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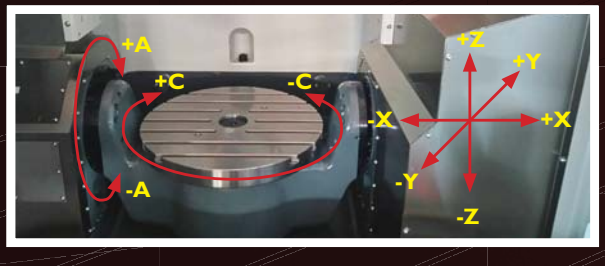

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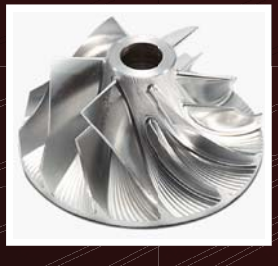

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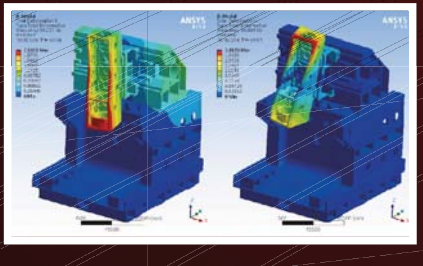

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CADCAM

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WORKHOLDING

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Renishaw unveils the new XM-60 multi-axis calibrator

The XM-60 is capable of measuring all six degrees of freedom from a single setup, in any orientation for linear axes. It offers significant improvement in simplicity and time saving over conventional laser measurement techniques.

As demands on component tolerances increase, manufacturers are now required to consider all error sources from the machines producing parts; angular errors as well as linear and straightness errors. XM-60 captures all these errors in a single setup. Designed for the machine tool market, the XM-60 multi-axis calibrator complements Renishaw's calibration product line, which includes the XL-80 laser system, XR20-W rotary axis calibrator and QC20-W wireless ballbar. The XM-60 uses the XC-80 environmental compensator to correct for environmental conditions.

The XM-60 multi-axis calibrator provides a highly accurate laser system that incorporates unique technology with a patented optical roll measurement and fibre optic launch system. The compact

launch unit is remote from the laser unit, reducing heat effects at the point of measurement. It can be mounted directly to the machine on its side, upside down and even on its back, which is particularly beneficial in areas with difficult machine access.

Reducing uncertainties of measurement is paramount for any user. The Renishaw XM-60 has therefore been designed to measure machine errors directly, reducing the inaccuracies which can result from complex mathematics used in some alternative measurement techniques. Direct measurement makes comparison before and after machine adjustments a quick and simple task with users' existing part programs for XL-80 measurement. The receiver is fully wireless and powered by rechargeable batteries, avoiding trailing cables during machine moves which could cause inaccuracies or break the laser beam during measurement.

The performance of each XM-60 multi-axis calibrator is traceable to international standards and every unit is also certified before shipment. This provides users with the confidence that their system will deliver the specified accuracy day-after-day where it counts - in the workplace.

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High production of medical and surgical instruments

Second workstation enables medical specialists to double output using Bumotec turn-mill centre

The s181 9-axis turn-mill centre from Starrag Group company, Bumotec is a compact and cost-effective multi-function machine targeted at medical and surgical instruments.

Importantly, the machine features a second, live tool workstation, enabling up to 40,000 revs/min milling to complement the 90-position automatic toolchanger that serves the 11 kW, 6,000 revs/min main HSK-40 spindle.

This additional station effectively increases productivity by up to 40 percent by enabling up to five driven tools to work on the rear side of one part while the main tool spindle works on another component. Integrated tool breakage monitoring also ensures optimum productivity levels are maintained.

In one instance, the production of a stainless steel surgical instrument is being produced in just four minutes compared with almost seven minutes on a single-station machine. Other examples include:

The production of femoral balls in a single setup, machining the cobalt chrome units from bar to a surface roughness of Ra 0.04 micron and a sphericity of 0.002 mm; machining intervertebral implants in one piece from implantable peek with no burrs, including inserting x-ray marker pins without manual intervention and reduced cycle time by 22 percent compared to a sliding head machine. This produces the finished unit in 9.38 min compared to 12 min (without pin insertion), while producing modular hip joints from titanium (TiAl6V4 Grade 5) and turning and milling the cone to two and four microns, respectively, in the same setup. This compares to the previous process of using separate turning and milling machines; machining hip stem rasps from 48 mm diameter stainless steel bar in a cycle time of 1.4 hours as opposed to 2 1/2 hours on a standard vertical machining centre.

Derived from the Bumotec s191 linear CNC turn-mill centre, a proven solution that utilises linear drives and boasts high-level thermal stabilisation to achieve 2.5 microns machining accuracies in the six-sided, complete machining of workpieces, the s181 is multi-functional turn-mill centre designed for the single setup, complete machining of complex and high-precision workpieces. With water-cooled axes, the machine has a 90-tool magazine, including grinding discs up to 80 mm diameter, which accommodates all machining eventualities.

With a footprint of just 3.5 m^2, the machine can handle bar of 32 mm diameter and, being of modular design, can be equipped with a range of productivity-gaining options including auto part loading to complement the choice of parallel jaw vices, tailstock, collet system or multiple workholding units.

The s181's development was focused on the efficient production of medical, orthopaedic and dental components, as well as surgical instruments, but the machine is equally at home in all micro-mechanic industry sectors including watchmaking and jewellery.

The Bumotec s181 9-axis turn-mill centre is targeted at medical and surgical instruments.

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 and energy, transportation and 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).

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Delivering high-precision deep drilling machines for the medical instrument cluster

Baden-Württemberg is one of the leading locations in Germany for the highest quality of machine tools. The federal state has established a fantastic position in the area of medical instruments, and, like Swabian machine tools, has a reputation that extends well beyond the state borders. Tuttlingen in particular continues to enjoy respect as the global centre for medical instruments, and first made a name for itself in the production of medical devices as early as the 19th century. Several hundred companies work in Europe's largest medical instrument cluster on innovative products for the medical industry.

One category of such instruments deals with traumatology or, more specifically, the products used for the treatment of bone fractures such as bone nails and screws. When fractures occur in hip joints and in the upper and lower extremities, bone screws may be used to compress the fragments and lock implanted intramedullary nails. These nails usually have two transverse bores by means of which the nail is secured with two screws against dislocation.

Why do bone screws require deep drilling?
When a bone fracture must be fixed with plates, nails, or screws, a so-called guide wire is positioned in the bone at the point in question. This wire is used to push the bone screw with the deep bore, guiding it safely to the bone so that the orientation of the fracture compression can be precisely ensured by screwing in the screws.

TIBO Tiefbohrtechnik GmbH, based in the Swabian town of Pfullingen, established itself on the high-precision deep-drilling machine market years ago and is familiar with the high standards of quality in the medical instruments industry.

Benjamin Röcker, TIBO's sales manager, says: "We know all about the requirements of quality and precision in medical instruments and have no problem meeting our clients' demands because we use precision parts in our deep-drilling machines. We simply do not have any oversized machines, they are expensive, and their performance potential is far above what is necessary. At TIBO, the modular design essentially means that each deep-drilling machine is tailor-made, just like a tailored suit."

One of the leading manufacturers of bone nails and screws from the Tuttlingen medical instrument cluster has found a competent partner in TIBO for designing its process. As TIBO has built and delivered deep-drilling machines for other applications for this client in the past, it was clear that TIBO would be a competent partner for the bone screws that were to be planned, one who could offer a package solution and whose machines could fit into the compact on-site spaces.

The framework conditions were a bore diameter of 2.5-5 mm with a drill path of 0.06 mm for up to 160 mm drill depth in titanium alloys (Ti6Al4V) and implant steel 1.4441. Solid carbide drills were used, in which the drill head and drill shaft are manufactured from a carbide blank. This

increases the tool's rigidity and reduces the drill centring and any torsion fluctuation. The clamping sleeves that are soldered to the drill shaft transfer the torque from the machine to the tool. A high concentricity between the drill shaft and the clamping sleeve reduces additional vibrations and improves cutting capacity and process safety. Because deep drilling is the last machining level in the manufacturing process and the bone screws therefore already have their outer geometry, workpiece machining and sealing of filigree screw threads and screw heads that have already been slitted are given special attention, so that the process returns reliable results with steplessly variable tensioning forces, coolant pressures of more than 160 bar, and solid carbide tools.

TIBO designers came up with a compelling tensioning concept. Because the wall thicknesses between the bores and the outer contour were as small as 2 mm in places and the screw thread and screw-in geometries differed greatly, special clamping sleeves that could be easily inserted into the deep-drilling machine's basic universal holders were constructed.

The E10 series deep-drilling machine, selected from TIBO's modular system, with its vertical supply magazine for a total of 80 workpieces and gantry gripper for loading and unloading the deep-drilling stations, was able to fulfil these requirements.

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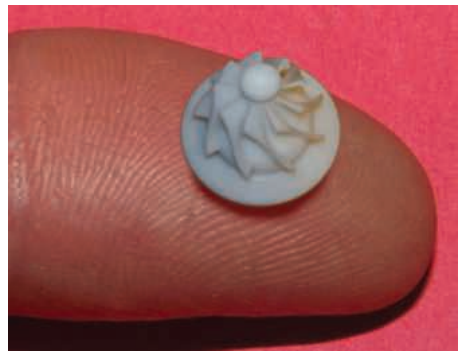
GF Machining Solutions acquires Microlution Inc

GF Machining Solutions has announced an agreement to purchase 100 percent of the shares of Microlution Inc, a Chicago-based developer of micro-machining solutions incorporating milling and laser technologies.

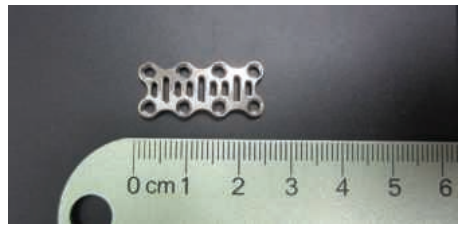
The acquisition of Microlution complements GF Machining Solutions' strategy to enlarge its progressive and advanced technology portfolio to fully meet the needs of manufacturers across a range of targeted industry segments, including aerospace and medical.

"We warmly welcome Microlution to GF," says Yves Serra, CEO of GF. "The company has developed, within a short space of time, remarkable know-how in micro-machining, which complements very well our technology portfolio. We look forward to supporting Microlution in widening its presence and growing its business in the US and worldwide."

Microlution was founded in 2005 by three engineers from the Chicago region. The company specialises in 5-axis milling and femto-second laser machining for hole drilling and micro-cutting applications across a wide range of industries, including aerospace, medical and automotive. The company generated $10 million in sales in 2015 and employs 30 individuals.



A typical Microlution application: a micro impeller and bone plate



"We are excited for our team, products and technology to join forces with GF Machining Solutions," says Andy Phillip, president and director of Microlution.

"Microlution's customers have benefited from our innovative systems for nearly 10 years. With our new partner, we will increase our ability to serve customers and grow."

"Micro-machining" refers to a variety of processes for machining very small parts and/or features using small, high-precision tools and/or precision milling technology.

Microlution Inc. develops "ultra-precise machining platforms designed to integrate part handling, motion control, part characterisation and quality control to deliver complete, automated micro-manufacturing solutions to customers."

GF Machining Solutions Ltd
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Leader drills into production benefits

Tamworth-based workholding specialist, Leader Chuck Systems, has recently expanded its product portfolio with the addition of the advanced range of keyed, keyless and hybrid industrial and medical drill chucks from Llambrich. Headquartered in Barcelona, Spain, Llambrich has been designing and manufacturing drill chucks and machine tool accessories since 1957.

Leader Chuck Systems managing director, Mark Jones, says: "As a globally-renowned tool chuck manufacturing specialist, Llambrich's extensive range of industrial and medical products has been specifically developed to meet the varied demands of the precision engineering and medical sectors. Advanced technical and operational development differentiates the company's products, while the robust build and quality of finish is among the best in the industry."

Llambrich claim to offer the world's most comprehensive drill chuck programme for the precision engineering and industrial market. Drill chucks range from 0.2 mm to 25 mm diameter and its catalogue details a wide range of drill chucks to suit all kind of drills, from latest generation CNC machine tools and stationary equipment, to portable drills.

As it should be for any tool or workholding device, one of the company's key product measurements for its drill chucks is concentric run-out. For its SP, SPS and SPX run-out is just 0.04 mm, for the Hexa System it is 0.03 mm, or 0.05 mm for the Hexa Black, with each being individual tested and certified. The company is also a pioneer of the guarantee of accuracy for precision keyless chucks, having established this in the 1980s.

Medical 'INOX' is Llambrich's stainless steel chuck programme for surgical instruments. The company manufactures a complete stainless steel drill chuck range for use in manual, power and pneumatic surgical instruments. It is the only drill chuck manufacturer in the world to hold the ISO 13485 certification for medical drill chuck products, and the quality management system ensures products are designed and manufactured for the most demanding medical applications.

Mark Jones concludes: "Llambrich has an unparalleled wealth of drill chuck experience and knowledge, with its latest products being independently verified up to 60,000 rpm. They provide better concentricity and, therefore, reduced vibration which improves spindle life and minimises tool breakage."

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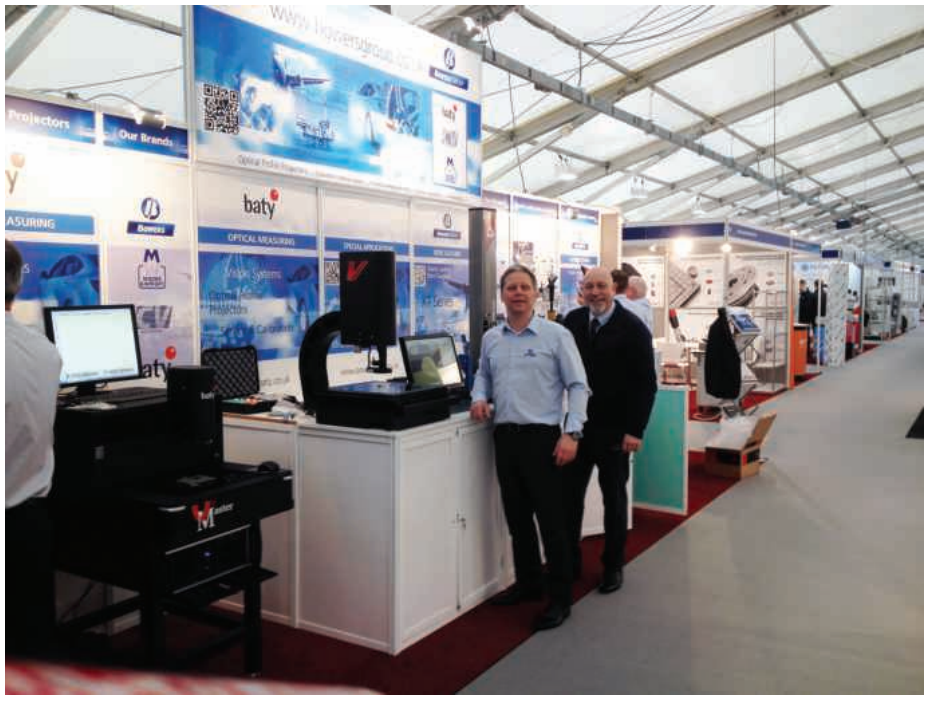
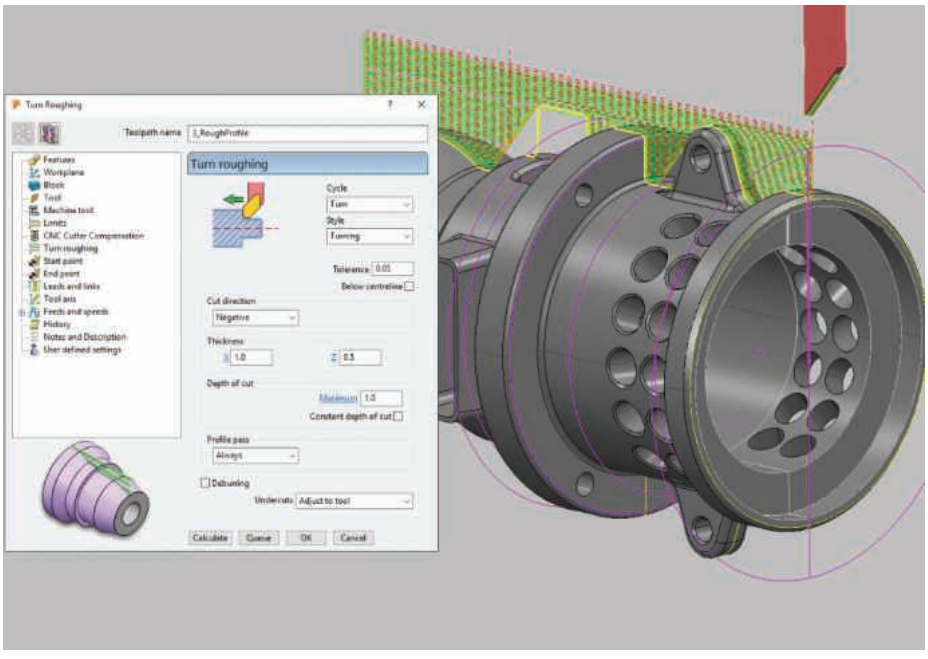
Southern Manufacturing 2017



Southern Manufacturing and Electronics 2017 returns to FIVE, Farnborough, from March 21st to 23rd. The change from its traditional timing in February to new, more convenient dates in early Spring marks another step in the evolution of the UK's most enduring engineering exhibition, now nearing the end of its second decade.

Southern Manufacturing and Electronics is the largest and most comprehensive annual industrial exhibition in the UK and a major pan-European showcase for machinery, production equipment, tooling and components as well as subcontract services across an impressively wide range of activities. In addition, the show includes a specialist aerospace/automotive engineering feature, AutoAero, focusing on subcontract services with particular expertise in these areas. Around 22 percent of the UK's £20 bn aerospace industry is based in the region, making Southern one of the most important marketplaces for precision engineering and other high-specification engineering specialists.

Not only is it by far the leading annual manufacturing exhibition in the UK, it's also the first of the New Year, offering companies interested in purchasing new machinery the earliest chance to see the latest hardware in action from numerous leading manufacturers and dealers. Despite a great deal of uncertainty over the implications of the Brexit vote, manufacturing is currently performing strongly, with exports being boosted by the weak pound. Consequently, the mood amongst machinery vendors appears decidedly bullish. Most of the regular machinery vendors return to Southern for 2017, with Matsuura in particular substantially increasing its presence at the show with the addition of a second machine to its stand in the machinery area, alongside many other big-name suppliers such as Haas Automation, Bystronic, Bruderer, CMZ, C Duggard and XYZ Machine Tools. Furthermore it's not only the high-end, big-ticket machines dominating the event either; a great feature of Southern Manufacturing is that it gives visitors the chance to see a range of solutions.



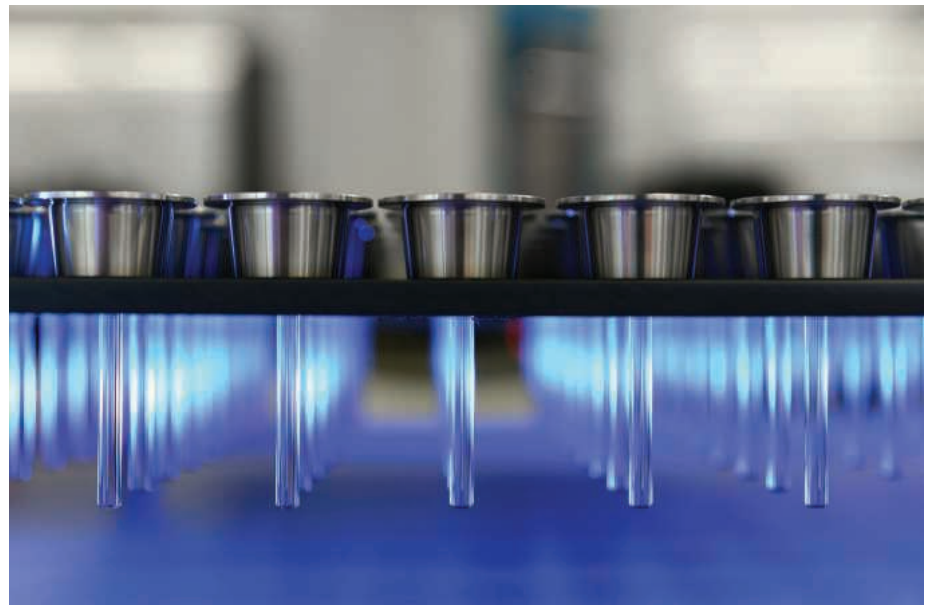
Complementing the machinery is a vast selection of tooling, workholding and other production equipment. Arno (UK) debuts at Southern 2017 with its range of part-off tools includes direct turret mounted modules and mechanically clamping indexable modules. Through-tool coolant and short overhand increase both tool life and productivity considerably. The range also includes dedicated tooling for sliding head auto lathes, available with through-tool coolant. 1st Machine Tool Accessories will show a range of Kitagawa rotary table designed to versatility, reducing the number of separate machining operations and increasing the complexity of parts that can be produced. Products on show include the latest TT150 tilting type compound table with 150 mm faceplate for adding 4th and 5th CNC axes.

Southern is known for its phenomenal range of suppliers from almost every sphere of industrial activity. Alongside the latest machinery and tooling, the event is an incredible marketplace for components, OEM parts, sub-assemblies, sensors and consumables.

It's no exaggeration to say that whatever sourcing challenges you have, you will find suppliers at Southern Manufacturing to

resolve them. Moreover, the number of firms exhibiting means that multiple sourcing issues can be solved in a single visit. In 2016, over half the show's visitors cited components as the primary reason for their visit. A full database of the products and suppliers at this year's event can be found at www.industrysouth.co.uk Pre-registered visitors also get a free copy of the comprehensive show guide and the show's official preview magazine, profiling around 100 key exhibitors from this year. Subcontracting is also a major part of the show, and here too the diversity of suppliers participating in 2017 is quite staggering, covering everything from large scale fabrication to precision engineering, specialist coatings and finishing.

Admission to the exhibition and the technical seminars is free, and FIVE Farnborough offers plentiful complimentary parking. There's easy accessibility by road from the M3 or by public transport. A complimentary shuttle bus runs between the exhibition and both of Farnborough's railway stations.



To sign-up for tickets, just head to **www.industrysouth.co.uk** . Event visitors can stay informed with the latest show and exhibitor announcements by heading to the event's official blog, **http://blog.industrysouth.co.uk**, by following **@industry_co_uk #southmanf** on Twitter or by signing up to the show's official LinkedIn group at LinkedIn at **http://linkedin.industrysouth.co.uk**

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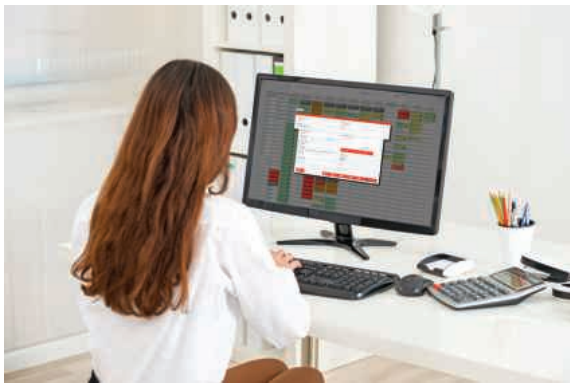
T Cards online is a hit with Meggitt

Meggitt PLC is a global engineering group specialising in extreme environment components and smart sub-systems for aerospace, defence and energy applications. It employs around 12,000 people at manufacturing facilities around the world. Operational excellence is a key focus for Meggitt with the aim of continually improving customer care and efficiency across every part of its business.

Keeping track of work and improving the workflow through its factories is critical and using visual displays to communicate the status of jobs is regarded as vital in the high-technology environment. A Meggitt facility in Coventry was one of the first to invest in the innovative T cards online planning system which has subsequently been taken up in other areas of the business, including its American corporate hub in North Hollywood, California.

Meggitt had previously used a manual card-based system in some areas of this business and were looking to digitise the process, displaying information throughout the factory. The T Cards online system was introduced in the MRO (Maintenance Repair and Overhaul) facility to manage the administration and processing of customer enquiries and orders. This is a key interface between Meggitt and its customers and a function handled by a dedicated team accountable for initial customer perception of company performance, with a goal to exceed customer expectations at all times. The T Cards online system displays the status of jobs and allows multiple users in different locations to log-on and access the same information. Every action is logged ensuring accountability for each stage of a task, enabling instant access to the reasons for any job falling behind schedule. Meggitt customer service coordinator Kathy Kelly says: "Having the status of all the repair orders displayed in the office and on the shop floor has been a real bonus.



It's easy to update and edit. As coordinator and company face to our clients, getting information quicker on the whereabouts of units has made a big difference to the service we provide."

Following the success of T Cards online within the MRO department, it has been implemented in goods inwards where it helps to ensure that items are allocated with speed and efficiency.Quality manager, Brett Withington realised that the system could be easily adapted to manage and communicate status to key personnel. After consulting with T Cards online about these requirements, a bespoke system was designed and rolled out within days.

Brett Withington says: "As a first-class engineering business we pride ourselves on quality. This is maintained through quality systems and audits. With many inputs, keeping everyone informed of status is vital. T Cards online helps us ensure audits are completed on time and to manage any actions required after that more efficiently."

Simon Dixon, operational excellence manager, took the system further. He wanted to utilise it to keep track of the stages of new and reviewed contracts. Whilst this was a relatively simple development and quickly rolled out, it has provided key information across various departments and bridged gaps.

All interested parties now have access to the information they need, although limited to their specific responsibilities. Simon Dixon has since initiated the system to incorporate customer returns, control of subcontractors and the quality clinic. The visual nature of the system has helped with the speedy processing and rectification of returns, whilst the subcontractor board ensures that all the work allocated is managed and tracked with efficiency and clarity.

Simon Dixon says: "The big advantage of the T Cards system is that it has made our process far more visible and accountable. Our old process was paper driven and documents tended to get lost and mislaid, so there was a lot of chasing around looking for documents. Now we can see them via the T Cards dashboard instantly."

Meggitt's experience in using the T Cards online system is another example of the benefits of a simple yet highly effective online management tool which helps companies large and small to streamline management processes and improve productivity.

T Cards Direct
Tel: 01732 871417
Email: philip@tcardsdirect.com
www.tcardsonline.com

Blum gauges to deliver instant success

At the FIVE venue in Farnborough on stand P86, Blum Novotest will be presenting brand new products alongside established technologies at the Southern Manufacturing & Electronics 2017 exhibition. At the show Blum will be drawing visitors' attention to exciting advancements in its Digilog and RG product lines.

Despite being a leading company in the component measuring and testing technology arena, Blum will be keen to emphasise the benefits of the new TC63-RG and TC64-RG DIGILOG surface roughness gauges. This exciting new technology marks a quantum leap in regard to roughness measurement for machine integrated quality control methods. In essence, the new TC63-RG and TC64-RG gauges can evaluate the surface roughness of the part whilst it remains clamped in the machine tool.

For the abundance of aerospace manufacturers that will visit Southern Manufacturing, and particularly for those machining blisks for engine turbines, there is a necessity for dimensional accuracy and also a defined surface roughness. In such instances, the new TC64-RG is used to ensure machining faults and poor surface finishes are detected during the process. If ultra-precise DIN-compliant measurements as small as one tenth of a micron are required, the roughness gauge is guided across the workpiece surface at a comparatively slow measuring speed. When it comes to detecting machining errors in the micron range, measurements can be carried out up to 20 times faster.

For the end user, the benefits are immediate. Reject parts are reduced by enabling immediate re-working whilst the part is still clamped in the machining or turning centre. This improves productivity, process reliability and it eliminates downstream testing processes.

Supporting these innovative products will be the latest RG 2.0 software that now allows parameters such as waviness, skew or contact area ratio to be presented for the measured surface in addition to the calculated roughness values. This system can now be integrated with the DIGILOG software in the control systems of machine tools. This now enables customer-specific signal analyses to be performed for route-based measurement. It allows form and surface defects to be logged as well as lengths and angles of the measured surface.

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Aberlink Xtreme metrology on display

Aberlink's advanced new Xtreme CNC coordinate measuring machine will make its debut at Southern Manufacturing & Electronics. Designed with a novel non-Cartesian structure, and utilising linear motors and mechanical bearings, the cost-effective Xtreme's advantageous configuration ensures that it maintains its accuracy at very fast measurement rates and does not suffer from the accumulative inaccuracies that occur in conventional 3-axis Cartesian arrangements. As its name implies, the new Xtreme CNC CMM offers customers a robust solution for undertaking precise inspection routines wherever they are required.

To help illustrate its high-speed, high-accuracy capabilities, Aberlink's best-selling Axiom Too CNC CMM will also be demonstrated. Despite the Axiom Too's generous measuring volume, the machine's compact design occupies a relatively small footprint, with the controller and all peripherals housed within the Axiom Too's workbench.

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

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

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

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One machine for all big structural parts

Handtmann HBZ AeroCell 700/200
Horizontal 5-axis machining, high spindle power, long-term reliability, small floor space and the flexibility to efficiently machine all big structural parts on one machine. These have been the crucial factors which lead to the decision to include a 5-axis horizontal machining centre from the HBZ AeroCell series into the uniquely extensive production chain of Aircraft Industries. The company decided to invest in the Handtmann machining centre as a result of its good relationship with the supplier.

The Czech aircraft manufacturer is not like any other aircraft manufacturer. Aircraft Industries, a.s. unifies all its competences and processes under one roof within one compound. From design, aluminium sheet and roll forming, steel forming, machining, welding, riveting to surface treatment, hardening, painting, measuring, assembly, testing and more. For building its own aircraft, the L410 twin turboprop commuter aircraft which is predestined for the most severe flight conditions, the company is covering the whole process from raw material to the finished aircraft. The German machine tool manufacturer Handtmann has been selected to be an integral part of this uniquely extensive production chain in the Czech Republic. The company is playing an important role with its horizontal machining centre HBZ AeroCell for the production of the L410 and to subcontract other OEMs and international aircraft programs.

Tradition and progress
With approximately 1,000 employees, the only Czech small transport aircraft manufacturer currently produces around ten aircraft a year. During 80 years of existence, the company located in Kunovice, has undergone significant changes and reconstructions. After the company's foundation in 1936, when a branch of AVIA Letňany was built in Kunovice to service the planes, the company transformed over the years from a repair centre for aircraft into the only producer of small civil transport aircraft in the Czech Republic and into one of the largest employers of the region. After the first aircraft had been built in the company premises in 1957, the first L410 was test flown in 1969. Until today more than 1,200 of the L410 series have been made and the production has been continuing uninterrupted since. Today, more than 350 aircraft are being operated in more than 50 countries all over the world. Aircraft Industries, has existed since 2005, when a new Czech owner created it. Since 1936 more than 8,000 aircraft of various types have been produced in Kunovice.

Aircraft manufacturing and production subcontracting
Aircraft Industries is not just the only producer of small civil transport aircraft in the Czech Republic but also a major supplier of structural aircraft components. The professional know-how, large production capacity as well as the quality and level of technology enables Aircraft Industries to supply parts for other important aircraft manufacturers and suppliers such as GKN Aerospace Transparency Systems. Due to the latest significant machinery modernisation the production capacity for subcontracting has increased and the aircraft manufacturer can offer its expertise to other valuable partners as well.

An aircraft for the most severe conditions
The L 410 UVP-E20 standard version holds passenger seats for 19 people. It is also used for cargo, air ambulance, sky diving, maritime surveillance, photogrammetric scanning and much more. The company's target markets are closely linked to the aircraft's particularities. All short unpaved airfields with severe take-off and landing conditions as well as difficult climatic conditions are the predestined areas of application for the L 410. Besides Russia the company's target markets are Southeast Asia, Africa, Latin America, but also Europe.

New generation
The L 410 offers the most spacious fuselage in its category as well as its multipurpose and versatile use providing a lot of competitive advantages. The production numbers of more than 1,200 aircraft since the start of production in 1969 speak for themselves. With the L 410 NG, officially presented at ILA Berlin 2016 and MAKS 2015, Aircraft Industries has advanced the current L 410 UVP-E20.

The start of serial production of the NG (New Generation) is planned for 2018 where orders have been placed already. Major improvements include even more space for luggage, higher maximum payload, higher maximum cruising speed (now up to 417 km/h TAS), less fuel consumption, longer maximum range (from 1,520 km now to 2,630 km), extended maximum endurance (from 5.1 hours to 10 hours), reduced propeller noise, and the significantly increased capacity of fuel. The current aircraft provides for 1,300 kg fuel whereas the new wing design provides for a fuel capacity of 2,260 kg in total. Major changes in the aircraft include the main structural wing parts which have actually

been the main reasons for new machinery. This is where Handtmann comes into play.

The perfect fit for Aircraft Industries

With the new generation of L 410 the amount of milled aluminium parts will significantly increase and way larger parts will be included in the wing structure like the approx. 6,300 mm x 1,000 mm wing panel. The fact that all milled parts for the L 410 NG are being produced under Aircraft Industries' roof shows the large machining capabilities of the company. To be prepared for this amount of milled parts, Aircraft Industries looked for a machine, able to manage the large variety of structural parts in a most productive and space-saving way. Oldřich Zich, NC programmer, says: "We needed one machine for all big structural parts. The machine has to cover 20 parts varying in size and type, from small ribs up to the large wing panel sized approx. 6,300 mm x 1,000 mm milled from one solid aluminium block and building the wing structure. Flexibility and productivity have been the keywords in the buying process. The horizontal concept was a prerequisite from the beginning. Aerospace structural parts require maximum material removal when aiming for short cycle times and good surface quality at once. Chip and coolant management as well as tool life are never better than with horizontal machining."

The Handtmann HBZ AeroCell 700/200 5-axis horizontal machining centre seemed to be the perfect fit. The machine's pallet size of 7,000 mm length and 2,000 mm width and axis travels of 7,800/2,050/ 700 mm in X/Y/Z-axis fits all these parts as well as all other requirements such as high spindle parameters with a maximum power of 156 kW and 30,000 rpm spindle speed, perfect for roughing, and the integrated pallet changing system. Travel speed of 80 m/min and accelerations up to 7 m/s² represent the required dynamics.

Oldřich Zich says: "With Handtmann we felt like having a strategic partner from the beginning. We still have a good cooperation almost two years after machine installation and an exceptional level of trust.

Significant decrease in machining time

In early 2015 Aircraft Industries started to machine all its structural parts on the Handtmann HBZ AeroCell. The machine's utilisation will increase with the start of serial production of the L 410 NG, but despite this enough capacity for subcontracted deliveries will remain. Currently getting prepared for the serial production, Aircraft Industries can already prove some impressive decrease in machining times compared to various 5-axis vertical machining centres. Machining time of bogie beams (size: approx. 3,300 x 200 mm) not only decreased about 50 percent from 40 hours to 20 hours but also the number of following operations could be reduced for the bottom wing panel approx. 6,300 x 1,000 mm. Aircraft Industries achieved a significant decrease in machining time from 100 hours to 30 hours with the HBZ AeroCell.

The future of Aircraft Industries

Aircraft Industries commercial director Robert Erhart says: "We will continue investing in new technologies to keep on track with other aircraft manufacturers and suppliers to be able to always offer the best quality not only as final aircraft producer but also as sub-deliverer" With their strategy of not buying any milled parts but to keep the production of milled parts completely in-house Aircraft Industries will invest in more machinery.

The company is therefore considering the Handtmann PBZ HD profile machining centre and HBZ Trunnion horizontal machining centre with NC-rotary swivel table for complete machining of complex small parts in one clamping.

Robert Erhart concludes: "With the Handtmann HBZ AeroCell we got ourselves prepared for future growth. Especially with our L 410 New Generation, production will increase and so has our production capacity already. With Handtmann we found a reliable partner to do so.''

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Upgraded 5-axis machining centres include automation options

The U-630 and U-1530 ranges of 3-, 4- and 5-axis vertical machining centres (VMCs) from German manufacturer, Spinner have been significantly upgraded in response to suggestions from end users. Sole sales and service agent for the UK and Ireland, Whitehouse Machine Tools, explains the improvements.

The U-Advanced Series machines offer larger magazines up to 122 pockets for SK40 / BT40 or HSK63 taper tools, higher speed spindles with maxima of 12,000, 15,000 or 20,000 rpm, longer axis travels, higher coolant pressure to 70 bar, improved chip flow and a swarf conveyor as standard.

CNC options are the most modern versions of Siemens (840D sl 4.x) and Heidenhain (TNC620 / TNC640) controls, both with 15" screen. For operator convenience, the height and angle of the control can be adjusted. Digital drives from the same two manufacturers ensure high precision machining, with linear scales fitted for accurate feedback of axis position.

Despite the longer strokes, now 630 x 530 x 465 mm for the U-630 and 1,530 x 530 x 465 mm for the U-1530, the footprints of the machines have been reduced to enable installation in smaller workshops. Furthermore, the overall height is lower, facilitating access to factories.

U3 machine variants are 3-axis VMCs with a fixed table. Built into the base of U4 models is a larger, more dynamic, rigid rotary table that pivots around a horizontal axis to allow workpieces to be clamped on both faces.

For full 5-axis machining, U5 versions have an integrated rotary-tilt table that can optionally be equipped with a counterbalancing system to eliminate the influence of workpiece weight. Direct-drive rotary tables are available.

Low-cost automation is offered in the form of a 5- or 9-pallet pool with automatic pallet exchange. Positioned to the right of the machine, the configuration is said to be particularly well suited to mould making. Alternative automation arrangements accommodate up to 50 pallets.

Whitehouse Machine Tools advises that more than 1,000 of the original U-Series VMCs have been installed and that U-Advanced Series sales in Germany already exceed 50 units. A U5-1530 is available for demonstration in the agent's Kenilworth showroom.

It is also noteworthy that the new machine range is complemented by the entry-level Compact Series of 5-axis VMCs from Spinner, intended for up to 4-axis simultaneous cycles.

Compact, high-performance machining centre

A new, vertical-spindle machining centre has been introduced by Spinner which, despite having a generous working envelope of 1,650 x 820 x 820 mm, occupies a relatively small footprint on the shop floor of 3,550 x 2,750 mm. Its compactness is a result of employing a novel method for protecting the 1,800 x 820 mm table's X- and Y-axis guideways from swarf and coolant ingress using a single wiper system and without recourse to telescopic covers.

The VC1650 3-axis machine joins the smaller VC1150 model with 1,150 x 620 x 600 mm travels introduced two years ago. Both machines are available in the UK and Ireland through sole sales and service agent, Whitehouse Machine Tools, Kenilworth. An informative video showing the VC1650 in operation and giving representative cutting data may be viewed at **www.youtube.com/watch?v=Pbi6l_rtLg0**

Another notable characteristic is the 14.5 tonne, FEM-optimised cast structure, which provides a high level of rigidity and vibration damping for elevated cutting performance and high standards of surface finish on machined components. Further advantages are that tool life is extended and accuracy of machining is enhanced, assisted by optimal chip evacuation via a conveyor at the front of the machine which ensures negligible transmission of heat.

The distance from the operator to the front of the table, which accepts components weighing up to two tonnes, has been minimised to 200 mm for convenient workpiece loading and unloading without strain. Operator convenience is extended further by the ability to adjust the control panel height and keyboard angle.

The machine is nimble despite its size, with rapid linear traverse in X, Y and Z of 48 m/min. Options available on the machine are a 32 or 60 tool magazine; a choice of controls; and an SK40, SK50 or HSK63 spindle.

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It's all about you

XYZ challenges the market with 5-axis launch

XYZ Machine Tools has long been a leading company in providing value when it comes to machine tool performance. It is now pushing that value/performance ratio further with the introduction of its first simultaneous 5-axis machining centre, the XYZ UMC-5X The Challenger. This new introduction to the XYZ range brings with it a wide range of design features that will set it apart, while adding functionality and performance at a very competitive price point. While the UMC-5X may be new to the XYZ range, it is a well-established design with more than 200 machines installed at high-tech customers in Russia, Germany, Spain, France and Italy and more than 30 toolroom installations in Portugal alone.

Weighing in at over nine tonnes, the XYZ UMC-5X features a compact, gantry-style, design that maximises the front loading working area while maintaining a relatively small footprint. Its construction makes use of solid meehanite castings to create a rigid platform that allows high-speed, precise machining of complex shapes and forms across a wide variety of materials. The design results from extensive use of ANSYS simulation and finite element analysis techniques, a combination that delivers a machine with maximum stability and reduced vibration even under heavy, highly dynamic, cutting conditions. This versatility and lack of compromise in its design makes it an ideal solution for multi-axis machining of parts for a wide range of industries, including aerospace, medical, automotive and mould and die.

Performance of the XYZ UMC-5X is enhanced with a choice of spindles, ranging from 12,000/15,000 revs/min in-line direct drive variants through to high-power, high-speed, 18,000/24,000 core-cooled motorised units. All spindle options are equipped with a high pressure through spindle coolant system. The C-axis torque-driven table is 600 mm diameter and, can take components weighing up to 600 kg yet remains highly mobile with maximum rotational speed of 90 revs/min, this is combined with feedrates of 36m/min in X, Y and Z axes with agility aided by the acceleration of 7 m/sec. The tilting A-axis, which has a tilt range of +/- 120 degrees, with full rotation in under 2.5 seconds, has a feedrate of 16.6 revs/min with the A and C axes also benefitting from high accuracy Heidenhain RCN238 rotary linear encoders, while linear scales are standard in X Y & Z.

To give customers added choice, XYZ will offer the machine with the Siemens 840DSL control as standard or, the Heidenhain iTNC640 HSCI, both of these high performance controls have Traori/Kinematic options and fast block processing capabilities suited to simultaneous 5-axis machining, they also benefit from having Smart Machining Technology (SMT) integrated to improve machine performance. The four key elements of SMT are Tool-Tip Positioning Control (TTPC), Spindle Vibration Supervision (SVS), Metal Removal Rate Optimisation (MMRO) and Axial Accuracy Control (AAC). SVS and MRRO are optional.

Tool Tip Positioning (TTP) provides real-time monitoring of any spindle thermal growth using an embedded measurement system, data collected is fed back to the control and offsets are adjusted in real-time, this generates improvements in accuracy of between 5-6 times compared to when the system isn't employed. Similarly, the optional Spindle Vibration Supervision (SVS) uses embedded motion sensors to monitor spindle condition and reacts accordingly to different levels of vibration, level one being a notification to the operator, level two automatically reduces cutting data, while level three will stop the machine to prevent damage. The option of Metal Removal Rate Optimisation (MRRO) also makes use of characteristics of the machine, cutting tool, workpiece and control to maximise the cutting condition. The system automatically uses this information to enhance cutting data with improvements of up to 14.3 percent in metal removal possible and surface finish improved by up to 61.5 percent.

The other standard feature of SMT is Axial Accuracy Control (ACC) which helps combat overall thermal growth in the machine thanks to integrated thermal sensors that constantly monitor the machine's temperature. ACC is automatically activated with temperature fluctuations to overcome thermal deformation and improve consistency and accuracy.

XYZ managing director, Nigel Atherton, says: "We have looked long and hard to find

what we feel is the right solution to 5-axis machining and, in the UMC-5X, I believe XYZ Machine Tools has a machine to meet the needs of a wide variety of customers, from those just starting out in the five-axis arena, to those already well-versed in this technology. The machine is a perfect fit with our existing range in that it combines excellent value for money with extremely high specifications, which we know will make it attractive to XYZ customers."

As with all other machines in the XYZ range there will be stock held at the company's Burlescombe headquarters, with seven machines of differing specifications due to arrive early 2017. This initial shipment of seven machines, including five with the Siemens control and two with the Heidenhain system, will be ready for customer deliveries from March 2017.

A series of launch events will be held for the XYZ UMC-5X, to register to attend please contact XYZ on 01823 674200 or email sales@xyzmachinetools.

When you commit to an XYZ product, XYZ commits to you. XYZ has over 80 employees who are committed to providing the best level of service. This means that while a customer's machine tool has the support of the XYZ spares department and XYZ service team, it will also be backed up by the free support of the XYZ applications training team and the free XYZ programming helpline.

XYZ Machine Tools provides free one on one training with any CNC machine purchase. Its applications team of experienced, apprentice trained, machinists are fully trained to help customers get the most from their machine tool purchase.

With 15 service engineers based nationwide, if your machine needs attention XYZ aims to be with you the same or next day. It has an electronic service system where information is sent to engineers as soon as it is reported leading to quick response times.

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Alphacam guides 5-axis future for Cambridge Precision

5-axis machining is transforming the way a Cambridgeshire engineering subcontractor works

Milling supervisor Andy Barnard at Cambridge Precision Ltd was instrumental in the company investing in 5-axis capability. The company already used Alphacam CADCAM software to program their 27 milling machines, and he says it is now a vital part of their 5-axis operation.

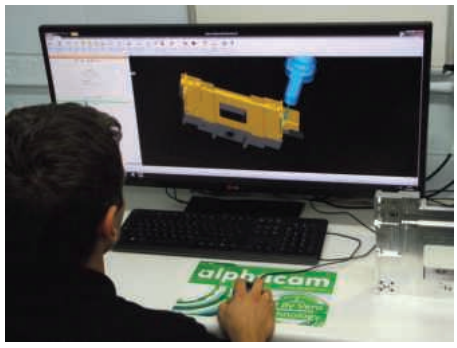
Cambridge Precision ships hundreds of thousands of components a year, manufactured predominantly in aluminium, along with a variety of steels, brass, copper and copper tungsten. Nearly every job it was doing on its 3-axis mills involved more than two operations, with many requiring four, five or six operations. Andy Barnard, along with production manager Nick Raven and programmer/setter Tom Szablicki, could see the advantages of moving over to 5-axis, and the directors agreed with their recommendation.

Andy Barnard says: "Originally we were considering looking for a full 5-axis machine, but chose instead, to have Nikken tables added to two machines."

The tables have given a Haas mill full 5-axis simultaneous capability, while converting a Doosan 650 into a 4 + 1 machine.

Andy Barnard continues: "Straight away it reduced the number of operations down to two. The complete cycle time for one component in particular, a container tracking box, has been slashed from 75 minutes to under half an hour, and it also saves a lot of time on making fixtures."

Manufacturing a wide variety of components for several industry sectors, including medical, pharmaceutical, aerospace, and automotive, he says the company is looking to expand its 5-axis capability and invest in more seats of Alphacam.



Andy Barnard says: "It's got to be the way forward, especially as it's so easy for Alphacam to produce 5-axis programs."

Cambridge Precision has used Alphacam for around 15 years, and Andy Barnard says there are at least 100,000 programs stored, any one of which can be used as a potential starting point for new jobs which require similar products. Alphacam also assists in the quoting process.

Andy Barnard explains: "We can quickly load up the existing program to give an estimated run time, and this will pay dividends on 5-axis work.

"For example, if a job calls for a block to be roughed out we can use Alphacam to get an accurate cycle time for it within a few minutes."

Cambridge Precision's Alphacam programming is done offline on any one of six suites, by a number of skilled engineers, with programs being sent via the server to the appropriate machining centre. After the initial setup and full inspection of the first off, the machines can run for 24 hour periods, utilising the night shift.

Components come in all shapes and sizes, from 10 mm squares with a hole, up to 300 mm square X-Ray housings, along with parts for machines designed to test electronic wafers, microscope housings, CD facia plates, and aircraft parts.

Customers supply a solid model or DXF file, and Andy Barnard says it is especially easy to program jobs on the solid model, apply the toolpaths, and send it out via the post processor to generate machine-ready code. As they undertake a range of 3D machining, Alphacam's versatile machining styles function is particularly valuable, as is the powerful simulator.

Andy Barnard explains: "We use simulation all the time, which saves us scrapping the part and damaging the machine or vice, or breaking the tooling. And it's an essential aspect of the 5-axis process, as we've got the machine configurations loaded, along with tool holders and tools. A lot of what we do involves having a tool just 0.1 or 0.2 mm away from the 5-axis table or vice, and the simulation gives us absolute confidence that when we start cutting metal there won't be any collisions."

As well as CNC milling, Cambridge Precision has a number of lathes, and also undertakes laser marking and electro-mechanical assembly at its St Neots factory. Operating with 85 employees, the company has an annual turnover of £6 m.

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Powerful 5-axis machining centre

The availability in the UK and Ireland of a large, portal, 5-axis machining centre, built by the Italian company Mecof, has been announced by sole agent NCMT. The UMILL 1800 is a versatile machine with an 1,800 mm x 2,150 mm x 1,250 mm working volume and does not require special foundations. It is suitable for 5-axis and 5-sided metalcutting applications in industries as diverse as aerospace, oil and gas, power generation and automotive.

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

There is a choice of two torque motor-driven rotary tables for accepting workpieces weighing up to 10 tonnes. The 1,700 mm x 1,400 mm milling table has a 10 rpm drive with a maximum torque of 6,000 Nm, while a 1,800 mm diameter mill-turn table offers 250 rpm and 4,000 Nm.

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

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

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

Its business is all about satisfying customer demand, so responsive engineering support, training and back-up forms a core part of the NCMT service.

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Mazak powers to Autosport with new VARIAXIS 5-axis machine

At the recent Autosport Engineering exhibition, held at the NEC in Birmingham, Yamazaki Mazak showcased its latest generation of 5-axis multi-tasking machines.

The company exhibited a state-of-the-art VARIAXIS j-500/5X 5-axis machining centre which combines a compact footprint with the ability to offer simultaneous 5-axis machining across multiple surfaces, making it ideal for automotive applications involving volume, small batch or prototype work.

The VARIAXIS j-500/5X delivers high accuracy and productivity from a wide B-axis spectrum of rotation (+90° to -120°). Outstanding accuracy is guaranteed by its high rigidity structure, which utilises linear roller guides on all linear axes and roller gear cam on both rotary axes.

Most importantly, the VARIAXIS is equipped with SmoothX, the 5-axis version of Mazak's SMOOTH technology, the world's fastest CNC. SmoothX includes a 19 in touchscreen control panel, and has the capability to deliver a machining revolution, from programming and cycle times through to automation integration, data collection and ergonomics.

Mazak has a long history of supporting Autosport Engineering and supplying CNC machine tools to the motorsport sector, most notably Formula One. As well as providing machine tools to the Renault and Mercedes racing teams, Mazak is also the official supplier of CNC machine tools to the McLaren Honda Formula One team. There are currently over 25 Mazak machines in operation at the McLaren technology centre in Surrey.

Alan Mucklow, managing director UK and Ireland sales division at Yamazaki Mazak, says: "The VARIAXIS j-500/5X sets new standards for multi-tasking machines and is designed to deliver high speed, high-accuracy machining, all the time ensuring maximum ease of operation for the machinist.

Yamazaki Mazak Corporation was founded in 1919 in Nagoya, Japan. The company now has over 6600 employees worldwide.

Yamazaki Mazak has nine existing manufacturing plants, with five in Japan as well as manufacturing operations in the United States, the United Kingdom, Singapore, and China. Products include multi-tasking machines, CNC turning centres, vertical and horizontal machining centres, CNC laser cutting machines, flexible manufacturing systems (FMS), CADCAM products and factory management software.

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Citizen launches modular high speed solution

Citizen has increased its capability in micro-machining turn-milling technology and small part turning with the launch of two capacity versions of its new generation, modular-built high speed R-Series CNC sliding head machine. The latest R01 and R04 in Type-VI have bar capacities of 1 mm and 4 mm respectively with common front and back spindle modules and the ability to carry up to 17 tools.

Launched by Citizen Machinery UK, this third generation of the ultra-compact machine series builds on its well-proven, highly productive success in the watch, medical and miniature component sectors and requires a floor area of just 1,465 mm by 535 mm. It expands the modular design concept being progressively introduced across the Citizen range and with its small frame construction achieves new levels of thermal displacement and rigidity to ensure consistent levels of high precision.

In order to accommodate the high precision demands for micro-machining, spindle design is critical. The latest common design applied to the oil cooled, main and back spindles are more compact having some 25 percent reduction in overall length and weight. Each spindle is faster to accelerate and decelerate while helping restrict factors such as the onset of vibration. High speed ceramic bearings are a feature giving added stability and rotary guide bushing is now available in addition to fixed and fixed open/close enabling a maximum machining length of 30 mm on the R01 platform, which extends to 40 mm on the R04 version. Each spindle on Type-VI is powered by 0.75 kW motor delivering up to 20,000 revs/min with a huge acceleration profile.

The X- and Y- twin gang tool slides are now mounted vertically either side of the spindle with the X-axis tool slide combined with linear motor drive technology. This enables high speed acceleration to 30 m/min while also adding to the precision capability by eliminating deflection and backlash. In order to maximise the compact build of the machine, the Y-axis is driven by servo motor and will still achieve the same 30 m/min rapid rate of traverse.

Each machine capacity is able to capitalise on Citizen's newly introduced modular build techniques, in order to provide users with the greater flexibility of a bespoke machine

type, but is also developed as part of a proven package of options in a cost-effective strategy.

The Type VII has the added advantage of an identical opposed 0.75 kW, 8,000 revs/min back spindle with 17 tools, seven for turning, eight for front drilling and two driven positions powered by 0.1 kW, 8,000 revs/min motors with the option of including a gang tool unit which has three with a 2 mm shift and one with a 10 mm shift.

As part of the Citizen new wave, the Cincom control is enhanced with faster processing, start-up and screen switching. Ancillary devices are now enclosed to aid operability, maintenance and lower levels of heat generation. In addition, to aid practicality of machining micro component types on the R01, a non-contact air blow collection chute is available to aid the collection rate of workpieces up to 1 mm diameter by 5 mm long. This device also effectively separates chips from the component.

A front collection chute can be specified for workpieces up to 2 mm diameter by up to 20 mm in length where coolant is run through a semi-circular chute mounted on the back spindle and collects workpieces parted-off during front machining.

A single spindle Type-II is also available and is dedicated to front machining cycles with the use of 13 tools but without the added flexibility of the back spindle.

Citizen Machinery UK Ltd, based in Bushey, is a CNC machine tool specialist supplying the latest CNC turning technology to UK industry. Following a merger in January 2011 the company incorporates staff and resources from the UK machine tool operations of both Citizen (Citizen Machinery UK Ltd, formerly NC Engineering Ltd) and Miyano (Miyano Machinery UK Ltd, formerly Macro Machine Tools Ltd). It has been successfully serving UK manufacturing industry since 1974.

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Reduce machining setup times

Based near the industrial capital of Italy, Turin, privately owned specialist engineering company Chiaro Macchine Speciali is perfectly located to serve industry heavyweights such as Magneti Marelli and Webasto. In fact, 80 percent of the company's engineered products, test systems, and tooling, used in manufacturing processes and on production lines, are supplied to the European and global automotive sector.

Andrea Beltramo and his colleague, Khalid Mahmood, are the Chiaro engineers responsible for the company's Haas CNC machine tools, one of which is a VM-6 mould-making machine.

Khalid Mahmood says: "We bought the Haas because we wanted a large, solid machine. And, it's precise and versatile. We don't make parts in large numbers; most of the test systems and machines we build are one-offs, but we do need versatility. The Haas VM-6 table, with its X and Y T-slots, gives us the ability to quickly and easily mount parts of different sizes and shapes''

Andrea Beltramo says: "We do all our planning and design in-house, so it's important, for speed and quality control, that we can make our own parts, test them, and make changes as quickly and efficiently as possible."

A typical Chiaro test system could be, for example, one designed to check fabricated automotive exhausts before they are fitted to vehicles on a line.

Andrea Beltramo explains: "We've designed and built a fully automated machine that allows our customer to check the silencer of an exhaust system for leaks. It will be located beside a production line, so it has to be designed to minimise the possibility of setup errors and, very importantly, it has to accommodate a variety of different model variations without any trouble or delays.

"Before the Haas VM-6 arrived, we already had a Haas TM-2 Toolroom Mill, which we use for small, one-off parts. So, we already knew the Haas control, which meant we were able to start working the new machine without the need for much

additional instruction. We did a very short course, and that was it."

Khalid Mahmood concludes: "We're extremely happy with the VM-6, and I know the company owner is, too. We got the machine we needed to be able to improve the way we make parts in-house. It has made a significant difference."

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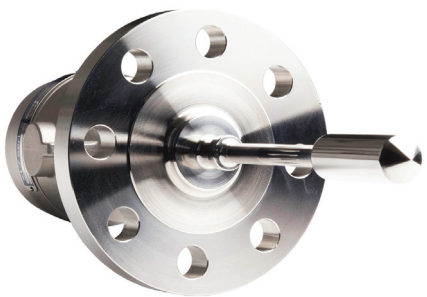
High quality viscometer manufacture moves up to high performance machining with DMG MORI

Hydramotion has been leading the field in viscosity measurement for nearly 30 years and holds a series of patents for its high precision instruments which have revolutionised in-line and in-process viscosity measurement for a wide range of industries including oil and gas, food and beverage, paints and coatings and resins. Its products play an important role in any industry where the viscosity of a fluid is a vital part of product quality and performance and are used in over half of the world's melamine production.

Managing director John Gallagher is proud of the rigorous scientific development that goes into the company's continuously evolving products and he wanted to apply the same approach to the manufacturing process. "We wanted to develop our engineering and introduce a philosophy with an F1 sensibility. We already use CFD software in product development, CAD for design and CAM for CNC program generation. The next step was to enhance high performance machining to speed up production, ensure our products are of the highest quality, future proof our manufacturing and enhance the confidence our customers have in our capabilities."

Hydramotion therefore invested in a DMG MORI NLX 2000 | 500 and a CTX beta 800.



John Gallagher says: "The machines met our requirements with a second spindle on the NLX 2000 | 500 and a programmable travelling steady rest on the CTX beta 800. Additionally, we wanted visibility from the investment. The aesthetic appearance of the machines is well done as is the CELOS® interface."

For the new machines, the company invested in an 8,000 sq ft extension, which it plans to join to the existing factory to provide a seamlessly connected production facility both physically and electronically.

John Gallagher continues: "By connecting our design, development and manufacturing together, we can speed up development and production. Feeding back improvements in machining capabilities to the design phase will in turn lead to product enhancements. Our customers are highly international and the investments we have made and the high technology philosophy which we are pursuing will definitely be appreciated."

Parts that previously required four operations can now be done in two setups on the NLX 2000 | 500 thanks to the second spindle, while on the CTX beta 800 the travelling programmable steady rest enables parts as small as 8.7 mm diameter and up to 850 mm long to be turned without them flexing during machining.

Team leader at the production centre, Richard Bielby, says: "The DMG MORI machines easily work within the tolerances we need to achieve. However the big advantages are the quality of the surface finish and the lack of blend marks which we used to have from turning parts in sections. Previously, this required a significant amount of polishing to achieve the desired mirror finish. Now this finishing task is at least 50 percent faster."

Previously, it was very time consuming with all the different operations to produce a batch of 30 parts. Now it is extremely simple and highly repeatable, thanks to the tool setting in the machines, the use of standardised tooling, the reduction in operations and the smooth vibration free operation of the machines.

Richard Bielby says, "We use various corrosion resistant materials which are difficult to machine. The DMG MORI machines cut these with ease giving us increased tool life of around 25 percent and halving the time to manufacture parts. Furthermore, the CELOS® interface on both machines enables us to program parts on the machine if we want to, look up setup sheets, simulate the toolpath, and examine CAM data, models and drawings of the part, minimising the chance of error by utilising a paperless environment."

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In fine fettle

ADM Fine Machining Ltd, based in Littlehampton, has recently invested in a new, large-capacity Doosan DNM 650 II vertical machining centre from Mills CNC.

The machine joins ten previously purchased Doosan machines, five lathes and five vertical machining centres, the company has at its disposal and is being used, in conjunction with the other Doosans, to machine high-precision, complex components for a diverse range of sectors, most notably for a growing number of aerospace, motorsport, medical, defence and petrochemical customers.

ADM Fine Machining was established earlier this year following the acquisition of Fine Machining Ltd, by specialist aerospace subcontractor, ADM Engineering Ltd, based in Petersfield.

The company, with its 30-strong workforce, operates from a 12,000 sq ft facility in Littlehampton. The premises include separate, temperature-controlled inspection, clean-room testing and spacious sub assembly facilities, as well as a modern, well-resourced and cellular-structured machining area- replete with advanced, high-performance and multi-tasking machine tools.

Although the company may appear to be the new kids on the block, the wealth of engineering experience of the three company directors: Geoff Holden, managing director; Nick Moore, sales director and Andrew Matthews, technical director, combined with its highly-skilled staff should leave no-one in any doubt about the company's engineering excellence and impressive manufacturing credentials.

ADM Fine Machining's ISO 9000 accreditation and its intention to secure AS 9100 approval in the very near future provide further evidence of ADM Fine Machining's manufacturing pedigree.

The company, unlike many subcontractors, is not positioned at the end of its customers' supply chains. Instead, using its collective experience and expertise, ADM Fine Machining is committed to adding value and building long-term, mutually-beneficial partnership relationships with customers built on integrity and the ability to deliver high-quality and cost-competitive and often critical precision machined parts and assemblies on time.

A key in-house strength that has enabled the company to move up its customers' supply and value chains is its understanding of, and ability to machine, hard and difficult-to-machine materials including inconels, duplex stainless steels, hastelloy, and titanium alloys, as well as aluminium, numerous grades of steel and a range of engineering plastics.

Business development director, Peter Howell says: "To achieve the high part accuracies and surface finishes expected by our customers requires in-depth knowledge concerning the machinability of different materials and having access to high-performance machine tools.

"The Doosan lathes and machining centres we have invested in have a rigid design and build, have powerful high-torque spindle capabilities and are thermally stable all pre-requisites for machining tough materials."

Another important feature common across all ADM Fine Machining's Doosan supplied machine tools is its multi-tasking functionality with the company's Puma lathes having driven tooling capability and its machining centres being supplied with 4th-axis

units. ADM Fine Machining's in-house expertise enables it to provide 'simultaneous' engineering consultancy services to customers.

Essentially, simultaneous or concurrent engineering describes a management approach where all aspects of a manufacturing project are planned and agreed, in advance, with teams responsible for delivering elements of the project.

Suppliers such as ADM Fine Machining are increasingly involved in these types of relationships, so that any possible issues or delays in developing and implementing reliable and repeatable machining processes are anticipated, and solved, in advance, or are avoided altogether.

A recent example with a petrochemical customer involved the manufacture of high-pressure needle valves made from Inconel 625.

ADM Fine Machining's knowledge and expertise in machining the nickel-based super alloy was instrumental in re-designing the part specification.

The DNM 650 II is a large-capacity vertical machining centre with 1,270 mm x 670 mm x 625 mm travels (X, Y and Z), a generous sized table of 1,300 mm x 670 mm and a powerful direct-drive spindle of 18.5 kW/12,000 rpm.

As well as its technical specification the machine was also acquired because it was supplied by Mills CNC and, as a consequence, is backed by Mills' after-sales service and support.

Nick Moore, ADM Fine Machining's sales director, concludes: "I have dealt with Mills for many years and rate their service backup as being the best in the business.

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55-year-old uses his pension to start successful subcontracting business

It is never too late to become an entrepreneur, it seems. Brian Yates, a machinist since he left school and latterly a manager in a subcontracting firm, decided in October 2010 at the age of 55 to start his own business, Campro Precision. He invested all his pension fund in renting premises and purchasing two Hurco machine tools, a 3-axis VM20 vertical machining centre and a TM8 CNC lathe.

His son Peter Yates joined him almost immediately and Dewi Hughes started one year later as a third, equal partner. Six years on and the company is going from strength to strength. It now employs two more staff, having moved in early 2015 to a much larger, 500 m² factory unit on the J Reid Trading Estate in Sandycroft, Deeside.

Milling and turning for the medical sector accounts for around one-third of turnover, aerospace contracts are another 20 percent and the remainder is spread across a wide range of industries.

Testament to Campro Precision's success and a vindication of Brian Yates' decision to risk everything on the venture is the company's recent purchase of two large-capacity Hurco machine tools.

In 2014, a powerful TM12i CNC lathe with a 12-inch chuck was purchased, differentiating the subcontractor from most of the competition in the North West. It allows turning of larger components up to one metre in length by 550 mm diameter, such as brass oil sump cylinders, stainless steel rings for the oil and gas industry and wheels for sandblasting equipment.

Then just before Christmas 2015, a VMX60Ui trunnion-type, 5-axis machining centre with a 1,524 x 660 x 610 mm working envelope was installed, taking the firm into a new realm of prismatic machining. Nobody in the company had any experience of 5-axis work, including Brian Yates, who is a turner by trade, but the technology was picked up quickly by the three partners.

They all commented that shop floor conversational programming of 3+2 axis cycles is intuitive using the WinMAX software in the control, based on their experience preparing 3- and 4-axis programs on the other machining centres. More complex simultaneous 5-axis routines can be prepared using the company's OneCNC CAM system.

Dewi Hughes mentioned a job produced on both the VMX60Ui and the TM12i lathe, namely production of steel hubs for overhead cranes in use by Airbus at nearby Broughton. The former production route was one operation on the smaller TM8 turning machine, another on the VM30, back onto the lathe to complete the turning and a further two setups on the machining centre.

These five operations, which remove well over half the volume of the billet, have been condensed into two on the larger machine tools. Total prismatic metalcutting time is similar. However, the 55 kW / 2,800 rpm spindle with chiller on the TM12i drastically reduces the time needed to turn the component from two and a half hours down to 30 minutes.

The first component to be put on the latter machine, at the end of 2015, was an aluminium bracket that forms part of equipment for the electronics industry. It is an ongoing job and another example of the cost reductions that can be made in handling, setting and work-in-progress using 5-axis strategies.

Measuring 120 mm x 100 mm x 90 mm, the component was previously machined in 45 minutes on the 3-axis VM30 in four setups. The number of operations has reduced to two and the total cycle time is now less than half at 22 minutes.

When Brian Yates started the company six years ago, he already had experience of using Hurco machines during his previous employment. The WinMAX conversational programming software in particular was an attraction, as it reduces setup time and cost for new components that might only be required in ones and twos.

Campro Precision looks set to continue to grow, especially in the medical sector and hopefully soon in wind energy. The company's success means that Brian Yates will undoubtedly receive a better income when he finally retires than an annuity would provide.

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New turn-mill centre from INDEX

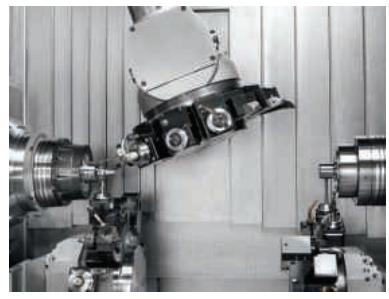
The second generation of the INDEX G200 turn-mill centre, launched at the AMB show in Stuttgart last September, is available in the UK and Ireland through Geo Kingsbury, sole sales and service agent for the German manufacturer.

The twin-spindle machine, which has a compact footprint similar to that of its predecessor, has been extensively improved. Distance between centres is up from 400 mm to 660 mm, a second tool carrier has been added below the spindle centreline, reducing cycle times by typically 30 percent, and the speed of the B-axis milling spindle has been increased from 2,000 rpm to 7,200 rpm. The result is a flexible, three-turret lathe for highly productive, complete machining of bar stock up to 65 mm diameter and chuck parts up to 165 mm diameter.

A significant change compared to the first-generation G200 is that the heavily ribbed, low-vibration, cast machine bed is arranged vertically, a design that INDEX pursues in almost all its new products. Although such machines tend to be slightly

taller, they have a smaller footprint and provide extra space in the working area, permitting all three tool carriers to work simultaneously at either the main or counter spindle without interference. The fluid-cooled spindles are identical, rated at 32 kW / 170 Nm / 6,000 rpm.

The two lower turrets are arranged in mirror image, each having a ± 45 mm Y-axis. They contain 14 tool stations, all of which can be equipped with live tools driven at up to 7,200 rpm by a 16 kW motor. The turrets may be parked outside the machining area, giving the top tool carrier unrestricted access to the workpiece, for example to allow collision-free machining without stopping along the entire length of a shaft.



The upper tool carrier deploys a 14-station turret and an integrated, HSK-A40 milling spindle. It has ± 65 mm of Y-axis movement and a 360-degree swivelling B-axis. In addition to its elevated speed range, the 845 mm horizontal travel covers the complete turning length of 660 mm, without having to rotate the B-axis as is often the case on other lathes.

With Industry 4.0 in mind, the INDEX Xpanel i4.0 focuses on productivity and ease of use. Building on the Siemens S840D sl, it reduces the complexity of control operation.

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New Toodle spindles from Floyd

Manufacturers using turning centres with high-pressure coolant (HPC) systems can now benefit from a unique solution to provide high- speed drilling or milling capability without the need of expensive high frequency spindles or similar technology. This innovative new tooling from Floyd Automatic Tooling uses the HPC to drive a turbine driven tool system that can achieve spindle speeds between 40-70,000 rpm.

Primarily designed to provide faster spindle speed for small diameter work, the new Toodle spindles can be easily used on most machines fitted with HPC and coolant filtering system.

The innovative and simple new system has a 25 mm diameter spindle housing that incorporates two ball bearings, a turbine that is driven by the HPC and a locking cap. The Toodle system is supplied with an assembly device that enables the operator to assemble two bearings and a turbine onto the shank of a standard cylindrical tool. (Ø3, Ø4 or Ø6 mm) The completed assembly is then fitted inside the 25 mm diameter and 30 mm long turbine housing. The final process is the tightening of the locking cap. All completed in less than two minutes, the Toodle is then ready to be installed on the machine tool.

Extremely reliable, flexible and interchangeable, the Toodle requires no machine adaptation and it can work in conjunction with ATC systems. The Toodle is available as the standard Toodle Blue 131 system or alternatively as the Toodle Blue 90° unit. This configuration incorporates a 16 mm diameter 54 mm long tool shank that holds the high speed Toodle unit at 90°.

The easily adaptable Toodle will deliver a maximum spindle speed upwards of 75,000 rpm based on a coolant pressure of 60 bar. For workshops operating machine tools with lower coolant pressure systems, the Toodle can be driven by a pressure as low as 6 bar. This will yield an impressive spindle speed in excess of 24,000 rpm.

Floyd Automatic Tooling provides the turned part and precision component machining industry with specialist tooling to a wide variety of subcontract and OEM component manufacturers. The products offered are from some of Europe's top names providing quality at realistic prices.

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Columbia Precision cashes in on Walter's milling cutters

The combination of Walter GB's tools and its Engineering Kompetenz applications engineering expertise, plus highly sophisticated 5-axis machine tools, is enabling Columbia Precision to not only meet its aerospace customers' annual price-down demands but is also allowing the Birmingham-based company to compete with, and win, global business against competitors in lower wage economies.

In one case, the use of Walter tooling is generating annual cost savings of an amazing 70 percent compared to former methods.

A wide range of milling tools supplied by tooling expert Walter is used by Columbia to complement a host of top-of-the-range machines. Coupled with expert in-house manufacturing skills and 24/7 operation, the result is a formidable armoury of technology and skills that have kept the 54 employee precision machinist at the forefront of supply to companies in the medical, oil and gas, nuclear and ordnance, as well as aerospace sectors.

Columbia relies on an impressive portfolio of modern machining centres and turning centres, predominantly Matsuura, Mazak and Hurco horizontal and vertical machining centres, Mazak turning machines, plus milling tools from Walter.

These tools include the F4030 high-feed milling cutters with Screw-fit adaption, integral BT40 extensions and WSP45S inserts, which consistently generate considerable cycle time and tool cost savings.

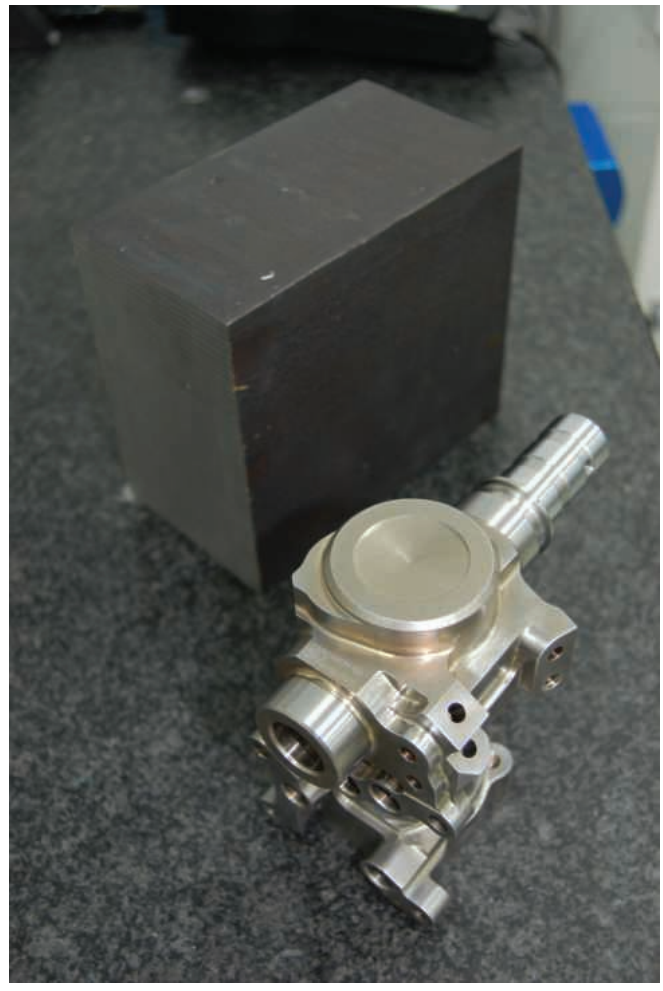
The combination of best-in-class machines and tooling consistently enables Columbia to meet the trio of supplier demands that are centred on supplying workpieces of the highest quality, at the ideal price and on time, in batches that vary from one-offs through to components required at the rate of 60/week on five-year contracts.

Columbia Precision's operations director Ted Yarnall says: "Many companies throughout the world can buy and use similar machines and tools, but it is the unique marriage of correctly applying these tools, which are of the utmost integrity, coupled with the highest levels of machine automation for example, extensive pallet systems that includes a Matsuura MAM72-35V with 32 pallets, that enables us to out-compete others.

"We do this by steadfastly running the machines at night, unmanned. To be able to do that safe in the knowledge that the finished components will meet all quality controls means we not only need suitable automated machines but, crucially, also tooling that is ultra-reliable. It's no good loading up the machine for a night shift if we can't trust the tooling."

Here, he says, the input of Walter GB's technical sales engineer John Hejdner is invaluable: "John always takes time out to listen to our needs then, applying Walter's renowned Engineering Kompetenz applications expertise, advises our engineers on how best to apply specific tools to take time out of each job.

"That does not always mean that every batch of workpieces is machined at the highest feeds and speeds, and at the deepest depths of cut. We listen and take on board John's advice and adopt machining criteria and strategies that not only reduce cycle times but also preserves the machines' spindle, for wear, for example."



Among the array of solutions that Walter GB has applied is tooling for a stainless steel part for a Boeing 737. Machined from solid on a Mazatech FH-480 horizontal machining centre, the use of a Walter F4030 indexable hi feed cutter for roughing on the majority of the component, followed in the more inaccessible sections by a 16 mm diameter Walter H2EC ConeFit solid carbide milling cutter, a Protomax Inox with Flash high-feed geometry and through-coolant, are generating annual overall cost savings of 70 percent compared to the former tooling from another supplier.

The use of the Walter tool on this task alone has effectively eliminated tool presetting costs, reduced lost time in tool changes and slashed machining times and costs, enabling hundreds of hours of capacity to be released.

Available in the diameter range 10 to 25 mm, ConeFit is a modular solid carbide interchangeable head milling system that combines a solid carbide changeable milling head with a steel shank; solid carbide shanks and HSK63, SK40, Capto C5 and C6 monoblock adaptors are also available.

Walter GB Ltd Tel: 01527 839450
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P J Hare presses ahead with help from WNT

With a history dating back to 1947 when the company was formed by Pat Hare, PJ Hare (Hare Presses) has evolved into a leading UK manufacturer of hydraulic and hydro-pneumatic presses, with systems ranging from one tonne to 400 tonne force. Along the way the business has added precision press tooling to its product range, making use of leading edge technology to deliver advantages to its many customers. The ability to achieve zero defects, load monitoring, in-tool Poke Yoke devices and fixtures, part presence sensing and, of course, increased productivity and reject rates are just some of the benefits of Hare tooling. These benefits are of particular interest to the automotive and food packaging sectors, which accounts for much of PJ Hare's business.

With sales growing and further export markets being targeted, the demand for machined parts is also increasing, with typically two presses per week plus press tooling requiring machine capacity. Traditionally, P J Hare had manual machining capacity in-house, but this wasn't sufficient to meet its needs, so a high proportion of machining was subcontracted.

As part of a business review, the company took the decision to pull back in-house much of this machining work, a choice that meant investment in new machine tools under the guidance of production engineer Konrad Nerc. This process was started with the purchase of a Doosan DNM 500 vertical machining centre, quickly followed by an XYZ TC 320 LTY turning centre.

As a result of this investment, P J Hare had to make a major shift in tooling technology, from what was predominantly high speed steel and morse taper shank drills, used on its manual machines, to the latest in indexable insert and solid carbide tooling. With components machined from a variety of materials, from mild steel and cast iron, through to more exotic materials at up to 50HRc, it would also need to be able to rely on the support of its tooling supplier to achieve its aims. Added into the mix was a desire to move away from castings to machining parts from solid. The decision was taken to work with WNT (UK) to make these aims achievable.

With the process of change well under way, Hare Presses is now using mainly U-type indexable inserts or the WTX change

style of replaceable head drills, the latter are greatly improving productivity as the speeds and feeds used sit nicely within the power bands of the machines. Milling is a combination of indexable WNT (HFC) high feed cutters (HFC) cutters that are being used machine small diameter deep pockets; solid carbide with a reliance on WNT's silverline range being superseded by the latest WNT CCR milling system, that is enabling deep pockets to be cut much quicker and to a greater depth in a single cut, thanks to the six-flute design and geometry that delivers much better chip evacuation.

Glenn Stanton, WNT's UK and Ireland sales manager says: "From the outset, WNT set out its service level of delivery next day before noon. As our customer base has grown, so has the logistics that allow us to maintain that service level.

"The ability for customers to rely on our delivery means that they can reduce tooling inventories, safe in the knowledge that tools will be delivered when they need them. In addition to the logistics investment, we have also dedicated significant resource to providing face-to-face support through our team of technical sales engineers and applications engineers. Backing up this face-to-face time is the level of detail on the WNT website, where we have embraced the use of technology to simplify the selection and application of our entire range of cutting tools."

The investment in machine and tooling technology, with the help of WNT, has allowed P J Hare Presses to bring back in-house over 70 percent of its machining requirement. This is giving the Wrington, Bristol-based company much greater

control over its production and quality, the success of which will lead to further work being produced in-house as business continues to expand.

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The ironmaster

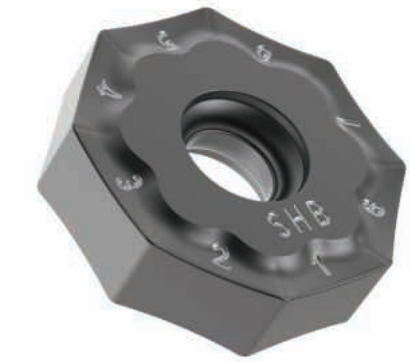
Kennametal's next generation face mill

Iron is the most abundant element on earth by mass. For over twenty five centuries, it has been used to plough fields, build bridges, cook food, and wage war. Without iron, the industrial revolution would have gone nowhere, we would have no trains, automobiles, or machine tools today, and mankind would still be an agrarian society. It is quite simply the most important metal in history.

There's a newcomer to this metal family though, one that's making manufacturers take notice. As auto makers strive for increasingly fuel efficient and environmentally friendly vehicles, they're turning away from traditional iron favorites such as gray and ductile iron (GCI and DCI) to compacted graphite iron, or CGI. Also known as vermiculate graphite iron, CGI's mechanical attributes meet or exceed its counterparts, sometimes drastically so.

Unfortunately, CGI is also more difficult to machine, requiring cutting tools both tough and wear-resistant. And, because of the continuing call for cost-effective machining solutions across all manufacturing industries, these tools must also offer a low cost per part and predictable tool life. For face milling applications, that tool is Mill 16™.

Senior global product manager for indexable milling at Kennametal, Marcelo Campos says: "Compared to cast iron, CGI has lower weight and greater strength, and is ideal for components that are exposed to both thermal and mechanical stresses like engine blocks and heads for cars and trucks, exhaust manifolds and brake parts. As with other cast irons, however, it is quite abrasive, and somewhat gummy to machine.



We developed Mill 16 as a best in class face mill not only for CGI, but for all types of cast iron, which remains a popular choice for gear boxes, housings, pump bodies, and other components used in the automotive, agricultural, and heavy equipment sectors."

The Mill 16 has a fine-pitch and medium pitch cutter body equipped with an innovative single-screw, wedge-style clamping system. This reduces time spent in the tool crib setting the tool and assures rigid, no-fail tool placement. Each pocket on the cutter body is numbered, as are each of the insert's cutting edges, assuring maximum accuracy and ease of use when indexing to a new cutting edge.

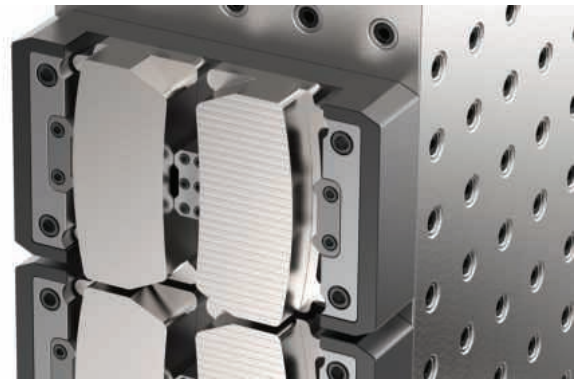
The heart of the Mill 16 is an octagonal, double-sided insert with 16 effective cutting edges, providing the lowest tooling cost per part possible. Each cutting-edge face contains an aggressive chip-breaker for positive cutting action and increased chip flow. The wedge clamp on either side of the insert's top face is likewise chamfered to improve chip evacuation.

Mill 16 is available in cutter diameters ranging from 2 in to 10 in (50 mm to 250 mm). Kennametal has rated the maximum axial depth of cut (Ap1) at 5.5 mm (0.216 in), although depths to 9 mm (0.35 in) or greater are achievable, an important consideration where casting variation is a concern. Due to the cutter's low cutting forces, up to 100 percent radial cutter engagement is possible. All cutters have internal coolant supply capability and the carbide is new as well.

Kennametal's grade KCK20 is a PVD AlTiN/AlTiCrN multilayer coating bonded to a wear resistant substrate which provides an average tool life of 30 percent greater than comparable TiAlN-coated grades.

A wide assortment of insert edge preps, geometries, corner radii, as well as a number of complementary grades assure the Mill 16 is a top performer in a variety of machining conditions, from heavy roughing to semi-finishing and, because of the insert's integrated wiper facet, fine finishing to Ra 3.2 µm or better.

Customer field tests have shown consistent and positive results. During a dry machining operation on a ductile cast iron plate using Mill 16, feed rates were increased by 41 percent and tool life was doubled. A grey iron transmission case was machined at a feed rate of 0.39 mm per tooth (0.015 in) and cutting speed of 208 m/min (682 ft/min), leading to reduced spindle loads compared to the legacy tool and slightly improved tool life. Metal removal rate and tool life on a water pump housing was more than doubled by switching to Mill 16.



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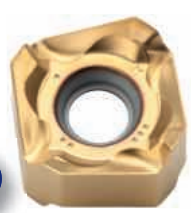

NEW

MP7140
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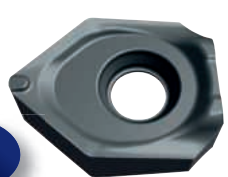
STAINLESS STEEL

NEW

MP9130
FOR ROUGH MACHINING
HRSA



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Sumitomo's detachable head SMD multi-drill

A factor of Sumitomo Electric Hardmetal's continuous development programme is the ability to enable deep holes to be drilled between 12 mm and 42.5 mm diameter with up to 12:1 depth-to-diameter ratio. The new drill range has the advantage of a detachable replacement head that brings new orders of flexibility and tool inventory reduction by enabling up to five sizes of drill head to be accommodated by a single drill body.

SMD multi-drill heads can also be selected to suit the machine type and power available plus the material being processed. In addition, the new Sumitomo drill programme is able to achieve a level of hole tolerance normally only met by adding the reaming process with the added bonus of maintaining improved hole consistency and increased in-cut life. The drill head inserts can also be reground which increases overall useful life and furthers economic returns.

The complete multi-drill SMD programme covers the SMDH replaceable head type drill holder, MTL Type drill head for high efficiency drilling of general steels and MEL for soft steel, grey cast iron, exotic metals and low rigidity setups plus MB for structural steel and single layer laminates. There is a large range of diameters available between 12 mm and 42.5 mm which can be specified in short Series (3 x D), long series (5 x D), deep hole series (8 x D) and ultra-deep hole series (12.1 x D) giving effective drilling depths up to 300 mm.

Due to the toughened body and balanced design, and the use of a tungsten carbide substrate drill head with ultra-hard and smooth coating, tool vibration and noise generated under cutting conditions are reduced. Optimised heat dissipation is achieved via precisely positioned through-the-tool coolant holes and the high rigidity clamping system ensures edge security and repeatable hole size for the exchangeable drilling heads which are bolted to the body against fixed precision ground radial serrations.

There are two variants of drill head with ultra-hard and smooth PVD coating, having improved peeling and chipping resistance. MTL ACX70 is for general purpose drilling applications and MEL ACX80 where the design of the drill head will provide higher performance on lower powered machine spindles. This is achieved due to the decrease in cutting force (thrust) requirement that is some 25 percent lower, making this variant of the drill ideal for stainless steel or more difficult cutting conditions.

The SMDT-MEL drill head has a light edge preparation and is coated with Sumitomo's latest ACX80 ideal for soft steel where cutting speeds between 80 and 130 m/min and feed rates between 0.15 and 0.4 mm/rev can be maintained. Stainless steel and super alloys can be drilled between 50 and 90 m/min with feed rates between 0.1 to 0.25 mm/rev and grey cast iron 50 to 100 m/min with 0.2 to 0.45 mm/rev feed.

Meanwhile, the SMDT-MTL drill head type has a standard edge preparation and is coated with ACX70 for general carbon steel applications with cutting speeds between 80 and 130 m/min and feed rates of 0.15 to 0.35 mm/rev.

Hardened steel (HRC45) can be drilled between 50 and 90 m/min with feed rates of 0.1 to 0.25 mm/rev. Nodular cast iron components can be processed at speeds of 70 to 110 m/min and feed rates between 0.15 to 0.4 mm/rev.

The special MB designation of drill head is for use on applications involving structural steel, rolled steels and single layer laminate material This drill head has a robust substrate with a reinforced edge treatment, a 150-degree point angle and highly polished wider J-grooved flute surfaces.

Sumitomo's SMD multi-drill enables deep holes between 12 mm and 42.5 mm diameter to be drilled up to 12.1 depth-to-diameter ratio and up to 300 mm deep.

Sumitomo Electric Hardmetal Ltd. is a leading manufacturer of modern standard and special tools for demanding machining tasks in turning, milling and drilling.

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Greenleaf launches the revolutionary XSYTIN-1

Greenleaf Corporation has officially launched its revolutionary ceramic insert grade XSYTIN®-1 at its global headquarters in Saegertown, PA.

Executive vice president of commercial, Bernie McConnell welcomed the industry trade press to the event and illustrated the 71-year history of innovations at Greenleaf Corporation. Following the opening remarks, Jim Wyant, applications engineer/project development, and Jan Andersson, global manager, TechTeam and marketing, presented the technical merits and customer value offered by XSYTIN®-1.

Jan Andersson said: "XSYTIN-1 has the potential to be as revolutionary as WG-300® was when it changed machining with its introduction in 1985."

The trade press experienced an in-depth tour of Greenleaf's world-class insert manufacturing facility led by Greenleaf's manufacturing leadership team.

Greenleaf Corporation president, Jim Greenleaf, offered closing remarks about the outstanding win-rate and performance of XSYTIN-1 in the marketplace as well as the future opportunities for Greenleaf's line of technical ceramic products.

XSYTIN-1 is a revolutionary phase-toughened ceramic insert grade complementing Greenleaf's world-class line of ceramic insert cutting tools. XSYTIN®-1 is engineered to machine more materials than any other ceramic grade in the industry today. It is designed to mill, turn and groove the most difficult materials on the market at extreme feed rates with the high surface footage of ceramic inserts.

The strongest ceramic insert grade ever produced by Greenleaf, XSYTIN-1 is ideal for use in interrupted cuts, removal of scale, roughing, semi-finish and finish cuts in heat-resistant superalloy materials, cast irons, nodular irons, ductile irons, steel alloys and stainless steels.

Headquartered in the United States with offices in Schimmert, The Netherlands and Hunan, China, Greenleaf Corporation has been a leading company in cutting tool technology since 1945. Greenleaf's comprehensive line of high-performance carbide and ceramic inserts and advanced toolholding systems have helped companies realise increased productivity across various machining applications. With a worldwide sales network, Greenleaf is capable of delivering its latest cutting tool solutions to companies around the globe.

Greenleaf's global support centre is a comprehensive online source for purchasing Greenleaf cutting tools and components. There are over 15,000 items to choose from as well as all the technical information you need to run Greenleaf's advanced cutting tool products to their fullest potential.

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New FMAX high feed milling cutters

Renowned for its productive milling tools, Mitsubishi Materials has now extended its range with the introduction of the new FMAX series of high feed cutters for finish machining.

This impressive new face milling range has been specified with indexable PCD inserts for machining aluminium alloy materials that are commonly used in the aerospace and automotive sectors. In fact, automotive OEMs are already realising productivity benefits by employing the new FMAX range for machining engine components. Such benefits over competitors milling tools are realised through the ultra-fine pitch design that enables milling at feed rates beyond 20 m/min.

To achieve such impressive speed and feed rates, the FMAX consists of a lightweight and robust tool body design that combines alloy steel and aluminium to maximise rigidity and performance whilst simultaneously reducing stress on the machine tool spindle. This lightweight design combines with the anti-fly dovetail clamping mechanism of the insert pockets to enhance rigidity and resistance to forces during high speed machining. The indexable inserts also incorporate an angled face to increase the clamping forces on the insert.

In addition, the insert pockets have a chip breaker wall (body-protector) on the rake face that helps to form chip shapes and dispose the swarf away from the cutting area. To guarantee that swarf is disposed of efficiently, FMAX has the facility for through coolant with the jets directed at the cutting edge of each insert. The through coolant design is compatible with all standard through-coolant milling arbors.

Fine and super fine pitch adjustment screws

From a precision perspective, each insert seat of the cutter body incorporates a fine pitch insert adjustment screw as well as a secondary ultra-fine adjustment nut. The fine and ultra-fine pitch threads provide a precise run-out adjustment of better than 5 µm. This impressive and easy to use adjustment system guarantees surface finishes and unparalleled precision.

The new face mill is available with a coarse or fine insert pitch design and a selection of diameters that includes 80, 100 and 125 mm. The coarse pitch cutter has 10, 12 or 16 insert pockets respectively whilst the fine pitched cutter is offered with 14, 18 or 24 inserts. Capable of machining up to a maximum 2 mm depth of cut, the new FMAX can run up to vc 2500 (m/min) to provide extreme feeds and material removal rates.

Machining at such high speeds is the result of not just the robust and lightweight body, but also the new MD2030 PCD insert grade. This new diamond sintered grade contains ultra micro-particle diamond that improves fracture resistance during interrupted cutting whilst offering an extremely stable cutting edge. This stable cutting edge prevents burrs and ensures an excellent surface finish result. To reduce costs for the end-user, the MD2030 PCD inserts can also be re-ground to extend tool life.

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Floyd slides out another high-end turning line

Following its world premiere at the SIAMS show and its international show debut at AMB in September, Floyd Automatic has announced the arrival in the UK of the new PRO-Line range of indexable insert turning tools from Applitec.

Developed for sliding head turning centres, the new PRO-Line is undoubtedly the next generation of insert tooling for the small turned parts industry. Applitec is regarded as a leader in the development of precision tooling for Swiss type sliding head machines and, with the PRO-Line, the Swiss manufacturer is once again breaking new ground. The PRO-Line is a blend between the best-selling TOP-Line twin-screw insert products and the single-screw ECO-Line. What this gives the customer is an insert line that delivers diversity, performance and quality whilst meeting the cost-down demands of the modern machine shop.

Applitec has achieved this blend by re-engineering the twin-screw program. This evolution now permits the PRO-Line to reduce both material and production costs to provide twin-screw rigidity and performance at lower prices with a new patented insert clamping system. This unique clamping solution also ensures that even a broken insert with just one remaining edge can still be used.

The PRO-Line program consists of two series of holders and inserts. Firstly, the 630/640 grooving and turning series has been introduced with a short and wide insert geometry for robust turning applications. The second series, the 650/660 series is a parting-off line that provides thin and long insert geometries for parting-off up to Ø20 mm with a 2 mm width. For customers, already familiar with the Applitec lines, the Swiss manufacturer has made the new range available with many of the established insert geometries from the TOP-Line range. This includes the laser generated forms that have proven very successful.

The new PRO-Line is available with the option of a TiAlN coated universal grade for machining steel, stainless and titanium alloys or as an uncoated grade that is suitable for interrupted cutting and other difficult machining tasks. The selection of insert geometries includes the 632/642 front turning, 632X/642X front turning, 632S/642S multi-function turning and the 631-EP and 641-EP blank insert. For the 650/660 parting-off series of tools, Applitec has developed the 651/661 standard part-off insert, the 651XF/661XF, the 651X12/661X12, the 651U/661U, 651R and the new 661ZU.

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MAPAL drills into cost reduction processes at the Ford Engine Plant

When Ford opened its Bridgend Engine Plant (BEP) in 1980, the CVH engine produced on the 1.52 million sq ft site was one of Europe's most popular power train systems. Over 30 years later, the engine used in the Escort, Fiesta, Sierra and Orion models of the 1980s and 90s is long gone. Now, the site is producing the latest generation of environmentally friendly Ford EcoBoost engines and also the JLR V6 and V8 power units.

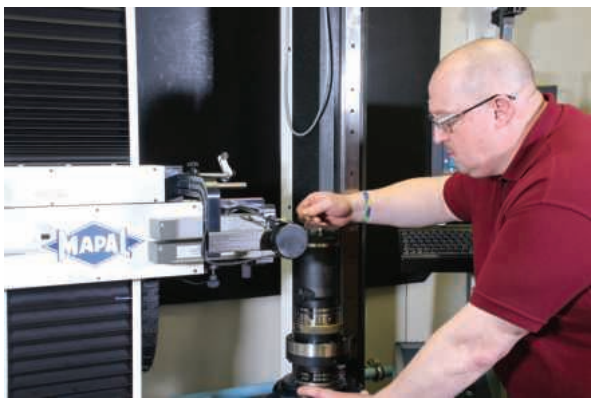
Producing over 750,000 petrol engines a year, Ford Bridgend is a key asset in the company's European supply chain; only last year announcing proposals for the next generation of an all-new family of petrol engines to be manufactured in South Wales. Ensuring Ford hits its SPC targets and uncompromising precision levels on the most critical elements within a vehicle, the company has engaged in a cutting tool partnership with MAPAL. Acknowledged as a leader in the PCD cutting tool market, MAPAL has been a key supplier to Ford Bridgend for over a decade.

As a core tooling supplier to Ford Bridgend, MAPAL has a tooling engineer permanently based at the plant. Discussing his role at BEP, MAPAL UK's Wayne Keepins says: "MAPAL tools now account for upward of 90 percent of all PCD tools on-site, 80 percent of the milling tools and an ever-increasing share of the solid carbide drilling products, which is the result of the MAPAL Group acquiring the Miller brand of German holemaking products. To become a leading supplier to Ford Bridgend, MAPAL has committed extensive resources to ensure the company benefits from our technical expertise and the evolution of our R&D efforts. This is underpinned by my daily on-site presence to support any cutting tool queries."

Over the last four decades, Ford has invested near £3 bn in the site, which is the epitome of modern manufacturing. This ongoing commitment has recently been bolstered by the announcement of an additional £100 m investment in the next generation petrol engine line. Such investment levels are critical in the era of the modern automotive industry that demands a continual cost-reduction year-on-year.

Wayne Keepins says: "We are committed to helping Ford hit targets of improving productivity or reducing costs by 10 to 15 percent year-on-year. This is a huge challenge that is commonplace in the global automotive sector. MAPAL continually strives to exceed these expectations, something that can only be achieved by working in a true partnership."

With an annual tooling supply to the plant well in excess of £1 m per annum, a large portion of the MAPAL products are applied to engine block milling and holemaking applications. Like most modern-day engines, the Ford power systems are lightweight aluminium blocks with sintered iron inserts pressed into bores to support continually moving wear parts. It is within these holes and bores that MAPAL has stepped up to the challenge with its bespoke multi-stepped drilling innovations.



By removing the stock material in a single pass, MAPAL eliminated the need for a separate throat blend and valve seat tool. This new combination tool reduced cycle times from 64 to 34 seconds, reduced tool setting times by 30 percent and reduced the number of tool changes by 800 per year.

As well as implementing productivity and cost saving combination tools, other tools have been developed to resolve inherent engine block machining issues. On the JLR V8 engine line, the crank boring process was trapping swarf in the guide pads of the boring tool whilst the rear of the tool was being contaminated with swarf particles. To resolve the situation, MAPAL developed a two-tool process to replace the previous three tool operation. By eliminating the rough boring tool and machining the complete bore from one side of the block, the new two-tool process reduced insert consumption and improved tool life to the tune of £52,000 per annum. This was partly down to the new tool requiring four inserts as opposed to eight, a potential 50 percent saving. The engine line that manufactures 145,000 engines each year also benefitted from enhanced bore precision and surface finishes, improved hourly engine throughput and reduced tool changeover times.

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New WIDIA milling grade from ITC for super-alloys

Industrial Tooling Corporation (ITC) has now extended its impressive portfolio of tools for machining super-alloys with the arrival of the WIDIA WS40PM indexable insert line.

This cobalt-rich substrate provides robust fatigue resistance and edge integrity while the multi-phase AlTiN-TiN PVD coating reduces tool wear. The combination makes the WIDIA WS40PM grade the first choice for machining a wide range of high-temp steel alloys, austenitic and PH stainless steels, nickel-based super alloys such as Hastelloy, Nitronic and titanium.

Josef Fellner, WIDIA product group manager for turning and indexable milling, says the company recently took its newest WS40PM advanced milling grade on a world-wide testing tour. The results have been quite impressive with an aircraft manufacturer enjoying a 90 percent reduction in machining time per part with a tool life improvement of 50 percent during Ti-6Al-4V face milling operations. Furthermore, a UK workshop decreased insert flank wear by more than 90 percent when machining Inconel 625. This delivered a 70 percent reduction in tooling costs. In China, a turbocharger manufacturer increased tool life by 80 percent while machining an austenitic stainless steel component using the new WS40PM. As well as increased tool life, the customer improved surface quality, reduced cutting forces and enhanced chip flow.

In all instances, speeds and feeds were kept the same or in some cases increased to take advantage of WS40PM's exceptional toughness, wear-resistance and ability to resist thermal cracking. The WS40PM was designed to meet the needs of the aerospace, defence and medical industries where titanium is used for everything from landing gear and seat tracks to lifesaving implants and surgical instruments.

However, the WS40PM is suitable for far more than just titanium. High-temp steel alloys, austenitic and PH stainless steels, nickel-based super alloys such as Hastelloy and Nitronic are all materials that cause tool failure due to built-up edges and notching at the depth of cut line. Other common factors for failure are cratering, chipping and extreme heat generation, which in the case of wet-cutting operations leads to cracking. The impressive new WS40PM from ITC significantly reduces the potential for all of these common machining problems.

WS40PM's advanced cobalt-rich substrate provides robust fatigue resistance and edge integrity, while the multiphase AlTiN-TiN PVD coating reduces wear. Using an initial cutting speed of 53 m/min, the WS40PM can achieve productivity gains of 25-35 percent with consistent tool life improvements, even when milling very tough materials like Ti-5553 and Super Duplex steels.

Success with super-alloys takes more than a good carbide grade. Customers should also utilise a robust tool body platform such as the WIDIA VSM490 shoulder mill, which offers state of the art cutter design. In addition, customers must also consider the rigidity and machining platform of the machine tool, toolholder and spindle interface when aiming for the utmost in productive titanium machining. For further details on the WIDIA WS40PM, contact your local ITC representative.

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Horn to sell Boehlerit ISO tooling

A joint sales cooperation between Horn and Boehlerit, two independent manufacturers of carbide and cutting tools in Germany and Austria respectively, has resulted in the companies selling each other's products. As part of the agreement, Ringwood-based Horn Cutting Tools will sell Boehlerit-branded ISO turning and milling tools in the UK from 1st January 2017. Similar agreements have been reached in Germany, France, the USA and China.

Mike Green, general manager of Horn in the UK says: "The aim of the strategic cooperation is twofold. First, it will enable both companies to combine the product and sales synergies of their organisations and, secondly, it is an opportunity for the two medium-sized, family-run businesses to grow together by developing carefully targeted markets."

As far as Horn is concerned, the Boehlerit range of ISO turning tools perfectly complements the products from its own, internationally-leading grooving tool range. Similarly, the new Boehlerit milling cutter range will enable Horn to enhance its own portfolio of high-performance prismatic machining products by introducing a wide selection of top-performing and highly productive tools. In this way, Horn will be able to build on its leading position as a supplier of tools for technically demanding applications by establishing itself in the area of general machining as well.

New 'chip channel' turning geometries introduced by Boehlerit, in combination with the carbide and coating, will play a key role in improving cost-effective machining. The manufacturer used a high-speed camera to carry out a precise chip-breaking analysis for each turning application so that the best possible chip flow characteristics could be developed.

It has resulted in optimum turning geometries for machining steel as well as solutions to the problems posed by special steel grades and superalloys. A new, harder gradient carbide ensures a high degree of machining reliability and a more wear-resistant, MT-CVD carbide coating results in higher cutting speeds. Primarily, this is achieved by increasing the thickness of the patented Nanolock TiCN layer that safely bonds with the significantly harder Alpha-Al2O3 (HV2700), which has better insulating properties and increases service life by 60 percent, resulting in a high degree of universality in steel machining.

The new LCM20T turning grade for indexable inserts enables cutting speeds of more than 200 m/min to be achieved when turning stainless steels. The reliable, heat-resistant carbide exhibits high resistance to plastic deformation, as does the BCS20T grade for machining titanium. The peripherally ground CNGG 120408-BCU inserts, which are available in the Steeltec grades LCP15T and LCP25T, offer high machining reliability for a wide range of steels, as does the Supertec LC415Z grade, which has proven itself to be ideal for superalloys and stainless steel.

Boehlerit's range of high-end milling tools is based on eight innovative tool programmes. They include a pair of multifunctional tool systems that support two different machining operations with one main body, thereby cutting body-related and storage costs.

In total, there are 12 new milling grades combining machining reliability with cost-effectiveness, ideal for face milling and corner milling all the latest materials.

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Application range expanded for latest steel milling grade

Cutting tool and tooling systems specialist Sandvik Coromant has made its high-performance steel milling grade, GC1130, available for use with CoroMill® QD and CoroMill 331 groove milling cutters. GC1130, which is the latest Zertivo™ grade from the company, delivers high metal removal rates and secure performance levels in both wet and dry machining operations.

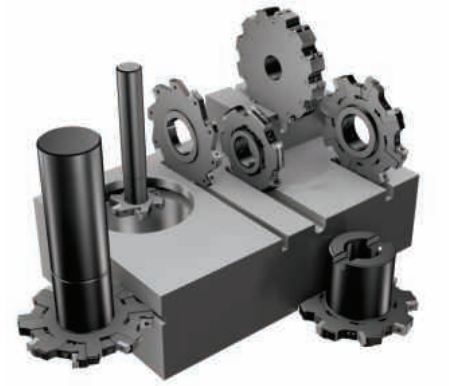
Already available for use with CoroMill 390, CoroMill 490 and CoroMill 495 shoulder and chamfer milling systems, this expansion of the application area makes the benefits of Zertivo technology, such as longer tool life and secure machining, available to a wider user profile.

Machine shops can now use grade GC1130 inserts with CoroMill QD for deep and narrow grooving in both external and internal roughing and finishing operations. For additional groove milling requirements, GC1130 inserts can also be applied to CoroMill 331, a multi-purpose side and face milling cutter. This versatile tool is capable of grooving, double half side milling, shoulder milling, face milling, back face milling, gang milling and circular ramping.

In total, GC1130 is now introduced to seven additional product families. Along with CoroMill QD and CoroMill 331, the insert grade is available for use with CoroMill 790 and T-Max long edge (shoulder milling), CoroMill Century (face milling), CoroMill 170 and CoroMill 176 (gear milling).

Project manager, Björn Ericsson says: "Issues such as flaking, abrupt chipping and thermal cracks are commonly encountered when milling materials in the ISO P application area, especially when faced with unfavourable tool paths, deep cavities or when using coolant. We have developed GC1130 to help machine shops overcome the consequential effects of reduced insert life and unstable production."

Manufactured using Zertivo, a PVD production technology that is designed to enhance the grade's advantages, GC1130 offers high edge-line security and reduced flaking. In addition, a high-Cr content fine-grain substrate delivers high resistance



to thermal cracks, helping ensure long and reliable tool life.

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

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New TK Duratomic insert grades for turning cast iron

Seco Tools has introduced two new insert grades for machining cast iron. Both TK1501 and TK0501 have wide application potential and feature Seco's proven, popular and much publicised next-generation Duratomic coating technology.

This technology, introduced by Seco in 2007 initially for steel and stainless steel turning, has been developed and refined ever since and now includes cast iron grades.

The proprietary technology involves the manipulation of Aluminium Oxide (Al203), used as an insert coating, at an atomic level, to improve coatings' mechanical properties and increase thermal and chemical inertness.

Therefore, Duratomic inserts are tough and wear resistant and, enable manufacturers to machine more parts per edge thereby increasing productivity and reducing tooling costs.

TK1501 and TK0501 incorporate Seco's edge intelligence concept. Essentially, this chrome used-edge detection capability helps manufacturers 'spot', instantly and easily, if an insert's cutting edges have been used.

John McGhee, Seco Tools UK's turning product manager says: "chrome used-edge detection makes it easy to identify wear scars on inserts even in low light environments, and prevents customers from prematurely discarding inserts with unused edges. We estimate that this feature significantly reduces waste and costs."

TK1501 and TK0501 grades are available in different insert sizes, different geometries and with different chip-breaker configurations to suit all cast iron turning requirements.

Seco's production is spread across the globe. Thanks to its standardised production methods, much of the range can be manufactured at several different facilities without compromising on quality. This flexibility enables Seco to rapidly adapt its production to fluctuations in demand.

The Group's global production structure also ensures that it comes closer to its customers. Seco can currently reach all its customers within 24 hours through one of its

four distribution hubs situated in Belgium, the US, China and Singapore.

To enable the delivery of efficient total solutions, this competence must be combined with an in-depth understanding of the customer's business. This level of understanding can only be achieved through customer closeness. This closeness is achieved by having a large number of sales representatives with high technical expertise on-site at the customers' production facilities and by establishing long-term customer relationships that are developed over time.

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Customised tools for all core competency areas

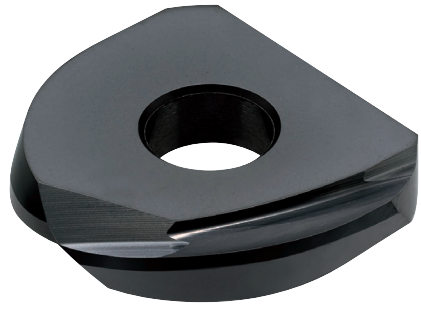
New technologies, materials and production facilities drive the international production industry. The required efficiency can often no longer be obtained by standard solutions. With its new motto "exactly yours," LMT Tools has set itself a clear goal to find the best solution for its customer's. With the new customer-specific solutions for gear cutting, thread rolling, tapping and forming as well as for milling and reaming the group focuses on customised user benefits.

The CARBIDELINE product family by LMT Fette stands for top performance in carbide gear milling. It includes three gear hob variations which are each characterised by special strength and productivity in their respective fields of application. New in 2016 is the hybrid variant CARBIDELINE-H (hybrid carbide) with brazed carbide cutting edges and the wear-resistant coating Nanosphere. With these high-class features users can cut high-strength materials of over 1,000 N/mm². The hybrid gear hob can be used in the M5 to M12 module range. The reduced diameter range is covered by CARBIDELINE-S solid-carbide gear hobs. For manufacturers of large gears, the multi-component gear cutting CARBIDELINE-I (indexable carbide) tools are the first choice.

Thread rolling systems strengthen the fibre orientation of a material making the thread even stronger, while retaining consistent gage accuracy and unparalleled surface quality. The rolling systems by LMT Fette have proven themselves over decades in series production. Now, the customised tangential rolling heads of the CTline series represent the next step in the development.

Customised means modified standard rolling heads to meet customer specific requirements. This can be achieved in several ways: Even slight changes to tool making, tool stability or coolant supply can significantly increase rolling head efficiency. To realise new solutions more quickly, LMT Fette also uses the additive 3D printing production process.

The CopyMax®2 indexable insert, that features an entirely new design by LMT Kieninger, guarantees top performance in mould and die making. Apart from improved cutting and material properties, the copy milling plate has a fully functional second cutting edge. When the first cutting edge is worn down, the second cutting edge can be turned over and used with the same service life. In cases of practical applications it was possible to quadruple service life. Another new feature is that the milling plate is manufactured using the High Quality Sintering (HQS) process. Here, increased pressure and special forming ensure stabler cutting edges on the tool. This facilitates highly consistent and reliable cutting of the material over large material surfaces. The CopyMax®2 is available as end mill cutter or bolt-on mill cutter with the diameters 16, 20 and 25 mm.



Tools are being subjected to more and more stringent requirements when it comes to finishing in mould and die making. The required precision and quality of the surface areas must be achieved despite increased cutting data. Therefore, LMT Kieninger goes right to the next step with the SuperFinish copy milling system. The new HSCline SuperFinish4 ball nose cutter has four cutting edges and a special S-cut. This guarantees shorter component processing times while extending the service life. Thanks to an ultra-fine grain carbide substrate and a coating tailored to the process, productivity is increased by 40 percent. The 30 degree helix reduces the tendency to vibrate. In addition, the small radius tolerance of +/– 5 µm ensures high dimension accuracy. As a result the surface finish is especially high at a high cutting speed.

Nanomold Black is optimally suited to universal applications. The new coating closes the gap between the already established high-performance coatings Nanomold Gold and Nanomold Red. It completes the established Nanomold coating range by adding the roughing and finishing of steel, cast steel and cast iron up to a hardness of 56 HRC. Up until now, the gold coating covered the lower hardness range for roughing and semi-finishing of materials. The red coating is ideally suited to the finishing of hardened materials of up to 65 HRC.

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Quick-change tools lower the cost of reaming small-diameter holes

A new, modular system for changing small, indexable-insert reamers in a machine spindle quickly and to a high degree of repeatability has been introduced by Horn Cutting Tools. The DR Small tooling comprises four sizes covering diameters from 13.1 mm down to 7.6 mm and is a cost-effective alternative to using solid carbide reamers.

The patented system is believed to be the only quick-change method of attaching a small reamer head to a shank without the need for locking screws. The high-precision interface features keys and slots for rapid, secure attachment, repeatability of position being within 5 µm.

The tools are designed to raise productivity and cut costs by eliminating clocking in the interchangeable head each time it is exchanged, thereby drastically reducing idle times. Such quick-change tooling has the added advantage that a manufacturer does not have to buy extra reamers to maintain production while worn tools are sent away to be reground, saving the associated costs.

The flexibility in terms of shank systems and cutting edges means that a vast array of applications is catered for. Steel and carbide shanks are available in different versions for machining through holes or blind holes, the main difference being in the type of internal coolant supply. The indexable reamer inserts are held in place in the head by a central clamping screw.

The tools will be of particular interest to manufacturers of components in high volumes for the automotive industry, for example. They will also meet the requirements of those producing high value parts where process security is paramount and the variability in surface finish, form and tolerance introduced by boring heads is unacceptable.

Horn Cutting Tools Ltd is the wholly owned UK subsidiary of Horn S.A. Luxembourg, a leading supplier of grooving tools and a leader in precision grooving technology. The company was incorporated in the UK in 2008, having previously traded as Horn UK since 1995.

The Horn group of companies is led by Paul Horn GmbH, based in Tubingen, near Stuttgart, which has been developing and producing grooving, side turning and slot milling tools since 1969. These tools occupy a leading position in the market. Its products are used by automotive, general engineering, aerospace, hydraulics/pneumatics, jewellery and medical equipment manufacturers.

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Innovations in plastic packaging

BlockPack, the newly patented packaging concept from rose plastic, features an innovative TwistLock locking system. This new and exciting design has had such an impact in the market that it has recently achieved two packaging awards.
In order to offer customer's, the widest range of application possible, the product range has now been extended by several new sizes and includes tool diameters of 8-105 mm and effective lengths of 50-620 mm.

The two-piece protective packaging combines two essential functional product advantages: the bayonet-type twist lock technology, for smooth slide opening of the tube and the ratchet length adjustment, for individual securing of product content.

BlockPack only requires the minimum operating opening force for length adjustment, offering both the manufacturer and end user effortless entry in to the packaging. It only takes a quick click to engage both parts and a simple rotation of about 10 degree fixes the desired length. Special contoured tube ends, lateral stiffening ribs and an integrated base provides stability and gives a cushioning effect.

BlockPack is available with an optional clip on/ off hanger system making it one of the most universal tool packaging on the market today. The product is available as standard, innatural PE material from stock.

For decades, rose plastic has been engaged in the development and production of special plastic packaging. Closeness to customer, a skilled and motivated workforce and a tightly interlaced network of perfected processes are the components for innovative packaging solutions of outstanding quality and for optimum service.

The company's creativity and innovation is recognised not only by its long-standing business relationships with customers but also by national and international awards for innovative products.

rose plastic is a leader in the production of protective plastic tubes and boxes for the cutting tool Industry. Its goal and the company philosophy are to service customers' requirements and provide short lead times to meet the needs of the market. It provides guidance on the appropriate selection packaging, and helps customers to develop efficient, cost effective packaging.

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Roemheld "cleans up" with electro-mechanical wedge clamps

Roemheld has introduced a new range of programmable, electro-mechanical wedge clamps for sliding tables, injection moulding machines and presses. These offer a hydraulic-free solution for automatic clamping even in clean room conditions.

Roemheld electro-mechanical wedge clamps are suitable for a wide range of applications where oil-free clamping is required, making them ideal for use in purely electrical machines, the food industry and in clean rooms. Because all functions are monitored electrically, the wedge clamps can be easily integrated into automated systems. The 24 Volt version of the wedge clamp offers high retention forces of up to 240 kN with a current of just 3.8 amps. This makes the clamping elements particularly suited to systems in which dies and moulds have to be secured in tight spaces with high clamping forces.

As with hydraulic clamps, the new electrical wedge clamps are dual action and consist of a guide housing and clamping bolt. Programmable standard drives mean that the clamping and release position of the bolt can be freely programmed up to a maximum stroke value of 25 mm. The speed of the clamping bolt can also be selected.

The electro-mechanical wedge clamps are also extremely safe to use as they have a self-locking mechanism that ensures the die is held securely even in the event of a power failure. The drive programme, including previously entered values, is also retained. In addition, the electric monitoring of the clamping forces and bolt position provides a high degree of operating safety. Integrated position monitoring components indicate the position of the bolt at all times, while data collection in conjunction with the programmable drive enables full automatic operation and makes the wedge clamp a perfect Industry 4.0 element.

The flexibility of the Roemheld electro-mechanical wedge clamps means they can be used in a variety of applications. In particular, they are suitable for dies with varying clamping edge heights and mounting dimensions in accordance with the Euromap standard or individual specifications.

The Roemheld app for tablets provides comprehensive and descriptive information about products and solutions for die clamping and changing systems in sheet metal forming. It contains the entire product catalogue with over 1,500 articles and variants, features many product videos, some animated 3D illustrations, application pictures and technical data sheets, showing a variety of application areas on presses and die-cutters. The app can be found at **www.roemheld-gruppe.de/app**

The new programmable, electro-mechanical wedge clamps for oil-free clamping of dies

Roemheld UK launches new website

Roemheld UK has launched a new, mobile friendly website designed to make it easier for visitors to access product information, download CAD files and contact the company.

Detailed information on the company's wide range of hydraulic workholding elements, machine vices, zero point clamping, magnetic clamping, quick die change and materials handling technology is available on this new site. It also has information about the company's specialist solutions for industry such as rotor locks, aluminium vices and Kostyrka clamping sleeves as well as electric clamping innovations in line with the Industry 4.0 initiative.

The new Roemheld UK site also enables offers visitors access to the wide breath of information available, including the ability to download CAD files, on the Roemheld Group site.

Terry O'Neill, managing director of Roemheld UK, says: "We have put a lot of time and effort into making this new website as user friendly as possible. Our old website had been around for a long time and we were limited with what we could do with it, so we decided to invest in a completely new Roemheld UK website so we could more effectively showcase our extensive workholding and materials handling solutions."

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

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Clamping different geometries fast and flexibly

Regardless of shape or size, the SCHUNK PRONTO prism jaws allow different geometries to be clamped fast, flexibly, and safely. The jaw quick-change system is unique in its kind. It can be retrofitted on any lathe chuck (no matter what manufacturer or design). It allows high flexibility and short setup times of just 15 seconds for a complete set of jaws. The operator can mill the customised required workpiece contour into the soft SCHUNK PRONTO prism jaws himself. Alternatively, configured jaws, based on the workpiece data of the individual prism jaws can be machined and delivered by SCHUNK on short notice. For raw parts clamping, the prism jaws are additionally equipped with SCHUNK claw inserts.

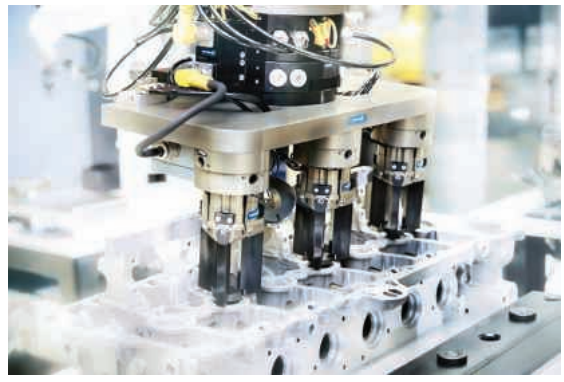
SCHUNK PRONTO prism jaws allow flexible clamping of various workpiece geometries on lathe chucks. A complete set of jaws can be precisely exchanged within 15 seconds

Fast and precise jaw change

In combination with the SCHUNK PRONTO support jaws, SCHUNK PRONTO prism jaws can be used very flexibly. For a fast jaw change, all that is needed is loosen the locking is an Allen key, to remove the clamping insert from the prism jaw, and to replace it by another clamping insert. During jaw change an incorrect positioning on the serration can be prevented. Excellent repeat accuracy of 0.02 mm allows for less time reboring inserts and turned or milled clamping inserts can be used again. In the locked condition, a six-sided form-fit locking ensures maximum process stability and allows a high force and torque transmission.

Modular design for maximum efficiency

SCHUNK PRONTO supporting jaws are available in two mounting variants: fine-serrated (1/16'' x 90° or 1,5 mm x 60°) for conventional lathe chucks, or with straight or angled serration for implementing the PRONTO system on modern quick-change chucks. The supporting jaws can be combined with different quick-change inserts, such as soft jaws, claw jaws, or prism jaws. By using the quick-change inserts, the clamping insert can be enlarged with soft jaws by up to 55 mm or with claw jaws up to 45 without having to change the base jaw's position. In turn, prism jaws allow maximum flexibility of the workpiece geometry. With the Excel-based PRONTO configuration tool, which is available for free, the selection and positioning of the supporting and changing inserts are quick and easy to do. The tool automatically determines the required changing inserts and correct position of the supporting jaws after input of the chuck type and the workpiece diameter.



The jaw quick-change system can be retrofitted onto every 3-jaw chuck for the sizes 200, 250/260, 315, and various 2-, 4- and 6-jaw chucks. The modular design allows an individual and economical combination of individual components. Every changing insert is compatible with every supporting jaw. On option, a setup cart is available, which ensures clean storing and fast access to claw inserts, soft changing inserts, supporting jaws with assembled screws and T-nuts, adjustment aids. Storage possibility in the machine is available: every component can be carried on a tray and a quick lock for assembly can be directly located in the machine.

For more information on PRONTO, watch the film at: **www.youtube.com/watch?v=F6nMsZcqOTQ**

SCHUNK to show new product lines at Southern Manufacturing

SCHUNK will once again be showing why its product range is the industry benchmark at Southern Manufacturing & Electronics 2017. On Stand S110, the family-owned company will be showing a variety of new and established product lines.

As an industry leader, SCHUNK will once again be demonstrating the capabilities of its ROTA-S Plus chuck. With an optimised wedge bar drive system, a jaw change time of less than 60 seconds and an improved lubricant system, the ROTA-S Plus ensures a consistently high clamping force that exceeds the performance from alternate lathe chucks. By making higher rotational speeds and cutting speeds possible, users can apply more efficient cutting strategies that shorten the manufacturing time.

The quick-change jaw system has an enhanced drive that allows fast, comfortable and repeat accurate jaw changes. SCHUNK offers the lathe chuck with a manually actuated expansion arbor that can be quickly retro-fitted. The innovative manual chuck is available in sizes 165, 200, 250 and 315 mm. As part of a workholding range that has been proven more than 50,000 times worldwide, the ROTA-S Plus will be among a vast array of products that the SCHUNK experts will be delighted to demonstrate at the show.

From its toolholding portfolio, SCHUNK will be emphasising the benefits of its TENDO E compact hydraulic expansion toolholder. Capable of reducing setup times by up to 80 percent whilst generating 2,000 Nm of torque, the TENDO E compact delivers micron precision for a host of machining applications. With this precision toolholder, even demanding applications with tight tolerances on the form, position and surface finish can be rapidly and reliably machined. The TENDO E compact demonstrates a tool life extension of 300 percent and tool changeovers in seconds.

SCHUNK's recent Industry 4.0 developments and automation products will also be showcased at Southern Manufacturing. One product that has proven extremely popular since its launch is the new BSWS-MPG-plus standardised finger blanks, featuring an integrated quick-change jaw system that shortens the time for a jaw change in small parts grippers. The impressive BSWS-MPG-Plus reduces jaw changes in grippers to less than 30 seconds. Compared with a conventional jaw change, the MPG-plus system reduces setup times by up to 90 percent. An easily accessible form-fit locking mechanism ensures finger change with a repeat accuracy that can be achieved within seconds by a 90° turn of an Allen key. The entire length of the fingers can be adapted to the individual workpiece without having to take into account the jaw change and the required screw connections.

The finger blanks with the integrated quick-change system are available in aluminium or steel. Both the standard and precision version of the small parts gripper are available in sizes 16 to 64 with finger strokes from 1.5 to 10 mm and gripping forces from 25 N to 350 N. The maximum part weight is between 0.13 kg and 1.25 kg, depending on the size.

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Pratt Burnerd further simplifies one-hit machining

In keeping with its reputation for developing innovative workholding systems, Pratt Burnerd International has launched a NEW 3+1 version of its highly successful Gripfast Combination Power Chuck.

Following the recent launch of the five jaw system at MACH 2016, developed for handling thin walled components, the NEW 3+1 Gripfast combination power chuck now allows for the standard three jaw chuck configuration to effortlessly convert to a two jaw system in a matter of seconds, accommodating the handling of square or irregular shaped components instantly, giving customers even more levels of flexibility in one chucking system than ever before.

Pratt Burnerd not only supplies standard chucking products and accessories, but with its vast product knowledge and unrivalled manufacturing expertise gained over 150 years, it comes into its own through its highly specialised chucking solutions. The NEW 3+1 Gripfast Chuck is yet another great example of this experience. The 3+1 Gripfast combination power chuck can be supplied in sizes from 300 mm to 500 mm, but larger versions with special modifications to suit the application can be made on request.

This 3+1 Gripfast chuck is already installed successfully on machines at existing Pratt Burnerd customer facilities and is already proving essential for carrying out three operations in one hit, cutting down massively on production setup times on highly complex components.

The well-proven three Jaw Gripfast combination power chuck is unique in providing CNC lathe customers with a chuck, a collet chuck and a mandrel chuck, all combined in the one unit. Its versatility comes into its own when integrated onto

production CNC turning centres for small and medium batch production, enabling CNC lathe operators to increase productivity by minimising non-machining time, whilst still maintaining market leading levels of repeatability. All these chucks carry the world famous Pratt Burnerd brand name, which remains synonymous with high quality, value for money, productive and highly innovative workholding products.

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Software standardisation increases efficiency and makes inspection easy

By Iain Caville, managing director of Measurement Solutions

The metrology industry has seen incredible changes over recent years, both in terms of the supplier base and the types of measuring technology on offer. There was a time when the metrology tool of choice was the traditional granite-based CMM, and for many organisations that is still the case. However, there are now many other types of disruptive technologies available, such as white-light scanning, red and blue lasers, portable arms, laser trackers, photogrammetry, the list goes on, all making claims to be the new standard in metrology.

The rise of these new technologies has seen suppliers focus their attention on the hardware devices, with everyone talking about speed, accuracy and portability. However, the one thing that makes all of these devices work and produce measurement results is the inspection software. The problem is that every manufacturer seems to have created their own software that works with only their own products, in some cases, one manufacturer may have to offer several completely different software packages depending on what type of technology they try to sell you. By accepting a hardware manufacturer's own software, users are immediately limited to what that brand can offer in the future.

An independent software solution

The latest Metrolog X4 software from Metrologic Group is designed to provide metrology professionals with a cohesive, single software platform that works with any type of measuring device technology. Metrologic Group has for many years been a leading developer of device independent software. Users only have to learn one software solution irrespective of the measuring system that is being used, the complexity of the measuring application, or the type of data that will be utilised.

The company was founded in the 1980's, providing electronic counter boxes for basic 3-axis layout machines. This led to the development of the world's first ever truly Windows-based measuring software. Equipment suppliers at the time, in particular CMM manufacturers, completely overlooked Metrologic stating that Windows software would never work. However, several major automotive companies quickly recognised the advantage of having one standardised software on every CMM, and the Metrologic Group grew quickly while the CMM manufacturers soon realised the error of their ways.

Metrologic Group is now the World's largest independent metrology software company, with over 20,000 users worldwide and sales in excess of €40million. All R&D is aimed at developing software solutions, unlike the hardware suppliers who must develop measuring devices first and foremost, and then try to keep up in terms of software. Metrologic Group has always maintained a position of being completely independent of hardware brands, enabling users to choose the right tool for the job rather than be limited in choice, as they know that whatever device they wish to use will work with Metrolog X4.

The software boasts direct interfaces to just about every 3D measuring device possible, so users can easily switch between measuring technologies or introduce new measuring technologies in the future without having to completely re-learn new software every week. Most of the automotive and aerospace industry's major manufacturers now use Metrologic software, many on a world-wide basis. It is therefore no surprise that measuring device manufacturers are keen to ensure that their devices work seamlessly with Metrolog software due to customer demand, often before the device is released onto the market. Many even offer Metrolog X4 in preference to their own software, as users are not prepared to be tied to the limitations of having to use one brand of measuring system, or worse still multiple software platforms.

What is Metrolog X4?

Metrolog X4 is to the measurement and metrology industry what Google is to internet browsing. Users want one software that is able to deal with any application, provide results in a format that is easy to understand, and to do it all without any fuss and bother. The latest Metrolog X4 software

provides users with a fully customisable user interface that is able to work with any type of measuring device. The legacy of Metrolog as CMM software is unrivalled, having started out as CMM software over 30 years ago. Other software systems having come and gone, but Metrolog X4 is still the only software that is able to interface directly to almost every CNC or manual CMM controller that is still in use today. Even old or obsolete machines that are no longer supported by the original manufacturer are still able to work with the software.

This CMM heritage has been carried over to fully utilise the new measuring technologies that are available today. Metrolog X4 treats all measuring devices as XYZ data point collectors, so irrespective of whether it is a traditional touch probe CMM taking 10 points per minute or a 3D scanner taking 500,000 points per second, the software works in exactly the same way. The user can choose between three typical modes of operation: manual measurement for one-off inspection activities, semi-automated repeat measurement of a selection or group of features, or fully automated measurement cycles with user guidance. In all cases, a familiar user interface means the user always feels "at home", whatever the complexity of the application or measuring data capture technology being utilised.

The software is completely modular, with several standard packages available according to the data capture device to be used and the type and complexity of measurement application to be undertaken. With several hundred direct device interface combinations available, users can create a solution that precisely meets their needs, irrespective of what measuring device they currently have or may require in the future. Even in its standard package formats, Metrolog X4 is still a highly-advanced measuring software, as device specific options are automatically included, for example, if the software is to be used with a laser tracker, the common large scale metrology tools are automatically configured e.g. build/inspect for jig and tool adjustment. In addition, a range of application specific modules can be included to adapt the software configuration to specific needs. Some examples of these modules include advanced reporting & data export, advanced GD&T analysis, blade measurement for aerospace applications, twin or multi-device connections, high level programming, CMM simulation, i-Remote control using hand-held devices (iPad, smartphone, etc.), and so on.

Built for the future

Fully compatible with Windows 7 and Windows 10, both in 32 and 64-bit guises, Metrolog X4 is designed to make full use of the latest Microsoft Windows operating system and computer hardware architectures. Full use of multi-processing means the toughest of tasks are handled with ease. For example, huge CAD files and data point clouds can be easily loaded and manipulated within the software, thanks mainly to the use of intelligent processor & memory management, and utilisation of the industry standard OpenGL graphics engine. This ensures that Metrolog X4 provides users with a serious, long-term software solution that is able to meet their needs for many years into the future, and not just a quick fix based on the latest widgets.

However, Metrologic Group doesn't simply develop software in response to the hardware manufacturer's product developments. For many years, the company has developed software that has predicted and often defined the future of measurement. Back in the early days, CMM's were predominantly used to measure prismatic or geometric features, replacing the old-fashioned methods of first-principle measurement. However, at that time Metrologic focused its attention on measurement of free-form surfaces (such as car body applications) with direct comparison to 3D CAD data, something that had never been seen or even imagined before. Many of the features you see in most measuring software today, such as colour maps, graphical results with result labels or stickers, and customisable report layouts, all originated from that early Metrologic software.

They were also one of the first companies to successfully combine laser scanning heads onto CNC CMM's, when even the scanning device manufacturers focused only on portable measuring arms.

A more recent development has been Metrolog X4 i-Robot, a software solution that turns any make of industrial robot into a fully programmable CMM solution. First introduced almost 5 years ago at the international control show in Germany, Metrologic were able to show how it is possible to program an industrial robot directly from within a traditional metrology software package, without the need for specialist PLC programming.

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At home in the automotive industry

For about three years, the Huron machining centre at the tool shop of Forges de Courcelles has been equipped with Blum measuring technology. Under the constant pressure of having to optimise its production processes, the department has to reduce its cycle times continuously. Against the background of strong competition and rising demand, especially of crank shafts, the laser measuring systems and TC52 touch probes of Blum facilitated the reduction of lead times and an increase in precision.

The Nogent area located in Haute-Marne was known for its cutlery producing industry for a long time. Another industrial sector that also originated in the middle of the 19th century has held its ground in the industrial landscape and that is the operation of steel mills. Also, today, the operation at the Forges de Courcelles site is running at full speed. Being a subsidiary of the SIFCOR Group, the company specialises in hot pressing safety parts.

The company is benefiting from the upturn in the automotive market, which accounts for 95 percent of its turnover. The remaining five percent of business is with the heavy vehicle and truck sector.

Regis Varney, head of the tool shop onsite, explains: "We mainly produce steering boxes, shifting forks, drive shafts, chassis components such as kingpins for cars and triangular control arms for trucks. A large part of our production is crank shafts, the demand of which has dramatically risen ever since the introduction of direct injector diesel motors (HDI)."

With over 470 staff, a turnover of €116.6 million and an annual tonnage of 53,600 tonnes, Forges de Courcelles has maintained its position as a European leading company in the production of crank shafts. Every year three million are being produced. And the company that uses cutting-edge production machines is running modern machining centres to supply up to twenty dies a day for internal use.

The tool shop consists largely of horizontal machining centres with pallet changing devices that allow short production changeover times. The workshop also includes a station with three Makino A88 machining centres, each equipped with 13 pallets. In addition, the

tool shop contains a robot-welding station. Endeavouring to expand its equipment, and to further modernise its production resources in order to meet the rising demand, Forges de Courcelles opted for a vertical Huron K2X10 machining centre.

This machine was supplied with a laser measuring system for tool measurement and a touch probe for workpiece measurement, both from Blum Novotest.

Time is always of great significance and this is where the Blum Novotest touch probes come in. After placing the workpiece on the magnetic plate, all the user needs to do is start the measuring cycle. The touch probe measures the workpiece and acquires the workpiece zero point in record speed.

Guillaume Thenon, former head of the French Blum Novotest branch, explains: "The opto-electronic measuring mechanism developed by Blum Novotest allows a significantly higher probing speed. Up to 2 m/min is possible with the TC52 and this with higher accuracy than other touch probes.

"Together with the Blum FormControl software, users can recognise machining errors directly in the process, which enables them to rework the part in its original clamping."

The Blum MicroCompact NT laser measuring system is integrated directly in the Huron machine. Thanks to the optical system, tools can be measured under working speed while the current chucking

situation as well as the spindle expansion is taken into consideration.

Various applications are possible. Of course, all functions of an optical system, such as non-contact tool setting in length and radius, shaft breakage and cutting edge monitoring, examination for chucking and concentricity errors as well as wear monitoring are available.

Regis Varney concludes: "With the Blum laser control systems, we can also check the shape of the cutting edge. This allows us to detect even miniscule errors in the cutting edge before we commence machining. We therefore increase process safety and eliminate the risk of workpieces being damaged or becoming rejects."

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Pressings subcontractor replaces two CMMs with one Nikon video measuring machine

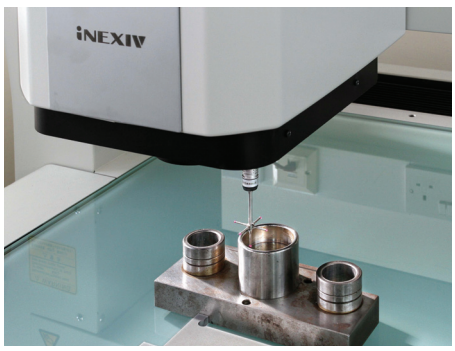
Optical inspection time halved and touch probing cycles cut 15-fold

Second-tier supplier of light pressings and small assemblies to the automotive industry, Berck Ltd, has invested in a Nikon Metrology iNEXIV VMA-4540 CNC video measuring machine fitted with tactile probing capability. Installed at the subcontractor's factory in West Bromwich, UK, the multi-sensor machine has greatly speeded the inspection of 2D and 3D sheet metal components, improved measuring accuracy, and facilitated the production of detailed quality reports for customers. It also allows manufacturing processes to be optimised by providing detailed historical measurement data to be compared with current inspection results.

Two-thirds of Berck's output goes to the vehicle manufacturing industry in the UK and overseas, of which 40 percent is bracketry for the engine compartment or wiring loom and the remainder comprises precision contacts for lights, windows, seats and other electrical equipment. The other third of production is delivered to customers manufacturing domestic electrical goods such as cookers, lighting and plugs.

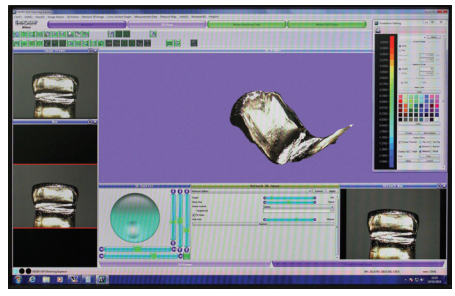
Components are stamped using up to 12-stage progression tools on 23 presses, including 12 high-speed models, mainly from coil between 10 and 150 mm wide, 0.1 to 3.5 mm thick. Materials encompass brass including tin-plated varieties, mild and spring steel, copper, beryllium copper, phosphor bronze and aluminium.

The subcontractor has for many years used a Mitutoyo Quick Vision Ace CNC optical coordinate measuring machine (CMM) and a Kemco manual touch-probe CMM to inspect sheet metal parts and tools.



The former machine is nearing the end of its useful life, while the latter was recently dismantled as it was beyond economic repair.In 2015, realising that a new metrology solution would soon be required, Berck's quality manager Steve Bettridge visited the Advanced Manufacturing Show at the National Exhibition Centre, Birmingham, to investigate what alternatives were available.

He was keen to combine the functions of both the Mitutoyo and Kemco CMMs in one machine and was also aware that 95 percent of throughput in the quality department at West Bromwich is optical measurement of sheet metal components. Only five percent is touch probing for inspection of components with steep sides, like fuse cups that have a dimensional tolerance of ± 20 µm and are difficult to inspect by optical auto focus. Parts with complex external profiles such as radiator cap inserts are similarly difficult to measure optically.



After discarding the idea of combined touch probing and laser scanning on a CMM, as that level of accuracy was not needed for pressed parts and the cost was too high, Steve Bettridge looked at various alternative video measuring machines and decided in favour of the Nikon Metrology iNEXIV. The machine had a larger stage than others on offer, so promised greater versatility use, the company's proprietary software was considered easy to use, and the quality of the Nikon camera and objective lens was beyond question. It is noteworthy that, although laser technology has not been adopted, there is the option to fit laser autofocus if the need arises.

The Nikon CNC video measuring machine is equipped with three light sources for efficient inspection, whatever the type of product. Episcopic (overhead), diascopic (transmitted light) and an 8-segment ring LED combine to provide comprehensive illumination and accurate edge detection.

Since it was installed in April 2016, the iNEXIV has been a resounding success. Optical measuring routines are programmed conversationally in half the time required using G-code for the Quick Vision Ace. The stage on the Nikon instrument, with its 450 mm x 400 mm working area, is four times the size and the axis movements are considerably faster, so more components can be inspected in a shorter time.

Steve Bettridge concludes: "Nikon engineers came here to provide training within one week of the video CMM being installed. It allowed us to learn how to program the machine and measure our own components, so the training was directly relevant to our business.

"The software is surprisingly easy to pick up, provided that you have a basic knowledge of the principles of metrology.''

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LPE 'coordinating' quality with Mitutoyo

The quality, reliability and longevity of manufactured products is continuously improving, in addition to enhanced design techniques and developments in material science, this progress is largely due to the use of advanced quality control methods, equipment and the application of tighter dimensional tolerances.

The workhorse of most manufacturers' inspection departments is the now ubiquitous Coordinate Measuring Machine (CMM). As the need for higher standards of precision grows, so does the requirement for faster inspection speeds to keep-pace with the latest, highly productive machine tools. Manufacturers such as Mitutoyo have responded to these challenges with the introduction of a new generation of CMMs that deliver the required levels of precision and speed.

To make full use of todays advanced CNC CMMs, well-informed manufacturers are now employing highly-efficient techniques such as offline programing and linking their multiple CMMs into their manufacturing software systems. One such progressive company is Lymington Precision Engineers Co Ltd (LPE).

LPE is a leading manufacturer of precision machined components, fabrications, assemblies and kit sets for the oil and gas, telecommunications, aerospace and defence, land and sea systems, nuclear and marine industries.

A major employer in the New Forest and surrounding areas with more than 180 members of staff, since 2015 LPE has been owned by Senior plc and operates within the Flexonics division. Continuous investment in the latest machine tools and inspection technology enables the company's highly skilled workforce to meet customers' challenging requirements.

To help deliver the company's quality objectives LPE use a wide range of Mitutoyo inspection aids, such as hardness testers and optical measuring equipment. Although, the mainstay of the company's inspection functions are its 14 Mitutoyo CMMs, including an advanced Mitutoyo Crysta-Apex-S122010, CNC machine.

LPE's Mitutoyo CMMs range from small models located on the shop-floor to large CNC machines with work piece capacities of up to 2 m long, 1.0 m wide and 0.9 m high. Due to the precision of many of LPE manufactured components, most of the company's CMMs are situated in enclosed, temperature controlled environments.

LPE's advanced CNC manufacturing capabilities run in parallel with the offline programming of its CMM's. The use of virtual offline MCosmos-3 software allows the utilisation and investigation of CAD models, resulting in data files that can be converted to produce program code for the MCosmos software. Inspection programming is carried out concurrently with manufacturing to enable reduced lead times to be achieved.

The Mitutoyo Crysta-Apex-S122010, as purchased by LPE, is an advanced CMM that is capable of making very accurate measurements at high speed. The machine represents a future-proof investment for LPE as its probe systems and software can easily be upgraded, or added to at a later date. In short, the CRYSTA-Apex S not only provides precision and speed, it also guarantees flexibility.

The CRYSTA-Apex S is based on proven construction principles that are optimised to reduce any adverse dynamic effects within the system. Dedicated software algorithms guarantee high accuracy by eliminating even the most miniscule of geometrical imperfections in the CMMs guideways.

The machine's integrated thermal compensation system enables measurement at temperatures varying between 16 and 26°C, by automatically calculating and presenting measurement results as if they were made at the standard reference temperature of 20°C. This system works even when temperature gradients of 1 K per metre and per hour are experienced.

Optional active vibration damping makes it possible to locate this innovative CMM close to a production line, enhancing efficiency by reducing the time taken to transport workpieces to and from the source of inspection.

The CRYSTA-Apex S is equipped with a brand new controller. The UC-400 allows high speed measurements and movements with impressive accuracies, further increasing inspection throughput and saving costs.

As a fully flexible 3D measuring machine the CRYSTA-Apex S can be equipped with almost any kind of probe, such as, touch-trigger probes, scanning probes and laser scanners such as Mitutoyo's new SurfaceMeasure.

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

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Ultra-high accuracy machines made future ready

Hexagon Manufacturing Intelligence has announced an upgrade for the Leitz PMM-C and Leitz PMM-Xi coordinate measuring machines (CMMs) to ensure the ultra-high accuracy metrology solutions are more adaptable for user needs now and in the future.

The future-ready concept from Hexagon will optimise the machines for the SENMATION intelligent sensor automation system, by replacing the current pre-cabling with a universal alternative. The new pre-cabling concept will be installed on all standard configuration Leitz PMM-C and Leitz PMM-Xi CMMs allowing for more flexible application changes without costly downtime.

The SENMATION intelligent sensor automation system allows different probe heads to be used within a simple measurement procedure without human interaction. Automated measurement cycles can be introduced to further increase speed and optimise the manufacturing process. Rework and rejection rates will also be reduced, creating a faster and more reliable quality assurance system. Both the Leitz PMM-C and Leitz PMM-Xi machines can now handle an extended measurement portfolio including fixed and indexing probes and optical measurement options. Machines with the update will no longer need engineers to switch pre-cabling to facilitate application changes, allowing for better flexibility in the manufacturing process, reducing downtime costs and making the CMM more adaptable to changes in future technologies and processes.

Holger Fritze, general manager at Hexagon Manufacturing Intelligence says: "We are always looking for ways to improve and develop our CMMs and have taken the opportunity to make some of our best machines even better. By introducing the future-ready concept our aim is to eradicate unnecessary downtime for our customers, speeding up measurement routines and allowing more flexibility in their workflows now, and in the future."

The future-ready concept will be introduced to standard configuration Leitz PMM-C and Leitz PMM-Xi machines from next year. More information is available through local Hexagon commercial operations and dealers.

Hexagon Manufacturing Intelligence helps industrial manufacturers develop the disruptive technologies of today and the life-changing products of tomorrow. As a leading metrology and manufacturing solution specialist, its expertise in sensing, thinking and acting, the collection, analysis and active use of measurement data, gives customers the confidence to increase production speed and accelerate productivity while enhancing product quality.

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High-resolution array imager

FARO has announced the launch of a higher resolution version of its Cobalt Array Imager solution which is geared towards quality inspection, factory automation and In-Process Verification (IPV) applications.

The new 9MP version of the Cobalt Array Imager is a higher resolution model of the Cobalt platform, which FARO introduced earlier this year. The 9MP version is ideally suited for manufacturers, particularly automotive and aerospace manufacturers, where there is a need to capture fine details and features on edges and surfaces including stamped, machined or engraved parts. The current 5MP version remains the ideal solution for customers who do not require high-resolution data capture. Both versions feature on-board processing, blue light technology, interchangeable lenses, high dynamic range and automatic exposure.

On-board processing, an industry first, means that the Cobalt Array Imager is a smart sensor. This capability enables unique multi-imager array configurations of an unlimited number of Cobalt sensors. Multi-imager arrays expand the scan area to deliver rapid and automated inspection of all surfaces of an object, dramatically reducing cycle time. The actionable data is delivered as a simple go/no-go result or an easy-to-read dimensional deviation colour map.

Joe Arezone, chief commercial officer of FARO, says: "FARO's portfolio of Cobalt Array Imagers is designed for the factory floor and production environments so they can be used anywhere inspection is needed. The Cobalt is deployable in both near-line and in-line inspection applications, which allows this solution to align with lean manufacturing principles of eliminating unnecessary movements and time. The new 9MP version enhances Cobalt's attractiveness for applications requiring higher resolution scan data and provides our customers with more options to select the version best tailored to their needs."

Joe Arezone concludes: "Our initial release of the Cobalt Array Imager was well received as a product which allows businesses to simultaneously improve both quality and productivity. The Cobalt is a simple-to-use solution, ideal for maximising productivity and automated workflows throughout the factory. This is particularly true when using the Cobalt in automated inspection processes that may include deploying multiple Cobalt sensors in multi-imager array configurations or attaching one or more Cobalts to a robot. Moreover, Cobalt is priced for rapid return on investment and offers unparalleled value."

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World's first multi smart camera vision system

The only multi-camera system that gets faster with each camera added

Cognex Corporation, a leader in machine vision, has introduced the In-Sight® VC200 series, a family of multi smart camera vision systems. The In-Sight VC200 series brings the proven performance and reliability of In-Sight vision systems to multi-camera vision applications.

Traditional multi-camera systems use "dumb" cameras that share the same processer, resulting in slower performance as more cameras are added. This technology limits today's multi-camera systems to applications with simultaneous acquisitions. The In-Sight VC200 overcomes these restrictions because the processing power actually increases with each additional camera, expanding the number of multi-camera inspection applications. This improved performance helps keep pace with fast-moving production lines and also provides the flexibility to solve applications with sequential or asynchronous inspections.

The In-Sight VC200 includes a fully customisable, web-enabled HMI, providing monitoring and control through password-protected access levels. With the In-Sight VC200, operators can now view inspections, controls engineers can modify parameters and plant managers can review performance statistics simultaneously from any iOS®-, Android®- or Windows®-based device with a web browser.

Joerg Kuechen, Cognex vice president and business unit manager, says: "As our customers expand their use of machine vision, they are looking for ways to make standalone cameras work together to solve applications requiring multi-view inspections. The In-Sight VC200 now offers this functionality leveraging the In-Sight platform, recognised as the gold standard in machine vision."

Like all In-Sight vision systems, In-Sight VC200 multi-camera applications are easy to set up with the powerful In-Sight explorer software. The graphical workflow simplifies vision applications by separating the inspection steps into manageable tool blocks. It also provides access to proven In-Sight vision tools (including PatMax Redline, OCRMax and others) through the familiar spreadsheet interface.

Cognex Corporation designs and manufactures sophisticated machine vision technology that gives products the ability to see. Cognex products include barcode readers, machine vision sensors, and machine vision systems that are used in factories, warehouses, and distribution centres around the world to guide, gauge, inspect, identify, and assure the quality of items during the manufacturing and distribution process.

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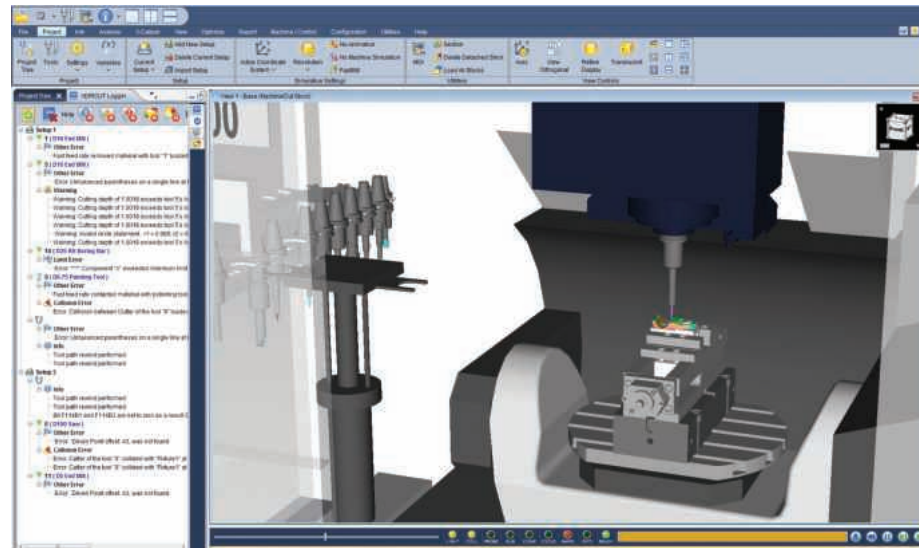
VERICUT Version 8 heralds improved workflow efficiency

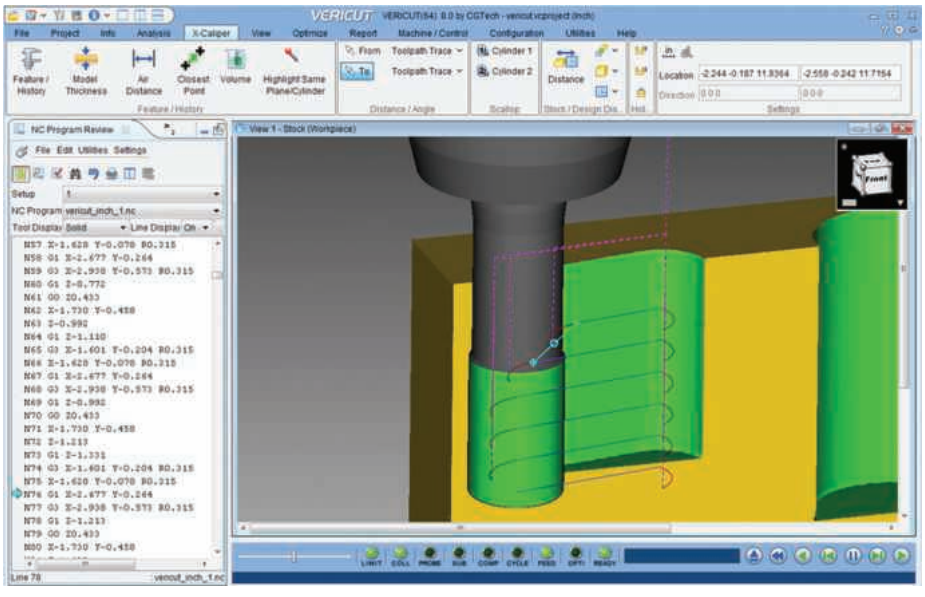


Developed and supported globally by CGTech, VERICUT is independent CNC simulation and optimisation software. CGTech is increasingly challenged to simulate more complex processes and machines, while supporting 'right first time' production goals. The latest release of the software, Version 8 ties complex processes together with the ability to monitor and evaluate many potential problems in an efficient and consolidated way, thereby reducing the time spent in the programming and machining cycle.

VERICUT machine simulation detects collisions and near-misses between all machine tool components such as axis slides, heads, turrets, rotary tables, spindles, tool changers, fixtures, workpieces, cutting tools, and other user-defined objects. Users can also set up 'near-miss zones' around components to check for close calls and detect over-travel errors. Machine movements and material replacement can even be simulated while stepping or playing backwards.

VERICUT CNC machine simulation, verification and optimisation software simulates all types of CNC machining, including drilling and trimming of composite parts, water jet, riveting, robots, mill-turn and parallel kinematics. The software operates independently, but can also be integrated with leading CAM systems including Dassault Systemes CATIA, Siemens PLM NX, Autodesk PowerMill and Vero EdgeCAM. Version 8 features several enhancements designed to increase the ability of manufacturing engineers to analyse, optimise, and document the CNC programming and machining process. Intelligence gathered from both the cut part and the machining process is applied to achieve an even higher level of accuracy and efficiency.

A new ribbon bar in the latest release optimises workflow and helps users find the functionality required with minimal mouse clicks. The ribbon bar allows the quick selection of the VERICUT function needed. Moving from tab to tab, the ribbon bar dynamically updates to show the options available for that tab. Options are grouped by the function they perform within VERICUT.



The ribbon bar is highly customisable, but to ease the transition for experienced users of the software a VERICUT classic setting organises all of the menus and options where they were previously located. Several other layout options are included and can be selected depending on the task at hand. Users can also create and save their own workflow as needed for different jobs.

CGTech's managing director, John Reed says: "VERICUT 8 is all about optimising our customers' workflow to quickly access only the menu choices needed at the time. The ribbon bar has been developed to help users find the functionality they need quickly and with minimal mouse clicks."

CADCAM programmers and manufacturing engineers now have the ability to optimise air cuts only focusing on the milling cutter motions away from the raw material. This capability is included within the base verification license, and this new method is intended as an easy-to-use, entry level technique of optimising NC programs. Additional optimisation strategies are available with the optional OptiPath or FORCE modules.

VERICUT V8 can read STEP files without any extra licensing. The STEP model interface reads STEP files (.stp or .step) containing AP203 and AP214 (geometry only) protocols. A STEP file can be referenced directly in VERICUT's modelling interface to describe machine, stock, fixture,

and design shapes, or 3D cutting tool shapes in VERICUT's tool manager. The tool manager displays the CAD geometry window that allows users to identify which parts of the CAD model file correspond with holders, cutters, or inserts.

As with all software programs, the accuracy of the data input will directly affect the output. So, an accurate model of the cutting tool and holder is required for the effective and accurate simulation of the machining process. Most leading cutting tool manufacturers now make 3D solid model data available and VERICUT can read in this model data for use in the simulation process. Many of the 3D models are available via the machining cloud app, and Version 8 has been enhanced to take advantage of more machining cloud metadata. This can significantly simplify the configuration of tools for use in VERICUT, and better describe their proper use and limitations. The software also interfaces with tool management systems such as TDM Systems, Zoller, and WinTool for access to databases storing cutting tool information. Also, the WinTool interface can now be launched from within tool manager.

VERICUT also integrates with most major tool management systems. Pre-setting suppliers including Zoller and Speroni can also interface to the software, so tool offsets and exact dimensions can be applied to the simulation session.

A new preferences dialog allows users to setup many default settings that help to streamline creation of cutting tool assemblies. For example, specifying the colours used and the driven point offset numbering scheme (default to '1' or follow the tool number) and CAD model tolerances for cutters and holders, and if the holder is desired (or not) for a new tool. Each imported 3D tool model can also have its own separate model tolerance. For example, users may want a very high accuracy on the cutter model, and less tolerance on the holder model. Tool manager in this version also has a number of other time-saving features, such as being able to mark any tools as 'default', to be the starting point for building similar tools of that type, instead of starting from scratch. There are also a number of copy, paste and multi select improvements.

The VERICUT logger now displays messages and reports from many sources in a tabbed logger window. In addition to errors, warnings, and other messages from the VERICUT session, it also displays information from AUTO-DIFF and X-Caliper. The messages can be grouped, sorted, and displayed in a variety of ways depending on user preference. VERICUT speeds investigation with dynamic links between logger messages and responsible NC Program records. So the exact source of an error can be located in just one click.

A new 'toolpath trace' feature creates a wireframe of the motion path that can then be measured. In NC program preview or review modes, picking on a toolpath trace in the wireframe automatically sets the simulation to that record in the NC program.

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Alphacam 2017 R1 enhances simulation and automation

The latest edition of Alphacam, from Vero Software, a leading CAM developer, is rich with new features ranging across the modules, making it easier to use and improve productivity.

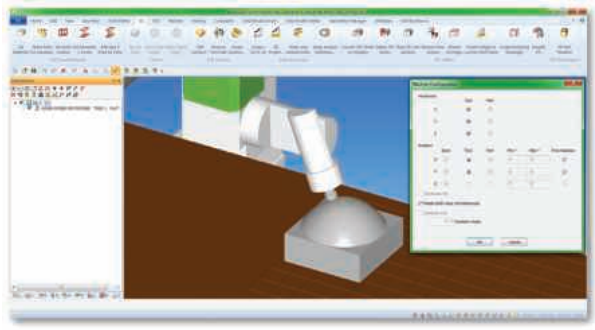
The overall user experience has been augmented in several ways, including restyled dialogs to provide a more intuitive layout, with images and tooltips included to help the user. An example is the new 3D machining dialog which provides the interface to multiple machining strategies in a consistent manner. Strategies available in the 3D machining command are: Along intersection; Constant cusp; Cylindrical parallel; Cylindrical profiling; Drive curves and Z contour roughing.

The work plane properties option in the project manager displays a window with a grid containing details of the work planes in the active drawing, such as the name and offset number, which can also be edited in the grid. Additionally, it is now possible to rename the move clamp/fixture operation in the quick edit window.

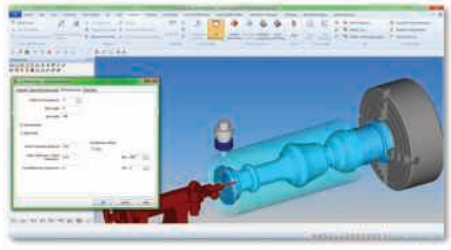
A new option in drawing notes means the add-ins dialog will only be displayed if the opened drawing file already contains notes.

In machining, the cylindrical parallel strategy now gives the option of setting the width of cut as a distance, and when editing settings, the drawing area will update with a preview of the tool and holder, if applicable. The machining area is indicated by a transparent shaded region around the part that is automatically updated when settings are changed in the dialog, allowing the user to visualise the effect that a change has on the operation.

Alphacam router now includes improved foul avoidance for sawing. Previously when using a saw to cut parts, the risk of fouling other parts was increased due to the size of the blade. Alphacam 2017 R1 sawing operations now checks for fouling against all geometries selected for the same operation, resulting in toolpaths being trimmed, if necessary. This means that parts can be laid out on a sheet and all sawn as the same operation, using the automatic fouling check. The operator can use the new path extensions tool with options for extending saw paths by either, distance, to boundary or pick point, with reversing options.



For simulator, the new release sees XY configurations supported on both the head and table.



The transfer of 5-axis toolpaths between Alphacam and the simulator has been optimised, meaning that complex operations containing toolpaths comprising thousands of individual elements are much faster. Furthermore, if program stops are included in the operation, they will now be recognised. All these improvements make the user experience more realistic and speed up the simulation process.

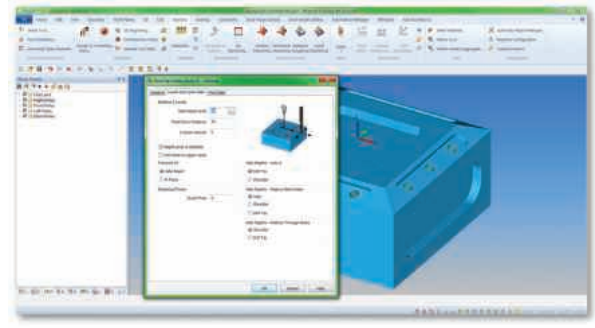
Automation manager sees several new options that provide flexibility and performance improvements including an option that enables the user to extract the solid body outline of the part known as feature extraction, from faces.

For non-nested job files the from job option is now available in the machining order drop-down menu in the processing tab. This is now set as the default selection for non-nested job files. Alphacam 2017 R1 gives the ability to copy and paste styles in the layer mapping setup tree by right-clicking and selecting copy or paste on the menu. Settings are retained when copying, which enhances efficiency by removing the need to re-apply settings each time a style is applied to a layer. It is also possible to copy and paste a complete setup, if required.

Work volume support has been added for the parametric sketcher. This is useful for many post processors that require the work volume dimensions for the NC controller.

User configurable default layer setting is useful when creating designs with set layer configurations. Improved solid model assembly splitting support for SolidWorks and Solid Edge assemblies is also provided.

Alphacam's network license profiles allow users to save their own selection of system and module licenses as a single profile, making it quick and easy to select pre-defined license options. For example, all network licensing users can create their own set of license profiles and copy them to a shared folder on a nominated network PC, ensuring that all users can access the same ones.



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Mastercam announces new post processor for SINUMERIK controllers

CNC Software, Inc., producer of Mastercam CADCAM software, has announced a 3-axis milling post processor that will unleash the highest productivity on SINUMERIK-controlled machine tools. The new post processor was developed utilising the technical expertise of Siemens CNC engineers.

This post processor includes support for SINUMERIK 840D sl and 828D CNCs from Siemens and features: Cycle 832 support for high-speed settings; Drill cycles (cycles 82, 83, 84, 85, 86, 840) ;Workpiece output for graphical simulation; Tool call as tool name or tool number; TOFFR option; Siemens 3-axis application guide.

Pedro Sanchez, Jr, post department manager of CNC Software, Inc., says: "We've been collaborating with Siemens in this development for the release of Mastercam 2017, and are proud to announce the 3-axis milling post processor as the initial launch of strengthening our relationship for future posts that will benefit mutual customers."

It is cooperation like this that provides Mastercam users the opportunity to truly complement their CAM investment and give their shops the best chance at a more efficient manufacturing solution, from design to part.

Chris Pollack, east coast dealer and importer regional account manager, says: "By educating Mastercam on the key advanced functions of the SINUMERIK control, Mastercam has been able to create a post-processor that provides the most value to our mutual customers. Siemens looks forward to continuing to help Mastercam create more advanced post-processors in the future."

CNC Software, Inc. is dedicated to providing state-of-the-art software tools for CADCAM manufacturing markets. Its goal is to provide superior software products based on users' needs to solve simple to complex design and machining problems. In addition to providing the software, it also provides exceptional service and support to our customers.

CNC Software was one of the first companies to introduce CADCAM software designed for both the machinist and the engineer, providing a practical solution to both markets. While the original version of Mastercam focused on two-dimensional (2D) CAM, it was also one of the first micro-based CAM packages to include CAD capabilities. With Mastercam, the engineer could construct his or her own parts quickly and easily as well as machine them, for an affordable price.

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The focus is on saving time

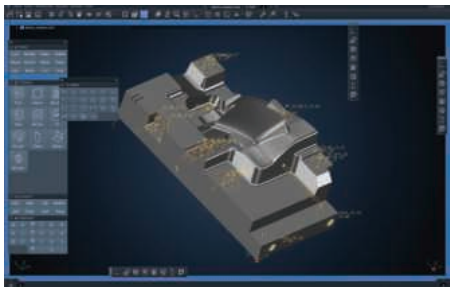
Tebis, the software and process provider for the development, design and manufacture of models, moulding tools and components, has made its Version 4.0 Release 3 available on the market. With this update of the proven CADCAM software, customers will be able to design their processes more efficiently. The newly added functions allow users more flexibility and cost efficiency in design manufacturing preparation and processing, saving them considerable time. This is supported by more intuitive and simpler operation.

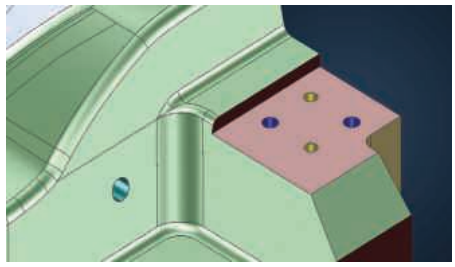
Toolbars and menu panels can be easily docked to the edge of the application window. The software interface is more informative for the user, who can learn to operate it more quickly and easily and with less effort. A new project dialog with the most recently used files is displayed immediately after the program is started, so the user won't lose any time after an interruption. This is supplemented by preview images of saved components.

With Release 3, Tebis has also improved the display of wire-frame models and isolines. The user is often confronted with the problem of many isolines, which can make the view of the components unclear on the screen. The colours of the models can be adjusted independently of the surface colour in the new Release 3.

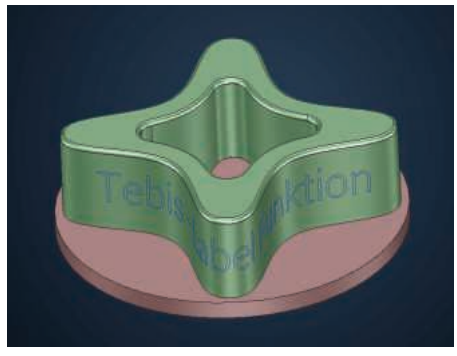
In its update to Version 4.0, Tebis has focused on a more efficient use of time. Among other measures, the software achieves this by automatically breaking up assemblies and complex files with many manufactured parts into multiple individual files. The user can immediately access the corresponding component with no effort at all.

They can also design active surfaces more quickly and spot them in tryout. In addition, the software can very conveniently flatten positive radii. This prevents any contact in the special areas between the sheet metal





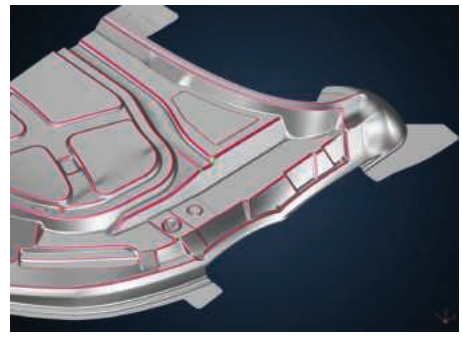
and the die in the press. This is especially important for subsequent operations after drawing the component. The customer can also save more time with optimised reverse engineering. Release 3 provides improved algorithms that generate perfect transitions for 4-edge surfaces. The user can also quickly and easily adjust the approximation tolerance as well as control generated radius runouts and theoretical edges more efficiently. The software also includes an automatic smoothing process for theoretical edges with few segments.



This also saves the user valuable minutes when surface modelling. When generating surfaces with constant curvature, Release 3 supports symmetrical areas, for example, and provides better management of input parameters when using optimisation functions.

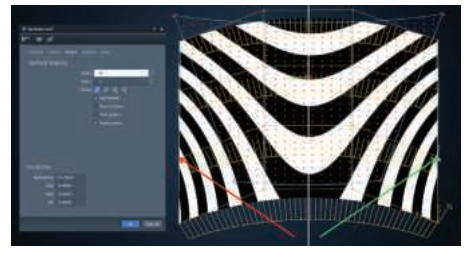
The new Version 4.0 also delivers customers improved reliability in NC programs. An extended list with known machine conflicts is integrated in the CADCAM software for quick access by the user. This enables users to mark and filter acceptable and critical conflicts between the affected machine components. Release 3 provides an additional option for automatic collision avoidance in 3-axis milling.

The NC automation of 2.5 D drilling and milling is also more efficient, because the processing sequence in feature-based NC programming can now be more easily influenced by feature groups. Tool optimisation has also been extended in the job manager. Tools can be changed across machining operations in NCJobs. The user can also assign NC variables across features. Standard and free-form functions can be selected independently of type and parameter assignment. The software always identifies currently different and modified variable assignments.



The new release also includes a function that is perfect for engraving texts, logos and numbers. The operator receives a text that is projected on the component geometry. A new function has been incorporated to calculate the 5-axis toolpath required for this operation.

The user can shorten cycle times by roughly 30 percent in laser cutting and trimming. This is because the improved NC



point distribution results in more compact programs. The user can set axial tolerances and manually remove NC points. In Release 3, head tilt directions on the manufacturing machines can also be handled more easily in stamping areas. This prevents rapid pivot movements of the machine. And toolpaths can be checked numerically with the collision check machine add-on, so that collisions and limit-switch conflicts never even occur. This saves more time and costs.

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Cycle time reduced

The cutting edge of tomorrow's CADCAM software

ProfitTurning™, releases in the latest version of the ESPRIT CAM software, represents years of ground-breaking research. A lathe roughing strategy that significantly reduces machine cycle time, ProfitTurning has hurdled a gruelling series of tests, delivering a performance that promises to take machinists, engineers and industrialists to greater levels of precision, quality control and productivity.

ProfitTurning is a high-speed lathe roughing strategy developed by DP Technology Corp. for OD/ID/face cutting and other tasks. Fast, secure and efficient, it also extends tool life by significantly minimising wear. Compared to conventional ramping methods, ProfitTurning reduces machine cycle time as well as the frequency tooling inserts need to be replaced.

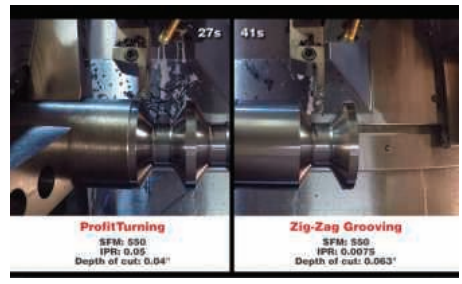
DP Technology's R&D Director of product and engineering Ivan Kristic reveals the science behind ProfitTurning's performance. Ivan Kristic says: "ESPRIT 2016's ProfitTurning toolpath maintains consistent cutting forces and chip loads, allowing cutting speeds to be significantly increased. By employing trochoidal turning and controlled engagement techniques, the ProfitTurning toolpath also reduces vibration and residual stresses, which in turn makes it particularly well-suited to thin walls or hard materials, especially super alloys. The net result is significantly reduced cycle times and maximised productivity."

Physics-based cutting engine

ESPRIT 2016 uses a physics-based cutting engine which provides the foundation for the technologies such as ProfitTurning.

While traditional cutting strategies consider only the geometry of materials, ESPRIT 2016 taps deeper into the science of how different industrial materials can be cut in the most efficient ways possible. Its new toolpath technology uses the principles of physics to formulate unique strategies for each cutting challenge.

To do that, ESPRIT 2016 inputs all relevant



factors in the toolpath algorithm such as tool material, tool shape, workpiece material, tool speed, feed rate, chip deforming, chip load, machine tool power, acceleration and deceleration. This helps establish complete control of the cutting environment, allowing for optimal cutting everywhere along the toolpath.

For more details about this new technology, please read the ESPRIT 2016 ProfitTurning White Paper available at: **www.espritcam.com/products/profit-turning**.

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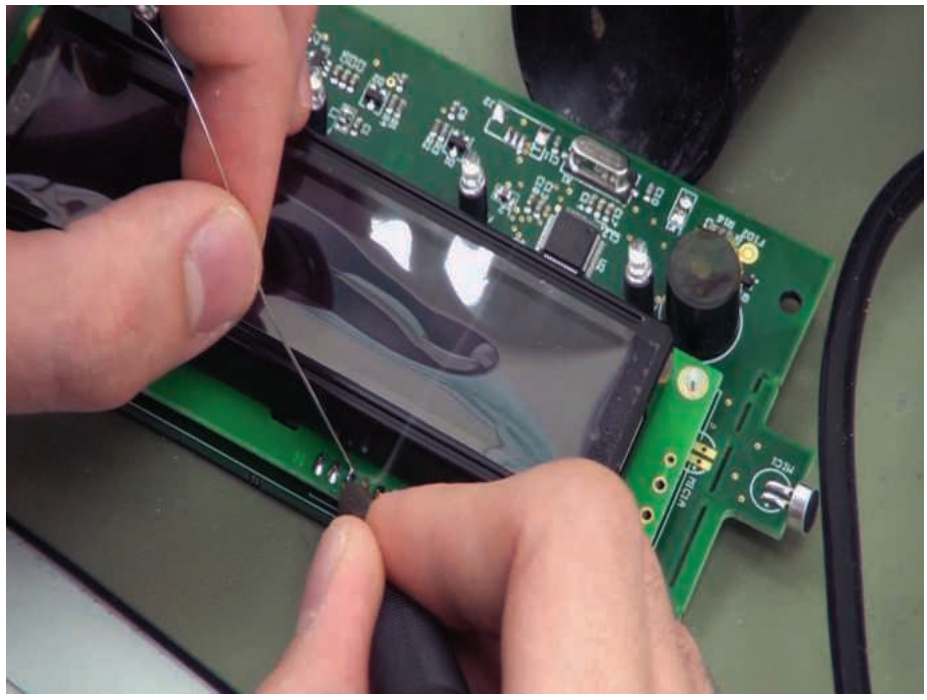
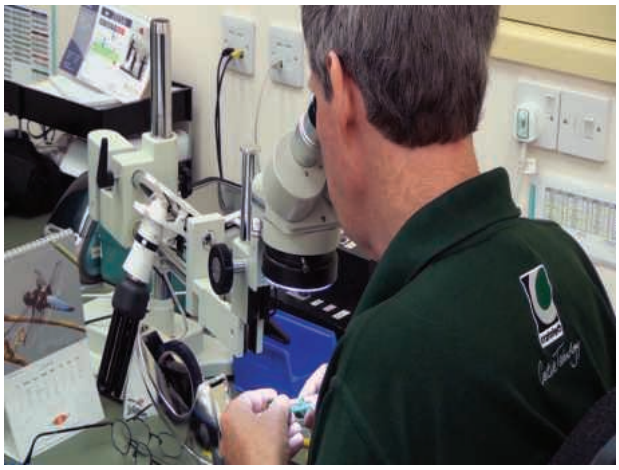
Global benefits with 123insight's tight integration



Electronics manufacturers Lascar and Corintech, both part of the same group, have been using 123insight for over a decade. Lascar selected 123insight after an £80,000 system failed to deliver, with Corintech following suit shortly after Lascar's successful implementation. This '10 years on' case study catches up with both companies to see how their businesses have evolved and what part 123insight has played in their growth.

Lascar Electronics Ltd, based in Whiteparish, Wiltshire and Corintech Ltd, based in nearby Fordingbridge, Hampshire, are two distinctly separate companies sharing many common traits. Both companies manufacture different ranges of environmental data loggers as well as offering electronic product design and manufacturing services. Lascar, after initially spending over £80,000 on an ERP system that failed to deliver on its promises, selected 123insight in 2006. Corintech, already wary due to Lascar's earlier experiences, waited for the implementation to prove successful before selecting 123insight the following year and implementing it in just three months. Pete Cross, managing director of Corintech and Sean Wigmore, managing director of Lascar have each worked at both companies and have seen how 123insight has shaped each business.

Pete Cross notes that Corintech's business model has changed significantly since implementing 123insight: "We've changed a lot in the last decade. We were a traditional CEM (Contract Electronics Manufacturer) and then around the recession we decided to take our destiny into our own hands a little and came up with our own product range of cloud-based environmental monitors. That added a whole new market area for us of standard products sold through distribution. On top of that our CEM work has been growing steadily. In the UK we've become more of a logistical hub for the company. Staff numbers for the group have risen, but in the UK it's stayed flat."



Sean Wigmore adds: "The launch of our own data loggers around 10 years ago provided huge growth to the company in the time since, so much so that we've now split onto a second site in the UK. Turnover's gone up quite dramatically. We haven't really seen a massive increase in staff levels, and because of the way our warehousing was working beforehand we've actually lost two staff through natural wastage and haven't felt the need to replace them."

Both companies have seen a doubling of their turnover and have also expanded their geographic locations, with Corintech adding a Hong Kong location for engineering, quality and sales. Lascar shares the same Hong Kong premises with Corintech and has now expanded across two sites within the UK and added a sales site in the US. 123insight is used to connect all locations together.

As each company has grown they've taken advantage of 123insight's scalable licencing. Lascar started with 14 licences, moving to 40, with Corintech increasing from an initial 40 to 50.

Corintech streamlined their manufacturing by implementing shop floor data collection, allowing staff to use barcodes to track an order's position through their facility. This gave the company a rich understanding of manufacturing times. Pete Cross says: "Logging on and off of processes has led to better timings from our jobs so that we understand the reality versus our desired times and we can subsequently drill down further into that."

Both Corintech and Lascar are using Access Dimensions accounts, and Sean Wigmore notes that 123insight's tight integration was a benefit during the selection process. Sean Wigmore says: "When I was at Corintech we were running Access Dimensions as a standalone system. So when we were evaluating 123insight having to think about linking the two together was one less thing to do, and that made life much easier for us." After seeing the benefits Lascar subsequently implemented Access Dimensions in 2007.

As part of ongoing improvements Corintech are looking to extend 123insight's reach by way of the SDK (Software

Development Kit). Pete Cross explains: "We've just invested almost £300,000 into a new surface mount line which offers us much higher capability than we had before. We are beginning to utilise the SDK to accommodate linking that system very cleanly into 123insight. The prime driver is for 123insight to be the main system to be used rather than another system that we then link in a 'Heath Robinson' way. We want the 123insight dashboard to be the place that people go to in order to do their jobs."

Quality is an important factor, and both companies hold the ISO 9001 accreditation. Corintech also holds AS9100, with Pete Cross stating that 123insight has been instrumental in assisting with maintaining it.

Both Sean Wigmore and Pete Cross cite 123insight as being easy to learn and use. Lascar are working to streamline the learning process for new recruits. In 2010 Corintech was also a finalist in The Manufacturer of the Year awards as a direct result of their successful implementation of 123insight.

Over the last ten years Sean and Pete have grown to appreciate the relationship they have with 123insight. Sean Wigmore says: "We've always had a very beneficial relationship with 123insight. I like the fact that I can still speak to (the founders) Guy Amoroso and Craig Grant."

Pete Cross adds: "We can talk to rather senior decision makers, even if it's to let them know what we're thinking or tell them what our problems are. They are always willing to help. Just recently we had an open day here and I had quite a lengthy chat with Craig about all sorts of things."

Ten years on from registering for 123insight both companies have doubled in size and still see significant benefits in the subscription model over the traditional approach of 'high initial cost, maintenance, upgrade fees and consultancy'.

Sean Wigmore concludes: "The fact that I haven't actually done a comparison must say that we feel happy with it, we haven't felt the need to do that. We haven't seen significant cost increases over the last 10 years, it's been pretty steady other than additional licences. It's been good."

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Most in-depth remote machine tool diagnostic solution

GF Machining Solutions is advancing the Industry 4.0 vision of the smart factory of the future with the launch of rConnect, the machine tool industry's most in-depth remote machine tool diagnostic solution.

As manufacturing undergoes a digital transformation accelerated in no small part by emerging technologies including cyber-physical systems, and the Internet of Things (IoT) and services, opportunities are arising for manufacturers to increase their competitiveness by ensuring maximum machine uptime.

That is the ambition of GF Machining Solutions customer services' new rConnect technology. The communication platform operates across and integrates the company's milling, EDM and laser technologies.

rConnect provides evidence of how GF Machining Solutions is pioneering the Industry 4.0 vision of the smart factory of the future. The first phase of rConnect is Live Remote Assistance (LRA). This facility enables customer-authorised remote assistance and therefore connects the customer with a local diagnostics centre and the GF Machining Solutions plants in real time.

LRA allows customer services to inspect a machine tool remotely with diagnostics performed by a GF Machining Solutions technician or the customer. Any resulting maintenance intervention that may be required is performed on site by a service engineer.

The LRA customer cockpit is the user interface for the machine operator or production or operations manager.

The LRA enables direct access to GF Machining Solutions' digital services and supports the customer in its daily machine tool maintenance activities. For example, the LRA provides an overview of all maintenance activities due and pending and customers can view current status messages and call up machine tool performance reports. The customer benefits of LRA are clear. Faster diagnosis and interventions when machine issues arise, significantly less machine downtime and, consequently, improved and continuous productivity. With LRA, information can be shared between the customer and GF Machining Solutions via audio, video, chat, whiteboard, file transfer, screen sharing, and system access etc. All interactions are logged, and a record is created.

Behind rConnect and LRA is an instant virtual private network allowing highly secure access to the machine. This is certified with TÜViT trusted product certificate.

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Netfabb doubles-down to offer complete additive manufacturing solution

Following the major release of Netfabb 2017 in September, Autodesk is doubling-down on its vision of Netfabb as a true end-to-end additive manufacturing solution. The company has bolstered the software with enhanced simulation capabilities, new hybrid manufacturing functionality and collaborative multi-head 3D printing.

The additions further extend Netfabb's lead as a complete solution for additive manufacturing, allowing customers to test, optimise, prepare and 3D print commercial-quality products.

Autodesk Netfabb helps additive manufacturing professionals move from CAD design to finished part efficiently. With its connected software for additive manufacturing and design, Netfabb provides valuable insight to help businesses large and small improve material selection, process simulation to validate build strategies, optimise designs and drive machines.

Dan Ko, strategic initiatives lead at Shapeways says: "Not only is Netfabb easy to use, it does much of the heavy lifting in preparing models for 3D printing. Netfabb streamlines the process of fixing common 3D print file problems for additive manufacturing. If we didn't have Netfabb to automate a large portion of file preparation process, each build would be substantially more time consuming and labour intensive."

In this latest update, users get new tools that will help them stay innovative and competitive in the additive manufacturing and 3D printing industry.

Cloud-based simulation

The wide-spread adoption of metal additive manufacturing has been historically slow, due to the lack of predictability in the manufacturing process, as well as the high costs of iteration. Simulation for Netfabb, which is built on technology from the acquired Pan Computing, helps customers to predict and adjust for deformation, allowing part designers and manufacturing engineers to optimise designs and reduce the number of iterations required for reliable build results.

Simulation for Netfabb has been available in conjunction with a local solver since the September release. From November 30th, 2016 to January 15th, 2017, active Netfabb subscribers will have access to a tech preview of a new cloud solving option. During this period, subscribers will be able to access cloud solve at no cost. The feedback received from subscribers during this time will help guide the direction of this new solution before the cloud-based simulation becomes available as a pay-per-use capability in a future release of Netfabb.

Hybrid subtractive and additive workflows

Subtractive manufacturing processes are often required to improve the surface finish and accuracy of features on additively manufactured parts. Extra material must be added to the original design to accommodate these subtractive processes, creating a larger geometry referred to as the near-net shape. Netfabb now includes solid modeling and near-net shape planning capabilities based on Autodesk (formerly Delcam) PowerShape technology.

This new hybrid manufacturing functionality allows users to keep models in solid form and take advantage of solid modelling tools aligned to CAM workflows. It also allows manufacturers to keep sight of the original solid model and easily track the

near-net shape as it is built to allow for the subtractive processes. With better visibility of the original model and the near-net shape, Netfabb opens a connected workflow between build preparation and post-processing operations.

Collaborative multi-head 3D printing
Also included in this update is technology from Project Escher, breakthrough control technology that powers machines with multiple extrusion-based print heads working together to print a single part. This collaborative 3D printing process makes printing industrial scale parts with greater speed and detail a possibility. In keeping with Autodesk's focus on advancing the additive industry, the company is also open-sourcing the hardware specifications and the software required to create machines with this new collaborative 3D printing capability. By doing so, hardware vendors will be able to create multi-head printers that can print parts far faster than conventional single-head printers.

Stephen Anderson, Renishaw software director says: "The new production, optimisation and simulation tools within Netfabb are very exciting and we are delighted to be working with Autodesk to enable a streamlined additive manufacturing print experience for our joint customers. We look forward to future integration opportunities with the QuantAM workbench, a series of API's that can be made available to those wishing to leverage the power of the Renishaw additive manufacturing platform. This will give users of Autodesk Netfabb the confidence that any toolpaths they generate will be optimised for Renishaw's AM systems, ensuring maximum part quality every time."

Mark Forth, manager of manufacturing industry strategy at Autodesk, says: "Netfabb helps to accelerate the additive manufacturing design and production process by giving designers and engineers the tools they need to make better parts, streamline their workflows and improve the efficiency of their printers in one comprehensive software solution. The addition of cloud-based simulation, subtractive workflow capabilities and collaborative 3D printing means that we are now providing our customers with the most comprehensive and powerful additive solution on the market."

Price and availability
These updates to Netfabb are now available with existing subscribers receiving the new version automatically.

For more information or to learn more about the features in this update, visit **www.netfabb.com**.

Autodesk is a leader in 3D design, engineering and entertainment software. The company makes software for people who make things. If you've ever driven a high-performance car, admired a towering skyscraper, used a smartphone, or watched a great film, chances are you've experienced what millions of Autodesk customers are doing with the software.

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UK subcontractor fully exploits hyperMILL machining strategies

Bicycle milled from solid stock
With its mountain bike frame milled from solid stock, North Bucks Machining Ltd, based in Milton Keynes, UK, has created a new reference workpiece that demonstrates the many possibilities offered by the hyperMILL® CAM suite from OPEN MIND Technologies.

Engineer Steward Palmer introduced the hyperMILL CAM system to his parents' family business to make more efficient use of the company's 5-axis machining centre. The extremely powerful machining strategies of the CAM software allowed him to realise his personal dream of developing his own weld-free and weight-optimised downhill mountain bike frame.

The main frame, seat post and swing arm are each milled from solid aluminium blocks. Here, Stewart Palmer took advantage of the roughing module in the hyperMILL MAXX machining performance package. The high-performance cutting (HPC) strategies allowed North Bucks Machining to achieve large stock removal volumes in the shortest time possible.

Stewart Palmer explains: "Using hyperMILL, we were able to machine the main frame in one hour and 30 minutes. In the past, this took two hours and 20 minutes. This is equivalent to a reduction of around 40 percent."

An aluminium frame weighing less than 7 kg was machined from raw material with a starting weight of 165 kg. But this isn't enough for Stewart Palmer: He now seeks to further enhance the design of the frame to reduce the overall weight to 5 kg.

Perfect surface
The finishing strategies offered by hyperMILL were also very important as the bike frames produced by North Bucks Machining do not undergo secondary finishing operations. It's only since calculating the toolpaths with the CAM software from OPEN MIND that the company has been able to achieve the desired surface finish.

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

OPEN MIND develops optimised CAM solutions that include a high number of innovative features not available elsewhere to deliver significantly higher performance in both programming and machining. Strategies such as 2,5D, 3D as well as 5-axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the hyperMILL CAM system. hyperMILL provides the maximum possible benefits to customers thanks to its full compatibility with all current CAD solutions and extensive programming automation.

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Starrett goes the extra mile

In a recent visit to Jedburgh, Scotland, Engineering Subcontractor's Roger Barber interviewed John Cove, marketing manager at L.S. Starrett to discover what continues to make the company so successful

Like all businesses, the company started with a man and an idea. The man was Laroy S. Starrett; his idea was "to invent something useful that people would want." He had unusual ability, vision and enterprise, but without his high courage the foundation and growth of "the world's greatest toolmakers" would never have happened. He was born in China, Maine, in a farming community, but even as a small boy L.S. Starrett was fascinated by tools. Better than anything else he liked to be making something useful in what spare time he had. His father helped him get a saw, plane and a few chisels; when he went to a nearby auction and bid on a draw shave and auger bit set he was the proudest boy in the countryside. This was the first money he ever had to spend and in later years he often said it was the best trade he ever made. He had what he called "invention on the brain" and it wasn't to be sidetracked. By selling sales rights in different countries he was able to devote more of his time to manufacturing. The business grew and eventually he began looking around for a new location: a place where he could get water power and more capital.

In winter and on stormy days much of his time had been spent in a room over the stable which he had fitted up as a workshop.

Here he developed his first invention, a meat chopping machine. While he was without experience in manufacturing he had great faith in this chopper and his ability to succeed with it.

On a visit to Athol, Massachusetts, he was impressed by what it had to offer and moved there as quickly as he could. Associating himself with the Athol Machine Company, he soon had the meat chopper business running smoothly and turned his inventive genius to other products. Among the patents he took out (eventually about one hundred) was a line of bench vices and a shoe hook-fastener which later was universally used. This alone was capable of bringing its inventor an independent fortune had he himself developed it. Instead, he regarded the hook-fastener as an item of secondary importance in the light of his keen interest in the development of precision tools and kindred items, and sold it for a few hundred dollars. He purchased this company in 1905.

As early as 1882 he went abroad and established selling connections in London and Paris. In the years that followed, facilities and personnel were doubled several times, new brick buildings were erected on both sides of the river and The L.S. Starrett Company began to take shape as one of Athol's leading industries.

Quite early in the days of adding to his tool lines and facilities, L.S. Starrett realised that the hacksaw as a cutting tool was as important to efficient shop practice as any other tool. He studied what the market offered, then characteristically set out on his own course. A hacksaw blade may look simple to the uninitiated, actually few tools call for as much manufacturing "know-how". The stock goes through a dozen critical processes calling for the best of equipment, highly skilled operators and many tests for each individual blade: tooth set, cutting edges, hardness and uniformity. Starrett leadership in this field, built on its original process and equipment, has been maintained by rigid control of quality at every production step. Carrying on the Starrett tradition of innovation the company focused major resources into the development of a new saw technology. This resulted in the new bi-metal uniqueTM saw blade technology that produces stronger blades, faster cutting and longer blade life. In addition to hacksaw and jig saw blades, the technology is now available on a new line of portable band saw blades that fit a variety of machines including Black & Decker, Greenlee, Porter-Cable, Rockwell and more. Bi-metal unique technology joins two strips of high-speed steel wires to a backing steel in a solid phase, using the principle of solid-state diffusion bonding. Bi-metal unique technology is totally different from traditional weld or laser bonding which rely on metal fusion as the union agent at the interface. The same technology was applied to the recently developed Unified Shank® jig saw blades that fit both universal shank and Bosch shank jig saws. This new technology gives both of these bi-metal products 170 percent more weld contact area than conventional bi-metal products. Further, the teeth now

have four cutting edges rather than two and they produce dual chips that are easily removed from the cut, referred to as the Split Chip Advantage®.

The Starrett Primalloy™ Band Saw product line applies a proprietary Extended Life Treatment (EXT) to its alloy steel backing material. This process, in addition to controlled blast peening, enhances the fatigue life of the blade. The EXT applied during the peening operation adds increased residual stress into the surface of the blade. Higher stress levels aid in the reduction of fatigue cracks that originate along microscopic grain boundaries. The benefits of extended life treatment are proven with X-Ray Diffraction (XRD) and extensive mechanical fatigue tests. This process will soon be applied to most Starrett bimetal and carbide tip product lines.

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

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

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

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

Starrett has launched a new, portable band saw machine designed to provide durability on the move. The S1005 machine is both lightweight and compact, allowing for easy transportation for installers and contractors. REF: LS5044

During the recent visit to the Jedburgh facility, Roger was shown the impressive production facilities that include substantial heat treatment and welding facilities. The site employs nearly 200 people, with 40 or so being added in the past six months to the welding personnel.

The on-site showroom showcases the latest sawing machines, from semi-automatic models down to the highly successful "hobby" range.

Starrett recently launched a new portable, battery powered band saw machine designed specifically for professional installers and contractors working across multiple sites. The S1005 machine's lightweight and compact design allows for safe and easy transportation, making it the ideal product for users across a range of trades. With a blade speed of 170 m per minute, the hand held saw is ideal for high performance cutting across a wide range of materials including conduit, trunking, pipe, box section, armoured cables, unistrut and much more besides.

Weighing just 4 kg, the battery powered S1005 band saw features a durable design, allowing fast cuts with a high quality surface finish. For repeated use on the move, the saw features a 20 V lithium-ion long-life battery with a convenient charge display.

"The S1005 portable band saw machine combines portability with performance to provide fast, high quality cuts." comments John Cove. "Many contractors struggle onsite as band saws can be too restrictive and heavy, meaning they cannot be safely and easily transported, there is also the obvious issue that mains power may not be available. That's why we have designed our latest machine to simplify the cutting process for installers without compromising on the quality of the cut itself.

"The machine's 0.35 mm thickness Starrett Univerz Bi-Metal blades are ideal for cutting a huge variety of materials, the unique Starrett material reduces the stress on the blade, potentially creating up to 50 percent more blade life than band saw blades in competitive machines. The blade's high durability provides consistent and repeated cutting with the quick release lever allowing for easier blade changes that shorten and simplify the cutting process. This makes the machine ideal for all types of contractors, allowing them to work freely without the potential design or user restraints that other band saws can create."

The S1005 portable band saw has a one-year warranty and comes with a free Starrett tool bag, free Starrett Univerz band saw blade and free secondary 20 V lithium-Ion powered battery.

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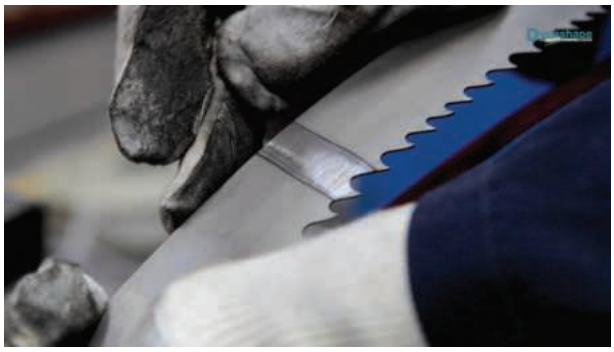
Giving Jaguar Land Rover's teardown cells the cutting edge

Dynashape, the UK's most experienced saw blade servicing and remanufacturing specialist, has been awarded a service contract for the maintenance of the bandsaws used in Jaguar Land Rover's Lode Lane teardown cells. The contract follows Dynashape's recent supply of a new high-speed bandsaw for use in the teardown area, and the assistance it has given to Jaguar Land Rover in the development of its teardown cutting technologies.

While vehicle teardown is a far from new concept in quality control, the shift towards lightweight aluminium body components has brought a significant change in the way the process is completed. Whereas spot-welded steel joints would previously have been cut for examination, today's use of rivets demands that each riveted joint is examined individually for integrity. For a typical vehicle randomly selected for teardown at the Lode Lane facility, this could mean that as many as 4,000 joints have to be prepared for inspection.

Jaguar Land Rover is a world-leading manufacturer in the area of aluminium body construction and is increasing the use of aluminium body structures. The teardown facility at Lode Lane has benefited from considerable investment as manufacturing has switched to aluminium and doubled in capability over the last few years.



"Including the DoAll Zephyr high-speed vertical bandsaw supplied by Dynashape, we have a total of four bandsaws in the teardown area," comments Jaguar Land Rover group leader, John Mackenzie. "Token-size jointed pieces of typically 2 cm square are cut using bandsaws, after which each rivet is cut down the centre using a diamond cutting disc machine, ready for microscopic analysis."

With vehicle construction almost totally switching to aluminium, Jaguar Land Rover's challenge was to find the most appropriate blade technology that would be suitable for use with today's lightweight aluminium vehicle bodies, but could also be used for cutting steel when the requirement arose. 90 percent of material cut is aluminium; the remainder is steel.

"Dynashape has been incredibly helpful and supportive as our teardown capability has expanded and made the transition to cutting aluminium," continues John MacKenzie. "Committed to helping us find the best bandsaw blade types for our machines, the Dynashape team carried out extensive cutting trials and provided us with a range of different blade types to try. This enabled us to identify the specific tooth configurations that best suited our cutting requirements, including occasional work with steel. I am delighted that following all their hard work in meeting our saw blade requirements, Dynashape will also maintain our bandsaws."

"Although the new DoAll bandsaw machine we supplied to Jaguar Land Rover is equipped to provide high-speed friction sawing if required," says Chris Parkes, Dynashape managing director. "Our approach was to identify bandsaw blades that would run at the conventional speeds the teardown team is used to cutting at, all while providing the best results."

Dynashape is an approved supplier to Jaguar Land Rover. The blades supplied include Dynashape's 'Silencer' product (1" x 6/10 TPI) and 'Intenss Pro' product (1/2" x 8/12 TPI). Both products provide smoother cutting action on aluminium as well as on occasional steel test pieces.

Dynashape: the UK's complete saw blade service

Following a £1 million investment in infrastructure and the very best CNC saw blade production technologies, Dynashape is well equipped to assist manufacturers with everything involving sawing machinery and saw blades – all from under one roof.

In 2016, the business added five new CNC machines, three of them robotic, to its already impressive capabilities. As a result, Dynashape now has the very latest 4-, 5- and 6-axis high precision CNC saw blade production technologies from leading manufacturers including Loroch, Vollmer and Walter, and is able to offer the most comprehensive one-stop solution for manufacturing and remanufacturing TCT, SHSS and solid carbide saw blades, as well as PCD tooling.

Instead of sharpening blunt saw blades, Dynashape's approach is to remanufacture them using its advanced CNC machinery. For the majority of Dynashape customers, this means that for around three-quarters of its useable life, a remanufactured blade will perform like new, before there's any issue of degradation due to reduced base material and tooth facet.

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

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Behringer sets its sights on the future with networked sawing plants

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

Automated operations in the steel trade require only a handful of employees to control and monitor a machining process which involves only minimal direct contact between personnel and material or machines, from the goods-in department through to loading the finished parts onto trucks for shipping. Different tasks from materials management through machining and order picking to shipment are all performed according to a programmed sequence and logical material flow process: a driveway along the hall wall permits part delivery and storage. Without encountering any crossroads, the girders and profiles are delivered straight to the warehouse, and travel from there to the sawing machines on infeed roller conveyors.

High-performance sawing plants in the centre of the hall, such as mitre bandsaw HBP510-923G-NAP, cut the material. Some parts then pass through a conservation line for surface treatment, while others are loaded immediately following sawing. Processing takes place on a program-controlled, bar-optimised basis. A transport management system ensures the material-saving assignment of starting lengths by matching them up to orders and takes care of trouble-free material flow along the plant. The material and data arrive at the right time in the right place, enabling maximum output. Marking and labelling devices are used to identify material on an order-by-order basis.

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

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

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

From the warehouse, the raw parts are transferred using a hall crane onto the cross conveyor of the sawing line, where they are separated and fed towards the machine using an infeed roller conveyor with positioning device. Following on from the sawing process, the cut sections are sorted into cross conveyors in two directions. A cut section gripper selects the offcuts and short waste pieces. Short lengths are also sorted onto table surfaces and possibly also into containers. Depending on the material size and weight, different versions of the transport systems are used. Depending on the job in hand, good parts are deposited in the order picking zone for delivery, or are sent automatically for surface treatment to the blasting or painting booth. Markings and labels on the parts simplify the process of assigning parts for commissioning, or enable information to be scanned in.

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

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

"By automating material flows and in particular due to the automated cut section disposal system, heavy and hazardous work processes are minimised", says Christian Behringer. Investing in networked plants pays off, also in view of the demographic changes currently taking place.

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Top cropping

Formed in 2010, Saxon Fabrications Ltd specialises in the fabrication of structural steelwork such as columns, beams, portal frames, stairways, ladders and secondary steelwork. Situated in Newton Aycliffe, County Durham, the company fabricates in the region of 50 tonnes of steelwork each week. A speciality of the company is the production of flat bar "fittings", designed and produced as fixing flanges for numerous types of building frame constructions.

In order to upgrade the production capacity of these flat bar fittings, Prosaw has recently installed a Geka Alfa 500 Flat Punch and Shear line. The new system can accommodate flat bars of between 50 mm x 3 mm up to 500 mm x 20 mm and with a maximum length of 6 m, all of which are suitable for automatic hole punching, a feature that delayed the acquisition of a beam drilling machine until production requirements had further increased.

The Geka system uses DSTV files to directly program from CAD format to the machine tool. This system allows fittings of various different lengths and hole centres to be sheared and punched from a single flat bar, making the Geka system particularly flexible and easy to use.

In this respect, the system has proved to be a significant cost saving facility, as the company's previous shearing system required the presence of a second operator, which is now no longer required. Additionally, not only does the company not need to outsource production in times of under capacity, but the increase in capacity that the Geka system has provided allows the company to bid for larger jobs.

Saxon Fabrications' managing director Andrew Wharton comments: "We reviewed several different makes of punching and shearing systems before purchasing the Geka machine. Our decision was influenced by its ease of use, its extended tool life and the lack of problems compared to other makes, as well as its competitive price. We purchased a bandsaw from Prosaw three years ago and have been very impressed by the standards of service offered by the company. In fact, we've never had a problem that wasn't satisfactorily fixed by a Prosaw engineer straight away."

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More than 125 years of innovation and passion

KALTENBACH GmbH + Co. KG was founded in 1887 and has remained a family-run company to this day. With headquarters in Lörrach, Germany, KALTENBACH is one of the leading worldwide manufacturers of machinery for the processing of steel, aluminium and other non-ferrous metals. The business group includes a total of ten subsidiaries with locations in the UK, France, Netherlands, Austria, Switzerland, the Czech Republic, Singapore, the Middle East, Russia and China.

KALTENBACH has more than 500 employees and customer consultants working in over 50 countries to ensure that the companies' products, services and support are fully accessible in all regions. These are complemented by a network of national and international service partners, providing prompt attention from experienced product specialists. KALTENBACH machinery is installed across a wide variety of industries around the globe and is renowned for its high quality, reliability and long service life. The company owes its leading market position to its commitment to these principles and to continual product innovation.

The KALTENBACH product range starts with the company's' core, circular and band sawing machines and extends to a comprehensive portfolio of profile drilling machines, profile processing robots, welding robots, plate processing centres, punching / shearing systems, shotblast lines, preservation systems, marking equipment and the accompanying measurement and material transport systems. The product range is designed for the efficient and reliable processing of steel, aluminium and other non-ferrous metals.

Each KALTENBACH machine family includes multiple, individual models, designed to suit both the process application and each customers' own productivity requirements. Semi and fully automatic options are available, each with further configuration possibilities and a modular design approach, permitting the most optimum specification, tailored to suit every need.

All KALTENBACH machines are designed and manufactured to meet the most stringent quality standards, adhering to a strict DIN EN ISO 9001 Quality Management System. When introduced in 1996, the company was the first and only manufacturer of sawing machinery with an ISO certification.

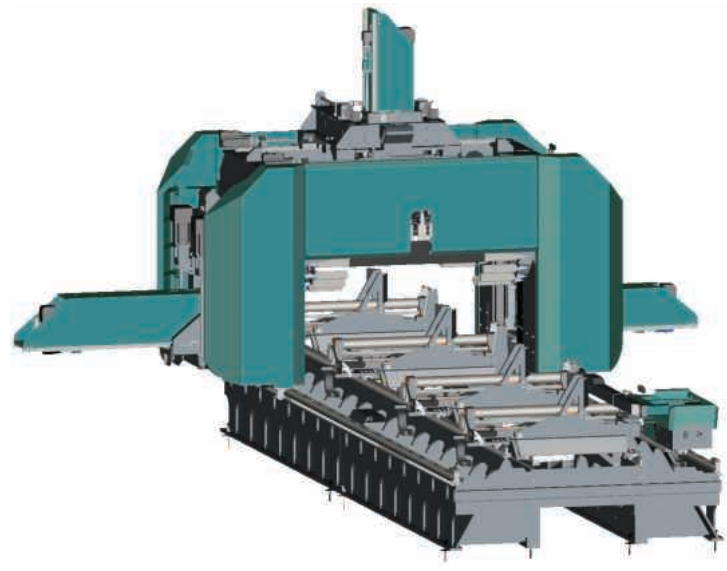
KALTENBACH also provides its customers a comprehensive range of services from one single source, extending fully from consultation and solution definition through to on-site commissioning and some of the industries most advanced maintenance practices. KALTENBACH set the standard for customer service with spare parts available over many years, online support, skilled service technicians, training programmes and preventive maintenance initiatives designed to ensure the highest possible utilisation levels over a long machinery lifetime.

High-performance KDH 1030/1060 processing centre

With the KALTENBACH KDH 1030/1060, it is now possible to saw and drill or mill in parallel for the first time, thereby significantly increasing the effective productive time of both machines. By decoupling the drilling/milling and sawing processes, both in mechanical and sequential terms, and running machining and idle times in parallel, the innovative design achieves productivity gains of 30 to 100 percent. A drastic reduction in material throughput times increases capacity and thus reduces the need for capital investment. An intelligent measurement and feed system consisting of two independently operating measuring carriages saves even more valuable time by allowing the next workpiece to be loaded, measured and drilled whilst the sawing process for the preceding workpiece is still in progress.

The completely redesigned clamping system uses an electronic drive system to ensure that all common profile types are optimally clamped with strength and precision. The elimination of high-maintenance hydraulic components reduces maintenance costs and increases energy efficiency.

Three high-performance milling units operating simultaneously combined with an extremely rigid frame are designed for the most demanding applications. Difficult notches, complex trajectories and holes up to 600 mm in diameter can be milled simultaneously and independently of one another on all three milling units. With an rpm range of up to 10,000 min-1, steel profiles can finally be machined at high speed. Each milling machine can be fitted with up to 20 tools to increase the degree of automation, making 60 tools available in total.



The high-performance KBS 1051 band saw and optimised AS 1051 autosorter on the material discharge side demonstrate the same high standards of performance to ensure optimum material flow.

The new user interface concept is both functional and ergonomic to ensure fatigue-free operation. The new PROFILINE V user interface is designed to give the operator intuitive and easy control of the entire system.

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Kerf service keeps Irish eyes smiling

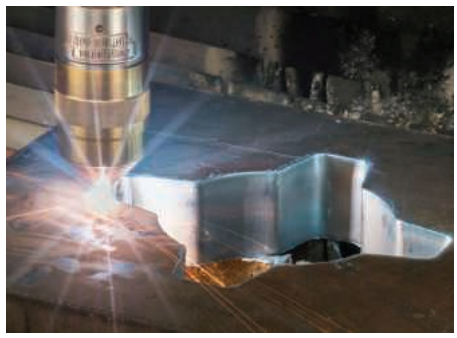
When Arcon Engineering made the trip from Ballymena to the MACH exhibition eight years ago, the fledgling company was looking for a new CNC plasma cutting machine to replace its aging and unreliable plasma machine. In meeting Kerf Developments at MACH 2008, Arcon found more than a machine supplier; it located a partner that could confidently serve all its sheet and metal plate cutting requirements.

Formed in 2003 to cater for the complex cutting and fabricating demands of the mining, transport, utilities and heavy industry sectors, Arcon offers an extremely diverse level of services. With expertise in design, CNC profiling, welding and fabrication, press brake forming, assembly and much more, Arcon Engineering has grown at an exponential rate, now employing over 30 staff. Nowhere is this growth better demonstrated than with the CNC plasma cutting machines from Kerf.

Arcon Engineering's managing director, Paschal McLoughlin recalls: "Our old plasma machine was unreliable and this was compounded by our struggle to reliably obtain service support and parts. This caused considerable headaches and production bottlenecks. We went to MACH and reviewed all the available machines, and it was Kerf that had the build quality, service, support and productivity that we needed. We installed a Kerf RUR3000 CNC plasma cutting machine with a Hypertherm HPR260 plasma unit in June 2008 and it has been running over 18 hours a day plus weekends ever since."

Of course, the reliability of the RUR3000 combined with the often 24 hour production, led the manufacturer to invest in a second profiling machine and once again the company bought from Rochdale-based Kerf.

The Kerf RUR3500 at Arcon



A close up of the Lincoln Electric cutting head on the Kerf RUR plasma

"Running our first machine non-stop, we were conscious of depending upon the reliability of the RUR3000. We knew that any breakdown or unscheduled maintenance would create a bottleneck or capacity issues. Considering this, we bought a second machine. Of course, the first Kerf machine never failed us; and within no time the second machine was also running at capacity."

The second machine, a Kerf RUR2500GP with a Lincoln Electric Proline 200amp high definition plasma system slotted straight into the business in November 2014. Like its predecessor, the RUR2500GP has been running non-stop since installation. The company is cutting profiles from one-off and small quantities to larger batch runs from materials such as stainless and mild steel with plate thicknesses varying from 3, 4 and 5 mm through to heavy duty 30 and 40 mm plates.

As the Irish business has expanded, it has closely reviewed its processes and more recently considered investing in a CNC laser profiling machine for high-precision cutting with impeccable edge finishes. However, upon discussing the evolving needs of the business with Kerf Developments, it was soon realised that Kerf once again had the solution. Arcon wanted to achieve extremely precise profiles with outstanding edge finishes, so Kerf took Arcon to a local company using the latest Lincoln Electric Spirit plasma unit with Ultrasharp technology to demonstrate the system.

Pascal McLoughlin continues: "We wanted the quality of laser without the cost. Kerf gave us the alternative with their new RUR3500P machine that has an Lincoln Electric Spirit 400A plasma unit with Ultrasharp technology. The cut quality and precision was outstanding whilst the cost wasn't near the price of a laser machine. Furthermore, the Kerf RUR3500P is more flexible than a laser as the high definition unit is powerful enough to cut through material far beyond the scope of a laser."

The single head RUR3500P machine with a Lincoln Electric Spirit 400A high definition plasma unit was installed in June 2016 and the company has been thoroughly impressed.

The design and technology built into the Lincoln Electric Spirit system incorporates a water reservoir that keeps the cutting torches cool. The benefit of this technology is that torch and consumable life is extended considerably. Furthermore, the high-powered system has lower gas consumption. The result for Arcon is a more powerful machine with significantly reduced operating and consumable costs.

The Lincoln Electric cutting head on the Kerf plasma machine

The powerful 400A system can cut plate up to 75 mm thick, which gives Arcon the potential to extend its workload beyond existing plate thicknesses. In addition, the new machine has the ability to mark components as well as cut. This allows Arcon to mark datum points, identification features and location spots for secondary drilling operations.

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New range of versatile saws for the workshop

A new range of swing-frame, pivoting-bow bandsaws for use in workshops has been launched by the German manufacturer KASTO and is available in the UK and Ireland through the company's Milton Keynes subsidiary. As a large percentage of the parts used in the manufacture of the various models are identical, the saws are offered at attractive prices.

The versatile KASTOmicut machines are designed for high accuracy cutting to length and mitre cutting of tubes, sections and solid materials. Four model variants are available: manual (P 2.6), manual clamping with hydraulic downfeed (E 2.6), hydraulically actuated clamping and downfeed (U 2.6) and fully automatic (A 2.6) with ballscrew-driven material feed, carbide blade guides and an optional chip conveyor.

The saws supersede six machine models in the KASTOpractical and KASTOfunctional series, compared with which they have higher power motors and greater band tension, allowing a 50 percent increase in cutting force. Feed rate is constant throughout, avoiding lost productivity due to the blade slowing towards the centre of the cut. Blade speed is infinitely variable from 20 to 120 m/min, allowing a range of different materials to be processed cost-effectively.

KASTO has launched the KASTOmicut range of versatile, swing-frame, pivoting-bow bandsaws for use in workshops

KASTOmicut saws have a cutting range of 260 mm for rounds and 310 x 260 mm for flat stock. Mitre cuts are possible at continuously adjustable angles from -45 to +60 degrees. A torsionally rigid, vibration-damped, cast iron frame provides support for the saw blade, ensuring top cutting quality, even in difficult-to-cut materials. Many different accessories are available including a rotary table to support the material.

Shortest cut length is 6 mm, with a residual length of 15 mm for manually cut pieces or 40 mm in automatic operation, so users can make maximum use of their material. Cutting accuracy is 0.1 mm per 100 mm of height.

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A strong development from Bahco

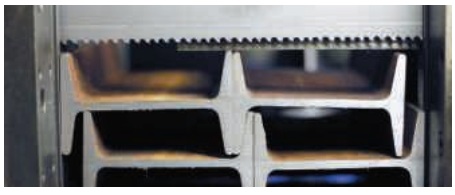
Top Fabricator bandsaw blade delivers great performance and longer life

Bahco bandsaw blade design engineers believe their upgraded Top Fabricator blade is now the best on the market for cutting tubes and profiles.

Following innovative improvements, the popular 3853 Sandflex Top Fabricator Bi-metal blade is now even better, providing greater performance, longer life and improved chipping resistance.

Manufactured at the company's South Yorkshire production centre, the highly versatile 3853 blade is specifically designed for cutting structural steels, tubes and profiles, either in bundles or as individual pieces.

Latest improvements enable the blade to cut larger work pieces or bigger bundles,



with much reduced out-of-square cutting, stripped teeth, broken blades, vibration, pinching and noise.

A new, patented tooth design with a revolutionary rake angle of 9 degrees lowers cutting forcé and gives every blade longer life.

The 3853 is ideal for cutting bundles, angle iron, 'I' beams, 'H' beams, structural steel and square or round tubes.

Multichip features, with high/low teeth and double set (0;R+;L-;0;R-;L+), increase the number of chips on the cut to provide better chipping resistance.

Bahco bandsaw blade specialist Peter Storr comments: "Our improved 3853 Top Fabricator blade, with its high speed steel tooth edge, is stronger and longer lasting than ever.

"Its special setting, using both high, low and doublé set teeth, increases the number of chips on the cut, providing better stripping resistance.

"We are confident that fabricators will be

delighted with the improved bandsaw blade's performance and durability."

For technical information about the Bahco 3853 visit **www.bahco.com** and follow the link to Bandsaw Blades. Alternatively, contact:

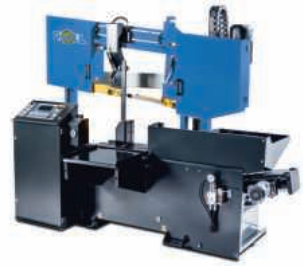
Bahco UK
Tel: 01709 731731
Email: info@bahco.com
www.bahco.com

An industry leader after nearly 85 years

DoALL provides manual, semi-automatic and automatic metalworking band saws. A manual or gravity saw requires an operator to manually feed the material, lift the saw head and close the vice. With a semi-automatic saw, a hydraulic or pneumatic vice raises the saw head, but an operator needs to feed material. With an automatic saw,an operator programs the saw for fully automated material feed (indexing) and cutting. Even though DOALL specialises in metal cutting bandsaws, its legacy extends to parts and service as well.

DoALL Sawing Products offers a complete line of service, replacement and repair parts for its current line of band sawing machines. A skilled team of service professionals, spread across America and around the globe, are trained in service and repair of the entire line of DoALL band saws.

With the a complete line of vertical contour band saws, DoALL Sawing Products also offers horizontal saws, mitre cutting saws, vertical tilt-frame models, horizontal production level band saws an, the latest addition to our sawing machine line-up,



circular carbide saws custom tailored for production level environments. The expansive line-up of saws ranges from manual operation to completely automatic sawing machines. DoALL, StructurALL and SAM - The Sawing Answer Man are all registered trademarks of DoALL Company.

DoALL Sawing Products showcased eight metal cutting band saws at the International Manufacturing Technology Show (IMTS) in Chicago in September.

Four of its most popular saws were displayed, along with four brand-new high performance machines.

The company also provided ten machines for demonstrations at FABTECH 2016 in Las Vegas. Since the initial new products launched at IMTS in September, DoALL added three more saws: the TDC-400SA Olympia™ Tube-Cutting Band Sa, the DC-1000CNC and the DC-1400CNC Hercules™ Dual Column CNC Enclosed Saw.

The new metal-cutting band saws introduced at FABTECH meet the stringent tradition of high quality that DoALL customers expect. For specific sawing requirements, a wide variety of optional accessories are available to customise all of the new DoALL saws.

DoALL continues to add new metal cutting band saws to its product line to support fabricators and machine shops. These new high-performance saws provide versatile, efficient, economical and accurate sawing solutions for a large variety of sawing needs.

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Handheld plasma cutters

ESAB Welding & Cutting Products Cutmaster® Series of portable air plasma cutting systems range in output from 20A to 120A 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.

The four products in the ESAB Cutmaster Series (60, 80, 100 and 120) share 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. Color-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.

Product highlights include the following:

The ESAB Cutmaster 60 features a 60A 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 between 25 and 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.

The ESAB Cutmaster 80 features an 80A output, has a genuine cut of 25 mm and severance cut of 38 mm. It also weighs just 19.5 kg.

The ESAB Cutmaster 100 features a 100A output, has a genuine cut of 35 mm and severance cut of 45 mm and weighs 28.1 kg.

The ESAB Cutmaster 120 features a 120A output, has a genuine cut of 40 mm and severance cut of 55 mm and weighs 28.1 kg.

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

ESAB Welding & Cutting Products is a recognised leader in the welding and cutting industry. From time-honoured processes in welding and cutting to revolutionary technologies in mechanised cutting and automation, ESAB's welding consumables, equipment, and accessories bring solutions to customers around the globe. For more information, contact:

ESAB
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LT-FREE: products finished in a single operation

LT-FREE is a 5-axial laser cutting machine developed by BLM GROUP to offer maximum operational flexibility and simplicity of laser cutting of bent pipes, flat pipes, shaped sheets, hydroformed elements, collapsible elements and welded elements. Thanks to certain technical novelties, the unit has even greater performance

In its many configurations, the LT-FREE machine is capable of performing a full work cycle with ease. The processes that enter into such a cycle are inconceivable in the case of traditional technologies. Starting from simple and effective off-line programming, the LT-FREE machine reduces the number of semi-finished products and manufactured finished products within a short time, in a very inexpensive process.

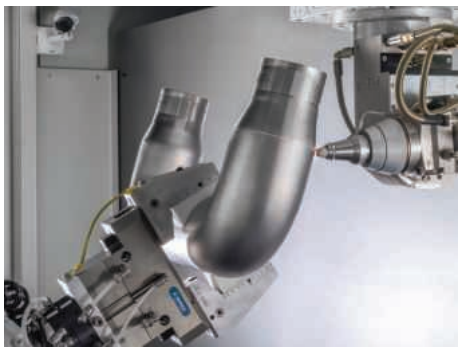
LT-FREE is a system created with various applications in mind, from prototyping to serial production, in such sectors as automotive, aerospace, motorcycles, household appliances, HVAC, furniture and steel structures.

To satisfy the needs of individual clients, four different configuration options are available:

Entry Level is an option created for prototyping and job shops, intended for producing small lots. The unit is equipped with a single base where elements are fastened for processing. When the quality of processing and simplicity of operation are more important than production times, this configuration is decidedly more appealing.

Piece Value is a unit intended for serial production typical for the automotive sector. This configuration, with a rotating base, is the ideal solution for applications requiring frequent replacement of instrumentation and high production capacity.

Mid-Flex is the right solution for small elements with additional manufacturing requirements. Two moving bases operating



in a divided work area allow for optimisation of work cycles by performing loading/unloading operations quickly.

High Flex is the most comprehensive option, universal and efficient, with two independent, robotic bases, providing maximum flexibility. Besides sheets and mechanical assemblies, this system is capable of precisely and efficiently processing bent and hydroformed pipes, which can be positioned at will during processing thanks to the robots, without the need for using complicated tools.

The application for a fibre laser with power between 1 and 2 kW provides the LT-FREE machine with the capability of cutting a very wide range of materials, while saving energy and maintenance costs at the same time.

The Active Piercing function, which automatically controls the hole cutting stage, has proven to be particularly effective in the LT-FREE unit. Active Piercing makes programming hole cutting easy, without any need to worry about the material's thickness, which is often variable from area to area in many elements processed on the LT-FREE unit. This function also manages hole cutting within the shortest possible time, without damaging the wall of the pipe resting on the processed wall.

LT-FREE is easy to use. Planning and simulation software makes it easy to import 3D projects to quickly identify and isolate components to be processed, to automatically generate the work program and to simulate the program graphically for the purpose of inspecting and correcting potential irregularities. It's all done off-line, before going to the machine and without wasting time. The software package also contains an effective module for designing auxiliary tools, which can quickly be made using the LT-FREE unit itself.

The High Flex and Value options also include the Bin Packing unit, a powerful station for automatic loading/unloading, providing the LT-FREE unit with totally independent operation.

It is possible to detect individual elements to be processed inside the container by means of the precise monitoring system and to collect them by means of an external robotic arm, and then to place them on the base of the LT-FREE unit for processing. The cycle ends with collection of the processed element from the work base and placing it in the container for finished products.

More generally, the presence of an external loading robot provides many possibilities for customising the unit for loading/unloading for the LT-FREE unit, with automatic solutions including possible loading onto other units from BLM GROUP. For example, a robot on a feed conveyor collects an element and places it in the pipe bending machine automatically, or into the LT-FREE unit.

All this in an efficient operational process with a continuous 24 x 7 cycle, capable of providing good production times, continuous production and low costs.

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LVD launches next generation of adaptive bending system

LVD Company nv has introduced Synchro-Form, the next leap in adaptive bending technology. Synchro-Form automatically maintains angular consistency and the required geometric profile when handling, positioning and bending large parts with multiple bends. The system overcomes the problems of accumulative error and trial-and-error bending when forming large profiles. As a result, Synchro-Form ensures precise, efficient bending, eliminating manual operations and increasing throughput. The system made its debut at the recent EuroBLECH exhibition.

Adaptive bending evolution

Synchro-Form evolves LVD's renowned adaptive bending technology, making it easy to produce accurate bends in large workpieces. The system is a unique design. It uses a laser scanner and synchro modules (X, R, A-axes magnets) to manipulate, position and measure each bend, relaying the digital information to the TOUCH-B control, which makes adjustments to part and ram position to achieve the correct profile. Variations are not accumulated but, instead, compensated with each bend step. Even after multiple, consecutive bends, the profile will be perfectly formed.

Technology leader

LVD is a leader in adaptive bending technology. The Synchro-Form system joins LVD's Easy-Form® Laser, a patented in-process angle monitoring system introduced in 2002 and currently featured on all Easy-Form press brakes. LVD's unique Easy-Form system uses a laser and symmetrical measurement at the front and back of the die to determine the exact value of the angle of the workpiece.

Heavy-duty bending up to 3000 tons

LVD's Synchro-Form is an integrated feature of Synchro-Form Series in models ranging from 320 tonnes by 4 metres up to 3,000 tonnes by 14 metres and also available in tandem, tridem and quadem configurations. These configure-to-order machines are typically used in the crane boom, yellow goods, lighting pole, construction,

transport, agricultural, offshore, oil&gas, and wind power industries.

The LVD Group is a leading manufacturer of a comprehensive range of sheet metal/plate working machine tools and software solutions, including laser cutting systems, punch presses, press brakes, guillotine shears and mid-level automation systems, integrated and supported by its CADMAN® PC-based Windows® compatible software.

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Piranha introduces new line of press brakes

Newly-designed models feature EasyCrown™ Hydraulic Crowning System

The makers of the legendary Piranha ironworkers has announced the addition of a new line of press brakes to the Piranha family, aiming to give customers durable, high-quality machines for an expanded range of fabrication needs.

Piranha's new design was born from the need for mid-market machines that can handle tough jobs, accurately, time after time.

"Our customers have been asking us to bring back a press brake offering, especially one with high-end specs at a reasonable price. Our new line answers that need," says Scott Donahy, Piranha Press Brake product manager.

Central to the value proposition is the EasyCrown Hydraulic Crowning System, a standard feature on WPH and WPB models. EasyCrown eliminates guesswork and rework through automatically compensating for deflection through hydraulic cylinders in the brake's bed. The operator simply programs the part, the material type, thickness and tools into the industry-leading, easy-to-use Delem controls, and it automatically adjusts for accuracy.

"EasyCrown is a perfect example our quest for top-notch quality and efficiency," adds Scott Donahy. "This feature greatly improves part accuracy and it's so easy to use."

The new Piranha press brakes are available in four models, ranging from 30-3,000 tonnes, including options for large tonnage tandem brakes and electric servo-driven machines.

The new line was shown at FabTech, North America's largest metal forming, fabricating, welding and finishing event, in Las Vegas, in November. Other highlights at the MegaFab booth at FabTech included a new patent-pending CNC control on the Bertsch Bending Roll, a Whitney Punch Plasma Combination Machine with drilling and tapping, and a production model Whitney 12 kW Fiber Laser, claimed to be the fastest plate laser on the planet delivering superior thick plate cut quality at unbelievable cutting speeds.

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Latest IRIS Plus technology

IRIS Plus is the sheet metal industries' first and only combination optical protection and real-time image processing system for press brakes. In addition to the high speed guarding capabilities, IRIS Plus contains integrated high speed image processing hardware and software that sends real-time image and angle data to the CNC.

This data is used to perform live angle bending where the CNC utilises the real-time angle to control the bending depth. In addition, more advanced angle control processes can be used in conjunction with real-time spring back compensation and final angle confirmation for high speed and highly accurate bend angle control. This provides the machine operator with a good bend the first time, without having to make manual adjustments or corrections in the CNC.

Traditional angle measurement devices are expensive optional upgrades and in some cases, cost prohibitive for the buyer. However, by utilising the integrated image processing technology within the guarding system hardware, IRIS Plus now enables a press brake manufacturer to include realtime angle control as standard on its entire machine range for little or no additional cost.

IRIS Plus image processing technology is designed to complement, not replace, existing proprietary angle measurement and control systems. This enables manufacturers to now standardise all machines with angle control while still offering customers their own proprietary solutions as additional options that can be used in combination with IRIS Plus to further expand and enhance angle control capabilities and performance.

Several leading press brake manufacturers have already adopted IRIS Plus technology early to be first to market with angle control as standard on all machines, with many more leading manufacturers to follow suit over the coming months.

IRIS Plus is available exclusively for new press brakes from leading press brake manufacturers.

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Reliably brought into form

Workpieces with special end form geometry are in demand again and again. Whether for the initial production or repeated precision, ensuring exact parameters is necessary for an efficient implementation. Engineers at transfluid have developed a solution with automatic tool detection for tube forming. The new REB 645 axial tube forming machine form allows for tube end forming with fast tool changes for complex geometries and extreme degrees of forming.

The starting point is a barcode scanning system. Using this system, the operation data of a tube with individual barcode can be easily read, for end forming for example. All the tools on the machine, which is equipped with six forming stations, have sensors (RFID), ensuring that the right programme and the appropriate tools are available. If the automatic inspection unit detects a wrong tool, the operating panel with data memory displays this information immediately. Identifying the correct tool for the change is indicated as well. Using the convenient quick-connecting system of the

transfluid solution with fork for fixing and locking bolt for securing the mount, the machine operator can directly change the tool and precisely perform the tube end forming afterwards.

The REB 645 allows the axial forming of tubes with diameters from 6 to 45 mm. By means of a servomotor, the tool sequence is positioned horizontally and vertically. In addition, rolling stations for specific forming processes can be integrated. Upon request, the machine can be equipped with electric or hydraulic numeric drives. In case of extremely short cycle times, these forming procedures can also be carried out gradually in transfer systems. With the new tube

forming machine, transfluid ensures even more reliable processes and more flexibility for individual requirements.

A video is available to view at **http://bit.ly/REB-645-YouTube**

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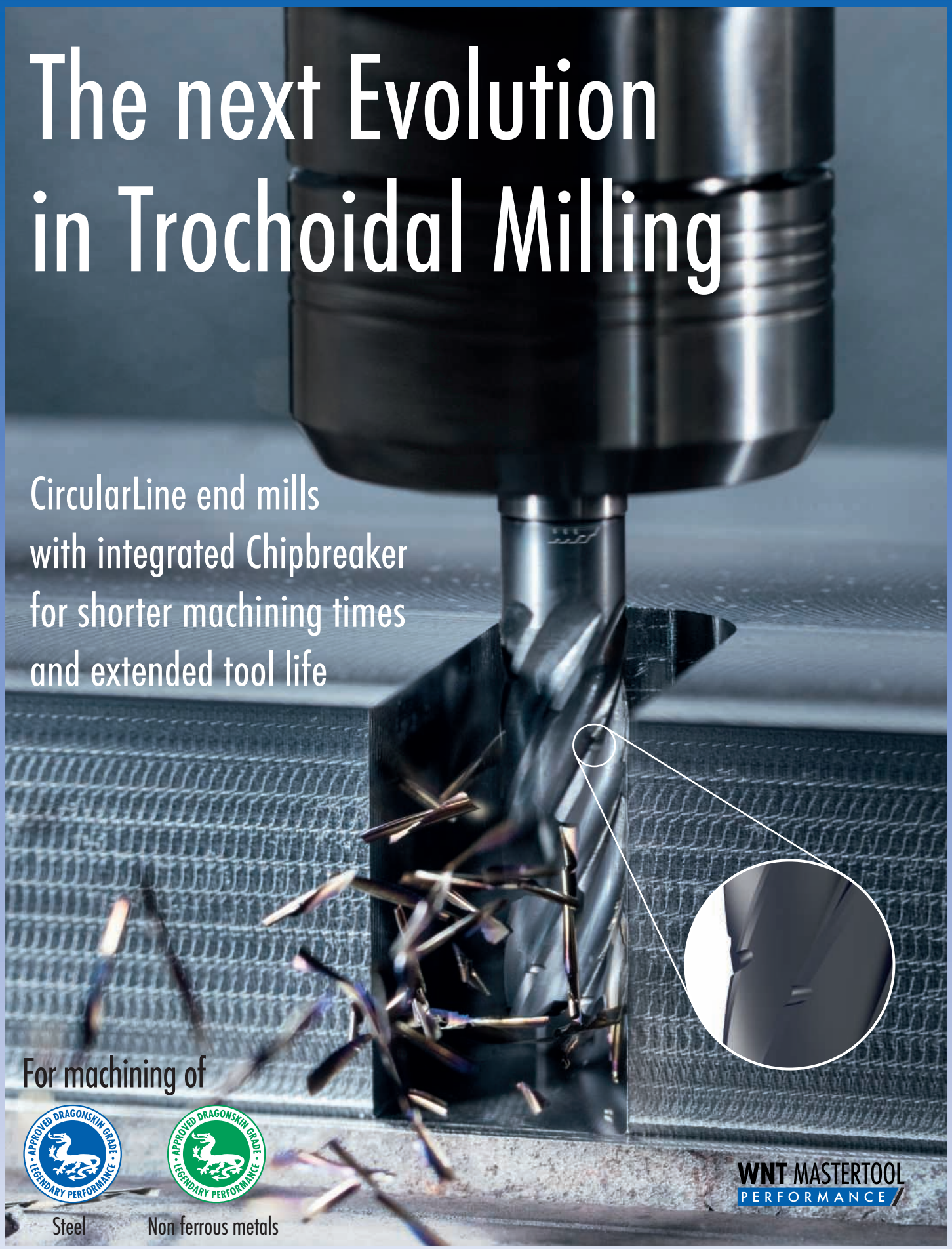
The next Evolution in Trochoidal Milling



CircularLine end mills
with integrated Chipbreaker
for shorter machining times
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