the clearly designed and easy to understand software. Latest processor technologies are used and with this a fast navigation and quick access times to the marking files is possible. There are many language versions available for the FlyMarker mini which makes the operation for users all over the world very easy.

Helpful commands such as variables for time, date or auto numbering are already included in the standard scope of delivery. With the use of the practical preview function it is possible to picture the marking file in the high resolution LC colour display before the marking process will be started. With this incorrect markings can be avoided and are almost impossible.

The internal memory of the hand-held marking system offers space for several hundreds of marking files, fonts and logos which can easily be imported and exported using the USB-interfaces of the unit. These interfaces can also be used for optional available accessories as for example a barcode scanner. The content of a barcode can with this be read very quickly into the system and the characters and numbers can be marked with preset configuration on the workpieces.

Two prisms on the positioning plate of the FlyMarker mini help to mark round work pieces very easily (radial and axial). Height differences up to 5 mm can be compensated. With this also uneven work pieces can be marked in a constant marking depth. For special application as for example marking round work pieces on the face, etc., several optional accessories are available. Integrated threaded holes on the positioning plate enable also to mount customised equipment.

To find out more about the new hand-held marking system FlyMarker mini, contact:

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Polished performance from Electrox lasers

Special EFX, a leading British design and manufacturing company of high quality awards and trophies invests in another Electrox laser marking system

Founded in Birmingham's jewellery quarter in the 1970's with silversmith origins, Special EFX now produces bespoke corporate awards and custom made trophies to its prestigious global customer base, providing a unique personal service, where precision and a clear, highly legible mark is everything. Electrox has shown that it has the right products to deliver for this lucrative industry.

In 2007, Special EFX first approached Electrox for an in-house need for a laser marking system to engrave text and branding onto their manufactured nickel and gold plated trophies.

Prior to purchasing the first laser, the Electrox team spent time understanding Special EFX's application and operation process in order to propose a solution. Following the review, Special EFX purchased its first Laser and MaxBox Plus workstation and recently upgraded to a high performance Scorpion Rapide 70W ZEP laser for high speed and high resolution operation.

"Electrox has delivered a consistent and repeatable system," says Peter Osborne, MD of Special EFX. The definition and quality of the engraving is imperative to our business and the Scorpion Rapide delivers this. We are impressed in the quality, fast cycle-times and the ability to deep-engrave. Our team also found the Scriba graphic software very user-friendly and with the training received, the whole process has been well received."

Having successfully worked with the Electrox laser marking system, Special EFX has also seen significant growth in demand for trophies, which has resulted in further investment in an additional workstation and high performance Scorpion Rapide laser.

The Electrox Scorpion Rapide uses the latest optic fibre technology and provides high performance laser marking, etching or engraving capabilities. It is the ultimate laser for marking, engraving, etching and pulsed micro-machining. Ideal for high speed, high resolution operations on a wide range of materials including metals and plastics, it offers complete control of the laser beam parameters to permit a wide range of marking, etching and engraving finishes.

The in-built 4 axis control is easily integrated into automated production systems or into one of Electrox's stand-alone workstations. Other benefits include extremely low operating costs and it is virtually maintenance-free.

The Scorpion Rapide is easy to use with minimum training and setup requirements, with up to 20kW peak power and 70kW average power.

"Special EFX is delighted to have Electrox as a supplier as Electrox products can deliver the quality and technology which our business needs. We hope to build on our relationship with the Electrox team as we continue to grow our business," adds Peter Osborne.

Electrox was founded 40 years ago and is part of the world-renowned 600 Group PLC. The company manufactures a wide variety of fully-integrated laser marking solutions, which use an intense beam of light to permanently engrave or mark a material's surface. Its systems are fast, extremely easy to use and very cost effective, because there are no components to wear or run out.

Electrox lasers offer a wide range of applications including ablation and coating removal such as for automotive displays, coding for traceability and identification, authentication and labelling and for decorative design and personalisation.

For more information, contact:
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FOBA presents reliable laser marking solutions for complete traceability of parts

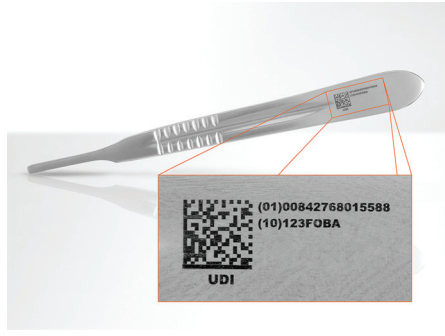
Part marking is crucial for reliable traceability and safety of industrial products. But how do manufacturers ensure that their products are marked reliably and in zero-defect quality? How to optimise the marking process and turn the industrial part marking into a more efficient process? How do manufacturers implement identification requirements and mark their products compliant with regulations, e.g. with the UDI directive?

FOBA, the international manufacturer of precision laser systems for marking and engraving, provides the answers.

Many industries such as electronic, medical and automotive are obliged to mark their products permanently and precisely to meet the high standards of product safety, process reliability, traceability and quality management. Additionally, they have to comply with legal requirements and regulations, such as FDA's (Food and Drug Administration) Unique Device Identification directive (UDI). But only permanently readable markings guarantee to trace back products reliably. Only if markings are correctly positioned, the highest product quality, minimum scrap and a lean production can be achieved. Regarding product safety and readability of the marking, also the products' life cycle has to be taken into account: Resistance to corrosion as well as to cleaning and sterilisation procedures are decisive criteria for manufacturers.

FOBA's closed-loop laser marking process HELP (Holistic Enhanced Laser Process) is an innovative process solution involving pre-marking product validation, laser-based product marking and post marking validation through optical character verification and the possibility to reread 2D or 3D matrix codes. Thus HELP contributes to a stable marking process and strengthens productivity and cost-effectiveness.

FOBA Laser Marking + Engraving is a leader in manufacturing and supplying precision laser systems for marking and engraving. FOBA marking lasers mark a variety of materials and parts in key markets



such as automotive, medical, electronics, plastics, safety and ID.

FOBA laser workstations for marking and engraving are especially applied in the fields of automotive part production and medical device marking as well as in tool, metal and mould making, plastics processing, jewellery and coinage.

In September 2009, FOBA became part of ALLTEC GmbH. Since then, FOBA is now an ALLTEC sales channel for laser part marking and engraving.

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New UV laser for marking plastic

What's new in laser marking? TRUMPF introduces two new products: the TruMark 3330 and the new workstation TruMark Station 3000

TRUMPF is expanding its TruMark Series 3000 with the new TruMark 3330 ultraviolet laser. In addition to inscribing glass, ceramics and organic materials, the primary use for the diode-pumped solid-state laser is marking plastics.

The new TruMark 3330 is equipped with an efficient air cooling system, significantly reducing maintenance effort and in this way lowering the laser's operating costs. An additional benefit of the new marking laser is its low energy consumption, while getting more work out of that power.

Over and above this, the new TruMark 3330, thanks to its non-proprietary interface architecture and plug-and-produce connection, is flexible in its utilisation. It can be integrated into new or existing assembly lines without difficulty and can communicate with the components in the manufacturing system using standard interfaces such as ProfiBus, ProfiNet or EtherCAT.

Also new to the TruMark Series 3000 are the scanner optics integrated into the marking laser. These offer higher precision and greater dynamics and, in turn, higher laser productivity and enhanced marking quality.

Heightened contrast, thanks to UV light

Operating at a wavelength of 355 nanometers, the TruMark 3330 opens up new possibilities for labelling plastics. This is because synthetics absorb the energy of the short-wave UV light far better than an infrared laser beam. This may eliminate the need for expensive additives. In this way UV lasers offer significantly better inscription, at greater contrast and optimal labelling quality, along with high processing speed.

Thanks to its excellent beam quality of $M^2 < 1.5$, the laser beam can be focused on a very small beam spot. The laser power absorbed by the material causes a reaction in the plastic, one which is primarily photo-chemical. This type of machining is exceptionally gentle on the material and yields very good surface quality. At the same time, the high pulse-to-pulse stability in the TruMark 3330 offers dependable reproducibility in the work and uniform high quality of the inscriptions.

New marking workstation for medium lot sizes

The new TruMark Station 3000 extends the portfolio of marking workstations by adding to the already available 1000, 5000 and 7000. It is especially advantageous for users who need to ensure traceability in small and medium-sized production runs and who wish to integrate the marking process into their own manufacturing.

Laser safety class 1 guarantees maximum protection for the user. The new workstation has a large interior space so that it can accept components up to 350 x 450 x 200 millimetres in size and weighing a maximum of twelve kilograms. If necessary, the transfer flaps installed at the sides of the case can be removed. This lets the user integrate the workstation into an assembly line or, alternatively, to employ it for marking even larger components.

A motorised Z-axis, which can be software-controlled, makes for convenient positioning of the components. In addition, the focal position of the laser can be adjusted perfectly to comply with requirements. As an option, the workstation is also available with an additional axis of rotation.

Regardless of whether the operator is seated or standing, the new TruMark Station 3000 is available in a compact desktop version or as a convenient stand-alone version with a base. Depending on requirements, all TRUMPF marking lasers from the TruMark Series 1000, 3000 and 5000 may be used. A suction unit is also available as an option.

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Direct part marking with lasers

Permanent laser marking is indelible, thus providing full traceability for the life of the part. It cannot be falsified, and offers a high security tamper-proof process for marking and protecting your parts. As it is non-contact, no force is applied to the part so even delicate components can be marked without damage or distortion. Fixturing is simplified or even eliminated in some cases, as the part does not require clamping. There is also no tooling to wear out.

The laser is one of the most environmentally friendly marking technologies. Unlike inkjet printing, the laser process uses no solvents or aggressive chemicals, nor any consumable items. Pollution to the environment is reduced, and savings in consumable and disposal costs and also downtime for clean-up operations can be realised. Offering high quality, resolution and precision, laser marking provides clear and concise results and scrap costs associated with poor quality marking from other technologies are virtually eliminated.

The very fine laser beam enables high resolution images and also very small character height (less than 1 mm), useful where space on the component is limited.

As all the information to be marked is under programmable control, the data can be changed from part to part on the fly. For example, serial numbers can be automatically incremented, date and time stamps created, batch and shift numbers updated. This data can take the form of alpha-numeric text, or machine readable formats such as barcodes and 2D datamatrix codes. Artwork and logos can be imported directly as CAD files. Many laser marker installations take the form off stand-alone systems, but the technology also lends itself to automation.

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Technifor takes marking innovation and performance a step further

At a time when machine-to-machine communication is proliferating in the industry, bringing with it significant gains in terms of efficiency and productivity, Technifor has risen to the challenge with a new range of laser marking machines that are making their mark as a true model of integration: LASER SOLUTION F-SERIES. The new electronics offer communication tools natively, allowing continuous and instantaneous interaction with the various workstations integrated into the chain of production.

Dedicated and generic Inputs/Outputs, TCP/IP Ethernet, PROFINET, RS232, USB... the configuration, control and data recording options are cutting-edge and allow for remote control. The new connections eliminate the need for costly adapters and offer the prospect of a single central server managing a factory's entire fleet of lasers. Ultra-fast, the choice of high-performance electronic components has resulted in marking equipment that is 50 percent more time-efficient than the previous generation.

Available in a whole range of powers from 10 to 50w, the Laser Solution F-Series permits the direct and permanent marking of a wide variety of parts and materials, for example plastics, metals, ceramics etc. From surface marking to deep engraving, it executes 1D and 2D codes of outstanding quality, guaranteeing faultless scanning.

These new laser machines offer a real technical advantage to integrators and manufacturers who need to install marking stations on production lines.

Highly compact, the marking head is adapted to industrial constraints, for example small spaces, extreme conditions of temperature and vibration. It is robust and protected from dust or other splashes (class IP54). The solution can be integrated with no necessity for filtration or additional enclosure and it is immune to electromagnetic interference.

Designed to minimise installation costs and time, the equipment is easily interfaced with a PLC thanks to pre-programmed controls. A control screen with integrated HMI displays the operations in progress and offers self-diagnostic capabilities: machine status, event history, backup files and maintenance messages are accessible in real time. Benefiting from a wealth of application experience with major car and automotive parts manufacturers, in precision mechanics, aeronautics, medical and other leading-edge sectors, Technifor delivers end-to-end equipment meeting its customers' every expectation: contrasted and permanent high-speed marking, a reliable, safe and efficient production asset, a modular and evolutive range.

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Joint venture for additive processes with inspire AG

The UNITED GRINDING Group, holding company for the machine tools business area in the Körber international technology group, is establishing a joint venture named Irpd AG with the university-affiliated inspire AG. IRPD specialises in additive manufacturing processes such as laser-based processes and 3D printing. The focus of the joint venture is to further develop these cutting-edge production processes and thereby benefit from current research findings. ETH Zurich has made significant investments in inspire AG.

The Irpd AG joint venture, with headquarters in St. Gallen (Switzerland), is the new centre of excellence for additive manufacturing of the UNITED GRINDING Group and is collectively managed by both joint venture partners. Irpd AG concentrates on the manufacture of industrial metal or plastic prototypes through to the production of a small series of complex workpieces as a service for customers. The focus is on additive manufacturing processes, particularly Selective Laser Sintering (SLS), Selective Laser Melting (SLM) and 3D printing. IRPD also offers individual technology consulting, reverse engineering, scanning and services for the design and production of complex components.

inspire AG brings significant parts of its own centre of excellence (inspire irpd: institute for rapid product development) to the joint venture. The centre of excellence is the Swiss market and technology leader for the design, production and marketing of additively manufactured products and serves over 300 industrial customers in Switzerland and neighbouring countries. As one of the world's leading suppliers in precision machining, the UNITED GRINDING Group is a knowledgeable partner for further developing production processes and expanding customer contacts. Stephan Nell, CEO of the United Grinding Group AG, is delighted by this close cooperation: "IRPD has extensive expertise in cutting-edge production techniques, which we intend to collectively further develop using our experience in industrial series production as a foundation. Additive manufacturing processes are of strategic relevance for us."

inspire AG also welcomes the cooperation: "We see the UNITED GRINDING Group as the best possible partner, who will open up outstanding development opportunities through its experience in professional production processes and its international market access", says Dr. Jürg Krebser, managing director of inspire AG.

The location will remain the campus of the former inspire IRPD centre of excellence in St. Gallen on the campus of the Swiss Federal Laboratories for Materials Science and Technology (EMPA). This will also facilitate the continuation of knowledge transfer and exchange of experiences in the area of material research, among other things.

The machine tools business area of Körber AG under the management of the United Grinding Group AG combines the world's leading suppliers of precision machines for grinding, eroding, lasering, combination machining and measuring methods. With the eight company brands MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER and EWAG, this business area boasts the broadest possible application knowledge, the largest product portfolio and the most complete array of services on the international market.

inspire AG, as the strategic partner of ETH Zurich, is the leading Swiss centre of excellence for technology transfer to the machine, electrical and metal industries. It undertakes research for industry, develops cutting-edge technologies, methods and processes and solves problems in all disciplines of product innovation and production technology. Inspire AG is a centre funded by the Swiss state and the result of a joint initiative between Swiss industry, Swissmem and the Swiss Federal Institute of Technology Zurich (ETH).

The Irpd AG joint venture with headquarters in St. Gallen (Switzerland) is the centre of excellence for additive manufacturing of the UNITED GRINDING Group, with a focus on services as well as research & development. The applications of additive manufacturing range from the production of metal or plastic functional models (Rapid Prototyping) through to the direct production of (small) series (AM). This includes the innovative technologies Selective Laser Sintering (SLS), Selective Laser Melting (SLM) and 3D Printing (3DP). Irpd AG supports its customers with engineering expertise, specialising in scanning, Reverse Engineering (RE) and Medical Manufacturing (MM).

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Additively manufactured hydraulic chuck

With the HighTorque Chuck (HTC) with narrow contour, MAPAL has succeeded in combining the benefits of the hydraulic expansion technology with the 3° back taper known from the shrink chuck. This is made possible by the additive manufacturing process employed at MAPAL in the form of selective laser melting (SLM). SLM is a powder bed-based process. Loose metal powder is melted layer by layer onto the areas where material is required by means of a laser beam. The part is built up from bottom to top.

During the production of the hybrid HTC with narrow contour, the functional area is applied to the conventionally manufactured tool body by SLM. Thanks to the additive manufacturing, the clamping range can be positioned very close to the chuck tip which would not have been possible with conventional manufacturing. This provides an optimum radial run-out of < 3 µm at the location bore and < 5 µm at 2.5 x diameter, as well as high shape accuracy with good vibration damping. The damping in the system reduces microstructure cracking at the cutting edge. That in turn ensures longer tool life and less strain on the machine spindle. Furthermore, the additive manufacturing eliminates the need for the soldered joint that has always been a limiting factor until now.

The HTC with narrow contour has all the benefits of the proven MAPAL HTC (HighTorque Chuck) technology, whereby the "T" stands not only for high torque transmission, but also for thermal stability. The wide operating temperature range up to 170 °C ensures additional process reliability. The balancing quality is G=2.5 at 25,000 revolutions per minute.

The new chuck offers significant benefits not only for mould making, but also for applications in the automotive and aerospace sector. Why? The HTC with narrow contour is suitable for all machining operations in contour-critical areas. It allows quick and simple clamping of the tool. This means neither training courses nor high retooling costs or expensive peripherals are required for implementation.

The HTC with narrow contour is available in the clamping diameters of 6, 8, 10 and 12 mm for HSK-A63 and SK-40. Intermediate sleeves enable additional diameter ranges to be covered. In addition, the chuck is optionally available with dynamically balanced HSK. That again is something new: For the first time is has become possible to dynamically balance components with HSK connection, because the mass imbalance that has been caused by the different depths of the key block slots until now has been eliminated in the optimised HSK.

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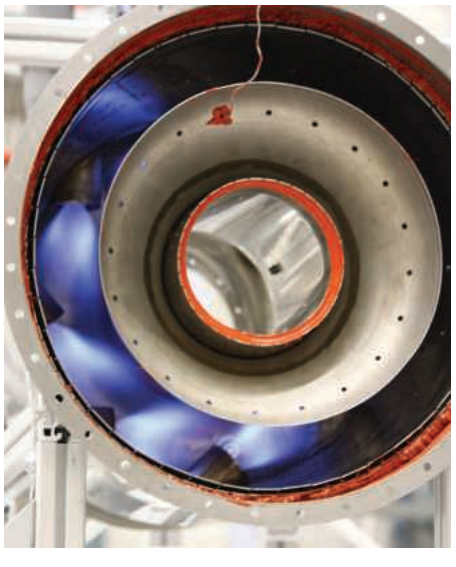
Additive manufacturing of versatile, compact burners

Based in Berlin and Cottbus, Germany, Euro-K Design specialises in the manufacture and testing of energy-converting micro gas turbines that optimise the combustion of fuels. The company has been steadily increasing the effectiveness of systems, concentrating on innovative burner geometry to raise combustion efficiency and lower exhaust gas emissions. In pursuit of these goals, it harnesses the versatility of metal additive manufacturing (AM) technology from EOS.

Whereas the formation of a combustible fuel / air mixture is relatively straightforward with gaseous fuels, liquid fuels present a challenge, as the surface area must be greatly increased. This is generally done by projecting it in a very fine spray using pneumatic, mechanical or pressure differential principles. Consequently, the availability of burners that support the use of liquid as well as gaseous fuels is limited.

Euro-K set out to produce a compact micro-burner that can handle both types of fuel efficiently. Its design freedom was greatly enhanced using AM, with which it has long been familiar, avoiding the constraints of conventional metalcutting and the uneven cooling of castings. The technology is able to produce small batch sizes economically and allows burner assembly costs to be reduced by 20 percent.

Thanks to its complex design, made possible by additive manufacture, the new Euro-K burner can use both gaseous and liquid fuels. (Source: EOS.)



Euro-K has access to test rig technology to evaluate new burner designs. (Source: Faculty of Combustion Engines and Aircraft Propulsion, Brandenburgische Technische Universität (BTU), Cottbus - Senftenberg)

One of the processes the company uses is an EOS M 290 metal AM system. For the design work, CAD software is used that allows data to be transferred quickly and easily to the EOS system following definition of the final shape and size of the burner.

To create the optimal burner for use in the micro gas turbines of one of its customers, a Berlin-based plant builder, the Euro-K project team chose EOS NickelAlloy IN718, a heat- and corrosion-resistant material that has excellent tensile strength, resilience, and resistance to creep and fracture at temperatures up to 700°C.

The new burner is able to use gaseous and liquid fuels equally effectively. Optimised geometry also allows the use of liquid fuel oils that are classified as difficult to burn, such as those distilled of alcohol. Another positive effect is that the burner's innovative design allows the size of the combustion chamber to be reduced by 20 percent.

There is an additional advantage for end users. Until now, a plant operator had to select the type and grade of fuel to be used, so it was impractical to take advantage of fluctuating market prices. The new burner design changes that by introducing flexibility of purchase.

Frieder Neumann, deputy head of Micro-Gas Turbine Development at Euro-K customer, Bilfinger, Berlin, confirms: "As the combustion process has been optimised, we are able to guarantee our customers freedom of choice in terms of fuel and switching to other fuels after the plant has been purchased can be easily arranged.

"Euro-K is able to offer the technology at an attractive price. We are absolutely delighted by our partner's expertise in design and production, as well as by the EOS technology that makes it possible."

Sebastian Kießling, managing partner at Euro-K adds: "EOS technology gives us the opportunity to offer exactly the right solution to meet the specific challenges experienced by our customers. Our many years of experience in the industry, coupled with our expertise in AM, enable us to achieve measurable added value for users."

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Large aerospace contract for composite supplier

epm: technology group, based in Derby, UK, has announced it has successfully won a £22m+ order to produce and supply composite aircraft interior components and sub structures.

Graham Mulholland, epm: technology group's CEO, commented: "This is a great first announcement following our move which we completed with DEGF (Derby Enterprise Growth Fund) support into our purpose-built 60,000 sq. ft. technology centre 11 months ago.

"My team have performed their socks off over the past 18 months to win the first aerospace contract which combines our high-performance engineering capability with a novel production method to produce composite parts and assemblies every eight minutes, with excellent R&D and KTP support from Derby University."

Graham Mulholland continues, "our R&D activities have been steadily building up alongside our move into our new facility, and now provide our customers with innovative knowhow. This is making our customer more competitive and opening doors for epm in new markets. This is the first of a number of key opportunities we're working on right now and I expect epm to be making more announcements as customers continue to engage with us and understand our new capabilities, capacity, engineering knowhow and our innovations moving forward. We're very excited about being customer ready rather than taking new contracts on and learning on the job. epm has always invested heavily in its future. Our team is ready and we're proud to be leading our future growth plans"

The potential of carbon fibre composite materials is huge. Industry of every kind is only just waking up to it.

Where composites were seen virtually exclusively for the use of aerospace, defence and performance motorsport, you can now see them as a cost-effective, high-quality alternative to traditional manufacturing materials. You get the same strength and structural performance, but with less weight and more versatility, and with bespoke composite products made to your specification, real value for money.

epm: technology started in 1996. The Derbyshire firm now employs 120 staff and is investing in its future manufacturing know-how and investing in the next generation through the epm: academy. The company is continuing to expand rapidly.

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Feeding on success with PSL Datatrack

Barfeed manufacturer Hydrafeed of Milton Keynes also runs a major subcontract engineering business. With a vast range of products and services, managing the manufacturing and administration processes represented a major challenge. This has been solved with the implementation of PSL Datatrack software.

Hydrafeed's barfeed systems are usually sold as a package with new CNC turning centres or directly to companies looking to increase production capacity. Engineering subcontracting work is provided to a diverse range of companies in different industries. When current owner Martyn Page took control of the company in 2012, he recognised that a major overhaul of Hydrafeed's production administration procedures was needed.

PSL Datatrack software fitted in well with Hydrafeed's business model as it is designed for small to medium sized engineering companies. The focus was initially on the subcontracting business and the software was rolled out to the manufacture and assembly of the barfeeders. It helps to avoid unnecessary overproduction, reduces administration, records and values, the actual time taken for manufacture and creates a history of when parts are made, on which machine and by which person.

Major improvements have resulted in the speed of order placing, raising enquiries, material allocations, traceability and the generation of certificates, vital to ISO and aerospace requirements. The history of materials used has led to improved reporting for supply monitoring, more accurate stock records and enables the company to give better information to suppliers when negotiating prices. Furthermore, when an order is repeated all the historical data is available, saving further on administration time and effort.

"PSL Datatrack is making Hydrafeed more efficient, competitive and professional, "says Martyn Page. " We are in a position to win more engineering subcontract work and continue to expand our barfeed operation, confident in the knowledge that PSL Datatrack will allow us to cope as it can be adapted easily to new requirements."

PSL Datatrack is a flexible, modular production management system designed for both small and medium size manufacturing businesses.

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Kaltenbach launches major new machine innovation

German machinery group, Kaltenbach recently launched a completely new machine innovation at the IPS2015 exhibition, held during June at its factory in Loerrach, Germany.

The new Kaltenbach KDH1084 machine made its international debut at the show. Against the backdrop of dry ice and a thundering rock soundtrack, Kaltenbach demonstrated the machines' unique ability to run in parallel, the processes of sawing, drilling and milling, for the very first time.

The new KDH1084 represents a complete revolution in structural steel processing, removing the established restrictions of sawing the steel whilst simultaneously adding holes, slots, machined contours and marks.

Not only have these processes been brought together in parallel, the new machine also benefits from huge technology improvements to increase performance, process capability and efficiency. In the development of the KDH1084, Kaltenbach focused heavily on 'real-life' customer data and requirements. As a result, productivity gains in excess of 80 percent are possible over conventional processes.

The machine boasts three, heavy duty machine spindles mounted within a highly robust frame, designed to provide the maximum rigidity required not only for high speed drilling using carbide tooling but also for complex machining functions in order to reduce onward processing requirements. Each axis on the KDH1084 can be used with up to 28 tools, operating independently and able to conduct differing tasks on the material simultaneously, over a wide positional range. These are all able to take place whilst the material is being cut, using Kaltenbach's acclaimed KBS1051DG high performance bandsaw and automatic sorting system.

Also on show at IPS2015 was Kaltenbachs' new KPS-A207 Punch and Shear system for processing Angle sections and Flats up to 200 mm x 200 mm x 25 mm, along with the latest KF2114 Plate System. Both models were launched just a few months ago, following a full redesign by the company. Several examples of each machine are already installed and operational around the world.

These innovations were complemented by the wide range of additional Kaltenbach machines available, from universal circular saw solutions through to sawing and drilling lines, robotic coping systems and the Kaltenbach Shotblasting and Painting Systems, represented by the very latest 'Sprint 1504' Shotblaster.

The Sprint Shotblaster series has again received considerable development work, resulting in performance characteristics which, along with its sibling models, represent some of the most reliable shotblasters in the world with the highest possible productivity and lowest possible running costs.

Some 36 partner companies also exhibited alongside Kaltenbach at IPS2015. These represented a wide range of additional, sector specific, solutions and products from CAD/CAM systems through to materials handling, used machine systems and additional processing technologies such as section cambering, material deburring, billet cutting, plate processing and fully automatic structural welding.

The show also witnessed new partnerships formed recently between the Kaltenbach Group and 'Zinser', for plate cutting systems: 'Zeman' for fully automatic robotic welding systems in Structural Steels and 'RSA' the renowned manufacturer of automatic circular sawing systems and section deburring machines.

A spokesman for Kaltenbach comments: "IPS2015 clearly demonstrates the massive innovation that Kaltenbach have towards processing technology and efficiency, along with our dedication and commitment to the individual sectors in the steel industry around the world. The company is now pushing forward with even greater energy and aspiration towards new markets and further product developments."

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Speeding up the laundry

New Bomar bandsaw with automatic feed system increases throughput for laundry systems manufacturer

Founded in 1948 by Herbert Kannegiesser, the company started life producing ironing machines for the garment industry. Production originally commenced in a wooden shed near Vlotho, Germany with just four employees, where their ironing presses made specifically for use with dress shirts quickly became their speciality and helped to establish an international reputation for the young company.

More than six decades later, Kannegiesser now offers a full range of industrial laundry equipment including washer extractors, continuous tunnel washer systems, moisture extraction presses, dryers, feeders, ironers and folders, garment sorting and tunnel finishing systems. In their Banbury plant, the company specialise in producing what is known as the "Supertrack Monorail System" which has been designed to transport soiled laundry through all of the necessary laundry processes, working in harmony with the entire range of Kannegiesser laundry equipment.

The monorail tracks, which are constructed from stainless steel were previously cut to the required lengths by means of a hydraulic saw that relied on a simple manual feed system, so in order to simplify the production process as well as increase efficiency and throughput, Kannegiesser turned to sawing specialist Prosaw for the complete sawing and material handling solution.

Prosaw's answer was to propose the use of a Bomar ergonomic model 290.250 DGA bandsaw. This advanced system features automatic programming in order to eliminate the possibility of manual errors, whilst simultaneously simplifying the process and increasing efficiency.

Importantly, Prosaw also designed and produced a purpose-built mechanical handling system in order to automatically introduce the lengths of track stock into the bandsaw, thus greatly simplifying the crucial in-feed part of the process.

The resulting automatic sawing system has proved to be a major benefit by simplifying an important element of Kannegiesser's Monorail manufacturing process.

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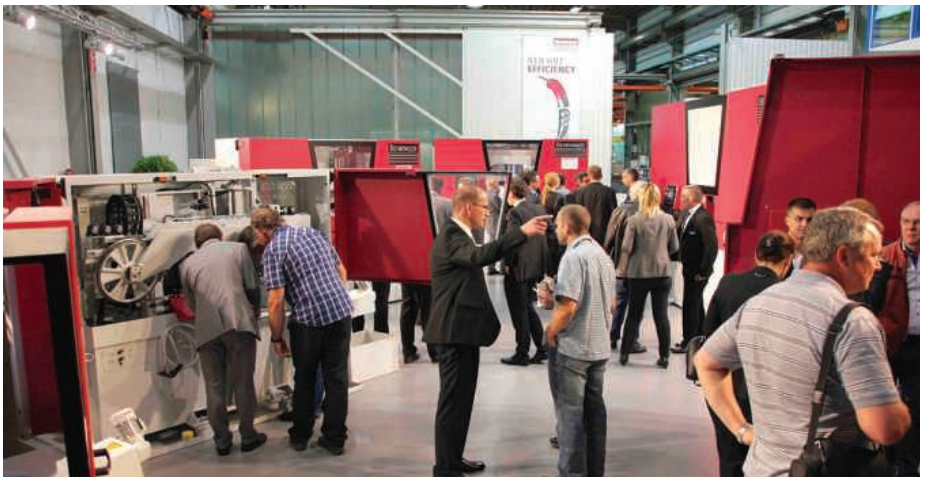
Open House attracts record number of visitors and high interest



"We are very pleased with the way our sixth open house World of Saws unfolded", summarises CEO Christian Behringer and managing director of Behringer Ltd, Simon Smith.

Around ten percent more visitors from a total of 31 nations experienced three days sawing technology up close. In particular, the two new "big sisters" in the HBE Dynamic series, the HBE563A Dynamic and the HBE663A Dynamic fascinated visitors.

In an exhibition space of approximately 4,000 square metres, the market leader for band and circular saws from Southern Germany presented state-of-the-art sawing technology in five main topics.

Besides the main exhibitor Behringer GmbH, daughter company Behringer Eisele GmbH showed an extensive range of high performance circular cold saws for ferrous and non ferrous cutting applications, including its comprehensive range of mitre cutting circular saws. The high performance Behringer HCS MF series and the VA-XL stand out as leaders in the field

Under the "Partners For Steel" banner (P4S), Behringer's French sister company Vernet Behringer and Rösler GmbH showed turnkey system solutions for the steel trade and the steel construction industry. These combine sawing, drilling, blasting and painting with complex handling systems from a single source. Vernet Behringer is also recognised a leader in its field for manufacturing machines for processing angles, plates and strip material for the steel processing and fabrication markets.

With the further development of the successful HBE-Dynamic series, Behringer is not only focusing on today's requirements of the customers.

"We develop and think clearly for tomorrows market and demand", says CEO Christian Behringer.

The two new "big sisters" in the series were presented during the Open House. The new HBE Dynamic series is now available in six model types 261A, 321A, 411A, 511A, 563A and 663A with corresponding cutting ranges, covering an extensive field of applications in the steel trade, machine and tool building and in high-end metalworking businesses. The series features high cutting performance, coupled with reduced energy consumption, low space requirements, occupational safety without compromise and handling simplicity, raising sawing technology to a new level.

Pure high-performance

Visitors could see for themselves the machines cutting steel, high alloy materials and aluminium using BEHRINGER and EISELE band and circular sawing technology for OEM and steel distribution applications. Behringer always advise that for optimum high performance Behringer saws are used in conjunction with coolant filtration units.

This equipment can be supplied as an optional extra and Behringer believes that this is a feature that significantly influences machine performance and output quality. This feature is often overlooked but has a tremendous effect on blade life. Unfiltered coolant means that minute particles of swarf are deposited on the blade and ultimately the material being cut. A filtration unit is an additional initial expense, but it will soon pay for itself through longer blade life, longer machine life, better quality surface finishes and higher levels of accuracy. An additional benefit of course is that the coolant will last longer because it's cleaner."

Plate and ring saws

Solutions with horizontal and vertical band saws for cutting large slabs and rings were covered by the topic "Sawing of large

Dimensions". Behringer produce some of the biggest machines available in this market sector.

Universal, compact solutions for fabricators and workshops were shown, covering a wide range from simple sawing tasks to cutting sample sections of heat-treated material.

Lean processes in the foundry

Visitors were offered a tour of the highly modern Behringer iron foundry. The dialogue between parts design and input of casting technology experts form an efficient team, so that process optimisation in this respect is more than just a slogan.

The economical and technological aspects of sawing technology

were presented both in the technical presentations and also live at the machines. With topics such as "Behringer 4.0" and "Lean Chili", the company concentrated on issues that currently dominate the discussions in professional circles.

"Our guests had been inspired and discussed their sawing needs with our experts", says Christian Behringer as he looks back on numerous conversations. The exhibition was an intense experience for all involved.

Behringer's UK operation, Behringer Ltd, is situated in Pitstone, Bedfordshire and is headed up by managing director Simon Smith. He explains that the 'World of Saws' is an international event that is of significant value to UK customers: "There are over a thousand Behringer machines installed in the UK so the customer base is extensive. We stage the open house every other year over three days here in Kirchardt and this year we had a large number of UK customers, existing and new in attendance.

"What's particularly important to us is that there's a diverse range of UK companies interested in our products, from stockholders and metal fabricators through to metal processing specialists and a healthy proportion of our clients have multiple machines installed. The fact that they were prepared to make the trip out to Germany to see the technology first hand is very encouraging."

If you are a stockholder of ferrous or non ferrous material, a fabricator, an original equipment manufacturer or subcontractor Behringer can offer you high performance machines with technical support and advice commensurate with the quality of the product. Simon Smith adds: "Behringer is unique in this respect."

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BLM tube laser investment delivers fundamental gains for Sidhil

Halifax-based Sidhil is one of Europe's leading designers and manufacturers, providing high quality healthcare solutions focused on the changing requirements of the acute, nursing home, GP and community environments. With a history dating back to 1888, Sidhil manufactured and sold over 10,000 of its popular Community Bed in 2014.

The growth in the Community market, along with a rise in the support services offered by Sidhil, has seen increased demand on its manufacturing operations, which are faced with the challenge of an extensive product range. Order sizes for the beds and furniture that Sidhil manufactures can range from one to ten offs through to 500 off and these challenges are compounded by the demands of its customers who expect rapid delivery to support clinical care. Manufacturing needs to react to these demands, as the variety of products within the range generally precludes the stocking of finished items.

To ease these challenges, Sidhil took delivery of its first BLM Tube Laser machine in 2006.

"The justification process for this first BLM Tube Laser was extensive as it was new technology to us and we were operating in a traditional way, cutting lengths of tube, manual welding and assembly," says Lynne Dixon, Sidhil's operations director. "Once it was justified on paper, we needed to deliver in reality. The efficiency of the BLM Tube Laser made that an easy process, with throughput efficiency increasing dramatically as we eliminated much of the double handling and secondary operations that had previously been undertaken. Efficiency also increased as we were able to redesign many components and manufacture from a single piece of tube, before we would have needed to weld three or four separate components."

The versatility of this initial investment in laser tube cutting also gave Sidhil the opportunity to review and enhance the design of its products. This, along with the accuracy of the laser cut parts, also allowed the introduction of robot welding capability, further adding to manufacturing efficiency.

"It is fair to say that the arrival of the BLM Tube Laser had a fundamental impact on our business and the efficiencies that it generated led to increased sales, specifically in our export markets," adds Lynne Dixon. "This growth in business eventually led to the first BLM Tube Laser working 24/7. It was becoming a bottleneck and therefore also a business risk, as if we had any problems with the machine, deliveries would be impacted significantly. Therefore, the decision was taken to invest in a second tube laser. This time the justification was much simpler, as the technology within Sidhil was now proven and the benefits were obvious. This second machine would allow additional flexibility to match production with the variable order profile that we have and precisely control lead times."

With the arrival of this new BLM Tube Laser LT722D, Sidhil was able to maximise the higher levels of automation, which would allow job changeovers to be completed in a matter of a few minutes, ideally suiting its manufacturing demands. This versatility also allowed Sidhil to change its shift patterns with one man now

operating both machines, which operate 24 hours Monday to Friday with weekends available when required. The developments by BLM on its Tube Laser machines have enhanced performance considerably with 20 percent higher productivity being the norm when compared to Sidhil's original machine. This performance gain was quickly realised once the second machine was installed.

"We couldn't believe how much quicker it was compared to our older machine," says Lynne Dixon. "Previously we had a process time of 33 hours to produce enough tubular parts for a batch of 100 beds. This is now 25 hours, a near 25 percent saving in cycle time. Not long after we had installed the machine, the operator came to me and exclaimed 'I only went for a coffee and the floor was covered in parts!' We could almost get rid of the original machine and still be ahead of production, but having both gives us process security in that we don't need to fully utilise either machine. It also gives us huge scope for future growth."

The LT722D laser tube cutting system is part of BLM Group's family of CO_2 laser systems that complement its fibre laser systems. The LT722D is easily capable of delivering productivity gains of 70 percent or more compared to traditional machining processes; eliminating from the production cycle several machining operations including sawing, deburring, drilling, milling, punching, notching etc. Also, as Sidhil has experienced, thanks to its fully automated, quick-changeover feature (a full changeover can take less than two minutes), it is equally efficient for small or large batch runs. The system's flexibility when combined with a capacity to cut sections up to 152 mm, in lengths up to 6500 (optionally 8500 mm) and fully automatic tube handling from bundle, including measuring, feeding, cutting and unloading, make the LT722D highly efficient.

"For a machine capable of complex operations, programming is also simplified due to the BLM software. It is possible to take a new component from drawing to finished part in under three minutes, even with minimal experience on the machine. As Sidhil has discovered, the move from traditional manufacturing processes to modern laser technology can have a business-changing impact on the performance of a business, making it more productive and efficient, almost overnight" says Paul Lake, managing director BLM Group UK.

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Irish subcontractor cuts bottlenecks and costs

General welding and fabrication subcontractor, Clonakilty Engineering Ltd was finding that its growth potential was being held back by the lead-times of its supply chain. To eradicate the lengthy lead-times and costs of using subcontract laser cutting services, the County Cork-based manufacturer has invested in an RUR2000p high definition plasma cutting machine from Kerf Developments.

Founded in 1989, the Irish subcontract company has witnessed steady growth since its inception, working with high profile companies such as Intel, Pfizer and ABP foods to name a few. However, when the company moved from its long term 3,000 sq/ft facility to a new 10,000 sq/ft factory in 2011, its ambition for growth had already evolved. Clonakilty Engineering's workshop manager, David Guest recalls: "When we moved to our new factory, we realised we had the space to acquire a laser cutting machine. However, the level of business as we came off the recession couldn't justify the investment. We have steadily grown by 10 percent year on year since the downturn, this prompted us to investigate the laser cutting market."

The company didn't have the facility to laser cut its material in-house and this caused considerable bottlenecks in its workflow. By subcontracting out its laser cutting of stainless and mild steel sheets from 3 to 25 mm thick, the lead times for the Irish company were extended by up to four days, which wasn't feasible for many customers. The manufacturer of steel components for the construction, medical, science, agricultural, food and pharmaceutical sectors investigated the laser cutting market and immediately took a liking to the Kerf line of machines.

Changing perception

As Clonakilty previously relied on its subcontractor for laser cutting, the company had little experience of the process. By speaking to Kerf, the Rochdale based cutting specialist, both parties identified the high cost of laser machines and that Kerf's high definition plasma range of machines could deliver precision and cut quality similar to that of a CNC laser cutting machine at a much lower cost.

David Guest continues: "I was of the perception that we needed an expensive CNC laser cutting machine. I explained our type of work to the Kerf engineers and they suggested a demonstration on a lower-cost plasma cutting machine. I was really surprised by the +/- 0.25 mm precision level, speed and cut quality of the Kaliburn high definition plasma unit on the Kerf RUR2000p machine. We instantly made our decision to invest."

For the 14 employee company, business would never be the same again.

Benefits delivered by the Kerf plasma machine

The immediate benefit was that Clonakilty eliminated the bottleneck created by sending steel sheets to its laser cutting subcontractor. Turnaround times with the external supplier fell from 4-5 days and the company now sets its jobs up almost as soon as they come through the door. This has improved workflow and scheduling and has eliminated internal downtime that may have been created by being 'on-stop' waiting for cut profiles. From a cost perspective, cutting the profiles internally has instantly eliminated the monthly cost of subcontract cutting.

By cutting its own steel profiles, Clonakilty is also cashing-in on the return from its steel scrap, which its subcontract supplier was previously sending for disposal. At the current scrap rate of 130 Euros per tonne, the business is generating an additional return of 700 to 1000 Euros each month. Furthermore, by utilising the Kerf nesting software within the Burny 10 LCD control unit, the company is processing more parts from each steel sheet.

David Guest continues: "The financial, material and time savings have been phenomenal. We can utilise all our remnants from larger jobs and use them to produce small jobs and this is cutting our waste material whilst maximising our profitability. At present, we are producing a 2 m diameter flange and an 80 mm square bracket in batches of beyond 500, so our workload and material usage is very diverse. Being able to control this internally is making a huge saving.

"Furthermore, I am really surprised by the low running costs of the Kerf machine. We've made over 50,000 piercings and use the machine almost all day every day - and the cost of consumables and running the machine are both remarkably low."

Moving forward With Kerf

When Clonakilty specified the Kerf RUR2000p, it wanted a machine table to suit its requirement to manufacture 4m long steel staircases. Kerf duly obliged with a 4.5 by 1.5 m bed on the machine. This also enables Clonakilty to place more sheets and respective components on the machine, which is helping it to further increase its eye watering turnaround times. What it also provides is the facility to expand the scope of the work taken on by the subcontract company. David Guest says: "Our business has gone from a steady 10 percent year on year growth to over 30 percent since having the Kerf machine.

"The majority of this business is attributed to our acquisition of the Kerf RUR2000p. We have been able to increase the complexity and intricacy of our work when required; and this has stopped us from turning work away on the grounds that it previously had an unfeasible lead time or the margin was too small. In fact, the Kerf machine now sees us providing a subcontract cutting service to new and existing customers as well as enabling us to profile all our parts.

"The results have been really impressive. Moreover, the service, support and friendly approach of Kerf means that when we eventually need another machine, Kerf will be our first port of call," he concludes.

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Starrett hole saws go deeper and faster

Two new bi-metal hole saws that promise significant performance gains are now available from Starrett. Fast Cut and Deep Cut will replace the existing Constant Pitch and Dual Pitch respectively.

The Fast Cut hole saw combines a new tooth profile and base material, with enhanced heat and wear resistance, to provide a smoother, faster cut on a wide range of materials. It is especially suited to cutting stainless and mild steel sheet, and Fast Cut will also cut through tubes with a wall thickness of up to 3 mm.

By changing the tooth pitch from 6 TPI to 5.5 TPI, Starrett's engineering team has created enough space to dramatically improve the profile of the teeth to enhance the cutting action, and also increase the gullet to clear away the chips more effectively. This also results in a noticeably smoother cut.

"The change from 6 TPI to 5.5 TPI does not sound much, however it is a fractional change that makes a big difference to the geometric profile of the teeth we can generate," explains marketing manager, John Cove.

Changing the bi-metal base material specification has also enhanced cutting efficiency for the customer. Moving to a new material specification with 8 percent cobalt has increased the saws resistance to both wear and elevated heat during use. John Cove explains: "We know that our previous base material is a great bi-metal material: if it is run at the speeds and feeds we recommend. However, the problem is in the real world everyone runs the saw much quicker and if the blade gets hot it can wear quickly. Our new bi-metal material provides a much greater tolerance to wear under elevated heat generating situations. So, if the saws are run fast, as we know they will be, they will last longer."

Compared to the previous Constant Pitch hole saw, Fast Cut can operate up to 30 percent quicker and increases edge life by up to 20 percent, depending on the application and cutting conditions.

The new Deep Cut saw combines the tried and tested tooth form and set from the previous Dual Pitch product with a new high cobalt material, for enhanced heat and wear resistance. It offers the same 20 percent increase in cutting life under the right conditions. Deep Cut also features an increased hole saw depth of 51 mm, up from 41 mm, and is said to be ideal for cutting metal of more than 3 mm thickness, tubes with a wall thickness of greater than 3 mm and wood up to 51 mm.

John Cove continues: "Demand for the increased depth initially came from our Scandinavian customers, as their construction industry required a deeper hole saw. Now Deep Cut offers all of our customers more flexibility. Although Deep Cut and Fast Cut are available now, both Constant and Dual Pitch will be available until the end of the year. However, from January 2016 onwards they will be replaced with the new products."

The advances made with these new hole saws are, in part, a result of the continued investment Starrett has made in its manufacturing capability to gain production efficiencies that aid new product developments. This year around £300,000 has been invested in capital equipment for hole saw production at the company's manufacturing facility in Jedburgh, Scotland, with this value set to increase further in the near future.

The L. S. Starrett Company is a global business, headquarted in Athol, Massachusetts, but with production facilities in North and South America, the UK and China.

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ESAB launches new series of handheld plasma cutters

ESAB Welding & Cutting Products has announced the launch of its ESAB Cutmaster® Series of portable air plasma cutting systems, which range in output from 20 to 120 amps and produce a recommended "quality" cut on material from 6 mm to 40 mm.

ESAB Cutmaster plasma cutters are among the lightest and most compact in the industry, making them highly portable and easy to store.

With ESAB Cutmaster products, the recommended cut capacity equals the system's true cut capacity. A recommended cut has a smooth cut face with little or no dross and requires little or no rework or grinding, all of which improve productivity and quality. ESAB Cutmaster products provide additional output when needed, offering a maximum cut thickness that ranges from 60 to 150 percent greater than the recommended cut. As a result, they eliminate the concept of having to "buy up," or purchase a machine larger than end users actually need.

There are four products in the ESAB Cutmaster Series: the 60, 80, 100 and 120, all sharing common features. These include a tubular "roll bar" that protect the front and rear of the power supply for durability, as well as make the unit easier to carry. A trigger latch feature prevents hand fatigue during longer cuts, as it allows the operator to release the trigger while the system keeps cutting. Colour-coded LEDs on the front panel indicate pressure status and setup errors. The Auto Pilot Restart feature instantly reignites the pilot arc while cutting expanded metals such as grates and chain link fences. Each unit comes standard with the industry-leading 1Torch (6.1 or 15.2 m cable options), but they also accept mechanised and automated torches. Primary power options are 50/60 Hz, 400V, 3-ph CE unit.

The ESAB Cutmaster 60 features a 60-amp output, has a genuine cut of 20 mm and severance cut of 32 mm. It provides a 12 mm cut at 635 mm per minute, which is 25 percent to more than 100 percent faster than competitive models and weighs just 19.5 kg. This unit can also be used for medium duty gouging applications when fitted with the correct torch consumables.

For primary power and location flexibility, the ESAB Cutmaster 40 enables users to switch from 1-phase, 208–230VAC primary power to 115VAC primary. It produces a genuine cut on 12 mm material, cuts a maximum thickness of 15 mm material and weighs only 11.8 kg.

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Dynashape brings even greater levels of precision to the UK

Dynashape, the UK's most experienced sawblade servicing and manufacturing specialist, has invested some £500,000 in the very latest robotic CNC sawblade production technologies.

This significant outlay adds five new CNC machines to Dynashape's already extensive capabilities and further enhances the exacting levels of service that the business is able to offer to its growing customer base. The new machinery will take pride of place in Dynashape's new £300,000 Servicing Centre of Excellence, which is scheduled to open in Stourbridge, West Midlands, in autumn 2015.

"With more than 50 years of expertise behind us, Dynashape is already recognised across the UK for its uncompromising sawblade servicing and refurbishing capabilities," comments operations director, Chris Parkes.

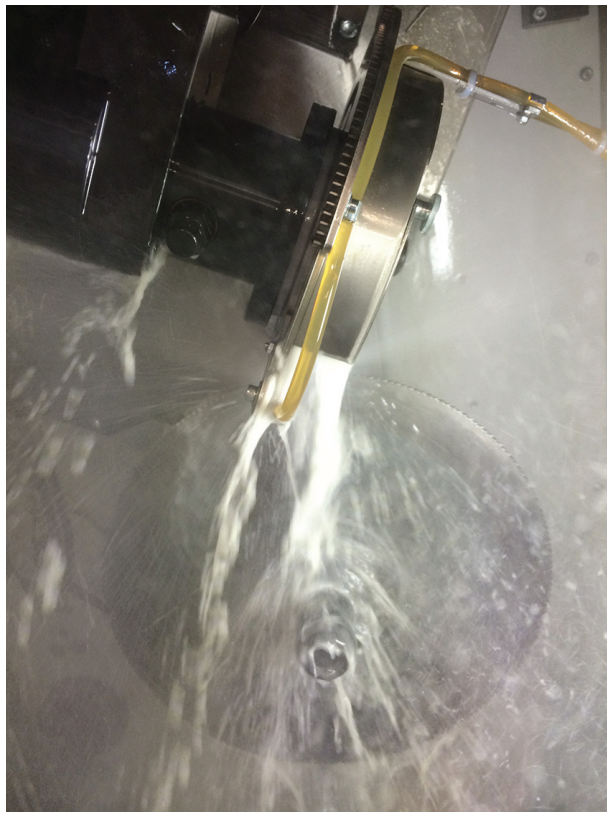
Remanufacturing, never re-sharpening

"This is because rather than 'sharpen' blunt blades," he adds, "our approach is to 'remanufacture' them using advanced CNC machinery, the same machinery as is used by leading sawblade manufacturers globally. As a result, our customers benefit from blades that, time after time, can be remanufactured to perform as precisely and as efficiently as they did when new – and all for significantly less than the cost of purchasing new blades."

Dynashape is investing in the very latest CNC sawblade production technologies

Improving on OEM solutions

Dynashape's commitment to remanufacturing, however, means significantly more than providing its customers with sawblades that meet 'as new' tolerances. Thanks to its use of advanced CNC machining technologies and CAD packages, the company can also enhance new blades that improve on OEM-supplied products, as well as create bespoke cutting solutions and tooth profiles for superior results when cutting all manner of materials. An example of this is Dynashape's ability to manufacture 'special plastics' blades with a unique side-grind tooth design for the creation of an aesthetically pleasing 'diamond-polished' finish when cutting acrylics.



The UK's complete sawblade service

"Accuracy, longevity and repeatability are essential to all our customers, regardless of whether they are manufacturing fine furniture or are cutting cardboard, ferrous or non-ferrous metals, laminates or composites," adds Chris Parkes. "By investing in the latest 4-, 5- and 6-axis high precision CNC sawblade production technologies from leading manufacturers including Loroch GmbH, Vollmer and Walter, we offer our customers the most comprehensive one-stop solution for manufacturing and re-manufacturing TCT and SHSS sawblades, as well as PCD tooling."

The CNC sawblade re-manufacturing and tooling technologies offered by Dynashape include: Precision Tungsten Carbide Tipped (TCT) sawblade servicing and manufacturing; Solid High Speed Steel (SHSS) sawblade servicing and manufacturing; Standard and custom-made Polycrystalline Diamond (PCD) tooling.

Dynashape is part of the Addison Group, a UK-based organisation that has been at the forefront of metal sawing technology since 1956.

Using the very latest CNC machinery, combined with industry leading knowledge, the services provided by Dynashape include the supply and re-manufacture of sawblades and tooling for small steel fabricators to many of the UK's largest manufacturers, all supported by uncompromising levels of customer care. By remanufacturing blunt sawblades using exactly the same CNC equipment as they were originally produced on, rather than simply re-sharpening them, Dynashape ensures that they continue to perform as their original manufacturer intended. In addition to Dynashape, the Addison Group includes metal cutting technology specialist Addison Saws Ltd and tube-forming machinery business Tubefab.

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Power, reliability and precision

The new high performance MEBAe-cut band saw sets standards in energy efficiency, economic efficiency and power. For the first time, a high spec band saw operates without the need of a hydraulic motor, but purely on electrical drives resulting in a clean cut without compromise.

Advancements in automation and integration of sawing techniques within companies' value added chain require continuous increase in performance, very economic systems and customised complete solutions. At the same time we are responsible for our environment and committed to use energy and resource saving technologies. MEBAe-cut meets these requirements without compromise.

All the drives on MEBAe-cut models are powered by soft start motors, eliminating voltage spikes. Electrical axles are moved with high precision and accuracy resulting in efficient power consumption, improving cutting accuracy and increasing the life of the saw blade. Electrical driven systems have a significantly lower power demand when compared to a hydraulic based system. For example, hydraulic clamping requires permanent pressure consuming energy during a cutting cycle. Electric clamps only require energy for the vice movement (clamping and releasing), not during the cutting cycle. At the same time, there is no danger of leaks when using electrical clamps.

MEBAe-cut machines also offer: lower maintenance/ running costs as there is no need to replace hydraulic oils, filters etc; improved machine / blade performance due to increased hydraulic temperature; no hydraulic leaks, which can be a major concern in the maintenance of cutting fluids and operator safety.

Noise reduction is another positive that the MEBAe-cut has over rivals. The only noise generated is the sound of the blade cutting the material resulting in a much quieter cut which can be a major consideration when purchasing new equipment due to health & safety restrictions on noise levels within the working environment. Hydraulic based machines have additional noise produced by the hydraulic pumps and motors, even if the machine is not working.

The CNC control is based upon Windows® CE with touch sensitive panel.

MEBAe-cut is available in models: 400 and 500 mm, or as a semi-automatic machine or 90° fully automatic machine. All models of the new range are made for high productivity and long-term and continuous use in single- and multiple shift operation. It enables the sawing of solid materials and tubes as well as bundle- and carbide sawing.

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Gluing with a laser

Natural stone like marble or granite are processed with saw blades with hard-wearing, diamond cutting segments. When these are damaged or worn, the cutting segments have to be replaced. Usually, the whole saw blade is then sent to a repair shop. The Laser Zentrum Hannover e.V. (LZH) and the Institut für Werkzeugforschung und Werkstoffe (IFW) in Remscheid have now developed a mobile, laser-based process chain for gluing the cutting segments onto the saw blade and removing them subsequently without causing damage.

Up to now, the soldered cutting segments are thermally detached, the soldering partners prepared and the new cutting segments are then soldered onto the saw blade. Thermal stress from soldering leads to axial runout deviations (warpage) and an unfavourable distribution of stress in the saw blade. Consequently, the cutting quality decreases and cutting losses increase. Therefore, additional process steps are necessary to align and preload the saw blades.

Based on laser and gluing technology, a laser-based process chain for manufacturing glued saw blades was developed at the LZH and IFW. The laser radiation only exerts minimal thermal stress onto the saw blades, so that in the best case, the blades can be refitted without preloading or alignment. Ideally, the saw blade can be refitted as often as necessary.

The laser-based process for the first and consequent fittings of the saw blade consists of four steps. First, the surfaces of the segments and the saw blade are prepared by structuring them using a pulsed laser system. The segments are then glued onto the saw blade using a one-component epoxy resin adhesive, which is thermally hardened using a continuous wave (cw) laser system. When the life span of the segments has been reached, they are detached from the saw blade using the cw laser system. A pulsed laser system is then used to remove glue residues and impurities from the gluing partners. Following this, the saw blade can be refitted.

For demonstration purposes, the LZH has developed a mobile unit, with which refitting can be carried out directly at the user's premises. Such a refitted saw blade has already been used to successfully cut granite.

In comparison to soldering, gluing has many advantages. Among these are a very low, respectively no thermal distortion, no heat tinting, homogeneous distribution of stress in the joining zone and a relatively high joining strength and high vibration dampening.

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Prima Power Night Train delivers the ultimate in automation

With a turnover of 66 million and 475 employees, Nuaire in Caerphilly is the UK market leader in energy-efficient domestic and commercial ventilation solutions. It has been involved in many high profile installations, including the Gherkin, Terminal 5 in London and the Millennium Stadium in Cardiff.

In 2012 a major investment in Prima Power automation transformed its production capabilities enabling it to achieve lead times of 5-10 days for its 40,000 product lines. Alun Jones, director of manufacturing, explains: "The majority of our parts are largely made up of rectangular shapes and cutouts, so the punching and shearing solution we opted for is by far the quickest method of production. We also process aluzinc and coated material where the Prima machine is used to fold and wrap sharp edges to produce safe components.

Prima Power proposed an automated system with two Prima Power Shear Genius SGe5 punching and shearing cells, a Prima Power Night Train FMS system with robot handling and a Prima Power EBe automated servo electric bending machine. The complete system is fully integrated with Nuaire's ERP software, through Prima Power's Tulus software, responding to orders and their delivery dates. The Night Train system has 80 pallets with capacity for more, and the system runs 24/7.

With the technology available in the Night Train system and the skill of the software engineers at Nuaire, the solution is both elegant and highly efficient. Working back from the required delivery dates, the manufacturing information is passed into the Tulus software, where parts are dynamically nested into sheets to optimise material utilisation. A mix of parts is put on each sheet and software determines the sequence of operations, cutting parts and putting them into storage in their flat state for bending later, or by transferring them to the Prima Power EBe for immediate bending. By shearing the long edges and punching the apertures and holes, the system is extremely quick in producing each flat component.

Once the flat part comes off the Shear Genius SGe5, it is picked by a robot, which automatically alters the position of the lifting suckers to avoid apertures and to fit the component shape. The software then decides if the part is to be put into storage in the Night Train system or passed directly to the folding stage.

Alun Jones explains: "Dynamic nesting of parts can mean that parts which will be ultimately assembled together can be made on completely different machines. Because the machine is running 24/7 and the assembly operation operates Monday to Friday, the out of hours working is truly lights out, with the machine operating in the dark making flat parts. On Monday morning, most of the activity is folding parts, made over the weekend, ready for assembly."

For the bending operations, the design is taken from the company's AutoCAD Inventor software and the bends interrogated. Technicians then use the Tulus software to automatically select the tools, work out the bend sequence and create a bending program for the Prima Power EBe. The bending machine is robot loaded and automated tool changing makes changing from one series of bending sequences to another, as each different component arrives, something that takes just a few seconds. Alun Jones adds, "We can experiment with the logic of the system to maximise production. This makes it possible to try out new methods. For example, we can test if it is quicker to keep the tools in place on the EBe and bend several parts, while putting others temporarily in storage or, to keep changing the EBe tools as each different part arrives. By having an in-house software team, we are able to have a continuous improvement program running."

Part identification is linked into the system so that, as each part is completed, the correct identification label is attached as it comes off the Prima Power EBe as, because of the volume and variety of components, it is impossible to follow the system manually.

Alun Jones says, "We have never had a case of parts being lost in the Night Train system which is a remarkable achievement. We would not have been able to achieve the growth we have got now without it."

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Ultimate precision bending

Greenfield Engineering Sheet Metal Ltd, based in Holsworthy, Devon, has just placed an order for its second Amada HD ATC Hybrid Drive Pressbrake with Automatic Tool Changer within 10 months.

Greenfield Engineering offers a complete range of manufacturing capabilities, operating in many different business sectors for customers throughout the UK and mainland Europe. These include office furniture, lighting, data enclosures, industrial storage, retail shelving, refrigeration, vending and point of sale.

For OEM's and subcontractors alike, increasing productivity and throughput is the main target for improving profitability. Smaller batch sizes are causing more time lost due to an ever increasing number of machine setups. Amada's HD1003 ATC is the solution, allowing fast efficient set up when dealing with smaller batch sizes.

Having originally completed in-depth analysis and time studies on the downtime associated with manual pressbrakes and comparing these results against the time saving made by incorporating the automatic tool changer, the choice was clear.

Operations director Gary Burnard, states: "The decision was very easy. The time savings and flexibility of switching between jobs we have made with the first HD-ATC far outweigh the initial larger investment. We are experiencing an increased uptime on the first machine of up to 60 percent in a single shift. The bending cell team can't wait to get the next machine up and running as soon as possible and working like the first."

The HD1003 ATC has fully automated top and bottom tooling, enabling a fast and efficient switch between jobs. This, paired with the Amada Dr ABE Software Offline programming, gives Greenfield Engineering unrivalled flexibility.

Greenfield Engineering is no stranger to automated systems. These new HD1003 ATC machines add to its impressive portfolio of an Amada Astro 100 Bending Cell with automatic tool and gripper changeover, Amada EMZ 3610 Punching cell with PDC tooling carousel plus EML Combination Punch/Laser both of which are linked to a fully automated material tower system and an Amada EM3610 fully automated with load and unload system to complete the automated line-up.

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